Draft Comprehensive Conservation Plan and Environmental Assessment

Arrowwood National Wildlife Refuge

February 2007

Prepared by the U.S. Fish and Wildlife Service

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Abbreviations

Administration Act	National Wildlife Refuge System Administration Act
AGNPS	agricultural nonpoint source (model)
CCC	Civilian Conservation Corps
CCP	comprehensive conservation plan
CFR	Code of Federal Regulations
cfs	cubic feet per second
DNC	dense nesting cover
EA	environmental assessment
EIS	environmental impact statement
EPA	Environmental Protection Agency
FMP	fire management plan
FWS	U.S. Fish and Wildlife Service
GS	general pay schedule
HMP	habitat management plan
HUA	hydrologic unit area
Improvement Act	National Wildlife Refuge System Improvement Act of 1997
IPM Plan	Integrated Pest Management Plan for the Arrowwood NWR Complex
JAKES	Juniors Acquiring Knowledge, Ethics & Skills
MMRE	Mainstream Missouri River ecosystem
NEPA	National Environmental Policy Act
NDGF	North Dakota Department of Game and Fish
NOA	notice of availability
NRCS	Natural Resources Conservation Service
NWR	national wildlife refuge
OWLS	outdoor wildlife learning site
PL	public law
Reclamation	Bureau of Reclamation
Refuge System	National Wildlife Refuge System
SAMMS	Service Asset Maintenance Management System
Service	U.S. Fish and Wildlife Service
SWG	State Wildlife Grant
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UWA	North Dakota Unified Watershed Assessment
VOR	visual observation reading
WG	wage grade pay schedule
WMD	wetland management district
WPA	Works Progress Administration
WUI	wildland–urban interface

Summary

Arrowwood National Wildlife Refuge, North Dakota, was established in 1935 as a refuge and breeding ground for migratory birds and other wildlife.

Alternative 3 of this environmental assessment is the proposed action of the U.S. Fish and Wildlife Service and is presented in chapter 6 as the draft comprehensive conservation plan for the refuge.

THE REFUGE

President Franklin D. Roosevelt signed Executive Order 7168 on September 4, 1935, "establishing Arrow-wood Migratory Waterfowl Refuge." Now known as Arrowwood National Wildlife Refuge, the 15,973-acre refuge is in east-central North Dakota. The refuge covers 14 miles of the James River Valley in Foster and Stutsman counties, approximately 30 miles north of Jamestown.

The purposes for the refuge, summarized here, are set out in the authorities for acquisition. Arrowwood National Wildlife Refuge was established for the following:

- use by migratory birds, with emphasis on waterfowl and other waterbirds
- the conservation of fish and wildlife resources
- use as an inviolate sanctuary, or for any other management purpose, for migratory birds. (Migratory Bird Conservation Act of 1929)
- a refuge and breeding ground for migratory birds and other wildlife (Executive Order 7168)

Donna Dewhurst/USFWS

The canvasback is a common duck at the refuge.

Habitat

The refuge lies on the Central Flyway migration corridor and is an important stopover for many species of birds as they journey north and south during annual migrations. Prairie grassland and wetland complex habitats at the refuge and surrounding private lands provide nesting and feeding habitat for waterfowl in the spring and summer. In addition, hundreds of thousands of waterfowl migrate through the area and use these wetlands in the spring and fall for feeding and resting.

The refuge contains approximately 6,000 acres of native prairie; 5,340 acres of seeded grasses; 3,850 acres of wetlands (420 acres of natural wetlands); 660 acres of wooded ravines and riparian woodlands; and 125 acres of planted trees including shelterbelts.

The prairie ecosystem, of which the refuge is a part, evolved under constantly changing conditions. Grazing by large herds of animals, trampling, fire, and drought —with varied timing and intensity—resulted in diverse plant and animal communities in various successional stages. Today, large herds of grazing animals no longer exist. Tracts of prairie have been broken into smaller pieces and new habitats have been introduced (including croplands, woodlands, and brush lands).

Many of the sensitive native plant communities are suppressed with nonnative plants including smooth brome, Kentucky bluegrass, or invasive plants such as leafy spurge and Canada thistle. However, these sites still contain native plant seed sources and dormant native plants with the potential for tremendous biological diversity. Along with the waterfowl habitat, these grasslands provide important breeding habitat to a variety of ground-nesting birds, especially the declining grassland-dependent songbirds.

Approximately 3,430 acres of wetlands are in managed impoundments and pools. The remaining acres are either natural wetlands or instream wetlands created by low-head dikes on tributaries flowing into the refuge. Historically, the managed impoundments were naturally occurring riverine lakes; these lakes were modified to improve water management capabilities.

Administrative History

In the 1930s, the Civilian Conservation Corps developed refuge impoundments designed to store water rather than facilitate drawdowns and shallow water management.

The Flood Control Act of 1944 authorized construction of the Jamestown Dam, roughly 30 miles south of the refuge, in 1954. The purpose of the dam was to provide flood control for the city of

Jamestown. The reservoir filled for the first time in 1965 and backed water onto the Arrowwood National Wildlife Refuge, preventing water management in most years. Several years later, operating levels of the reservoir were increased by 3 feet to accommodate recreation and to allow for the release of pollutant-flushing flows through Jamestown. This increased water level backed even more water onto the refuge and eliminated water management options in most years.

The Garrison Diversion Unit Reformulation Act of 1986 required mitigation for the adverse impacts to the refuge caused by the Garrison Diversion Unit project. An environmental impact statement, signed in 1997, analyzed the need to provide the refuge with water management capability to mitigate for high water levels imposed by the Jamestown Reservoir.

The preferred alternative selected from the environmental impact statement consisted of the following: downstream channel improvements; new water control structures; fish barriers; a bypass channel around Mud Lake, Jim Lake, and Depuy Marsh; a dike and water control structure at Stony Brook; and subimpoundments within Mud and Jim lakes. In addition, the alternative called for the reduction of the Jamestown Reservoir operating elevation by 1.8 feet. These features of the Arrowwood National Wildlife Refuge mitigation project are intended to mitigate past, present, and future impacts of the Jamestown Reservoir.

Visitor Services

Public use and recreation at the refuge includes the six priority wildlife-dependent uses: hunting, fishing, wildlife observation, wildlife photography, interpretation, and education. Hunters are allowed to pursue deer, upland game birds, cottontail rabbits, and fox. Fishing is allowed on all refuge impoundments; however, current fishing opportunities are temporary and sporadic due to the predominantly low water levels in managed impoundments. The auto tour route, the Warbler Woodland Watchable Wildlife Area, and an adjacent nature trail offer numerous wildlife-viewing opportunities. The entire refuge is open to walk-in access. Interpretation consists of refuge brochures, maps, and signs. In addition, the refuge offers tours and environmental education programs for school groups, scouts, and special events.

In addition, the refuge allows recreational trapping, commercial fishing for carp and bigmouth buffalo, recreational wild food gathering, and biking and horseback riding on designated trails.

THE PLANNING PROCESS

The comprehensive conservation planning process is a series of steps that, along with environmental analysis and documentation, are conducted simultaneously. The U.S. Fish and Wildlife Service is engaging the public in the planning process to provide a forum for ideas and issues to be shared, reviewed, and evaluated among agency staff and the public.

Based on the analysis documented in this environmental assessment, the following decisions will be made by the U.S. Fish and Wildlife Service's regional director for region 6:

- the type and extent of management and public access that will occur on the Arrowwood National Wildlife Refuge
- whether or not the management and public access on the Arrowwood National Wildlife Refuge would have a significant impact on the quality of the human environment

Implementation of the comprehensive conservation plan will be monitored throughout its 15-year effective period (2007–2022). The U.S. Fish and Wildlife Service will annually monitor accomplishment of plan objectives. The objectives will be examined at a minimum of every 5 years to determine if revisions, additions, or deletions are necessary.

Future Management of Arrowwood National Wildlife Refuge

As part of the planning process, the refuge staff and planning team developed the following vision statement for Arrowwood National Wildlife Refuge.

Vision

Provide quality habitat for threatened and endangered species, waterfowl, other migratory birds, and other wildlife in the Prairie Pothole Region of North Dakota. The refuge will provide an environment where a diversity of riparian, native prairie, grassland, and wetland habitats and their associated wildlife can be observed and explored. People will be able to learn about and appreciate the natural environment of the refuge and enjoy opportunities for wildlife-dependent recreation.

Goals

A goal is a descriptive, broad statement of desired future conditions that conveys a purpose, but does not define measurable units. Goals will direct work at carrying out the refuge's mandates and achieving the purposes. Each management alternative is designed to meet all the goals for the refuge.

These goals are derived from the purposes and vision statement for the refuge to reflect the refuge's contribution to the National Wildlife Refuge System. The goals reflect the core mission of the U.S. Fish and Wildlife Service to protect fish, wildlife, and plant resources while providing compatible opportunities for the public to appreciate and enjoy the natural environment of the region.

Upland Goal

Provide a diversity of grassland types that emulate the range of natural variation characteristic of the Prairie Pothole Region to benefit trust resources including waterfowl, grassland birds, and songbirds.

Wetland Goal

Provide a diversity of wetland types that emulate the range of natural variation characteristic of the Prairie Pothole Region to benefit threatened and endangered species, waterfowl, shorebirds, wading birds, and other wetland birds.

USFWS

Arrowwood Lake

Visitor Services Goal

Visitors of all abilities will enjoy a refuge visit and increase their knowledge and appreciation of the prairie ecosystem and the refuge's history by participating in compatible wildlife-dependent activities.

Management Alternatives

In all alternatives, the bypass channel, dikes, and water control structures of the Arrowwood National Wildlife Refuge mitigation project would allow management of refuge water levels in all but the most extreme high water years. Managers would use the bypass channel to move large volumes of water downstream, bypassing all refuge wetlands except Arrowwood Lake. Water passing through Arrowwood Lake and entering the bypass channel would not be filtered through the other refuge wetlands; sediment and contaminates gained in the upper watershed would have a greater chance of entering Jamestown Reservoir.

Alternative 1—Current Management (No Action)

This alternative would manage habitats, wildlife, programs, and facilities at current levels as time, staff, and funds allow. There would be emphasis on waterfowl migration and reproduction habitat. In some cases, management would be reactionary to opportunities as they present themselves. Target elevations of each wetland impoundment would be managed independently to achieve optimal habitat conditions. Interpretation, education, administration, and facilities would be maintained with minor increases or decreases based on time, funding, and staffing.

Alternative 2—Enhanced Management

This alternative would maximize the biological potential of the refuge for both wetland and upland habitats, and support a well-balanced and diverse flora and fauna representative of the Prairie Pothole Region. The Arrowwood National Wildlife Refuge mitigation project would be used to achieve wetland habitat objectives. A scientific-based monitoring program would be developed as part of the habitat management plan, a step-down plan, and carried out to monitor the habitat and wildlife population responses to management activities. Public use opportunities would be expanded with the construction of additional facilities and development of educational programs.

Alternative 3—Enhanced Refuge and Watershed Management (Proposed Action)

This alternative, in addition to the features described in alternative 2, would include a plan to improve water quality entering the refuge and reduce peak flows in the upper James River watershed during spring runoff and summer rainfall events. The watershed management component would include working with private landowners through the U.S. Fish and Wildlife Service's Partners for Wildlife Program and other federal, state, and private conservation programs. The focus would be to protect and restore wetlands and grasslands, and reduce the impacts on water quality from cropland and livestock operations. Improving the health of the upper James River watershed would not only benefit wildlife habitat in the watershed and at the refuge, it would also benefit Jamestown Reservoir and all downstream users.

1 Purpose and Need

This document presents an environmental assessment (EA) that evaluates alternatives for, as well as expected consequences of, management of Arrowwood National Wildlife Refuge in North Dakota (see vicinity map , figure 1). Alternative 3 of the EA is the proposed action of the U.S. Fish and Wildlife Service (Service, USFWS) and is presented in chapter 6 as the draft comprehensive conservation plan (CCP) for the refuge.

The Arrowwood National Wildlife Refuge Complex includes Arrowwood National Wildlife Refuge (NWR), Arrowwood Wetland Management District (WMD), Chase Lake WMD, and Valley City WMD. This analysis and draft CCP does not address management of areas other than Arrowwood NWR. One or more CCPs will be developed to guide management of the districts and their inclusive waterfowl production areas and refuges.

This chapter describes agency guidance, the history and purposes of Arrowwood NWR, and the purpose and need for a plan.

Agency Guidance

This section describes agency guidance—laws and policies—that affects national wildlife refuges. This includes guidance that requires and directs development of a CCP for a national wildlife refuge.

Tim Bowman/USFWS

Nesting Canada Goose

The Service is the principal agency responsible for conservation of the United States' fish, wildlife, and plant resources. The Service shares this responsibility with other federal agencies and state and tribal governments.

> *The mission of the U.S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.*

The Service manages a diverse network of more than 540 national wildlife refuges within the Refuge System, which encompasses 95 million acres of lands and waters. Arrowwood NWR is one of 60 national wildlife refuges in North Dakota and was the 70th national wildlife refuge established.

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

Laws

Operation and management of national wildlife refuges are influenced by a wide array of laws, treaties, and executive orders (appendix A). The primary guidance comes from these laws:

- National Wildlife Refuge System Administration Act of 1966, as amended (Administration Act)
- National Wildlife Refuge System Improvement Act of 1997 (Improvement Act)

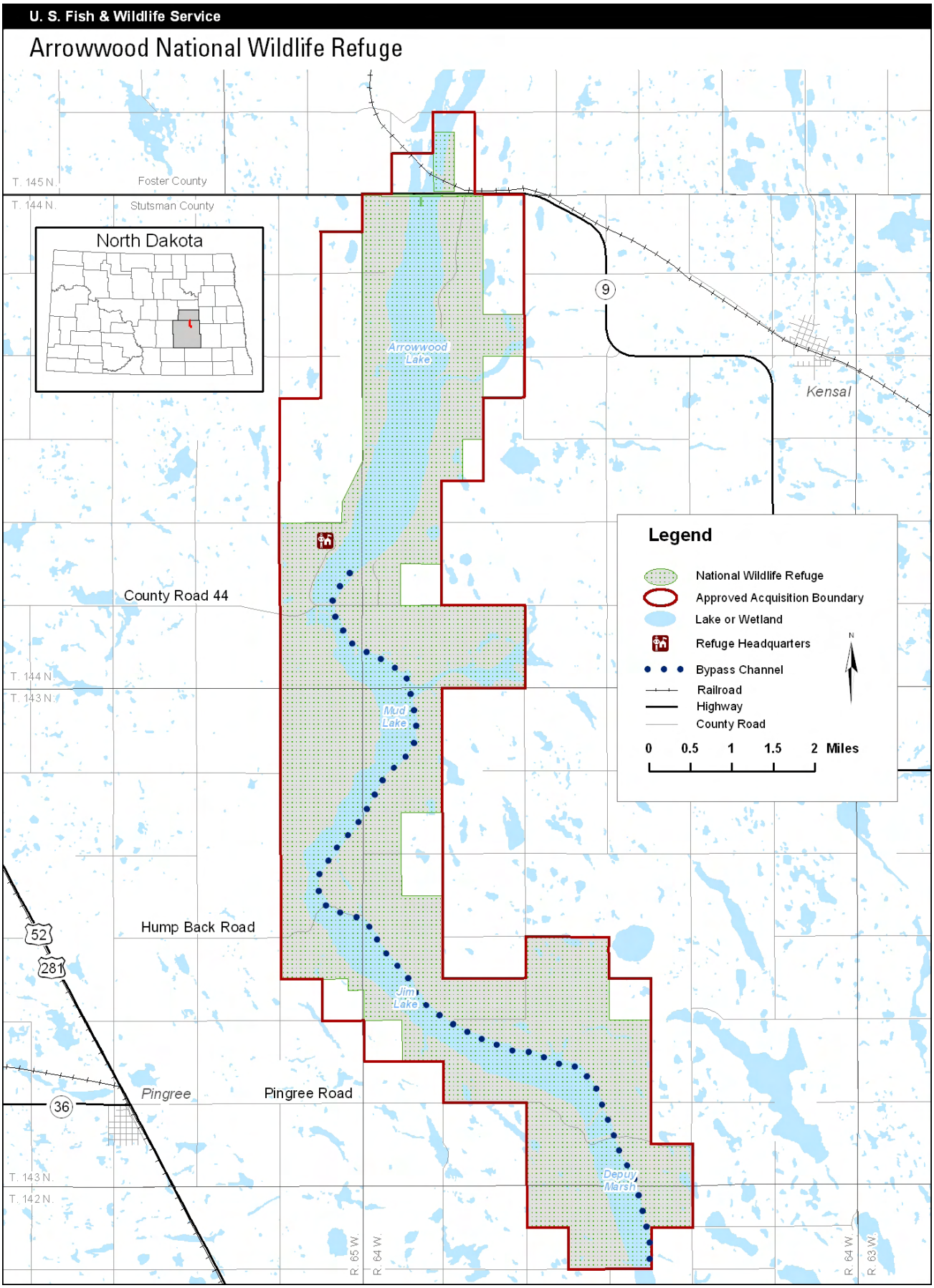


Figure 1. Vicinity map for Arrowwood NWR, North Dakota

Policies

All national wildlife refuges are established with the following goals (*The Fish and Wildlife Service Manual*, 601 FW 1, 1.8):

- Conserve a diversity of fish, wildlife, and plants and their habitats, including species that are endangered or threatened with becoming endangered.
- Develop and maintain a network of habitats for migratory birds, anadromous and interjurisdictional fish, and marine mammal populations that is strategically distributed and carefully managed to meet important life history needs of these species across their ranges.
- Conserve those ecosystems, plant communities, wetlands of national or international significance, and landscapes and seascapes that are unique, rare, declining, or underrepresented in existing protection efforts.
- Provide and enhance opportunities to participate in compatible wildlife-dependent recreation (hunting, fishing, wildlife observation and photography, and environmental education and interpretation).
- Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

These goals help step down the Refuge System mission and the principles of the 1997 amendments to the Administration Act. These goals articulate the foundation for stewardship of the Refuge System and define the unique niche it occupies among various federal land systems.

There are four guiding principles for management and general public use of the Refuge System established by Executive Order 12996 (appendix A):

Public Use—The Refuge System provides important opportunities for compatible wildlife-dependent recreational activities involving hunting, fishing, wildlife observation, wildlife photography, interpretation, and environmental education.

Habitat—Fish and wildlife would not prosper without high-quality habitat and, without fish and wildlife, traditional uses of refuges cannot be sustained. The Refuge System would continue to conserve and enhance the quality and diversity of fish and wildlife habitat within refuges.

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 general 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.

To maintain the health of individual refuges and the Refuge System as a whole, managers must anticipate future conditions—to avoid adverse effects and take positive actions to conserve and protect refuge resources. Effective management also depends on knowledge of larger systems and resource relationships.

- The Service adopted an ecosystem approach to conservation to enable it to fulfill its federal trust resource responsibility with greater efficiency and effectiveness. Through this holistic approach to resource conservation, the Service can accomplish its mission.
- An ecosystem approach to fish and wildlife conservation means protecting or restoring functions, structure, and species composition of an ecosystem, while providing for its sustainable socioeconomic use. Key to carrying out this approach is recognizing that partnerships are an essential part of a diverse management to accomplish ecosystem health.
- The Service has adopted watersheds as the basic building blocks for ecosystem conservation. Arrowwood NWR is located in the "main stem Missouri River ecosystem" (MMRE), which includes North Dakota, South Dakota, and northeastern Montana (figure 2). Ecosystem planning for the MMRE sets forth visions and goals for prairie, wetland, and rivers to conserve fish and wildlife by protecting and restoring the natural ecosystem (appendix B). The habitat and wildlife goals and objectives for Arrowwood NWR contribute to the mission of the MMRE.

It is the policy of the federal government—in cooperation with other nations and in partnership with states, local governments, Indian tribes, and private organizations and individuals—to administer federally owned, administered, or controlled prehistoric and historic resources in a spirit of stewardship for the benefit of present and future generations.

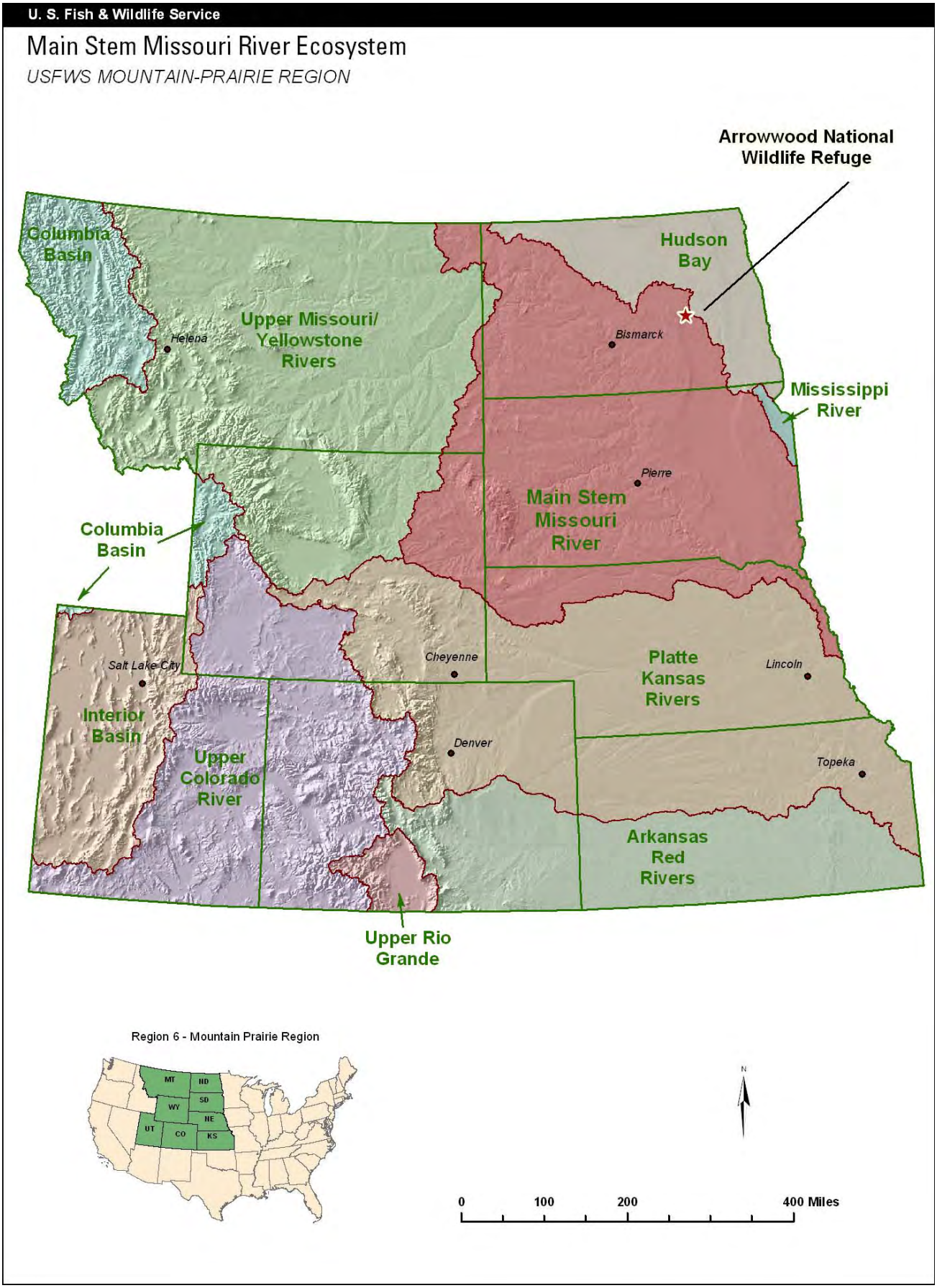


Figure 2. Main stem Missouri River ecosystem

Guidance for Planning

The Administration Act, as amended by the Improvement Act (1997), requires that CCPs be in place for all national wildlife refuges within 15 years (2012).

A CCP does the following:

- ensures that the purpose of the refuge and mission of the National Wildlife Refuge System (Refuge System) are being fulfilled
- ensures that national policy direction is incorporated into refuge management
- ensures that opportunities are available for interested parties to participate in the development of management direction
- provides a systematic process for making and documenting refuge decisions
- establishes broad strategies for refuge programs and activities
- provides a basis for evaluating accomplishments

The Improvement Act calls for making opportunities for wildlife-dependent recreation, as long as they are compatibly managed with other purposes and do not conflict with other use. Service policy allows recreational uses that are determined compatible. A compatible use is "a proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge, that based on sound professional judgment, would not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purpose(s) of the national wildlife refuge" (50 Code of Federal Regulations [CFR] 25.12).

A compatible use generally does one or more of the following:

- contributes to the Refuge System mission, the refuge's major purposes, or refuge goals or objectives
- is a public priority use (fishing, hunting, wildlife observation, wildlife photography, interpretation, or environmental education)
- supports the safe and effective conduct of a priority public use

Refuge Overview

This overview presents descriptions of the establishment of the refuge, the history of the refuge area, and the Garrison Diversion Unit project.

Refuge Establishment

Management is dictated, in large part, by legislation that created the refuge and defines the purposes for which the refuge was established.

Five authorities exist for the acquisition and establishment of Arrowwood National Wildlife Refuge:

- Executive Order 7168—"as a refuge and breeding ground for migratory birds and other wild life."
- Migratory Bird Conservation Act—"for use as an inviolate sanctuary, or for any other management purpose, for migratory birds."
- The Fish and Wildlife Act—"for the development, advancement, management, conservation, and protection of fish and wildlife resources."
- National Wildlife Refuge System Administration Act—"conservation, management, and … restoration of the fish, wildlife, and plant resources and their habitats … for the benefit of present and future generations of Americans."
- The Refuge Recreation Act—"for (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species."

On September 4, 1935, President Franklin D. Roosevelt signed Executive Order 7168, establishing Arrow-wood Migratory Waterfowl Refuge. The order stated, "To effectuate the purposes of the Migratory Bird Conservation Act, it is ordered that the following described lands ... are hereby, reserved and set apart ... as a refuge and breeding ground for migratory birds and other wildlife." In a news release dated October 30, 1935 and titled "Two More 'Safety Islands' for Ducks in North Dakota," the Department of Agriculture stated, "Arrow-wood still offers annual nesting and resting attractions to large concentrations of ducks, largely canvasbacks, redheads, mallards and pintails. Canada geese, swans and white pelicans also inhabit the area ... Water ... caught (impounded) and held would be seasonably distributed to create favorable conditions for aquatic-plant production and the growth of nesting cover ... In addition to creating an ideal nesting condition for waterfowl, this development would also provide for control of flood waters of the James River."

History

The refuge and surrounding area were not settled until the late 1870s. Prior to that time, it was an important location along the Fort Totten Trail, a freight trail from Jamestown to Fort Totten, located near Devils Lake. Several watering stops were located along the valley and fuel wood was obtained from numerous wooded ravines.

The first Europeans to establish residence were ranchers. However, following the turn of the century, homesteaders flocked into the area and the native prairie was put to the plow. The irregular terrain prevented some of what is now refuge land from

being broken; the more level portions were in crop production prior to establishment. Most of the former cropland was heavily infested with smooth brome by the time of establishment and the first refuge manager immediately "retired" many of these fields. Although a few of these areas were seeded to introduced grasses, most of them were allowed to revert or "go back" by natural succession.

During the drought years of the thirties, extensive croplands lay idle and reverted slowly from annual weeds, forbs, and sweetclover to perennial grasses. Since the grasslands were extensively overgrazed prior to establishment of the refuge, very limited grazing of native grasslands was allowed until the early forties. At that time, it was deemed that the grasslands had recovered from the previous years of misuse. Demands for grazing land increased following World War II, and many new grazing units were set up to satisfy local needs. The stocking rates and season lengths later proved to be excessive and refuge grasslands continued to deteriorate in species composition and value for wildlife.

Soon after the refuge was established, CCC and Works Progress Administration (WPA) camps were set up on the southeast side of Arrowwood Lake. The United States was just coming out of the 1930s Dust Bowl period. Arrowwood NWR was created in response to the drought, low waterfowl numbers, and an economic downturn. The CCC immediately set out to develop the refuge for water management and to benefit people. The CCC and WPA employed many local men and lasted until 1942.

USFWS

Jim Lake

Efforts of the first refuge managers led to enhancement of the three natural water areas and creation of a fourth. Two of these (Arrowwood and Jim lakes) were relatively deep, while the other two (Mud Lake and Depuy Marsh) were shallow marshes. The initial CCC development work took place during a drought, leading to the assumption that too much water would not be a problem. Consequently, refuge impoundments were designed to store water rather than facilitate drawdowns and dewatering to manage pools. While valid during the drought, this operation was later discovered to be impractical for obtaining maximum waterfowl use; higher water levels were not conducive to production of vegetation preferred by waterfowl.

Prior to 1945, haying activity at the refuge was limited. However, as beef prices increased and more private lands were put into crop production, the demand for hay increased and extensive acreages of refuge grasslands were cut for hay. In addition, Kentucky bluegrass seed was harvested for 10 years (1947–1957). This practice was very detrimental to nesting waterfowl since it was conducted during peak nesting season.

Management at the refuge went from more than 11,700 upland acres idle in 1935 to only about 1,000 acres by 1953. The adverse effect on wildlife production was noted and management changes were made, as follows:

- bluegrass stripping was eliminated
- hayed acres were decreased by half in 1958 and virtually eliminated by 1960
- cropped acres peaked in 1957, but were reduced by 75% soon after
- grazed acres increased and peaked at more than 9,000 acres in 1963

Garrison Diversion Unit

In 1944, Congress passed the Flood Control Act, which was later renamed the Pick–Sloan Missouri Basin Program. This act authorized construction of a series of dams, power plants, irrigation projects, municipal water systems, and other water control features to manage the Missouri River for flood control, navigation, and power. The Garrison Diversion Unit was developed as part of this massive public works project. An early feature of the project was the Jamestown Dam, which was completed in 1954 for flood control. The Jamestown Reservoir filled for the first time in 1965; since then, backwater effects have resulted in higher water levels at Arrowwood NWR. In 1972, the summer operating level of the reservoir was raised by 3 feet to accommodate recreation and allow for the release of flushing flows through the city of Jamestown to prevent stagnation. The increase in the reservoir operating level eliminated water management options at the refuge in most years.

The James River has been called the flattest river of its length in North America. The river drops less than 0.5 foot per mile in the reach through and below the refuge. The low slope, coupled with water control structures initially designed to hold water, made elevation manipulations difficult at best. Operations of the Jamestown Reservoir further hampered refuge management.

The Garrison Diversion Unit Reformulation Act of 1986 requires mitigations for impacts to refuge operations caused by features of the Garrison Diversion Unit project. An interagency team assessed various measures to improve water management capabilities at the refuge during normal water years. An environmental impact statement (EIS), initiated in 1994 and signed in 1997, analyzed the need to provide the Arrowwood NWR with water management capability to mitigate for high water levels imposed by the Jamestown Reservoir. The EIS presents an incremental series of actions that can provide various levels of water management capability. The preferred alternative selected was the "Mud and Jim Lakes Bypass–Lower Joint Use Pool Alternative." This alternative consists of downstream channel improvements, improved water control structures, fish barriers, a 2.5-mile channel around Jim Lake, a 7-mile channel around Mud Lake, a dike and water control structure at Stony Brook, and subimpoundments within Mud and Jim lakes. The alternative also calls for the reduction of the Jamestown Reservoir "Joint Use Pool" elevation by 1.8 feet. Once the mitigation project is completed, the features are expected to mitigate for past, current, and future impacts of the operations of the Jamestown Reservoir. The series of channels, capable of passing flood waters in 7 of 10 years, would also allow managers to perform water level manipulations on all pools independently of the other pools, both upstream and downstream.

Purpose of and Need for the Plan

The Improvement Act directs the Service to manage national wildlife refuges in accordance with approved CCPs. These plans must include public involvement in their development. A CCP needs to set goals and objectives that meet the establishment purposes for the refuge, as well as contribute to the mission of the Refuge System. Wildlife has first priority in the management of national wildlife refuges.

The purpose of developing the CCP is to provide the refuge manager with a 15-year management plan for the conservation of fish, wildlife, and plant resources and their related habitats, while providing opportunities for compatible wildlife-dependent recreational uses.

The CCP, when fully implemented, should do the following:

- achieve the refuge purposes
- help fulfill the Refuge System mission
- maintain and, where appropriate, restore the ecological integrity of each refuge and the refuge System
- help achieve the goals of the National Wilderness Preservation System
- meet other mandates

Vision Statement

As part of the planning process (see chapter 2), the refuge staff and planning team developed the following vision statement for Arrowwood NWR.

Provide quality habitat for threatened and endangered species, waterfowl, other migratory birds, and other wildlife in the Prairie Pothole Region of North Dakota. The refuge will provide an environment where a diversity of riparian, native prairie, grassland, and wetland habitats and their associated wildlife can be observed and explored. People will be able to learn about and appreciate the natural environment of the refuge and enjoy opportunities for wildlife-dependent recreation.

Goals

A goal is a descriptive, broad statement of desired future conditions that conveys a purpose, but does not define measurable units. Goals would direct work at carrying out the refuge's mandates and achieving the purposes. Each management alternative is designed to meet all the goals for the refuge.

These goals are derived from the purposes and vision statement for the refuge to reflect the refuge's contribution to the Refuge System. The goals reflect the core mission of the Service to protect fish, wildlife, and plant resources while providing compatible opportunities for the public to appreciate and enjoy the natural environment of the region.

Upland Goal

Provide a diversity of grassland types that emulate the range of natural variation characteristic of the Prairie Pothole Region to benefit trust resources including waterfowl, grassland birds, and songbirds.

Wetland Goal

Provide a diversity of wetland types that emulate the range of natural variation characteristic of the Prairie Pothole Region to benefit threatened and endangered species, waterfowl, shorebirds, wading birds, and other wetland birds.

Visitor Services Goal

Visitors of all abilities will enjoy a refuge visit and increase their knowledge and appreciation of the prairie ecosystem and the refuge's history by participating in compatible wildlife-dependent activities.

2 The Planning Process

The Service is following the planning steps listed below—in a thorough manner that meets requirements of the National Environmental Policy Act (NEPA) and Service policies—to determine the future management of Arrowwood NWR.

The CCP process is a series of steps that are displayed sequentially (figure 3). However, CCP planning, along with the associated environmental analysis and documentation, occur simultaneously. Although public involvement is listed as part of two steps, the Service will take public input at any point in the following planning process:

- Preplan (form a planning team, review available data, organize efforts).
- Initiate public involvement and scoping (public input gathered on issues).
- Develop draft vision and goal statements.
- Develop and analyze alternatives including a proposed action with draft objectives.
- Prepare documentation of the environmental analysis, including the draft CCP (proposed action alternative).
- Conduct internal review (the Service, other federal, state, and tribal partners) and gather public input on the draft CCP and EA.
- Analyze and respond to public comments.
- Select one of the alternatives to become the final CCP.
- Make revisions as necessary and prepare the final CCP.
- Approve and carry out the CCP.
- Monitor and evaluate actions and results.

The planning team (appendix C) is comprised of representatives from various Service programs, including the refuge staff, has prepared this draft CCP and EA. Coordination with the North Dakota Department of Game and Fish (NDGF), the public, local groups, and other agencies has been essential in developing a realistic, meaningful plan. After reviewing a wide range of public comments and management needs, the Service developed a proposed action alternative (alternative 3). This alternative addresses all significant issues while determining how best to achieve the intent and purposes of the refuge. Alternative 3 is the Service's recommended course of action for the future management of the refuge and represents the draft CCP described in detail in chapter 6.

© Jennifer Jewett

The purple coneflower is one of the colorful, native prairie plants at Arrowwood NWR.

The following sections describe the decisions to be made about management of Arrowwood NWR. In addition, there are descriptions of the public involvement and other coordination activities, followed by the issues related to management of the refuge. Step-down management plans and the CCP revision process are discussed.

Decisions to be Made

Based on the environmental analysis documented in this EA, the following decisions will be made by the Service's regional director for region 6, headquartered in Lakewood, Colorado.

The type and extent of management and public access that will occur on the Arrowwood National Wildlife Refuge.

Whether or not the management and public access on the Arrowwood National Wildlife Refuge will have a significant impact on the quality of the human environment.

As part of the decision-making process, the Service developed this EA in accordance with the NEPA. Three alternatives provide options for addressing management concerns and for resolving public issues. The draft CCP for the refuge is described in alternative 3 (the Service's proposed action) of this EA. This document displays the results of CCP planning to date. It includes a description of the existing environment at the refuge, alternatives for management, and an assessment of the effects of carrying out the alternatives.

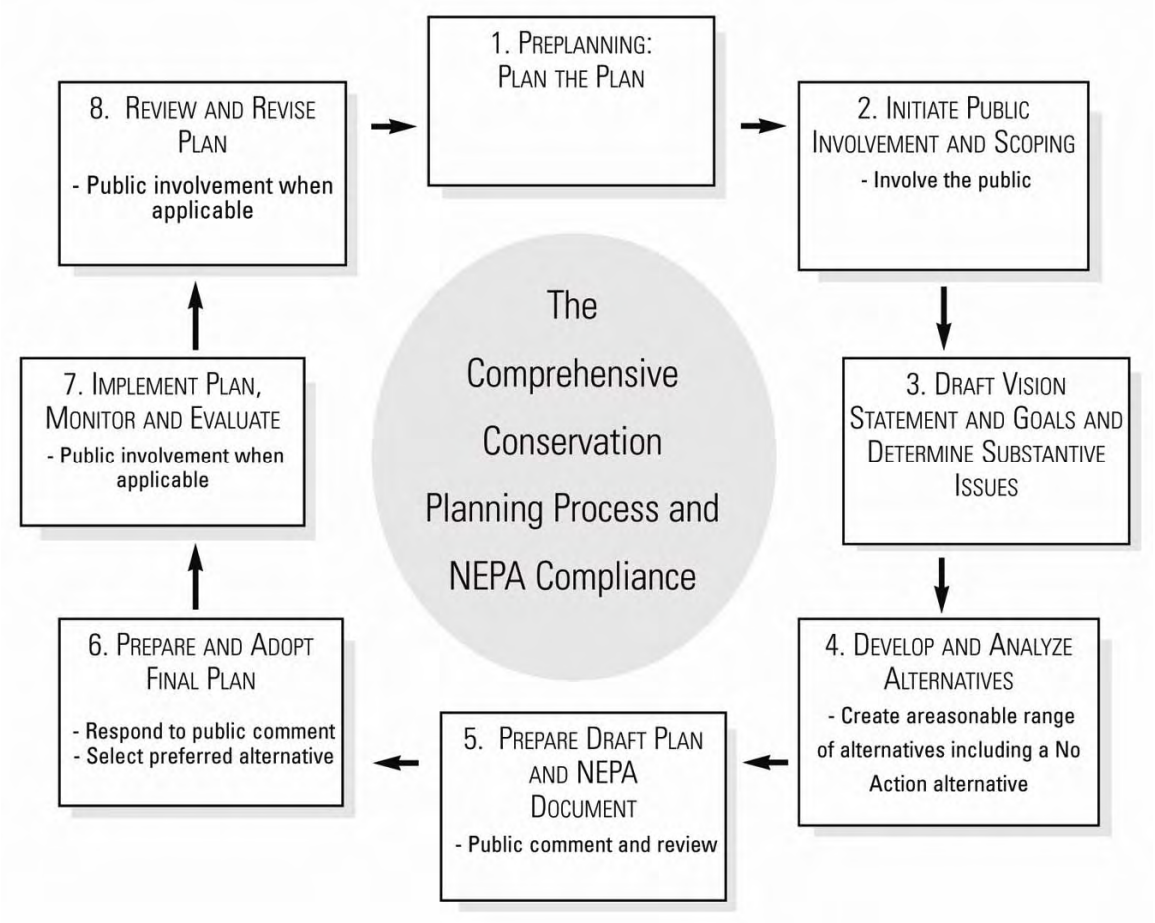


Figure 3. The planning process.

Public Involvement

The Service is using the NEPA process to engage the public in refuge planning, while determining whether the proposed action for management of Arrowwood NWR will have significant effects.

Scoping is the term for requesting input from the public, in this case, regarding management of the refuge. The primary thrust for the planning process is to provide a forum for ideas and issues to be shared, reviewed, and evaluated among agency staff and the public. Comments are reviewed to identify issues and public concerns about, or advocacies for, future management of the refuge. These issues are addressed in the draft CCP and EA, other plans, and decision documents.

Public scoping was initiated for Arrowwood NWR in a notice of intent (NOI) dated August 1, 2001. The NOI announced the availability of an issue workbook and the dates for open houses to be held for public input on management of the refuge. On

August 14 and 15, 2001, open house scoping sessions were held within the communities of Kensal, Pingree, Carrington, and Jamestown, North Dakota. A summary of those who participated in public involvement is in appendix D.

Coordination with Others

The Service coordinated with tribes, other federal agencies, and state agencies as part of the planning process. The Service provided a planning update to relevant federal, state, and county representatives (including all county chairpersons). The planning update introduced them to the CCP process for Arrowwood NWR and welcomed their comments. Interested agencies are on the planning mailing list (appendix D).

Tribal Coordination

In the preliminary phase of planning (April 2001), the Service's director of region 6 sent an invitation letter for participation in the CCP process to the following tribes:

- Assiniboine and Sioux Tribes of the Fort Peck Indian Reservation, Montana
- Cheyenne River Sioux Tribe, South Dakota
- Crow Creek Sioux Tribe, South Dakota
- Flandreau Santee Sioux Tribe, South Dakota
- Lower Brule Sioux Tribe, South Dakota
- Santee Sioux Tribe, Nebraska
- Sisseton-Wahpeton Sioux Tribe, South Dakota
- Spirit Lake Tribe, North Dakota
- Standing Rock Sioux Tribe, North Dakota
- Yankton Sioux Tribe, South Dakota

None of the tribes contacted expressed interest in participating in the planning process.

Federal Agency Coordination

Coordination with the Bureau of Reclamation (Reclamation) took place throughout the planning process. Reclamation representatives provided information pertinent to the development of the draft CCP and EA related to the ongoing mitigation project.

The planning team worked with representatives from the Northern Prairie Wildlife Research Center (Jamestown, North Dakota) of the U.S. Geological Survey (USGS).

State Coordination

The NDGF is charged with managing the state's natural resources. Their mission is to "protect, conserve, and enhance fish and wildlife populations and their habitats for sustained public consumptive and nonconsumptive uses." The state manages more than 78,000 acres in support of wildlife, recreation, and fisheries.

The Service's director of region 6 sent an invitation letter for participation in the CCP process to the director of the NDGF. The local NDGF wildlife managers and the refuge staffs maintain excellent and ongoing working relations, preceding the start of the CCP process.

State Wildlife Grants Program

Over the past several decades, documented declines of wildlife populations have occurred nationwide. The State Wildlife Grant (SWG) program was created by Congress in 2001. This program provides states and territories with federal dollars to support conservation aimed at preventing wildlife from becoming endangered and in need of protection under the Endangered Species Act. The SWG program represents an ambitious endeavor to take an active hand in keeping species from becoming threatened or endangered in the future.

According to the SWG program, each state, territory, and the District of Columbia must complete a comprehensive wildlife conservation strategy (CWCS) by October 1, 2005 to receive future funding.

These strategies will help define an integrated approach to the stewardship of all wildlife species, with additional emphasis on species of concern and habitats at risk. The goal is to shift focus from single species management and highly specialized individual efforts to a geographically based, landscape-oriented, fish and wildlife conservation effort. The Service approves CWCSs and administers SWG program funding.

The State of North Dakota CWCS was reviewed and information was used during development of the CCP. The goals and objectives of the State of North Dakota CWCS are supported by the CCP through implementation of habitat goals and objectives.

Planning Issues

Internal and public scoping meetings, an internal management review, and a review of completed issues workbooks indicated seven major issues regarding the refuge.

Water Quantity

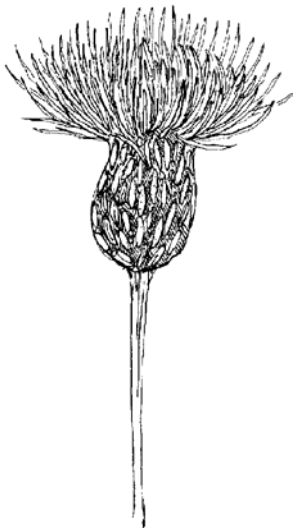
Jamestown Reservoir lies downstream of Arrowwood NWR on the James River in North Dakota. During high-water years, the reservoir backs up onto the refuge, floods pools, and eliminates

or severely reduces water management capabilities at the refuge. The refuge has experienced increased flooding and water management problems since Jamestown Reservoir filled to normal operating levels in 1965. High water levels preclude moist soil management and result in decreased productivity at the refuge during most years.

In addition, Jamestown Reservoir supports rough fish such as carp and big mouth buffalo that invade the refuge during high-water periods. Rough fish can cause extensive damage to aquatic resources important for migratory and nesting waterfowl. When wetland elevations are high, there may be no winterkill of the rough fish.

Invasive Plants

Invasive plants are an ongoing problem at the refuge and adjacent private agricultural lands. Invasive plants at the refuge degrade the quality of croplands, uplands, and hay harvested at the refuge by cooperative farmers. Since most refuge lands are not cropped, grazed, or mowed annually, these lands are viewed as weed sources that infest nearby private croplands.



Canada Thistle
© Cindie Brunner

Visitor Services

The refuge offers a wide variety of year-round, accessible, recreational opportunities that are wildlife dependent. There is a keen interest in wildlife-dependent recreational opportunities, especially hunting and fishing. There is also interest in trapping, wildlife photography, and wildlife observation. Activities that are not dependent on the presence of wildlife are also of interest, for example, picnicking, boating, canoeing, and kayaking.

All types of recreational opportunities should be universally accessible by young and old, abled and disabled.

However, there was concern about letting public use go too far. Some residents felt recreation needs to be controlled and restricted to ensure it stays compatible with the wildlife mission of the refuge. Examples include not allowing all-terrain vehicles (ATVs), snowmobiles, or jet skis, as there are other areas nearby already developed for these activities.

Agricultural Practices

The refuge conducts cropping, grazing, and haying —usually by private cooperators—to meet management objectives. The refuge has steadily decreased its cropland acreage, which has decreased economic benefits to cooperators.

Wildlife Depredation

The refuge is located in a predominately small-grain, row-crop, agricultural area. Migratory birds and other wildlife such as deer feed on crops on private as well as on refuge lands; Canada geese are of particular concern. Neighboring farmers would like to see the refuge managed to attract and hold wildlife on refuge lands to keep depredation on private land crops to a minimum.

Naturalness

Some area residents expressed a desire for the primary mission of the refuge to be restoration and protection of the natural ecosystem, including less artificial management (for example, water management) in favor of natural processes. This may include reestablishing native prairie, big game species such as elk and bison. There is concern with habitat disturbance and vegetative damage such as that caused by the Arrowwood NWR mitigation project.

Economic Benefits

Foster and Stutsman counties, where the refuge is situated, receive annual payments under the Refuge Revenue Sharing Act. These payments are made to counties in lieu of taxes, using revenues derived from the sale of products from refuges. Local officials express concern and discontentment that the allocations are but a fraction of the entitlement.

Area farmers and ranchers benefit economically by acting as cooperators to crop, hay, or graze at the refuge. The refuge gains valuable and cost-effective habitat treatments to meet management goals while offering an additional source of income for these cooperators.

Step-down Management Plans

A CCP is intended as a broad umbrella plan that provides general concepts and specific wildlife, habitat, endangered species, visitor services, and

partnership objectives. Step-down management plans provide detail to managers and staff who carry out specific actions authorized in a CCP. Based on this draft CCP and EA, table 1 presents plans needed for Arrowwood NWR.

CCP Revision

Plans are dynamic—management strategies need to be reviewed and updated periodically. The Service will review the final CCP at least annually to determine if the plan requires any revisions. The CCP and associated step-down plans will be modified whenever this review or other monitoring and evaluation determine changes are needed to achieve the refuge's purposes, vision, and goals.

Monitoring and evaluation will determine whether management activities are achieving the refuge's purposes, vision, and goals. The CCP can be revised when significant new information becomes available, ecological conditions change, major refuge expansions occur, or other needs are identified.

Revision will occur, at a minimum, every 15 years. If the plan requires a major revision, the CCP process starts anew. CCP revisions require NEPA compliance. The public will continue to be informed of and involved with any revision to the CCP for Arrowwood NWR.

Table 1. Step-down management plans for Arrowwood NWR, North Dakota.

Plan	*Status*
Disease Contingency Plan	To be completed in 2006
Environmental Management Plan	Completed in 2003; revised annually
Fire Management Plan	Completed in 2001; revised annually
Habitat Management Plan (HMP)	To be completed in 2008
Integrated Pest Management Plan (IPM Plan)	Completed in 2005
Law Enforcement Plan	To be completed in 2008
Visitor Services Plan	To be completed after the CCP is final
Predator Management Plan	Completed in 2006
Safety Plan	Completed in 1991; revised annually
Water Use Plan	Completed in 2006; revised annually