Draft Comprehensive Conservation Plan and Environmental Assessment

Pathfinder National Wildlife Refuge

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Prepared by

U.S. Fish and Wildlife Service

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Abbreviations

Administration Act	National Wildlife Refuge System Administration Act of 1966
BSFW	Bureau of Sport Fisheries and Wildlife
CCC	Civilian Conservation Corps
CCP	comprehensive conservation plan
CFR	Code of Federal Regulations
cfs	cubic feet per second
CRP	conservation reserve program
EA	environmental assessment
EO	executive order
FHWA	Federal Highway Administration
FMP	fire management plan
FONSI	finding of no significant impact
FTE	full-time equivalent
GIS	geographic information system
GPS	global positioning system
GS	general schedule (employment)
Improvement Act	National Wildlife Refuge System Improvement Act of 1997
LPP	Land Protection Plan
NABCI	North American Bird Conservation Initiative
NAWMP	North American Waterfowl Management Plan
NAWCA	North American Wetlands Conservation Act
NEPA	National Environmental Policy Act
NGO	nongovernmental organization
NOI	notice of intent
NWR	national wildlife refuge
NWRS	National Wildlife Refuge System
PFW	Partners for Fish and Wildlife
Refuge System	National Wildlife Refuge System
Region 6	Mountain–Prairie Region of the U.S. Fish and Wildlife Service
RONS	Refuge Operating Needs System
SAMMS	Service Asset Maintenance Management System
Service	U.S. Fish and Wildlife Service
SUP	special use permit
SWG	State Wildlife Grant
TNC	The Nature Conservancy
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WG	wage grade (employment)
WGFD	Wyoming Game and Fish Department
WUI	wildland–urban interface

Summary

Mark Ely/USFWS

Pathfinder National Wildlife Refuge, Wyoming

This is a summary of the draft comprehensive conservation plan for the Pathfinder National Wildlife Refuge in Carbon and Natrona counties, Wyoming. This plan, when approved, will guide management of the refuge for the next 15 years.

Assessing the refuge's ability to provide quality wildlife habitat for migratory bird species and actively managing the refuge to achieve this end, along with identifying and providing appropriate public uses on the refuge, were key factors driving the development of this plan.

The National Wildlife Refuge System Improvement Act of 1997 requires the U.S. Fish and Wildlife Service to develop a comprehensive conservation plan by 2012 for each unit in the National Wildlife Refuge System.

THE REFUGE

Located in central Wyoming in a high plains basin near the headwaters of the "Platte–Kansas Rivers" ecosystem, Pathfinder National Wildlife Refuge lies approximately 47 miles southwest of the city of Casper.

Pathfinder Dam construction was completed in 1909, creating the first reservoir on the North Platte River. At the same time, Pathfinder Wildlife Refuge (later renamed "Pathfinder National Wildlife Refuge") was established as an overlay refuge on Bureau of Reclamation lands on the reservoir. This large body of water was very attractive to waterbirds, and where the refuge once offered a unique environment in this semiarid region of Wyoming, the reservoir on which it is situated is now part of a larger system of reservoirs including Alcova to the north and Seminoe to the south.

Major habitat types of Pathfinder National Wildlife Refuge include open water wetlands, uplands consisting of shrub and grasslands, and alkali flats.

THE PLANNING PROCESS

The comprehensive conservation plan process consists of a series of steps including environmental analysis. Public and partner involvement are encouraged and valued throughout the process. Management alternatives are developed to meet the purposes, vision, and goals of the refuge. Implementation of the final comprehensive conservation plan will be monitored throughout its 15-year effective period.

Issues

Public scoping for the Pathfinder National Wildlife Refuge initiated in May 2006, along with refuge information, identified nine major areas of concern regarding management of the refuge.

Refuge Management

Pathfinder National Wildlife Refuge is part of the Arapaho National Wildlife Refuge Complex. Refuge staff are headquartered near Walden, Colorado, approximately a four-hour drive from the refuge. The complex's small staff size (four full-time employees), limited resources, and remote headquarters create management challenges for the refuge, including a lack of day-to-day oversight and minimal opportunities for law enforcement. Degrading infrastructure (specifically, roads, fences, and signs) and litter occur on the refuge due to lack of active management.

Management of Pathfinder Reservoir and refuge lands by multiple agencies creates additional management challenges. The U.S. Fish and Wildlife Service currently has memorandums of agreement and understanding with a number of agencies in the Casper region including the Bureau of Reclamation, the Bureau of Land Management, the Wyoming Game and Fish Department, and Natrona County.

The Bureau of Reclamation has a withdrawal on Pathfinder Reservoir project lands to support project purposes (i.e., flood control, irrigation, and hydroelectric power generation). The U.S. Fish and Wildlife Service has a withdrawal on refuge lands for wildlife management purposes. The roles and responsibilities of each agency should be clearly defined, evaluated, and simplified where possible during the comprehensive conservation plan process.

Refuge Uses

Refuge uses (grazing and recreation) need to be evaluated to ensure existing and proposed uses are compatible with the purpose of the refuge and the mission of the National Wildlife Refuge System. Refuge uses have not been actively evaluated over time due to minimal staff presence. Through the development of this comprehensive conservation plan, refuge uses and management activities will be evaluated to ensure the best, most informed decisions are made for proper management of refuge lands. For a use to be deemed compatible, appropriate staff and resources must be available to manage the use.

Water Resources

Water and water availability are vital in semiarid regions. The U.S. Fish and Wildlife Service does not own water rights for the refuge, which can result in poor wildlife habitat for trust species.

Water Level Fluctuation

During the past 20 years (from 1987 to 2007), the average fluctuation of the reservoir water level was 20 feet per year with a range of 8–40 feet, resulting in a lack of shoreline vegetation and food source for migratory birds and nesting cover for waterfowl. The Bureau of Reclamation is responsible for managing reservoir water levels.

Separated Land Parcels

The refuge consists of four separate units. Separated land parcels are generally more difficult to access and manage than contiguous parcels of land, and generally of less value to wildlife.

Invasive Species

Invasive species are a threat to quality habitat. If not contained early, they can also drain resources. Tamarisk and Canada thistle have been identified on the refuge. An increase in monitoring, management, and control of these and other invasive species is needed.

Research and Science

The U.S. Fish and Wildlife Service needs to obtain good baseline data for the refuge. Monitoring programs need to be implemented for species that use the refuge. Audubon Wyoming could be a partner in gathering quality research data on the refuge.

Partnerships

Cooperation with other agencies is needed to address issues of common concern. Opportunities for the public to assist in the protection and management of the refuge should be identified and provided. Local conservation groups could help raise funds for the refuge either directly or by lobbying state and federal representatives.

Staffing

The refuge should be managed by U.S. Fish and Wildlife Service staff stationed in Wyoming. This issue was raised frequently in public meetings. The managing staff is currently headquartered at Arapaho National Wildlife Refuge in Walden, Colorado, approximately 240 miles away from the refuge. The remote location of staff prevents active, consistent oversight of the refuge.

The Future of the Refuge

The issues, along with resource conditions, were important considerations during the development of the vision and goals for the refuge.

The Vision of the Refuge

The vision describes what the refuge will be and what the U.S. Fish and Wildlife Service hopes to do, and is based primarily on the mission of the National Wildlife Refuge System and specific purposes of the refuge.

Pathfinder Reservoir and surrounding public lands supply life-cycle needs for a multitude of wildlife adapted to this semiarid region of central Wyoming. The wetland complexes, upland sagebrush habitats, and open waters of the reservoir provide feeding, breeding, staging, resting, and nesting areas for migratory birds and resident wildlife. Management decisions will be directed toward maintaining or improving wildlife habitat values. Appropriate public use opportunities will be identified, and provided where possible.

Goals

The following goals were developed to meet the vision of the Pathfinder National Wildlife Refuge.

Natural Resources Goal

Conserve the ecological diversity of uplands and wetlands to support healthy populations of native wildlife, with an emphasis on migratory birds.

Visitor Services Goal

Provide wildlife-dependent recreational opportunities to a diverse audience when the administration of these programs does not adversely affect habitat management objectives.

Partnerships Goal

Work with partners to support healthy populations of native wildlife and to increase understanding of wildlife needs as well as the benefits wildlife offer to local communities.

Cultural Resources Goal

Identify and evaluate the cultural resources on the refuge and protect those that are determined to be significant.

Administrative Goal

Obtain administrative capabilities that will result in efficient strategies to manage the landscape to achieve habitat and public management goals.

ALTERNATIVES

The planning team developed the following three alternatives as management options for addressing the key issues.

Alternative A—Current Management (No Action)

This no-action alternative reflects the current management of the Pathfinder National Wildlife Refuge. It provides the baseline against which to compare the other alternatives.

Refuge habitats would continue to be minimally managed on an opportunistic schedule that may maintain—or most likely would result in further decline in—the diversity of vegetation and wildlife species. Only limited data collection and monitoring of habitats and wildlife species would occur on the refuge.

Outreach and partnerships would continue at present minimal levels.

Alternative B—Enhanced Refuge Management

Management activities under alternative B would be increased. Upland habitats would be evaluated and managed for the benefit of migratory bird species. Monitoring and management of invasive species on the refuge would be increased.

With additional staffing, the U.S. Fish and Wildlife Service would collect baseline biological information for wildlife and habitats. Wildlife-dependent recreation opportunities would be provided and enhanced where compatible with refuge purposes. Efforts would be increased in the operations and maintenance of natural resources on the refuge and to maintain and develop partnerships that promote wildlife and habitat research and management.

Alternative C—Modify Refuge Boundary (Proposed Action)

Alternative C is the U.S. Fish and Wildlife Service's proposed action and basis for the draft comprehensive conservation plan.

Under Alternative C, the refuge boundary would be modified to remove areas from the refuge that provide minimal opportunity to improve wildlife habitat and are difficult to manage. Remaining refuge areas would be managed similar to those actions described in alternative B. Modifying the refuge's boundary would enable the U.S. Fish and Wildlife Service to focus efforts on manageable lands, thereby enhancing refuge management and efficiently directing refuge resources toward accomplishing the mission of the National Wildlife Refuge System

1 Introduction

Glen Smart/USFWS

Hooded Merganser

The U.S. Fish and Wildlife Service (Service, USFWS) has developed this draft comprehensive conservation plan (CCP) to provide a foundation for the management and use of the Pathfinder National Wildlife Refuge (NWR) located in central Wyoming near the city of Casper (figure 1). When finalized, the CCP will serve as a working guide for management programs and actions over the next 15 years.

This draft CCP was developed in compliance with the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) and Part 602 (National Wildlife Refuge System Planning) of "The Fish and Wildlife Service Manual." The actions described within this draft CCP and environmental assessment (EA) meet the requirements of the National Environmental Policy Act of 1969 (NEPA). Compliance with the NEPA is being achieved through the involvement of the public.

The final CCP will specify the necessary actions to achieve the vision and purposes of Pathfinder NWR. Wildlife is the first priority in refuge management, and public use (wildlife-dependent recreation) is allowed and encouraged as long as it is compatible with the refuge's purpose.

The draft CCP and the EA have been prepared by a planning team comprised of representatives from various Service programs (refuge planning, education and visitor services, and ecological services), the Bureau of Reclamation (Reclamation), the Bureau of Land Management (BLM), and the Wyoming Game and Fish Department (WGFD). In addition, the planning team incorporated public input. Public involvement and the planning process are described in section 1.6 below.

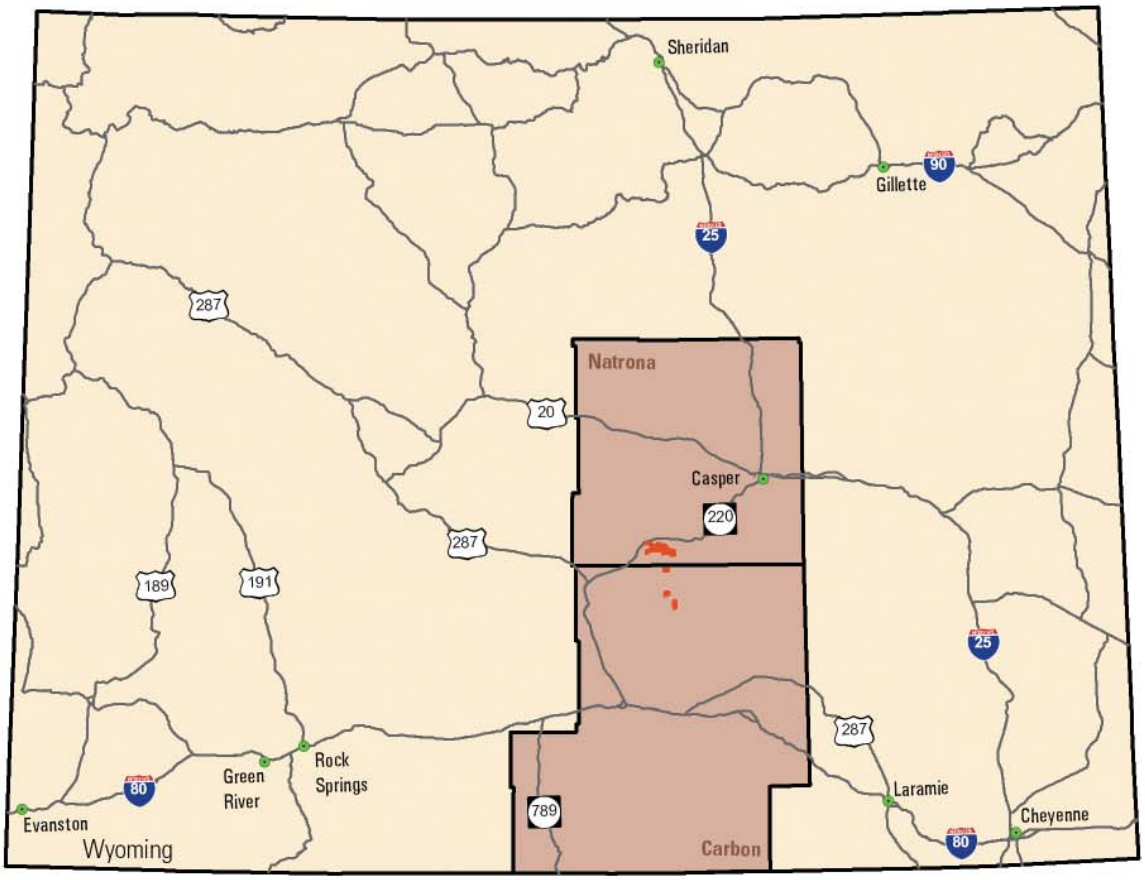
After reviewing a wide range of public comments and management needs, the planning team developed alternatives for management of the refuge. The team recommended one alternative to be the Service's proposed action. This action addresses all substantive issues while determining how best to achieve the purpose of the refuge. The proposed action is the Service's recommended course of action for management of the refuge. The proposed action is summarized in chapter 3, with its predicted effects described in chapter 5. The details of the proposed action compose the draft CCP (chapter 6).

1.1 PURPOSE AND NEED FOR THE PLAN

The purpose of this draft CCP is to identify the role that the refuge will play in support of the mission of the National Wildlife Refuge System (Refuge System), and to provide long-term guidance for management of refuge programs and activities. The CCP is needed:

- to communicate with the public and other partners in efforts to carry out the mission of the Refuge System;
- to provide a clear statement of direction for management of the refuge;

U.S. Fish & Wildlife Service



Pathfinder National Wildlife Refuge (NWR)

Carbon & Natrona Counties

0 50 100 150 200 Kilometers

0 25 50 75 100 Miles

N

Region 6 Mountain - Prairie Region

Figure 1. Vicinity map for Pathfinder NWR, Wyoming.

- to provide neighbors, visitors, and government officials with an understanding of the Service's management actions on and around the refuge;
- to ensure that the Service's management actions are consistent with the mandates of the Improvement Act;
- to ensure that management of the refuge is consistent with federal, state, and county plans;
- to provide a basis for development of budget requests for the refuge's operation, maintenance, and capital improvement needs.

Sustaining the nation's fish and wildlife resources is a task that can be accomplished only through the combined efforts of governments, businesses, and private citizens.

1.2 THE U.S. FISH AND WILDLIFE SERVICE AND THE REFUGE SYSTEM

The Service is the principal federal agency responsible for fish, wildlife, and plant conservation. The Refuge System is one of the Service's major programs.

U.S. Fish and Wildlife Service

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.

Over a century ago, America's fish and wildlife resources were declining at an alarming rate. Concerned citizens, scientists, and hunting and angling groups joined together to restore and sustain America's national wildlife heritage. This was the genesis of the U.S. Fish and Wildlife Service.

Today, the Service enforces federal wildlife laws, manages migratory bird populations, restores nationally significant fisheries, conserves and restores vital wildlife habitat, protects and recovers endangered species, and helps other governments with conservation efforts. In addition, the Service administers a federal aid program that distributes hundreds of millions of dollars to states for fish and wildlife restoration, boating access, hunter education, and related programs across America.

National Wildlife Refuge System

In 1903, President Theodore Roosevelt designated the 5.5-acre Pelican Island in Florida as the nation's first wildlife refuge for the protection of brown pelicans and other native, nesting birds. This small but significant designation was the beginning of the Refuge System.

One hundred years later, the Refuge System has become the largest collection of lands in the world specifically managed for wildlife, encompassing over 96 million acres within 546 refuges and over 3,000 small areas for waterfowl breeding and nesting. Today, there is at least one refuge in every state as well as Puerto Rico, Guam, and the U.S. Virgin Islands.

In 1997, the Improvement Act established a clear mission for the Refuge System.

The mission of the National Wildlife Refuge System is to administer a national 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.

The Improvement Act states that each national wildlife refuge shall be managed

- to fulfill the mission of the Refuge System;
- to fulfill the individual purposes of each refuge;
- to consider the needs of fish and wildlife first;
- to fulfill the requirement of developing a CCP for each unit of the Refuge System and fully involve the public in the preparation of these plans;
- to maintain the biological integrity, diversity, and environmental health of the Refuge System;
- to recognize that the six wildlife-dependent recreation activities (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) are legitimate and priority public uses;
- to retain the authority of refuge managers to determine compatible public uses.

In addition to the mission for the Refuge System, the wildlife and habitat vision for each unit of the Refuge System stresses the following principles:

- Wildlife comes first.
- Ecosystems, biodiversity, and wilderness are vital concepts.
- Habitats must be healthy.
- Growth of the Refuge System must be strategic.
- The Refuge System serves as a model for habitat management with broad participation from others.

Following passage of the Improvement Act, the Service immediately began to carry out the direction of the new legislation, including preparation of CCPs for all national wildlife refuges and wetland management districts. Consistent with the Improvement Act, the Service prepares all CCPs in conjunction with public involvement. Each refuge is required to complete its CCP within the 15-year schedule (by 2012).

People and the Refuge System

The nation's fish and wildlife heritage contributes to the quality of American lives. Wildlife and wild places provide special opportunities to recreate, relax, and enjoy the natural world.

Whether through bird watching, fishing, hunting, photography, or other wildlife pursuits, wildlife recreation contributes millions of dollars to local economies. In 2006, nearly 35 million people visited the Refuge System, mostly to observe wildlife in their natural habitats (Carver and Caudill 2007). Visitors are most often accommodated through nature trails, auto tours, interpretive programs, and hunting and fishing opportunities. Significant economic benefits are being generated to the local communities that surround refuges. During fiscal year 2006, recreational use on national wildlife refuges generated almost $1.7 billion of sales in regional economies, supported approximately 27,000 private sector jobs, produced about $543 million in employment income, and generated nearly $185.3 million in tax revenue at the local, county, state, and federal levels (Carver and Caudill 2007).

1.3 NATIONAL AND REGIONAL MANDATES

Refuge System units are managed to achieve the designated purpose of the refuge (as described in establishing legislation, executive orders, or other establishing documents) and the mission and goals of the Refuge System. Key concepts and guidance of the Refuge System are in the Refuge System Administration Act of 1966 (Administration Act), Title 50 of the Code of Federal Regulations (CFR), "The Fish and Wildlife Service Manual," and the Improvement Act.

The Improvement Act amends the Administration Act by providing a unifying mission for the Refuge System, a new process for determining compatible public uses on refuges, and a requirement that each refuge be managed under a CCP. The Improvement Act states that wildlife conservation is the priority of Refuge System lands and that the Secretary of the Interior will ensure the biological integrity, diversity, and environmental health of refuge lands are maintained. Each refuge must be managed to fulfill the Refuge System's mission and the specific purposes for which it was established. The Improvement Act requires the Service to monitor the status and trends of fish, wildlife, and plants in each refuge.

A detailed description of these and other laws and executive orders that may affect the CCP or the Service's implementation of the CCP is in appendix A. Service policies on planning and day-to-day management of refuges are in the "Refuge System Manual" and "The Fish and Wildlife Service Manual."

1.4 REFUGE CONTRIBUTIONS TO NATIONAL AND REGIONAL PLANS

Pathfinder NWR contributes to the conservation efforts described here.

Fulfilling the Promise

A 1999 report, "Fulfilling the Promise: The National Wildlife Refuge System" (U.S. Fish and Wildlife Service [USFWS] 1999), is the culmination of a yearlong process by teams of Service employees to evaluate the Refuge System nationwide. This report was the focus of the first national Refuge System conference in 1998 attended by refuge managers, other Service employees, and representatives from leading conservation organizations.

The report contains 42 recommendations packaged with three vision statements dealing with wildlife and habitat, people, and leadership. This draft CCP deals with all three of these major topics. The planning team looked to the recommendations in the document for guidance during CCP planning.

Partners in Flight

The Partners in Flight program began in 1990 with the recognition of declining population levels of many migratory bird species. The challenge, according to the program, is managing human population growth while maintaining functional natural ecosystems. To meet this challenge, Partners in Flight worked to establish priorities for conservation efforts and identify land bird species and habitat types. Partners in Flight activity has resulted in 52 bird conservation plans covering the continental United States.

The primary goal of Partners in Flight is to provide for the long-term health of the bird life of North America. The first priority is to prevent the rarest species from going extinct, the second is to prevent uncommon species from descending into threatened status, and the third is to "keep common birds common."

There are 58 physiographic areas, defined by similar physical geographic features, wholly or partially contained within the contiguous United States and several others wholly or partially in Alaska. Pathfinder NWR falls within physiographic area 86, the Wyoming Basin (figure 2).

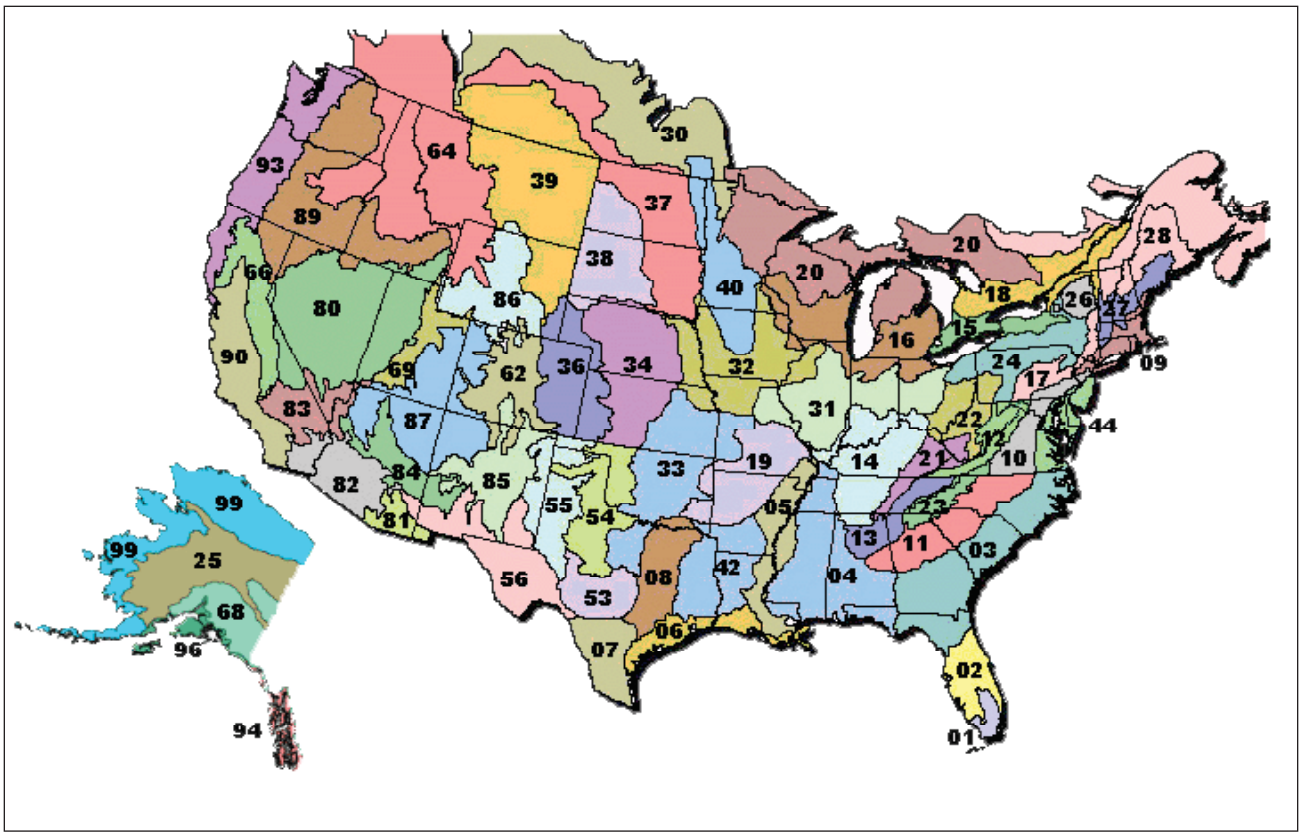


Figure 2. Pathfinder NWR is located in the Wyoming Basin, physiographic area 86.

The Wyoming Basin is primarily in Wyoming but also extends into northern Colorado, southern Montana, and very small parts of northeast Utah and southeast Idaho. The area consists of broad intermountain basins interrupted by isolated hills and low mountains that merge to the south into a dissected plateau. The Wyoming Basin is primarily shrub–steppe habitat, dominated by sagebrush and shadscale, interspersed with areas of short-grass prairie. Higher elevations are in mountain shrub vegetation, with coniferous forest atop the highest areas. Priority bird populations and habitats of the Wyoming Basin include:

Shrub–Steppe

- Ferruginous hawk
- Prairie falcon
- Greater sage-grouse
- Cassin's kingbird
- Sage thrasher
- Brewer's sparrow
- Sage sparrow

Sagebrush Grasslands

- Swainson's hawk
- Mountain plover
- McCowan's longspur

Montane Shrub

- Lewis's woodpecker
- Virginia's warbler

Wetlands

- American white pelican
- Wilson's phalarope

A large percentage of the Wyoming Basin is in public ownership, with the BLM owning much of the lower elevation shrub–steppe and grassland and the U.S. Forest Service owning a great deal of the higher-elevation wooded land. A checkerboard pattern of land ownership is a subtle problem that affects the consistency of land management over large areas. The primary land use in the Wyoming Basin has been for many years and continues to be grazing, although conversion to agriculture is also an issue. The effects of overgrazing and nonnative plant invasion should be mitigated to improve conditions for breeding birds. Maintenance of springs and riparian habitat may be crucial, particularly to sage-grouse. Fencing or changing grazing systems may be effective in maintaining water flow. Oil and gas extraction and hard rock mining are relatively recent factors that may negatively affect the greater landscape needs of the sage-grouse (Nicholoff 2003).

Recovery Plans for Federally Listed Threatened or Endangered Species

Where federally listed threatened or endangered species occur at Pathfinder NWR, management goals and strategies in their respective recovery plans will be followed. The list of threatened or endangered species that occur at the refuge will change as species are listed or delisted, or as listed species are discovered on refuge lands. Currently, no federally listed threatened or endangered species occur at the refuge.

State Comprehensive Conservation Wildlife Strategy

Over the past several decades, documented declines of wildlife populations have occurred nationwide. Congress created the State Wildlife Grant (SWG) program 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 a proactive role in keeping species from becoming threatened or endangered in the future.

According to the SWG program, each state or territory and the District of Columbia must have completed 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 CWCS for the state of Wyoming was reviewed and information therein was used during the development of the CCP. Implementation of CCP habitat goals and objectives will support the goals and objectives of the CWCS.

1.5 ECOSYSTEM DESCRIPTION AND THREATS

Pathfinder NWR is located within the Platte–Kansas Rivers ecosystem, which includes almost all of Nebraska, southeast Wyoming, northeast Colorado, and northern Kansas (figure 3). The ecosystem is home to the Nebraska Sandhills, the largest sand dune complex in the western hemisphere. This area and many others provide vital habitat for numerous threatened and endangered wildlife and plant species.

The ecosystem spans from snow-capped, barren mountain peaks in Colorado to lowland riparian cottonwood forests along the Missouri River in eastern Nebraska and Kansas. The mountainous regions are predominately a mixture of coniferous forests comprised of Douglas fir, ponderosa pine, lodgepole pine, Engelman spruce, and subalpine fir. Pinyon pine, juniper woodlands, and aspen communities are also common throughout. At high elevation, alpine meadows and lakes, willow shrublands, and barren, rocky areas are frequently found. Forests generally transition into shrub communities dominated by sagebrush with short grasses and forbs in eastern Wyoming and western Nebraska. Farther to the east, trees give way to short-grass prairie dominated by buffalo grass, blue gramma, hairy gramma, and western wheatgrass. The short-grass prairie turns into mixed-grass prairie in central Nebraska and Kansas, due primarily to greater annual rainfall.

Threats to the Platte–Kansas Rivers ecosystem that require attention include overgrazing of land, invasive plants, population growth and housing development, and groundwater and surface-water depletion. To overcome these threats, the priorities for the ecosystem will be to ensure that natural, healthy ecological processes dominate and that economic development complements environmental protection.

1.6 THE PLANNING PROCESS

This draft CCP and the EA for Pathfinder NWR is intended to comply with the Improvement Act and the NEPA as well as the implementing regulations of the acts. The Service issued its Refuge System planning policy in 2000, which established requirements and guidance for refuge plans—including CCPs and step-down management plans—to ensure that planning efforts comply with the Improvement Act. The planning policy identified several steps of the CCP and environmental analysis process (see figure 4).

Table 1 displays the planning process to date for this draft CCP and EA. The Service began the preplanning process in January 2006. The planning team consists of Service personnel from various programs including refuge planning, education and visitor services, and ecological services, as well as representatives from the BLM, Reclamation, and WGFD (appendix B). During preplanning, the team developed a mailing list, internal issues, and a special qualities list. The planning team identified current refuge program status, compiled and analyzed relevant data, and determined the purpose of the refuge.

Over the course of preplanning and scoping (the process of obtaining information from the public for input into the planning process), the planning team collected available information about the resources

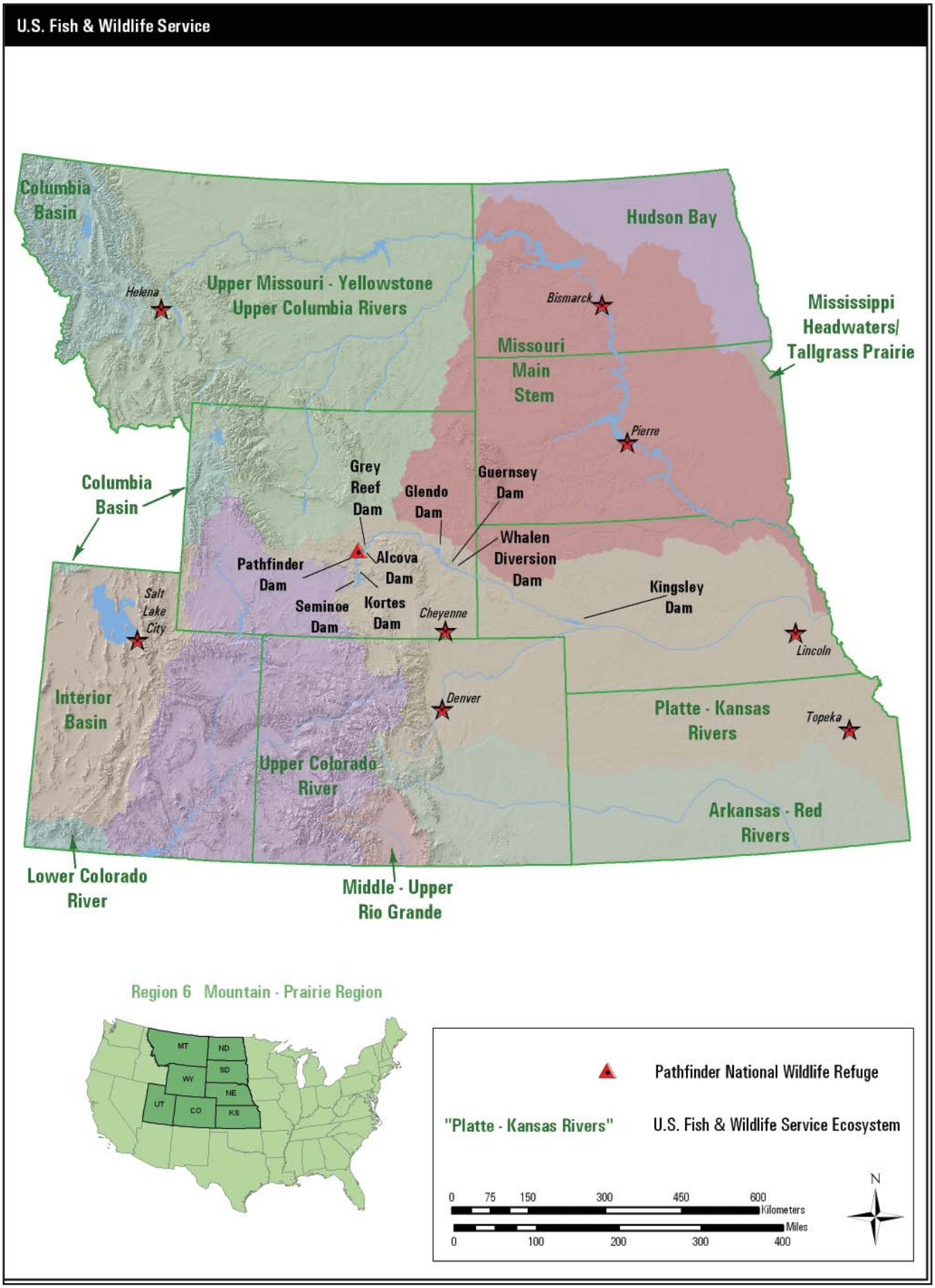


Figure 3. Platte–Kansas Rivers ecosystem.

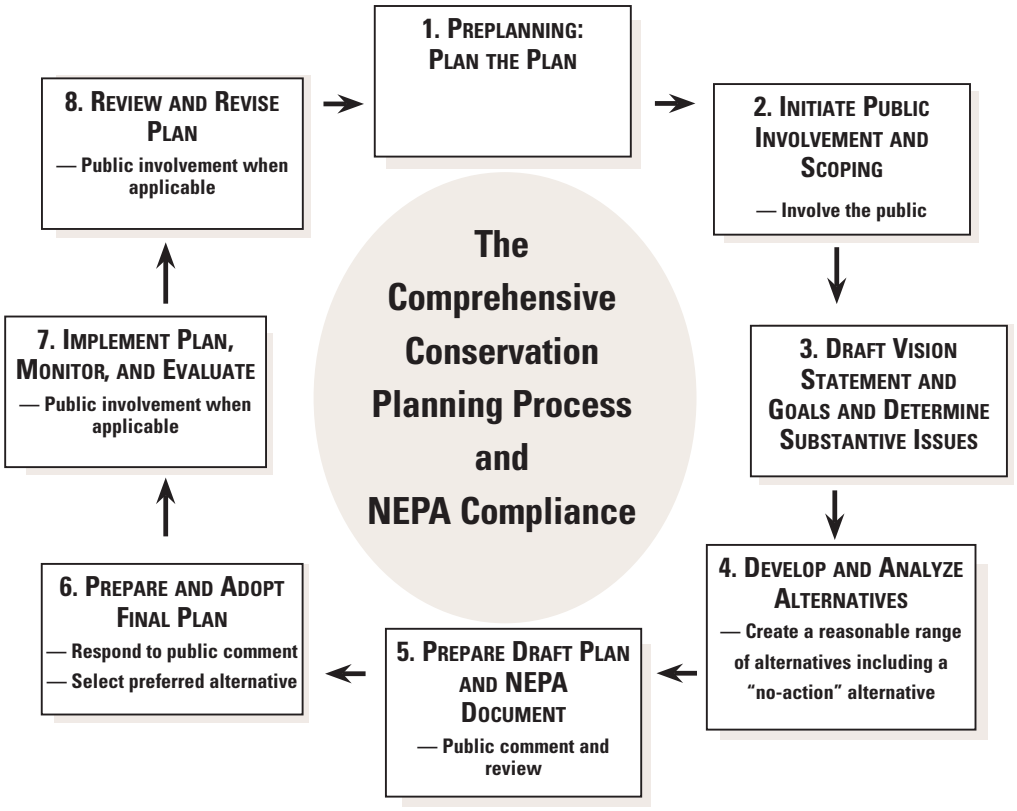


Figure 4. The planning process.

of the refuge and the surrounding areas. Chapter 4 summarizes this information.

The draft CCP (chapter 6) outlines long-term guidance for management decisions; sets forth proposed objectives and strategies to accomplish refuge purposes and meet goals; and identifies the Service's best estimate of future needs.

The draft CCP details program levels that are sometimes substantially above current budget allocations and, as such, are primarily for Service strategic planning purposes.

A notice of intent (NOI) to prepare the draft CCP and EA was published in the "Federal Register" on June 16, 2006. Public scoping began in May 2006 with public meetings in Casper and Laramie, Wyoming.

Coordination with the Public

The Service held two public scoping meetings in May 2006 (see table 1 for details) announced by the local media. During the public meetings, a description of the CCP and NEPA process was provided. Participants were asked to provide suggestions on the scope of issues to be considered in the planning process, and comments were recorded and entered in the planning record. Attendees were encouraged to ask questions and offer comments; each attendee was given a comment form to submit additional thoughts or questions in writing.

Approximately 51 people attended the public meetings. Attendees included local citizens and members of the Audubon Wyoming, the Wyoming Outdoor Council, and Biodiversity Conservation Alliance.

Written comments were due July 17, 2006. A total of 70 written comments were received throughout the scoping process. Input obtained from meetings and correspondence including email was considered in development of this draft CCP and EA.

A mailing list of more than 148 contacts includes private citizens; local, regional, and state government representatives and legislators; other federal agencies; and interested organizations (appendix C).

In September 2006, the first planning update was sent to everyone on the mailing list. Information was provided on the history of the refuge and the CCP process, along with an invitation to share ideas regarding refuge management with the planning team. Each planning update included a comment form and postage-paid envelope to give the public an opportunity to provide written comments.

Table 1. Planning process summary for Pathfinder NWR, Wyoming.

Date	*Event*	*Outcome*
January–March 2006	Preplanning.	CCP overview; established planning team; identified purpose of the refuge, history, and establishing authority; developed planning schedule and CCP mailing list.
April 27, 2006	Kickoff meeting.	Toured refuge; conducted internal scoping by developing issues and qualities list for the refuge; identified biological and mapping needs; developed a vision statement for the refuge.
May 8, 2006	News release for public meeting sent to Wyoming media contacts.	Notified public of opportunities for involvement in the CCP process.
May 24, 2006	Public meeting in Casper, WY.	Opportunity for the public to learn about the CCP and offer suggestions on the scope of issues to be considered in the planning process.
May 25, 2006	Public meeting in Laramie, WY.	Opportunity for the public to learn about the CCP and offer suggestions on the scope of issues to be considered in the planning process.
June 16, 2006	NOI (to prepare the CCP) published in the "Federal Register."	Notified the public of the intention to prepare a CCP and EA for Pathfinder NWR.
August 31, 2006	Goals and alternatives workshop.	Goals developed; alternatives discussed.
September 2006	Planning update distributed to CCP mailing list.	Planning update (describing CCP process and providing opportunity for public suggestions on the scope of issues to be considered in the planning process).
January 25, 2007	Environmental consequences workshop and identification of the proposed action.	Reviewed the anticipated environmental consequences; identified alternative C as the proposed action.
Spring 2008	Internal review of the draft CCP and EA.	Received comments on the draft CCP and EA.
Summer 2008	Release of draft CCP and EA for public review.	Draft CCP and EA presented to the public; received comments on the draft CCP and EA.
Summer 2008	Public meeting in Casper, WY.	Increased public understanding of the draft CCP and EA; received public comments about the draft CCP and EA.

State Coordination

On January 27, 2006, an invitation letter to participate in the CCP process was sent by the Service's region 6 director to the director of the Wyoming Game and Fish Department. Two representatives from the WGFD are part of the CCP planning team. Local WGFD wildlife biologists and the refuge staff had established excellent and ongoing working relations before starting the CCP process.

The Wyoming Game and Fish Department is charged with providing "an adequate and flexible system for the control, management, protection, and regulation of all Wyoming wildlife." The WGFD maintains 36 Wildlife Habitat Management Areas and 96 Public Access Areas, encompassing 410,000 acres of managed lands for wildlife habitat and public recreation opportunity. These lands contain 121 miles of stream easements and about 21,014 surface acres of lakes and reservoirs for public access (Wyoming Game and Fish Department 2006).

Tribal Coordination

On October 17, 2006, five Native American tribal governments (Arapaho, Crow, Northern Cheyenne, Oglala Sioux, and Shoshone) were contacted through a letter signed by Service's region 6 director. With

information about the upcoming CCP, the letter invited tribal recipients to serve on the planning team. Although Native American tribal governments did not express interest in participating on the planning team, the tribal governments remain on the CCP mailing list and will continue to receive CCP correspondence (planning updates, draft CCP and EA, final CCP) and will be given an opportunity to comment on the draft CCP and EA documents.

Results of Scoping

Table 1 summarizes all scoping activities. Comments collected from scoping meetings and correspondence, including comment forms, were used in the development of a final list of issues to be addressed in this draft CCP and EA.

The Service determined which alternatives could best address these issues. The planning process ensures that issues with the greatest affect on the refuge are resolved or given priority over the life of the final CCP. Identified issues, along with a discussion of effects on resources, are summarized in chapter 2.

In addition, the Service considered suggested changes to current refuge management presented by the public and other groups.

2 The Refuge

USFWS

Northern pintail

The Pathfinder Wildlife Refuge (later renamed the "Pathfinder National Wildlife Refuge") was established by executive order (EO) in 1909. The refuge's boundaries have been modified several times since its establishment. The present-day refuge comprises four separate units—Sweetwater Arm, Goose Bay, Deweese Creek, and Sage Creek—totaling 16,806 acres (figure 5).

2.1 ESTABLISHMENT, ACQUISITION, AND MANAGEMENT HISTORY

The origins of present-day Pathfinder NWR can be traced to June 17, 1902, when Congress authorized the Bureau of Reclamation to build the Pathfinder Dam and Reservoir in central Wyoming. When dam construction was completed in 1909, the refuge was established on the reservoir as an overlay refuge on Reclamation lands. As such, lands and waters are under the primary jurisdiction of Reclamation, and the refuge purpose is superimposed as a secondary interest in the property. Primary administration is retained by Reclamation, the host agency. Wildlife management must be compatible with those uses for which the primary agency acquired the land.

Below is a summary of the legislation that has shaped the refuge over the years:

- EO 1032 (February 25, 1909)—established Pathfinder Wildlife Refuge on the Pathfinder Reservoir site "as a preserve and breeding ground for native birds."
- EO 3725 (August 18, 1922)—revoked that part of EO 1032 reserving the Pathfinder Reservoir site for use "as a preserve and breeding ground for native birds."
- EO 4860 (April 19, 1928)—reestablished the area created by EO 1032 "as a preserve and breeding ground for native birds."
- EO 7425 (August 1, 1936)—established the present refuge and designated it "as a refuge and breeding ground for birds and other wildlife."
- EO 8296 (November 30, 1939)—changed the refuge name from "Pathfinder Wildlife Refuge" to "Pathfinder National Wildlife Refuge."

Primary jurisdiction of most of the refuge lands remains under Reclamation's authority. Reclamation administers lands within the Pathfinder Project boundary for North Platte Project purposes including flood control, irrigation, and hydroelectric power generation. A memorandum of understanding (MOU) specifies the management responsibilities of the Bureau of Sport Fisheries and Wildlife (BSFW),

the Service's predecessor, while preserving the autonomy of Reclamation to manage Pathfinder Dam and Reservoir (see appendix D).

The North Platte Project is a 111-mile irrigation project stretching along the North Platte River Valley from Guernsey, Wyoming, to Bridgeport, Nebraska (U.S. Department of the Interior, Bureau of Reclamation [USBR]). The project provides full-service irrigation for about 226,000 acres and supplemental irrigation service for a combined area of roughly 109,000 acres. The project includes five storage dams, four diversion dams, a pumping plant, and a power plant, as well as about 2,000 miles of canals, laterals, and drains.

Many mountain streams rising in the Rocky Mountains of Colorado and Wyoming feed the North Platte River. Its waters are stored and used for irrigation and power development for the North Platte Project and related projects. These projects' storage structures require close operational coordination, which is further complicated by various agreements and laws governing water rights.

Before reaching the Pathfinder Reservoir, the North Platte River waters pass through the Seminoe and Kortes dams, where they are joined by waters from the Sweetwater River. Pathfinder Reservoir holds much of the North Platte Project water, with a storage capacity of 1,016,000 acre-feet. A small amount of water is released during the nonirrigation season to satisfy other water rights, enhance fish and wildlife, and operate power plants downstream, and during the irrigation season, water is released as required.

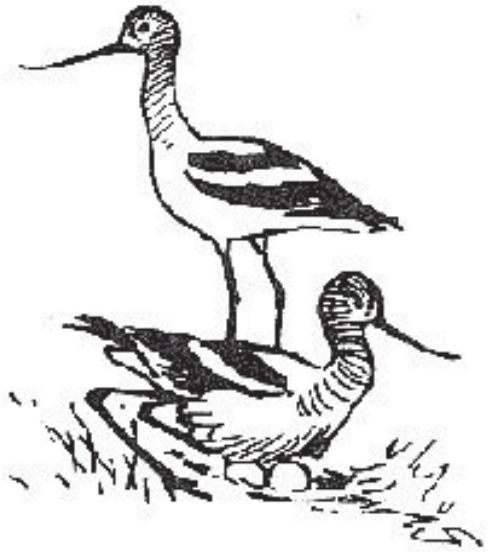
Pathfinder Dam is located about 3 miles below the North Platte River's junction with the Sweetwater River.

In the 1960s, the BSFW became increasingly concerned with the decline in waterfowl use of the reservoir. This decline was attributed to various ecological changes resulting from Reclamation activities, particularly water manipulation. Recreational activities were also increasing, and the trend was expected to continue. The BSFW concluded that developing and intensively managing only areas that had existing and potential waterfowl attraction would better benefit wildlife than continuing extensive management of the entire area. To this effect, various memorandums of agreement and understanding were signed with Reclamation and other agencies that oversee lands on the Pathfinder Reservoir:

- February 12, 1963—a proposal was made to limit the boundary of Pathfinder NWR to include only the Sweetwater Arm Unit and three small areas (Goose Bay, Deweese Creek, and Sage Creek units) designated for waterfowl production on the main body of the reservoir.
- May 20, 1963—the proposal was approved in a memorandum to the BSFW's regional director of the division of technical services.
- May 19, 1964—the proposal was carried out through partial revocation of EO 7425, which deleted 31,545 acres from the refuge.
- May 26, 1964—an MOU was signed between Reclamation and the BSFW (contract #14-06-700-4605), allowing the latter to manage land and water areas, including grazing, recreation, and related uses, for the conservation of wildlife resources (appendix D).
- September 10, 1964—the BSFW submitted an application to the BLM for the withdrawal of lands from the BLM to add 1,971.97 acres to Pathfinder NWR. The withdrawal of 1,574.84 acres of land was completed November 4, 1964, and serial number Wyoming 0311814 was assigned.
- May 7, 1965—Public Land Order 3657 placed 2,554 acres of public land under the primary responsibility of the BSFW through a realignment of the refuge boundary.
- November 16, 1965—an MOA (contract #14-06-700-4737) between Reclamation, the BLM, and the BSFW transferred administration of the grazing program to the BLM.
- May 19, 1966—an MOU (contract #14-06-700-4749) between Reclamation, the Natrona County Commissioners, and the BSFW was established concerning the administration and development of land and facilities at Alcova, Pathfinder, and Grays Reef reservoirs for recreational purposes.
- May 19, 1991—an MOU (contract # 1-AG-60-01340) between Reclamation and Natrona County replaced the MOU dated May 19, 1966. The area at Pathfinder NWR covered by this MOU is the Bishops Point Recreation Area in the Sweetwater Arm Unit. These recreational lands are currently within the refuge's boundary and therefore are subject to the Service's appropriate use and compatibility policies.

2.2 SPECIAL VALUES OF THE REFUGE

Early in the planning process, the planning team and public identified the outstanding qualities of Pathfinder NWR, the characteristics and features that make it special to people, valuable for wildlife, and worthy of refuge status. Identifying these values at the outset helps ensure they will be preserved, protected, and enhanced throughout the planning process. Refuge qualities can range from providing a unique biological habitat for wildlife to offering visitors a quiet place to observe a variety of birds and enjoy nature. The following summarizes the qualities that make portions of the refuge unique and valued.



Bob Hines/USFWS

Avocets

Wildlife and Habitat

- Forty species of waterfowl, wading birds, and shorebirds use the refuge for migration and nesting including mountain plover, phalarope, avocet, redhead duck, and scaup.
- The Steamboat Lake area of the Sweetwater Arm Unit provides important feeding and nesting habitat for waterfowl and other migratory bird species.
- The refuge contains a large body of water in a semiarid environment that provides resting habitat for migratory birds.
- Uplands sagebrush habitat on the refuge supports sage-grouse, antelope, and other sage-obligate species.
- The Sweetwater Arm Unit contains at least one sage-grouse lek, and likely early brood-rearing habitat.
- The refuge is designated an "Important Bird Area" (Audubon Wyoming).
- A state-listed rare plant, slender spiderflower, is present in the Sweetwater Arm Unit of the refuge.
- The potential exists to form partnerships with other agencies and with private landowners in the area who are interested in maintaining and improving the refuge's natural resources.
- Currently, there is little pressure for development near the refuge.

Public Use

- The refuge provides a variety of public recreation including the six priority public uses of the Refuge System (hunting, fishing, wildlife observation and photography, and environmental education and interpretation).
- The Steamboat Lake area of the refuge provides excellent wildlife observation and interpretation opportunities.
- The Oregon Trail and Independence Rock offer opportunities to showcase the refuge to the public.
- The refuge offers visitors open space and the opportunity to experience solitude in an aesthetically pleasing environment.

2.3 PURPOSE

Every refuge is established for a purpose. This purpose is the foundation upon which to build all refuge programs, from biology and public use to maintenance and facilities. No action that the Service or public takes may conflict with this refuge purpose. The refuge purpose is found in the legislative acts or administrative orders, which are the authorities to either transfer or acquire a piece of land for a refuge. Over time an individual refuge may contain lands that have been acquired under a variety of transfer and acquisition authorities, giving it more than one purpose. The goals, objectives, and strategies identified in the CCP are intended to support the individual purpose for which the refuge was established.

As stated in EO 7425, the purpose of Pathfinder NWR is "as a refuge and breeding ground for birds and other wildlife."

2.4 VISION

At the beginning of the planning process, the Service developed a vision for Pathfinder NWR. A vision describes what will be different in the future as a result of the CCP and is the essence of what the Service is trying to accomplish at the refuge. The vision is a future-oriented statement designed to be achieved through refuge management by the end of the 15-year CCP planning horizon. The vision for Pathfinder NWR is the following.

Pathfinder Reservoir and surrounding public lands supply life-cycle needs for a multitude of wildlife adapted to this semiarid region of central Wyoming. The wetland complexes, upland sagebrush habitats, and open waters of the reservoir provide feeding, breeding, staging, resting, and nesting areas for migratory birds and resident wildlife. Management decisions will be directed toward maintaining or improving wildlife habitat values. Appropriate public use opportunities will be identified, and provided where possible.

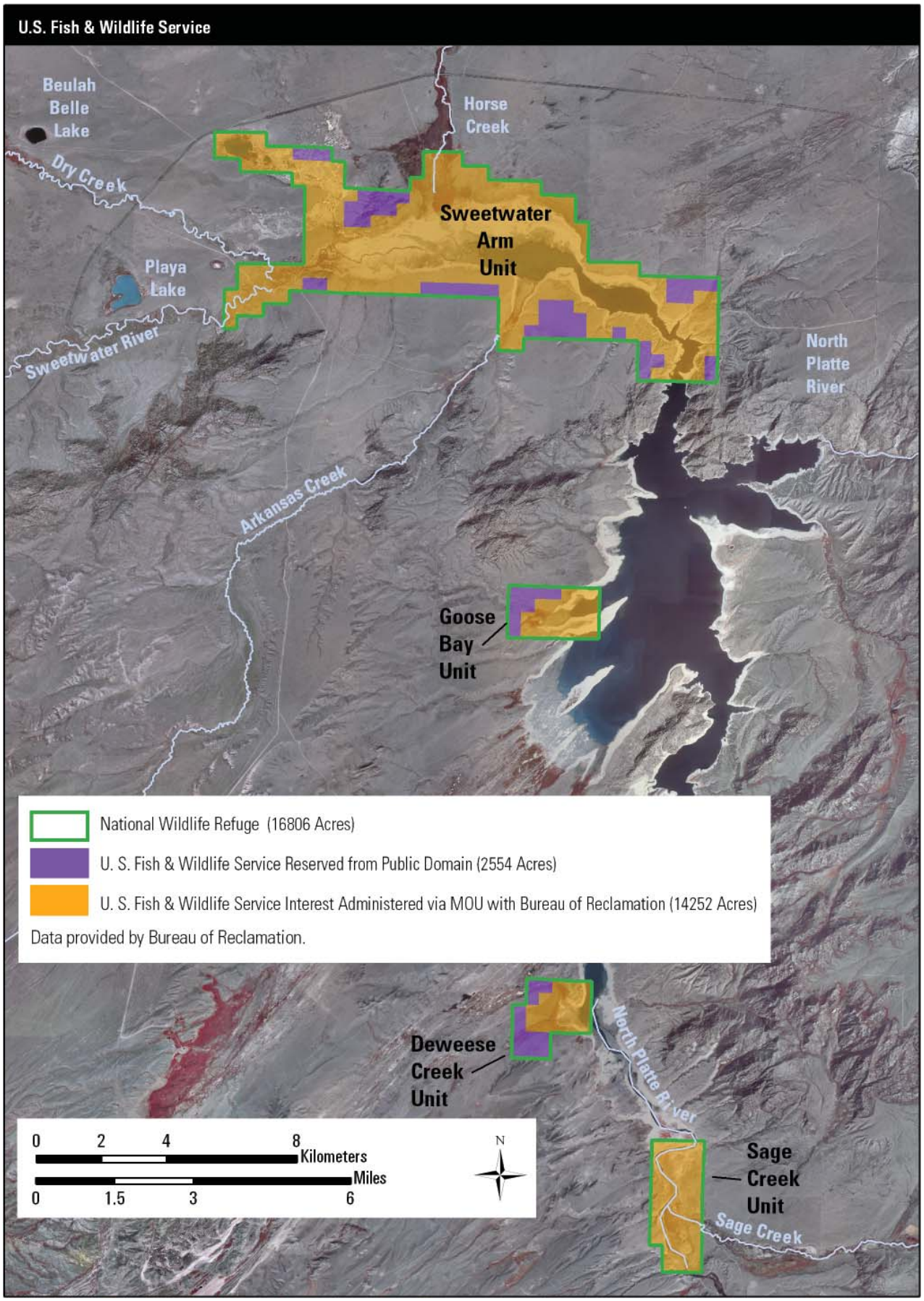


Figure 5. Base map of Pathfinder NWR, Wyoming.

2.5 GOALS

The Service also developed a set of goals for the refuge based on the Improvement Act, the refuge purpose, and information developed during project planning. The goals direct work toward achieving the vision and purpose of the refuge and outline approaches for managing refuge resources. The following five goals were identified for Pathfinder NWR.

Natural Resources Goal

Conserve the ecological diversity of uplands and wetlands to support healthy populations of native wildlife, with an emphasis on migratory birds.

Visitor Services Goal

Provide wildlife-dependent recreational opportunities to a diverse audience when the administration of these programs does not adversely affect habitat management objectives.

Partnerships Goal

Work with partners to support healthy populations of native wildlife and to increase the understanding of wildlife needs as well as the benefits wildlife offer to local communities.

Cultural Resources Goal

Identify and evaluate the cultural resources on the refuge and protect those that are determined to be significant.

Administrative Goal

Obtain administrative capabilities that will result in efficient strategies to manage the landscape to achieve habitat and public management goals.

2.6 PLANNING ISSUES

Several key issues were identified following the analysis of comments collected from refuge staff and the public, as well as a review of the requirements of the Improvement Act and the NEPA. Substantive comments (those that could be addressed within the authority and management capabilities of the Service) were considered during the formulation of the alternatives for future management. These key issues for Pathfinder NWR are summarized below.

Refuge Management

Pathfinder NWR is part of the Arapaho NWR Complex. Refuge staff are headquartered near Walden, Colorado, approximately a four-hour drive from the refuge. The complex's small staff size (four full-time employees), limited resources, and remote headquarters create management challenges for the refuge, including a lack of day-to-day oversight and minimal opportunities for law enforcement. Degrading infrastructure (specifically, roads, fences, and signs) and litter occur on the refuge due to lack of active management.

Management of Pathfinder Reservoir and refuge lands by multiple agencies creates additional management challenges. The Service currently has memorandums of agreement and understanding with a number of agencies in the Casper region including Reclamation, BLM, WGFD, and Natrona County. Reclamation has a withdrawal on Pathfinder Reservoir project lands to support project purposes (i.e., flood control, irrigation, and hydroelectric power generation). The Service has a withdrawal on refuge lands for wildlife management purposes. The roles and responsibilities of each agency should be clearly defined, evaluated, and simplified where possible during the CCP planning process.

Refuge Uses

Refuge uses (grazing and recreation) need to be evaluated to ensure existing and proposed uses are compatible with the purpose of the refuge and mission of the Refuge System. Refuge uses have not been actively evaluated over time due to minimal staff presence. Through the development of this CCP, refuge uses and management activities will be evaluated to ensure the best, most informed decisions are made for proper management of refuge lands. For a use to be deemed compatible, appropriate staff and resources must be available to manage the use.

Water Resources

Water and water availability are vital in semiarid regions. The Service does not own water rights for the refuge, which can result in poor wildlife habitat for trust species.

Water Level Fluctuation

During the past 20 years the average fluctuation of the reservoir water level was 20 feet per year with a range of 8–40 feet, resulting in a lack of shoreline vegetation and food source for migratory birds and nesting cover for waterfowl. The Bureau of Reclamation is responsible for managing reservoir water levels.

Separated Land Parcels

The refuge consists of four separate units. Separated land parcels are generally more difficult to access and manage than contiguous parcels of land, and generally of less value to wildlife.

Invasive Species

Invasive species are a threat to quality habitat. If not contained early, they can also drain resources. Tamarisk and Canada thistle have been identified on the refuge. An increase in monitoring, management, and control of these and other invasive species is needed.

Research and Science

The Service needs to obtain good baseline data for the refuge. Monitoring programs need to be implemented for species that use the refuge. Audubon Wyoming could be a partner in gathering quality research data on the refuge.

Partnerships

Cooperation with other agencies is needed to address issues of common concern. Opportunities for the public to assist in the protection and management of the refuge should be identified and provided. Local conservation groups could help raise funds for the refuge either directly or by lobbying state and federal representatives.

Staffing

The refuge should be managed by Service staff stationed in Wyoming. This issue was raised frequently in public meetings. The managing staff is currently headquartered at Arapaho NWR in Walden, Colorado, a four-hour drive from the refuge. The remote location of staff prevents active, consistent oversight of the refuge.

3 Alternatives

Bob Hines /USFWS

Pricklypear

This chapter describes the management alternatives considered for Pathfinder NWR. Alternatives are different approaches to planning unit management designed to achieve:

- the refuge's purpose, vision, and goals
- the mission of the Refuge System
- the mission of the Service

3.1 ALTERNATIVES DEVELOPMENT

Alternatives are formulated to address the significant issues, concerns, and problems identified by the Service, the public, and the governmental partners during public scoping and throughout the development of the draft plan.

This chapter contains the following sections:

- elements common to all alternatives
- description of alternatives
- summary of alternatives and environmental consequences (table 2)

This chapter describes three management alternatives that represent different approaches to enhance protection and restoration of fish, wildlife, plants, habitats, and other resources. Alternative A, the no-action alternative, describes ongoing refuge management. The no-action alternative is a basis of comparison with alternatives B and C. Alternative C is the Service's proposed action and basis for the draft CCP (chapter 6).

The planning team assessed biological conditions and external relationships affecting the refuge. This information contributed to the development of alternatives, each of which presents a unique approach for addressing long-term goals. Each alternative was evaluated based on expected progress in meeting the vision and goals of the refuge and how it would address core wildlife and habitat issues and threats. Where data are available, trends in habitat and wildlife are evaluated, and the environmental consequences of each alternative are projected.

3.2 ALTERNATIVES CONSIDERED BUT ELIMINATED

No alternatives were considered but eliminated during the planning process.

3.3 ELEMENTS COMMON TO ALL ALTERNATIVES

Several elements of refuge management are common to all alternatives. Management activities that could affect natural, archaeological, and historical resources would comply with applicable laws, regulations, and policies.

All alternatives would provide equal protection and management of cultural resources. Individual projects may require additional consultation with the Wyoming State Historic Preservation Office. Additional consultation, surveys, and clearance may be required when activities could affect properties eligible for the National Historic Register.

3.4 DESCRIPTION OF ALTERNATIVES

Management actions to advance the mission of the Refuge System and the purpose and vision of Pathfinder NWR are summarized below. The alternatives reflect options to address significant threats, problems, and issues raised by public agencies, private citizens, and interested organizations.

Each alternative differs in its ability to achieve long-term wildlife and habitat goals. However, each is similar in its approach to managing the refuge. Each alternative

- would pursue the goals outlined in chapter 2;
- would be consistent with the purpose of the refuge and with the mission and goals of the Refuge System.

The focus and actions for each of alternatives A–C are described below.

Alternative A—Current Management Plan (No Action)

Alternative A, the no-action alternative, reflects the current management of Pathfinder NWR. It provides the baseline against which to compare other alternatives. It is also a requirement of the NEPA that a no-action alternative is addressed in the planning process.

The no-action or current management alternative should not be interpreted to mean no change in refuge management. National wildlife refuges are required to be managed in compliance with Refuge System laws, regulations, and policies. The CCP process provides an opportunity to review and update current refuge management to comply with Refuge System laws, regulations, and policies.

Under alternative A, management activity being conducted by the Service would remain the same. The Service would not develop any new management, research, restoration, education, or visitor services programs at the refuge. Current habitat and wildlife practices benefiting migratory bird species and other wildlife would not be expanded or changed. No new funding or staff levels would occur and programs would continue to follow the same direction, emphasis, and intensity as they do at present.

Refuge Administration

The Bureau of Reclamation would continue to administer lands within the Pathfinder Project boundary. The Service would continue to manage the area within the refuge boundary as a national wildlife refuge in accordance with the MOU between Reclamation and the Service (appendix D). Management agreements would be reviewed to provide a better understanding of the roles and responsibilities of each party.

Refuge Uses

Existing refuge uses would be evaluated to determine if the use is appropriate on a refuge (appendix E). If the use is found to be appropriate, a compatibility determination would be made before the use is allowed to occur on the refuge (appendix F).

USFWS

Ground squirrel.

Habitat Management

Reservoir (Deepwater)

Reclamation would continue to manage the water levels of the Pathfinder Reservoir. The Service would continue to own no water rights and have no control over the reservoir water level.

Wetlands and Riparian Areas

No management of refuge wetlands would occur due to the Service's lack of water rights and limited infrastructure. Riparian habitats and wetlands in the Steamboat Lake area of the Sweetwater Arm Unit and Goose Bay Unit would continue to receive water based on natural runoff and hydrological processes.

Uplands

Uplands habitat management would continue to consist of grazing the refuge in conjunction with adjacent BLM grazing allotments. The grazing program would continue to be administered by the BLM through an MOA between the Service and the BLM.

The lack of boundary fencing on the refuge would continue to prohibit management of the grazing program to Service standards. An evaluation of upland habitat conditions would assist refuge staff in determining appropriate grazing program as a habitat management tool. Current stocking rates, duration, seasons, and so forth would continue until data analysis indicates further management direction.

Threatened and Endangered Species and State Species of Concern

Management for threatened and endangered species and state species of concern would occur if they were discovered on the refuge. At the present time, no known threatened or endangered species or state species of concern use Pathfinder NWR.

Invasive Species

Monitoring and management of invasive species would continue at present levels with no active monitoring of invasive species occurring.

Visitor Services

Public use of the refuge would be evaluated to determine appropriate uses under the guidelines established in the Service's appropriate uses and compatibility policies.

Five of the six wildlife-dependent public uses (hunting, wildlife observation and photography, and environmental education and interpretation) would be maintained and encouraged to the extent possible. The sixth use, fishing, is not allowed on the refuge.

Hunting

All four units of the refuge would remain open to hunting of ducks, coots, mergansers, deer, and pronghorn in accordance with dates and regulations established by the Wyoming Game and Fish Commission. WGFD would assist with law enforcement activities related to hunting regulations on the refuge.

Fishing

The refuge is closed to fishing and would remain closed to fishing.

Wildlife Observation, Photography, Environmental Education, and Interpretation

The refuge would continue to provide wildlife observation, photography, environmental education, and interpretation opportunities. The Service would continue to partner with Audubon Wyoming to maintain the interpretive site off Highway 220 at the Sweetwater Arm Unit. Audubon Wyoming would continue to use the site for environmental education purposes.

Nonwildlife-dependent Recreation

Existing and proposed nonwildlife-dependent recreational uses such as picnicking, camping, water sports, motorboating, and sailing would be evaluated for appropriateness and compatibility with the purpose of the refuge. Uses that are found to be inappropriate or incompatible would be modified or eliminated.

Research and Science

Refuge staff would not conduct research on the refuge. Data collection would continue to be opportunistic in nature and performed mainly by other entities.

Partnerships

Existing refuge partnerships would be maintained, but no new partnerships would be developed or pursued. Refuge staff would continue to work with Audubon Wyoming toward the goals of habitat protection and restoration, public education and awareness, and data collection at the refuge.

Operations

The refuge would continue to be managed by Service staff headquartered at the Arapaho NWR near Walden, Colorado.

Alternative B—Enhanced Refuge Management

Under Alternative B, refuge management activities would be increased and enhanced. Refuge habitats

would be actively managed to achieve refuge goals and objectives. Refuge staff would strive to better understand the effects of management actions on the refuge. An emphasis on adaptive management, including monitoring the effects of habitat management practices and use of the research results to direct ongoing management, would be a priority. Partnerships would be essential to accomplish these actions.

Refuge Administration

Management agreements would be reviewed and updated, where appropriate, to provide a better understanding of the roles and responsibilities of each party.

Refuge staff would investigate potential land exchanges with other agencies to block out the refuge boundary.

Refuge Uses

Proposed uses on refuge lands would be evaluated to determine if the use is appropriate on a refuge (appendix E). If the use is found to be appropriate, a compatibility determination would be made before the use is allowed to occur on the refuge (appendix F). Nonwildlife-dependent recreational uses would not be permitted on the refuge.

Habitat Management

Reservoir (Deepwater)

Reclamation would continue to manage the water levels of Pathfinder Reservoir. The Service would continue to own no water rights and have no control over the reservoir water level.

Wetlands and Riparian Areas

No management of refuge wetlands would occur due to the Service's lack of water rights and limited infrastructure. Riparian habitats and wetlands in the Steamboat Lake area and Goose Bay units would continue to receive water based on natural runoff and hydrological processes.

Uplands

Refuge personnel would work with the BLM to evaluate the grazing program to ensure grazing regimes meet wildlife objectives. The existing MOA (contract #14-06-700-4737) between the Service and the BLM, whereby BLM administers grazing, would be reviewed by both agencies and amended as needed or revoked. Fencing and other infrastructure needed to facilitate a grazing program would be evaluated and addressed. Uplands management would continue to use grazing as a habitat management tool under special use permit. Refuge grazing programs (stocking rates, duration, and seasons) would be evaluated to determine whether grazing would be used as a habitat management tool. Boundary fencing would be installed, where appropriate, to permit active management of the grazing program.

The use of additional habitat management tools (e.g., prescribed fire, mechanical, chemical) would be considered where appropriate.

Threatened and Endangered Species and State Species of Concern

Monitoring for the presence of threatened and endangered species and state species of concern on the refuge would be increased.

Invasive Species

Monitoring and management of invasive species on the refuge would be increased.

Visitor Services

The six priority wildlife-dependent public uses and supporting programs would be enhanced and expanded. A step-down management plan would be developed to address refuge access, circulation, facility, and infrastructure needs.

Hunting

All four units of the refuge would remain open to hunting of ducks, coots, mergansers, deer, and pronghorn in accordance with dates and regulations established by the Wyoming Game and Fish Commission. Hunting programs would be enhanced to provide a higher-quality hunt where possible.

Fishing

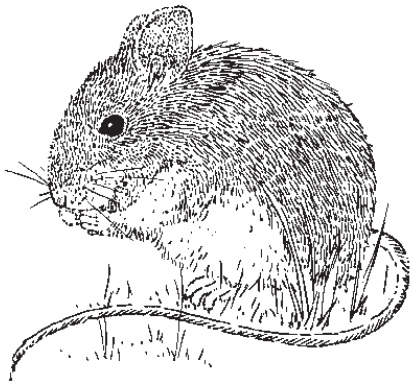
Refuge staff would consider opening the refuge to fishing through the CFR process. A compatibility determination would be performed to ensure compliance with refuge goals and objectives. Boating would be controlled to minimize impacts to migratory bird species. Fishing would be permitted year-round in accordance with dates and regulations established by the Wyoming Game and Fish Commission, except where otherwise posted.

Wildlife Observation, Photography, Environmental Education, and Interpretation

Efforts to provide wildlife observation, photography, environmental education, and interpretation opportunities on the refuge would be expanded. The interpretive overlook off Highway 220 in the Sweetwater Arm Unit would be maintained and enhanced. The Service would continue to partner with Audubon Wyoming to expand opportunities for these four uses on the refuge.

Nonwildlife-dependent Recreation

Nonwildlife-dependent recreational uses such as picnicking, camping, water sports, motorboating, and sailing would not be permitted on the refuge.



Deer Mouse

Facilities and infrastructure that support these uses would be modified or removed as expediently as possible.

Research and Science

Baseline data for habitat and wildlife on the refuge would be acquired. Refuge staff would partner with universities and other entities to collect baseline data to identify refuge resources and obtain a better understanding of the effects of management activities.

Partnerships

Increased emphasis would be placed on maintaining existing and developing new partnerships to achieve refuge goals and objectives. Efforts would be increased to focus research-based partnerships on collecting baseline data for the refuge.

Operations

The refuge would be managed by Service staff headquartered at Arapaho NWR near Walden, Colorado. One additional full-time employee would be hired to perform increased management activities at Pathfinder NWR and at three refuges located near Laramie known collectively as the "Laramie Plains refuges" (Bamforth, Hutton Lake, and Mortenson Lake). Additional funding would be required to fully implement the goals, objectives, and strategies described in this alternative.

Alternative C—Modify Refuge Boundary (Proposed Action)

Under Alternative C, the refuge boundary would be modified to remove areas from the refuge that provide minimal opportunity to improve wildlife habitat and are difficult to manage. Remaining refuge areas would be managed similar to those actions described in alternative B. Modifying the refuge's boundary would enable the Service to focus efforts on manageable lands, thereby enhancing refuge management and efficiently directing refuge resources toward accomplishing the mission of the Refuge System.

History and Development of the Refuge

Pathfinder Dam construction was completed in 1909. The dam created Pathfinder Reservoir, the first reservoir on the North Platte River. At the same time, Pathfinder NWR was established as an overlay refuge on the reservoir. This large body of water was very attractive to waterbirds, as it was a unique feature along the North Platte River in Wyoming. From 1905 to 1924, over 2,000 miles of canals, laterals, and drains were dug across Wyoming and Nebraska. As these canals were completed, Reclamation initiated plans to build more dams along the North Platte River. Ultimately, a number of dams were built downstream of Pathfinder Reservoir. Upstream dams were also built, and the waters of the North Platte River pass through Seminoe and Kortes dams before entering Pathfinder Reservoir (Autobee 1996).

In 1928, the Guernsey Dam and Power Plant were constructed, expanding the purpose of Pathfinder Reservoir to include the generation of hydroelectric power.

With the building of subsequent dams on the North Platte River, and the expanded use of Pathfinder Reservoir, the Service's ability to manage Pathfinder NWR to benefit migratory bird species was limited. A 1964 memorandum from the Bureau of Sport Fisheries and Wildlife to the Wyoming State Office of the Bureau of Land Management indicates the issues and concerns regarding management of the refuge and the decision to delete lands from the refuge. Below is an excerpt from this memorandum:

> *The Bureau of Sport Fisheries and Wildlife has become increasingly concerned with the decline in waterfowl use of the reservoir. This is attributed to various ecological changes resulting from Bureau of Reclamation activities, particularly water manipulation. Recreation pressure is also increasing and the trend is expected to continue. The popularity of this site for boating and fishing has contributed to the dilemma.*
>
> *We have concluded that rather than continue extensive management of the entire area, it will be more worthwhile from a wildlife management viewpoint to develop and intensively manage only those portions that have existing and potential waterfowl attraction.*

In 1964, Pathfinder NWR was reduced from 48,353 acres to 16,806 acres. Current refuge lands include the Sweetwater Arm, Goose Bay, Deweese Creek, and Sage Creek units.

The present-day refuge lands were thought to have either existing or potential waterbird habitat. A few years following the initial reduction in refuge lands, however, the BSFW discovered that it did not have water rights to pursue the development of waterbird habitat. The following excerpt from the refuge's 1966 annual narrative report (BSFW) documents the BSFW's efforts to acquire water rights for the development of shallow-water wetlands at Pathfinder NWR:

> *After several years of hesitant water development, all with the permission of the Bureau of Reclamation, which has primary use of the Pathfinder [Reservoir] waters, an effort was made this year to determine if any water was legally available to our Bureau. On July 13, Messrs. Godby and Nitisahke(sp) of the Regional Office and the refuge manager met in a special session with officials of the Bureau of Reclamation in their Denver office to discuss our possible filing on apparently unclaimed waters. It had appeared that there were some old water rights which had fallen to disuse on the Sweetwater River and its tributary, Horse Creek. The refuge hopes lay in claiming these rights so that ponds and crops could be developed for waterfowl.*
>
> *It was finally brought to light at this meeting that there were no unclaimed waters, that the Bureau of Reclamation had purchased said waters and transferred them to the reservoir pool as project water for the users downstream, and that the Bureau of Reclamation never has any water rights, anyway, since they are purchased solely for the water districts.*
>
> *It now appears that, unless an outside chance of drilling a legal deep well avails itself, we are left without hope of additional water development on the refuge. This about pulls the props out from under any extensive program plans we may have treasured in our minds.*

Since that time, development of the refuge units for water management purposes has been nonexistent. Further complications with water rights have arisen since the signing in July 1997 of the North Platte River Compact, a three-state agreement between Colorado, Nebraska, and Wyoming to provide water for the life-cycle needs of endangered species in the North Platte River system. Water must be delivered downstream to be in compliance with this compact, further influencing the significant water fluctuations at Pathfinder Reservoir. The benefits to the endangered species downstream are vital, and the compact must be adhered to by the Service and the three states involved.

Areas to Be Removed from the Refuge

The areas that would be removed from the refuge include the eastern half of the Sweetwater Arm Unit and the Goose Bay, Deweese Creek, and Sage Creek units in their entirety. These areas would remain in federal ownership under the administrative jurisdiction of Reclamation or the BLM. Areas within the Reclamation Pathfinder Project boundary would be managed by the Reclamation or its designee, and areas outside the project boundary would be returned to the public domain administered by the BLM (figure 6).

Sweetwater Arm Unit (eastern half)

While the large open water areas of the reservoir provide resting habitat for migratory birds, reservoir levels affect habitat, and the Service has no control over the water management of the reservoir. These areas that fall outside the proposed refuge boundary would continue to provide resting habitat for migratory birds in the future without Service oversight and management.

Due to the fluctuations in reservoir water levels (figure 7) and the dry, sandy soils at Pathfinder NWR, most of the wetland areas along the reservoir shoreline do not provide submergent or emergent vegetation for waterfowl and do not meet habitat requirements for trust species.

These fluctuations also impact the uplands in the eastern half of the Sweetwater Arm Unit. As shown in the photograph below of the area, these upland areas have little vegetation and are dominated by sandy soils, producing marginal habitat (at best) for upland-obligate species.

Goose Bay, Deweese Creek, and Sage Creek Units

The Goose Bay, Deweese Creek, and Sage Creek units of Pathfinder NWR are small, isolated tracts of land located at the southern end of the Pathfinder

Mark Ely/USFWS

Sand deposits in the uplands in the eastern half of Sweetwater Arm Unit.

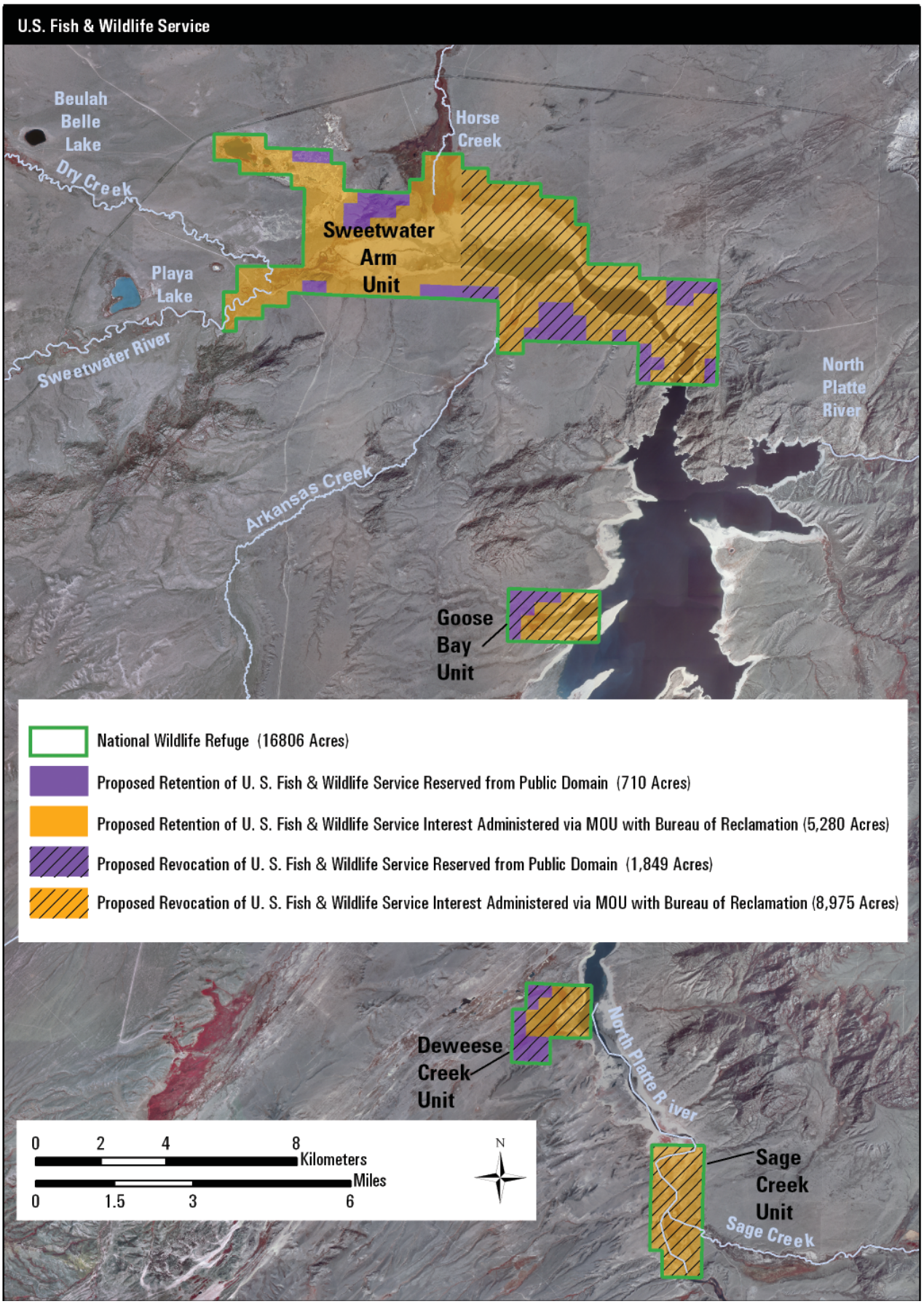


Figure 6. Areas to Be Removed from Pathfinder NWR, Wyoming.

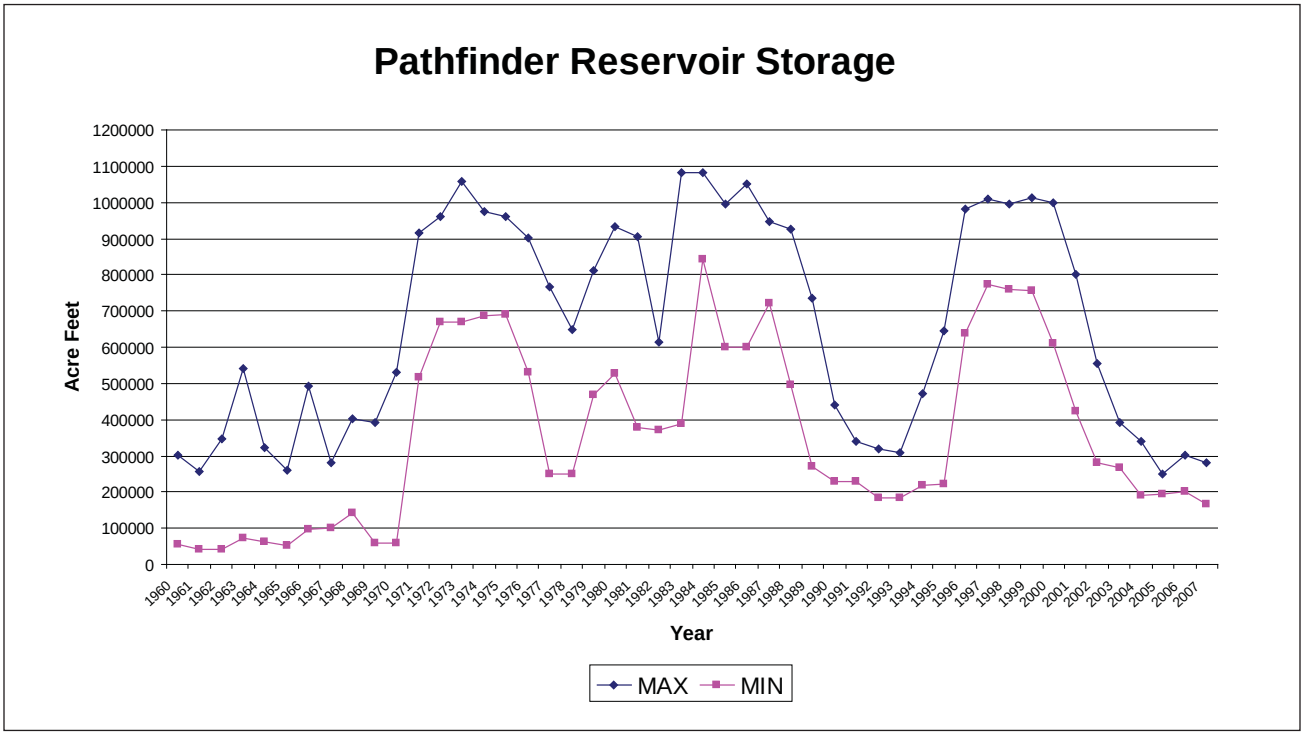


Figure 7. Pathfinder Reservoir storage.
(Source: Bureau of Reclamation.)

Reservoir. These tracts are 1,120 acres, 1,120 acres, and 1,520 acres, respectively. They consist primarily of sagebrush, with this habitat type occurring on 838 acres, 665 acres, and 1,207 acres, respectively. Adjacent lands consist primarily of similar sagebrush upland habitat managed by the BLM.

The Goose Bay unit has 3–4 wetland areas that appear to be spring fed. The Deweese Creek Unit is adjacent to a number of alkaline wetlands. The North Platte River and Sage Creek bisect the Sage Creek Unit.

All four units are heavily influenced by reservoir operations. Reservoir water-level fluctuations can be such that refuge lands are rendered dry, with a stretch of sandy shoreline abutting greasewood, rock, and sage uplands.

Refuge Administration

Areas that remain within the refuge boundary would continue to be managed by the Service in accordance with the MOU between Reclamation and the Service that established roles and responsibilities for each agency (appendix D).

Refuge lands would be roughly defined by the area west of Horse Creek to the current west refuge boundary including the Steamboat Lake area, reservoir backwater areas, and the Sweetwater River section currently within the boundary of the Sweetwater Arm Unit. Areas east of this region are highly influenced by reservoir operations, thereby decreasing habitat quality for migratory birds.

Areas west of Horse Creek are less influenced by fluctuating reservoir levels and do not contain steep cutbanks with blowing sand.

The area of contiguous lands would be posted and managed as a national wildlife refuge, which would help promote the Service's mission and rectify the situation of intermingled agency lands with little signage or fencing to delineate federal land ownership and allowed public uses.

Management agreements would be reviewed and updated or terminated as appropriate to address management of remaining refuge lands.

Refuge staff would investigate potential land exchanges with other agencies to round out the refuge boundary.

Refuge Uses

Existing uses on remaining refuge lands would be evaluated to determine if the use is appropriate on a refuge (appendix E). If the use is found to be appropriate, a compatibility determination would be made before the use is allowed to occur on the refuge (appendix F). Compatibility determinations for proposed refuge uses are included in this draft plan (appendixes G–J). If an existing use is not appropriate, it would be eliminated or modified as expeditiously as practicable.

Uses occurring on lands that are removed from the refuge boundary would not be subject to Service

laws, regulations, and policies and may continue to occur under management by Reclamation and/or BLM or its respective designee.

Habitat Management

Reservoir (Deepwater)

Deep, open water outside the Service's sphere of management would continue to provide resting habitat for migratory bird species and serve as resting habitat under management by Reclamation or its respective designee (that is, without a Service presence). Areas defined by steep, sandy cutbanks and influenced annually by water manipulations would be removed from the MOU between the Service and Reclamation (appendix D).

Wetlands and Riparian Areas

No management of refuge wetlands would occur due to lack of water rights and infrastructure. Riparian areas and wetlands in the Steamboat Lake area would continue to receive water based on natural runoff and hydrological processes.

Uplands

The existing MOA (contract #14-06-700-4737) between the Service and the BLM, whereby BLM administers grazing, would be reviewed by both agencies and amended as needed or revoked. Fencing and other infrastructure needed to facilitate a grazing program would be evaluated and addressed. Uplands management would continue to use grazing as a habitat management tool under special use permit. The grazing program (stocking rates, duration, and seasons) would be evaluated to determine appropriate grazing methods. Boundary fencing would be installed to permit active management of the grazing program.

The use of additional habitat management tools (e.g., prescribed fire, mechanical, chemical) would be considered where appropriate.

Threatened and Endangered Species and State Species of Concern

Monitoring for the presence of threatened and endangered species and state species of concern on the refuge would be increased.

Invasive Species

Monitoring and management of invasive species on the refuge would be increased.

Visitor Services

Hunting

The refuge would continue to be open to hunting of ducks, coots, mergansers, deer, and pronghorn in accordance with dates and regulations established by the Wyoming Game and Fish Commission. Hunting programs would be enhanced to provide a higher-quality hunt or expanded where possible.

Fishing

Refuge staff would consider opening the refuge to fishing through the CFR process. A compatibility determination would be performed to ensure compliance with refuge goals and objectives. Boating would be controlled to minimize impacts to migratory bird species. Fishing would be permitted year-round in accordance with dates and regulations established by the Wyoming Game and Fish Commission, except where otherwise posted. Modification of the refuge boundary may result in the loss of some fishing habitat.

Wildlife Observation, Photography, Environmental Education, and Interpretation

Efforts to provide wildlife observation, photography, environmental education, and interpretation opportunities on the refuge would be expanded. The interpretive overlook off Highway 220 in the Sweetwater Arm Unit would be maintained and enhanced. The Service would continue to partner with Audubon Wyoming to expand opportunities for these four uses on the refuge. With appropriate planning, this area could be used to educate the public on the differences between Reclamation, BLM, and Service lands and land management directives.

Nonwildlife-dependent Recreation

Nonwildlife-dependent recreation would not be permitted on the refuge.

Research and Science

Baseline data for habitat and wildlife on the refuge would be acquired. Refuge staff would partner with universities and other entities to collect baseline data to identify refuge resources and obtain a better understanding of the effects of management activities.

Partnerships

Regional office and refuge staff would work with Reclamation, the BLM, Natrona County, and WGFD to accomplish refuge boundary modification. The CCP would identify lands to be eliminated from the refuge boundary, and establish the process and timeline by which to complete the boundary modification.

Greater emphasis would be placed on maintaining existing and developing new partnerships to achieve refuge goals and objectives. Efforts would be increased to focus research-based partnerships on collecting baseline data for the refuge.

Operations

The refuge would be managed by Service staff headquartered at the Arapaho NWR near Walden, Colorado. One additional full-time equivalent (FTE) would be hired to perform increased management activities at Pathfinder NWR and the Laramie Plains refuges.

3.5 COMPARISON OF ALTERNATIVES AND ENVIRONMENTAL CONSEQUENCES

Table 2 provides descriptions of management actions and environmental consequences by resource and use topics for each of the three alternatives.

Table 2. Comparison of management alternatives and environmental consequences for the draft CCP and EA, Pathfinder NWR, Wyoming.

Alternative A (No Action)	*Alternative B*	*Alternative C (Proposed Action)*
REFUGE ADMINISTRATION—Management Actions		
Reclamation administers all lands within the Pathfinder Project boundary for project purposes (irrigation, flood control, hydroelectric power generation). The Service manages refuge lands for wildlife purposes.	*Same as alternative A, plus* review, update, and/or terminate management agreements where appropriate. Investigate potential land exchanges with other agencies to round out the refuge boundary.	*Same as alternative B, except* lands eliminated from refuge boundary (the Goose Bay, Deweese Creek, and Sage Creek units and portions of the Sweetwater Arm Unit) revert to prerefuge administrative status (i.e., Reclamation, BLM).
REFUGE ADMINISTRATION—Environmental Consequences		
Differing missions and overlaying responsibilities of managing agencies (Reclamation, BLM, Service) can hinder agencies' individual and combined effectiveness at managing lands and contribute to habitat degradation.	Agency coordination would be improved and roles would be clarified, resulting in improvement of habitat conditions to support migratory bird species.	*Same as alternative B, except* concentrating resources on manageable lands would allow limited funds to be spent on a smaller area that meets the Service mission (quality migratory and resident bird habitat).
RESERVOIR (DEEPWATER) HABITAT—Management Actions		
No management of reservoir water levels for migratory bird species and other wildlife.	*Same as alternative A.*	*Same as alternative A.*
RESERVOIR (DEEPWATER) HABITAT—Environmental Consequences		
The reservoir would continue to provide resting areas for waterfowl and other migratory bird species during spring and fall migration. Emergent vegetation along the shoreline of the reservoir, which provides a food source for migratory birds and other wildlife, would be minimally present due to fluctuations in water levels (20 ft/yr) and resulting steep, sandy cutbanks that prohibit vegetation growth.	*Same as alternative A.*	*Same as alternative A.*

Table 2. Comparison of management alternatives and environmental consequences for the draft CCP and EA, Pathfinder NWR, Wyoming.

Alternative A (No Action)	*Alternative B*	*Alternative C (Proposed Action)*
WETLANDS AND RIPARIAN HABITAT—Management Actions		
Provide playas and wetlands for the benefit of waterfowl, shorebirds, and other migratory bird species. The Service has no water rights on the refuge, and North Platte River depletion issues preclude the acquisition of water rights and/or development of impoundments on the refuge.	Increase efforts to monitor and manage refuge wetlands and riparian areas through partnerships and other means.	*Same as alternative B.*
WETLANDS AND RIPARIAN HABITAT—Environmental Consequences		
Playas and impoundments would continue to fill and dry as natural processes dictate, with no management actions to influence them. Management actions for habitats below the reservoir high water line would be subject to the impacts of inundation if the reservoir water level rises. Few options would exist for effective habitat management on wetland areas.	*Same as alternative A, except* by studying the wetland characteristics, refuge staff and partners could develop potential management actions that may improve wetlands for the benefit of waterfowl and waterbirds.	*Same as alternative B, except* Goose Bay, Deweese Creek, and Sage Creek units would no longer be part of the refuge.
UPLANDS HABITAT—Management Actions		
Graze uplands in conjunction with BLM allotments. BLM administers grazing program through MOA.	Evaluate effectiveness of grazing program, and alter where necessary, to achieve refuge objectives. Consider other upland management techniques (chemical, mechanical, prescribed fire).	*Same as alternative B.*

Table 2. Comparison of management alternatives and environmental consequences for the draft CCP and EA, Pathfinder NWR, Wyoming.

Alternative A (No Action)	*Alternative B*	*Alternative C (Proposed Action)*
UPLANDS HABITAT—Environmental Consequences		
Grazing would continue to occur on adjacent BLM lands. A lack of Service coordination with BLM would result in grazing on the refuge that may not be compliant with refuge policy. Updating the grazing program may affect BLM permittees. Continued unanalyzed impacts from grazing could result in criticism that the Service is not appropriately managing lands in the Refuge System.	Increased monitoring and evaluation of grazing effects would assist with management decisions. Some fencing would likely be constructed in the Sweetwater Arm Unit of the refuge. The Goose Bay, Dewesse Creek and Sage Creek Units would likely remain unfenced due to the fact that fencing small units may be detrimental to wildlife. Small, fenced parcels impede migration and animal movement. Grazing operations for BLM permittees may be affected. Small, isolated parcels and areas with steep, sandy cutbanks would remain difficult to manage for grazing purposes.	Increased monitoring and evaluation of grazing impacts would assist with management decisions. A smaller area (less refuge uplands) would need to be managed. Better ability to control and implement grazing program per refuge policy due to a smaller geographical area and removal of isolated parcels from the refuge. Better ability to fence refuge areas (gentle slopes of backwater and riparian areas are better suited to fencing and posting).
THREATENED AND ENDANGERED SPECIES AND STATE SPECIES OF CONCERN—Management Actions		
Manage for threatened and endangered species as discovered on the refuge.	*Same as alternative A, plus* increase monitoring for presence of threatened and endangered species and state species of concern.	*Same as alternative B.*
THREATENED AND ENDANGERED SPECIES AND STATE SPECIES OF CONCERN—Environmental Consequences		
Federally listed species would be protected from intentional or unintended impacts by banning or modifying activities where these species occur. Threatened and endangered species and state species of concern may be present on refuge lands but would go undetected.	*Same as alternative A, except* threatened and endangered species and state species of concern would be detected sooner.	*Same as alternative B.*
INVASIVE SPECIES—Management Actions		
As funding is available, attempt to control invasive species in accordance with federal and state laws, policies, and guidelines.	Increase efforts to monitor and control invasive species through partnerships and other means. Consider additional management techniques (chemical, mechanical, prescribed fire).	*Same as alternative B.*

Table 2. Comparison of management alternatives and environmental consequences for the draft CCP and EA, Pathfinder NWR, Wyoming.

Alternative A (No Action)	*Alternative B*	*Alternative C (Proposed Action)*
INVASIVE SPECIES—Environmental Consequences		
Management of invasive species would continue to be reactionary (addressed when problems are identified and as resources permit). Some invasive species may become established or expand.	Proactive approach by refuge staff and partners to monitor for infestations and obtain the necessary resources would eradicate some invasive species from the units and prevent ones from becoming established.	*Same as alternative B, except* eradication efforts would be condensed, improving the Service's ability to eliminate or control invasive species.
VISITOR SERVICES, *Hunting*—Management Actions		
Continue hunting program but review for compatibility.	*Same as alternative A, plus* work with WGFD to evaluate and enhance hunting program.	*Same as alternative B.*
VISITOR SERVICES, *Hunting*—Environmental Consequences		
Unlimited vehicle access would negatively impact vegetation and wildlife. Limited law enforcement would increase potential for illegal hunting activities to occur.	*Same as alternative A, except* WGFD would be an active partner in addressing issues and effecting solutions.	*Same as alternative B, except* refuge areas would be easier to patrol for law enforcement purposes.
VISITOR SERVICES, *Fishing*—Management Actions		
Fishing is not permitted within the refuge boundary.	Consider opening the refuge to fishing through the CFR process. Partner with WGFD to evaluate and develop compatible fishing program.	*Same as alternative B.*
VISITOR SERVICES, *Fishing*—Environmental Consequences		
Loss of public fishing opportunity within refuge boundary. Lack of enforcement of refuge regulations.	Public opportunity for fishing within refuge boundary. Fishing program would be developed to be compatible with refuge purpose, goals, and objectives. WGFD would be an active partner in creating fishing program on the refuge, addressing issues, and effecting solutions.	*Same as alternative B, except* boundary modification may result in some loss of fishing habitat on refuge lands. Fishing opportunity for visitors to Pathfinder Reservoir would continue outside refuge boundary. Service regulations would not apply to reservoir areas outside the refuge boundary.
VISITOR SERVICES, *Wildlife Observation, Photography, Environmental Education, and Interpretation*—Management Actions		
Continue recreational wildlife observation and photography and limited opportunities for environmental education, and interpretation; review these uses for compatibility.	*Same as alternative A, plus* work with partners to formalize and enhance opportunities for wildlife observation and photography and to expand environmental education and interpretive programs.	*Same as alternative B.*

Table 2. Comparison of management alternatives and environmental consequences for the draft CCP and EA, Pathfinder NWR, Wyoming.

Alternative A (No Action)	*Alternative B*	*Alternative C (Proposed Action)*
VISITOR SERVICES, *Wildlife Observation, Photography, Environmental Education, and Interpretation*—Environmental Consequences		
With no formal tour routes or walking trails on the refuge, visitors likely walk into refuge habitats to observe and photograph wildlife, which may damage vegetation and disturb wildlife. Environmental education would likely occur without refuge staff's knowledge or management of it. Interpretation would continue to be limited to the overlook at Steamboat Lake.	Opportunities for wildlife observation and photography would be enhanced. Greater public awareness of the principles of ecology and refuge management would result.	*Same as alternative B.*
VISITOR SERVICES, *Nonwildlife-dependent Recreation*—Management Actions		
Existing nonwildlife-dependent recreational uses such as those at Bishops Point (boat ramp, campground, day use area, boating, jet skiing, ATV use, vehicle use, picnicking, biking, rock climbing, camping) would be evaluated under current Service policy. Inappropriate uses would be eliminated or modified.	*Same as alternative A.*	*Same as alternative A, except* recreational uses occurring outside the refuge boundary would not be subject to compliance with Service policy.
VISITOR SERVICES, *Nonwildlife-dependent Recreation*— Environmental Consequences		
Changes to public use of refuge areas may negatively impact recreation opportunities at Bishops Point (waterskiing, jet skiing, wind surfing, sailing, motorboating, ATV use, overnight camping, and campfires would be prohibited). The Service may experience a negative public image, as it would be restricting public uses that have been permitted for over 40 years.	*Same as alternative A.*	Off-refuge effects: existing recreational uses may continue to be permitted under management by Reclamation or its designee (Natrona County).
RESEARCH AND SCIENCE—Management Actions		
Continue opportunistic data collection by others under special use permit.	Increase data collection to enhance baseline data to guide management decisions.	*Same as alternative B.*
RESEARCH AND SCIENCE—Environmental Consequences		
Little more would be learned about habitat and wildlife use on the refuge's four units to help guide management decisions.	Acquiring baseline data would assist in management efforts to maintain or improve the units for the benefit of wildlife.	*Same as alternative B.*

Table 2. Comparison of management alternatives and environmental consequences for the draft CCP and EA, Pathfinder NWR, Wyoming.

Alternative A (No Action)	*Alternative B*	*Alternative C (Proposed Action)*
PARTNERSHIPS—Management Actions		
Continue to work with Audubon Wyoming and other groups as opportunities arise to manage refuge lands more efficiently.	*Same as alternative A, plus* expand efforts to develop and manage new partnerships to benefit the refuge.	*Same as alternative B.*
PARTNERSHIPS—Environmental Consequences		
Little improvement or repair to infrastructure would occur.	With assistance from partners, infrastructure improvements and an increase in active management may be seen.	*Same as alternative B.*
OPERATIONS—Management Actions		
Continue refuge administration by Arapaho NWR Complex staff located in Walden, CO. Retain current complex staffing of 4 FTEs. Continue the current level of funding to support refuge operations and maintenance. Monthly (April–October) visit(s) to refuge to assess refuge conditions and conduct wildlife surveys would occur.	*Same as alternative A, plus* hire one additional FTE to perform increased management activities on the refuge. Increase funding to support enhanced management efforts.	*Same as alternative B.*
OPERATIONS—Environmental Consequences		
Distance from the complex headquarters to the refuge would continue to impede proper management of the refuge. No specific annual funding would be earmarked for Pathfinder NWR, but special projects may arise through SAMMS. Continued minimal on-the-ground accomplishments and management of refuge units.	Improved on-the-ground accomplishments in refuge habitat conditions. Better ability to compete for limited funding. Isolated areas would see minimal improvements due to difficulty in managing them.	*Same as alternative B, except* isolated areas would be removed from refuge boundary.

4 Affected Environment

Dave Menke/USFWS

Sage Thrasher

Located in central Wyoming in a high plains basin near the headwaters of the Platte–Kansas Rivers ecosystem, Pathfinder NWR lies approximately 47 miles southwest of the city of Casper. Since the refuge was established on the Pathfinder Reservoir in 1909, many other reservoirs have been created, including Alcova to the north and Seminoe to the south, and the refuge no longer offers a unique environment for wildlife in this semiarid region of Wyoming.

This chapter describes the refuge's setting, as follows:

- physical environment
- biological resources
- cultural resources
- special management areas
- visitor services
- partnerships
- socioeconomic environment
- operations

4.1 PHYSICAL ENVIRONMENT

This section describes global warming as well as the climate, soils, water resources, and air quality at the refuge.

Global Warming

The U.S. Department of the Interior issued an order in January 2001 requiring federal agencies under its direction that have land management responsibilities to consider potential climate change effects as part of long-range planning endeavors.

The U.S. Department of Energy's report, "Carbon Sequestration Research and Development," concluded that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere. The report defines carbon sequestration as "the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere" (U.S. Department of Energy 1999).

The increase of carbon dioxide (CO_2) within the earth's atmosphere has been linked to the gradual rise in surface temperature commonly referred to as "global warming." In relation to comprehensive conservation planning for Refuge System units, carbon sequestration constitutes the primary climate-related effect to be considered in planning.

Climate

The annual precipitation as recorded at Pathfinder Dam averages 9.55 inches (Western Regional Climate Center [WRCC]). The average maximum temperature is 58.3°F, average minimum temperature is 33.4°F, and extremes range from a summer high of approximately 100°F to a winter low of approximately –40°F (WRCC). High winds buffet the area in all seasons, creating ground blizzard conditions in winter and windblown deposition of soils in the spring through fall.

Physiography

The Pathfinder Reservoir area consists almost entirely of Miocene age tertiary sediments with outcrops of Precambrian granite. A small area of quarternary alluvial bedrock is found on the west end of the Sweetwater Arm Unit, as well as small deposits of dune sand or loess (loamy deposits) on the Deweese Creek Unit (Larson and Letts 2003). There is little indication of geologic influence from glaciation, and the North Platte River primarily cuts through the granite in the area, creating spectacular canyons but little in the way of flood plains. The Sweetwater River, when reservoir conditions reveal it, seems to have had some history of meandering, and the formation of a flood plain with it. Shifting sand areas (dunes) occur on the western shore of the reservoir and further to the southwest. The high water mark of the reservoir is 5,850 feet, but lands are regularly exposed below this elevation. The highest point on the refuge is a 6,360-foot rock outcrop on the northwest portion of the Sweetwater Arm Unit.

Soils

Soils in the Sweetwater Arm Unit, located in Natrona County, are comprised of 13 different soil types. Soils found in the eastern half of the unit include Bosler-Alcova, Haverdad-Clarkelen, Delphill-Blazon, and Bronsto-Lupinto, and McFadden-Edin-Blackhall. Soils found in the western half of the unit include Zeomont-Ryan Park, Rock River-Ryan Park, Havermom, and Aquic Ustifluvents.

The west and east portions of the Sweetwater Arm Unit share four common soil types including Rawlings-Rock River, Rock Outcrop, Ryan Park, and the Typic Fluvaquents found in the Horse Creek area. The soil range includes saline subirrigated, loamy, shallow loamy, shallow sandy, sandy, and very shallow.

Mark Ely/USFWS

Soils at Pathfinder NWR, Wyoming

The three most common soil types across the Sweetwater Arm Unit are Ryan Park (in the eastern half) and Typic Fluvaquents and Aquic Ustifluvents (in the western half). Ryan Park is a sandy soil, which creates the blowing, sandy conditions depicted in the photograph of the eastern half of the Sweetwater Arm Unit in chapter 3. The more common soils in the western half of the unit, including Havermom, are subirrigated soils, which provide better growing conditions for vegetation. The sandy soil types (Rawlins-Rock River and Rock River-Ryan Park) in the western half of the unit are less impacted by reservoir operations. One area of Ryan Park in the western half of the unit abuts the reservoir on the south side of the water body.

Water Resources, Hydrology, and Water Rights

The refuge is situated on portions of the Bureau of Reclamation's Pathfinder Reservoir. The reservoir's dam, located on the North Platte River and backing water flowing in from the Sweetwater River, impounds 1,016,000 acre-feet. The reservoir serves as part of the North Platte Project, explained in chapter 2.

Water on the refuge's four units—the main Sweetwater Arm Unit and the satellite Goose Bay, Deweese Creek, and Sage Creek units—flows into the North Platte River. Reclamation retains ownership of all appurtenant state-based water rights. All of the state-based water rights appurtenant to the formerly ranched lands withdrawn for the reservoir are North Platte Project water and part of the reservoir pool, which

is maintained on behalf of the downstream water users who entered into repayment contracts for the construction of the project. The Service cannot obtain or purchase state-based water rights for this refuge, due to the lack of enabling legislation.

The Service may hold federal reserved water rights for refuge purposes on 2,554 acres of land withdrawn from the public domain. These public lands were outside earlier Reclamation withdrawals, and, prior to withdrawal, were administered by the BLM.

Four perennial streams on the Sweetwater Arm Unit empty into the reservoir: the Sweetwater River, Dry Creek, Arkansas Creek, and Horse Creek. Upstream of the reservoir pool, all of these streams are relatively free-flowing, with only small on-stream irrigation reservoirs. The largest of the four streams is the Sweetwater River, which has a watershed area of 2,338 square miles upstream of a USGS gauge, located 7 miles upstream of the reservoir. The station has been in operation from 1914 to 1924 and from 1939 to the present. A gauging station (USGS 06639500) was operated on Horse Creek near the dam from 1915 to 1924. The drainage area of Horse Creek at the gauging station was 117 square miles.

Stream discharge generally peaks from snowmelt and precipitation runoff in May and is at its lowest levels in September. Former oxbows of the Sweetwater River receive spring flood flows and serve as seasonal marshes. USGS gauging station records indicate the mean annual production is approximately 91,200 acre-feet for the Sweetwater River and approximately 2,400 acre-feet for Horse Creek.

The Sweetwater Arm Unit contains former ranchland that had several irrigation ditches. The Bothwell ditches divert water from the Sweetwater River, and the Smith ditches divert water from Horse Creek. The lands these ditches irrigated were designated to be inundated by Pathfinder Reservoir. However, over the years, the reservoir's storage obligations have decreased and some of the lands are not underwater. These state-based water rights were adjudicated and have not been abandoned. Table 3 shows the irrigation rights held by Reclamation for the Sweetwater River and Horse Creek.

Approximately 1,794 acres of the Sweetwater Arm Unit were withdrawn from the public domain for wildlife purposes. Because the federal government has not been enjoined into a general stream adjudication for Sweetwater and Horse creeks, and since it is not known if water was available for appropriation at the time of withdrawal, it is not known if the Service holds federal reserved water rights appurtenant to the reserved lands.

The Soda Lakes area contains a series of small, seep-fed alkali ponds. The ponds are shallow, and some dry up in the summer. Several of the ponds are connected by ditches; some have dams that allow water to impound to deeper levels. The structures are in poor condition. All of these lands were withdrawn from the public domain for Reclamation purposes.

A portion of the Goose Lake Unit is underwater when reservoir levels are high. In low-water conditions, it is dry. The unit's water derives either from reservoir storage or from surface moisture from high water tables resulting from reservoir storage. Approximately 320 acres of the unit were reserved for refuge purposes. It is not known if the Service holds federal reserved water rights appurtenant to the reserved lands.

The Deweese Creek Unit has small dams and water-spreader ditches, most of which are dilapidated. Some water from the creek is diverted and spread into small impoundments and moist areas that offer protection for waterfowl broods and afford growth of aquatic plants and grass. Because the soil has hardpan clay under it, the diverted water returns to the creek, which has a fairly constant flow. A gauging station (USGS 06637000) was operated on Deweese Creek from 1917 to 1924. The drainage area above the gauging station was 16.4 square miles. The mean annual production during the period of record was 1,960 acre-feet. Approximately 440 acres of the Deweese Creek Unit were reserved for refuge purposes. It is not known if the Service holds federal reserved water rights appurtenant to the reserved lands.

Sage Creek and the North Platte River run through the Sage Creek Unit. Sage Creek has a watershed of approximately 190 square miles, which produces flashy, torrential flows filled with silt and sediment. A gauging station (USGS 06636500) was operated on Sage Creek from 1915 to 1925. The mean production during the period of record was 13,800 acre-feet per year.

The Service has not pursued adjudication of federal reserved water rights for Pathfinder NWR and does not intend to pursue them in the future.

Air Quality

Air quality receives protection under several provisions of the Clean Air Act, including the national ambient air quality standards (NAAQS) and the prevention of significant deterioration program. NAAQS include maximum allowable pollution levels for particulate matter, ozone, sulfur dioxide, nitrogen dioxide, lead, and carbon dioxide.

Based on the Wyoming's most current data, the state has relatively clean air. In the area of the refuge (Carbon and Natrona counties), the levels of carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, particulate matter (diameter <2.5 micrometers), particulate matter (diameter <10 micrometers), and lead did not exceed federal standards at any

Table 3. Bureau of Reclamation irrigation rights for the Sweetwater River and Horse Creek, Wyoming.

Permit No.	*Territorial Right*	*Priority Date*	*Name*	*Use*	*Source*	*CFS*	*Acreage*
	A.J. Bothwell	9/1/1886	Bothwell-Sweetwater No. 2 Ditch	Irrigation	Sweetwater River	6.77	474
	State of Wyoming et al.	9/1/1886	Bothwell-Sweetwater No. 2 Ditch	Irrigation	Sweetwater River	2.99	209
	A.J. Bothwell	6/1/1888	Bothwell-Sweetwater No. 3 Ditch	Irrigation and domestic	Sweetwater River	9.55	669
397-E	A.J. Bothwell	12/22/1898	Bothwell-Sweetwater No. 2 Ditch Enlargement	Stock and domestic	Sweetwater River	2.79	195
397-E	State of Wyoming	12/22/1898	Bothwell-Sweetwater No. 2 Ditch Enlargement	Stock and domestic	Sweetwater River	1.01	71
397-E	A.J. Bothwell	12/22/1898	Bothwell-Sweetwater No. 2 Ditch Enlargement	Stock and domestic	Sweetwater River	.79	55
1384	A.J. Bothwell	2/6/1897	Supplement of Bothwell No. 2 Ditch	Irrigation and domestic	A spring or seep supplements the Sweetwater River Bothwell-Sweetwater No. 2 Ditch rights in case they are not whole	8.8	
	A.J. Bothwell	6/17/1885	Smith No. 1 Ditch	Irrigation and domestic	Horse Creek	2.8	190
	A.J. Bothwell	6/17/1885	Smith No. 2 Ditch	Irrigation	Horse Creek	1.14	80

monitoring site in 2006 (U.S. Environmental Protection Agency [EPA] 2007a).

The air quality index (AQI) is an approximate indicator of overall air quality, because it takes into account all of the criteria air pollutants measured within a geographic area. Air quality in Carbon and Natrona counties is considered to be generally good, with no reported days of unhealthy air quality (EPA 2007b).

Prescribed burning is the refuge management activity that has the greatest effect on air quality (find more information in the description of the fire management program in appendix K). The management of smoke is incorporated into planning prescribed burns and, to the extent possible, in suppression of wildfires. Sensitive areas are identified and precautions are taken to safeguard visitors and local residents. Smoke dispersal is a consideration in determining whether a prescribed burn is within prescription. Generally, the fine-grass fuels and small burn size (80–600 acres) generate low volumes of smoke for short durations (4–5 hours). Prescribed burning activities have not yet occurred at Pathfinder NWR.

4.2 BIOLOGICAL RESOURCES

This section describes the existing habitat and wildlife at Pathfinder NWR. Appendixes L–O list species that occur on the refuge for plants (appendix L) and species that potentially occur on the refuge for birds (appendix M), amphibians and reptiles (appendix N), and mammals (appendix O).

Habitat

Major habitat types of Pathfinder NWR include open water wetlands, uplands consisting of shrub and grasslands, and alkali flats. The location and distribution of the major habitat types for the refuge is shown in figure 8.

Open Water Wetlands

Water rights throughout Wyoming are tightly regulated by the Wyoming State Engineer's Office. Central Wyoming is characterized by dry, arid uplands and unpredictable water runoff events. Due to these conditions, Pathfinder Reservoir was constructed to control flooding and to provide for irrigation water to ranches. Over time, the purposes of Pathfinder Reservoir expanded, and it now is used to provide water for hydropower and to deliver water to other downstream reservoirs.

Reservoir (Deepwater)

Pathfinder Reservoir is part of a system of dams and reservoirs operated by Reclamation in the North Platte River Basin for irrigation, hydroelectric power production, and municipal and industrial water supply (USBR). As such, the Service has little to no input into reservoir level management, although a significant portion of the refuge lies below the high water line of the reservoir. As a result, the available management options and long-term benefits of management actions are limited, as reservoir fluctuations can inundate, desiccate, or destroy wildlife habitats.

The spillway elevation for the reservoir is approximately 5,850 feet, at which point the storage capacity is 1,016,507 acre-feet. From 1996 to 2005, the reservoir level has seen a high of 5,849.89 feet in 1999 and a low of 5,784.84 feet in 2004. Annual variation between high and low reservoir levels during this time period ranged from 8 feet in 2005 to 26 feet in 2001 and 2002, and averaged nearly 17 feet annually (USBR).

The biological consequences of these variable water levels include a lack of reliable emergent or submergent vegetative growth; shorelines that are primarily sandy, varying from bare sand and rock to partially or fully vegetated with annuals; potentially significant weed issues in low-water years (tamarisk is currently scattered around the reservoir below the high water line); and substrates from the bottom of the reservoir being windblown and deposited on downwind uplands. With the low water levels of the past 5 years, the former floodplain of the Sweetwater River has produced some promising meadow habitat, but a relatively small rise in the reservoir elevation would inundate most of this area. Use of the reservoir by waterbirds is minimal likely due to poor water conditions resulting in poor food production, along with disturbance on the water and shorelines from boating, fishing, camping, and ATV use.

Fluctuations in reservoir water levels create cutbank and sandy shorelines, resulting in the establishment of little emergent vegetation (i.e., cattails and rushes) for brood cover and feeding areas. The Service's inability to control reservoir water levels to manage for habitat conditions to support migratory bird species, along with a decrease in migratory bird use of the reservoir, hinder the effectiveness of managing the reservoir area as a national wildlife refuge.

Artificial Ponds

The refuge's 1961 annual narrative (BSFW) makes reference to "pit type" ponds that were apparently in place on the Goose Bay Unit. Remnants of these ponds still exist, but only two to three appear to be functional in good water years. The 1962 annual narrative (BSFW) also notes that three dikes and ditches were constructed on Deweese Creek that year, along with one on Sage Creek. The dikes on Deweese Creek were designed to back up water that would not only create a small impoundment but also supply water for use in irrigating adjacent uplands for waterfowl nesting habitat. It appears the dikes were somewhat successful, as this area holds remnants of tame grasses that were probably planted at or near the same time. All of the dikes are currently breached, with the creek running back on its old course through them. The remnants of these ponds hold the only emergents found on the refuge.

The Sage Creek dike was reported to be 270 feet in length and included 1,300-foot ditch for irrigation (present-day refuge staff have not seen the Sage Creek dike and ditch). Some of the area was planted to a wheatgrass mixture. The dike and ditch were apparently subject to regular damage by high waters during spring flows and thunderstorms, as damage to these structures were reported in 1962, 1963, and 1964. In 1964–65, five dams were constructed on Horse Creek; they appear to be nonfunctional today and to have had little impact on habitat development.

Playas

The playa lakes that make up the Steamboat Lake area of the Sweetwater Arm Unit are influenced by runoff and appear to be supplemented by springs around Steamboat Lake. This area blends in with the upland and alkali flat habitat types, as it consists of small rolling "hills" not more than 10–15 feet higher

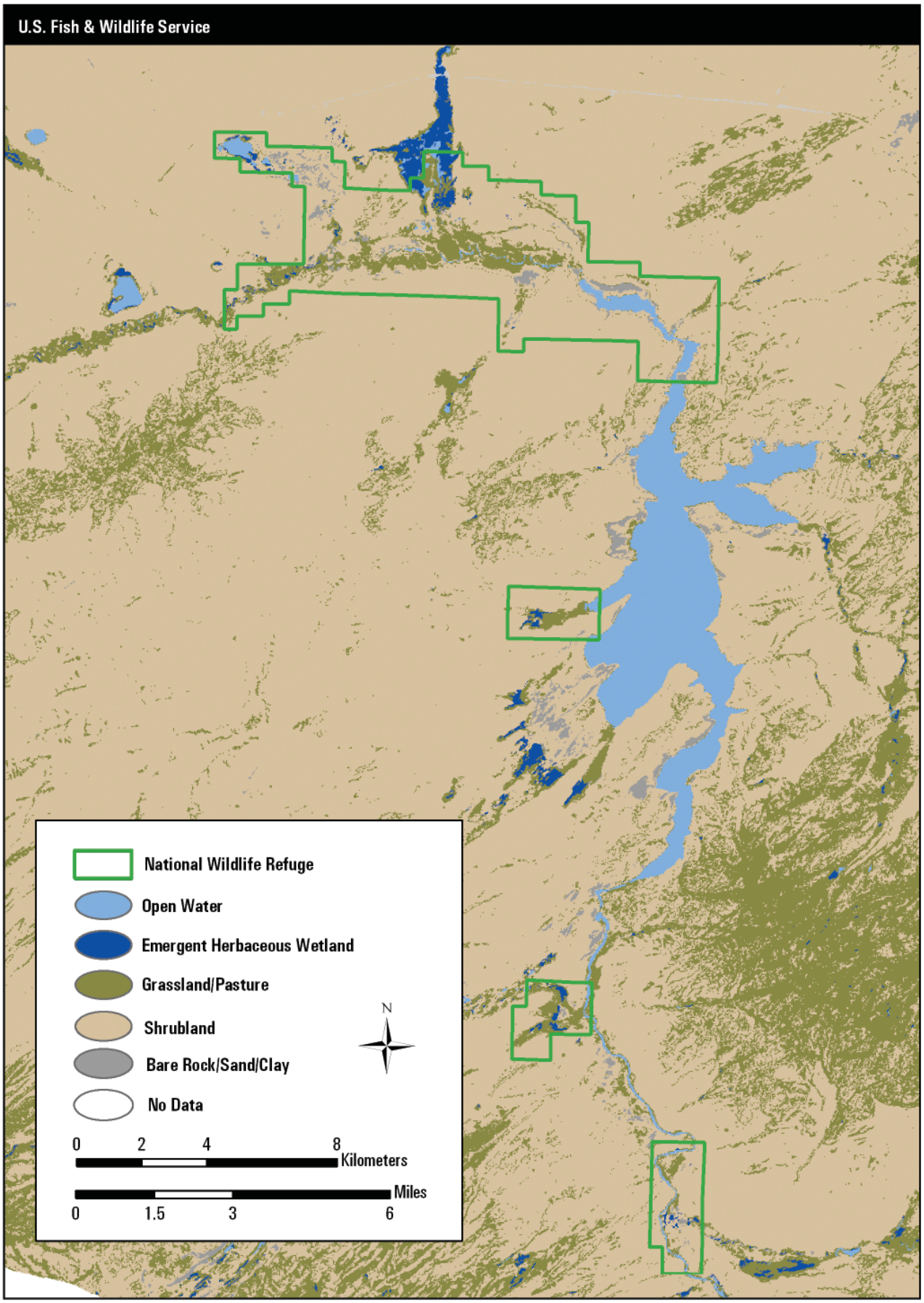


Figure 8. Habitats at Pathfinder NWR, Wyoming.

than the surrounding area with alkali areas between them. These hills and alkali areas vary in size from 100 square feet to many acres. After significant precipitation events, and/or runoff, these alkali areas hold water for a time. Typically, the smaller alkaline areas provide spring habitat but are mainly dry later in the summer months, and the larger alkaline areas to the east of the chain of lakes hold some water most of the year. Steamboat Lake and the next lake east hold water year-round in most years, but an alkali flat generally forms around them in late summer and early fall. The 1961 annual narrative (BSFW) noted that 1,650 linear feet of diking was constructed in the Soda Lake area to hold early water and decrease evaporation. This construction can be seen today. Emergent vegetation is limited to the edges of the ponds and includes rushes and sedges. Steamboat Lake and Soda Lakes are used by American avocet, Wilson's phalarope, and other shorebirds for migration and breeding, as well as several duck species, Canada geese, coot, and eared grebe. The smaller, drier lakes see some use by avocet, apparently when the water is fresher, but they are minimally used otherwise.

The 1966 annual narrative excerpted in chapter 3 on page 22 documents the Service's unsuccessful attempts to acquire water rights for Pathfinder NWR development.

Uplands Habitat: Shrub and Grasslands

Uplands consisting of shrub and grasslands are the dominant habitat type in the area. The upland areas adjacent to the reservoir in the area impacted by reservoir operations are characterized by blowing sand and dryland shrub communities. Areas further west on the Sweetwater Arm Unit (approximately west of Horse Creek) are characterized by more gentle terrain and grassy and wet meadow areas rather than sandy cutbanks. Located in the backwaters of the reservoir, these areas are wet only if the reservoir is full or near full.

The majority of the lands above the high water line of Pathfinder Reservoir—and likely, the area below and approaching the dam—consists of shrub-dominated uplands and rock outcrops. The upland habitats on the refuge slope upward from the reservoir where the North Platte and Sweetwater River channels lie, and in some places are 150 feet above the high water line. Rock outcrops occur on the north, northwest, southwest, and southeast portions of the Sweetwater Arm Unit and in the southeast corner of the Sage Creek Unit. In addition, the western part of the Sage Creek Unit adjacent to the North Platte River contains shear cliffs that rise up from the river 150 feet to an upland bench above. A notable feature on the refuge landscape, these cliffs appear to be made of a different rock than the other Precambrian rock outcrops. These outcrops, though dominated by rock, contain within them areas of sparse grass, forbs, and sage mixes characteristic of the surrounding uplands, as well as scattered limber pine and Rocky Mountain juniper.

The upland vegetation is primarily dominated by sagebrush of various species and heights, and probably age classes as well. The understory of grasses and forbs is sparse in general, but varies from site to site based on soil and range type. The south side of the Sweetwater Arm Unit and the upland areas of Deweese Creek and Goose Bay units consist primarily of well-dispersed sagebrush of 15–40 percent canopy cover, with a minimal grass-and-forb understory and considerable bare ground. Some draws on the western portion of the Goose Bay Unit and the southern part of the Sweetwater Arm Unit contain small areas of sage 2–4 feet tall and have a canopy cover of nearly 100 percent. Some uplands areas on the north side of the Sweetwater Arm Unit and east of Horse Creek are almost completely covered with pricklypear. The sage component is still present, but the shrubs are further apart and the understory is dominated by cactus.

An area in the northeast corner of the Sweetwater Arm Unit is apparently impacted by sediments blowing from the reservoir bottom when it is exposed. This area was once typical of the other sage-dominated uplands, but most of the plants have died, apparently as the result of being sandblasted or choked off in the sediments, as the soil deposits are several inches deep in spots and have formed drifts. The uplands adjacent to the Steamboat Lake area and the upper end of the Sweetwater River contain more greasewood than sage, and unless they are on a bench, contain very little undergrowth and appear to have very poor soils for vegetative growth. Historic use of the uplands has been for livestock grazing. The geography and soil types in this area are such that, for the most part, no thought seems to have been given to attempting irrigation. Wildlife use of these areas includes pronghorn, mule deer, sage thrasher, horned lark, meadow lark, sage-grouse, rattlesnake, and white-tailed prairie dog.

Wyoming has more sagebrush than any other state. Two cover types, Wyoming big sagebrush (30.8 percent) and mixed grass (20.2 percent), occupied about half of the land area of the Wyoming Gap Analysis (WY-GAP) land cover map, based on the proportional area of land cover (Merrill et al. 1996). WY-GAP is part of the national Gap Analysis Program (GAP), whose goal is to keep common species common by identifying species and plant communities that are inadequately represented in existing conservation lands. Begun in 1991, WY-GAP was officially completed in November 1996. The main goal of WY-GAP was to analyze the current status of biodiversity within Wyoming, focusing on two biodiversity elements: land cover types and terrestrial vertebrate species. Land ownership and management for the state of Wyoming was combined with the data on land cover and species distributions in a geographic overlay using geographic information

system (GIS) data to determine which biodiversity elements are inadequately protected within the current system of areas managed for conservation.

Wyoming sagebrush communities are as diverse as the landscape, which is covered by 13 different types of sagebrush. Sagebrush-associated vegetation types provide habitat for approximately 87 species of mammals; 297 species of birds; and 63 species of fish, reptiles, and amphibians (Wyoming Interagency Vegetation Committee 2002). These species have been influenced by historic fire intervals and both domestic and wild ungulate grazing.

Associated species occurring in saltbush and desert shrub cover type include greasewood, winterfat, galleta grass, alkali sacaton, Indian ricegrass, bottlebrush, squirreltail, foxtail barley, basin wildrye, and western wheatgrass.

Grazing Management History

As noted in chapter 2, in 1965, the Service signed an MOA (contract #14-06-700-4737) with the BLM that transferred grazing management at Pathfinder NWR to the BLM. Since that time, the BLM has administered the grazing in conjunction with BLM allotment grazing. Section 202 of the Federal Land Policy and Management Act of 1976 (FLPMA) requires the development and maintenance of land use plans for public lands. BLM land use plans are designed to provide guidance for future management actions and the development of subsequent, more detailed and limited-scope plans for resources and uses. Land use plans are developed under the multiple-use and sustained-yield mandate of FLPMA. Land use plans identify lands that are available for livestock grazing and the parameters under which grazing is to occur. BLM issues grazing permits or leases for available grazing lands. Grazing permits and leases specify the portion of the landscape BLM authorizes to the permittee or lessee for grazing (i.e., one or more allotments) and establish the terms and conditions of grazing use. Terms and conditions include, at a minimum, the number and class of livestock, when and where they are allowed to graze, and for how long. Grazing use must conform to any applicable allotment management plans, the terms and conditions of the permit or lease, land use plan decisions, the grazing regulations, and other applicable laws.

Alkali Flats

Alkali flats are predominately flat lands and seasonally dried-up wetland basins with strongly saline soils. These areas are associated with or adjacent to playas or intermittent lakes. The alkaline/saline soils appear to severely restrict plant growth, as vegetation is very spotty throughout much of this area. Vegetation includes saltgrass, alkali sacaton, and greasewood. Wildlife use by killdeer and American avocet (likely in association with water nearby) is similarly sparse. The Steamboat Lake area supports alkali wetlands and associated vegetation and wildlife uses.

Mark Ely/USFWS

Alkali Flats at Pathfinder NWR, Wyoming

The soil characteristic of this area is Aquic Ustifluvents (saline), 0–3 percent slopes, and includes the playas mentioned in the open water wetlands section above. When there is no water in the basins of the playas, the soils have an alkaline cover. The alkali flats also include the "hilly" areas of the playas, which occur mainly in the northeast portion of the unit and between the larger playas. The dominant vegetation includes greasewood and saltgrass on the hilly areas, and sedges, rushes, slender spiderflower (a state species of concern), and other salt-tolerant species on the edges of some of the playas. The bottoms of the playa basins do not appear to support vegetation.

Meadows

The refuge does not contain irrigated meadows. Meadow areas exist in a limited capacity and vary with the reservoir level, as much of the meadowland is underwater in high-water conditions.

On the Deweese Creek Unit, the Service constructed a series of dikes and ditches in 1962 on the creek with the hope of irrigating the land to improve waterfowl-nesting habitat and create brood-rearing habitat with the ponds. The dikes blocked the creek and were constructed to continue into the adjoining upland area to serve as a ditch bank carrying water to irrigate these lands. When the Service realized, in 1966, that no water rights were available to support such projects, all construction and maintenance efforts were abandoned. Available historical documents do not indicate that these irrigated meadows were seeded, but the remnant stand of

tame grasses, as well as documentation of planting efforts in the 1960s on the Sage Creek Unit, indicate seeding could have been attempted on the Deweese Creek Unit as well. The meadow area on this unit is estimated to be less than 100 acres.

The Goose Bay Unit holds some meadow habitat that fluctuates based on water conditions. It is likely nonexistent at full reservoir pool, but may return when the pool is low. The meadows slope down the bay to the east toward the reservoir and are likely influenced by surface and subsurface water flows, presumably spring fed. In extremely low water years (such as 2006), the meadow at Goose Bay is estimated at 100–150 acres. In high water years, the area is likely less than 20 acres.

Another low reservoir phenomenon is the emergence of meadow habitat, which usually occurs after a few successive dry years, along the old floodplain of the Sweetwater River in the Sweetwater Arm Unit. This floodplain is some of the flattest terrain on the refuge when not inundated by the reservoir, and this aspect combined with water flowing from the Sweetwater River and also likely influenced by Horse Creek, probably raise the water table enough to create fairly lush meadows and emergents over time. The growth of this area was apparent in 2006 and was also noted in the 1966 annual narrative (BSFW). No vegetative surveys have been completed of these areas, but sedges, rushes, and unidentified taller grass species have been observed. Although the aforementioned narrative noted the lush vegetative growth in the meadows of the Sweetwater Arm Unit, it also noted that use of the area by waterfowl, especially nesting birds, appeared to be light.

With the dikes blown out at the Deweese Creek Unit, the pit ponds at the Goose Bay Unit functioning minimally, and no ponds along the Sweetwater River, the brooding areas may be limiting what waterfowl nesting occurs. Pronghorn heavily use the Sweetwater Arm Unit meadows. Snipe, Wilson's phalarope, meadowlark, and willet have been noted.

Contaminant Assessment

A contaminant assessment completed by the ecological services division of the Service (Ramirez, Dickerson, and Jennings 1995) did not find any major trace element problems at the Sweetwater Arm Unit, with the possible exception of arsenic and chromium in brine shrimp. Although elevated, arsenic and chromium concentrations do not pose a threat to aquatic birds. Major cations and anions (positively and negatively charged ions, respectively), specific conductance, and total alkalinity are typical of shallow alkaline wetlands in the semiarid western United States.

The assessment did not find any evidence of sodium toxicity in ducklings or goslings; however, management recommendations state that waterfowl nesting should not be encouraged at these ponds due to the potential for sodium toxicity. Nesting enhancement measures could be carried out at the southeast ponds closest to the Sweetwater Arm Unit of the reservoir where freshwater is available. Refuge managers should consider water-quality analysis at these ponds before intensive management for waterfowl production. The alkaline ponds provide good nesting habitat for American avocet. If possible, aquatic bird surveys should be conduced during the breeding season to determine productivity and use (Ramirez, Dickerson, and Jennings 1995).

Threatened and Endangered Species

Threatened and endangered species listed for Carbon County include black-footed ferret and blowout beardtongue. Although Canada lynx and yellow-billed cuckoo are potentially found in the county, the refuge does not contain habitat for either species. Currently, no known threatened or endangered species are listed for Natrona County or use the refuge. (Wyoming Natural Diversity Database [WYNDD] 2006).

Species of Concern

Table 4 indicates documented occurrences of vertebrate species of concern within Pathfinder NWR (WYNDD 2006). Observations were in the Steamboat Lake area of the Sweetwater Arm Unit.

Gary Kramer/USFWS

Black-crowned Night-heron

Table 4. Documented occurrences of vertebrate species of concern within Pathfinder NWR, Wyoming.

Bird Species	*Most Recent Observation*
American white pelican	2003
Black-crowned night-heron	2002
Brewer's sparrow	2007
Franklin's gull	2007
Great blue heron	2007
Greater sandhill crane	2006
Lark bunting	2007
Lesser scaup	2006
McCown's longspur	2006
Mountain plover	2006
Northern pintail	2007
Redhead	2005
Sage thrasher	2007
Western grebe	2005
White-faced ibis	2005

4.3 CULTURAL RESOURCES

The Service is responsible for managing archaeological and historical sites found on refuge lands.

Prehistoric Background

Although structured searches have been minimal in number, archaeological surveys on and near refuge lands have found numerous indications of substantial use of the area by prehistoric cultures. Ten prehistoric sites have been recorded on the refuge and 142 near refuge lands. They consist of chipped stone, hearths, stone circles, stone raw material procurement areas, rock shelters, and lithic scatters. The presence of the North Platte and Sweetwater rivers in this semiarid land were likely influential on prehistoric human use (Larson and Letts 2003). Arapaho, Cheyenne, Sioux, and Shoshone tribes were probably the most common users of the area.

Early Exploration

Although trappers and traders traversed and used the area in the early nineteenth century, by far the largest push of humans through the region came as a result of the Oregon Trail. The remnants of the trail can clearly be seen in numerous locations on the Steamboat Lake area of the refuge, as well as numerous off-refuge locations nearby. It is estimated that over 200,000 people traveled the Oregon Trail between 1840 and 1870, many leaving a record of their passing at Independence Rock just 3 miles west of the refuge (Larson and Letts 2003). Besides travelers to the west coast, the Oregon Trial was used briefly by the Pony Express in the 1860s, and the discovery of gold near South Pass City, Wyoming, in 1868 brought opportunistic travelers.

Early Settlement

European settlement of the refuge area was hindered by a combination of limited natural resources, the absence of major travel corridors (with the exception of the defunct Oregon Trail) and railways, and harsh environmental conditions. Indeed, even today very few people live in the vicinity of the refuge and reservoir. Settlement was almost exclusively dependent upon ranching. Some sheepherding occurred, but cattle ranching was preferred. Because the area is very dry, expanses of land were required to take advantage of what grass was available; ranches were large and included what is now BLM ground for grazing. As in much of the West, water was a critical commodity. At the base of the large rock outcrop on the north side of the Sweetwater Arm Unit is the gravesite of Ella Watson, better known as "Cattle Kate," and James Averal. They were reported to have been hung in 1889 just off the southwest portion of the Sweetwater Arm Unit over a water dispute.

History of Development

One of the biggest signs of development in the region is the reservoir created by Pathfinder Dam. The dam was constructed between 1905 an 1909, and later modified, on a stretch of the North Platte River. Numerous pipelines for oil and natural gas traverse the area, but successful mineral exploration has been minimal. The nearest communities to the refuge are Alcova, located to the east, which currently caters to recreationists on Alcova and Pathfinder reservoirs,

and Jeffrey City, a classic mining boom-and-bust town approximately 40 miles west of the refuge.

4.4 SPECIAL MANAGEMENT AREAS

There are no special management areas related to the refuge.

Wilderness

Due to human development in the area and current and past land use patterns, the refuge does not appear to meet the criteria for wilderness. As outlined in the Wilderness Act of 1994, a wilderness area:

- generally appears to have been affected primarily by the forces of nature, with the human imprint substantially unnoticeable;
- offers outstanding opportunities for solitude or a primitive and unconfined type of recreation;
- has at least 5,000 acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition;
- may contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

4.5 VISITOR SERVICES

Refuge infrastructure (roads) and public use facilities (wildlife viewing area, county park) are shown in figure 9.

Visitor Services

The distance of the refuge from the complex headquarters at Arapaho NWR, combined with little boundary fencing and the fact that part of the reservoir is refuge land and part is not, create a situation that allows for unrestricted public use on the refuge.

Mark Ely/USFWS

Bishops Point, Pathfinder NWR, Wyoming

A developed campground and boat ramp are located at Bishops Point in the Sweetwater Arm Unit and is administered by the Natrona County Roads, Bridges, and Parks Department. Hunting of ducks, coots, mergansers, deer, and pronghorn is permitted throughout the refuge in accordance with state seasons.

An interpretive overlook located along Highway 220 above Steamboat Lake interprets the refuge and likely receives several visits a day from the spring through the fall. Opportunities specific to wildlife photography and wildlife observation are minimal, as there are no formal tour routes, hiking trails, or signs.

Several nonwildlife-dependent uses presently occur or are assumed to occur on the refuge, including off-road vehicle use (as the reservoir level fluctuates vehicles follow the shoreline); dispersed camping; water skiing, jet skiing, and pleasure boating; ATV use; Bishops Point campground and boat ramp use; rock climbing; and arrowhead hunting. Although refuge staff have known about these incompatible refuge uses for years, the lack of human and fiscal resources has made addressing them a low priority.

Refuge staff believe that most public use occurs on the refuge's largest unit, the Sweetwater Arm, due to its size and location close to a main highway and the city of Casper. The Sage Creek Unit is fairly small and remote. Goose Bay and Deweese Creek are small, extremely remote units surrounded by BLM lands that probably only see occasional use by hunters and jet skiers or boaters in high-water conditions.

Hunting

Hunting is allowed per state seasons. Because the refuge boundary is not appropriately posted or fenced, Service law enforcement officers cannot enforce hunting regulations. The number of hunters using the refuge is unknown but is predicted to be low due to the remote access to most of the refuge.

Fishing

Fishing is available on the main reservoir and in stream areas leading to it. Fishing is allowed per state seasons. The Service does not have control over fishing access, limits, or seasonal closures. Fishing is managed by the WGFD.

Wildlife Observation, Photography, Environmental Education, and Interpretation

Although wildlife viewing and photography probably occur on other areas of the refuge, the only known use occurs at the Steamboat Lake area, which offers the best opportunities for these activities. An interpretive overlook can be found off Highway 220 above Steamboat Lake.

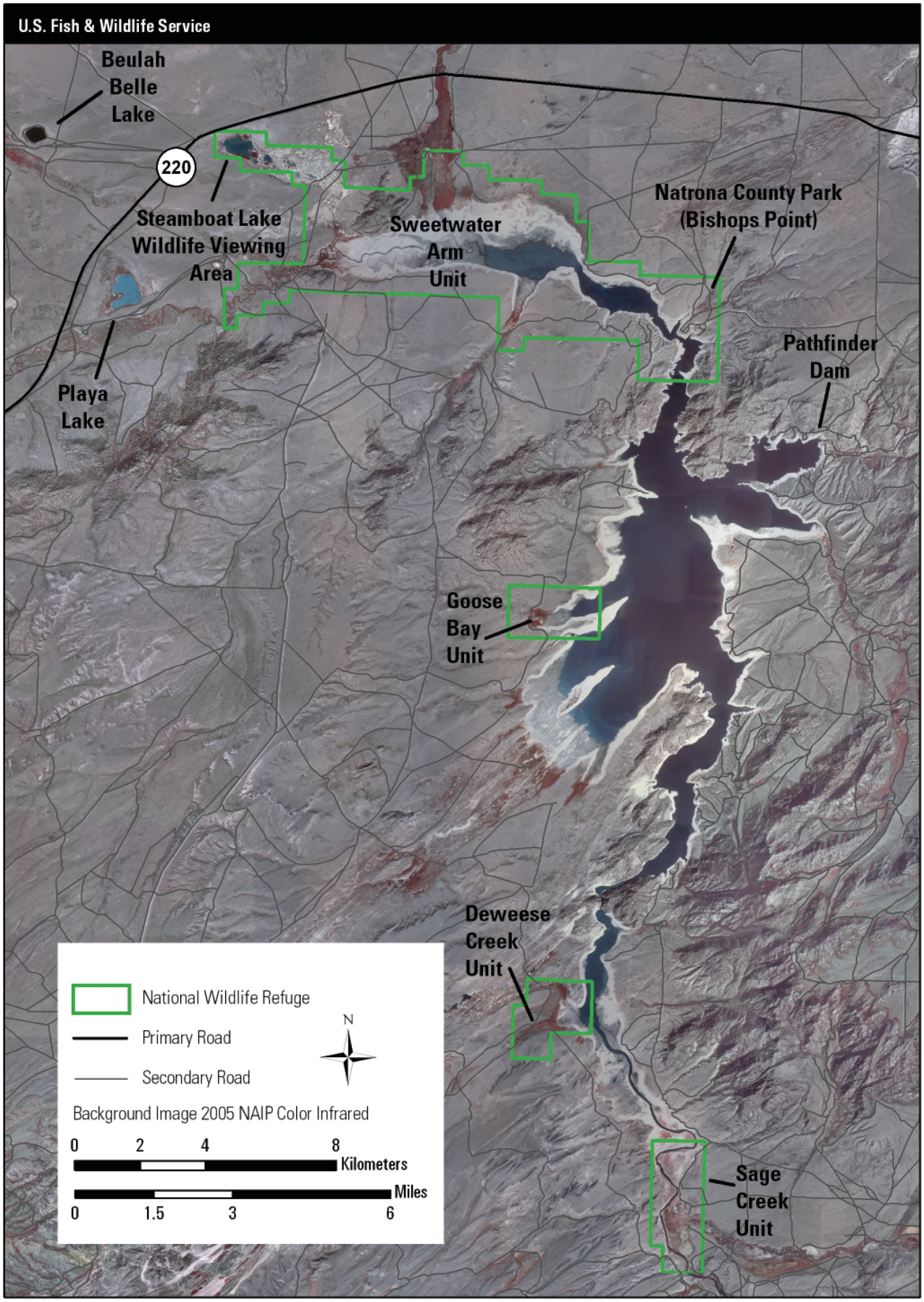


Figure 9. Infrastructure and public use areas at Pathfinder NWR, Wyoming.

4.6 PARTNERSHIPS

Refuge staff work with Audubon Wyoming to conduct annual breeding bird surveys. Audubon Wyoming conducts annual waterfowl and shorebird surveys at the Steamboat Lake area.

4.7 SOCIOECONOMIC ENVIRONMENT

The local and regional demographics (statistical data about the population) are described below for the communities in the five-county study area pertaining to Pathfinder NWR.

Socioeconomic Conditions

The following section illustrates the current socioeconomic conditions found within the study area, which is comprised of Albany, Carbon, Converse, Fremont, and Natrona counties. Pathfinder NWR is located with Carbon and Natrona counties; however, the remaining three counties included in the study area are located in close proximity to the refuge and could be affected by refuge management decisions.

Figure 10 shows the location of Pathfinder NWR in relation to nearby population centers. The refuge is located in central Wyoming near the cities of Casper, Rawlins, and Medicine Bow.

Population

The 2006 census shows the population of the study area has slowly increased since 2000, and total population was about 165,300 as of 2005 (U.S. Census Bureau 2006). Over the same period, the population of Wyoming decreased slightly (figure 11). The study area contained 33 percent of Wyoming's population in 2005. The city of Casper (2000 census population 49,644) is located within the study area and provides an ample tourist base for the refuge (U.S. Census Bureau 2006).

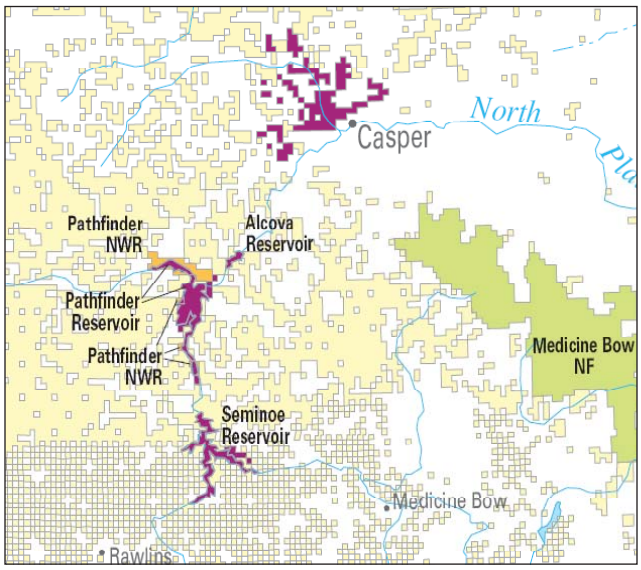


Figure 10. Location of Pathfinder NWR.
(Source: Nationalatlas.gov and BBC Research & Consulting.)

Age

Figure 12 illustrates the aging population of the study area. In 1990, 25 percent of the study area's population was under the age of 18. By 2011, this age group will only constitute about 21 percent of the population. It should also be noted that the percentage of residents aged 65 and older has steadily increased since 2000. This increase can possibly be attributed to the aging of the baby boom generation. The median age of the study area was about 36.9 years as of 2006.

Employment

The civilian workforce for the study area has increased by about 760 workers per year since 2000. As of 2006, the workforce consisted of 84,278 workers. The unemployment rate for 2006 was estimated at 4.0 percent, which is slightly higher than the state's 3.5 percent unemployment rate. Both the study area and the state have a lower unemployment rate than the nation, which was 4.4 percent as of October 2006 (U.S. Bureau of Labor Statistics 2006).

Local Industry

A wide range of occupations are represented in the study area; sales and office occupations is the largest sector at 26 percent (figure 13). Professional and related occupations employ 19 percent, while farming, fishing, and forestry occupations employ 1 percent of the population.

Visitation Levels

Pathfinder Reservoir receives approximately 170,000 visitors annually, buy very little data exists on actual visitation to the refuge. Service officials estimate that more than half of the 170,000 reservoir visitors visit the refuge, due to the Sweetwater Arm Unit's accessible location along the primary road entering the reservoir area. They also estimate that a high percentage of those who visit the refuge are locals, with the majority residing in nearby Casper.

Visitor Spending

Off-site spending by visitors helps support local lodging and retail establishments in surrounding towns such as Casper and Medicine Bow. Approximately 10 percent of refuge visitor days, or about 8,500 visitor days, are from nonlocal visitors. On average nonlocal visitors spend $60 per day for lodging, food, and supplies. If half of these guests spend the night locally in commercial lodging or campgrounds, then refuge activity may currently spur about $255,000 of new annual spending in the regional economy.

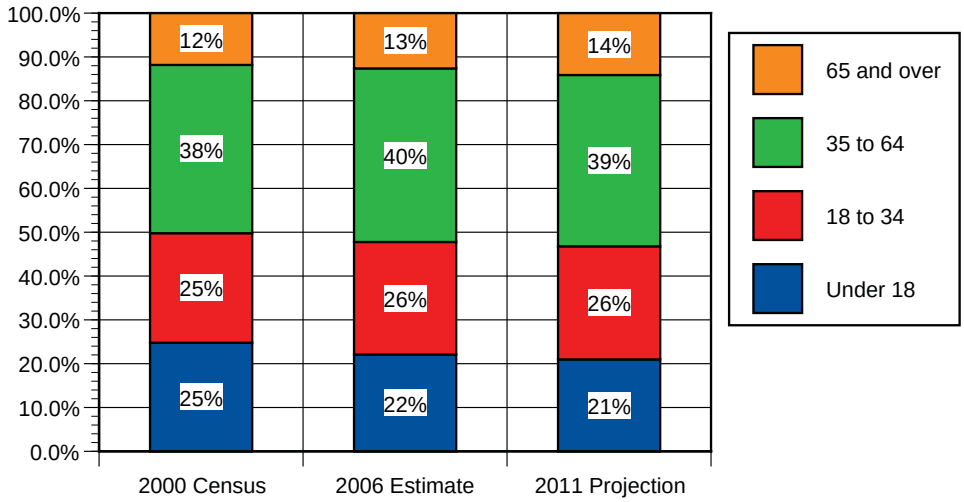


Figure 11. Wyoming and study area population.
(Source: State of Wyoming, Administration and Information, Economic Analysis Division.)

4.8 OPERATIONS

The Steamboat Lake area of the refuge has received some management and public use improvements. Surveys conducted demonstrate waterfowl and shorebird use at this very western end of Sweetwater Arm Unit. This area and the backwater reservoir areas are not impacted by the reservoir fluctuations that create sandy cutbank areas along the eastern half of the unit. As such, they have a higher potential for developing, protecting, and preserving quality trust resource habitats and quality wildlife-dependent public use opportunities.

STAFFING

Since 1967, Pathfinder NWR has been managed by Service staff headquartered at the Arapaho NWR in Walden, Colorado. The Arapaho NWR Complex includes Arapaho NWR, Pathfinder NWR, and the Laramie Plains refuges (Bamforth, Hutton Lake, and Mortenson Lake). The refuge staff of four FTEs and three to four seasonal employees are responsible for management activities on six refuges totaling 46,673 acres. Refuge staff travel approximately 240 miles to conduct management activities at Pathfinder NWR. Table 5 indicates the current staff for the complex.

The complex is also supported by Refuge System staff as part of a developing business unit concept. Contracting, budget tracking, travel, and payroll are supported remotely by Service staff stationed in Colorado and Kansas.

FACILITIES

The refuge has no operations facilities.

Table 5. Current staff for the Arapaho NWR Complex, Colorado.

Staff Group	*Current Positions*
Management	Project leader, GS-12 Refuge operations specialist, GS-11
Biology	Wildlife Biologist, GS-9
Maintenance	Maintenance worker, WG-8

GS=General Schedule Positions
WG=Wage Grade Positions

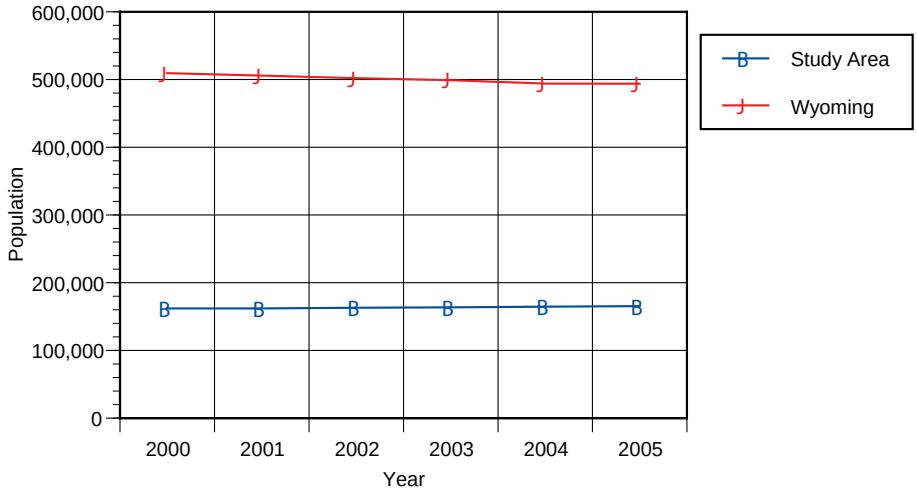


Figure 12. Study area age composition.
(Source: PCensus.)

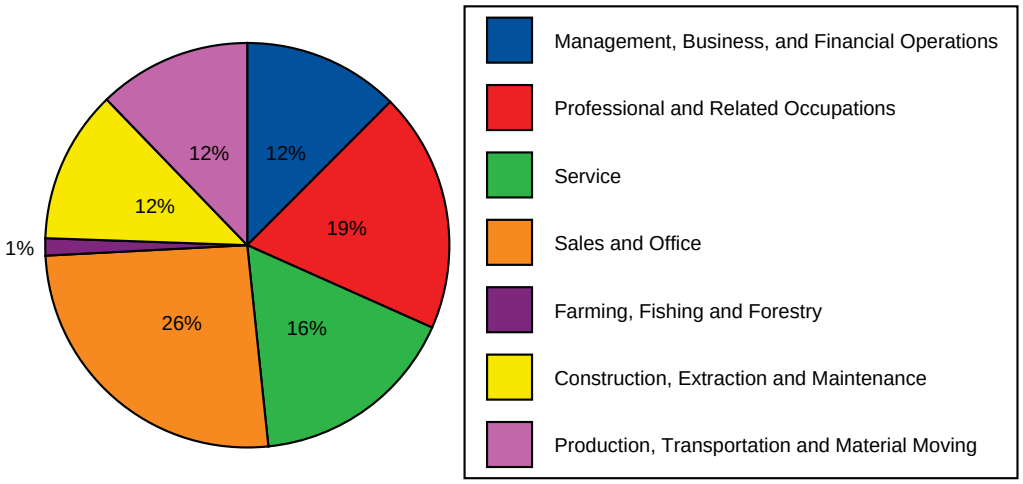
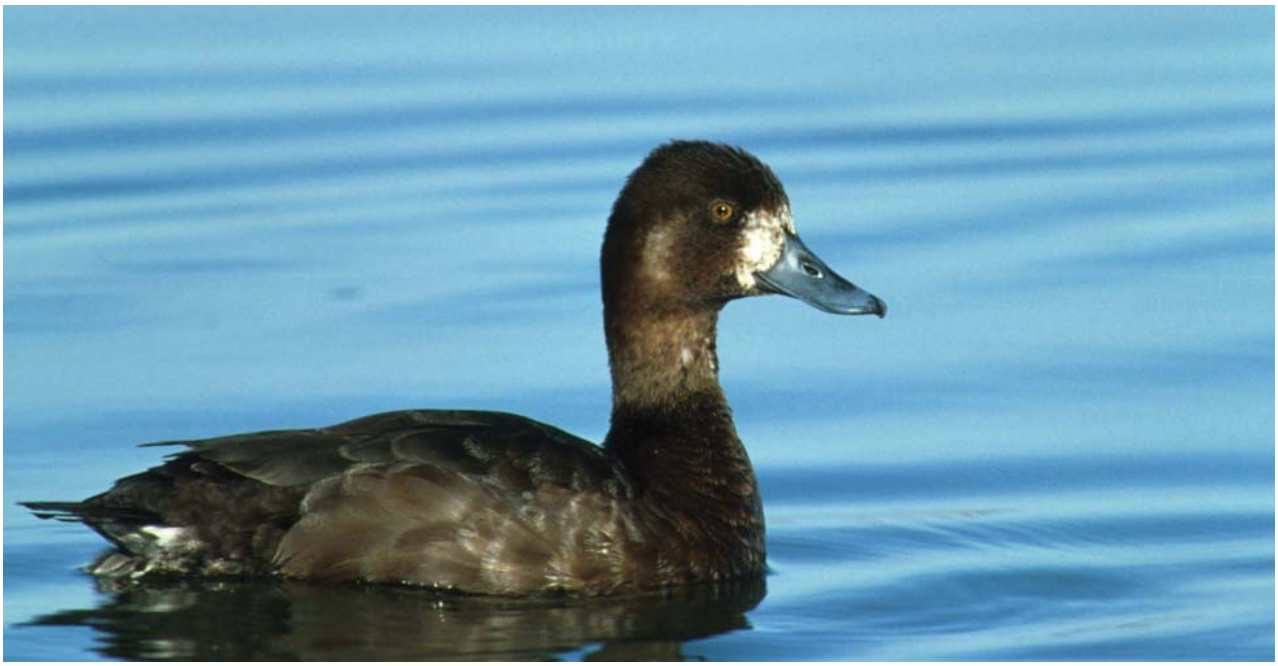


Figure 13. Study area employment distribution, 2006.
(Source: PCensus.)

5 Environmental Consequences



Dave Menke/USFWS

Lesser scaup

This chapter describes the environmental consequences for the management alternatives (see chapter 3) considered for Pathfinder NWR.

The planning team assessed the environmental consequences of implementing each alternative on the biological, physical, social, economical, cultural, and historical resources of the refuge.

This chapter contains descriptions of the (1) effects common to alternatives, (2) consequences by alternative, and (3) cumulative impacts of the alternatives. Table 2 in chapter 3 includes a summary of these consequences in relation to the actions for each alternative.

5.1 EFFECTS COMMON TO ALL ALTERNATIVES

Some projected effects would be similar for all alternatives:

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

The sections below describe other projected effects common to all alternatives.

Cultural Resources

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

Cultural resource surveys at the refuge have been limited. Therefore, additional surveys would be required prior to any new construction or excavation to fully satisfy provisions of the NEPA and applicable acts and policies related to historical and archaeological resources.

Potentially negative effects from construction of trails or facilities would require review by the regional archaeologist (region 6) and consultation with the Wyoming State Historic Preservation Office.

Environmental Justice

None of the management alternatives described in this EA would disproportionately place any adverse environmental, economic, social, or health effects on minority or low-income populations.

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

Air Quality

No adverse effects on air quality are expected. Short-term effects on air quality from prescribed burning on the refuge should not vary significantly between any of the alternatives. Prescribed burning operations are planned to reduce impacts to neighbors through ignitions that move the smoke up and out of the vicinity quickly. Rapid mop-up is completed to reduce overnight impacts to neighbors.

Climate Change Impacts

The primary climate-related impact to be considered in the CCP process is carbon sequestration, which helps offset global warming. Vegetated land is a tremendous factor in carbon sequestration. Terrestrial biomes of all sorts—grasslands, forests, wetlands, tundra, and desert—are effective both in preventing carbon emission and acting as a biological "scrubber" of atmospheric CO_2. The conclusions of the report on carbon sequestration by the U.S. Department of Energy (1999) noted that ecosystem protection is important to carbon sequestration and may reduce or prevent loss of carbon currently stored in the terrestrial biosphere.

Conserving natural habitat for wildlife is the heart of any long-range plan for national wildlife refuges. The actions proposed in this draft CCP and EA would conserve or restore land and habitat, and would thus retain existing carbon sequestration on the refuge. This in turn contributes positively to efforts to mitigate human-induced global climate change.

One Service activity in particular—prescribed burning—releases CO_2 directly to the atmosphere from the biomass consumed during combustion. However, there is actually no net loss of carbon, since new vegetation quickly germinates and sprouts to replace the burned-up biomass and sequesters or assimilates an approximately equal amount of carbon as was lost to the air (Dai et al. 2006). Overall, there should be little or no net change in the amount of carbon sequestered at Pathfinder NWR from any of the proposed management alternatives.

Several impacts of climate change have been identified that may need to be considered and addressed in the future:

- Habitat available for cold-water fish such as trout and salmon in lakes and streams could be reduced.
- Forests may change, with some species shifting their range northward or dying out, and other trees moving in to take their place.
- Ducks and other waterfowl could lose breeding habitat due to stronger and more frequent droughts.
- Changes in the timing of migration and nesting could put some birds out of sync with the life cycles of their prey species.

The managers and resource specialists on the refuge need to be aware of the possibility of change due to global warming. When feasible, documenting long-term vegetation, species, and hydrologic changes should become a part of research and monitoring programs on the refuge. Adjustments in refuge management direction may be necessary over the course of time to adapt to a changing climate.

Soils

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

Water Quality, Wetlands, and Floodplains

All alternatives would positively affect water quality. Positive effects are anticipated from protecting groundwater recharge, preventing runoff, retaining sediment, and minimizing nonpoint source pollution. The management alternatives are not anticipated to have any adverse effects on the area's wetlands and floodplains, pursuant to EO 11990 and EO 11988.

Public Health and Safety

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

5.2 DESCRIPTION OF CONSEQUENCES BY ALTERNATIVE

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

Bob Savannah/USFWS

Wildlife Observation

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

Alternative A—No Action

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

Refuge Administration

Three federal agencies currently have responsibilities for managing lands within the current boundary of Pathfinder NWR. The agencies' differing missions and regulations can create confusion regarding agency roles and responsibilities, which contributes to habitat degradation and public confusion about land management and usage.

The Bureau of Reclamation manages Pathfinder Reservoir for flood control, irrigation, and hydroelectric power. The MOU for management of lands (appendix D) limits the Service to actions that will not impact reservoir operations. As such, any improvements or management actions the Service undertakes to benefit wildlife on habitats below the reservoir high water mark (5,850 feet) are at risk by Reclamation operations because these habitats may be flooded out as reservoir levels rise, and habitat plantings may not succeed if reservoir operations lower water levels.

Public uses that are permitted within Reclamation or BLM mandates may be outside compatibility and/or allowed uses under Service policy and guidance, which can result in identity issues for the Service and confusion for the public regarding the Service's mission. At some areas of the refuge it is difficult for visitors to know what lands they are on due to lack of posting and regulations.

The Natrona County Road, Bridge, and Parks Department has management responsibility for the Bishops Point Recreation Area within the current boundary of Pathfinder NWR, which allows picnicking, boating, camping, campfires, and motorized watercraft access to the waters of Pathfinder Reservoir. Many of these uses may be considered inappropriate or incompatible uses of a national wildlife refuge.

Refuge Uses

The CCP process triggers the evaluation of all existing and proposed public uses and management actions on a national wildlife refuge. Uses found to be inappropriate or incompatible will be modified or eliminated as expediently as possible.

Habitat Management

Reservoir (Deepwater)

The reservoir would continue to provide resting areas for waterfowl and other migratory bird species during spring and fall migration. Emergent vegetation along the shoreline of the reservoir, which provides a food source for migratory birds and other wildlife, would be minimally present due to fluctuations in water levels (20 feet per year on average) and resulting steep, sandy cutbanks that prohibit vegetation growth.

Wetlands and Riparian Areas

Playas and impoundments would continue to fill and dry as natural processes dictate, with no management actions to affect them. Management actions below the high-water line of the reservoir are subject to impacts of inundation if and when the reservoir water level rises, precluding investment of Service funds or staff time in these areas. Few options exist for effective habitat management on wetland areas (e.g., development of water control structures and seeding in low-lying areas).

Uplands

Little change in upland habitat conditions on the refuge would occur. Grazing would continue on refuge lands in conjunction with BLM allotments. The BLM and the Service have different purposes for grazing on federal lands. The Service uses grazing as a habitat management tool specifically for the benefit of wildlife, whereas the BLM manages grazing in accordance with the Taylor Grazing Act.

A lack of Service coordination with the BLM results in grazing on the refuge that may not be compliant with refuge policy. The Service may not be fulfilling its mandate for trust resources by not

staying actively involved in annual grazing planning and management with BLM. Updating the grazing program to comply with Service grazing standards may affect BLM permittees. Continued unanalyzed impacts from grazing could result in criticism that the Service is not appropriately managing lands in the Refuge System.

Threatened and Endangered Species and State Species of Concern

Currently, no known federally listed species or state species of concern have been located on the refuge. If located, they would be protected from intentional or unintended impacts by banning or modifying activities where these species occur. Surveys are not occurring, which restricts discovering the presence of these species on the refuge.

Invasive Species

Management of invasive species on the refuge would continue to be reactionary, addressed as problems are identified and as resources permit. Some invasive species may become established or expand.

Visitor Services

Hunting

Unlimited vehicle access negatively impacts vegetation and wildlife. Public use programs would be reviewed for compatibility and modified or eliminated as needed. Understaffing prohibits active law enforcement and educational programs to ensure a quality hunting experience and the ability to manage hunting in accordance with the Service's policy and guidelines. Limited law enforcement efforts increase the potential for illegal hunting activities.

John and Karen Hollingsworth/USFWS

Pronghorn

Fishing

Enforcing refuge regulations would result in the loss of a public fishing opportunity and may result in a negative public image, as the Service would be restricting a use that has occurred in previous years.

Wildlife Observation, Photography, Environmental Education, and Interpretation

With no formal tour routes or walking trails on the refuge, it is assumed that most wildlife observation and photography is conducted by visitors walking through refuge habitats, which may damage vegetation and disturb wildlife. Lack of dedicated staff time precludes the development of quality, compatible wildlife observation and photography, educational, and interpretation activities. Uses may be modified to ensure compatibility and appropriate use.

Nonwildlife-dependent Recreation

Changes to public use of refuge areas may reduce recreation opportunities at Bishops Point (i.e., waterskiing, jet skiing, wind surfing, sailing, motorboating, ATV use, and overnight camping would be prohibited). While visitation to the refuge by some user groups (recreational boaters) may decline, visitation by others (wildlife enthusiasts) may increase with the implementation of compatibility policies. The Service may experience a negative public image by restricting public uses that have been permitted for over 40 years.

Research and Science

Under this alternative, little more would be learned about the four units' habitat and wildlife use to guide management decisions. Habitat conditions could degrade due to the lack of information gathering on wildlife and habitats.

Partnerships

Partnership development would not occur due to lack of Service resources. With limited funding and no dedicated staff, little improvement or repair to infrastructure or habitat improvements would occur. Partnerships would be reliant on interested parties approaching the Service as well as managing and funding agreed-upon projects. Opportunities for habitat improvements likely would not occur for these reasons.

Operations

The remote location of refuge staff at Arapaho NWR Complex headquarters 240 miles away would continue to impede proper management of the refuge. Specific annual funding would not be earmarked for Pathfinder NWR, but special project funding may become available through the SAMMS. Minimal on-the-ground accomplishments and management of refuge units would occur due

to competing priorities. Loss of opportunities for habitat improvements and other projects would continue due to staff shortages within the complex.

Socioeconomic and Economic Impacts

The refuge would continue to be managed much as it is today and socioeconomic change would therefore be minimal. Visitation and revenues spurred by the refuge would remain at or near current levels. Visitor spending would likely remain at or very close to current levels.

Alternative B—Enhanced Refuge Management

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

Refuge Administration

Agency coordination would be improved and roles would be clarified, resulting in improvement of habitat conditions to support migratory bird species.

Refuge Uses

The CCP process triggers the evaluation of all existing and proposed public uses and management actions on a national wildlife refuge. Uses found to be inappropriate or incompatible would be modified or eliminated as expediently as possible.

Habitat Management

Reservoir (Deepwater)

The reservoir would continue to provide resting areas for waterfowl and other migratory species during spring and fall migration. Emergent vegetation along the shoreline of the reservoir, which provides a food source for migratory birds and other wildlife, would be minimally present due to fluctuations in water levels (20 feet per year on average) and resulting steep, sandy cutbanks that prohibit vegetation growth.

Wetlands and Riparian Areas

By studying the wetland characteristics, staff and partners could develop management actions that may improve wetlands for the benefit of waterfowl and waterbirds.

Uplands

Increased monitoring and evaluation of grazing effects would assist with management decisions. Some fence construction would likely occur. Fencing of the three small units (Goose Bay, Deweese Creek, and Sage Creek) may be detrimental to wildlife. Small, fenced parcels impede migration and animal movement. Fenced parcels may create higher-quality habitat, but also may create wildlife sinks by increasing predators' ability to find ground nesting birds or young in a concentrated area. Grazing operations for BLM permittees may be affected. Small, isolated parcels and areas with steep, sandy cutbanks would still be difficult to manage for grazing purposes.

Threatened and Endangered Species and State Species of Concern

Currently, no known federally listed species or state species of concern have been located on the refuge. If located, they would be protected from intentional or unintended impacts by banning or modifying activities where these species occur. Dedicated staff time would allow for surveys to occur, and the potential for protective management actions would increase.

Invasive Species

A proactive approach by refuge staff and partners to monitor for infestations and obtain the necessary resources to manage them would eradicate some invasive species from the units and control new invasive species before they become established. Coordination with Reclamation staff to obtain information on the presence of invasive species on the three isolated units would continue. Efforts within the reservoir pool level would be limited to areas where reservoir operations would not impact the success of controls.

Visitor Services

Hunting

Vehicle access would be controlled to minimize negative impacts to vegetation and wildlife. Public use programs would be reviewed for compatibility and modified or eliminated as needed. Dedicated staff would allow for better coordination and efforts to improve hunting programs. A stronger law enforcement presence may increase compliance with hunting regulations. Through development of an MOU, WGFD would become an active partner with the Service in addressing issues and effecting solutions.

Fishing

Public fishing opportunity would be provided upon completion of the CFR process to open the refuge to fishing. Boat use would be controlled to minimize negative impacts to shoreline vegetation through wake action. Disturbance to waterbirds using the reservoir for molting and feeding would be reduced. Water uses would need to be evaluated under compatibility and modified or eliminated accordingly. Through development of an MOU, WGFD would become an active partner in addressing issues and effecting solutions. Dedicated staff time would allow for an increase in law enforcement patrol, education, and compliance.

USFWS

Family Opportunities.

Wildlife Observation, Photography, Environmental Education, and Interpretation

Dedicated staff time would enhance opportunities for wildlife observation and photography in selected areas. Improving and developing partnerships would increase the opportunities for these public uses. All uses would be reviewed and may be modified to ensure compatibility and appropriate use.

Nonwildlife-dependent Recreation

Changes to public use of refuge areas may reduce the number of recreation opportunities at Bishops Point (i.e., waterskiing, jet skiing, wind surfing, sailing, motorboating, ATV use, and overnight camping would be prohibited). While visitation to the refuge by some user groups (recreational boaters) may decline, visitation by others (wildlife enthusiasts) may increase with the implementation of compatibility policies. The Service may experience a negative public image by restricting public uses that have been allowed for over 40 years.

Research and Science

Acquiring baseline data would assist in management efforts to improve or maintain the units for the benefit of wildlife. Dedicated staff would develop plans and partner with interested parties to gather and interpret data. Habitat conditions may improve due to increased knowledge. Efforts would be focused on the Steamboat Lake area and other areas of the Sweetwater Arm Unit not heavily influenced by reservoir operations.

Partnerships

With assistance from partners, infrastructure improvements and an increase in active management may be seen. Dedicated staff would be available to lead and coordinate quality projects and develop positive partnership experiences over time. Partnership development is an important aspect of refuge management and, with staff available, time would be dedicated to develop and nurture such partnerships. Efforts would only focus on lands not influenced by reservoir operations, leaving other lands unattended.

Operations

A budget increase would improve on-the-ground accomplishments in refuge habitat conditions. Efforts would focus on areas that provide the highest potential gain for trust resources. The ability to provide funding for staff efforts at Pathfinder NWR and the Laramie Plains refuges would increase. Areas heavily impacted by reservoir operations and small, isolated units would see only minor improvements due to the difficulty in managing these areas.

Socioeconomic and Economic Impacts

Under Alternative B, the refuge would be managed for enhanced wildlife habitat, which would prohibit many popular recreational activities (e.g., sailing and jet skiing) at the refuge. The long-term socioeconomic effects of such actions are unclear. While restriction of recreational activities within the refuge boundary would reduce visitation to the refuge in the near future, these activities would continue to be permitted and enjoyed on reservoir areas outside the refuge boundary. However, if such restrictions result in larger and more diverse wildlife populations within the refuge, a potential increase in visitation from wildlife enthusiasts could offset the socioeconomic impact caused by the decrease in recreational visitors.

Improved wildlife habitat and increased wildlife populations could draw additional visitors to the refuge in the long term. As a result, the study area economy could see up to a 10 percent increase in visitor spending, which could introduce an additional $25,500 in economic activity to the region. Additional visitors would generate more business for local proprietors and raise regional tax revenues. However, if the alternative did not increase wildlife populations and visitation from wildlife enthusiasts, overall visitation levels and visitor spending in the local economy would be uncertain.

Alternative C—Modify Refuge Boundary (Proposed Action)

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

Refuge Administration

Concentrating resources on manageable lands would improve agency credibility by allowing limited funds to be spent on a smaller area that meets the Service mission (i.e., quality migratory and resident bird habitat).

Refuge Uses

The CCP process triggers the evaluation of all existing and proposed public uses and management actions on a national wildlife refuge. Uses found to be inappropriate or incompatible would be modified or eliminated as expediently as possible. By modifying the map associated with the MOU, certain refuge areas would not need to be evaluated under compatibility or appropriate use policies.

Habitat Management

Reservoir (Deepwater)

The reservoir would continue to provide resting areas for waterfowl and other migratory species during spring and fall migration under management by Reclamation or its designee.

Wetlands and Riparian Areas

Playas and impoundments would continue to fill and dry as natural processes dictate. By studying the wetland characteristics, Service staff and partners could develop potential management actions to improve wetlands for the benefit of waterfowl and waterbirds. The eastern half of the Sweetwater Arm Unit and the Goose Bay, Deweese Creek, and Sage Creek units in their entirety would be removed from the refuge. As a result, reservoir level fluctuations would no longer be an issue for refuge lands. The final configuration of refuge lands would concentrate the area of responsibility and focus efforts on lands that meet habitat requirements for trust resources.

Uplands

Increased monitoring and evaluation of grazing effects would assist with management decisions. Isolated parcels would be removed the refuge boundary. With less uplands acreage to manage, refuge staff would be better able to control and implement an appropriate grazing program and to fence the area. The gentle slopes of backwater and riparian areas are better suited for fencing and posting of signage.

Threatened and Endangered Species and State Species of Concern

Currently, no known federally listed species or state species of concern have been located on the refuge. If located, they would be protected from intentional or unintended impacts by modifying activities where these species occur. Dedicated staff time would increase the opportunity for surveys and protective management actions.

Invasive Species

A proactive approach by refuge staff and partners to monitor for infestations and obtain the necessary resources to manage them would eradicate some invasive species from the refuge and control new invasive species before they become established. Early preemptive efforts would best help to eradicate or control any invasive species.

Visitor Services

Hunting

Vehicle access would be controlled to minimize negative impacts to vegetation and wildlife. Dedicated staff would allow for better coordination of and efforts to improve hunting programs. A stronger law enforcement presence may increase compliance with hunting regulations. Through development of an MOU, WGFD would be an active partner in addressing issues and effecting solutions. Refuge lands would be easier to patrol for law enforcement purposes. Clearly designated boundaries would increase compliance with regulations and raise public awareness of and appreciation for Service efforts at providing quality hunting programs.

Fishing

Fishing opportunities for visitors to Pathfinder Reservoir and the regional fishing community would continue. Service regulations and potential seasonal restrictions would not apply to the deepwater habitats outside the refuge boundary.

Public fishing opportunity on refuge lands would be provided upon completion of the CFR process to open the refuge to fishing. Boat use would be controlled to minimize negative impacts to shoreline vegetation through wave action. Disturbance to waterbirds using the reservoir for molting and feeding would be reduced. Water uses would need to be evaluated under compatibility and modified or eliminated accordingly. Through development of an MOU, WGFD would become an active partner in addressing issues and effecting solutions. Dedicated staff time would allow for an increase in law enforcement patrol, education, and compliance.

Wildlife Observation, Photography, Environmental Education, and Interpretation

Dedicated staff time would enhance opportunities for wildlife observation and photography to occur in selected areas. Improving and developing new partnerships would increase the opportunities for these public uses. All uses would be reviewed and may be modified to ensure compatibility and appropriate use. Focusing efforts on properly marked and posted lands would enhance the Service's

image and raise public awareness of the Service's mission and role in managing trust resources.

Nonwildlife-dependent Recreation

Because the lands and waters associated with Bishops Point would be outside the refuge boundary, the activities that occur there would not be subject to Service compatibility and appropriate use policies. Existing recreational uses would likely continue to be permitted in areas outside the refuge under management by Reclamation or its designee (e.g., Natrona County).

Research and Science

Acquiring baseline data would assist in management efforts to improve or maintain the refuge for the benefit of wildlife. Dedicated staff would develop plans and partner with interested parties to gather and interpret data. Improved habitat conditions may occur due to increased knowledge.

Partnerships

With assistance from partners, infrastructure improvements and an increase in active management may be seen. Dedicated staff would be available to lead and coordinate quality projects as well as develop positive partnership experiences over time. Partnership development is an important aspect of refuge management and, with staff available, time would be dedicated to develop and nurture such partnerships.

Operations

A budget increase would improve on-the-ground accomplishments in refuge habitat conditions and help the Arapaho NWR Complex compete for limited funding to support staff efforts for Pathfinder NWR and the Laramie Plains refuges. Focusing management efforts on remaining refuge lands would increase the potential to successfully support the mission of the Refuge System. Retaining only lands with the highest potential benefit to migratory birds would most efficiently use limited resources and help secure needed funds.

Socioeconomic and Economic Impacts

The refuge would no longer include lands that are difficult to maintain and manage. With reduced land area, it is uncertain whether the refuge would experience the same visitation levels. However, if the reduced land area spurred wildlife population growth, visitation by wildlife enthusiasts could increase.

Improved wildlife habitat and increased wildlife populations could draw additional visitors to the refuge in the long term. As a result, the study area economy could see up to a 10 percent increase in visitor spending, which could introduce an additional $25,500 in economic activity to the region. Additional visitors would generate more business for local proprietors and raise regional tax revenues. However, if the alternative did not increase wildlife populations and visitation from wildlife enthusiasts, overall visitation levels and visitor spending in the local economy would be uncertain.

5.3 CUMULATIVE IMPACTS

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

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

The NEPA requires mitigation measures when the environmental analysis process detects possible significant impacts to habitats, wildlife, or the human environment. All activities proposed under alternative C are not expected or intended to produce significant levels of environmental impacts that would require mitigation measures. Nevertheless, the final CCP will contain the following measures to preclude significant environmental impacts from occurring:

- Federally listed species will be protected from intentional or unintentional impacts by banning or restricting activities where these species occur.
- All proposed activities will be regulated to reduce potential impacts to wildlife and plant species, especially during their sensitive reproductive cycles.
- Monitoring protocols will be established to determine goal achievement levels and possible unforeseen impacts to resources for application of adaptive management to ensure wildlife and habitat resources, as well as cultural resources, are preserved.
- The final CCP can be revised and amended after 5 years of implementation, for application of adaptive management to correct unforeseen impacts that occur during the first years of the plan.

6 Implementation of the Proposed Action

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Once a management alternative has been selected and finalized, the CCP has been approved, and the Service has notified the public of its decision, the implementation phase of the CCP process begins.

During the next 15 years (2008–2023), the objectives and strategies presented below would be realized. The final CCP will serve as the primary management document for Pathfinder NWR until it is formally revised. The Service will carry out the final CCP with assistance from existing and new partner agencies, organizations, and the public.

Although a number of needs were identified during the planning process, there are no assurances that projects identified in this draft CCP will be fully or even partially funded. However, within every planning effort, there are opportunities to examine current funding and resources to determine the best available uses based on a comprehensive evaluation of critical needs. If this CCP were never completed, issues could go unresolved due to a lack of public and administrative understanding and support.

6.1 IDENTIFICATION OF THE PROPOSED ACTION (DRAFT CCP)

The planning team for Pathfinder NWR developed three unique management alternatives based on the issues, concerns, and opportunities expressed during the scoping process (see chapter 1). The issues discussed throughout this draft CCP and EA were derived from the collective input of local citizens and communities, cooperating agencies, conservation organizations, and refuge staff.

In identifying the alternative for proposed action, the team determined probable effects of each alternative on ten program areas: (1) administration; (2) habitat protection; (3) refuge habitats (deepwater reservoir, wetlands and riparian areas, and uplands); (4) threatened and endangered species; (5) invasive species; (6) public use; (7) research and science; (8) partnerships; (9) cultural resources; and (10) budget and staffing. Effects on habitats and threatened and endangered species received stronger consideration

than effects projected for other program areas. Below is a brief description of the determination of the proposed action alternative, as well as the other two alternatives, in ranked order of desirability.

1. Alternative C—Proposed Action, Draft CCP

Alternative C is ranked the first of three alternatives as the proposed action (draft CCP) for best addressing the vision and goals for Pathfinder NWR. The proposed action is fully developed under "Draft CCP" for the refuge later in this chapter.

This alternative would modify the refuge boundary to remove areas from the refuge that provide minimal opportunity to improve wildlife habitat and are difficult to manage. Remaining refuge areas would be managed similar to those actions described in alternative B. This modification would enable the Service to focus efforts on manageable lands, thereby efficiently directing refuge resources toward accomplishing the mission of the Refuge System.

Baseline data would be acquired for refuge habitats. Data would be evaluated to determine current conditions in relation to the historical ecological site characteristics. Management decisions would be directed toward providing high-quality habitat conditions to support migratory bird species.

Monitoring and management of invasive species on the refuge would be increased. Greater emphasis would be placed on maintaining existing partnerships and developing new partnerships to achieve refuge goals and objectives.

Water-based recreational activities such as camping, motor boating, water skiing, and sailing would likely continue off refuge due to the fact that the areas where these uses generally occur would be located outside the refuge boundary.

Cultural resources management would protect known and newly discovered artifacts and sites.

2. Alternative B—Enhanced Refuge Management

This alternative would maintain the current land management responsibilities. Difficult areas to manage with little benefit to migratory bird species would remain within the refuge boundary. Areas impacted by reservoir operations would not receive active management. Public uses would be evaluated under current Service policies, and some uses may be modified or eliminated.

3. Alternative A—Current Management

Alternative A ranked last of three alternatives because management issues would not be adequately addressed.

The CCP process offers an opportunity for refuge staff to assess the effects of past and current management. This timely and introspective analysis encouraged development, consideration, and selection of alternatives to current management that better address old and emerging management issues.

6.2 SUMMARY OF THE PROPOSED ACTION

For the past 35 years, Pathfinder NWR has received little to no active management due to the relatively small staff of the Arapaho NWR Complex and competing refuge priorities. Audubon Wyoming conducts bird surveys and the Service maintains an interpretive site, but little to no proactive management, monitoring, or other activities have occurred.

It is hoped that this plan will demonstrate the need to actively manage this refuge for the benefit of migratory bird species. An increase of one FTE, dedicated to Pathfinder NWR and the Laramie Plains refuges, would have a noticeable impact on the ability to conduct site-specific research; build and maintain partnerships; develop specific biologically based goal-oriented, step-down management plans; and guide future management decisions for the refuge.

The planning team developed objectives in support of goals identified in chapter 2 to carry out the proposed action (alternative C) for management of Pathfinder NWR. Strategies to achieve objectives are suggested. Rationale is included that supports goals, objectives, and strategies. In addition, assumptions are discussed.

Biological goals and objectives emphasize management of plant communities as habitat for wildlife, especially migratory birds, and are organized by major habitat types represented at the refuge. Goals and objectives are habitat based rather than wildlife based, because wildlife often respond to factors beyond the control of local refuge management (for example, management of migratory birds). Furthermore, management practices (for example, prescribed fire, grazing, and water-level manipulation) usually benefit wildlife communities through improved habitat conditions rather than wildlife populations. Habitat-based objectives emphasize monitoring of important vegetation structure over time. In most cases, wildlife population responses to habitat changes are not monitored. Rather, site-specific inventories, applied research, and literature reviews offer reasonable predictions of wildlife response to habitat management.

Additional goals, objectives, and strategies are developed for visitor services, cultural resources, and refuge administration and operations.

The National Wildlife Refuge System Administration Act of 1966 required the Secretary of the Interior, before permitting uses, to ensure that those uses are compatible with the purposes of the refuge. The CCP process requires a compatibility determination for all existing and proposed refuge uses. Draft compatibility determinations for Pathfinder NWR include hunting (appendix G), wildlife observation and photography (appendix H), environmental education and interpretation (appendix I), and prescribed grazing (appendix J).

6.3 DRAFT CCP

The following goals, objectives, and strategies apply to Pathfinder NWR and outline the actions needed to achieve the vision of the refuge (figure 14). Figure 15 shows the proposed boundary for Pathfinder NWR, (further detailed in the administrative goal below.

Natural Resources Goal

Conserve the ecological diversity of uplands and wetlands to support healthy populations of native wildlife, with an emphasis on migratory birds.

Natural Resources Objective 1

Within 5 years of completing the CCP, establish vegetation monitoring transects to collect baseline floristic composition data.

Strategy

- ❑ Partner with USGS, Audubon Wyoming, universities, and other interested parties for information gathering and evaluation of habitats.

Rationale and Assumptions

The lack of active management has resulted in sparse biological information regarding the refuge. It will be important to focus on providing baseline data and achieve identified habitat goals. Baseline vegetative data will provide accurate information on species composition and presence, which will help guide management plans to ensure the highest and best use for wildlife resources.

Natural Resources Objective 2

Within 1 year of completing the basic inventory of vegetation, develop detailed objectives describing the desired vegetation conditions for upland, wetland, and riparian habitats.

Strategies

- ❑ Identify and prioritize habitat management research needs.
- ❑ Encourage data collection that focuses on developing plans for the future of this refuge.
- ❑ Conduct baseline habitat surveys to identify refuge resources and the role they serve.
- ❑ Complete a habitat management plan for the refuge.
- ❑ Coordinate with universities, nongovernmental organizations (NGOs), and Natrona County for cooperative development and accomplishment of management actions.
- ❑ Investigate the habitat qualities of the Steamboat Lake and Horse Creek areas of the Sweetwater Arm Unit.
- ❑ Implement management actions to improve habitat conditions (i.e., burning, fencing, grazing, rest, and invasive plant control).

Rationale and Assumptions

The Sweetwater Arm Unit of the refuge provides some riparian habitat, but is primarily native grasslands and alkali lakes. The backwater areas, west of Horse Creek, provide vegetation and cover conditions for wildlife habitat. The decline of grassland nesting birds has been attributed to habitat loss and conversion, fragmentation, and the disruption of ecological factors, such as fire, which created a mosaic of habitat types across the landscape. As a result, many grassland bird species are now considered species of biological concern (USFWS 2002). Managing natural areas for these bird species involves providing the nesting habitat requirements and food resources essential for their reproduction and survival. These requirements include large, treeless patches containing within them diversity in vegetation structure. The habitat within Pathfinder NWR provides open water, shrub and grasslands, riparian habitat, and alkali lakes. This mosaic can be managed for the benefit of migratory birds.

The Service has no data on the effects of current grazing, condition of uplands, or other biological information due to inactive management. The lack of site-specific biological information on bird species' use of refuge lands and personnel dedicated to guide management practices (grazing, rest, prescribed fire) needs to be corrected by gathering data and evaluating such management practices for the benefits they offer to wildlife resources. Baseline information on vegetative structure, composition, and quality as well as water quality are imperative to guide proper management decisions.

Submergent vegetation provides complex structure for macroinvertebrate production when it becomes established in early summer (Krull 1970, Voights 1976, Nelson and Kadlec 1984). Waterfowl broods rely heavily on the availability of both invertebrate and plant foods (Sudgen 1973). In addition, submergents are used by many wetland-associated wildlife species (Kantrud 1990, 1991) for nesting, foraging, and escape habitat.

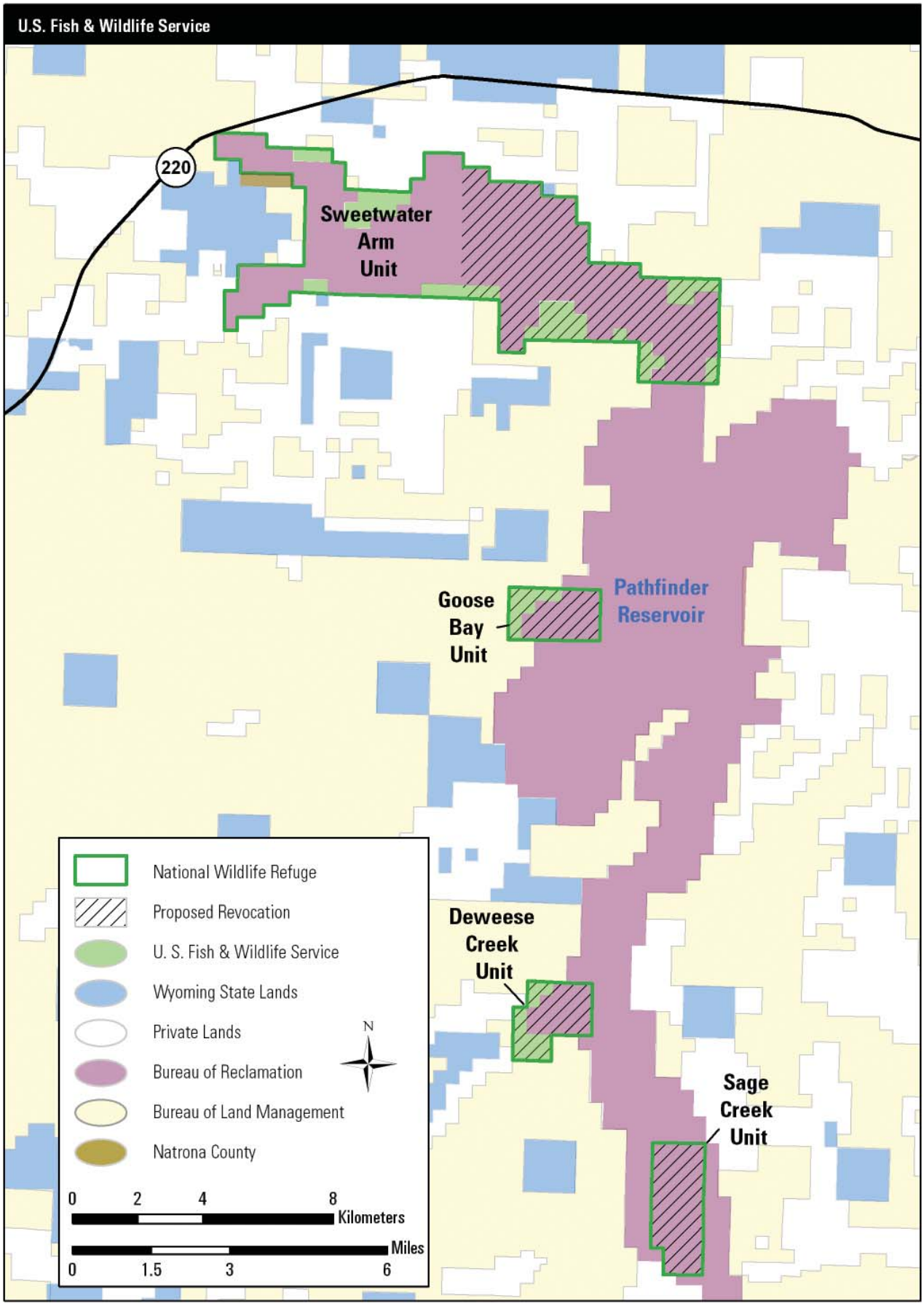

Figure 14. Draft CCP map of Pathfinder NWR, Wyoming.

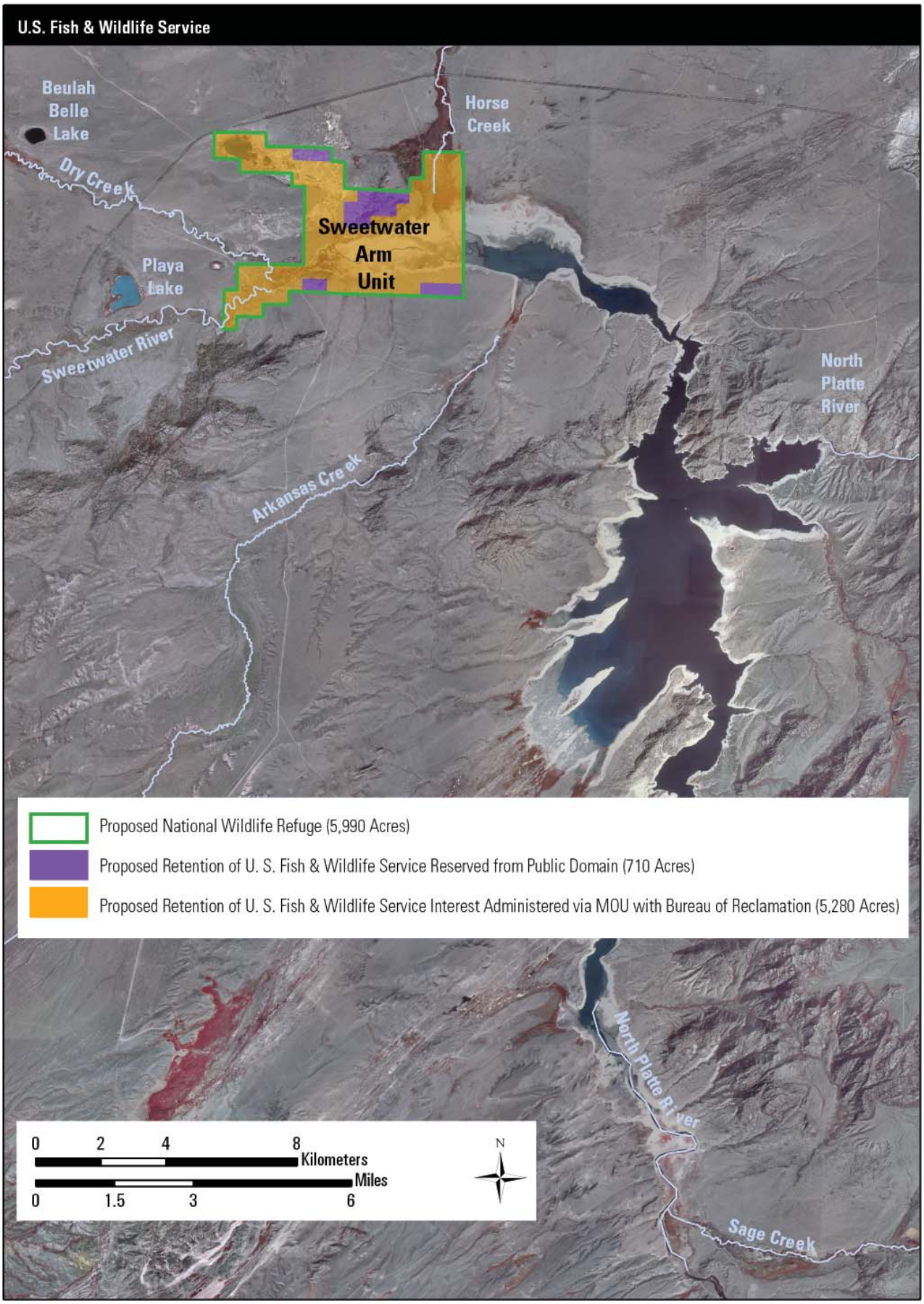

Figure 15. Proposed boundary of Pathfinder NWR, Wyoming.

The Steamboat Lake area of the refuge provides shallow-water wetlands. Wilson's phalarope will use both fresh and alkali wetlands with three characteristics: open water, emergent vegetation, and open shoreline (Dechant et al. 2003). Though Wilson's phalarope have been observed, a lack of data concerning water quality and other parameters hamper management actions to benefit these and other species. Site-specific information is needed to guide management actions.

The backwater areas provide subirrigated grasses and, depending on the year, some wet meadow and shallow wetland habitat for migratory birds. These areas are limited to boating access due to dry conditions and shallow water. When water is available they provide feeding and loafing areas for waterfowl and shorebirds. Their shorelines are more stable and less influenced by the large fluctuations in reservoir operations. Steep, sandy cutbanks are less prevalent and gently sloping shorelines allow vegetative growth, which reduces soil erosion and blowing sands.

These backwater areas provide quality wildlife habitat to a variety of species. Riparian communities in the western states are mesic vegetative associations occurring along ephemeral, intermittent, and perennial streams (Meyer et al. 2003).

Healthy riparian habitat helps filter runoff, reduces sedimentation, improves water quality, and provides habitat for associated wildlife species (Meyer et al. 2003). The ability of riparian systems to support a diverse assemblage of vertebrates is also well documented (Pashley et al. 2002). In fact, riparian habitats are disproportionately more important for support of wildlife than any other type of ecological habitat (Cooper 1986). For example, floodplain vegetation provides habitats for more species of birds than other vegetation associations in western North America (Stanley and Knopf 2000). Riparian systems provide habitat for fish, large and small mammals, amphibians, reptiles, wetland-dependent birds (waterfowl, shorebirds, wading birds), and a large diversity of passerines including Neotropical migrants, grassland birds, waterfowl, and shorebirds. The channel, floodplain, and transitional fringe all work to provide life-cycle requirements for numerous wildlife species. The riparian habitat on the refuge needs to be evaluated for its current and potential condition in providing for wildlife life-cycle needs.

Natural Resources Objective 3

Over a 15-year period, during routine activities in the field, document any occurrences of problematic invasive plant species that have not yet been documented on refuge lands but have the potential to exist on them. Continue to work with Reclamation and Natrona County Weed and Pest on known infestations.

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Tamarisk

Strategies

- Discuss invasive plant issues on the refuge with Natrona County Weed and Pest.
- Maintain efforts to actively look for invasive plants when performing other management duties.
- Develop an integrated pest management plan for the refuge.
- When invasive plants are discovered, coordinate with Natrona County Weed and Pest for control efforts to maintain habitat integrity.

Rationale and Assumptions

For native birds to be retained, invasive plants must be actively controlled (Marzluff and Ewing 2001). Invasive species pose a serious threat to existing fish and wildlife resources. Once invasive species are documented, it is important to maximize efforts to gain control or eliminate the presence of invasive plants, thereby reducing competition and providing areas for native plants to flourish.

Currently, tamarisk is the primary invasive plant of concern. Tamarisk invades along the shoreline of the reservoir, and drawdowns in the summer months facilitate the spread of invasive plants within the transition and shoreline areas. During the course of other management activities, it is prudent to maintain vigilance for invasive species. New infestations are easier to control if noticed early.

Natural Resources Objective 4

Over the life of this plan, appropriately conserve and manage any threatened and endangered species or state species of concern documented on the refuge. Increase management efforts for state species of concern.

Strategies

- ❑ Conduct surveys for listed plant species.
- ❑ Conduct surveys for listed animal species.
- ❑ Develop management plans for threatened and endangered species and state species of concern (i.e., slender spiderflower and sage-grouse).
- ❑ Partner with Audubon Wyoming and other interested parties to conduct surveys.

Rationale and Assumptions

Federal law requires that threatened and endangered species are protected. Greater management capability will increase the Service's ability to monitor and manage for any threatened and endangered species located on refuge lands. Partnering with the state of Wyoming to manage state species of concern will demonstrate the Service's willingness to collaborate on wildlife management issues important to the state.

Visitor Services Goal

Provide wildlife-dependent recreational opportunities to a diverse audience when the administration of these programs does not adversely affect habitat management objectives.

USFWS

Wildlife Photography

Visitor Services Objective 1

Within 10 years of plan approval, enhance wildlife-dependent recreation opportunities by developing a visitor services management plan to address refuge activities, access, and circulation.

Strategies

- ❑ Assign a new FTE to coordinate the effort to develop a visitor services plan for the refuge.
- ❑ Request assistance from the Service's region 6 division of education and visitor services to develop a visitor services management plan for the refuge.

Rationale and Assumptions

The Steamboat Lake area of the Sweetwater Arm Unit provides wildlife viewing and photography opportunities. The public can observe and enjoy a variety of wildlife including raptors, waterfowl, shorebirds, and other migratory species. Conducting a site assessment is essential to create a quality wildlife-dependent recreational opportunity.

Visitor Services Objective 2

Where compatible, opportunities for fishing will be provided based on refuge goals and objectives.

Strategies

- ❑ Work with WGFD to gather information required to establish viable fishing program.
- ❑ Open refuge to fishing through the mandated CFR process.
- ❑ Prepare a compatibility determination for fishing program.
- ❑ Prepare a compatibility determination for boating in support of the six priority public uses.
- ❑ Encourage fishing opportunities on the refuge.

Rationale and Assumptions

Fishing is a compatible use and will be supported. Stipulations on boating (e.g., designated boating areas, no wake zone, times of year) may be required to ensure compatibility with refuge goals and objectives.

Visitor Services Objective 3

Enhance hunting program to manage wildlife and provide hunting opportunities (ducks, coots, mergansers, deer, pronghorn) consistent with refuge goals and objectives, while promoting ethical hunting practices.

Strategies

- Work with partners (i.e., WGFD) to enhance and promote hunting program.
- Minimize resource damage caused by vehicles.
- Enhance quality of refuge habitats.
- Where necessary, implement seasonal and permanent road closures in selected areas.

Rationale and Assumptions

Improving the quality of refuge habitats will attract more wildlife to the refuge. Reducing disturbance to hunters and wildlife will improve opportunities to observe and harvest game. Providing greater open distance between animals and potential threats to them helps promote their safety and security.

Partnerships Goal

Work with partners to support healthy populations of native wildlife and to increase the understanding of wildlife needs as well as the benefits wildlife offer to local communities.

Partnerships Objective 1

Throughout the life of the plan, promote existing partnerships and develop new partnerships to achieve refuge goals and objectives.

Strategies

- Establish partnerships that result in collecting baseline data for the refuge.
- Work with partners to evaluate baseline data to determine management direction for the refuge.

Rationale and Assumptions

Partnerships are important to the Service to achieve refuge management goals and objectives. If the Service does not cultivate partnerships, which take time and resources to develop and maintain, opportunities to work with others in conserving wildlife habitat will be missed.

Current partnerships include Audubon Wyoming, the Bureau of Land Management; the Bureau of Reclamation; the Natrona County Road, Bridge, and Parks Department; Natrona County Weed and Pest; and the Wyoming Game and Fish Department.

Cultural Resources Goal

Identify and evaluate the cultural resources on the refuge and protect those that are determined to be significant.

Cultural Resources Objective 1

Within the 15-year life of this plan, accomplish a complete cultural resources survey of those areas of the refuge with a moderate to high potential for cultural resources.

Strategies

- Create a sensitivity model that identifies areas as having a low, medium, or high potential for cultural resources.
- Complete a cultural resource survey, including evaluations and management recommendations, for the moderate and high potential areas.

Rationale and Assumptions

A survey is the best tool available to determine the location of cultural resources on the refuge. Through survey, both historic and prehistoric sites are identified and key information is gathered that promotes planning, research, and educational outreach. Although a few small surveys have been conducted, large-scale surveys are needed to better understand the distribution and nature of the resources. By concentrating on areas with a moderate or high potential for cultural resources, the Service can locate the greatest number of significant sites and work toward their protection and possible interpretation.

Administrative Goal

To obtain administrative capabilities that will result in efficient strategies to manage the landscape to achieve habitat and public management goals.

Administrative Objective 1

Within 2 years of plan approval, hire and assign one FTE Service employee to perform increased management activities on the refuge.

Strategies

- Hire a refuge manager or refuge operations specialist assigned to Pathfinder NWR and the Laramie Plains refuges.
- Increase funding to improve management activities at the refuge.

Rationale and Assumptions

The current staffing level of the Arapaho NWR Complex restricts a dedicated staff member for Pathfinder NWR, which has resulted in minimal management of the refuge.

Through discussions, the planning team determined that the addition of one full-time Service employee would provide adequate staff to actively manage refuge lands. Refuge management activities would be increased and enhanced, and refuge staff would strive to better understand the effects of management actions on the refuge.

Administrative Objective 2

Within 5 years of plan approval, regional office and refuge staff work with Reclamation to accomplish modification of national wildlife refuge boundary (figure 15).

Strategies

- Service completes field survey for proposed boundary line in the Sweetwater Arm Unit.
- Revise Exhibit A attached to the MOU between Reclamation and the Service (appendix D) to indicate configuration of new refuge boundary.

Rationale and Assumptions

Concentrating the Arapaho NWR Complex's resources on manageable lands would improve the Service's credibility by allowing limited funds to be spent on a smaller area that meets the Service's mission of providing quality migratory bird habitat.

6.4 STAFFING AND FUNDING

Currently, the Arapaho NWR Complex has a staff of four full-time employees. All four employees work in the complex with duties at Arapaho NWR, the Laramie Plains refuges, and Pathfinder NWR. Table 5 in chapter 4 lists these positions along with one new FTE (specifically assigned to Pathfinder NWR and the Laramie Plains refuges) that is needed for full implementation of the CCP. Projects required to carry out the CCP are funded through two separate systems as follows:

- The refuge operations needs system (RONS) is used to document requests to Congress for funding and staffing needed to carry out projects above the existing base budget.
- The Service Asset Maintenance Management System (SAMMS) is used to document the equipment, buildings, and other existing properties that require repair or replacement.

6.5 MONITORING AND EVALUATION

Adaptive management is a flexible approach to long-term management of biotic resources. Adaptive management is directed, over time, by the results of ongoing monitoring activities and other information. More specifically, adaptive management is a process by which projects are carried out within a framework of scientifically driven experiments to test the predictions and assumptions outlined with a CCP (figure 16).

To apply adaptive management, specific survey, inventory, and monitoring protocols would be adopted for Pathfinder NWR. The habitat management strategies would be systematically evaluated to determine management effects on wildlife populations. This information would be used to refine approaches and determine how effectively the objectives are being accomplished. If monitoring and evaluation indicate undesirable effects for target and nontarget species or communities, the management projects would be altered accordingly. Subsequently, the CCP would be revised.

Specific monitoring and evaluation activities will be described in the step-down management plan (table 6).

6.6 PLAN AMENDMENT AND REVISION

The final CCP will be reviewed annually to determine the need for revision. A revision would occur if and when significant information becomes available. The final CCP will be supported by detailed step-down management plans to address the completion of specific strategies in support of Pathfinder NWR goals and objectives. Revisions to the CCP and the step-down management plans will be subject to public review and NEPA compliance.

At a minimum, the final CCP will be evaluated every 5 years and revised after 15 years.

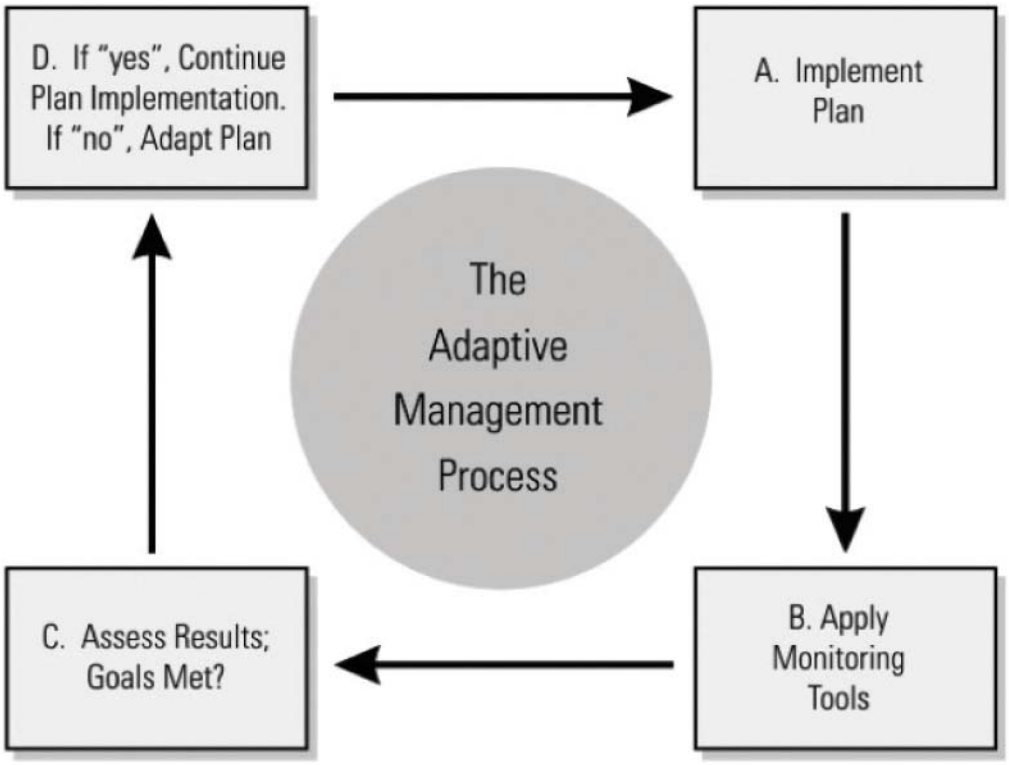

Figure 16. The adaptive management process.

Table 6. Step-down management plans for Pathfinder NWR, Wyoming.

Step-down Management Plan	*Completed Plan, Year Approved*	*New or Revised Plan, Completion Year*
Fire management plan	2001	2009
Habitat management plan	—	2012
Integrated pest management plan	2007	n/a
Law enforcement plan	—	2017
Safety plan	Covered under Arapaho NWR Complex plan	2008
Visitor services plan	—	2012
Water management plan	2007	n/a

Glossary

accessible—Pertaining to physical access to areas and activities for people of different abilities, especially those with physical impairments.

adaptive resource management—The rigorous application of management, research, and monitoring to gain information and experience necessary to assess and modify management activities; a process that uses feedback from research, monitoring, and evaluation of management actions to support or modify objectives and strategies at all planning levels; a process in which policy decisions are implemented within a framework of scientifically driven experiments to test predictions and assumptions inherent in management plan. Analysis of results helps managers determine whether current management should continue as is or whether it should be modified to achieve desired conditions.

Administration Act—National Wildlife Refuge System Administration Act of 1966.

alternative—A reasonable way to solve an identified problem or satisfy the stated need (40 CFR 1500.2); one of several different means of accomplishing refuge purposes and goals and contributing to the Refuge System mission ("Draft U.S. Fish and Wildlife Service Manual" 602 FW 1.5).

amphibian—A class of cold-blooded vertebrates including frogs, toads or salamanders.

annual—A plant that flowers and dies within 1 year of germination.

ATV—All-terrain vehicle.

baseline—A set of critical observations, data, or information used for comparison or a control.

biological control—The use of organisms or viruses to control invasive plants or other pests.

biological diversity, *also* **biodiversity**—The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur (Service Manual 052 FW 1.12B). The National Wildlife Refuge System's focus is on indigenous species, biotic communities, and ecological processes.

biotic—Pertaining to life or living organisms; caused, produced by, or comprising living organisms.

canopy—A layer of foliage, generally the uppermost layer, in a vegetative stand; midlevel or understory vegetation in multilayered stands. Canopy closure *(also* canopy cover*)* is an estimate of the amount of overhead vegetative cover.

CCC—*See* Civilian Conservation Corps.

CCP—*See* comprehensive conservation plan.

CFR—*See* Code of Federal Regulations.

cfs—Cubic feet per second.

Civilian Conservation Corps (CCC)—Peacetime civilian "army" established by President Franklin D. Roosevelt to perform conservation activities from 1933–42. Activities included erosion control; firefighting; tree planting; habitat protection; stream improvement; and building of fire towers, roads, recreation facilities, and drainage systems.

Code of Federal Regulations (CFR)—The codification of the general and permanent rules published in the "Federal Register" by the executive departments and agencies of the federal government. Each volume of the CFR is updated once each calendar year.

compatibility determination—*See* compatible use.

compatible use—A wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the director of the U.S. Fish and Wildlife Service, will not materially interfere with or detract from the fulfillment of the mission of the Refuge System or the purposes of the refuge ("Draft U.S. Fish and Wildlife Service Manual" 603 FW 3.6). A compatibility determination supports the selection of compatible uses and identified stipulations or limits necessary to ensure compatibility.

comprehensive conservation plan (CCP)—A document that describes the desired future conditions of the refuge and provides long-range guidance and management direction for the refuge manager to accomplish the purposes of the refuge, contribute to the mission of the Refuge System, and to meet other relevant mandates ("Draft U.S. Fish and Wildlife Service Manual" 602 FW 1.5).

concern—*See* issue.

conspecific—An individual belonging to the same species as another.

cool-season grasses—Grasses that begin growth earlier in the season and often become dormant in the summer. These grasses will germinate at lower temperatures. Examples of cool-season grasses are western wheatgrass, needleandthread, and green needlegrass.

coteau—A hilly upland including the divide between two valleys; a divide; the side of a valley.

cover, *also* **cover type, canopy cover**—Present vegetation of an area.

cultural resources—The remains of sites, structures, or objects used by people in the past.

dense nesting cover (DNC)—A composition of grasses and forbs that allows for a dense stand of vegetation that protects nesting birds from the view of predators, usually consisting of one to two species of wheatgrass, alfalfa, and sweetclover.

depredation—Destruction or consumption of eggs, broods, or individual wildlife due to a predatory animal; damage inflicted on agricultural crops or ornamental plants by wildlife.

DNC—*See* dense nesting cover.

drawdown—The act of manipulating water levels in an impoundment to allow for the natural drying-out cycle of a wetland.

EA—*See* environmental assessment.

ecosystem—A dynamic and interrelating complex of plant and animal communities and their associated nonliving environment; a biological community, together with its environment, functioning as a unit. For administrative purposes, the Service has designated 53 ecosystems covering the United States and its possessions. These ecosystems generally correspond with watershed boundaries and their sizes and ecological complexity vary.

EIS—Environmental impact statement.

emergent—A plant rooted in shallow water and having most of the vegetative growth above water such as cattail and hardstem bulrush.

endangered species, federal—A plant or animal species listed under the Endangered Species Act of 1973, as amended, that is in danger of extinction throughout all or a significant portion of its range.

endangered species, state—A plant or animal species in danger of becoming extinct or extirpated in a particular state within the near future if factors contributing to its decline continue. Populations of these species are at critically low levels or their habitats have been degraded or depleted to a significant degree.

endemic species—Plants or animals that occur naturally in a certain region and whose distribution is relatively limited to a particular locality.

environmental assessment (EA)—A concise public document, prepared in compliance with the National Environmental Policy Act, that briefly discusses the purpose and need for an action and alternatives to such action, and provides sufficient evidence and analysis of impacts to determine whether to prepare an environmental impact statement or finding of no significant impact (40 CFR 1508.9).

EPA—Environmental Protection Agency.

extinction—The complete disappearance of a species from the earth; no longer existing.

extirpation—The extinction of a population; complete eradication of a species within a specified area.

fauna—All the vertebrate and invertebrate animals of an area.

federal trust resource—A trust is something managed by one entity for another who holds the ownership. The Service holds in trust many natural resources for the people of the United States of America as a result of federal acts and treaties. Examples are species listed under the Endangered Species Act, migratory birds protected by international treaties, and native plant or wildlife species found on a national wildlife refuge.

federal trust species—All species where the federal government has primary jurisdiction including federally endangered or threatened species, migratory birds, anadromous fish, and certain marine mammals.

flora—All the plant species of an area.

FMP—Fire management plan.

forb—A broad-leaved, herbaceous plant; a seed-producing annual, biennial, or perennial plant that does not develop persistent woody tissue but dies down at the end of the growing season.

fragmentation—The alteration of a large block of habitat that creates isolated patches of the original habitat that are interspersed with a variety of other habitat types; the process of reducing the size and connectivity of habitat patches, making movement of individuals or genetic information between parcels difficult or impossible.

"friends group"—Any formal organization whose mission is to support the goals and purposes of its associated refuge and the National Wildlife Refuge Association overall; "friends" organizations and cooperative and interpretive associations.

FWS—*See* U.S. Fish and Wildlife Service.

geographic information system (GIS)—A computer system capable of storing and manipulating spatial data; a set of computer hardware and software for analyzing and displaying spatially referenced features (such as points, lines and polygons) with nongeographic attributes such as species and age.

goal—Descriptive, open-ended, and often broad statement of desired future conditions that conveys a purpose but does not define measurable units ("Draft U.S. Fish and Wildlife Service Manual" 620 FW 1.5).

grassland tract—A contiguous area of grassland without fragmentation.

GS—General schedule (pay rate schedule for certain federal positions).

habitat—Suite of existing environmental conditions required by an organism for survival

and reproduction; the place where an organism typically lives and grows.

habitat disturbance—Significant alteration of habitat structure or composition; may be natural (for example, wildland fire) or human-caused events (for example, timber harvest and disking).

habitat type, *also* **vegetation type, cover type**—A land classification system based on the concept of distinct plant associations.

HMP—Habitat management plan.

HUA—Hydrologic unit area.

impoundment—A body of water created by collection and confinement within a series of levees or dikes, creating separate management units although not always independent of one another.

Improvement Act—National Wildlife Refuge System Improvement Act of 1997.

indigenous—Originating or occurring naturally in a particular place.

integrated pest management (IPM)—Methods of managing undesirable species such as invasive plants; education, prevention, physical or mechanical methods of control, biological control, responsible chemical use, and cultural methods.

introduced species—A species present in an area due to intentional or unintentional escape, release, dissemination, or placement into an ecosystem as a result of human activity.

invasive plant, *also* **noxious weed**—A species that is nonnative to the ecosystem under consideration and whose introduction causes, or is likely to cause, economic or environmental harm or harm to human health.

inviolate sanctuary—A place of refuge or protection where animals and birds may not be hunted.

IPM—*See* integrated pest management.

issue—Any unsettled matter that requires a management decision; for example, a Service initiative, opportunity, resource management problem, a threat to the resources of the unit, conflict in uses, public concern, or the presence of an undesirable resource condition ("Draft U.S. Fish and Wildlife Service Manual" 602 FW 1.5).

lek—A physical area where males of a certain animal species gather to demonstrate their prowess and compete for females before or during the mating season.

management alternative—*See* alternative.

migration—Regular extensive, seasonal movements of birds between their breeding regions and their wintering regions; to pass usually periodically from one region or climate to another for feeding or breeding.

migratory birds—Birds that follow a seasonal movement from their breeding grounds to their wintering grounds. Waterfowl, shorebirds, raptors, and songbirds are all migratory birds.

mission—Succinct statement of purpose and/or reason for being.

mitigation—Measure designed to counteract an environmental impact or to make an impact less severe.

mixed-grass prairie—A transition zone between the tall-grass prairie and the short-grass prairie dominated by grasses of medium height that are approximately 2–4 feet tall. Soils are not as rich as the tall-grass prairie and moisture levels are less.

monitoring—The process of collecting information to track changes of selected parameters over time.

national wildlife refuge—A designated area of land, water, or an interest in land or water within the National Wildlife Refuge System, but does not include coordination areas; a complete listing of all units of the Refuge System is in the current "Annual Report of Lands Under Control of the U.S. Fish and Wildlife Service."

National Wildlife Refuge System (Refuge System)—Various categories of areas administered by the Secretary of the Interior for the conservation of fish and wildlife including species threatened with extinction, all lands, waters, and interests therein administered by the Secretary as wildlife refuges, areas for the protection and conservation of fish and wildlife that are threatened with extinction, wildlife ranges, game ranges, wildlife management areas, and waterfowl production areas.

National Wildlife Refuge System Improvement Act of 1997 (Improvement Act)—Sets the mission and the administrative policy for all refuges in the National Wildlife Refuge System; defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife and photography, and environmental education and interpretation); establishes a formal process for determining appropriateness and compatibility; establish the responsibilities of the Secretary of the Interior for managing and protecting the Refuge System; requires a comprehensive conservation plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

native species—A species that, other than as a result of an introduction, historically occurred or currently occurs in that ecosystem.

Neotropical migrant—A bird species that breeds north of the United States and Mexican border and winters primarily south of this border.

NEPA—National Environmental Policy Act.

nest success—The percentage of nests that successfully hatch one or more eggs of the total number of nests initiated in an area.

NOA—Notice of availability.

nongovernmental organization—Any group that is not composed of federal, state, tribal, county, city, town, local, or other governmental entities.

noxious weed, *also* **invasive plant**—Any living stage (including seeds and reproductive parts) of a parasitic or other plant of a kind that is of foreign origin (new to or not widely prevalent in the U.S.) and can directly or indirectly injure crops, other useful plants, livestock, poultry, other interests of agriculture, including irrigation, navigation, fish and wildlife resources, or public health. According to the Federal Noxious Weed Act (PL 93-639), a noxious weed (such as invasive plant) is one that causes disease or has adverse effects on humans or the human environment and, therefore, is detrimental to the agriculture and commerce of the U.S. and to public health.

NRCS—Natural Resources Conservation Service of the U.S. Department of Agriculture.

NWR—National wildlife refuge.

objective—An objective is a concise target statement of what will be achieved, how much will be achieved, when and where it will be achieved, and who is responsible for the work; derived from goals and provide the basis for determining management strategies. Objectives should be attainable and time-specific and should be stated quantitatively to the extent possible. If objectives cannot be stated quantitatively, they may be stated qualitatively ("Draft U.S. Fish and Wildlife Service Manual" 602 FW 1.5).

overlay refuge—Lands and waters that are under the primary jurisdiction of one federal agency; the refuge purpose is superimposed as a secondary interest in the property. Primary administration is retained by the host agency. Wildlife management must be compatible with those uses for which the primary agency acquired the land.

overwater species—Nesting species such as diving ducks and many colonial-nesting birds that build nests within dense stands of water-dependent plants, primarily cattail, or that build floating nests of vegetation that rest on the water.

OWLS—Outdoor wildlife learning site.

patch—An area distinct from that around it; an area distinguished from its surroundings by environmental conditions.

perennial—Lasting or active through the year or through many years; a plant species that has a life span of more than 2 years.

plant community—An assemblage of plant species unique in its composition; occurs in particular locations under particular influences; a reflection or integration of the environmental influences on the site such as soil, temperature, elevation, solar radiation, slope, aspect, and rainfall; denotes a general kind of climax plant community, such as ponderosa pine or bunchgrass.

prescribed fire—The skillful application of fire to natural fuels under conditions such as weather, fuel moisture, and soil moisture that allow confinement of the fire to a predetermined area and produces the intensity of heat and rate of spread to accomplish planned benefits to one or more objectives of habitat management, wildlife management, or hazard reduction.

priority public use—One of six uses authorized by the National Wildlife Refuge System Improvement Act of 1997 to have priority if found to be compatible with a refuge's purposes. This includes hunting, fishing, wildlife observation, and photography, and environmental education and interpretation.

proposed action—The alternative proposed to best achieve the purpose, vision, and goals of a refuge (contributes to the Refuge System mission, addresses the significant issues, and is consistent with principles of sound fish and wildlife management).

public—Individuals, organizations, and groups; officials of federal, state, and local government agencies; Indian tribes; and foreign nations. It may

include anyone outside the core planning team. It includes those who may or may not have indicated an interest in Service issues and those who do or do not realize that Service decisions may affect them.

public involvement—A process that offers affected and interested individuals and organizations an opportunity to become informed about, and to express their opinions on, Service actions and policies. In the process, these views are studied thoroughly and thoughtful consideration of public views is given in shaping decisions for refuge management.

purpose of the refuge—The purpose of a refuge is specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing authorization or expanding a refuge, refuge unit, or refuge subunit ("Draft U.S. Fish and Wildlife Service Manual" 602 FW 1.5).

raptor—A carnivorous bird such as a hawk, a falcon, or a vulture that feeds wholly or chiefly on meat taken by hunting or on carrion (dead carcasses).

Reclamation—Bureau of Reclamation of the U.S. Department of the Interior.

refuge operations needs system (RONS)—A national database that contains the unfunded operational needs of each refuge. Projects included are those required to implement approved plans and meet goals, objectives, and legal mandates.

refuge purpose—*See* purpose of the refuge.

Refuge System—*See* National Wildlife Refuge System.

refuge use—Any activity on a refuge, except administrative or law enforcement activity, carried out by or under the direction of an authorized Service employee.

resident species—A species inhabiting a given locality throughout the year; nonmigratory species.

rest—Free from biological, mechanical, or chemical manipulation, in reference to refuge lands.

restoration—Management emphasis designed to move ecosystems to desired conditions and processes, such as healthy upland habitats and aquatic systems.

riparian area *or* **riparian zone**—An area or habitat that is transitional from terrestrial to aquatic ecosystems including streams, lakes, wet areas, and adjacent plant communities and their associated soils that have free water at or near the surface; an area whose components are directly or indirectly attributed to the influence of water; of or relating to a river; specifically applied to ecology, "riparian" describes the land immediately adjoining and directly influenced by streams. For example, riparian vegetation includes all plant life growing on the land adjoining a stream and directly influenced by the stream.

RONS—*See* refuge operations needs system.

rough fish—A fish that is neither a sport fish nor an important food fish.

SAMMS—*See* Service Asset Maintenance Management System.

scoping—The process of obtaining information from the public for input into the planning process.

seasonally flooded—Surface water is present for extended periods in the growing season, but is absent by the end of the season in most years.

sediment—Material deposited by water, wind, and glaciers.

Service—*See* U.S. Fish and Wildlife Service.

Service Asset Maintenance Management System (SAMMS)—A national database which contains the unfunded maintenance needs of each refuge; projects include those required to maintain existing equipment and buildings, correct safety deficiencies for the implementation of approved plans, and meet goals, objectives, and legal mandates.

shelterbelt—Single to multiple rows of trees and shrubs planted around cropland or buildings to block or slow down the wind.

shorebird—Any of a suborder (*Charadrii*) of birds such as a plover or a snipe that frequent the seashore or mudflat areas.

spatial—Relating to, occupying, or having the character of space.

special status species—Plants or animals that have been identified through federal law, state law, or agency policy as requiring special protection of monitoring. Examples include federally listed endangered, threatened, proposed, or candidate species; state-listed endangered, threatened, candidate, or monitor species; Service's species of management concern; species identified by the Partners in Flight program as being of extreme or moderately high conservation concern.

special use permit—A permit for special authorization from the refuge manager required for any refuge service, facility, privilege, or product of the soil provided at refuge expense and not usually available to the general public through authorizations in Title 50 CFR or other public regulations (Refuge Manual 5 RM 17.6).

species of concern—Those plant and animal species, while not falling under the definition of special status species, that are of management interest by virtue of being federal trust species such as migratory birds, important game species, or significant keystone species; species that have documented or apparent populations declines, small or restricted populations, or dependence on restricted or vulnerable habitats.

step-down management plan—A plan that provides the details necessary to implement management strategies identified in the comprehensive conservation plan ("Draft U.S. Fish and Wildlife Service Manual" 602 FW 1.5).

strategy—A specific action, tool, or technique or combination of actions, tools, and techniques used to meet unit objectives ("Draft U.S. Fish and Wildlife Service Manual" 602 FW 1.5).

submergent—A vascular or nonvascular hydrophyte, either rooted or nonrooted, that lies entirely beneath the water surface, except for flowering parts in some species.

tame grass—*See* dense nesting cover.

threatened species, federal—Species listed under the Endangered Species Act of 1973, as amended, that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

threatened species, state—A plant or animal species likely to become endangered in a particular state within the near future if factors contributing to population decline or habitat degradation or loss continue.

travel corridor—A landscape feature that facilitates the biologically effective transport of animals between larger patches of habitat dedicated to conservation functions. Such corridors may facilitate several kinds of traffic including frequent foraging movement, seasonal migration, or the once in a lifetime dispersal of juvenile animals. These are transition habitats and need not contain all the habitat elements required for long-term survival or reproduction of its migrants.

trust resource—*See* federal trust resource.

trust species—*See* federal trust species.

USDA—U.S. Department of Agriculture.

U.S. Fish and Wildlife Service (Service, USFWS, FWS)—The principal federal agency responsible for conserving, protecting, and enhancing fish and wildlife and their habitats for the continuing benefit of the American people. The Service manages the 93-million-acre National Wildlife Refuge System comprised of more than 530 national wildlife refuges and thousands of waterfowl production areas. It also operates 65 national fish hatcheries and 78 ecological service field stations, the agency enforces federal wildlife laws, manages migratory bird populations, restores national significant fisheries, conserves and restores wildlife habitat such as wetlands, administers the Endangered Species Act, and helps foreign governments with their conservation efforts. It also oversees the federal aid program that distributes millions of dollars in excise taxes on fishing and hunting equipment to state wildlife agencies.

U.S. Geological Survey (USGS)—A federal agency whose mission is to provide reliable scientific information to describe and understand the earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

vision statement—A concise statement of the desired future condition of the planning unit, based primarily on the Refuge System mission, specific refuge purposes, and other relevant mandates ("Draft U.S. Fish and Wildlife Service Manual" 602 FW 1.5).

visual obstruction—Pertaining to the density of a plant community; the height of vegetation that blocks the view of predators and conspecifics to a nest.

visual obstruction reading (VOR)—A method of visually quantifying vegetative structure and composition.

wading birds—Birds having long legs that enable them to wade in shallow water including egrets, great blue herons, black-crowned night-herons, and bitterns.

waterfowl—A category of birds that includes ducks, geese, and swans.

watershed—The region draining into a river, a river system, or a body of water.

wetland management district (WMD)—Land that the Refuge System acquires with Federal Duck Stamp funds for restoration and management primarily as prairie wetland habitat critical to waterfowl and other wetland birds.

WG—Wage grade schedule (pay rate schedule for certain federal positions).

WGFD—*See* Wyoming Game and Fish Department.

wildland fire—A free-burning fire requiring a suppression response; all fire other than prescribed fire that occurs on wildlands (Service Manual 621 FW 1.7).

wildlife-dependent recreational use—The National Wildlife Refuge System Improvement Act of 1997 specifies six priority general public uses

of the Refuge System (hunting, fishing, wildlife and photography, environmental education and interpretation).

WMD—*See* wetland management district.

woodland—Open stands of trees with crowns not usually touching, generally forming 25–60 percent cover.

WPA—Works Progress Administration.

Wyoming Game and Fish Department (WGFD)—The Wyoming Game and Fish Department is charged with providing "an adequate and flexible system for the control, management, protection, and regulation of all Wyoming wildlife." The WGFD maintains 36 Wildlife Habitat Management Areas and 96 Public Access Areas, encompassing 410,000 acres of managed lands for wildlife habitat and public recreation opportunity.

WUI—Wildland–urban interface.

Appendix A

Key Legislation and Policies

This appendix briefly describes the guidance for the National Wildlife Refuge System and other policies and key legislation that guide the management of Pathfinder NWR.

NATIONAL WILDLIFE REFUGE SYSTEM

The mission of the National Wildlife Refuge System is to administer a national 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.

Goals

- 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

There are four guiding principles for management and general public use of the Refuge System established by Executive Order 12996 (1996):

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

LEGAL AND POLICY GUIDANCE

Management actions on national wildlife refuges are circumscribed by many mandates including laws and executive orders, the latest of which is the Volunteer and Community Partnership Enhancement Act of 1998. Regulations that affect refuge management the most are listed below

American Indian Religious Freedom Act (1978)—Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Americans with Disabilities Act (1992)—Prohibits discrimination in public accommodations and services.

Antiquities Act (1906)—Authorizes the scientific investigation of antiquities on federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Archaeological and Historic Preservation Act (1974)—Directs the preservation of historic and archaeological data in federal construction projects.

Archaeological Resources Protection Act (1979), as amended—Protects materials of archaeological interest from unauthorized removal or destruction and requires federal managers to develop plans and schedules to locate archaeological resources.

Architectural Barriers Act (1968)—Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

Clean Water Act (1977)—Requires consultation with the U.S. Army Corps of Engineers (404 permits) for major wetland modifications.

Endangered Species Act (1973)—Requires all federal agencies to carry out programs for the conservation of endangered and threatened species.

Executive Order 7425 (1936)—Establishes Pathfinder Wildlife Refuge "as a refuge and breeding ground for migratory birds and other wildlife"

Executive Order 8296 (1939)—Changes the refuge name from "Pathfinder Wildlife Refuge" to "Pathfinder National Wildlife Refuge."

Executive Order 11990 (1977)—Requires federal agencies to take action to avoid the adverse impacts associated with the destruction or modification of wetlands.

Executive Order 11988 (1977)—Requires federal agencies to provide leadership and take action to reduce the risk of flood loss, minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

Executive Order 12996, Management and General Public Use of the National Wildlife Refuge System (1996)—Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the Refuge System.

Executive Order 13007, Indian Sacred Sites (1996)—Directs federal land management agencies to accommodate access to and ceremonial uses of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Federal Noxious Weed Act (1990)—Requires the use of integrated management systems to control or contain undesirable plant species and an interdisciplinary approach with the cooperation of other federal and state agencies.

Federal Records Act (1950)—Requires the preservation of evidence of the government's organization, functions, policies, decisions, operations, and activities, as well as basic historical and other information.

Fish and Wildlife Coordination Act (1958)—Allows the U.S. Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Migratory Bird Conservation Act (1929)—Establishes procedures for acquisition by purchase, rental, or gifts of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934)—Authorizes the opening of part of a refuge to waterfowl hunting.

Migratory Bird Treaty Act (1918)—Designates the protection of migratory birds as a federal responsibility; and enables the setting of seasons and other regulations, including the closing of areas, federal or nonfederal, to the hunting of migratory birds.

National Environmental Policy Act (1969)—Requires all agencies, including the Service, to examine the environmental impacts of their actions, incorporate environmental information, and use public participation in the planning and implementation of all actions. Federal agencies must integrate this Act with other planning requirements, and prepare appropriate documents to facilitate better environmental decision making. [From the Code of Federal Regulations (CFR), 40 CFR 1500]

National Historic Preservation Act (1966), as amended—Establishes as policy that the federal government is to provide leadership in the preservation of the nation's prehistoric and historical resources.

National Wildlife Refuge System Administration Act (1966)—Defines the National Wildlife Refuge System and authorizes the Secretary of the Interior to permit any use of a refuge, provided such use is compatible with the major purposes for which the refuge was established.

National Wildlife Refuge System Improvement Act of 1997—Sets the mission and administrative policy for all refuges in the National Wildlife Refuge System; mandates comprehensive conservation planning for all units of the Refuge System.

Native American Graves Protection and Repatriation Act (1990)—Requires federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Refuge Recreation Act (1962)—Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Rehabilitation Act (1973)—Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the federal government to ensure that any person can participate in any program.

Rivers and Harbors Act (1899)—Section 10 of this Act requires the authorization of U.S. Army Corps of Engineers prior to any work in, on, over, or under navigable waters of the United States.

Volunteer and Community Partnership Enhancement Act (1998)—Encourages the use of volunteers to assist in the management of refuges within the Refuge System; facilitates partnerships between the Refuge System and nonfederal entities to promote public awareness of the resources of the Refuge System and public participation in the conservation of the resources; and encourages donations and other contributions.

Appendix B

List of Preparers, Consultation and Coordination

This document is the result of the extensive, collaborative, and enthusiastic efforts by the members of the planning team shown below.

Planning Team

Team Member	*Position*	*Work Unit*
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Mark Ely	Geographic information system (GIS) specialist	USFWS, Region 6; Lakewood, CO
Charlie Fifield	Range management specialist	Bureau of Land Management; Casper, WY
Toni Griffin	Planning team leader	USFWS, Region 6; Lakewood, CO
Pam Johnson	Wildlife biologist	Arapaho NWR; Walden, CO
Timothy Meyer	Natural resource specialist	Bureau of Reclamation; Mills, WY
Larry Roberts	Wildlife biologist	Wyoming Game and Fish Department; Casper, WY
Ann Timberman	Project leader	Arapaho NWR; Walden, CO

Contributors

Many organizations, agencies, and individuals provided assistance with the preparation of this draft CCP. The Service acknowledges the efforts of the following individuals and groups toward the completion of this plan. The diversity, talent, and knowledge they contributed dramatically improved the vision and completeness of this document.

Team Member	*Position*	*Work Unit*
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Sheri Fetherman	Chief, division of education and visitor services	USFWS, Region 6
Patti Fielder	Hydrologist, division of water resources	USFWS, Region 6
Wayne King	Biologist, NWRS	USFWS, Region 6

Team Member	*Position*	*Work Unit*
Deb Parker	Writer-editor, division of refuge planning	USFWS, Region 6
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Richard Schroeder	Wildlife biologist	USGS Science Center
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Michael Spratt	Chief, division of refuge planning	USFWS, Region 6
Richard Sterry	Regional fire planner	USFWS, Region 6
Meg Van Ness	Regional archaeologist	USFWS, Region 6

Appendix C

Public Involvement

Public scoping was initiated for Pathfinder NWR in a notice of intent (NOI) dated June 16, 2006. The NOI announced intent to prepare a comprehensive conservation plan and environmental assessment for the refuges and to obtain suggestions and information on the scope of issues to be considered in the planning process.

A public meeting was held in Casper, Wyoming, on May 24, 2006. Approximately 21 people attended the meeting. Numerous written comments were received during the open comment period. Comments received identified biological, social, and economic concerns regarding refuge management. The mailing list for the CCP and EA follows.

Federal Officials

U.S. Representative Barbara Cubin, Washington DC
Rep. Cubin's Area Director, Cheyenne, WY
U.S. Senator Craig Thomas, Washington DC
Sen. Thomas's Area Director, Casper, WY
U.S. Senator Michael Enzi, Washington DC
Sen. Enzi's Area Director, Cheyenne, WY

Federal Agencies

Bureau of Land Management; Casper, WY; Rawlins, WY

Bureau of Reclamation, Mills, WY

National Park Service; Denver, CO; Omaha, NE

USFWS, Ecological Services, Cheyenne, WY

USFWS, NWRS; Rawlins, WY; Albuquerque, NM; Anchorage, AK; Arlington, VA; Atlanta, GA; Fort Snelling, MN

USFWS, Office of Public Affairs, Washington DC

USFWS, Regional Offices, Hadley, MA; Portland, OR; Sacramento, CA; Shepardstown, WV; Washington DC

USGS, Fort Collins Science Center, Fort Collins, CO

Tribal Officials

Arapaho Business Committee, Fort Washakie, WY
Crow Tribal Council, Crow Agency, MT
Northern Cheyenne Tribal Council, Lame Deer, MT
Oglala Sioux Tribal Council, Pine Ridge, SD
Shoshone Business Council, Fort Washakie, WY

State Officials

Governor Dave Freudenthal, Cheyenne
Representative George Bagby, Rawlins
Representative Bob Brechtel, Casper
Representative Roy Cohee, Capser
Representative Mary Meyer Gilmore, Casper
Representative Mary Hales, Casper
Representative Steve Harshman, Casper
Representative Thomas Lockhart, Casper
Representative Lisa Shepperson, Casper
Representative William Steward, Encampment
Representative Tim Stubson, Casper
Senator Kit Jennings, Casper
Senator Bill Landen, Casper
Senator Drew Perkins, Casper
Senator Charles Scott, Casper
Senator Bill Vasey, Rawlins

State Agencies

Wyoming Department of Agriculture, Cheyenne

Wyoming Game and Fish Department; Casper; Lander

Wyoming Game Fish Commission, Cheyenne

Wyoming Office of State Lands and Investments, Cheyenne

Wyoming State Historic Preservation Office, Cheyenne

Local Government

Carbon County Board of Commissioners, Rawlins
Natrona County Board of Commissioners, Casper
Natrona County Roads, Bridges, and Parks, Mills
Mayor, Casper
Mayor, Rawlins

Organizations

American Bird Conservancy; The Plains, VA; Washington DC

American Rivers, Washington DC

Audubon Wyoming; Casper, WY; Laramie, WY; Tie Siding, WY

Defenders of Wildlife, Washington DC

Ducks Unlimited, Memphis, TN

Izaak Walton League, Gaithersburg, MD

Murie Audubon Society, Casper, WY

National Audubon Society; Washington DC; New York, NY

National Trappers Association Inc., New Martinsville, WV

National Wildlife Federation, Reston, VA

National Wildlife Refuge Association, Washington DC

North Platte Group Sierra Club, Casper, WY

Sierra Club; Sheridan, WY; San Francisco, CA

The Wilderness Society, Washington DC

U.S. Humane Society, Washington DC

Wyoming Outdoor Council, Logan, UT

Universities, Colleges, and Schools

Colorado State University, Fort Collins, CO

Local Media

Casper Star Tribune, Casper
Daily Boomerang, Laramie
KISS 104 7 FM, Casper
KKTY AM & FM, Douglas
Rawlins Daily Times, Rawlins
Wyoming Public Radio, Laramie

Individuals

22 individuals

Appendix D

Memorandum of Understanding

Contract No. 14-06-700-4605

MEMORANDUM OF UNDERSTANDING
Between The
BUREAU OF RECLAMATION
And The
BUREAU OF SPORT FISHERIES AND WILDLIFE

THIS MEMORANDUM OF UNDERSTANDING, made and entered into this 26th day of May, 1964, by and between the Bureau of Reclamation, and the Bureau of Sport Fisheries and Wildlife witnesseth that:

WHEREAS the United States, through the Bureau of Reclamation, is operating a reservoir located in Carbon and Natrona Counties, Wyoming, being the Pathfinder Dam and Reservoir, Pathfinder Unit, Oregon Trail Division, North Platte and Missouri River Basin Projects, established under the authority of the Act of June 17, 1902, as amended and supplemented; and

WHEREAS the Bureau of Sport Fisheries and Wildlife is administering certain land and water areas of said reservoir as the Pathfinder National Wildlife Refuge under authority of Executive Order No. 7425, dated August 1, 1936, Executive Order No. 8296, dated November 30, 1939, as modified by a subsequent Public Land Order.

NOW, THEREFORE, to define the responsibilities of the Bureau of Reclamation and the Bureau of Sport Fisheries and Wildlife regarding the proper administration of the land and water areas of Pathfinder National Wildlife Refuge as shown on Exhibit A, attached hereto and made a part hereof, and subject to the provisions and conditions contained hereafter, it is agreed that:

1. The Bureau of Sport Fisheries and Wildlife shall administer, develop, manage and operate the said land and water areas, including grazing, recreation and related uses, for the conservation, maintenance and management of the wildlife resources thereof and its habitat thereon in connection with the National Wildlife Refuge Program. The Bureau of Sport Fisheries and Wildlife shall conduct such activities under appropriate Federal and State laws and regulations and may do all things under such laws and regulations that are necessary to carry out the National Wildlife Refuge Program.

2. There shall be no interference with the operation of the dam and reservoir by the Bureau of Reclamation for reclamation purposes.

3. Land use capabilities shall be established in cooperation with any appropriate Land Use Agency which is available to perform such services, such as the Bureau of Land Management or Soil Conservation Service, provided that economic use so established shall not be in conflict with the operation of the project for reclamation purposes by the Bureau of Reclamation or the administration of the area as a national wildlife refuge by the Bureau of Sport Fisheries and Wildlife.

4. The Bureau of Sport Fisheries and Wildlife will issue special use permits and such other instruments as are necessary to carry out the National Wildlife Refuge Program.

5. All land use revenues received by the Bureau of Sport Fisheries and Wildlife in connection with administration, development, management and operation of the said land and water areas shall be transferred to the Bureau of Reclamation for appropriate disposition.

6. For other than the primary purposes of the Pathfinder Dam and Reservoir Project, any easements, licenses, permits or right-of-way uses which may be requested and allowed through or upon said land and water areas shall be granted by the Bureau of Reclamation, subject to the stipulations of the Bureau of Sport Fisheries and Wildlife, or through the Bureau of Land Management upon concurrence by and subject to the stipulations of the Bureau of Sport Fisheries and Wildlife and the Bureau of Reclamation.

7. The Bureau of Sport Fisheries and Wildlife will cooperate in the development of a Bureau of Reclamation management plan for the Pathfinder Reservoir, as applicable to said land and water areas, and both parties agree that no uses, improvements or developments will be made contrary to the provisions of said plan except by mutual consent.

8. Both parties agree to cooperate in the presuppression and suppression of all fires.

9. This agreement shall become effective upon its approval by the last signatory thereto and shall remain in force until terminated by mutual consent.

10. The performance of any obligations or the expenditure of any funds under this agreement is made contingent on the Congress making the necessary appropriation.

11. No member of or delegate to the Congress or resident commissioner shall be admitted to any share or part of this agreement or

to any benefit that may arise therefrom, but this restriction shall not be construed to extend to this agreement if made with a corporation or company for its general benefit.

IN WITNESS WHEREOF, the parties hereto have executed this Memorandum of Understanding as of the day and year first above written.

BUREAU OF RECLAMATION

By _____
Regional Director, Region 7

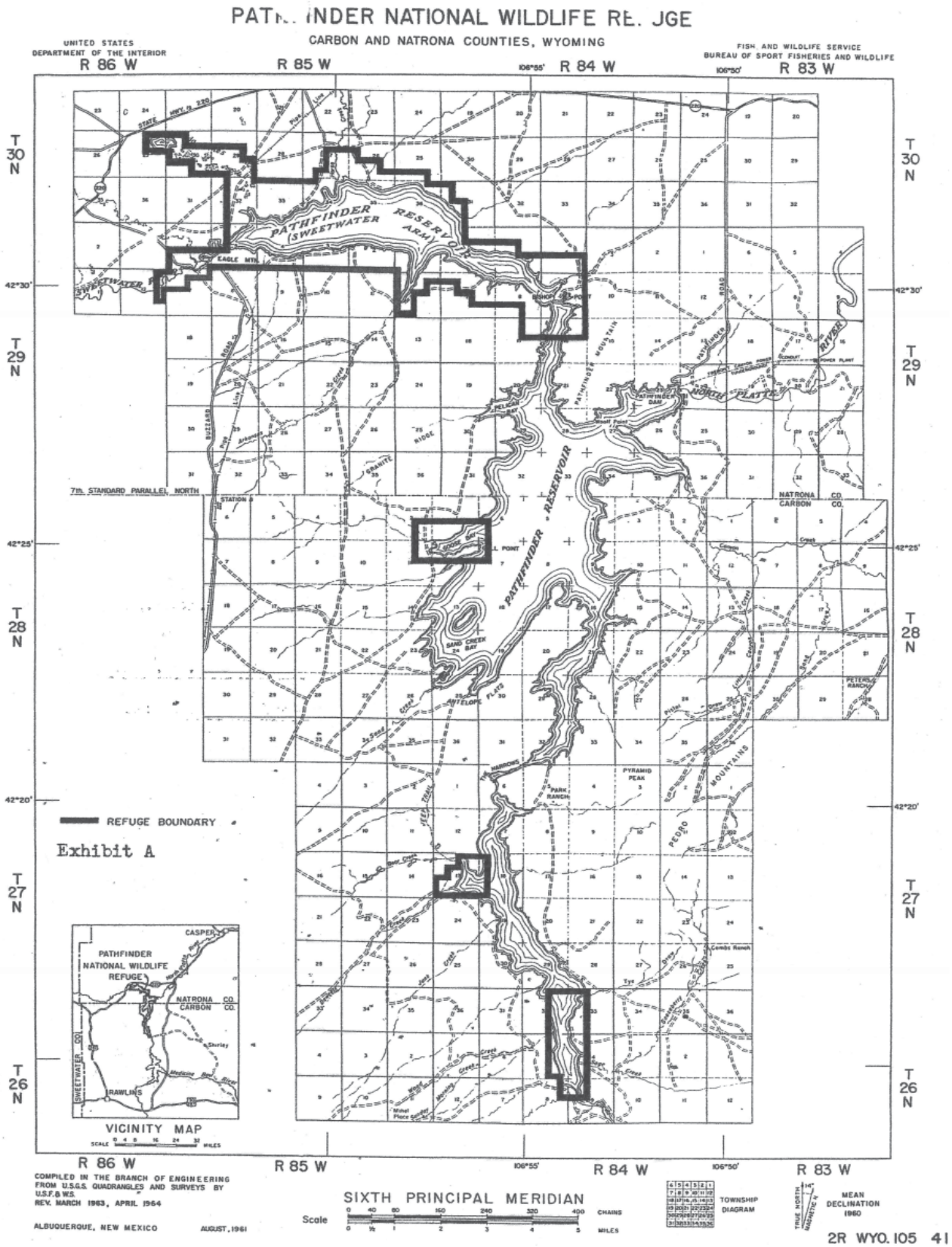
BUREAU OF SPORT FISHERIES AND WILDLIFE

By _____
Regional Director, Region 2

Appd. Sol. Office

/s/ B. L. Kepford

Date: May 25, 1964


PATHFINDER NATIONAL WILDLIFE REFUGE
CARBON AND NATRONA COUNTIES, WYOMING
UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
R 86 W
R 85 W
106°55'
R 84 W
106°50'
R 83 W
T 30 N
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T 26 N
42°30'
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PATHFINDER (SWEETWATER ARM) RESERVOIR
PATHFINDER RESERVOIR
NORTH PLATTE RIVER
7th STANDARD PARALLEL NORTH
NATRONA CO.
CARBON CO.
REFUGE BOUNDARY
Exhibit A
VICINITY MAP
CASPER
PATHFINDER NATIONAL WILDLIFE REFUGE
NATRONA CO.
CARBON CO.
SWEETWATER CO.
RAWLINS
SCALE 0 4 8 16 24 32 MILES
COMPILED IN THE BRANCH OF ENGINEERING FROM U.S.G.S. QUADRANGLES AND SURVEYS BY U.S.F.&W.S.
REV. MARCH 1963, APRIL 1964
ALBUQUERQUE, NEW MEXICO
AUGUST, 1961
SIXTH PRINCIPAL MERIDIAN
Scale
0 40 80 160 240 320 400 CHAINS
0 ½ 1 2 3 4 5 MILES
TOWNSHIP DIAGRAM
MEAN DECLINATION 1960
2R WYO. 105 41

Appendix E

Appropriate Refuge Uses Policy

FISH AND WILDLIFE SERVICE

REFUGE MANAGEMENT

Part 603 National Wildlife Refuge System Uses

1.1 What is the purpose of this chapter? This chapter provides a national framework for determining appropriate refuge uses. In addition, this chapter provides the policy and procedure for refuge managers to follow when deciding if uses are appropriate on a refuge. This policy also clarifies and expands on the compatibility policy (603 FW 2.10D), which describes when refuge managers should deny a proposed usewithout determining compatibility. When we find a use is appropriate, we must then determine if the use is compatible before we allow it on a refuge.

1.2 What does this policy cover? This policy applies to all proposed and existing uses in the National Wildlife Refuge System (Refuge System) only when we have jurisdiction over the use. This policy does not apply to:

A. Situations Where Reserved Rights or Legal Mandates Provide We Must Allow Certain Uses. For example, we usually will not apply this policy to proposed public uses of wetland or grassland easement areas of the Refuge System. The rights we have acquired on these areas generally do not extend to control over such public uses except where those uses would conflict with the conditions of the easement.

B. Refuge Management Activities. Refuge management activities are designed to conserve fish, wildlife, and plants and their habitats and are conducted by the Refuge System or a Refuge System-authorized agent to fulfill a refuge purpose(s) or the Refuge System mission. These activities fulfill refuge purpose(s) or the Refuge System mission, and we base them on sound professional judgment. Refuge management activities are fish and wildlife population or habitat management actions including, but not limited to: prescribed burns, water level management, invasive species control, routine scientific monitoring, law enforcement activities, and maintenance of existing refuge facilities. We consider State fish and wildlife agency activities refuge management activities that are not subject to this policy when they:

(1) Directly contribute to the achievement of refuge purpose(s), refuge goals, and the Refuge System mission, as determined by the refuge manager in writing,

(2) Are addressed in a document such as a Regional or California/Nevada Operations Office (CNO) memorandum of understanding or a comprehensive conservation plan (CCP), or

(3) Are approved under national policy.

1.3 What is the policy regarding the appropriateness of uses on a refuge?

With the exception of 1.3.A. and 1.3.B. below, the refuge manager will decide if a new or existing use is an appropriate refuge use. If an existing use is not appropriate, the refuge manager will eliminate or modify the use as expeditiously as practicable. If a new use is not appropriate, the refuge manager will deny the use without determining compatibility. Uses that have been administratively determined to be appropriate are:

A. Six wildlife-dependent recreational uses. As defined by the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act), the six wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation) are determined to be appropriate. However, the refuge manager must still determine if these uses are compatible.

B. Take of fish and wildlife under State regulations. States have regulations concerning take of wildlife that includes hunting, fishing, and trapping. We consider take of wildlife under such regulations appropriate. However, the refuge manager must determine if the activity is compatible before allowing it on a refuge.

1.4 What are the objectives of this chapter?

A. Refuges are first and foremost national treasures for the conservation of wildlife. Through careful planning, consistent Refuge Systemwide application of regulations and policies, diligent monitoring of the impacts of uses on wildlife resources, and preventing or eliminating uses not appropriate to the Refuge System, we can achieve the Refuge System conservation mission while also providing

the public with lasting opportunities to enjoy quality, compatible, wildlife-dependent recreation.

B. Through consistent application of this policy and these procedures, we will establish an administrative record and build public understanding and consensus on the types of public uses that are legitimate and appropriate within the Refuge System.

1.5 What are our statutory authorities for this policy?

A. National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee (Administration Act). This law provides the authority for establishing policies and regulations governing refuge uses, including the authority to prohibit certain harmful activities. The Administration Act does not authorize any particular use, but rather authorizes the Secretary of the Interior to allow uses only when they are compatible and "under such regulations as he may prescribe." This law specifically identifies certain public uses that, when compatible, are legitimate and appropriate uses within the Refuge System. The law states ". . . it is the policy of the United States that . . . compatible wildlife-dependent recreation is a legitimate and appropriate general public use of the System . . . compatible wildlife-dependent recreational uses are the priority general public uses of the System and shall receive priority consideration in refuge planning and management; and . . . when the Secretary determines that a proposed wildlife-dependent recreational use is a compatible use within a refuge, that activity should be facilitated . . . the Secretary shall . . . ensure that priority general public uses of the System receive enhanced consideration over other general public uses in planning and management within the System . . . ." The law also states "[i]n administering the System, the Secretary is authorized to take the following actions: . . . [i] ssue regulations to carry out this Act." This policy implements the standards set in the Administration Act by providing enhanced consideration of priority general public uses and ensuring other public uses do not interfere with our ability to provide quality, wildlife-dependent recreational uses.

B. Refuge Recreation Act of 1962, 16 U.S.C. 460k (Recreation Act). This law authorizes the Secretary of the Interior to ". . . administer such areas [of the System] or parts thereof for public recreation when in his judgment public recreation can be an appropriate incidental or secondary use." While the Recreation Act authorizes us to allow public recreation in areas of the Refuge System when the use is an "appropriate incidental or secondary use," the Improvement Act provides the Refuge System mission and includes specific directives and a clear hierarchy of public uses on the Refuge System.

C. Alaska Native Claims Settlement Act, 43 U.S.C. 1601-1624. Activities on lands conveyed from the Refuge System under section 22(g) of the Alaska Native Claims Settlement Act are not subject to this policy, but are subject to compatibility (see 603 FW 2).

D. Other Statutes that Establish Refuges, including the Alaska National Interest Lands Conservation Act of 1980 (ANILCA) (16 U.S.C. 410hh - 410hh-5, 460 mm - 460mm-4, 539-539e, and 3101 - 3233; 43 U.S.C. 1631 et seq.).

E. Executive Orders. We must comply with Executive Order (E.O.) 11644 when allowing use of off-highway vehicles on refuges. This order requires that we: designate areas as open or closed to off-highway vehicles in order to protect refuge resources, promote safety, and minimize conflict among the various refuge users; monitor the effects of these uses once they are allowed; and amend or rescind any area designation as necessary based on the information gathered. Furthermore, E.O. 11989 requires us to close areas to off highway vehicles when we determine that the use causes or will cause considerable adverse effects on the soil, vegetation, wildlife, habitat, or cultural or historic resources. Statutes, such as ANILCA, take precedence over Executive orders.

1.6 What do these terms mean?

A. Appropriate Use. A proposed or existing use on a refuge that meets at least one of the following four conditions.

(1) The use is a wildlife-dependent recreational use as identified in the Improvement Act.

(2) The use contributes to fulfilling the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Improvement Act was signed into law.

(3) The use involves the take of fish and wildlife under State regulations.

(4) The use has been found to be appropriate as specified in section 1.11.

B. Native American. American Indians in the conterminous United States and Alaska Natives (including Aleuts, Eskimos, and Indians) who are members of federally recognized tribes.

C. Priority General Public Use. A compatible wildlife-dependent recreational use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation.

D. Quality. The criteria used to determine a quality recreational experience include:

(1) Promotes safety of participants, other visitors, and facilities.

(2) Promotes compliance with applicable laws and regulations and responsible behavior.

(3) Minimizes or eliminates conflicts with fish and wildlife population or habitat goals or objectives in a plan approved after 1997.

(4) Minimizes or eliminates conflicts with other compatible wildlife-dependent recreation.

(5) Minimizes conflicts with neighboring landowners.

(6) Promotes accessibility and availability to a broad spectrum of the American people.

(7) Promotes resource stewardship and conservation.

(8) Promotes public understanding and increases public appreciation of America's natural resources and our role in managing and protecting these resources.

(9) Provides reliable/reasonable opportunities to experience wildlife.

(10) Uses facilities that are accessible and blend into the natural setting.

(11) Uses visitor satisfaction to help define and evaluate programs.

E. Wildlife-Dependent Recreational Use. As defined by the Improvement Act, a use of a refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation.

1.7 What are our responsibilities?

A. Director. Provides national policy for deciding the appropriateness of uses within the Refuge System to ensure such findings comply with all applicable authorities.

B. Regional Director/CNO Manager.

(1) Ensures refuge managers follow laws, regulations, and policies when making appropriateness findings.

(2) Notifies the Director about controversial or complex appropriateness findings.

C. Regional Chief/CNO Assistant Manager.

(1) Makes the final decision on appropriateness when the refuge supervisor does not concur with the refuge manager on positive appropriateness findings.

(2) Notifies the Regional Director/CNO Manager about controversial or complex appropriateness findings.

D. Refuge Supervisor.

(1) Reviews the refuge manager's finding that an existing or proposed use is appropriate when that use is not a wildlife-dependent recreational use or is not already described in a refuge management plan approved after October 9, 1997.

(2) Reviews the refuge manager's finding that an existing use is not appropriate outside the CCP process.

(3) Refers an appropriateness finding to the Regional Chief/CNO Assistant Manager if the refuge supervisor does not concur with the refuge manager. Discusses nonconcurrence with the refuge manager for possible resolution before referring the finding to the Regional Chief/CNO Assistant Manager.

(4) Notifies the Regional Chief/CNO Assistant Manager about controversial or complex appropriateness findings.

(5) Reviews documentation at least annually for refuge uses found not appropriate and forwards the documentation to Refuge System Headquarters for inclusion in a database of refuge uses.

E. Refuge Manager.

(1) Decides if a proposed or existing use is subject to this policy.

(2) Makes a finding as to whether a use subject to this policy is appropriate or not appropriate.

(3) Consults with State fish and wildlife agencies, as well as the refuge supervisor, when a request for a use could affect fish, wildlife, or other resources that are of concern to a State fish and wildlife agency.

(4) Documents all findings under this policy in writing as described in section 1.11A(3).

(5) Refers to the refuge supervisor all findings of appropriateness, both positive and negative, for any proposed use which is not a wildlife-dependent recreational use or which is not already described in a refuge CCP or step-down management plan approved after October 9, 1997. The refuge supervisor's concurrence is required for new uses found to be appropriate and existing uses found not appropriate outside the CCP process. The refuge supervisor periodically reviews other findings for consistency.

1.8 What is the relationship between appropriateness and compatibility? This policy describes the initial decision process the refuge manager follows when first considering whether or not to allow a proposed use on a refuge. The refuge manager must find a use is appropriate before undertaking a compatibility review of the use. This policy clarifies and expands on the compatibility policy (603 FW 2.10D(1)), which describes when refuge managers should deny a proposed use without determining compatibility. If we find a proposed use is not appropriate, we will not allow the use and will not prepare a compatibility determination. By screening out proposed uses not appropriate to the refuge, the refuge manager avoids unnecessary compatibility reviews. By following

the process for finding the appropriateness of a use, we strengthen and fulfill the Refuge System mission. Section 1.11 describes the appropriateness finding process. Although a refuge use may be both appropriate and compatible, the refuge manager retains the authority to not allow the use or modify the use. For example, on some occasions, two appropriate and compatible uses may be in conflict with each other. In these situations, even though both uses are appropriate and compatible, the refuge manager may need to limit or entirely curtail one of the uses in order to provide the greatest benefit to refuge resources and the public. See the compatibility policy (603 FW 2.11G) for information concerning resolution of these conflicts.

1.9 How are uses considered in the comprehensive conservation planning process?

A. We will manage all refuges in accordance with an approved comprehensive conservation plan (CCP). The CCP describes the desired future conditions of the refuge or refuge planning unit and provides long-range guidance and management direction to accomplish the purpose(s) of the refuge and Refuge System mission. We prepare CCPs with State fish and wildlife agencies and with public involvement and include a review of the appropriateness and compatibility of existing refuge uses and of any planned future public uses. If, during preparation of the CCP, we identify previously approved uses we can no longer consider appropriate on the refuge, we will clearly explain our reasons to the public and describe how we will eliminate or modify the use. When uses are reviewed during the CCP process, the appropriateness finding will be documented using the form provided as FWS Form 3-2319 for the refuge files. The documentation for both appropriateness findings and compatibility determinations should also be included in the documentation for the CCP.

B. For proposed uses we did not consider during the preparation of the CCP or if a CCP has not yet been prepared, we will apply the procedure contained in this policy and make an appropriateness finding without additional public review and comment. However, if we find a proposed use is appropriate, we must still determine that the use is compatible. The compatibility determination includes an opportunity for public involvement. See the planning policy (602 FW 1, 3, and 4) for detailed policy on refuge planning.

1.10 What are the different types of refuge uses? For the purposes of this policy, there are five types of uses.

A. Wildlife-Dependent Recreational Uses. When compatible, they are legitimate and appropriate uses of refuges and are the priority general public uses of the Refuge System.

B. State Regulated Take of Fish and Wildlife. When compatible, the take of fish and wildlife under State regulations is a refuge use.

C. Other General Public Uses. General public uses that are not wildlife-dependent recreational uses (as defined in the Improvement Act) and do not contribute to the fulfillment of refuge purposes or goals or objectives as described in current refuge management plans (see section 1.6A(2)) are the lowest priorities for refuge managers to consider. These uses are likely to divert refuge management resources from priority general public uses or away from our responsibilities to protect and manage fish, wildlife, and plants and their habitats. Therefore, both law and policy have a general presumption against allowing such uses within the Refuge System. Before we will consider these uses further, regardless of how often they occur or how long they last, we must first find if these public uses are appropriate as defined in section 1.11.

D. Specialized Uses. These uses require specific authorization from the Refuge System, often in the form of a special use permit, letter of authorization, or other permit document. These uses do not include uses already granted by a prior existing right. We make appropriateness findings for specialized uses on a case-by-case basis. Before we will consider a specialized use, we must make an appropriateness finding as defined in section 1.11A(3) of this chapter. Any person whose request for a specialized use is denied or who is adversely affected by the refuge manager's decision relating to a permit may appeal the decision. In these situations, the person should follow the appeal process outlined in 50 CFR 25.45 and, for Alaska refuges, in 50 CFR 36.41(i). The appeal process for denial of a right-of-way application is in 50 CFR 29.22. The appeal process for persons who believe they have been improperly denied rights with respect to providing visitor services on Alaska refuges is in 50 CFR 36.37(g). Some common examples of specialized uses include:

(1) Rights-of-way. See 340 FW 3 (Rights-of-Way and Road Closings) and 603 FW 2 (Compatibility) for detailed policy on rights-of-way.

(2) Telecommunications facilities. We process requests to construct telecommunication facilities on a refuge the same way as any other right-of-way request. The Telecommunications Act of 1996 does not supersede any existing laws, regulations, or policy relating to rights-of-way on refuges. The refuge manager should continue to follow the procedures in 340 FW 3 (Rights-of-Way and Road Closings) and 603 FW 2 (Compatibility).

(3) Military, National Aeronautics and Space Administration (NASA), border security, and other national defense uses. The following guidelines apply to Refuge System lands owned in fee title by the Service or lands to which the Service has management rights that provide for the control of such uses:

(a) We will continue to honor existing, long-term, written agreements such as memorandums of understanding (MOU) between the Service and the military, NASA, and other Federal agencies with national defense missions. However, we discourage entering into any new agreements permitting military preparedness activities on refuges. Only the Director may approve any modification to existing agreements. Where joint military/NASA/Service jurisdiction occurs by law, an MOU negotiated by the principal parties, and subject to the approval of the Director, will specify the roles and responsibilities, terms, and stipulations of the refuge uses. Wherever possible, we will work to find practical alternatives to the use of refuge lands and to minimize the effects on fish, wildlife, and plants and their habitats.

(b) We consider authorized military activities on refuge lands that directly benefit refuge purposes to be refuge management activities, and they are not subject to this policy. For example, in a case where a national guard unit is assisting the refuge with the construction of a water control structure or helping to repair a refuge bridge, we consider these activities to be refuge management activities. We do not consider them to be specialized uses.

(c) For routine or continuous law enforcement and border security activities, an MOU between the Service and the specific enforcement agency must clearly define the roles and responsibilities of the enforcement agency and must specify the steps they will take to minimize impacts to refuge resources. The MOU should also address emergency situations and require advance notice and approval as a general rule. It should clearly spell out under what circumstances, if any, the enforcement agency may enter refuge lands in emergency situations prior to notifying the refuge manager. We recognize that in some situations a refuge manager cannot be notified until after an operation has taken place (for example, where lives are in danger). If such situations occur, the refuge manager must be notified as soon as possible. For undercover operations, those involved must strictly follow Service guidelines that cover the specific situation.

(4) Research. We actively encourage cooperative natural and cultural research activities that address our management needs. We also encourage research related to the management of priority general public uses. Such research activities are generally appropriate. However, we must review all research activities to decide if they are appropriate or not as defined in section 1.11. Research that directly benefits refuge management has priority over other research.

(5) Public safety training. We may assist local government agencies by allowing health, safety, and rescue training operations on the refuge if we find the use to be appropriate and compatible. Examples include fire safety training, search and rescue training, and boat operations safety training. Law enforcement training exercises in support of refuge management activities are usually appropriate. We will evaluate each request on a case-by-case basis and consider the availability of other local sites. We will review these uses to decide if they are appropriate as defined in section 1.11. To the extent practicable, we will develop written agreements with the requesting agencies.

(6) Native American ceremonial, religious, medicinal, and traditional gathering of plants. We will review specific requests and provide reasonable access to Native Americans to refuge lands and waters for gathering plants for ceremonial, religious, medicinal, and traditional purposes when the activity is appropriate and compatible or when existing treaties allow or require such access.

(7) Natural resource extractions. Part 612 of the Service Manual provides general guidance relating to minerals management on refuges. Managers should refer to those policies, particularly in cases where their refuge has valid existing rights vested in private interests. The Alaska National Interest Lands Conservation Act of 1980 provides specific guidance for oil and gas leasing on Alaska refuges. We only allow the extraction of certain resources, such as gravel, that supports a refuge management activity when there is no practical alternative and only in compliance with 50 CFR 29.1. We will not justify such activity by citing budgetary constraints or mere convenience. We will seek funding through our normal budgetary process for projects that require gravel or similar resources found on the refuge.

(8) Commercial uses. Commercial uses of a refuge may be appropriate if they are a refuge management economic activity (see 50 CFR 25.12), if they directly support a priority general public use, or if they are specifically authorized by statute (such as ANILCA). See 50 CFR 29.1 for additional information on economic uses of the natural resources of refuges. An example of a commercial use that may be appropriate is a concession-operated boat tour that facilitates wildlife observation and interpretation. We will review all commercial uses to decide if they are appropriate as defined in section 1.11.

E. Prohibited uses. Certain activities that are prohibited on refuges by regulations are listed in 50 CFR 27.

1.11 How do we make the appropriateness finding for a use on a refuge?

A. A refuge use is appropriate if the use meets at least one of the following three conditions:

(1) It is a wildlife-dependent recreational use of a refuge. This finding does not require refuge supervisor concurrence.

(2) It contributes to fulfilling the refuge purpose(s), the Refuge System mission, or goals or objectives described in a refuge management plan approved after October 9, 1997, the date the Improvement Act was signed into law. This finding does not require refuge supervisor concurrence.

(3) The refuge manager has evaluated the use following the guidelines in this policy and found that it is appropriate. The refuge manager will address the criteria below and complete FWS Form 3-2319 for each use reviewed for appropriateness, including uses reviewed in conjunction with a CCP or step-down management plan. If the answers to the questions on FWS Form 3-2319 are consistently "yes," and if the refuge manager finds, based on sound professional judgment, the use is appropriate for the refuge, the refuge manager then prepares the written justification using FWS Form 3-2319. (If the answer to any of the factors is "no," refer to section 1.11B) Before undertaking a compatibility determination, the refuge manager should forward the justification to the refuge supervisor to obtain written concurrence when a use is found appropriate. The requirement for concurrence from the refuge supervisor will help us promote Refuge System consistency and avoid establishing precedents that may present management problems in the future. Refuge supervisors will usually consult with their Regional Chief/CNO Assistant Manager and peers in other Regions/CNO as these decisions are made to promote consistency within the Refuge System. The refuge manager will base the finding of appropriateness on the following 10 criteria:

(a) Do we have jurisdiction over the use? If we do not have jurisdiction over the use or the area where the use would occur, we have no authority to consider the use.

(b) Does the use comply with all applicable laws and regulations? The proposed use must be consistent with all applicable laws and regulations (e.g., Federal, State, tribal, and local). Uses prohibited by law are not appropriate.

(c) Is the use consistent with applicable Executive orders and Department and Service policies? If the proposed use conflicts with an applicable Executive order or Department or Service policy, the use is not appropriate.

(d) Is the use consistent with public safety? If the proposed use creates an unreasonable level of risk to visitors or refuge staff, or if the use requires refuge staff to take unusual safety precautions to assure the safety of the public or other refuge staff, the use is not appropriate.

(e) Is the use consistent with refuge goals and objectives in an approved management plan or other document? Refuge goals and objectives are designed to guide management toward achieving refuge purpose(s). These goals and objectives are documented in refuge management plans, such as CCPs and step-down management plans. Refuges may also rely on goals and objectives found in comprehensive management plans or refuge master plans developed prior to passage of the Improvement Act as long as these goals and objectives comply with the tenets and directives of the Improvement Act. If the proposed use, either itself or in combination with other uses or activities, conflicts with a refuge goal, objective, or management strategy, the use is generally not appropriate.

(f) Has an earlier documented analysis not denied the use or is this the first time the use has been proposed? If we have already considered the proposed use in a refuge planning process or under this policy and rejected it as not appropriate, then we should not further consider the use unless circumstances or conditions have changed significantly. If we did not raise the proposed use as an issue during a refuge planning process, we may further consider the use.

(g) For uses other than wildlife-dependent recreational uses, is the use manageable within available budget and staff? If a proposed use diverts management efforts or resources away from the proper and reasonable management of a refuge management activity or wildlife-dependent recreational use, the use is generally not appropriate. In evaluating resources available, the refuge manager may take into consideration volunteers, refuge support groups, etc. If a requested use would rely heavily on volunteer or other resources, the refuge manager should discuss the situation with the refuge supervisor before making an appropriateness finding. The compatibility policy also addresses the question of available resources (603 FW 2.12A(7)).

(h) Will the use be manageable in the future within existing resources? If the use would lead to recurring requests for the same or similar activities that will be difficult to manage in the future, then the use is not appropriate. If we can manage the use so that impacts to natural and cultural resources are minimal or inconsequential, or if we can establish clearly defined limits, then we may further consider the use.

(i) Does the use contribute to the public's understanding and appreciation of the refuge's natural or cultural resources, or is the use beneficial to the refuge's natural or cultural resources? If not, we will generally not further consider the use.

(j) Can the use be accommodated without impairing existing wildlife-dependent recreational uses or reducing the potential to provide quality (see section 1.6D), compatible, wildlife-dependent recreation into the future? If not, we will generally not further consider the use.

B. Where we do not have jurisdiction over the use, there is no need to evaluate it further as we cannot control the use (a "no" response to criterion

(a)). We may not find uses appropriate if they are illegal, inconsistent with existing policy, or unsafe. Therefore, if there is a "no" response to criteria (b), (c), or (d), immediately stop consideration of the use. If the answer is "no" to any of the other questions, we will generally not allow the use. However, there may be situations where the refuge has exceptional or unique recreational resources, such as rock climbing, that are not available nearby, off the refuge, and the use requires insignificant management resources. In such cases, we may further consider a use.

C. When the refuge manager finds that a proposed use is not appropriate, the finding must be documented for the refuge files using FWS Form 3-2319. This finding does not require refuge supervisor concurrence. However, if outside the CCP process a refuge manager finds that an existing use is not appropriate, the finding requires refuge supervisor concurrence. The refuge manager will send copies of all findings to the refuge supervisor to be incorporated into a national database annually. This section specifically clarifies and expands on the compatibility policy (603 FW 2.10D).

D. Following the issuance of this policy, refuge managers, in consultation with the States, must review all existing uses for appropriateness within 1 year unless the use was reviewed in a post-1997 CCP. If the refuge manager finds an existing use is not appropriate, the use must be modified so it is appropriate or terminated or phased out as expeditiously as practicable. The refuge manager must obtain refuge supervisor concurrence when there are changes to existing uses that eliminate the use or substantially change the use. All appropriateness findings required under section 1.11A(3), including findings made during the CCP process, must be documented for the refuge files using FWS Form 3-2319. Include the documentation for both appropriateness findings and compatibility determinations in the documentation for the CCP. A finding of "not appropriate" for a new use does not require refuge supervisor concurrence. However, the decision to modify or terminate a use may be subject to the National Environmental Policy Act (NEPA). Refuge managers should consult with their Regional NEPA coordinator to see if a decision would be subject to NEPA.

E. **The Refuge System Headquarters will maintain a** database of refuge uses. This database will include a refuge-by-refuge listing of all uses refuge managers have found either appropriate or not appropriate. With this information, refuge managers will know which uses have already been approved or denied at any other unit of the Refuge System. This information will help strengthen the Refuge System by reinforcing consistency and integrity in the way we consider refuge uses. However, this does not mean that a use found to be not appropriate on one refuge should automatically be found not appropriate on other refuges in the Refuge System.

1.12 How do we coordinate with the States? Both the Service and State fish and wildlife agencies have authorities and responsibilities for management of fish and wildlife on refuges as described in 43 CFR part 24. Consistent with the Administration Act, as amended, the Director will interact, coordinate, cooperate, and collaborate with the State fish and wildlife agencies in a timely and effective manner on the acquisition and management of refuges. Under both the Administration Act, as amended, and 43 CFR part 24, the Director as the Secretary's designee will ensure that Refuge System regulations and management plans are, to the extent practicable, consistent with State laws, regulations, and anagement plans. We charge refuge managers, as the designated representatives of the Director at the local level, with carrying out these directives. We will provide State fish and wildlife agencies timely and meaningful opportunities to participate in the development and implementation of programs conducted under this policy. These opportunities will most commonly occur through State fish and wildlife agency representation on the CCP planning teams. However, we will provide other opportunities for the State fish and wildlife agencies to participate in the development and implementation of program changes that would be made outside of the CCP process. Further, we will continue to provide State fish and wildlife agencies opportunities to discuss and, if necessary, elevate decisions within the hierarchy of the Service.

/sgd/ H. Dale Hall

DIRECTOR

Date: January 20, 2006

Appendix F

Compatibility Regulations

U.S. FISH AND WILDLIFE SERVICE TRANSMITTAL SHEET

PART	SUBJECT	RELEASE NUMBER
603 FW 2	National Wildlife Refuge System Uses Compatibility	360
ORIGINATING OFFICE Division of Refuges		DATE November 17, 2000

EXPLANATION OF MATERIAL TRANSMITTED:

This chapter establishes the process for determining whether or not a use of a national wildlife refuge is a compatible use, incorporating the compatibility provisions of the National Wildlife Refuge System Improvement Act of 1997, that amends the National Wildlife Refuge System Administration Act of 1966.

This chapter supersedes 5 RM 20 (Refuge Manual).

DIRECTOR

FILING INSTRUCTIONS:

Remove:

None

Insert:

603 FW 2, FWM 360, 11/17/00 (6 sheets)
Exhibit 1, 603 FW 2, FWM 360, 11/17/00 (1 sheet)
Exhibit 2, 603 FW 2, FWM 360, 11/17/00 (1 sheet)

FISH AND WILDLIFE SERVICE
REFUGE MANAGEMENT

Refuge Management — Part 603 National Wildlife Refuge System Uses

Chapter 2 Compatibility — 603 FW 2

2.1 What is the purpose of this chapter? This chapter provides policy for determining compatibility of proposed and existing uses of national wildlife refuges.

2.2 What does this policy apply to? This policy applies to all proposed and existing uses of national wildlife refuges where we have jurisdiction over such uses.

2.3 What is the compatibility policy? The refuge manager will not initiate or permit a new use of a national wildlife refuge or expand, renew, or extend an existing use of a national wildlife refuge unless the refuge manager has determined that the use is a compatible use.

2.4 What are the objectives of this chapter?

A. To provide guidelines for determining compatibility of proposed national wildlife refuge uses and procedures for documentation and periodic review of existing national wildlife refuge uses; and

B. To ensure that we administer proposed and existing national wildlife refuge uses according to laws, regulations, and policies concerning compatibility.

2.5 What are our statutory authorities for requiring uses of national wildlife refuges to be compatible?

A. National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee (Refuge Administration Act). This law states that "The Secretary is authorized, under such regulations as he may prescribe, to -- (A) permit the use of any area within the System for any purpose, including but not limited to hunting, fishing, public recreation and accommodations, and access whenever he determines that such uses are compatible" and that ". . . the Secretary shall not initiate or permit a new use of a refuge or expand, renew, or extend an existing use of a refuge, unless the Secretary has determined that the use is a compatible use and that the use is not inconsistent with public safety." The law also provides that, in administering the National Wildlife Refuge System, ". . . the Secretary is authorized to . . . Issue regulations to carry out this Act." A significant directive of the Refuge Administration Act is to ensure that we maintain the biological integrity, diversity, and environmental health of the National Wildlife Refuge System for present and future generations of Americans. We are now using the term "ecological integrity" in lieu of the phrase "biological integrity, diversity, and environmental health." Uses that we reasonably may anticipate to conflict with pursuing this directive to maintain the ecological integrity of the System are contrary to fulfilling the National Wildlife Refuge System mission and are therefore not compatible. Fragmentation of the National Wildlife Refuge System's wildlife habitats is a direct threat to the integrity of the National Wildlife Refuge System, both today and in the decades ahead. Uses that we reasonably may anticipate to reduce the quality or quantity or fragment habitats on a national wildlife refuge will not be compatible.

B. Refuge Recreation Act of 1962, 16 U.S.C. 460k-460k-4 (Refuge Recreation Act). This law requires that any recreational use of a national wildlife refuge must be compatible with the primary purposes for which the refuge was established.

C. Alaska National Interest Lands Conservation Act of 1980, P.L. 96-487, 94 Stat. 23-71 (ANILCA). Section 304 of ANILCA adopted the compatibility standard of the Refuge Administration Act for Alaska refuges.

2.6 What do these terms mean?

A. Compatibility determination. A written determination signed and dated by the refuge manager and Regional Chief signifying that a proposed or existing use of a national wildlife refuge is a compatible use or is not a compatible use. The Director makes this delegation through the Regional Director.

B. Compatible use. A proposed or existing wildlife-dependent recreational use or any other use of a national wildlife refuge that, based on sound professional judgment, will not materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the national wildlife refuge.

C. Comprehensive conservation plan. A document that describes the desired future conditions of a refuge or planning unit and provides long-range guidance and management direction to achieve the purposes of the refuge; helps fulfill the mission of the Refuge System; maintains and, where appropriate, restores the ecological integrity of each refuge and the Refuge System; helps achieve the goals of the National Wilderness Preservation System; and meets other mandates.

D. Conservation, and Management. To sustain and, where appropriate, restore and enhance, healthy populations of fish, wildlife, and plants utilizing, in accordance with applicable Federal and State laws, methods and procedures associated with modern scientific resource programs. Such methods and procedures include, consistent with the provisions of the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), protection, research, census, law enforcement, habitat management, propagation, live trapping and transplantation, and regulated taking.

E. Coordination area. A wildlife management area made available to a State by:

(1) Cooperative agreement between the U.S. Fish and Wildlife Service and a State agency having control over

wildlife resources pursuant to section 4 of the Fish and Wildlife Coordination Act (16 U.S.C. 664); or

(2) Long-term leases or agreements pursuant to title III of the Bankhead-Jones Farm Tenant Act (7 U.S.C. 1010 et seq.). The States manage coordination areas but they are part of the National Wildlife Refuge System. The compatibility standard does not apply to coordination areas.

F. Director. The Director, U.S. Fish and Wildlife Service or the authorized representative of such official.

G. Fish, Wildlife, and Fish and wildlife. Any member of the animal kingdom in a wild, unconfined state, whether alive or dead, including a part, product, egg, or offspring of the member.

H. National wildlife refuge, and Refuge. A designated area of land, water, or an interest in land or water located within the National Wildlife Refuge System but does not include coordination areas.

I. National Wildlife Refuge System, and System. All lands, waters, and interests therein administered by the U.S. Fish and Wildlife Service as wildlife refuges, wildlife ranges, wildlife management areas, waterfowl production areas, coordination areas, and other areas for the protection and conservation of fish and wildlife including those that are threatened with extinction as determined in writing by the Director or so directed by Presidential or Secretarial order. The determination by the Director may not be delegated.

J. National Wildlife Refuge System mission, and System mission. To administer a national 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.

K. Plant. Any member of the plant kingdom in a wild, unconfined state, including any plant community, seed, root, or other part of a plant.

L. Purpose(s) of the refuge. The purposes specified in or derived from the law, proclamation, executive order, agreement, public land order, donation document, or administrative memorandum establishing, authorizing, or expanding a national wildlife refuge, national wildlife refuge unit, or national wildlife refuge subunit. For refuges that encompass Congressionally designated wilderness, the purposes of the Wilderness Act are additional purposes of the wilderness portion of the refuge.

M. Refuge management activity. An activity conducted by the Service or a Service-authorized agent to fulfill one or more purposes of the national wildlife refuge, or the National Wildlife Refuge System mission. Service-authorized agents include contractors, cooperating agencies, cooperating associations, refuge support groups, and volunteers.

N. Refuge management economic activity. A refuge management activity on a national wildlife refuge that results in generation of a commodity which is or can be sold for income or revenue or traded for goods or services. Examples include: farming, grazing, haying, timber harvesting, and trapping.

O. Refuge Manager. The official directly in charge of a national wildlife refuge or the authorized representative of such official. In the case of a national wildlife refuge complex, this refers to the official directly in charge of the complex.

P. Regional Chief. The official in charge of the National Wildlife Refuge System within a Region of the U.S. Fish and Wildlife Service or the authorized representative of such official.

Q. Refuge use, and Use of a refuge. A recreational use (including refuge actions associated with a recreational use or other general public use), refuge management economic activity, or other use of a national wildlife refuge by the public or other non-National Wildlife Refuge System entity.

R. Regional Director. The official in charge of a Region of the U.S. Fish and Wildlife Service or the authorized representative of such official.

S. Secretary. The Secretary of the Interior or the authorized representative of such official.

T. Service, We, and Us. The U.S. Fish and Wildlife Service, Department of the Interior.

U. Sound professional judgment. A finding, determination, or decision that is consistent with principles of sound fish and wildlife management and administration, available science and resources, and adherence to the requirements of the National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee), and other applicable laws. Included in this finding, determination, or decision is a refuge manager's field experience and knowledge of the particular refuge's resources.

V. State, and United States. One or more of the States of the United States, Puerto Rico, American Somoa, the Virgin Islands, Guam, and the territories and possessions of the United States.

W. Wildlife-dependent recreational use, and Wildlife-dependent recreation. A use of a national wildlife refuge involving hunting, fishing, wildlife observation and photography, or environmental education and interpretation. The National Wildlife Refuge System Administration Act of 1966 (16 U.S.C. 668dd-668ee) specifies that these are the

six priority general public uses of the National Wildlife Refuge System.

2.7 What are our responsibilities?

A. Director. Provides national policy for making compatibility determinations to ensure that such determinations comply with all applicable authorities.

B. Regional Director.

(1) Ensures that refuge managers follow laws, regulations, and policies when making compatibility determinations.

(2) Makes the final decision on compatibility determinations when the Regional Chief does not concur with the refuge manager.

(3) Notifies the Director regarding controversial or complex compatibility determinations.

C. Regional Chief.

(1) Reviews all compatibility determinations for the purpose of deciding whether or not to concur.

(2) Refers a compatibility determination to the Regional Director if the Regional Chief does not concur with the refuge manager. Discusses nonconcurrence with the refuge manager for possible resolution before referring to the Regional Director.

(3) Notifies the Regional Director regarding controversial or complex compatibility determinations.

D. Refuge Manager.

(1) Determines if a proposed or existing use is subject to the compatibility standard.

(2) Determines whether a use is compatible or not compatible.

(3) Documents all compatibility determinations in writing.

(4) Ensures that we provide for public review and comment opportunities for all compatibility determinations, unless previously provided.

(5) Refers all compatibility determinations to the Regional Chief for concurrence.

2.8 What is the compatibility standard for Alaska refuges?

A. The Refuge Administration Act establishes the same standard for compatibility for Alaska refuges as for other national wildlife refuges. The provisions of ANILCA are the primary guidance refuge managers should apply when examining issues regarding subsistence use. We may alter the compatibility process, in some cases, for Alaska refuges to include additional procedural steps, such as when reviewing applications for oil and gas leasing on non-North Slope lands (ANILCA Sec. 1008) and for applications for transportation and utility systems (ANILCA Sec. 1104).

B. Alaska refuges established before the passage of ANILCA have two sets of purposes. Purposes for pre-ANILCA refuges (in effect on the day before the enactment of ANILCA) remain in force and effect, except to the extent that they may be inconsistent with ANILCA or the Alaska Native Claims Settlement Act, in which case the provisions of those Acts control. However, the original purposes for pre-ANILCA refuges apply only to those portions of the refuge established by the prior executive order or public land order, and not to those portions of the refuge added by ANILCA.

C. Section 22(g) of the Alaska Native Claims Settlement Act provides that patents issued to Village Corporations for selected land within the boundaries of a refuge existing on December 18, 1971, the signing date of the Act, will contain provisions that these lands remain subject to laws and regulations governing the use and development of such refuges. This includes application of the compatibility standard for such use and development, excepting certain differences provided in regulation (50 CFR 25.21) that acknowledge the unique status of these lands.

2.9 When is a compatibility determination required?

A. We require a compatibility determination for all refuge uses as defined by the term "refuge use" and must include in the analysis consideration of all associated facilities, structures, and improvements, including those constructed or installed by us or at our direction. This requirement will apply to all such facilities, structures, improvements, and refuge actions associated with uses that we approve on or after the effective date of this policy and to the replacement or major repair or alteration of facilities, structures, and improvements associated with already approved uses.

B. Facilities, structures, and improvements commonly associated with recreational public uses include: environmental education centers; boat/fishing docks; parking lots; boat ramps; roads; trails; viewing platforms/towers; and visitor centers.

C. Facilities, structures, and improvements commonly associated with refuge management economic activities include: loading/unloading areas; construction, operation,

and maintenance buildings; parking lots; roads and trails; fences; stock ponds and other livestock watering facilities; and crop irrigation facilities.

D. We will make compatibility determinations for such facilities, structures, and improvements at the same time we make the compatibility determination for the use or activity in question.

2.10 When is a compatibility determination not required?

A. Refuge management activity. We do not require a compatibility determination for refuge management activities as defined by the term "refuge management activity" except for "refuge management economic activities." Examples of refuge management activities that do not require a compatibility determination include: prescribed burning; water level management; invasive species control; routine scientific monitoring, studies, surveys, and censuses; historic preservation activities; law enforcement activities; and maintenance of existing refuge facilities, structures, and improvements. In addition, we do not require compatibility determinations for State wildlife management activities on a national wildlife refuge pursuant to a cooperative agreement between the State and the Fish and Wildlife Service where the refuge manager has made a written determination that such activities support fulfilling the refuge purposes or the System mission.

B. Other exceptions.

(1) There are other circumstances under which the compatibility requirements may not be applicable. The most common exceptions involve property rights that are not vested in the Federal Government, such as reserved rights to explore and develop minerals or oil and gas beneath a refuge. In some cases, these exceptions may include water rights, easements, or navigable waters. Exceptions may apply when there are rights or interests imparted by a treaty or other legally binding agreement, where primary jurisdiction of refuge lands falls to an agency other than us, or where legal mandates supersede those requiring compatibility. Where reserved rights or legal mandates provide that we must allow certain activities, we should not prepare a compatibility determination. In the case of reserved rights, the refuge manager should work with the owner of the property interest to develop stipulations in a special use permit or other agreement to alleviate or minimize adverse impacts to the refuge.

(2) Communication and cooperation between the refuge manager and the owner of reserved rights will help protect refuge resources without infringing upon privately held rights. refuge managers may find it helpful in these instances to secure legal advice from the Department of the Interior Office of the Solicitor.

(3) Compatibility provisions of the Refuge Administration Act do not apply to Department of Defense overflights or non-Department of Defense overflights above a refuge. However, other Federal laws (e.g., Airborne Hunting Act, Endangered Species Act, Bald Eagle Protection Act) may govern overflights above a refuge. For Department of Defense overflights, active communication and cooperation between the refuge manager and the local base commander will be the most effective way to protect refuge resources. For non-Department of Defense overflights, active communication and cooperation between the refuge manager and personnel at local airports, pilot training schools, and private groups regarding the Federal Aviation Administration's requested minimum altitudes over national wildlife refuges will be the most effective way to protect refuge resources.

(4) Compatibility requirements apply to activities on bodies of water in or within any area of the National Wildlife Refuge System. Under 50 CFR 25.11, this is effectively to the extent of the ownership interest of the United States in lands or waters. Where activities on water bodies not within an area of the National Wildlife Refuge System are affecting refuge resources, the refuge manager should seek State cooperation in managing the activities. If necessary, the refuge manager should consider refuge-specific regulations that would address the problem or consult with the Office of the Solicitor regarding other legal remedies for injury to refuge resources.

(5) Compatibility provisions of the Refuge Administration Act do not apply to activities authorized, funded, or conducted by another Federal agency that has primary jurisdiction over the area where a refuge or a portion of a refuge has been established, if those activities are conducted in accordance with a memorandum of understanding between the Secretary or the Director and the head of the Federal agency with primary jurisdiction over the area.

C. Emergencies. The Refuge Administration Act states that the Secretary may temporarily suspend, allow, or initiate any use in a refuge if the Secretary determines it is necessary to immediately act in order to protect the health and safety of the public or any fish or wildlife population. Authority to make decisions under this emergency power is delegated to the refuge manager. Temporary actions should not exceed 30 days and will usually be of shorter duration. Such emergency actions are not subject to the compatibility determination process as outlined in this chapter. When using this authority, the refuge manager will notify the Regional Chief in advance of the action, or in cases where the nature of the emergency requires immediate response, as soon as possible afterwards, and typically no later than the start of business on the first normal workday following the emergency action. The refuge manager will create a written record (memorandum to the file) of the decision, the reasons supporting it, and why it was necessary to protect the health and safety of the public or any fish or wildlife population.

little concern if it involves few boats, but of increasing concern with growing numbers of boats. Likewise, when considered separately, a use may not exceed the compatibility threshold, but when considered cumulatively in conjunction with other existing or planned uses, a use may exceed the compatibility threshold.

(2) While refuge managers should be looking for tangible impacts, the fact that a use will result in a tangible adverse effect, or a lingering or continuing adverse effect is not necessarily the overriding concern regarding "materially interfere with or detract from." These types of effects should be taken into consideration but the primary aspect is how does the use and any impacts from the use affect our ability to fulfill the System mission and the refuge purposes. For example, the removal of a number of individual animals from a refuge through regulated hunting, trapping or fishing would, in many instances, help the refuge manager manage to improve the health of wildlife populations. However, the take of even one individual of a threatened or endangered species could significantly impact the refuge's ability to manage for and perpetuate that species. Likewise, wildlife disturbance that is very limited in scope or duration may not result in interference with fulfilling the System mission or refuge purposes. However, even unintentional minor harassment or disturbance during critical biological times, in critical locations, or repeated over time may exceed the compatibility threshold.

(3) The refuge manager must consider not only the direct impacts of a use but also the indirect impacts associated with the use and the cumulative impacts of the use when conducted in conjunction with other existing or planned uses of the refuge, and uses of adjacent lands or waters that may exacerbate the effects of a refuge use.

C. Making a use compatible through replacement of lost habitat values or other compensatory mitigation. We will not allow compensatory mitigation to make a proposed refuge use compatible, except by replacement of lost habitat values as provided in subparagraph D below. If the proposed use cannot be made compatible with stipulations we cannot allow the use.

D. Existing rights-of-way. We will not make a compatibility determination and will deny any request for maintenance of an existing right-of-way that will affect a unit of the National Wildlife Refuge System, unless (1) the design adopts appropriate measures to avoid resource impacts and includes provisions to ensure no net loss of habitat quantity and quality; (2) restored or replacement areas identified in the design are afforded permanent protection as part of the national wildlife refuge or wetland management district affected by the maintenance; and (3) all restoration work is completed by the applicant prior to any title transfer or recording of the easement, if applicable. Maintenance of an existing right-of-way includes minor expansion or minor realignment to meet safety standards. Examples of minor expansion or minor realignment include: expand the width of a road shoulder to reduce the angle of the slope; expand the area for viewing on-coming traffic at an intersection; and realign a curved section of a road to reduce the amount of curve in the road.

E. Refuge-specific analysis. We must base compatibility determinations on a refuge-specific analysis of reasonably anticipated impacts of a particular use on refuge resources. We should base this refuge-specific analysis on information readily available to the refuge manager, including field experience and familiarity with refuge resources, or made available to the refuge manager by the State, tribes, proponent(s) or opponent(s) of the use, or through the public review and comment period. Refuge-specific analysis need not rely on refuge-specific biological impact data, but may be based on information derived from other areas or species that are similarly situated and therefore relevant to the refuge-specific analysis. We do not require refuge managers to independently generate data to make determinations but rather to work with available information. Refuge managers may work at their discretion with the proponent(s) of the use or other interested parties to gather additional information before making the determination. If information available to the refuge manager is insufficient to document that a proposed use is compatible, then the refuge manager would be unable to make an affirmative finding of compatibility, and we must not authorize or permit the use. See 2.12A(8) for additional information dealing with priority public uses.

F. Relationship to management plans. The refuge manager will usually complete compatibility determinations as part of the comprehensive conservation plan or step-down management plan process for individual uses, specific use programs, or groups of related uses described in the plan. The refuge manager will incorporate compatibility determinations prepared concurrently with a plan as an appendix to the plan. These compatibility determinations may summarize and incorporate by reference what the refuge manager addressed in detail in the comprehensive conservation plan, step-down management plan, or associated National Environmental Policy Act (NEPA) document.

G. Managing conflicting uses. The refuge manager may need to allocate uses in time and/or space to reduce or eliminate conflicts among users of the refuge. If this cannot be done, the refuge manager may need to terminate or disallow one or more of the uses. The Refuge Administration Act does not prioritize among the six wildlife-dependent recreational uses. Therefore, in the case of direct conflict between these priority public uses, the refuge manager should evaluate, among other things, which use most directly supports long-term attainment of refuge purposes and the System mission. This same analysis would support a decision involving conflict between two nonpriority public uses. Where there are conflicts between priority and nonpriority public uses, priority public uses take precedence.

D. Denying a proposed use without determining compatibility.

(1) The refuge manager should deny a proposed use without determining compatibility if any of the following situations exist:

(a) The proposed use conflicts with any applicable law or regulation (e.g., Wilderness Act, Endangered Species Act, Marine Mammal Protection Act, Migratory Bird Treaty Act);

(b) The proposed use conflicts with any applicable executive order, or written Department of the Interior or Service policy;

(c) The proposed use conflicts with the goals or objectives in an approved refuge management plan (e.g., comprehensive conservation plan, comprehensive management plan, master plan or step-down management plan);

(d) The proposed use has already been considered in an approved refuge management plan and was not accepted;

(e) The proposed use is inconsistent with public safety;

(f) The proposed use is a use other than a wildlife-dependent recreational use that is not manageable within the available budget and staff; or

(g) The proposed use conflicts with other resource or management objectives provided that the refuge manager specifies those objectives in denying the use.

(2) A compatibility determination should be prepared for a proposed use only after the refuge manager has determined that we have jurisdiction over the use and has considered items (a) through (g) above (see Exhibit 1).

E. Existing compatibility determinations. Compatibility determinations in existence prior to the effective date of this policy will remain in effect until and unless modified and will be subject to periodic reevaluation as described in section 2.11H. Any use specifically authorized for a period longer than 10 years (such as rights-of-way) is subject to a compatibility determination at the time of the initial application and when the term expires and we receive a request for renewal. We will use periodic reevaluations for such long-term uses to review compliance with permit terms and conditions.

2.11 What are considerations when applying compatibility?

A. Sound professional judgment.

(1) In determining what is a compatible use, the Refuge Administration Act relies on the "sound professional judgment" of the Director. The Director delegates authority to make compatibility determinations through the Regional Director to the refuge manager. Therefore, it is the refuge manager who is required and authorized to exercise sound professional judgment. Compatibility determinations are inherently complex and require the refuge manager to consider their field experiences and knowledge of a refuge's resources, particularly its biological resources, and make conclusions that are consistent with principles of sound fish and wildlife management and administration, available scientific information, and applicable laws. When a refuge manager is exercising sound professional judgment, the refuge manager will use available information that may include consulting with others both inside and outside the Service.

(2) The refuge manager must also consider the extent to which available resources (funding, personnel, and facilities) are adequate to develop, manage, and maintain the proposed use so as to ensure compatibility. The refuge manager must make reasonable efforts to ensure that the lack of resources is not an obstacle to permitting otherwise compatible wildlife-dependent recreational uses (hunting, fishing, wildlife observation and photography, and environmental education and interpretation). If reasonable efforts do not yield adequate resources to develop, manage, and maintain the wildlife-dependent recreational use, the use will not be compatible because the Service will lack the administrative means to ensure proper management of the public activity on the refuge.

(3) Refuge managers are reminded that, unless otherwise provided for in law or other legally binding directive, permitting uses of national wildlife refuges is a determination vested by law in the Service. Under no circumstances (except emergency provisions necessary to protect the health and safety of the public or any fish or wildlife population) may we authorize any use not determined to be compatible.

B. Materially interfere with or detract from.

(1) When completing compatibility determinations, refuge managers use sound professional judgment to determine if a use will materially interfere with or detract from the fulfillment of the System mission or the purpose(s) of the refuge. Inherent in fulfilling the System mission is not degrading the ecological integrity of the refuge. Compatibility, therefore, is a threshold issue, and the proponent(s) of any use or combination of uses must demonstrate to the satisfaction of the refuge manager that the proposed use(s) pass this threshold test. The burden of proof is on the proponent to show that they pass; not on the refuge manager to show that they surpass. Some uses, like a proposed construction project on or across a refuge that affects the flow of water through a refuge, may exceed the threshold immediately, while other uses, such as boat fishing in a small lake with a colonial nesting bird rookery may be of

H. Reevaluation of uses.

(1) We will reevaluate compatibility determinations for existing wildlife-dependent recreational uses when conditions under which the use is permitted change significantly, or if there is significant new information regarding the effects of the use, or concurrently with the preparation or revision of a comprehensive conservation plan, or at least every 15 years, whichever is earlier. In addition, a refuge manager always may reevaluate the compatibility of a use at any time.

(2) Except for uses specifically authorized for a period longer than 10 years (such as rights-of-way), we will reevaluate compatibility determinations for all existing uses other than wildlife-dependent recreational uses when conditions under which the use is permitted change significantly, or if there is significant new information regarding the effects of the use, or at least every 10 years, whichever is earlier. Again, a refuge manager always may reevaluate the compatibility of a use at any time.

(3) For uses in existence on November 17, 2000, that were specifically authorized for a period longer than 10 years (such as rights-of-way), our compatibility reevaluation will examine compliance with the terms and conditions of the authorization, not the authorization itself. We will frequently monitor and review the activity to ensure that the permittee carries out all permit terms and conditions. However, the Service will request modifications to the terms and conditions of the permits from the permittee if the Service determines that such changes are necessary to ensure that the use remains compatible. After November 17, 2000, no uses will be permitted or reauthorized, for a period longer than 10 years, unless the terms and conditions for such long-term permits specifically allows for the modifications to the terms and conditions, if necessary to ensure compatibility. We will make a new compatibility determination prior to extending or renewing such long-term uses at the expiration of the authorization. When we prepare a compatibility determination for reauthorization of an existing right-of-way, we will base our analysis on the existing conditions with the use in place, not from a pre-use perspective.

(4) The refuge manager will determine whether change in the conditions under which the use is permitted or new information regarding the effects of the use is significant or not. The refuge manager will make this decision by considering whether or not these new conditions or new information could reasonably be expected to change the outcome of the compatibility determination. Any person at any time may provide information regarding changes in conditions and new information to the refuge manager. However, the refuge manager maintains full authority to determine if this information is or is not sufficient to trigger a reevaluation.

(5) When we reevaluate a use for compatibility, we will take a fresh look and prepare a new compatibility determination following the procedure outlined in paragraph 2.12A.

I. Public review and comment. An opportunity for public review and comment is required for all compatibility determinations. For compatibility determinations prepared concurrently with comprehensive conservation plans or step-down management plans, we can achieve public review and comment concurrently with the public review and comment of the draft plan and associated NEPA document. For compatibility determinations prepared separately from a plan, we will determine the appropriate level of opportunity for public review and comment through a tiered approach based on complexity, controversy, and level of impact to the refuge. See 2.12A(9) for details on public review and comment.

2.12 What information do we include in a compatibility determination?

A. All compatibility determinations will include the following information. To maintain consistency, we will use the format provided in Exhibit 2 for documenting all compatibility determinations.

(1) Use. Identify the use. A use may be proposed or existing, and may be an individual use, a specific use program, or a group of related uses. The refuge manager will determine whether to consider a use individually, a specific use program, or in conjunction with a group of related uses. However, whenever practicable, the refuge manager should concurrently consider related uses or uses that are likely to have similar effects and associated facilities, structures and improvements, in order to facilitate analysis of cumulative effects and to provide opportunity for effective public review and comment.

(2) Refuge name. Identify the name of the refuge.

(3) Establishing and acquisition authority(ies). Identify the specific authority(ies) used to establish the refuge (e.g., Executive Order, public land order, Secretarial Order, refuge-specific legislation, or general legislation).

(4) Refuge purpose(s). Identify the purpose(s) of the refuge from the documents identified in 2.12A(3). For a use proposed for designated wilderness areas within the System, the refuge manager must first analyze whether or not the use can be allowed under the terms of the Wilderness Act (16 U.S.C. 1131-36). If so, the refuge manager must then determine if the use is compatible. As a matter of policy, the refuge manager will also analyze whether or not the use is compatible with the purposes of the Wilderness Act, which makes such purposes supplemental to those of the national wildlife refuge.

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(5) National Wildlife Refuge System mission. The mission of the National Wildlife Refuge System is "to administer a national 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."

(6) Description of use. Describe the nature and extent of the use. The refuge manager may work with the proponent(s) of a use to gather information required in subparagraphs (a) through (e) below to describe the proposed use. If the use is described in sufficient detail in a comprehensive conservation plan, step-down management plan, other plan, or associated NEPA document, the refuge manager may provide a summary of the use and reference the plan or NEPA document. At a minimum, the refuge manager must address and include the following in the compatibility determination:

(a) What is the use? Is the use a priority public use?

(b) Where would the use be conducted? Describe the specific areas of the refuge that will be used: habitat types and acres involved; key fish, wildlife, and plants that occur in or use that habitat; and the proportion of total refuge acreage and the specific habitat type involved. Include a description of other areas that may be affected incidental to the specific use, such as access to the destination area and storage of equipment. This information may be described in writing and on a map.

(c) When would the use be conducted? Describe the time of year and day, and duration of the use.

(d) How would the use be conducted? Describe the techniques to be used, types of equipment required, and number of people per given period. Include supporting uses and associated facilities, structures and improvements as appropriate, e.g., boating and boat ramps to support fishing, camping and campsites to support hunting, etc.

(e) Why is this use being proposed? Describe the reason for the use and the need to conduct the use on the refuge. Describe the extent to which other areas in the vicinity provide similar opportunities.

(7) Availability of resources.

(a) Complete an analysis of costs for administering and managing each use. Implicit within the definition of sound professional judgment is that adequate resources (including financial, personnel, facilities, and other infrastructure) exist or can be provided by the Service or a partner to properly develop, operate, and maintain the use in a way that will not materially interfere with or detract from fulfillment of the refuge purpose(s) and the System mission. If resources are lacking for establishment or continuation of wildlife-dependent recreational uses, the refuge manager will make reasonable efforts to obtain additional resources or outside assistance from States, other public agencies, local communities, and/or private and non-profit groups before determining that the use is not compatible. If adequate resources cannot be secured, the use will be found not compatible and cannot be allowed. Efforts to find additional funding must be documented on the compatibility determination form.

(b) For many refuges, analysis of available resources will have been made for general categories of uses when preparing comprehensive conservation plans, step-down management plans, other plans, or NEPA documents. If the required and available resources are described in sufficient detail in a comprehensive conservation plan, step-down management plan, other plan, or associated NEPA document, provide a summary of the required and available resources for the use and reference the plan or NEPA document. If not sufficiently covered in the planning document, the following should be documented in the compatibility determination:

(i) Resources involved in the administration and management of the use.

(ii) Special equipment, facilities or improvements necessary to support the use. Itemize expenses such as costs associated with special equipment, physical changes or improvements necessary on the refuge that would be required to comply with disabled access requirements.

(iii) Maintenance costs associated with the use (e.g., trail maintenance and mowing, signing, garbage pickup or sanitation costs, parking areas, road repair or grading, building or structure repair, including blinds, boat ramps, kiosks, etc.).

(iv) Monitoring costs (e.g., biological or visitor surveys, maintenance of control sites, etc.) to assess the impact of uses over time on natural resources and quality of the visitors' experience.

(c) This analysis of cost for administering and managing each use will only include the incremental increase above general operational costs that we can show as being directly caused by the proposed use.

(d) Offsetting revenues, such as entrance fees and user fees that are returned to the refuge, should be documented in determining the costs to administer individual or aggregated uses.

(8) Anticipated impacts of the use.

(a) Identify and describe the reasonably anticipated impacts of the use. In assessing the potential impacts of a proposed use on the refuge's purpose(s) and the System mission,

refuge managers will use and cite available sources of information, as well as their best professional judgment, to substantiate their analysis. Sources may include planning documents, environmental assessments, environmental impact statements, annual narrative reports, information from previously conducted or ongoing research, data from refuge inventories or studies, published literature on related biological studies, State conservation management plans, field management experience and consultation with wildlife research professionals, State wildlife resource managers and industry professionals, etc. Refuge managers are not required to independently generate data on which to base compatibility determinations. The refuge manager may work with the proponent(s) of the use and other interested parties to gather additional information before making the determination. If available information to the refuge manager is insufficient to document that a proposed use is compatible, then the refuge manager would be unable to make an affirmative finding of compatibility and we must not authorize or permit the use. If the use is a priority public use, and sufficient information is not available, the refuge manager should work with the proponent of the use to acquire the necessary information before finding the use not compatible based solely on insufficient available information. This does not mean that the burden of information collection is shifted to the refuge manager, but that the refuge manager should take steps to ensure that the additional information needs are clearly identified and that appropriate assistance is provided in facilitating the collection of that information.

(b) Refuge managers should distinguish between long-term and short-term impacts. A use may initially only be expected to cause minor impacts to the resource. However, the cumulative impacts over time may become quite substantial. Other uses may have impacts that are very short in duration but very significant while they are occurring, or are the converse: very long in duration but very insignificant in effect.

(c) Although direct impacts on refuge resources, such as wildlife disturbance or destruction of habitats, or degradation of ecological integrity may be easily predicted, the analysis of impacts must also address indirect and cumulative effects that may be reasonably associated with a specific use. Indirect impacts of a proposed use may include taking away or diverting resources from an activity that would support fulfilling the System mission or refuge's purposes and therefore would be a factor in determining whether the proposed use is compatible or not. A use with little potential for impact on its own may contribute to more substantive cumulative impacts on refuge resources when conducted in conjunction with or preceding or following other uses, and when considered in conjunction with proposed or existing uses of lands and waters adjacent to the refuge.

(d) If the anticipated impacts of the use are described in sufficient detail in a comprehensive conservation plan, step-down management plan, other plan, or associated NEPA document, refuge managers may provide a summary of the anticipated impacts of the use and reference the plan or NEPA document.

(e) Refuge managers should list all conservation objectives in approved refuge management plans (e.g., comprehensive conservation plan, comprehensive management plan, master plan, or step-down management plan), that reasonably might be affected by the proposed use. To the extent possible, the determination of anticipated impacts should include an explanation of the impacts on these specific conservation objectives and how that affects fulfilling refuge purposes or the System mission.

(9) Public review and comment.

(a) The refuge manager must provide an opportunity for public review and comment on the proposed refuge uses(s) before issuing a final compatibility determination. Public review and comment includes actively seeking to identify individuals and organizations that reasonably might be affected by, or interested in, a refuge use. Additionally, public review and comment will offer the public the opportunity to provide relevant information and express their views on whether or not a use is compatible. The extent and complexity of public review and comment that is necessary or appropriate will be determined by the refuge manager. For example, significantly modifying a popular hunting, fishing, or wildlife observation program would likely be controversial and would require considerable opportunity for public review and comment, whereas temporarily closing a small portion of a wildlife observation trail would likely require much less opportunity for public review and comment. For compatibility determinations prepared concurrently with comprehensive conservation plans or step-down management plans, public involvement can be achieved concurrently with the public review and comment of the draft plan and associated NEPA document. For compatibility determinations prepared separately from a plan, handle the level of public review and comment through the following tiered approach.

(i) For minor, incidental, or one-time uses that have been shown by past experience at this or other refuges in the System to result in no significant or cumulative impact to the refuge and would likely generate minimal public interest, the public review and comment requirement can be accomplished by posting a notice of the proposed determination at the refuge headquarters.

(ii) For all other uses, at a minimum, the refuge manager will solicit public comment by placing a public notice in a newspaper with wide local distribution. The notice must contain, at a minimum: a brief description of the compatibility determination process, a description of the use that is being evaluated, the types of information that may be used in completing the evaluation, how to provide comments, when

comments are due, and how people may be informed of the decision the refuge manager will make regarding the use. The public will be given at least 14 calendar days to provide comments following the day the notice is published.

(iii) For evaluations of controversial or complex uses, the refuge manager should expand the public review and comment process to allow for additional opportunities for comment. This may include newspaper or radio announcements, notices or postings in public places, notices in the Federal Register, letters to potentially interested people such as adjacent landowners, holding public meetings, or extending the comment period.

(b) Public review and comment efforts must be documented on the compatibility determination form and relevant information retained with compatibility determinations as part of the administrative record. The documentation must include a description of the process used, a summary of comments received, and a description of any actions taken or not taken because of the comments received. All written public comments will be retained in the administrative record. If a comprehensive conservation plan or NEPA document is being prepared, this information would be included in these documents as part of the administrative record.

(10) Use is compatible or not compatible. Identify whether the use is compatible or not compatible. This is where the refuge manager indicates whether or not the use would, or would not, materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge.

(11) Stipulations necessary to ensure compatibility.

(a) Describe any stipulations (terms or conditions) necessary to ensure compatibility. If a use is not compatible as initially proposed, it may be modified with stipulations that avoid or minimize potential adverse impacts, making the use compatible. It is not the responsibility of the refuge manager to develop a sufficient set of stipulations so as to make an otherwise not compatible proposed use, compatible. If the use cannot be modified with stipulations sufficient to ensure compatibility, the use cannot be allowed.

(b) Protective stipulations in the compatibility determination for a particular use should specify the manner in which that use must be carried out to ensure compatibility. Stipulations must be detailed and specific. They may identify such things as limitations on time (daily, seasonal, or annual) or space where a use could be safely conducted, the routes or forms of access to be used, and any restrictions on the types of equipment to be used or number of people to be involved. Monitoring of the use must be sufficient to evaluate compliance with stated conditions and swift action must be taken to correct or respond to any serious deviations.

(12) Justification. After completing the steps described above, the refuge manager will provide a written justification for the determination. The justification must provide a logical explanation describing how the proposed use would, or would not, materially interfere with or detract from the fulfillment of the National Wildlife Refuge System mission or the purposes of the refuge.

(13) Signature. The refuge manager will sign and date the compatibility determination and submit it to the Regional Chief for review and concurrence.

(14) Concurrence. The Regional Chief will sign and date the compatibility determination if in concurrence. If the Regional Chief does not concur, the Regional Chief must discuss the determination with the refuge manager and attempt to resolve the differences. If they do not agree, the Regional Chief must refer the compatibility determination to the Regional Director and the use may not be allowed unless, upon review, the Regional Director makes a written determination that the use is compatible.

(15) Mandatory 10- or 15-year reevaluation date. At the time the compatibility determination is made, the refuge manager will insert the required maximum 10-year reevaluation date for uses other than wildlife-dependent recreational uses or a 15-year maximum reevaluation date for wildlife-dependent recreational uses.

2.13 How do we expedite the compatibility determination process? The Refuge Administration Act provides for expedited consideration of uses that will likely have no detrimental effect on the fulfillment of the purpose(s) of the refuge or the System mission. The intent of this provision is to reduce the administrative burden on the refuge manager and speed the compatibility determination process for uses that are frequently found to be compatible. For minor, incidental, or one-time uses that have been shown to have no significant or cumulative impact to the refuge and would likely generate minimal public interest, the time period for an opportunity for public review and comment may be reduced to the time available.

2.14 What do we do with existing uses that are not compatible? Existing uses determined to be not compatible will be expeditiously terminated or modified to make the use compatible. Except with written authorization by the Director, this process of termination or modification will not exceed 6 months from the date that the compatibility determination is signed.

2.15 May we deny uses that are compatible? A determination that a use is compatible does not require the use to be allowed. Determinations on whether or not to allow otherwise compatible uses are based on compliance with other laws, the System mission, policy, refuge purposes, availability of resources to manage the use, possible conflicts

with other uses, public safety, and other administrative factors. The refuge manager must clearly document and describe in writing the administrative reasons for not permitting a compatible use. Usually, a refuge manager will make this decision prior to making a compatibility determination and completing one will be unnecessary.

2.16 What are the procedures for appealing a permit denial? Procedures for appealing a permit denial are provided in 50 CFR 25.45 (special use permits), 50 CFR 29.22 (rights-of-way), 50 CFR 36.41 (i) (special use permits for refuges in Alaska), or 43 CFR 36.8 (rights-of-way for Alaska). We are providing no administrative mechanism to appeal a compatibility determination.

2.17 When do we prepare pre-acquisition compatibility determinations?

A. When we add lands to the National Wildlife Refuge System, the refuge manager assigned management responsibility for the land to be acquired, will identify prior to acquisition, withdrawal, transfer, reclassification, or donation of those lands, existing wildlife-dependent recreational public uses (if any) determined to be compatible that we will permit to continue on an interim basis, pending completion of the comprehensive conservation plan. For this purpose, the refuge manager will make a pre-acquisition compatibility determination that will apply to existing wildlife-dependent recreational public uses that may be allowed, if determined to be compatible during the interim between acquisition and completion of the comprehensive conservation plan. The purpose of this policy is to inform the public, prior to acquisition, which pre-existing wildlife-dependent recreational public uses will be allowed to continue on newly acquired lands. Such decisions must be based on the compatibility standards and procedures outlined in this chapter. These pre-acquisition compatibility determinations for continuing existing wildlife-dependent recreational public uses will be made in writing, using the format in Exhibit 2.

B. Pre-acquisition compatibility determinations only apply to existing wildlife-dependent recreational public uses and are intended to be short-term in nature, bridging the gap between acquisition of refuge lands and completion of refuge comprehensive conservation plans. They should be made in conjunction with the preparation and release of appropriate pre-acquisition Realty documentation, prepared pursuant to NEPA. Pre-acquisition compatibility determinations should document the type, level, timing and location of wildlife-dependent recreational public uses that are presently occurring on lands proposed for acquisition.

2.18 What is the relationship of compatibility to NEPA? NEPA requires us to examine the environmental impact of our actions, incorporate environmental information, and utilize public participation, as appropriate, in the planning and implementation of our actions. NEPA compliance is required whenever we take an action. It is the action that triggers NEPA. A compatibility determination is not an action under NEPA, rather it is only one of many factors that we take into account whenever we consider taking an action; i.e., allow a refuge use. Deciding whether or not to allow the use is the action, not the compatibility determination. Comprehensive conservation plans, step-down management plans, and the issuance of special use permits are actions about allowing or not allowing refuge uses. These actions require NEPA compliance. Many compatibility determinations will be completed concurrently with these processes. Compatibility determinations are an integral part of our decision about refuge uses; however, it is important to note that compatibility is only one of many factors that we take into account when we consider allowing or not allowing a refuge use.

Appendix G

Draft Compatibility Determinations for Hunting

USE: Hunting

REFUGE NAME: Pathfinder NWR

COUNTY: Carbon and Natrona counties, Wyoming

ESTABLISHING AND ACQUISITION AUTHORITY: Executive Order 7425

REFUGE PURPOSES:

"As a refuge and breeding ground for birds and other wildlife." (Executive Order 7425, dated August 1, 1936)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System is to administer a national 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.

Description of Use

The use would be continuation of the existing hunting program, which includes ducks, coots, mergansers, deer, and pronghorn in accordance with dates and regulations established by the Wyoming Game and Fish Commission. The use would be conducted over the entire refuge.

Hunting is one of the six wildlife-dependent, priority public uses specified in the Improvement Act. It can be allowed at the refuge without interfering with the migratory bird resource.

When would the use be conducted?

Late-season upland game bird hunting and small game hunting would open on the day following the deer gun season. The upland game bird hunting season would close when the state season closes. The small game hunting season would close on March 31 to reduce disturbance to waterfowl and other migratory birds.

How would the use be conducted?

A state-issued unit permit would be required to hunt deer. All hunters must follow state regulations for hunted species. The refuge is closed to all other hunting activities.

Availability of Resources

Resources involved in the administration and management of the use: None.

Special equipment, facilities, or improvements necessary to support the use: None.

Maintenance costs: None.

Monitoring costs: None.

Offsetting revenues: None.

Anticipated Impacts of the Use

Short-term impacts: There may be temporary disturbance to nontarget wildlife near the activity. Animals surplus to populations would be removed by hunting, which may help ensure populations remain beneath the carrying capacity of available habitats.

Long-term impacts: Higher-quality habitats capable of supporting healthy populations of wildlife would result if animal populations (especially deer) remain beneath carrying capacity.

Cumulative impacts: There would be no direct or indirect cumulative impacts anticipated with this use.

Public Review and Comment

This compatibility determination was prepared concurrently with the draft CCP and EA for the refuge. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

Determination

Hunting is a compatible use at Pathfinder NWR.

Stipulations Necessary to Ensure Compatibility

Stipulations for the hunting program would be made available in the refuge's hunting "tear sheet."

Justification

Hunting is a traditional and legislated wildlife-dependent, priority public use. The current staff levels are inadequate to ensure the activity takes place with minimum negative impacts to the refuge and its associated wildlife. Use will be appropriately managed in cooperation with WGFD. Hunting at the refuge is a legitimate and necessary wildlife management tool that can be used to keep wild animal populations at healthy levels.

Signature

_____

Ann Timberman Date
Project Leader, Arapaho NWR Complex
USFWS, Region 6

Review

_____

Lloyd Jones Date
Regional Compatibility Coordinator
USFWS, Region 6

_____

Bud Oliveira Date
Refuge Supervisor
USFWS, Region 6

Mandatory 15-Year Reevaluation Date: 2023

Concurrence

_____

Richard A. Coleman, PhD Date
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Appendix H

Draft Compatibility Determination for Wildlife Observation and Photography

USES: Wildlife observation and photography

REFUGE NAME: Pathfinder NWR

COUNTY: Carbon and Natrona counties, Wyoming

ESTABLISHING AND ACQUISITION AUTHORITY: Executive Order 7425

REFUGE PURPOSES:

"As a refuge and breeding ground for birds and other wildlife." (Executive Order 7425, dated August 1, 1936)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System is to administer a national 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.

Description of Uses

The uses would be a continuation of existing public use programs and activities of and related to wildlife observation and photography.

This draft CCP proposes to continue the above uses and add the following to improve wildlife observation and photography:

- Update and improve refuge signs.
- Update existing brochures to the Service's graphic standards.

Wildlife observation and photography would be allowed year-round. However, access into the refuge would be limited during the deer gun and muzzleloader seasons; only hunters or those accompanying hunters (details in the "tear sheet") would be allowed at the refuge during these seasons.

The uses would occur over the entire refuge. Vehicle access would be restricted to the parking area at the interpretive overlook located off Highway 220. Supporting use (access) would be controlled and regulated through the publication of refuge "tear sheets" and brochures, and through information posted at the kiosks.

Wildlife observation and photography are two of the six wildlife-dependent, priority public uses specified in the Improvement Act. These uses and their supporting access-related uses can be allowed at the refuge without interfering with the migratory bird resource.

Availability of Resources

Currently, the programs for wildlife observation and photography are administered using available resources. Implementing new programs, activities, and facilities outlined in this CCP is tied to funding requests in the form of RONS and SAMMS projects.

Resources involved in the administration and management of the uses: None.

Special equipment, facilities, or improvements necessary to support the uses: None.

Maintenance costs: None.

Monitoring costs: None.

Offsetting revenues: None.

Anticipated Impacts of the Uses

Short-term impacts: Temporary disturbance may exist to wildlife near the activity. Direct, short-term impacts may include minor damage from traffic to refuge roads when wet and muddy.

Long-term impacts: None.

Cumulative impacts: There would be no direct or indirect cumulative impacts anticipated with these uses.

Public Review and Comment

This compatibility determination was prepared concurrently with the draft CCP and EA for the

refuge. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

Determination

Wildlife observation and photography, along with their supporting uses, are compatible uses at Pathfinder NWR.

Stipulations Necessary to Ensure Compatibility

Stipulations regarding the public use program would be made available in published refuge brochures. Dates, closed areas, and other information would be specified.

Justification

Wildlife observation and photography are priority wildlife-dependent public uses acknowledged in the Improvement Act. These uses promote an appreciation for the natural resources at the refuge. Increased public stewardship will support and complement the Service's actions in achieving the purposes of the refuge and the mission of the National Wildlife Refuge System.

The refuge contains unique habitats and supports wildlife populations—particularly migratory birds, upland game birds, and big game animals—in excess of what can be observed on neighboring private lands. These uses promote an appreciation for the natural resources at the refuge. Access into the refuge would be restricted during the deer gun and muzzleloader seasons for safety reasons.

No significant adverse impacts to the wildlife resource are expected from the primary or supporting uses.

Signature

_____

Ann Timberman Date
Project Leader, Arapaho NWR Complex
USFWS, Region 6

Review

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Lloyd Jones Date
Regional Compatibility Coordinator
USFWS, Region 6

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Bud Oliveira Date
Refuge Supervisor
USFWS, Region 6

Mandatory 15-Year Reevaluation Date: 2023

Concurrence

_____

Richard A. Coleman, PhD Date
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Appendix I

Draft Compatibility Determination for Environmental Education and Interpretation

USE: Environmental education and interpretation

REFUGE NAME: Pathfinder NWR

COUNTY: Carbon and Natrona counties, Wyoming

ESTABLISHING AND ACQUISITION AUTHORITY: Executive Order 7425

REFUGE PURPOSES:

"As a refuge and breeding ground for birds and other wildlife." (Executive Order 7425, dated August 1, 1936)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System is to administer a national 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.

Description of Uses

The uses would be a continuation of environmental education and interpretative programs at current levels. Environmental education consists of activities conducted by refuge staff and partnerships. Interpretation occurs in less formal activities through exhibits, signs, and brochures. Visiting school and nonprofit groups would use the refuge as an outdoor classroom and tour site.

This draft CCP proposes to continue with the above uses and add the following to improve environmental education and interpretation activities for visitors:

- Update and improve refuge signs.
- Update existing brochures to the Service's graphic standards.

These activities would be held during the daytime, most frequently while school is in session (September–May). Less frequently, nonprofit groups would be hosted during the summer months.

Refuge staff would provide the instruction and host classroom tours in most cases. When someone other than refuge personnel leads activities, a special use permit may be issued. Most activities would be at the interpretive overlook located off State Highway 220. Occasionally, small groups would be led to interior portions of the refuge such as the riparian and wetland habitat areas.

Environmental education and interpretation are two of the six wildlife-dependent public uses specified in the Improvement Act. These uses can be allowed at the refuge without interfering with the migratory bird resource.

Availability of Resources

Currently, environmental education and interpretation programs are conducted using available resources. Implementing new programs, activities, and facilities outlined in this CCP is tied to funding requests in the form of RONS and SAMMS projects.

Resources involved in the administration and management of the uses: None.

Special equipment, facilities, or improvements necessary to support the uses: None.

Maintenance costs: None.

Monitoring costs: None.

Offsetting revenues: None.

Anticipated Impacts of the Uses

Short-term impacts: Temporary disturbance may exist to wildlife near the activities. Minimal disturbance to wildlife and wildlife habitat will result from these uses at the current and proposed levels. Adverse impacts are minimized through careful timing and placement of activities. Minor damage to vegetation, littering, and increased maintenance may occur. These activities will have only minor impacts

on wildlife and will not detract from the primary purposes of the refuge.

Long-term impacts: These activities would increase local support of the refuge and increase knowledge of stewardship of natural resources to students young and old.

Cumulative impacts: There would be no direct nor indirect cumulative impacts anticipated with the continuation of these uses.

Public Review and Comment

This compatibility determination was prepared concurrently with the draft CCP and EA for the refuge. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

Determination

Environmental education and interpretation are compatible uses at Pathfinder NWR.

Stipulations Necessary to Ensure Compatibility

Anticipated impacts are assumed to be light; however, disturbance is almost an unavoidable impact of the interpretive and environmental education programs. However, it is through these activities that visitors would receive an understanding of proper etiquette and the impact people have on habitat and wildlife. This information and refuge-specific regulations would be available through visitor contacts, brochures, and kiosks. Periodic law enforcement would ensure compliance with regulations and area closures.

Justification

Environmental education and interpretation are legislated, wildlife-dependent, priority public uses. Other than minor disturbance, they would have no impact to the resource. These uses would contribute to the mission of the Refuge System by increasing knowledge and support of the stewardship of natural resources.

The refuge contains unique habitats and supports wildlife populations—particularly migratory birds, upland game birds, and big game animals—in excess of what can be observed on neighboring private lands. These uses promote an appreciation for natural resources and support for conservation programs at the refuge.

Signature

_____

Ann Timberman Date
Project Leader, Arapaho NWR Complex
USFWS, Region 6

Review

_____

Lloyd Jones Date
Regional Compatibility Coordinator
USFWS, Region 6

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Bud Oliveira Date
Refuge Supervisor
USFWS, Region 6

Mandatory 15-Year Reevaluation Date: 2023

Concurrence

_____

Richard A. Coleman, PhD Date
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Appendix J

Draft Compatibility Determination for Prescribed Grazing

USE: Prescribed grazing

REFUGE NAME: Pathfinder NWR

COUNTY: Carbon and Natrona counties, Wyoming

ESTABLISHING AND ACQUISITION AUTHORITY:

Migratory Bird Conservation Act, Executive Order 7425

REFUGE PURPOSES:

"*As a refuge and breeding ground for birds and other wildlife.*" (Executive Order 7425, dated August 1, 1936)

NATIONAL WILDLIFE REFUGE SYSTEM MISSION

The mission of the National Wildlife Refuge System is to administer a national 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.

Description of Uses

Prescribed grazing is the use of livestock, usually cattle, to remove standing vegetation, reduce vegetative litter, suppress woody vegetation or noxious weeds, open up vegetation-choked wetlands, or open up areas to sunlight and encourage native grass seedlings and growth. Prescribed grazing is carefully timed, and usually of short duration (usually 2–4 weeks), to target certain species for grazing impacts in order to benefit other species for growth after the competing vegetation has been removed.

Fence construction and maintenance (often a temporary electric fence) and control and rotation of the livestock are the responsibility of the cooperating private party. Market rate grazing fees are determined by the regional office, but may include standard deductions for fence construction and maintenance, frequent livestock rotations, construction of water gaps, or hauling/providing additional water in dry pasture.

This CCP proposes to continue with the above use and add the following to improve management of refuge upland habitats:

- Conduct upland vegetation surveys.
- Evaluate grazing program to determine appropriate stocking rates, duration, and so forth of grazing program.
- Install and maintain fencing, where appropriate, to manage grazing program.

Availability of Resources

Developing grazing plans and special use permits (SUPs) and monitoring compliance and biological effects require some Service resources. Most grazing management costs (fencing labor, monitoring and moving livestock, hauling water) are provided by the cooperator or permittee. Evaluating the grasslands for grazing prescriptions and grassland response is part of the refuge grassland management responsibilities. Some alternative form of grassland management, prescribed burning, or haying may be used if the areas are not treated with prescribed grazing.

Managing grasslands through permitted haying has comparable costs to managing a prescribed grazing program. Managed mowing would be more expensive, since all labor costs would be assumed by the Service. Prescribed fire can be an effective grassland management tool, but there are personnel and weather limitations on a burning program, as well the fact that some tracts are not suited to burning management. In addition, there is an ecological benefit to rotating grassland management techniques, such as grazing, burning, and haying, at different seasons, rather than just relying on one technique.

Anticipated Impacts of the Uses

Grazing by domestic livestock has the short-term effect of removing some or much of the standing vegetation from a tract of grassland. Properly prescribed, the effect of this removal of vegetation increases the vigor of the grassland, stimulates the growth of desired species of grass and forbs, and reduces the abundance of targeted species such as cool-season exotics, woody species, invasive species, or cattails. Grazing in the spring may cause the loss

of some bird nests due to trampling, and may cause some birds not to nest in areas being grazed. Grazing on public wildlife lands can create an aesthetic issue of concern for some people or visitors who do not understand grassland management. Prescribed grazing is usually of short duration and ultimately enhances the diversity and vigor of grassland habitats. Grazing livestock may create a minor and temporary disturbance to wildlife, but generally do no harm. There is a slight potential for conflict between the visiting public and the livestock or the permittee.

Public Review and Comment

This compatibility determination was prepared concurrently with the draft CCP and EA for the refuge. Public review and comment will be achieved concurrently with the public review and comment period for the draft CCP and EA.

Determination

As this activity is an economic use, it must meet the compatibility threshold of "contributing to the Mission and Purposes" of the Refuge System and refuge area. Prescribed grazing is used to improve and manage grassland habitats on refuges and benefit the migratory birds and other wildlife that use these habitats.

The use of grazing as a habitat management tool is compatible at Pathfinder NWR with the following stipulations.

Stipulations Necessary to Ensure Compatibility

- SUPs will specify the stocking rates, dates of use, and timing for each unit or grazing cell on the refuge.
- The standard grazing fee, as determined for each state by the regional office, and any standard deductions for any labor or work done on Service lands will be included on the SUP.
- Grazing permittees must comply with all applicable state livestock health laws.
- No supplemental feeding will be allowed without authorization from the project leader/ refuge manager.
- Control and confinement of livestock will be the responsibility of the permittee.
- The permit is issued subject to the revocation and appeals procedure contained in Title 50, Part 25 of the CFR.

Justification

Controlled grazing by domestic livestock will not materially interfere or detract from the purposes for which the refuge was established. Prescribed livestock grazing creates temporary disturbances to vegetation. Many of these disturbances are desirable for grassland management. Grazing produces an undesirable but short-term impact to grassland nesting birds and site aesthetics. In the long term, prescribed grazing increases grassland vigor, species diversity, and habitat quality. Prescribed grazing is an alternative management tool that can be used to replace or complement prescribed fire, mowing, or haying of Service grasslands. Without periodic disturbance caused by grazing the health of the grassland community would decline.

Signature

Ann Timberman Date
Project Leader, Arapaho NWR Complex
USFWS, Region 6

Review

Bud Oliveira Date
Refuge Supervisor
USFWS, Region 6

Mandatory 15-Year Reevaluation Date: 2023

Concurrence

Richard A. Coleman, PhD Date
Assistant Regional Director
National Wildlife Refuge System
USFWS, Region 6

Appendix K

Fire Management Program

The Service has administrative and fire management for 16,806 acres located within the boundaries of Pathfinder NWR in central Wyoming.

THE ROLE OF FIRE

Vegetation within the Wyoming Basin has evolved under periodic disturbance and defoliation from grazing, fire, drought, and floods. This periodic disturbance is what kept the ecosystem diverse and healthy while maintaining significant biodiversity for thousands of years.

Historically, natural fire and Native American ignitions played an important disturbance role in many ecosystems by removing fuel accumulations, decreasing the impacts of insects and diseases, stimulating regeneration, cycling nutrients, and providing a diversity of habitats for plants and wildlife.

When fire is excluded from shrub–steppe landscape, the fuel loading increases due the continued growth and increase in shrub size and density. This creates a decadent stand of tall dense shrubs that reduce species diversity by shading understory plants. It also increases fuel loading which leads to an increase in a fire's resistance to control. This increase in resistance to control threatens firefighter and public safety as well as private and federal properties.

However, fire when properly used, can:

- reduce hazardous fuels build-up in both wildland–urban interface (WUI) and non-WUI areas;
- improve wildlife habitats by reducing density of vegetation
- and/or changing plant species composition;
- sustain and/or increase biological diversity;
- improve woodlands and shrublands by reducing plant density;
- reduce susceptibility of plants to insect and disease outbreaks;
- improve quality and quantity of livestock forage;
- and improve the quantity of water available for municipalities and activities dependent on wildlands for their water supply.

WILDLAND FIRE MANAGEMENT POLICY AND GUIDANCE

In 2001, an update of the 1995 "Federal Fire Policy" was completed and approved by the Secretaries of Interior and Agriculture. The 2001 "Federal Wildland Fire Management Policy" directs federal agencies to achieve a balance between fire suppression to protect life, property, and resources and fire use to regulate fuels and maintain healthy ecosystems. In addition, it directs agencies to use the appropriate management response for all wildland fire regardless of the ignition source. This policy provides eight guiding principles that are fundamental to the success of the fire management program:

- Firefighter and public safety is the first priority in every fire management activity.
- The role of wildland fires as an ecological process and natural change agent will be incorporated into the planning process.
- Fire management plans (FMPs), programs, and activities support land and resource management plans and their implementation.
- Sound risk management is a foundation for all fire management activities.
- Fire management programs and activities are economically viable, based on values to be protected, costs, and land and resource management objectives.
- FMPs and activities are to be based on the best available science.
- FMPs and activities incorporate public health and environmental quality consideration.
- Federal, state, tribal, local, interagency, and international coordination and cooperation are essential.
- Standardization of policies and procedures among federal agencies is an ongoing objective.

The fire management considerations, guidance, and direction should be addressed in the land use resource plans (for example, the CCP). FMPs are step-down processes from the land use plans and habitat plans, with more detail on fire suppression, fire use, and fire management activities.

MANAGEMENT DIRECTION

The Arapaho NWRC will protect life, property, and other resources from wildland fire by safely suppressing all wildfires. Prescribed fire and manual and mechanical fuel treatments will be used in an ecosystem context for habitat management purposes, and to protect both federal and private property. Fuels reduction activities will be applied in collaboration with federal, state, private, and NGO partners. In addition, fuel treatments will be prioritized based on the guidance for prioritization established in the goals and strategies outlined in the "U.S. Fish and Wildlife Service National Wildlife Refuge System Wildland Fire Management Program Strategic Plan 2003–2010" and the "R6 Refuges Regional Priorities FY07–11." For WUI treatments, areas with community wildfire protection plans (CWPPs) and communities at risk (CARs) will be the primary focus. On August 17, 2001, the "Federal Register" published a list of CARs throughout the nation. In the area near Pathfinder NWR, no communities were identified in the list. Any additions or deletions to the CARs list are the responsibility of the state through coordination with interagency partners. Wyoming has determined to complete CWPPs on a county basis. Natrona and Carbon counties have completed CWPPs. The Service will place a high priority in collaborating with our neighboring partners to reduce the risk of wildfire using fuels reduction projects.

All aspects of the fire management program will be conducted in a manner consistent with applicable laws, policies, and regulations. The Arapaho NWRC will maintain an FMP to accomplish the fire management goals described below. Prescribed fire and manual and mechanical fuel treatments will be applied in a scientific way under selected weather and environmental conditions.

Fire Management Goals

The goals and strategies of the "U.S. Fish and Wildlife Service National Wildlife Refuge System Wildland Fire Management Program Strategic Plan" are consistent with Department of Interior and Service policies, National Fire Plan direction, President Bush's Healthy Forest Initiative, the 10-Year Comprehensive Strategy and Implementation Plan, National Wildfire Coordinating Group (NWCG) guidelines, initiatives of the Wildland Fire Leadership Council, and Interagency Standards for Fire and Aviation Operations.

The "R6 Refuges Regional Priorities FY07–11" are consistent with region 6's refuges vision statement: "to maintain and improve the biological integrity of the region, ensure the ecological condition of the region's public and private lands are better understood, and endorse sustainable use of habitats that support native wildlife and people's livelihoods." The fire management goals for the Pathfinder NWR are to use prescribed fire and manual and mechanical fuel treatments to (1) reduce the threat to life and property; and (2) meet the habitat goals and objectives identified in this CCP.

Fire Management Objective

The objective of the fire management program is to use prescribed fire and manual and mechanical methods to treat refuge lands for hazardous fuels and habitat management purposes.

Strategies

Strategies and tactics that emphasize public and firefighter safety as well as resource values at risk will be used. Wildland fire suppression, prescribed fire methods, manual and mechanical means, timing, and monitoring are described in more detail within the step-down FMP.

All management actions would use prescribed fire and manual and/or mechanical means to reduce hazardous fuels, restore and maintain desired habitat conditions, control nonnative vegetation, and control the spread of woody vegetation within the upland and wetland habitats. The fuels treatment program will be outlined in the FMP for the wetland management district. Site-specific prescribed fire burn plans will be developed following the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide (2006) template.

Prescribed fire temporarily reduces air quality by reducing visibility and releasing components through combustion. Pathfinder NWR will meet the Clean Air Act emission standards by adhering to the "Wyoming State Implementation Plan" requirements during all prescribed fire activities.

Fire Management Rationale

Pathfinder NWR does not have any recorded fire history since its establishment in 1909. Landfire has identified the shrub–steppe community within and around Pathfinder NWR as a Fire Regime IV, which means historically these areas burned every 35–100+ years and were stand-replacement fires. Some areas within the refuge boundary are identified as a Fire Regime III (35–100+ years and mixed-severity fires). Because fires have not occurred on Pathfinder NWR since its establishment, these habitat types are nearing or have reached the point where they maybe outside their historic fire return interval. Since settlement of the area, wildfires that have occurred have been suppressed (Landfire).

Fire Management Organization, Contacts, and Cooperation

Qualified fire management technical oversight for the refuges will be established by region 6 of the Service, using the fire management district approach. Under this approach, fire management staff will be determined by established modeling systems based on the fire management workload of a group of Service lands (refuges, wetland management districts, fish hatcheries), and possibly that of interagency partners. The fire management workload consists of historical wildland fire suppression activities as well as historical and planned fuels treatments.

Depending on budgets, fire management staffing and support equipment may be located at the administrative station or at other locations within the fire management district and shared between all units. Fire management activities will be conducted in a coordinated and collaborative manner with federal and nonfederal partners.

On approval of this CCP, a new FMP would be developed for Pathfinder NWR as (1) an FMP that covers the wetland management district, (2) an FMP that covers the fire management district, (3) an FMP that covers the Arapaho NWR Complex, or (4) an interagency FMP.

Appendix L

List of Occurring Plant Species

The following vascular plant species were documented on Pathfinder NWR during a rare survey of plants (Fertig 2000). Nonnative species are indicated by an asterisk (*). In addition, slender spiderplant (*Cleome multicaulis*), a state species of concern, is found on the Sweetwater Arm Unit of the refuge.

Scientific Name	*Common Name*
Agrostis stolonifera	Redtop*
Alopecurus aequalis	Shortawn foxtail
Alopecurus arundinaceus	Creeping meadow foxtail*
Artemisia biennis var. *biennis*	Biennial wormwood
Artemisia cana var. *cana*	Silver sagebrush
Artemisia frigida	Prairie sagewort
Artemisia ludoviciana var. *ludoviciana*	White sagebrush
Artemisia tridentata wyomingensis	Wyoming big sagebrush
Asclepias speciosa	Showy milkweed
Aster ascendens	Western aster
Aster ericoides	Heath-leaved aster
Aster occidentalis	Western mountain aster
Astragalus agrestis	Purple milkvetch
Astragalus bodinii	Bodin's milkvetch
Atriplex rosea	Tumbling saltweed*
Atriplex subspicata	Saline saltbrush
Bassia hyssopifolia	Fivehorn smotherweed*
Bidens cernua	Nodding beggartick
Bromus inermis var. *inermis*	Smooth brome*
Bromus tectorum	Cheatgrass*
Calamagrostis inexpansa	Northern reedgrass
Cardaria pubescens	Hairy whitetop
Carex nebrascensis	Nebraska sedge
Centaurium exaltatum	Desert centaury
Chenopodium atrovirens	Pinyon goosefoot
Chenopodium glaucum var. *salinum*	Oakleaf goosefoot
Chenopodium rubrum var. *glomeratum*	Red goosefoot
Chrysothamnus nauseosus	Rubber rabbitbrush
Cirsium arvense	Canada thistle*
Cirsium tioganum var. *coloradense*	Colorado thistle
Cleome serrulata	Rocky Mountain beeplant
Conyza canadensis	Canadian horseweed

Scientific Name	*Common Name*
Distichlis stricta	Saltgrass
Echinochloa spp.	Barnyardgrass
Eleocharis spp.	Spikerush
Elymus Canadensis	Canada wildrye
Elymus lanceolatus	Thickspike wheatgrass
Elymus repens	Quackgrass*
Equisetum arvense	Field horsetail
Equisetum hyemale	Scouringrush horsetail
Equisetum laevigatum	Smooth horsetail
Gentianella amarella var. *amarella*	Autumn dwarf gentian
Glaux maritima	Sea milkwort
Glycyrrhiza lepidota	American licorice
Gnaphalium palustre	Western marsh cudweed
Grindelia squarrosa	Curlycup gumweed
Gutierrezia sarothrae	Broom snakeweed
Haplopappus uniflorus	Plantain goldenweed
Helenium autumnale var. *montanum*	Common sneezeweed
Helianthus petiolaris	Prairie sunflower
Heliotropium curassavicum var. *obovatum*	Salt heliotrope
Hippuris vulgaris	Common mare's-tail
Hordeum jubatum	Foxtail barley
Iva	Marsh elder
Iva axillaris	Povertyweed
Juncus bufonius	Toad rush
Juncus compressus	Roundfruit rush
Juncus nodosus	Knotted rush
Koeleria macrantha	Prairie Junegrass
Lactuca oblongifolia	Blue lettuce
Lactuca serriola	Prickly lettuce
Limosella aquatica	Water mudwort
Lycopus asper	Rough bugleweed
Melilotus albus	White sweetclover
Melilotus officinalis	Yellow sweetclover
Mentha arvensis	Field mint
Muhlenbergia asperifolia	Scratchgrass
Oenothera villosa	Hairy evening-primrose
Opuntia polyacantha var. *polyacantha*	Hairspine pricklypear
Oryzopsis hymenoides	Indian ricegrass
Oxytropis riparia	Oxus locoweed*
Plagiobothrys scouleri	Scouler's popcornflower
Plantago eriopoda	Redwool plantain
Poa pratensis	Kentucky bluegrass*
Polygonum amphibium var. *emersum*	Longroot smartgrass

Scientific Name	*Common Name*
Polygonum aviculare	Prostrate knotweed
Polygonum lapathifolium	Curltop knotweed
Potentilla anserina	Silverweed cinquefoil
Puccinellia nuttalliana	Nuttall's alkaligrass
Ranunculus cymbalaria	Alkali buttercup
Rorippa truncata	Buntleaf yellowcress
Rosa sayi	Prickly rose
Rumex maritimus var. *fueginus*	Golden dock
Rumex stenophyllus	Narrowleaf dock*
Sagittaria cuneata	Arumleaf arrowhead
Salicornia rubra	Red swampfire
Salix amygdaloides	Peachleaf willow
Salix exigua	Narrowleaf willow
Salix lutea	Yellow willow
Salsola australis	Prickly Russian thistle*
Sarcobatus vermiculatus	Greasewood
Scirpus acutus	Hardstem bulrush
Scirpus pungens var. *polyphyllus*	Common threesquare
Sisymbrium altissimum	Tumblemustard*
Solanum rostratum	Buffalobur nightshade
Spartina pectinata	Prairie cordgrass
Spergularia spp.	Sandspurry
Sporobolus airoides	Alkali sacaton
Stachys palustris	Marsh hedgenettle
Suaeda calceoliformis	Pursh seepweed
Symphyotrichum frondosum	Short-rayed alkali aster
Tamarix ramosissima	Saltcedar
Thelypodium integrifolium	Entireleaved thelypody
Trifolium repens	White clover
Triglochin maritimum	Seaside arrowgrass
Typha latifolia	Broadleaf cattail
Xanthium strumarium var. *canadense*	Canada cocklebur

Appendix M

List of Potentially Occurring Bird Species

The following list of bird species was compiled from other national wildlife refuges in the state of Wyoming. The species listed below potentially occur in the area, but may or may not be present at Pathfinder NWR.

Scientific Name	*Common Name*
Accipiter cooperii	Cooper's hawk
Accipiter gentilis	Northern goshawk*
Accipiter striatus	Sharp-shinned hawk*
Actitis macularia	Spotted sandpiper
Aechmophorus clarkii	Clark's grebe
Aechmophorus occidentalis	Western grebe
Agelaius phoeniceus	Red-winged blackbird
Aix sponsa	Wood duck
Anas acuta	Northern pintail
Anas americana	American wigeon
Anas carolinensis	Green-winged teal
Anas clypeata	Northern shoveler
Anas cyanoptera	Cinnamon teal
Anas discors	Blue-winged teal
Anas platyrhynchos	Mallard
Anas strepera	Gadwall
Anthus rubescens	American pipit
Aquila chrysaetos	Golden eagle
Ardea herodias	Great blue heron
Asio flammeus	Short-eared owl*
Athene cunicularia	Burrowing owl*
Aythya affinis	Lesser scaup
Aythya americana	Redhead
Aythya collaris	Ring-necked duck
Aythya marila	Greater scaup*
Aythya valisineria	Canvasback
Bombycilla cedrorum	Cedar waxwing*
Bombycilla garrulus	Bohemian waxwing*
Botaurus lentiginosus	American bittern
Branta canadensis	Canada goose
Bubo virginianus	Great horned owl*
Bubulcus ibis	Cattle egret
Bucephala albeola	Bufflehead

Scientific Name	*Common Name*
Bucephala clangula	Common goldeneye
Bucephala islandica	Barrow's goldeneye*
Buteo jamaicensis	Red-tailed hawk
Buteo lagopus	Rough-legged hawk
Buteo regalis	Ferruginous hawk
Buteo swainsoni	Swainson's hawk
Butorides virescens	Green heron*
Calamospiza melanocorys	Lark bunting
Calcarius ornatus	Chestnut-collared longspur
Calcarius sandwichensis	McGown's longspur
Calidris alba	Sanderling*
Carduelis pinus	Pine siskin
Carduelis tristis	American goldfinch
Cathartes aura	Turkey vulture
Catharus guttatus	Hermit thrush*
Charadrius montanus	Mountain plover*
Charadrius vociferus	Killdeer
Chen caerulescens	Snow goose*
Chen rossii	Ross's goose*
Chlidonias niger	Black tern
Chondestes grammacus	Lark sparrow
Chordeiles minor	Common nighthawk
Circus cyaneus	Northern harrier
Cistothorus palustris	Marsh wren
Coccothraustes vespertinus	Evening grosbeak*
Colaptes auratus	Northern flicker
Corvus brachyrhynchos	American crow
Corvus corax	Common raven
Cygnus columbianus	Tundra swan
Dendroica coronata	Yellow rumped warbler
Dendroica nigrescens	Black-throated gray warbler*
Dendroica petechia	Yellow warbler
Egretta thula	Snowy egret
Eremophila alpestris	Horned lark
Erolia alpina	Dunlin*
Erolia bairdii	Baird's sandpiper
Erolia mauri	Western sandpiper
Erolia minutilla	Least sandpiper
Euphagus carolinus	Rusty blackbird*
Euphagus cyanocephalus	Brewer's blackbird
Falco mexicanus	Prairie falcon
Falco peregrinus	Peregrine falcon
Fulica americana	American coot

Scientific Name	*Common Name*
Gallinago delicata	Wilson's snipe
Gavia immer	Common loon
Geothlypis trichas	Common yellowthroat
Grus canadensis tabida	Sandhill crane
Haliaeetus leucocephalus	Bald eagle
Himantopus mexicanus	Black-necked stilt*
Hirundo rustica	Barn swallow
Hydroprogne caspia	Caspian tern*
Larus argentatus	Herring gull*
Larus californicus	California gull
Larus delawarensis	Ring-billed gull*
Larus philadelphia	Bonaparte's gull
Larus pipixcan	Franklin's gull
Lanius ludovicianus	Loggerhead shrike
Leucosticte atrata	Black rosy finch
Leucosticte australis	Brown-capped rosy finch*
Leucosticte tephrocotis	Gray-crowned rosy finch*
Limnodromus scolopaceus	Long-billed dowitcher
Limosa fedoa	Marbled godwit
Lophodytes cucullatus	Hooded merganser*
Melanitta deglandi	White-winged scoter*
Melospiza melodia	Song sparrow
Mergus merganser	Common merganser
Micropalmata himantopus	Stilt sandpiper*
Molothrus ater	Brown-headed cowbird
Numenius americanus	Long-billed curlew*
Numenius phaeopus	Whimbrel*
Nycticorax nycticorax	Black-crowned night-heron
Oreoscoptes montanus	Sage thrasher
Oxyura jamaicensis	Ruddy duck
Passer domesticus	House sparrow
Passerculus sandwichensis	Savannah sparrow
Pelecanus erythrorhynchos	American white pelican
Petrochelidon pyrrhonota	Cliff swallow
Phalacrocorax auritus	Double-crested cormorant
Phalaropus lobatus	Red-necked phalarope
Phalaropus tricolor	Wilson's phalarope
Pica hudsonia	Black-billed magpie
Pipilo chlorurus	Green-tailed towhee
Piranga ludoviciana	Western tanager
Plectrophenax nivalis	Snow bunting*
Plegadis chihi	White-faced ibis
Podiceps auritus	Horned grebe*
Podiceps grisegena	Red-necked grebe*

Scientific Name	*Common Name*
Podiceps nigricollis	Eared grebe
Podilymbus podiceps	Pied-billed grebe
Poecile atricapilla	Black-capped chickadee
Pooecetes gramineus	Vesper sparrow
Porzana carolina	Sora
Quiscalus quiscula	Common grackle
Rallus limicola	Virginia rail
Recurvirostra americana	American avocet
Riparia riparia	Bank swallow
Salpinctes obsoletus	Rock wren*
Sayornis saya	Say's phoebe
Selasphorus platycercus	Broad-tailed hummingbird
Selasphorus rufus	Rufous hummingbird
Sialia currucoides	Mountain bluebird
Spizella breweri	Brewer's sparrow
Spizella passerina	Chipping sparrow
Stelgidopteryx serripennis	Northern rough-winged swallow
Sterna forsteri	Forster's tern
Sterna hirundo	Common tern*
Sturnus vulgaris	European starling
Sturnella magna	Eastern meadowlark*
Sturnella neglecta	Western meadowlark
Tachycineta bicolor	Tree swallow
Tachycineta thalassina	Violet-green swallow
Toxostoma rufum	Brown thraser
Tringa flavipes	Lesser yellowlegs
Tringa melanoleuca	Greater yellowlegs
Tringa semipalmata	Willet
Tringa solitaria	Solitary sandpiper
Troglodytes aedon	House wren*
Turdus migratorius	American robin
Tyrannus tyrannus	Eastern kingbird
Tyrannus verticalis	Western kingbird
Xanthocephalus xanthocephalus	Yellow-headed blackbird
Zenaida macroura	Mourning dove*
Zonotrichia leucophrys	White-crowned sparrow

Asterisk (*) signifies rare sightings.

Appendix N

List of Potentially Occurring Amphibian and Reptile Species

The following list of amphibian and reptile species was compiled from other national wildlife refuges in the state of Wyoming. The species listed below potentially occur in the area, but may or may not be present at Pathfinder NWR.

Scientific Name	*Common Name*
Amphibians	
Ambystoma tigrinum	Tiger salamander
Phrynosoma platyrhinos	Horned lizard
Pseudacris triseriata maculata	Boreal chorus frog
Reptiles	
Crotalus viridis	Prairie rattlesnake
Pituophis catenifer	Bull snake

Appendix O

List of Potentially Occurring Mammal Species

The following list of mammal species was compiled from other national wildlife refuges in the state of Wyoming. The species listed below potentially occur in the area, but may or may not be present at Pathfinder NWR.

Scientific Name	*Common Name*
Antilocapra americana	Pronghorn
Canis latrans	Coyote
Cervus canadensis	Elk
Chaetodipus hispidus	Hispid pocket mouse
Cynomys leucurus	White-tailed prairie dog
Lepus townsendii	White-tailed jack rabbit
Mephitis mephitis	Striped skunk
Microtus pennsylvanicus	Meadow vole
Mustela frenata	Long-tailed weasel
Mustela vison	Mink
Myotis lucifugus	Little brown myotis
Odocoileus hemionus	Mule deer
Ondatra zibethicus	Muskrat
Perognathus fasciatus	Wyoming pocket mouse
Peromyscus maniculatus	Deer mouse
Procyon lotor	Common raccoon
Reithrodontomys megalotis	Western harvest mouse
Sorex cinereus	Masked shrew
Spermophilus elegans	Wyoming ground squirrel
Spermophilus tridecemlineatus	Thirteen-lined ground squirrel
Sylvilagus audubonii	Desert cottontail
Tamias minimus	Least chipmunk
Taxidea taxus	American badger
Thomomys talpoides	Northern pocket gopher
Vulpes vulpes	Red fox

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