Environmental Assessment

Karl E. Mundt National Wildlife Refuge

Jonas Tract Expansion

October 2005

Prepared by the U.S. Fish and Wildlife Service

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Abbreviations

EA	environmental assessment
ESA	Endangered Species Act
FONSI	finding of no significant impact
LWCF	Land and Water Conservation Fund
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRCS	Natural Resources Conservation Service
NWR	national wildlife refuge
Refuge System	National Wildlife Refuge System
Service	U.S. Fish and Wildlife Service
SDGFP	South Dakota Game, Fish, and Parks
SRB	Southern River Breaks
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service

1 Purpose of and Need for Action

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A bald eagle soars over its territory.

This environmental assessment (EA) describes and analyzes the following alternatives for the Karl E. Mundt National Wildlife Refuge (NWR) in South Dakota:

- no-action alternative
- proposed action alternative (Jonas tract expansion of the refuge)

The Karl E. Mundt NWR (figure 1) was one of the earliest federal refuges specifically set aside for the protection of bald eagles in the United States. The refuge and surrounding area have been recognized as important wintering habitat for bald eagles within South Dakota, as well as within the lower 48 states.

BACKGROUND

Prior to European settlement, an estimated 250,000–500,000 bald eagles occurred throughout the lower 48 states. When America adopted the majestic bald eagle as its national emblem in 1782, as many as 100,000 nesting pairs occupied the United States, excluding Alaska. However, by 1963, the stark realization that the national emblem was in serious trouble was evident, as only 417 nesting pairs were documented in the lower 48 states.

The dramatic decline of bald eagles can be attributed to many causes including:

- widespread use of DDT and other organochlorine pesticides following World War II;
- significant habitat loss and alteration;
- direct and indirect poisoning;
- electrocutions;
- shootings.

As imperiled as the species was in the early 1960s, the long road to recovery was beginning to take shape. A major step toward recovery occurred in 1972 when the U.S. Environmental Protection Agency banned within the United States the use of DDT and related chemicals, which have been linked to eggshell thinning and subsequent reproductive failure.

In addition, heightened public awareness and support of endangered species in general during the 1960s and 1970s led to greater attention focused at the disheartening plight of the bald eagle.

- In 1967, the Secretary of the Interior listed bald eagles south of the 40th parallel as endangered under the Endangered Species Preservation Act of 1966.
- Following enactment of a revised and stronger Endangered Species Act of 1973 (ESA), the U.S. Fish and Wildlife Service (Service) in 1978, listed the species as endangered throughout the lower 48 states, except in Michigan, Minnesota, Oregon, Washington, and Wisconsin, where they were listed as threatened.
- In 1995, the Service reclassified the bald eagle as threatened in all of the lower 48 states.

The ESA listing and protections resulted in increases in funding for recovery efforts including new funds for land acquisition projects. The Karl E. Mundt NWR was established in 1974 under the authority of the ESA.

U.S. Fish & Wildlife Service

Karl E. Mundt National Wildlife Refuge

Gregory County, South Dakota; Boyd County, Nebraska

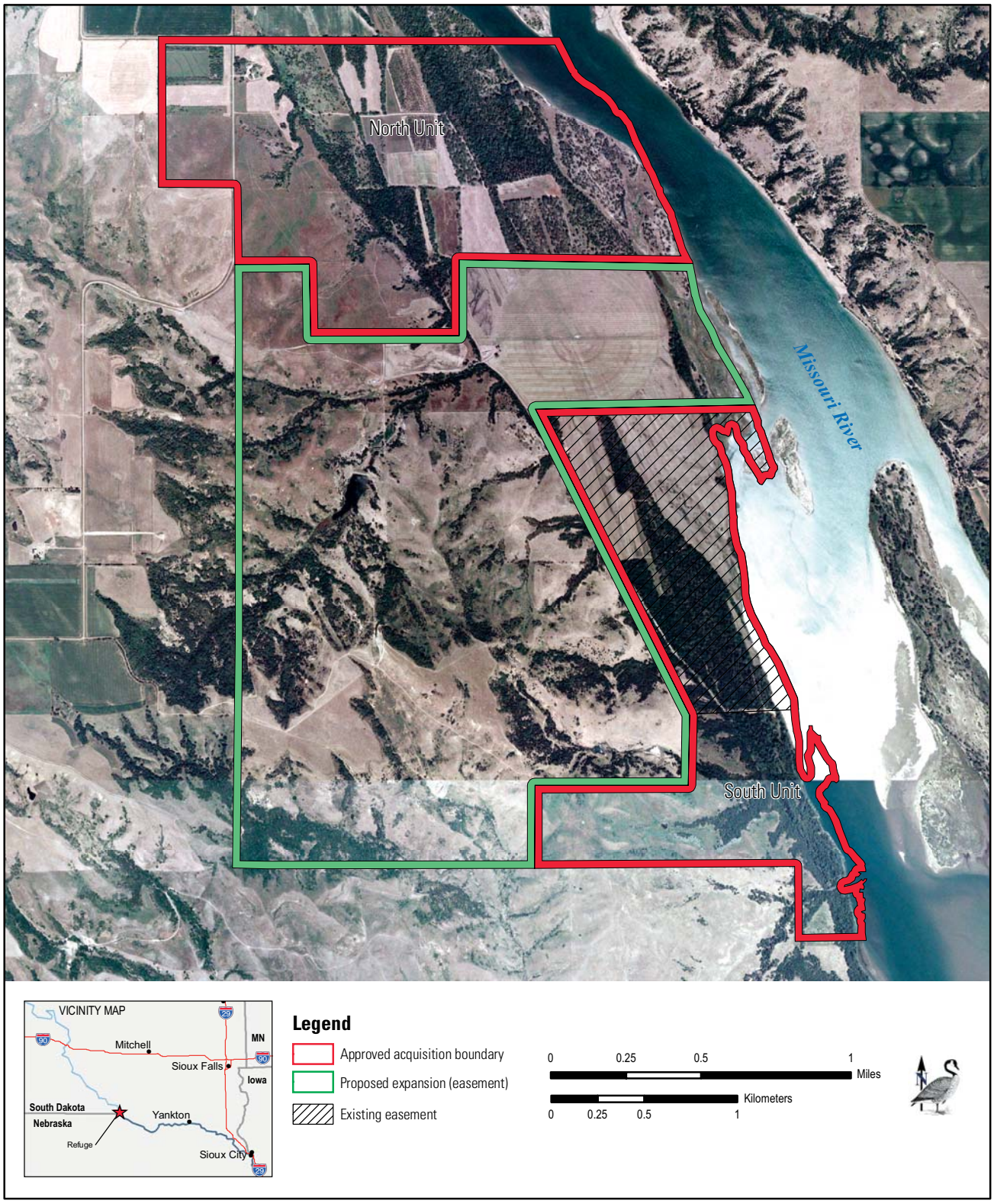

Figure 1. Proposed conservation easement (Jonas tract) expansion, Karl E. Mundt National Wildlife Refuge, South Dakota

The refuge is located below the Fort Randall Dam, along the Missouri River in southeastern South Dakota. In 1967, 283 bald eagles were counted during a winter survey of the refuge and surrounding area. At that time, this was believed to be the largest concentration of wintering eagles in the lower 48 states.

Mike Artmann/USFWS

A portion of the Fort Randall Dam, Pickstown, SD.

Recognizing its significance to bald eagles, the Secretary of the Interior subsequently designated the area below the dam as the Fort Randall Eagle Roost National Natural Landmark in 1967. Part of the refuge is within the boundary of this national natural landmark.

The refuge is comprised of approximately 760 acres of fee-title land (Service ownership) and 305 acres of private land under a perpetual conservation easement. The refuge is divided into two distinct units—the north unit and the south unit.

The Karl E. Mundt NWR is part of the Lake Andes NWR complex, which also includes Lake Andes NWR and the 13-county Lake Andes Wetland Management District. The complex headquarters are approximately 10 miles north of the project area (Jonas tract under consideration), in Lake Andes, South Dakota.

Proposed Action

The Service is proposing to expand the acquisition boundary of the Karl E. Mundt NWR to protect important bald eagle habitat. The Service intends to purchase a perpetual conservation easement on approximately 1,955 acres of private land owned in majority by Bill Jonas in Gregory County. The proposed conservation easement (Jonas tract expansion) would be an expansion of the existing conservation easement and would encumber additional lands owned by Bill Jonas.

A conservation easement would not only protect vital wintering habitat for bald eagles into the future, but would also link the two units of the refuge. Approximately 1,650 acres of the proposed easement fall outside of the current approved acquisition boundary. This document will evaluate the expansion of the approved acquisition boundary.

The extent of the project boundary was selected to provide protection not only for the cottonwood woodlands in the bottomlands—important to the needs of wintering and nesting eagles—but also to provide a substantial buffer zone to the west. The Service created a 0.5-mile buffer zone from the western edge of the historical floodplain. The project boundary was squared to section lines for ease of delineation and documentation.

The land would remain in private ownership, with property taxes and invasive plant control the responsibility of the landowner. In addition, public access would remain under the control of the landowner.

PROJECT AREA

The project area of the Jonas tract expansion—defined as the 1,650 acres of land outside the existing approved acquisition boundary—is located in Gregory County in southeastern South Dakota. The project area is approximately 5 miles east of Fort Randall, 3 miles south of Pickstown, and 2.5 miles downstream of the Fort Randall Dam (figure 1).

USFWS

The project area is located within a 39-mile reach of the Missouri National Recreational River, a segment of the National Wild and Scenic River System. This reach, designated in 1991 by Congress, extends from the Fort Randall Dam downstream to Running Water, South Dakota.

The Fort Randall Dam is one of six major dams on the mainstem of the Missouri River managed by the U.S. Army Corps of Engineers (USACE). The dam impounds water to form the 107-mile long Lake Francis Case Reservoir. Completed in 1956, the dam serves primarily as a hydropower facility.

The Jonas Land Corporation is a small, family-owned farm corporation and is the sole owner within the project area. Bill Jonas is the president and majority stockholder, and will be considered the "landowner" for the purposes of this document. Bill Jonas' father, William Jonas, sold a conservation easement to the National Wildlife Federation in 1973 for the protection of bald eagles. Like his father, Bill Jonas has expressed considerable interest in protecting additional native habitat from development to ensure further protection for the eagles.

Habitat types are a mix of cottonwood–willow riparian woodlands along the river, native mixed-grass uplands, and woody draws and canyons descending from the river bluffs to the Missouri River.

Kay Kottas/University of Nebraska

Included within the riparian corridor are mature cottonwood trees, which are highly sought after by wintering bald eagles as perching and roosting sites.

Several small water impoundments totaling approximately 10 acres occur in the uplands.

Alfalfa is grown and harvested annually on a 125-acre irrigation circle below the river bluffs, within the historical floodplain of the project area. The landowner grows an additional 50 acres of nonirrigated alfalfa in the floodplain. The landowner currently leases the uplands for livestock grazing and manages a limited deer-hunting operation.

PURPOSE OF AND NEED FOR PROPOSED ACTION

The purpose of this project is to protect in perpetuity:

- one of the largest and most important winter roost areas for bald eagles in South Dakota and the lower 48 states;
- valuable nesting area for bald eagles in the spring.

On average, the area below the Fort Randall Dam contains 50–300 eagles depending on the severity of the winter (Bryant 2005). The mature cottonwood trees and associated riparian plant communities provide ideal roost sites that offer protection from harsh winter conditions. Fish and overwintering waterfowl provide abundant food resources for bald eagles.

Steve Hillebrand/USFWS

The proposed Jonas tract expansion is needed to ensure that this critical riverfront habitat, located between two existing units of a national wildlife refuge, is protected from the increasing pressures of development and subdivision.

The project area is in a location that is very desirable for home development, especially for those interested in outdoor recreation. For example, land adjacent to this tract was recently sold and divided into 40-acre parcels for upwards of $3,000 per acre—far more than the agricultural value of the land. The project area contains hunting opportunities for trophy white-tailed deer and for turkey. Quality pheasant hunting, fishing, and boating opportunities are only minutes away.

Bald eagles are highly susceptible to disturbance especially during the winter on communal roosts (Martell 1992, Wood 1980). Subdivision of the project area could lead to subsequent development and increased year-round human activity. This would most likely alter the habitat integrity and attractiveness of this area to bald eagles, as well as undermine the values and benefits of the existing refuge to wildlife.

DECISIONS TO BE MADE

The preparers listed in appendix A carried out the environmental analysis process and produced this EA. Based on the analysis in this EA, the regional director of Region 6, with the concurrence of the director of the U.S. Fish and Wildlife Service, will make three decisions.

- Determine whether the Service should expand the acquisition boundary of the Karl E. Mundt NWR.
- If yes, select a boundary for approval that best fulfills the habitat protection purposes.
- If yes, determine whether the selected alternative would have a significant impact on the quality of the human environment. The National Environmental Policy Act of 1969 (NEPA) requires this determination. If the quality of the human environment would not be

significantly affected, a finding of no significant impact (FONSI) will be signed and made available to the public. If the alternative would have a significant impact, completion of an environmental impact statement would be required to address further those impacts.

ISSUES IDENTIFIED AND SELECTED FOR ANALYSIS

A news release was issued on June 14, 2005 to the media, conservation interests, and the public expressing the Service's request for comments about the proposed Jonas tract expansion. Local newspapers ran the notice prior to an open house that was held at the Lake Andes community center on June 20, 2005 from 6 to 8 pm. Public comments were taken during the meeting to identify any additional issues of concern to be analyzed for this project.

The Service has contacted county government officials, state congressional members, the Yankton Sioux tribal government, other public agencies, sportsmen and women groups, and conservation groups. Most of the contacts expressed an interest in and a desire to protect this tract for eagles and other native species.

There are two general categories of commonly expressed issues and concerns—biological and socioeconomic.

The biological issues follow:

- Future development activities could disturb wintering and nesting bald eagles within the project area.
- Habitat fragmentation and loss of habitat connectivity could result from future development activities.

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Communal Winter Roost Tree

- The restoration of cottonwoods along the floodplain should be part of this project.
- Increased numbers of eagles in the area may impact upland game species including pheasants and rabbits.

The socioeconomic issue is concern that land under a conservation easement would be opened for public access.

Biological Issues

Bald eagles are sensitive to human disturbance, especially at communal winter roost locations.

There is concern that residential and commercial development, especially in the historical floodplain and on the adjacent river bluffs, would substantially degrade the attractiveness and usability of the project area to bald eagles.

Cottonwood trees are the most used trees along the Missouri River by wintering and nesting bald eagles. Many of the cottonwood trees within the project area are estimated to be 40–60 years old. Cottonwoods tend to deteriorate after 75 years of age. Natural regeneration of cottonwoods along the river has essentially become nonexistent since the installation of major dams on the river over 50 years ago. Given the value of cottonwoods to bald eagles and the trees' aging condition, there is concern the terms of the conservation easement should require restoration of cottonwoods within the floodplain.

The diet of bald eagles in this area consists largely of fish and waterfowl (Grewe 1966, Steenhof 1976). The eagles also feed on snakes, small mammals, pheasants, and carrion. There is concern that if the project area is protected in perpetuity, the number of eagles using the area would increase to such a level that direct predation on game species such as pheasants and jackrabbits would surpass acceptable levels.

Socioeconomic Issues

There is concern that the landowner would not have control of public access for hunting or other recreational activities.

Issues Not Selected for Detailed Analysis

Historically, there has been concern about the amount of tax generated to local counties when land protection programs are proposed or land is removed from private ownership. Since this project is for a conservation easement, the land does not change ownership. Therefore, the current amount of taxes paid to the county would not change because the land's agricultural status would remain the same.

NATIONAL WILDLIFE REFUGE SYSTEM AND AUTHORITIES

The mission of the National Wildlife Refuge System is to preserve a national network of lands and waters for the conservation, management and, where appropriate, restoration of fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.

A conservation easement would be recognized as a unit of the Refuge System. The easement would be monitored in accordance with the terms of the easement and any other applicable legislation, policies, executive orders, and regulations.

GOALS OF THE REFUGE SYSTEM

Specific goals of the Refuge System follow:

- Fulfill our statutory duty to achieve refuge purpose(s) and further the Refuge System mission.
- Conserve, restore where appropriate, and enhance all species of fish, wildlife, and plants that are endangered or threatened with becoming endangered.
- Perpetuate migratory bird, interjurisdictional fish, and marine mammal populations.
- Conserve a diversity of fish, wildlife, and plants.
- Conserve and restore, where appropriate, representative ecosystems of the United States, including the ecological processes characteristic of those ecosystems.
- Foster understanding and instill appreciation of fish, wildlife, and plants, and their conservation, by providing the public with safe, high-quality and compatible wildlife-dependent public use. Such use includes hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation.

GUIDING PRINCIPLES OF THE REFUGE SYSTEM

In addition to the goals outlined above, four guiding principles for the management and public use of the Refuge System have been established:

- *Habitat*—Fish and wildlife will not prosper without high-quality habitat; and without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System will continue to conserve and enhance the quality and diversity of fish and wildlife habitat within refuges.
- *Public Use*—The Refuge System provides important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation, wildlife photography, environmental education, and interpretation.
- *Partnerships*—America's sportsmen and women were the first partners who insisted on protecting valuable wildlife habitat within wildlife refuges. Conservation partnerships with other federal agencies, state agencies, tribes, organizations, industry, and the public can make significant contributions to the growth and management of the Refuge System.
- *Public Involvement*—The public should be given a full and open opportunity to participate in decisions regarding acquisition and management of our national wildlife refuges.

The conservation and protection of the project area would be consistent with the following legislation, management plans, and reports:

- Migratory Bird Treaty Act (1918)
- Bald Eagle Protection Act (1940)
- Endangered Species Act (1973)
- Northern States Bald Eagle Recovery Plan (1983)
- North American Waterfowl Management Plan (1994)
- Prairie Pothole Joint Venture Implementation Plan (1994)
- Main Stem Missouri River Ecosystem Plan (2001)
- Migratory Non-game Birds of Management Concern in the United States (Service report) (2002)

HABITAT PROTECTION AND EASEMENT ACQUISITION

The long-standing policy of the Service is to acquire the "minimum interest" in land, from a willing seller, that best achieves habitat acquisition goals. The Service is proposing to purchase a conservation easement to achieve the necessary habitat protection goals within the project area.

Lands at the Karl E. Mundt NWR were acquired under the authority of the ESA (16 U.S.C. 1531-1543). In the proposed action, this authority would be used for the acquisition of a conservation easement. The purpose of the refuge is to conserve: "(A) fish or wildlife which are listed as endangered species or threatened species… or (B) plants which are listed as endangered or threatened species" (ESA, 16 U.S.C. 1534).

Because this acquisition is to protect a listed species, the primary funding source likely would be the Land

and Water Conservation Fund (LWCF). The LWCF is funded principally by oil and gas leases on the outer continental shelf, motorboat-fuel tax revenue, and the sale of surplus federal property. The LWCF is not funded from general tax revenue. The value paid by the Service for the conservation easement would be a percentage of the appraised value of the land. The percentage would be based on the value of the rights purchased by the Service under the terms of the easement.

Additional funding to acquire lands, waters, or interest therein for fish and wildlife conservation could come through congressional appropriations, the Migratory Bird Conservation Fund, the North American Waterfowl Conservation Act funds, and donations from nonprofit organizations.

Related Activities

The Service is working with other public, private, and tribal entities to maintain wildlife habitat and protect wildlife values near the project area.

SOUTH DAKOTA GAME, FISH AND PARKS

The South Dakota Game, Fish and Parks (SDGFP) manages the Randall Creek Recreational Area immediately north of the refuge. The campgrounds are closed to camping and vehicular travel October 1–April 30 to reduce disturbance to wintering bald eagles. In addition, the state manages the Missouri River adjacent to the project area as a state waterfowl refuge and prohibits hunting to further reduce disturbance to wintering eagles.

The state coordinates educational outreach activities through the Bald Eagle Awareness Days. Governor Mike Rounds signed a declaration establishing February 21–27, 2005, as “Bald Eagle Awareness Week.”

NATIONAL PARK SERVICE

The National Park Service is the administrator of the Fort Randall Eagle Roost National Landmark and the Missouri National Recreation River. The National Park Service is an active partner in issues of concern for the refuge and the Missouri River in the area.

U.S. ARMY CORPS OF ENGINEERS

The U.S. Army Corps of Engineers (USACE) manages the Fort Randall visitor center, where public visitors during the summer find information about bald eagles and their needs. The USACE also manages an informational overlook and kiosk (directly below the Fort Randall Dam) for viewing bald eagles.

The USACE initiated a cottonwood regeneration project in 2004, subject to further funding, to assist with restoration of cottonwoods on public lands along the Missouri River.

2 Alternatives including the Proposed Action

©Bob Gress

Adult Bald Eagle

This chapter describes the two alternatives identified for this project related to the Karl E. Mundt NWR:

- alternative A, the no-action alternative
- alternative B, the proposed action alternative (Jonas tract expansion of the refuge)

The following alternative descriptions portray no action in the project area (described in chapter 1), and actions related to expanding the boundary of the refuge to include the project area.

ALTERNATIVE A (NO ACTION)

The Service manages approximately 760 acres of fee-title land and oversees a conservation easement on 305 acres on private land (Jonas tract). Combined, these two types of ownership compose the refuge.

Under the no-action alternative, the Service would not expand the boundary of the refuge and would not purchase a conservation easement for protection of the expanded Jonas tract.

- Conservation organizations or state and local agencies could continue efforts to pursue a conservation easement within the project area to secure this important habitat.
- Refuge staff or other groups and agencies could continue habitat enhancement or restoration projects within the project area to improve wildlife habitat, including restoration of cottonwoods.

ALTERNATIVE B (PROPOSED ACTION)

The Service would expand the Karl E. Mundt NWR, through the Jonas tract expansion, to protect, in perpetuity, important habitat for bald eagles.

The Service would purchase a conservation easement on approximately 1,955 acres (1,650 acres of new refuge expansion on adjacent Jonas property and 305 acres under the existing Jonas tract easement). The Service would dissolve the 305-acre existing easement (Jonas tract) and encumber those acres with a new conservation easement.

- The land would remain in private ownership.
  - —Property taxes and invasive plant control would remain the responsibility of the landowner.
  - —Public access would remain under the control of the landowner.
- Development for residential, commercial, or industrial purposes would be restricted under the conservation easement.
- The Service and Mr. Jonas would coordinate and explicitly define terms related to the following management issues in the easement document.
  - —Conversion of the native upland habitat to cropland, drainage of wetlands, or any other alteration of the natural topography.
  - —Limited sand and gravel mining.
  - —Establishment of game farms.
- Existing agricultural uses including grazing livestock and haying alfalfa fields would continue to be permitted as is.

- Efforts to reestablish cottonwood trees within the floodplain would be pursued with the landowner and likely phased in over time through a separate wildlife extension agreement through the Service's Partners for Fish and Wildlife Program. Assistance and coordination with other agencies and nonprofit groups would be sought to best accomplish cottonwood reforestation within the historical floodplain in a timely manner.
- Staff at the Lake Andes NWR complex located in Lake Andes, South Dakota would monitor the easement. Monitoring would consist of reviewing land status conditions to ensure that the nondevelopment goal of the conservation easement is met according to the easement terms.

Alternatives Considered but not Selected for Detailed Analysis

Fee-title purchase of the Jonas tract under consideration.

The landowner was not interested in selling the area of the Jonas tract expansion (project area) to the Service in fee-title ownership at this time. This alternative was not pursued any further.

If sale of the area becomes a viable option for the landowner at some point, the Service will consider the opportunity and prepare the necessary NEPA documentation to pursue fee-title ownership.

3 Affected Environment

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Adult Bald Eagle

This chapter describes the biological, cultural, and socioeconomic resources most likely affected by expanding the acquisition boundary of Karl E. Mundt NWR.

Biological Environment

The project area lies within the Southern River Breaks (SRB) portion of the northwestern glaciated plains ecoregion (Bryce et al. 1998). The SRB is lightly glaciated and is comprised of dissected hills. The canyons have slopes of relatively high relief bordering the Missouri River and its alluvial plain.

Within the project area, elevations range from 1,224 to 1,720 feet above mean sea level. Slopes are nearly level within the floodplain, to almost 40 degrees in the small canyons and knobs. Elevations are highest in the southwestern part of the project area and decline toward the river.

The surface geology is primarily Pierre Shale of the Cretaceous period (144–65 million years ago). Dominant soils are as follows (USDA NRCS 2004):

- Labu–Sansarc clays with 15–50 percent slopes
- Oakton–Lakoma silty clays with 15–50 percent slopes
- Oakton–Lakoma silty clays with 9–15 percent slopes
- Labu clays with 9–15 percent slopes

Soils within the riparian corridor are primarily course-silty, course-loamy, silty clay, and river wash material.

The climate is characteristic of interior continental plains with hot, dry summers and cold, windy winters. Annual precipitation averages 23–25 inches, and the growing season ranges from 135 to 160 days. Most precipitation falls from April through July (table 1).

Table 1. Climatological data near Karl E. Mundt National Wildlife Refuge, South Dakota.

Climatological Factor	*Measurement Time Period or Aspect*	*Measurement*
Precipitation[1]	Wettest month (May)—mean total precipitation	3.70 inches
	Driest month (January)—mean total precipitation	0.43 inches
	Mean annual total precipitation	23.37 inches
Temperature[1]	Average mean temperature (January)	19.7° F
	Average mean temperature (July)	75.1° F
	Average annual temperature	48.4° F
	Annual mean growing days	3,266 days
Wind[2]	Average wind speed	10 mph
Dew point[2]	Average dew point	39%

Source: Picktown, SD, weather station data at <http://climate.sdstate.edu/climate_site/clmate_page.htm>
[1]Data from 1971 through 2000.
[2]Data from 1995 through 1999.

HABITAT

The project area covers three broad ecoregions (figure 2). These ecoregions include upland, lowland, and wetland habitats:

- Uplands—1,725 acres
- Lowlands—218 acres
- Wetlands—10 acres

A brief description of each ecoregion and the dominant plant communities follows.

Blue Grama

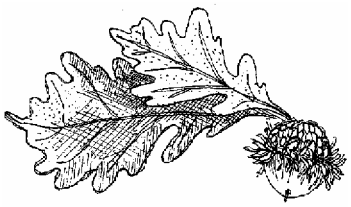
Uplands

Most of the project area (over 80 percent) is upland habitat. This area includes the river bluffs to the western border of the project area. Approximately 400 acres of trees and shrubs occur within the uplands, with the remainder being primarily grasses and forbs.

A mixture of native and nonnative grasses and shrubs dominates the upland habitat. Trees occupy the canyons and small swales.

Native grasses such as switchgrass, big bluestem, sideoats grama, and blue grama are common across the rolling terrain (Kottas and Stubbendieck 2005). Nonnative grasses, predominately smooth brome and crested wheatgrass, are also common in the uplands. Common forbs include dotted gayfeather, soft goldenrod, various asters, and white and yellow sweetclovers (Kottas and Stubbendieck 2005).

Shrubs include silver buffaloberry, snowberry, and yucca. Shrubs generally occur in the transition zone between the grasslands and wooded swales and canyons. Within the swales, common trees include green ash, eastern red cedar, bur oak, and American elm.

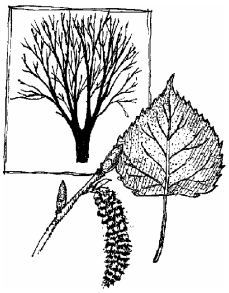


Bur Oak
© Cindie Brunner

Lowlands

Lowland habitat occurs from the bench of the lowest river bluff down to the river channel. This break delineates the historical floodplain. This area comprises approximately 15 percent (218 acres) of the project area. Lowlands include irrigated and nonirrigated alfalfa fields, a wooded riparian corridor, and a river wash area.

- The alfalfa field covers approximately 170 acres, of which 125 acres is irrigated. The irrigated alfalfa is cut and baled three to four times annually, typically starting in mid-June and running into September. The nonirrigated alfalfa is cut typically twice per year.
- The wooded riparian zone is approximately 13 acres and is located between the alfalfa field and the river wash area. The dominant tree along the Missouri River is cottonwood.



Cottonwood
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U.S. Fish & Wildlife Service

Karl E. Mundt National Wildlife Refuge

Gregory County, South Dakota; Boyd County, Nebraska

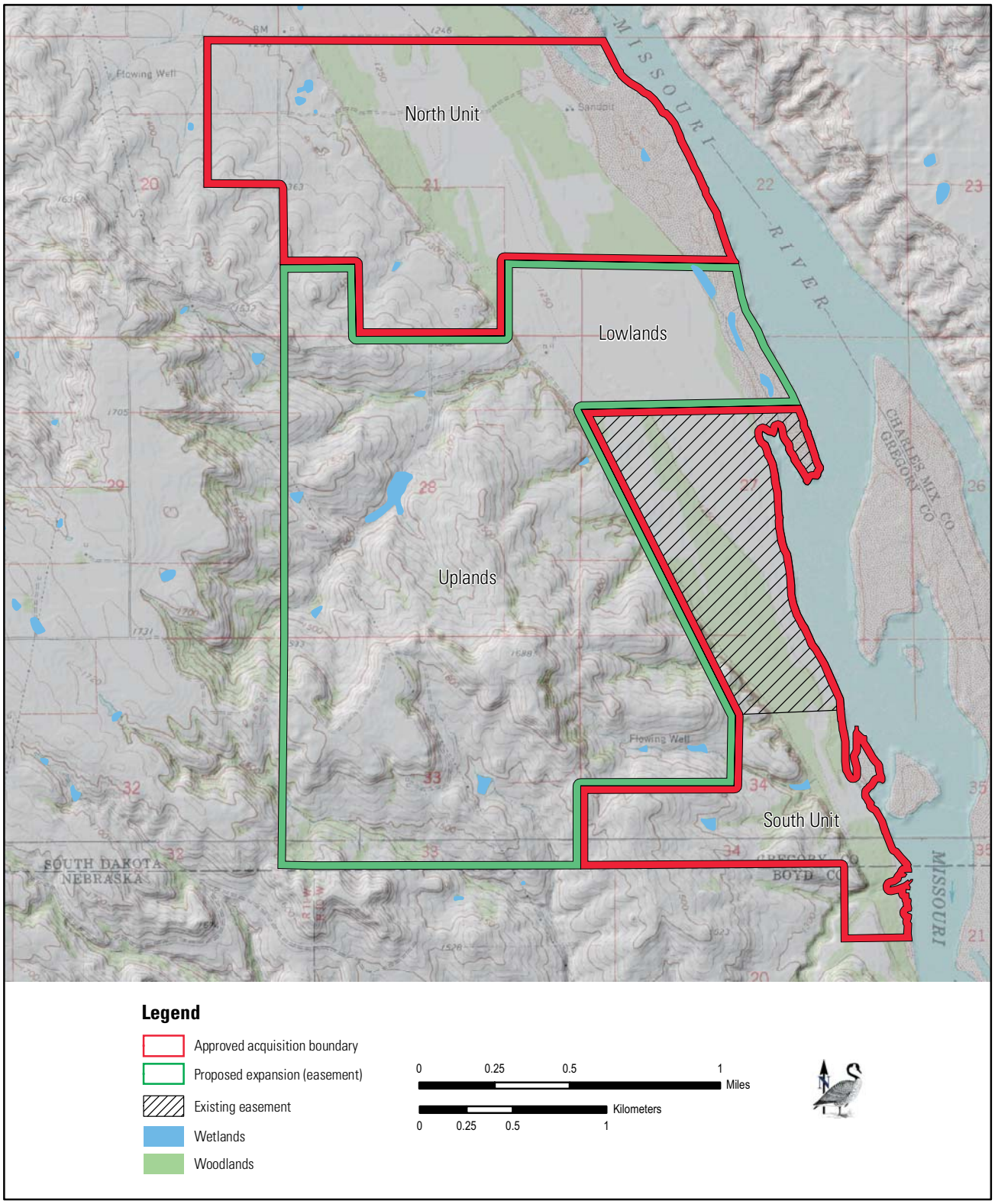


Figure 2. Habitats on the proposed conservation easement (Jonas tract) expansion, Karl E. Mundt National Wildlife Refuge, South Dakota

The understory consists of green ash, American elm, boxelder, Russian olive, peach-leaved willow, and eastern red cedar. Shrubs and forbs include smooth sumac, chokecherry, wild rose pennycress, stinging nettle, milkweed, and hemp dogbane (Kottas and Stubbendieck 2005).

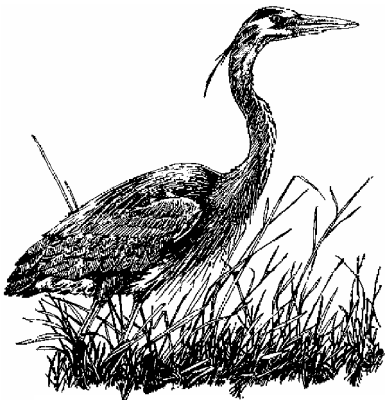
- Located between the wooded riparian zone and the river are approximately 35 acres of sandbar or river wash habitat. This relatively recent accreted land formed as the river channel migrated to the east, depositing sediments on the lee side of the river. Dominant vegetation includes sandbar willow, cottonwood, scouring rushes, grasses, and sedges.

Kay Kottas/University of Nebraska

Island Shoreline on the Missouri River

Wetlands

Several small impoundments ranging in size from 1-6 acres, and totaling 10 acres, occur within the project area, mostly within the uplands (figure 2). These impoundments are fed largely by surface runoff and were constructed primarily as water sources for livestock. These areas serve as important areas for amphibians and wetland-dependent birds. Within the river wash area, a mixture of riverine wetlands and freshwater emergent wetlands are also present, although limited in size (data is based on the Service's National Wetlands Inventory).



Great Blue Heron

WILDLIFE

The project area supports a wide variety of animal life. The project area has assemblages of amphibians and reptiles, mammals, and birds. Appendix B contains a list of common and scientific names of species mentioned in this EA.

The threatened bald eagle is the only federally listed species known to occur within the project area. Two endangered and two threatened bird species have been sighted adjacent to the project area. In the adjacent Missouri River, a host of fish species including the endangered pallid sturgeon is present. Appendix C lists endangered and threatened species that have been recorded in Gregory County.

Amphibians and Reptiles

Several species of amphibians and reptiles have been seen in Gregory County, where the refuge and project area lie, including the following:

- *Amphibians*

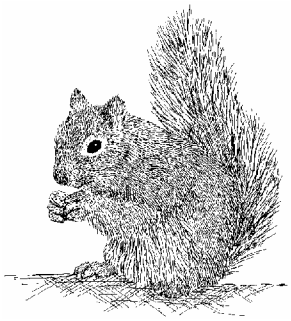
  Chorus frog
  Great Plains toad
  Northern leopard frog
  Plains leopard frog
  Tiger salamander

- *Reptiles*

  Bullsnake
  Common garter snake
  Eastern yellow-bellied racer
  False map turtle
  Prairie rattlesnake
  Spiny softshell turtle
  Western painted turtle

Mammals

The uplands and lowlands provide habitat for many small mammals including shrews, mice, voles, and ground squirrels. Small mammals provide important food resources for raptors such as the red-tailed hawk, Swainson's hawk, ferruginous hawk, and northern harrier.



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Examples of omnivores include the coyote, red fox, striped skunk, eastern spotted skunk, and Virginia opossum. Eastern fox squirrels are common in the wooded areas.

Wetlands provide cover and food for several terrestrial or semi-aquatic mammals including muskrat, mink, beaver, and raccoon.

White-tailed deer are the most common big game mammal within the project area. Small numbers of elk and mule deer occasionally occur in the project area.

Birds

This section discusses bald eagles and other bird species.

Bald Eagles

The threatened bald eagle winters and nests on and near the project area.

©Bob Gress

Bald eagles winter on and near the project area.

Wintering

As stated earlier, the refuge and surrounding area have long been recognized as an important winter roost site for bald eagles. Steenhof (1976) documented the location of the primary roost site during 1974–1976 on the existing conservation easement portion (Jonas tract) of the refuge. Other roost sites used less frequently were noted on both the north and south units of the refuge (Steenhof 1976). Wintering eagles typically vacate the area by the end of February.

Typically, the area below the Fort Randall Dam will winter between 50 and 300 bald eagles depending on the onset and the severity of the winter. Steenhof (1976) studied bald eagle winter use of the area and documented concentrations as high as 200 eagles in 1974–75 and 136 eagles in 1975–76. The average number of eagles for both years was 46 and 44, respectively, throughout the winter. Large concentrations of eagles in the project area tend to coincide with major winter storms and falling temperatures (Steenhof 1976). More recently, wintering populations have been in the range of 50–100 bald eagles.

Mature cottonwood woodlands, ice-free waters, and abundant food resources available below the dam provide ideal conditions for roosting, perching, and feeding. At night, and especially during adverse weather conditions, bald eagles will roost communally in one or two large trees. The roost trees, typically large cottonwoods, provide direct protection from the elements. The microclimate resulting from a congregation of eagles has been shown to be warmer than the surrounding ambient air temperature (Anthony et al. 1982, Keister et al. 1985).

Bald eagles feed primarily on the abundance of fish and overwintering waterfowl in the area.

- Grewe (1966) reported that fish are the most important food for bald eagles in South Dakota. Steenhof (1976) noted that eagles fed largely on fish, especially during periods when high numbers of young-of-the-year gizzard shad and crappie came through the dam turbines. As Missouri River levels receded due to daily dam operations, fish stranded in pools of water provided abundant feeding opportunities (Steenhof 1976).
- An estimated 5,000–10,000 waterfowl, primarily mallards and Canada geese, winter on the Missouri River below the dam during a typical year and feed in adjacent crop fields. When fish became scarce along the river, eagles tended to shift toward waterfowl by following flocks of waterfowl to fields (Steenhof 1976).
- Eagles also feed on jackrabbits, pheasants, and carrion (Steenhof 1976, Edwards 1969).

Donna Dewhurst/USFWS

Mallard Hen

The Randall Creek Campground is adjacent to the north unit of the refuge. Following a closure by the USACE on the south half of the campground in December 1974, eagle use within the closed area rose over 140 percent within the first month (Steenhof 1976). The north half, which was still open to the public, saw eagle use drop significantly (Steenhof 1976).

Bald eagles are highly sensitive to disturbance, especially in areas of communal roost locations (Martell 1992, Wood 1980). Stalmaster and Newman (1978) noted that fewer eagles were located along stretches of river with high human activity compared to stretches with low or moderate activity. Normal feeding patterns can also be disrupted by human activity (Stalmaster and Kaiser 1998, Stalmaster and Newman 1978, Thompson et al. 2005).

Steve Hillebrand/USFWS

An eagle warns off intruders with a defensive call.

Several protective measures are in place to reduce disturbance to wintering bald eagles.

- The refuge is closed to public access year-round.
- The SDGFP closes the Randall Creek Campground to camping and vehicular travel from October 1 through April 30.
- The state of South Dakota manages the Missouri River from the dam to the state line as a waterfowl refuge, and closes the area to waterfowl hunting.

Nesting

Over the last decade, the refuge and project area have developed into an important nesting area for bald eagles in South Dakota. In 2005, there were three eagle pairs nesting within the refuge and project area, all of which were successful (Bryant 2005).

Bald eagles typically begin courting and nesting activities in late January. One to three eggs are laid toward the end of February. Brood rearing continues into May, with fledging occurring late May to June.

A pair of bald eagles nested unsuccessfully in 1992 on the existing conservation easement portion (Jonas tract) of the refuge. The following year, this pair nested successfully in the same location—the first successful bald eagle nest in South Dakota in over a century. This pair of eagles nested successfully, using three different nest trees within the area, from 1994 through 2000 (Peterson 2005).

In 1997, a second pair established a nest on an island adjacent to the north unit of the refuge and successfully fledged young.

The location within the refuge and project area of bald eagle nests over the last 12 years may reflect avoidance of human activities. The first nesting pair used the existing conservation easement (Jonas tract) portion of the refuge, which is generally isolated and receives very little human disturbance.

Disturbance of nests is a concern during the breeding season. Grubb and King (1991) noted that terrestrial activities, in particular pedestrians (hikers and anglers), were the most disturbing group of human activities to nesting eagles. To protect nesting eagles, the refuge is closed to public access. The state of South Dakota maintains a ½-mile buffer around all active nests on state lands and a no-access closure within 820 feet of a nest tree to minimize disturbance (Aron 2005).

The number of nesting bald eagles in South Dakota and nearby areas in Nebraska along the Missouri River has continued to increase since 1993. Forty active nests were located in 2004; 24 of those nests were successful in producing at least one fledgling (Aron 2005). An estimated 7,600 pairs of bald eagles now nest in the lower 48 states and the number continues to rise.

Other Birds

The project area is located within the Central Flyway migratory corridor. The Lake Andes NWR complex is a major stopover point for millions of waterfowl and shorebirds every spring and fall.

Tim Bowman/USFWS

Canada Geese

Approximately 250 species of birds have been recorded within the complex. This represents about 72 percent of the bird species in South Dakota.

The uplands provide habitat for grassland-nesting birds including the northern harrier, Bell's vireo, dickcissel, grasshopper sparrow, and bobolink. The Service lists these species as nongame migratory birds of conservation concern (USFWS 2002).

S. Maslowski/USFWS

Bobolink

Although riparian vegetation occurs on less than 1 percent of the western landscape, it provides habitats for more species of birds than all other vegetation types combined (Knopf et al. 1988).

The riparian areas provide habitat for numerous bird species including the belted kingfisher, red-headed woodpecker, olive-sided flycatcher, yellow-billed cuckoo, bank swallow, great horned owl, and mourning dove. In addition, plans are underway to reestablish osprey in the immediate vicinity of the project area (Bryant 2005).

Endangered interior least terns and threatened piping plovers currently nest on islands downstream of the project area. However, neither of these species has nested on islands immediately adjacent to the project area even though the habitat appears suitable for nesting (Wilson 2005).

Fish

No fish are known to occur within the project area. However, a full suite of fish species including walleye, white bass, crappie, common carp, suckers, and catfish can be found in the Missouri River adjacent to the project area. Endangered pallid sturgeons also occur adjacent to the project area.

Cultural Resources

The Service has a trust responsibility to American Indian tribes that includes protection of tribal sovereignty and preservation of tribal culture and other trust resources.

The Service does not propose any project, activity, or program that would result in changes in the character of, or adversely affect, any historical cultural resource or archaeological site within the project area. If and when such undertakings are considered, the Service will take all necessary steps to comply with section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. The Service complies with section 110 of the NHPA to survey, inventory, and evaluate cultural resources.

Socioeconomic Environment

Gregory County, where the project area is located, is approximately 1,016 square miles and is located in southeastern South Dakota along the Nebraska state line. The county seat is located in the town of Burke, approximately 50 miles west of the project area. The nearest South Dakota communities are Pickstown (3 miles north), Fort Randall (5 miles west), Marty (5 miles east), Lake Andes (8 miles northeast); Gross, NE is 5 miles south.

- The estimated population of the county in 2003 was 4,500. This represents a 6.1 percent decline from the 2000 census, and a 16.7 percent decline since the 1990 census (U.S. Census Bureau 2003). In contrast, the population of South Dakota in 2003 had risen to an estimated 764,309, up 9.8 percent since 1990 (U.S. Census Bureau 2003).
- The county is mostly rural, with farming and ranching dominating land use activities and lifestyles. Recreational hunting, particularly for pheasants, is popular and generates revenue for local businesses.

The Rosebud Sioux Reservation is located in Todd County, two counties to the west of Gregory County. The Rosebud Sioux tribal servicing unit includes Gregory County. As of February 23, 2003, there were 24,426 living enrolled tribal members, of which 20,762 live on the Rosebud Sioux Indian (Rosebud Sioux Tribe 2005).

Charles Mix County borders Gregory County on the east. The Yankton Sioux Reservation occupies the eastern half of Charles Mix County, with tribal servicing units covering Bon Homme, Charles Mix, Douglas, and Hutchinson counties in South Dakota; and Boyd and Knox counties in Nebraska (Yankton Sioux Tribe 2005). Estimated tribal membership stands at 5,700.

LANDOWNERSHIP AND LAND USE

Only one landowner is involved directly with the Jonas tract expansion. This project area has an agricultural status.

PUBLIC USE

Public access is not provided on the project area (Jonas tract expansion) or on the existing conservation easement (Jonas tract) portion of the refuge.

The Service has closed the two units of the Karl E. Mundt NWR to public access to protect wintering and nesting bald eagles. Excellent viewing opportunities for the public are available at a lookout and information kiosk (managed by the USACE), which is located below the dam adjacent to the north unit of the refuge. The public's primary viewing and enjoyment of wintering eagles occurs at this kiosk.

Mike Artmann/USFWS

This kiosk provides an informative location for observing bald eagles.

Coreopsis
© Cindie Brunner

Other viewing areas for the public include a county road directly east of the Randall Creek Campground. This area, known as the Spillway Lakeside Use Area, contains a restroom, boat ramp, and picnic shelter. The SDGFP manages this area.

4 Environmental Consequences

Steve Hillebrand/USFWS

This chapter assesses the environmental effects expected to occur from the implementation of alternative A or B, as described in chapter 2.

Environmental effects are analyzed by issues for each alternative and appear in the same order as discussed in chapter 2.

Effects on the Biological Environment

This section describes the estimated effects on wildlife habitat of carrying out alternative A or B.

ALTERNATIVE A (NO ACTION)

The number of eagles using the project area would likely remain similar to current levels until the habitat is degraded, when the number of eagles could decline.

It is likely that some form of development would occur in the future. Disturbance to wintering bald eagles could be substantial if residential houses, camping facilities, or other types of development that leads to permanent or prolonged human presence near the primary roost locations. Increased human presence through hiking, snowmobiling, camping, or other types of recreation would likely cause disturbance to wintering bald eagles (Stalmaster and Newman 1978).

In addition, nesting efforts by bald eagles could be impacted by development as well. In 2005, three nesting bald eagle pairs were successful on the refuge and project area. This is the most nesting pairs since eagles began nesting in the area in 1992.

Development of residential properties would necessitate an improved infrastructure including county water and sewer lines, utility lines, and new roads. These activities would increase habitat fragmentation of an otherwise largely intact parcel. Increased fragmentation would likely lead to increases in invasive plant species, disruptions to wildlife corridors, and increased predation on grassland-nesting birds including pheasants (Burger et al. 1994, Johnson and Temple 1990).

Current levels of eagle predation on game species such as pheasants and jackrabbits would likely remain a small but consistent part of eagle feeding in this area. These game species compose a portion of the diet of bald eagles (Steenhof 1976), although the portion is small compared to fish and waterfowl.

If the traditional roost sites are permanently altered by development—causing eagles to disperse to other areas—predation on game species may increase. Steenhof (1976) noted that eagles roosting at other locations than along the Missouri River (e.g., Lake Andes) had a larger component of pheasant and rabbit remains in their pellets than eagles roosting along the river. Movement between the river and other less-used roost locations occurs as eagles use areas outside of the river corridor.

Conservation organizations or state and local agencies could continue efforts to pursue a conservation easement within the project area to secure this important habitat.

Refuge staff or other groups and agencies could continue habitat enhancement or restoration within the project area to improve wildlife habitat, including restoration of cottonwoods.

ALTERNATIVE B (PROPOSED ACTION)

The proposed Jonas tract expansion would protect in perpetuity key wintering and nesting habitat for bald eagles in South Dakota. Acquisition of this conservation easement would ensure that rolling, native mixed-grass uplands and riparian cottonwood woodlands remain intact. Based on the terms of the easement, minimal additional habitat fragmentation would be expected to occur on this tract in the future.

By protecting the Jonas tract expansion area with a conservation easement, the Service ensures increased habitat protection, integrity, and connectivity for existing refuge lands owned in fee-title.

Bald eagles would continue to use the bottomland cottonwood woodlands as roosting and nesting sites. Protected by a larger conservation easement (Jonas tract expansion), the number of eagles wintering at the site would likely remain steady or rise slowly in accordance with overall population trends of bald eagles. The number of eagles using the site is driven largely by the onset and severity of winter. Eagles typically congregate below the Fort Randall Dam in early November and may remain there in fluctuating numbers into February (Bryant 2005, Steenhof 1976).

The effects of direct predation of bald eagles on game species such as pheasants and jackrabbits would likely remain constant as long as their primary food resources, fish and waterfowl, remain abundant.

Efforts to reforest areas of the floodplain would be a priority for the Service's Partners for Fish and Wildlife Program. This program provides technical and financial assistance to private landowners for habitat restoration projects. Given that cottonwoods are such an important tree species for the bald eagles, and that regeneration of cottonwoods is nearly nonexistent under current management of the Missouri River, supplemental plantings would be necessary.

Kay Kottas/University of Nebraska

Milkweeds, Cattails, and other Marsh Vegetation

Effects on the Socioeconomic Environment

This section describes the estimated effects of alternative A or B on landownership and land use, and public use.

LANDOWNERSHIP AND LAND USE

The effects on landownership and use are described below.

Alternative A (no action)

In the short-term, landownership and land use would likely not change.

However, land use may change from agriculture to residential or commercial status if the land is sold to developers. This change would likely result in an increased tax base for the county. However, it is unclear whether the county would recoup investments for infrastructure improvements such as installation of water and utility lines and other items associated with residential or commercial development.

Alternative B (proposed action)

Although fee landownership may change in the future, the agricultural status of the land would remain the same under the protection afforded by the conservation easement.

PUBLIC USE

The effects on public use are the same for both alternatives.

Alternative A (no action)

The landowner would retain full control over public access.

Alternative B (proposed action)

The landowner would retain full control over public access.

Unavoidable Adverse Impacts

Any adverse effects that may be unavoidable while carrying out alternative A or B are described below.

ALTERNATIVE A (NO ACTION)

Adverse impacts of residential or commercial development would be expected to occur—with increased human presence and disturbance, as well as habitat fragmentation. This would likely result in reduced habitat suitability for, and use by, bald eagles; lower nesting productivity for may result.

ALTERNATIVE B (PROPOSED ACTION)

The conservation easement would not result in unavoidable adverse impacts on the physical or biological environment. The selection of an expanded boundary for approval, by itself, would not affect any aspect of landownership or values.

Kay Kottas/University of Nebraska

Sunflowers along the Missouri River

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Any commitments of resources that may be irreversible or irretrievable because of carrying out alternative A or B are described below.

ALTERNATIVE A (NO ACTION)

There would be no additional commitment of resources by the Service if no action were taken.

ALTERNATIVE B (PROPOSED ACTION)

There would not be any irreversible or irretrievable commitments of resources associated with the expansion of the acquisition boundary of the refuge.

Once the conservation easement (Jonas tract expansion) was acquired, irreversible and irretrievable commitments of funds would exist to ensure the terms of the easement were followed (e.g., expenditure for fuel, and staff time for monitoring). Since the Jonas tract expansion area is within several miles of the refuge complex headquarters, these expenditures are expected to be minimal.

SHORT-TERM USE VERSUS LONG-TERM PRODUCTIVITY

ALTERNATIVE A (NO ACTION)

The project area may eventually be sold to developers for short-term gains such as development and recreational activities. This would result in negative impacts to the long-term biological productivity of the area.

ALTERNATIVE B (PROPOSED ACTION)

A conservation easement for the project area (Jonas tract expansion) would secure and maintain the long-term biological productivity of important native grasslands and riparian corridors. In addition, the long-term productivity of the entire refuge would be enhanced by the increased protection.

Increased protection of endangered and threatened species and maintenance of biological diversity would likely result. The long-term productivity of the area as a wintering and nesting area for bald eagles would be secure.

©Bob Gress

By providing habitat for bald eagles on the expanded refuge, the public would gain long-term opportunities for wildlife-dependent recreational activities (bald eagle viewing) on areas adjacent to the refuge.

Cumulative Impacts

This section describes the cumulative impacts that may result from the combination of expected actions in alternative A or B, together with other biological and socioeconomic conditions, events, and developments.

ALTERNATIVE A (NO ACTION)

If this project area is developed into residential housing or commercial facilities such as a large campground, there may be major negative impacts to bald eagles and their future use of this site.

Bald eagles are relatively intolerant of human disturbances. The cumulative effects of habitat fragmentation and loss, disturbance, and changes in prey populations could have major impacts on bald eagles. If widespread development occurs within the project area, the following impacts are possible:

- Fragmentation caused by roads and utility, water, and sewer lines
- Increased ambient noise levels
- Increased likelihood of invasive plants
- Increased predation rates on grassland birds

ALTERNATIVE B (PROPOSED ACTION)

It is expected there would be negligible cumulative effects on the citizens of Gregory County.

The property would continue to be assessed as an agriculturally dominated property, and the county would continue to receive those taxes.

The potential for future revenue generated through taxes on possible residential or commercial facilities would not exist.

Kay Kottas/University of Nebraska

Sunset over the Refuge

5 Coordination and Environmental Review

Agency Coordination

The proposal to expand the Karl E. Mundt NWR has been discussed with landowners; conservation organizations; federal, state, and county governments; and other interested groups and individuals.

- The Service held one public meeting to provide information and discuss the proposal with landowners and other interested citizens. The staff at Lake Andes NWR complex presented the project proposal to the Gregory County commissioners.
- Service staff provided information to the Yankton Sioux Tribe on this project.
- Congresswoman Herseth hosted a meeting on September 2, 2005 in Lake Andes, South Dakota, to discuss the project with interested individuals.
- At the federal level, Service staff coordinated with representatives from other federal agencies, including the USACE and the National Park Service. Service staff provided briefings for South Dakota's congressional delegation.
- At the state level, Secretary John Cooper of the SDGFP was briefed on the project.

Contaminants and Hazardous Materials

The Service is required to invest in healthy lands. Prior to the acquisition of a conservation easement, Service personnel would conduct a level 1 contaminant survey. Discussions with the landowner indicate no contaminant issues.

National Environmental Policy Act

As a federal agency, the Service must comply with provisions of the NEPA. An EA is required under NEPA to evaluate reasonable alternatives that will meet stated objectives (see chapter 2 for alternative descriptions) and to assess the possible impacts to the human environment.

Steve Hillebrand/USFWS

A bald eagle searches the river for prey.

The EA serves as the basis for determining whether implementation of the proposed action would constitute a major federal action significantly affecting the quality of the human environment.

The analysis for, and development of this EA, facilitated the involvement of government agencies.

Distribution and Availability

Copies of the EA were sent to federal and state legislative delegations, agencies, interested landowners, and other private groups. Additional copies of the document are available from the following offices and websites.

- U.S. Fish and Wildlife Service
  Lake Andes NWR Complex
  38672 291st Street
  Lake Andes, SD 57356
  605/487 7603
  605/487 7604 fax
  http://lakeandes.fws.gov

- U.S. Fish and Wildlife Service
  Region 6, Division of Refuge Planning
  Branch of Land Protection Planning
  P.O. Box 25486–DFC
  Denver, CO 80225
  303/236 4381
  303/236 4792 fax
  http://mountain-prairie.fws.gov/planning/lpp.htm

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Appendix A—List of Preparers and Reviewers

Preparer's Name	*Position*	*Work Unit*
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Mike Bryant	refuge manager	USFWS, Lake Andes NWR complex, Lake Andes, SD
Edward Rodriguez	wildlife biologist	USFWS, Lake Andes NWR complex, Lake Andes, SD

Reviewer's Name	*Position*	*Work Unit*
John Esperance	branch chief	USFWS, Region 6, Branch of Land Protection Planning, Lakewood, CO
Deb Parker	writer-editor	USFWS, Region 6, Division of Refuge Planning, Lakewood, CO

Appendix B—List of Plants and Animals

These are the common and scientific names of species mentioned in the text.

Plants

Alfalfa	*Medicago sativa*
American elm	*Ulmus americana*
Asters	*Symphyotrichum spp.*
Big bluestem	*Andropogon gerardii*
Boxelder	*Acer negundo*
Bur oak	*Quercus macrocarpa*
Chokecherry	*Prunus virginiana*
Coreopsis	*Coreopsis spp.*
Cottonwood	*Populus deltoides*
Crested wheatgrass	*Agropyron cristatum*
Dotted gayfeather	*Liatris punctata*
Eastern red cedar	*Juniperus virginiana*
Gramas	*Bouleloua spp.*
Green ash	*Fraxinus pennsylvanica*
Hackberry	*Celtis occidentalis*
Hemp dogbane	*Apocynum cannabinum*
Field pepperwort	*Lepidium campestre*
Milkweeds	*Asclepias spp.*
Peach-leaved willow	*Salix amygdaloides*
Pennycress	*Thlaspi arvense*
Russian olive	*Elaegnus angustifolia*
Sandbar willow	*Salix exigua*
Scouring rushes	*Equisetum spp.*
Sedges	*Carex spp.*
Silver buffaloberry	*Shepherdia argentea*
Smooth brome	*Bromus inermis*
Smooth sumac	*Rhus glabra*
Snowberry	*Symphoricarpos occidentalis*
Soft goldenrod	*Solidago mollis*
Stinging nettle	*Urtica dioica*
Switchgrass	*Panicum virgatum*
Wild rose	*Rosa woodsii*
White sweetclover	*Melilotus albus*
Yellow sweetclover	*Melilotus officinalis*
Yucca	*Yucca glauca*

Amphibians and Reptiles

Bullsnake	*Pituophis catenifer*
Chorus frog	*Pseudacris triseriata*
Common garter snake	*Thamnophis sirtalis*
Eastern yellow-bellied racer	*Coluber constrictor flaviventris*
False map turtle	*Graptemys pseudogeographica*
Great Plains toad	*Bufo cognatus*
Northern leopard frog	*Rana pipiens*
Plains leopard frog	*Rana blairi*
Prairie rattlesnake	*Crotalus viridis viridis*
Spiny softshell turtle	*Apalone spinifera*
Tiger salamander (probable)	*Ambystoma tigrinium*
Western painted turtle	*Chrysemys picta bellii*

Mammals

Beaver	*Castor canadensis*
Coyote	*Canis lutrans*
Eastern cottontail	*Sylvilagus floridanus*
Eastern spotted skunk	*Spilogale putorius*
Eastern fox squirrel	*Sciurus niger*
Elk	*Cervus elaphus*
Mice	*Onychomys spp., Peromyscus spp.*
Mink	*Mustela vison*
Mule deer	*Odocoileus hemionus*
Muskrat	*Ondatra zibethicus*
Raccoon	*Procyon lotor*
Red fox	*Vulpes vulpes*
Shrews	*Sorex spp.*
Striped skunk	*Mephitis mephitis*
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*
Virginia opossum	*Didelphis virginiana*
Voles	*Microtus spp.*
White-tailed deer	*Odocoileus virginianus*
White-tailed jackrabbit	*Lepus californicus*

Birds

Bald eagle	*Haliaeetus leucocephalus*
Bank swallow	*Riparia riparia*
Bell's vireo	*Vireo bellii*
Belted kingfisher	*Ceryle alcyon*
Bobolink	*Dolichonyx oryzivorus*
Canada goose	*Branta canadensis*

Dickcissel	*Spiza americana*
Ferruginous hawk	*Buteo regalis*
Grasshopper sparrow	*Ammodramus savannarum*
Great horned owl	*Bubo virginianus*
Interior least tern	*Sterna antillarum athalassos*
Mallard	*Anas platyrhynchos*
Mourning dove	*Zenaida macroura*
Northern harrier	*Circus cyaneus*
Olive-sided flycatcher	*Contopus borealis*
Osprey	*Pandion haliaetus*
Piping plover	*Charadrius melodus*
Red-headed woodpecker	*Melanerpes erythrocephalus*
Red-tailed hawk	*Buteo jamaicensis*
Ring-necked pheasant	*Phasianus colchicus*
Swainson's hawk	*Buteo swainsoni*
Wild turkey	*Meleagris gallopavo*
Yellow-billed cuckoo	*Coccyzus americanus*

Fish

Crappie	*Pomoxis spp.*
Gizzard shad	*Dorosoma cepedianum*
White bass	*Morone chrysops*
Sauger	*Stizostedion canadense*
Gars	*Lepisosteus spp.*
Goldeye	*Hiodon alosoides*
Common carp	*Cyprinus carpio*
Walleye	*Stizostedion vitreum*
Channel catfish	*Ictalurus punctatus*
Pallid sturgeon	*Scaphirhynchus platorynchus*

Appendix C—Endangered and Threatened Species

The endangered and threatened species below have been known to occur in Gregory County, South Dakota.

Group	*Common Name*	*Scientific Name*	*Listing**
Birds	Bald eagle	*Haliaeetus leucocephalus*	(T)
	Piping plover	*Charadrius melodus*	(T)
	Interior least tern	*Sterna antillarum athalassos*	(E)
	Whooping crane	*Grus americana*	(E)
Fish	Pallid sturgeon	*Scaphirhynchus platorynchus*	(E)
Insects	American burying beetle	*Nicrophorus americanus*	(E)

**(E) Endangered—listed in the Federal Register as being in danger of extinction.*
(T) Threatened—listed in the Federal Register as likely to become endangered within the foreseeable future.

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