

# 5 Environmental Consequences



© Craig Birnie

*Pied-billed grebe in a courtship display.*

This chapter describes the environmental consequences for the management alternatives considered for the 12 national wildlife refuges (see chapter 3). The Service assessed the environmental consequences of carrying out each alternative on the physical, biological, cultural, social, and economical resources of the refuges.

## 5.1 Effects Common to All Alternatives

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

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

### GLOBAL WARMING

The actions proposed in this document would conserve or restore land and habitat, thus retaining existing carbon sequestration at the refuges. 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 because new vegetation would quickly replace the burned-up biomass. Overall, there should be little or no net change for carbon sequestered at the refuges 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 monitoring and research. Adjustments in management may be necessary over time to adapt to a changing climate.

### SOILS

All alternatives would positively affect soil formation processes in refuge lands. Some disturbances to surface soils and topography would occur at those locations selected for (1) administrative, maintenance, and visitor facilities, (2) invasive plant 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.



USFWS

*Refuge System wetland.*

The management alternatives are not anticipated to have any adverse effects on the refuges' 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 refuges should not vary significantly between any of the alternatives.

## CULTURAL RESOURCES

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

Cultural resource surveys at the refuges have been limited in the Service's fee-title lands. Therefore, additional surveys would be required before any new construction or excavation to fully satisfy provisions of the NHPA and applicable acts and policies related to historical and archaeological resources. Potentially negative effects from construction of trails or facilities would require review by the regional archaeologist and consultation with the North Dakota State Historic Preservation Office.

## ENVIRONMENTAL JUSTICE

None of the management alternatives described in this document would disproportionately place any adverse environmental, economic, social, or health effects on minority or low-income populations. There is no fee to enter the refuges; they are open to everyone.

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

## PUBLIC HEALTH AND SAFETY

Based on the nature of each alternative, the location of the refuges, and current land use, all alternatives are anticipated to have no significant negative effects on the quality of the human environment, including public health and safety.

## 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.

## 5.2 Description of Consequences

Management actions are prescribed by alternative as the 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 alternatives A, B, and C. A summary of this narrative is contained in table 3 in chapter 3.

### ALTERNATIVE A—CURRENT MANAGEMENT (NO ACTION)

The estimated potential effects of alternative A are described by the major topics discussed throughout this document.

#### Habitat and Wildlife

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

Habitat protection through acquisition efforts would focus on "roundouts" of high priority. Active management such as prescribed burning, grazing, farming, and invasive plant control would be used to maintain and improve native prairie tracts and tame grass units. The refuges would have improved quality of native vegetation in high-priority tracts and a status quo vegetative condition in medium- and low-priority tracts.

Refuge staffs would continue the current level of monitoring and documenting the presence and use of refuge lands by federally listed species, such as piping plover and whooping crane. The staffs would continue to impose area closures to public use in order to protect federally listed species using the refuges.

### Monitoring and Research

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

### Visitor Services

The hunting programs are open at Audubon, Chase Lake, Lake Alice, Lake Nettie, and Lake Zahl national wildlife refuges. The fishing programs are only open at Audubon and Lake Ilo national wildlife refuges. Hunting and fishing at these refuges would continue to be valued as two of the six wildlife-dependent recreational uses and would provide hunters with ample opportunity to hunt without compromising Refuge System mission and goals.

The current level of environmental education and interpretation programs would continue to be valued as wildlife-dependent recreational uses and would provide visitors with many opportunities to learn about a particular refuge and the Refuge System. Visitor services events such as teacher workshops would be conducted on a multiyear rotation among refuges. The refuge staffs would occasionally make updates to brochures and publications. There would be occasional attempts to do outreach to the media.

### Partnerships

Existing partnerships would continue to allow refuge staffs to accomplish much more than they could in the absence of partnerships. The refuge staffs would continue to improve and build partnerships with the local public, primarily landowners adjacent to the refuges. Partnerships with the NDGF would help the staffs manage hunting at the refuges. In addition, partnerships would improve the refuges' capabilities for research, monitoring, and inventory efforts and outreach and visitor service activities.

### Operations

This alternative would maintain refuge staffs at existing levels. The refuges would continue with the current level of operations and maintenance, including the maintenance of equipment and vehicles in good working condition to achieve management goals. Staffs would continue to operate with available funding and resources.

## ALTERNATIVE B—MODERATELY ENHANCED MANAGEMENT (PROPOSED ACTION)

The estimated potential effects of alternative B are described by the major topics discussed throughout this document.

### Habitat and Wildlife

The Service would manage all refuge units. For lands protected by conservation easements within the refuges, the refuge staffs would monitor and enforce all conservation easements. Monitoring would evaluate the effects of management and restoration on target migratory birds.



*Egrets in a wetland at Kellys Slough National Wildlife Refuge.*

There would be potential to increase the quality and expansion of native grasses and forbs, which would result in a corresponding decrease in acreage of nonnative grasses and forbs. This alternative would also limit the coverage of invasive, native, low shrubs (such as western snowberry and silverberry). Once some degree of success was achieved, it is likely that, through continued management, the degree of future invasion would be minimized.

Accomplishment of the above actions, with a corresponding positive vegetative response, would result in an improved breeding habitat conditions for the wildlife target species—waterfowl, shorebirds, and grassland Neotropical birds—with the resulting increase in nest success and nest densities for these wildlife groups. Potential does exist for less favorable breeding habitat condition for certain species such as nonnative bird species. Predator management through trapping would result in a decreased abundance of nest predators such as skunks, red fox, and raccoon, but may also result in artificially high populations of small mammals such as shrews and voles due to the removal of mid-sized predators. Removal of trees would result in less favorable habitat conditions for game species such as wintering deer and some resident bird species. Landscape fragmentation would be reduced through the replanting of native grass cover in areas where trees were previously removed, as well as through acquisition of additional lands. Habitat protection through acquisition would focus on high-priority conservation easements and some of the highest priority fee tracts such as “roundouts.”

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

### Monitoring and Research

The refuge staffs would improve their understanding of upland management’s effects (for example, from prescribed burning, grazing, and haying) on vegetative composition and structure. They would also better understand how wetland and upland management activities at the refuges affect overall habitat productivity.



© Craig Bihrlle

Shorebirds such as these red-necked phalaropes search for invertebrates.

This alternative would increase the extent of land at the refuges that is monitored (vegetation line transects) for vegetation changes in wetland and upland habitats. Ultimately, there would be an improved understanding of wildlife responses to management activities, which would allow for better management decisions that target specific wildlife objectives. The resulting 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, the refuge staffs would improve their knowledge of the effects of large-scale wind farms on migratory bird response, particularly for waterfowl, shorebirds, and migratory grassland birds.

### Visitor Services

There would be no change to the wildlife-dependent recreational uses of hunting, fishing, environmental education and interpretation, and wildlife observation and photography. Hunting and fishing apply to those refuges that currently have these programs, which include special regulations.

Refuge staffs would have the opportunity to organize or participate in visitor services events such as teacher workshops or waterfowl identification workshops. With the additional funding and staff provided by this alternative, workshops would be held on a 3-year rotation among refuges, and media outreach would be conducted annually. Brochures and publications would be reviewed annually and updates completed as needed.

This alternative would provide a future opportunity to develop an environmental learning at Audubon National Wildlife Refuge and kiosks and interpretive panels at Lake Alice National Wildlife Refuge. Lake Alice National Wildlife Refuge would also explore opening the lake to ice fishing and, if the floodwater recedes, restoration of visitor service facilities. With expanded and new visitor facilities, refuge staffs 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

Expanded partnerships would increase the Service’s ability to provide quality habitats for waterfowl, shorebird, and grassland bird species and improve wildlife-dependent recreational use opportunities. Refuge staffs would have improved relationships with a greater number of private landowners, government agencies, and nongovernmental organizations. Because the target bird group is popular with outdoor enthusiasts in North Dakota, this alternative holds potential for group partners, which could lead to increased money and increased likelihood that the goals and objectives are achieved.

## Operations

Increased funding would be needed for staff, equipment, and supplies (such as fuel and native grass seed). The increased resources would give refuge staffs the ability to accomplish goals and objectives associated with habitat and wildlife management, visitor services, monitoring, and research.

Increased funding and staff would enable the refuges to meet legal and obligated mandates and to provide management at high- and medium-priority tracts, as well as use limited resources for other projects. Increased resources would provide law enforcement for visitor safety and facility and wildlife protection.

## ALTERNATIVE C—ENHANCED MANAGEMENT

The estimated potential effects of alternative C are described by the major topics discussed throughout this document.

### Habitat and Wildlife

There would be the same effects as for alternative B. In addition, alternative C would also target native prairies and wetlands in the most intact ecosystems, which are more likely to support a wide range of migratory bird species (especially those of management concern such as northern pintail and marbled godwit). The emphasis would be restoration of representative examples of native mixed- and tall-grass prairies, including healthy grasslands to benefit ground-nesting species of migratory birds. There would be potential to increase the acreage of native grasses and forbs, which would result in a corresponding decrease in the acreage of nonnative grasses and forbs. Conversely, old cropland sites and badly degraded native prairies would be lowest priority, but would be managed to attract high densities of waterfowl species that use DNC.

This alternative would expand acquisition of fee-title lands to provide additional habitat protection. The highest priority for acquisition would be fee-title “roundouts” of native prairie and wetlands.

Geographic information system (GIS) mapping would provide for a proactive enforcement program.

Refuge staffs would identify invasive plants to target with limited management at high- and medium-priority tracts.

### Monitoring and Research

The refuge staffs would improve their understanding of management effects on vegetation composition. Specific research would be conducted to answer management questions and improve understanding of native prairie habitat. Money would be available for graduate student work and self-directed research. In addition, the refuge staffs would complete mandated surveys and baseline monitoring.

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

The refuge staffs would improve their knowledge of the effects of large-scale wind farms on migratory bird response, particularly for waterfowl, shorebirds, and migratory grassland birds.

### Visitor Services

There would be the same effects as for alternative B:

- There would be no change to the wildlife-dependent recreational uses of hunting, fishing, environmental education and interpretation, and wildlife observation and photography. Hunting and fishing apply to those refuges that currently have these programs, which include special regulations.
- Refuge staffs would have the opportunity to organize or participate in visitor services events such as teacher workshops or waterfowl identification workshops. With the additional funding and staff provided by this alternative, workshops would be held on a 3-year rotation among refuges, and media outreach would be conducted annually. Brochures and publications would be reviewed annually and updates completed as needed.
- This alternative would provide a future opportunity to develop an environmental learning at Audubon National Wildlife Refuge and kiosks and interpretive panels at Lake Alice National Wildlife Refuge. Lake Alice National Wildlife Refuge would also explore opening the lake to ice fishing and, if the floodwater recedes, restoration of visitor service facilities. With expanded and new visitor facilities, refuge staffs 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.

In addition, through enhanced outdoor education opportunities, students would gain an improved understanding of North Dakota’s natural history, wildlife biology, history and qualities of Service lands, and the mission of the Refuge System.

Wildlife-dependent recreational use would be enhanced, outdoor classroom activities would be developed, and interpretive exhibits and displays would be added to improve the public understanding of North Dakota’s

prairie system and associated wildlife. Refuge staffs would annually conduct or support visitor services events such as teacher workshops and waterfowl identification.

These changes would give the refuges the potential to generate greater support for future refuge and Refuge System programs.

### Partnerships

There would be the same effects as for alternative B:

- Expanded partnerships would increase the Service's ability to provide quality habitats for waterfowl, shorebird, and grassland bird species and improve wildlife-dependent recreational use opportunities. Refuge staffs would have improved relationships with a greater number of private landowners, government agencies, and nongovernmental organizations. Because the target bird group is popular with outdoor enthusiasts in North Dakota, this alternative holds potential for group partners, which could lead to increased money and increased likelihood that the goals and objectives are achieved.

### Operations

There would be the same effects as for alternative B:

- Increased funding would be needed for staff, equipment, and supplies (such as fuel and native grass seed). The increased resources would give refuge staffs the ability to accomplish goals and objectives associated with habitat and wildlife management, visitor services, monitoring, and research.
- Increased funding and staff would enable the refuges to meet legal and obligated mandates and to provide management at high- and medium-priority tracts, as well as use limited resources for other projects. Increased resources would provide law enforcement for visitor safety and facility and wildlife protection.

In addition, increased resources would enable the Service to accomplish easement enforcement.

## 5.3 Cumulative Impacts

Cumulative impacts are the potential effects of each alternative in combination with past, present, and future actions. The NEPA regulations define

cumulative effects as “the impact on the environment 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 nonfederal) 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 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 the implementation of the final CCP. Implementation over an extended period would reduce the likelihood of negative cumulative impacts.

The NEPA requires mitigation measures when the environmental analysis process detects possible significant impacts to habitats, wildlife, or the human environment. All activities for 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 impacts by having activities banned or restricted where these species occur.
- All proposed activities will be regulated to reduce potential impacts to wildlife and plant species, especially during their sensitive reproductive cycles.
- Hunting safety regulations will be closely coordinated with, and enforced by, refuge staffs and NDGF personnel.
- Monitoring protocols will be established to determine goal achievement levels and possible unforeseen impacts to resources for application of adaptive management to ensure 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 impacts that occur during the first years of the plan.

