1 Introduction

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Northern pintails are abundant at the waterfowl production areas.

In August 2007, the regional director of region 6 of the U.S. Fish and Wildlife Service (Service) approved this comprehensive conservation plan (CCP) for the Rainwater Basin Wetland Management District (district), Nebraska.

Over the next 15 years, this CCP will serve as the working guide for management programs and use of public lands within the district, which is located in south-central Nebraska (see figure 1, vicinity map).

Chapter 4, "Management Direction," of this CCP specifies the necessary actions to achieve the vision and purposes of the Rainwater Basin Wetland Management District, which Congress established to manage waterfowl production areas (WPAs) in the Rainwater Basin (basin) (see figure 2, waterfowl production areas). Wildlife and their habitats 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 district's purposes.

This CCP was developed in compliance with the National Wildlife Refuge System Improvement Act of 1997 (Improvement Act) and Part 602 of "The Fish and Wildlife Service Manual." The actions described within this CCP meet the requirements of the National Environmental Policy Act of 1969 (NEPA). Appendix A contains more detail on these laws and policies. Public involvement and the planning process are described in "1.6 The Planning Process."

1.1 PURPOSE AND NEED FOR THE PLAN

The purpose of the planning process that led to development of this CCP is to identify the role that the district will play in support of the mission of the National Wildlife Refuge System (Refuge System), and to provide long-term guidance for management of district 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 district's WPAs;
- to provide neighbors, visitors, and government officials with an understanding of the Service's management actions on and around the district's WPAs;
- to ensure that the Service's management actions are consistent with the mandates of the Improvement Act;
- to ensure that the management of the district's WPAs is consistent with federal, state, and county plans;
- to provide a basis for the development of budget requests for the district'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

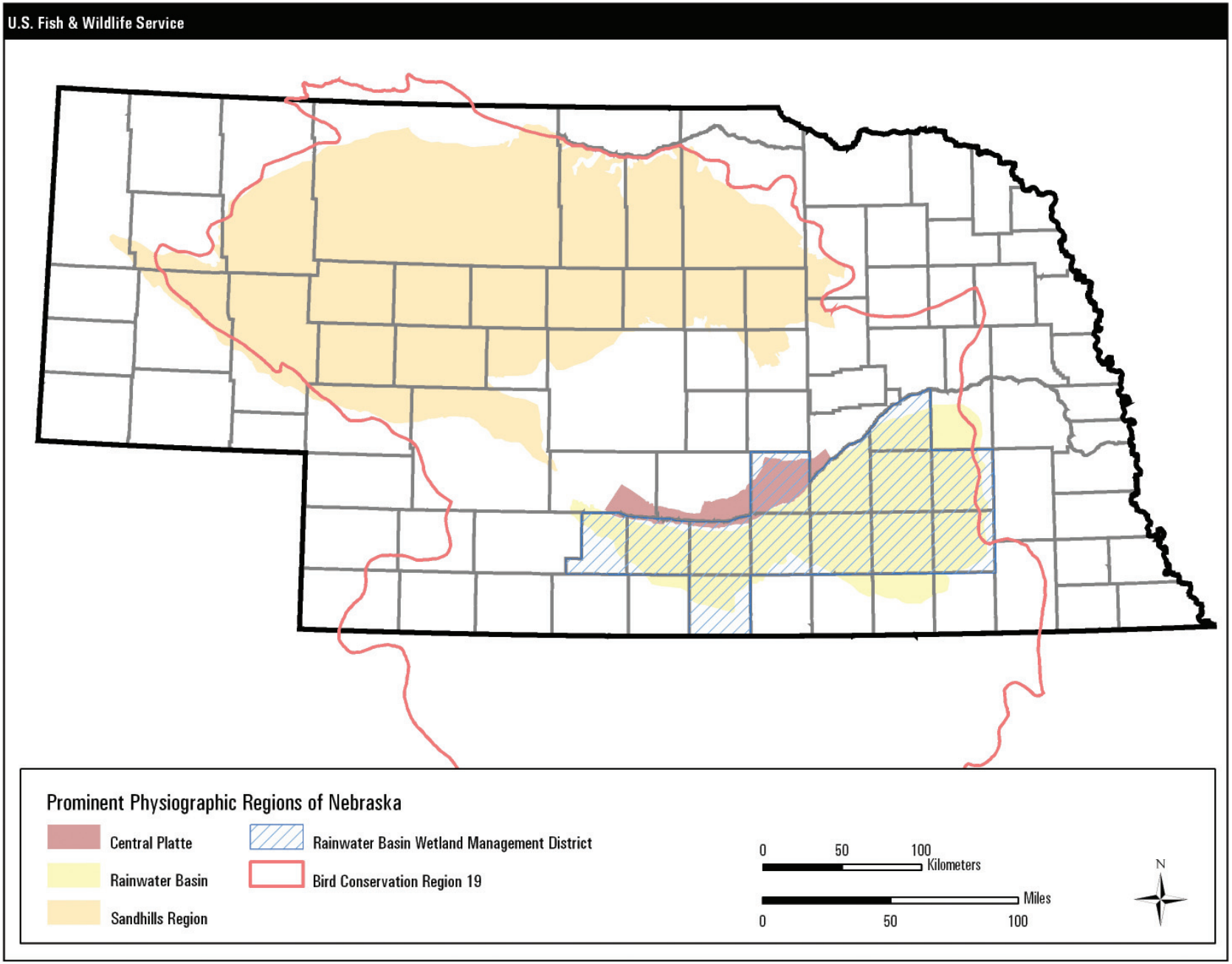


Figure 1. Vicinity map for the Rainwater Basin Wetland Management District, Nebraska.

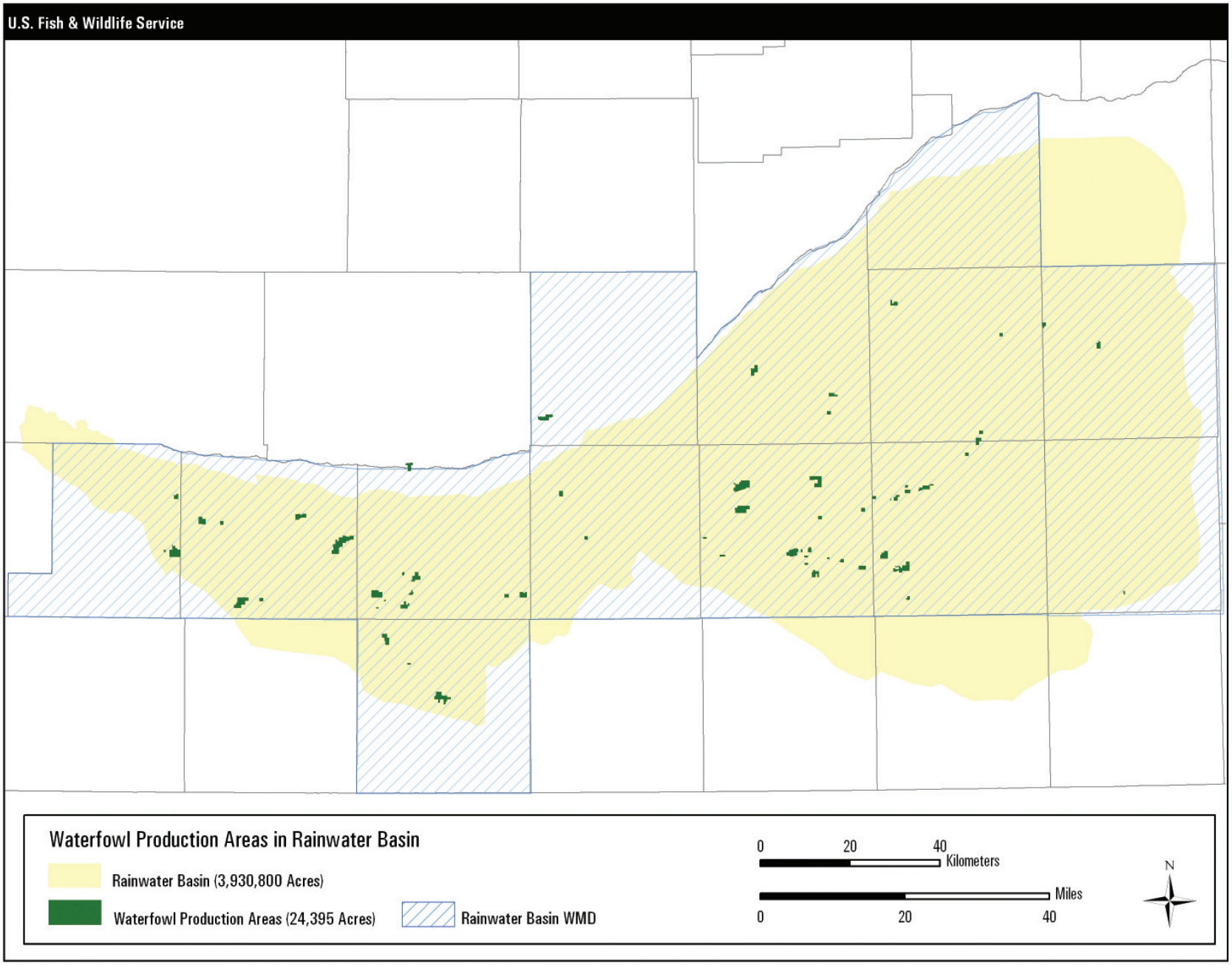


Figure 2. Waterfowl production areas in the Rainwater Basin, Nebraska.

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, working with others, is to conserve, protect, and enhance fish and wildlife 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.

The Service manages the National Wildlife Refuge System including thousands of WPAs and other special management areas. It also operates 66 national fish hatcheries and 78 ecological services field stations.

Service Activities in Nebraska

Service activities in Nebraska contribute to the state's economy, ecosystems, and education programs. The Rainwater Basin Wetland Management District contributes to the economic benefits of hunting, wildlife observation, and photography in Nebraska. A report titled, "Banking on Nature 2004: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation," evaluated the effects of refuges on local economies.

Based on figures from 2004, the district is estimated to have generated $900,000 in local economic effects from recreation visits (BBC Research and Consulting 2006). The majority of effects were associated with expenditures by nonresident visitors. In addition, the district's budget contributes a stimulus to the local economy with a significant portion of payroll, maintenance, and operation expenditures spent locally.

The district employs 12 full-time employees, has a current budget of $1.8 million, and has an annual visitation of 80,000. The budget includes funds for the fire program and the Partners for Fish and Wildlife Program. In addition, volunteers contribute 240 hours to the district's operations.

The Nebraska Sport Fish and Wildlife Restoration Program is a source of federal excise taxes paid by hunters, anglers, and boaters on fishing and hunting equipment. The monies generated from this tax have economic benefits to Nebraska. In 2001, the economic impact of angler expenditures was $146 million and hunters contributed $198 million to the overall economy (U.S. Fish and Wildlife Service [USFWS] 2000).

The 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 was the first time the federal government set aside land for wildlife. 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 including Puerto Rico 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 (that is, each unit of the Refuge System, which includes wetland management districts) shall be managed

- to fulfill the mission of the Refuge System;
- to fulfill the individual purposes of each refuge and district;

- 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 wildlife-dependent recreation activities including hunting, fishing, wildlife observation, photography, 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 in refuge and district management.
- Habitats must be healthy.
- Growth of refuges and districts 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 unit of the Refuge System 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 and is an integral part of the country's greatness. Wildlife and wild places have always given people special opportunities to have fun, relax, and appreciate the natural world.

Whether through bird watching, fishing, hunting, photography, or other wildlife pursuits, wildlife recreation contributes millions of dollars to local economies. In 2002, approximately 35.5 million people visited the Refuge System, mostly to observe wildlife in their natural habitats. 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 and wetland management districts. Economists report that Refuge System visitors contribute more than $792 million annually to local economies.

1.3 NATIONAL AND REGIONAL MANDATES

Refuge System units are managed to achieve the mission and goals of the Refuge System, along with the designated purpose of the refuges and districts (as described in establishing legislation, executive orders, or other establishing documents). 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 (CFRs), "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 districts, and a requirement that each refuge and district be managed under a CCP. The Service has made compatibility determinations (see appendix B) for the following uses at the district: haying, grazing, farming, environmental education, interpretation, wildlife observation, photography, recreational fishing, recreational hunting, and timber harvest.

The Improvement Act states that wildlife conservation is the priority of Refuge System lands and that the Secretary of the Interior will ensure that the biological integrity, diversity, and environmental health of refuge lands are maintained. Each refuge and district 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 and district.

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 and districts are in the "Refuge System Manual" and "The Fish and Wildlife Service Manual."

1.4 DISTRICT CONTRIBUTIONS TO NATIONAL AND REGIONAL PLANS

The Rainwater Basin Wetland Management District contributes to the conservation efforts described here.

Fulfilling the Promise

A 1999 report, "Fulfilling the Promise, The National Wildlife Refuge System" (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 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 identify priority 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 this continent. The first priority is to prevent the rarest species from going extinct. The second priority is to prevent uncommon species from descending into threatened status. The third priority 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. The Rainwater Basin Wetland Management District lies within physiographic area 34 (see figure 3, physiographic areas).

The source of the following description is from the Partners in Flight website (Butcher, no date).

Physiographic area 34, known as the "Central Mixed-grass Prairie," includes the central portion of Nebraska and Kansas, and a small portion occurs in southern South Dakota. The Nebraska Sandhills cover the northern and western portions of the area. The sandhills are an area of rolling, irregular dunes interspersed with gently sloping valleys and numerous small wetlands. The remainder of the physiographic area is a dissected loess plain, drained by several major rivers. All of the uplands are natural mixed- and tall-grass prairie communities, and the larger river valleys support northern floodplain forests.

The Nebraska Sandhills is one of the few, large, productive areas for grassland birds on the continent. It remains in excellent condition due to long-term use of virtually 100% of private lands for grazing livestock. Historical grazing practices have been, largely, beneficial. To keep the area healthy for birds, it is important to maintain the health of the ranching economy.

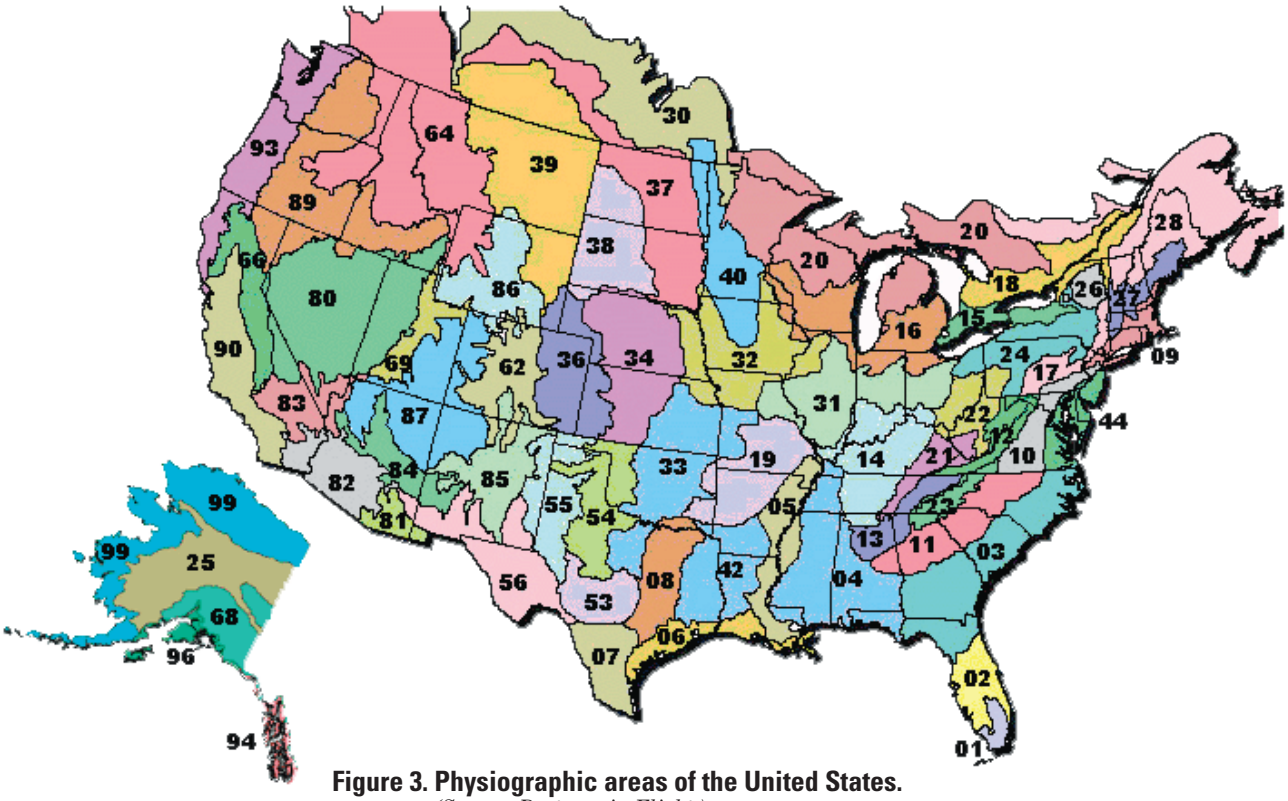


Figure 3. Physiographic areas of the United States.
(Source: Partners in Flight.)

Priority bird species and habitats of the Central Mixed-grass Prairie are listed below:

Grassland
- lesser prairie-chicken
- greater prairie-chicken
- Swainson's hawk
- dickcissel
- long-billed curlew
- Bell's vireo
- Smith's longspur

Big River Sandbars
- piping plover

Wetlands
- American white pelican
- black rail

Large wetland-grassland complexes benefit all of the high-priority birds and are essential to some. It is important to maintain all existing complexes. The black rail is a species that uses wet meadows; its ecology remains largely unknown and more survey work and retention of potential habitat are needed.

One of the most important features of the physiographic area is the close proximity of the Platte River to the district's wetlands, which combine to form a large and diverse habitat complex. This complex provides midlatitudinal, migrational habitat for midcontinental populations of sandhill cranes (86%), snow geese (90%), white-fronted geese (90%), and mallards (50%). About 30% of the continental population of northern pintails migrate through the district's habitats. In addition, impressive numbers of shorebirds annually stop in the area.

Key areas are receiving attention through the RWBJV and other endeavors. The efforts—some of which involve repeated removal of woody vegetation from sandbars that have stabilized with altered hydrology—are important to continue to keep the area attractive for these birds.

Maintenance of large, unfragmented, grassland ecosystems is the conservation objective for areas such as the Missouri Coteau where agriculture is not dominant. On the drift prairie and other agricultural areas, it is important to conserve discrete blocks of grassland-wetland complexes.

North American Waterfowl Management Plan

The Rainwater Basin is located in the Central Flyway, which is one of four administrative waterfowl flyways in North America.

Due to its unique location in the Central Flyway, millions of birds—including sandhill cranes, Canada geese, snow geese, and mallards—funnel into the district's WPAs to rest and eat before continuing on their journey (see figure 4, "hourglass" flight path of migratory birds).

Figure 4. "Hourglass" flight path of migratory birds.

The Central Flyway occurs in the following states and provinces:

- United States—Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming
- Mexico—Aguascalientes, Chihuahua, Coahuila, Colima, Distrito Federal, Durango, Guanajuato, Guerrero, Jalisco, Nayarit, Nuevo León, México, Morelos, Oaxaca, Puebla, Queretaro, San Luis Potosí, Sinaloa, Sonora, Tamaulipas, Veracruz, and Zacatecas
- Canada—Alberta and Saskatchewan

Federal, state, and provincial representatives from the United States and Canada make up the Central Flyway Council. The council meets regularly to coordinate population surveys, regulate and set hunting seasons, and plan for management of the migratory bird resource.

Canada and the United States united in 1986 to form the North American Waterfowl Management Plan (NAWMP) (USFWS et al. 1998), designed to restore diminishing continental waterfowl populations to the levels of the 1970s. The NAWMP envisioned a 15-year effort to achieve landscape conditions that could sustain waterfowl populations. Specific NAWMP objectives are to increase and restore duck populations to the average levels of the 1970s: 62 million breeding ducks and a fall flight of 100 million birds.

By 1985, waterfowl populations had plummeted to record lows. Habitat that waterfowl depend on was disappearing at a rate of 60 acres per hour. Recognizing the importance of waterfowl and wetlands to North

Americans and the need for international cooperation to help in the recovery of a shared resource, the United States and Canada governments developed a strategy to restore waterfowl populations through habitat protection, restoration, and enhancement. Mexico became a signatory to the plan in 1994.

The plan is innovative because of its international scope, plus its implementation at the regional level. Its success depends on the strength of partnerships called "joint ventures," involving federal, state, provincial, tribal, and local governments; businesses; conservation organizations; and individual citizens.

Joint ventures are regional, self-directed partnerships that carry out science-based conservation through a wide array of community participation in the United States, Canada, and Mexico. Joint ventures develop implementation plans focusing on areas of concern identified in the plan. The Rainwater Basin Wetland Management District lies within the administrative boundary of the Rainwater Basin Joint Venture.

Rainwater Basin Joint Venture

The Rainwater Basin Joint Venture (Gersib et al. 1992) is one of 14 joint ventures formed to undertake conservation projects. The joint venture was founded in 1992 with a goal to restore and permanently protect 37,000 acres of high-quality wetlands and 25,000 acres of associated uplands with adequate water and distribution to meet the needs of waterfowl and other migratory birds.

Location

Although the RWBJV's focus is the basin, its boundary also encompasses that portion of "Bird Conservation Region 19" in Nebraska (see figure 1). Three prominent geographic features occur within the joint venture—the basin in south-central Nebraska, the Nebraska Sandhills in north-central Nebraska, and the central portion of the Platte River.

The Playa Lakes Joint Venture bounds the RWBJV on the west and south. On the east, the RWBJV borders the Upper Mississippi–Great Lakes Region Joint Venture. The RWBJV's northern boundary is the Nebraska state line and it borders the Prairie Pothole Region and the Northern Great Plains Region joint ventures.

Description

Land use in the basin portion of the RWBJV is almost entirely agriculture, with corn and soybeans being the dominant crops. The topography of the basin is flat and it is poorly drained—forming thousands of shallow wetlands. Most of the wetlands are small and incorporated into cropland. Extensive wetland drainage and alteration has reduced the number of wetlands to a level that threatens populations of waterfowl and other waterbirds. The area is part of the tall- and mixed-grass prairie region of the Great Plains.

The sandhills portion is native, mixed-grass prairie that is used for livestock production. The topography is hilly, grass-covered, sand dunes. The porous sand allows for rapid percolation, forming a large groundwater reservoir. The groundwater is exposed in the low valleys and depressions—creating over a million acres of lakes, wetlands, and wet meadows.

The Platte River is a flat, braided river that has become forested in the last century. It is historically significant for settlement and for wildlife migrations. An approximately 150-mile stretch of the river transects the Central Flyway. Each spring nearly one-half million sandhill cranes and millions of ducks and geese use the river. River use by spring-migrating waterfowl increases dramatically when the basin's wetlands are dry or frozen.

Conservation

Each joint venture includes the participation of individuals, corporations, conservation organizations, and government agencies (USFWS et al. 1998). The district contributes to and participates in the RWBJV through its Partners for Fish and Wildlife Program, participation on various committees, and management of WPAs.

United States Shorebird Conservation Plan

Partners from state and federal agencies and nongovernmental organizations from across the country pooled their resources and expertise to develop a conservation strategy for migratory shorebirds and the habitats upon which they depend. The "United States Shorebird Conservation Plan" provides a scientific framework to determine species, sites, and habitats that most urgently need conservation action.

Main goals of the plan, completed in 2000, are to ensure that adequate quantity and quality of shorebird habitat is maintained at the local level and to maintain or restore shorebird populations at the continental and hemispheric levels. Separate technical reports were developed for a conservation assessment, research needs, a comprehensive monitoring strategy, and education and outreach. These national assessments were used to "step down" goals and objectives into 11 regional conservation plans.

The Rainwater Basin Wetland Management District lies within the "Central Plains/Playa Lakes Region" (CP/PLR), which includes Texas (excluding the coast); eastern New Mexico and Colorado; western Oklahoma, Kansas, and Nebraska; and the southeastern corner of Wyoming. Within the CP/PLR, there are five bird conservation regions as part of the North American Bird Conservation Initiative. Shorebird habitat types within the CP/PLR include ephemeral wetlands such as playa lakes, semipermanent wetlands, seasonally flooded wetlands, mud and alkali flats, wet meadows, short-grass prairie, agricultural fields, reservoirs, rivers, and other shallow water sources such as

ditches and farm ponds. All shorebird habitats within the CP/PLR are important to their conservation, especially scattered and ephemeral wetlands. The most critical habitats in the CP/PLR for those species experiencing population declines are grasslands and other upland areas with low vegetation structure, rivers, and salt flats. The salt flats and river sandbars within the CP/PLR are used by migrating and nesting piping plovers and nesting snowy plovers. Short-stature grasslands, mowed areas, alfalfa fields, plowed agricultural fields, and sod farms in Oklahoma, Kansas, and Nebraska are important to migrating buff-breasted sandpipers. Short-grass prairies, grazed grasslands, and fallow agricultural fields in western Kansas and Nebraska and in the eastern portions of New Mexico, Colorado, and Wyoming are breeding sites for mountain plovers. Upland habitats, recently burned rangelands, and salt flats within the CP/PLR are used as staging areas for American golden-plovers.

A particular challenge is that a high proportion of potentially important playa lakes, salt plains, and grasslands are either wholly or partly under private ownership (approximately 75%). The CP/PLR working group supports the hemispheric and national goals of the "United States Shorebird Conservation Plan," to "restore and maintain populations of all species of shorebirds in the Western Hemisphere" and to "stabilize populations of all shorebird species known or suspected of being in decline due to limiting factors occurring within the U.S., while ensuring that common species remain common" (Brown et al. 2000). However, land managers and biologists within the CP/PLR cannot control some of the factors that affect population sizes such as conditions on the wintering and, in most species, on the breeding grounds. Therefore, the CP/PLR can best contribute to the above goals by concentrating on protecting, improving, and expanding the habitat available for migrating shorebirds within the region and protecting, improving, and expanding the habitat available for the species that breed in the region.

Within the Rainwater Basin, shorebird habitat can be exceptional if rainfall coincides with shorebird migration. The basin is important to large numbers of migratory Hudsonian godwits; long-billed dowitchers; buff-breasted, white-rumped, stilt, least, and pectoral sandpipers; American avocets; lesser yellowlegs; semipalmated plovers; common snipe; Wilson's phalaropes; and killdeer. However, shorebird numbers and stopover habitat may not be fully understood. With the cooperation of landowners, state and federal natural resource agencies are conducting wetland habitat restoration and improvement work on private lands as part of the RWBJV.

North American Waterbird Conservation Plan

The "North American Waterbird Conservation Plan" (NAWCP) is the product of an independent partnership of individuals and institutions having interest and responsibility for conservation of waterbirds and their habitats in the Americas. This partnership—Waterbird Conservation for the Americas—was created to support a vision in which the distribution, diversity, and abundance of populations and habitats of breeding, migratory, and nonbreeding waterbirds are sustained or restored throughout the lands and waters of North America, Central America, and the Caribbean. The NAWCP provides a continental-scale framework for the conservation and management of 210 species of waterbirds including seabirds, coastal waterbirds, wading birds, and marsh birds. These birds use aquatic habitats in 29 nations throughout North America, Central America, the islands and pelagic (open ocean) waters of the Caribbean Sea and western Atlantic, the United States–associated Pacific Islands, and pelagic waters of the Pacific. The waterbirds' dependence on aquatic habitats—such as wooded swamps, stream corridors, salt marshes, barrier islands, continental shelf waters, and pelagic waters—make them especially vulnerable to the threats that face water and wetland resources globally.

The conservation of waterbirds faces significant challenges. Eighty percent of the species considered in the NAWCP are colonial nesters—congregating at breeding sites in numbers ranging up to hundreds of thousands of birds. Of this group, the plan finds that one-third are considered to be at risk of serious population loss. Waterbird populations are subject to numerous threats, many of which are habitat-based and affect all aquatic birds and other aquatic resources. The threats that the NAWCP identifies as requiring remedial action include destruction of inland and coastal wetlands, introduced predators and invasive species, pollutants, mortality from fisheries and other human industries, disturbance, and conflicts arising from abundant species.

The NAWCP identifies strategies and opportunities for achieving its vision. The plan documents a

dynamic process for species status assessment for use in setting conservation priorities at a regional scale and has identified many of the key issues that require conservation action. In addition, the plan promotes habitat- and site-based conservation actions throughout the Americas, especially via the "Important Bird Areas" programs and similar efforts. Regional waterbird conservation working groups will "step down" the continental-level aspects of the plan to the regional and local levels. At all scales, the NAWCP advocates integration of waterbird conservation with other bird conservation initiatives, when appropriate, to efficiently provide the best management options for local wildlife and habitat managers.

Recovery Plans for Federally Listed Threatened or Endangered Species

Where federally listed threatened or endangered species occur at the Rainwater Basin Wetland Management District's WPAs, management goals and strategies in their respective recovery plans will be followed. The list of threatened or endangered species that occur at the district will change as species are listed or delisted, or as listed species are discovered on district lands.

The district lies within the historical range of the whooping crane, least tern (interior population), American burying beetle, and western prairie fringed orchid. All of these species have recovery plans. If these species are found in the district, the staff will follow recovery plan guidelines.

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 an active hand in keeping species from becoming threatened or endangered in the future.

According to the SWG program, each state, territory, and the District of Columbia must have a completed 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.

In 2005, the NGPC developed a statewide CWCS called the Nebraska Natural Legacy Plan. The planning team reviewed the legacy plan and the information obtained was used during the development of the CCP. Implementation of the habitat goals and objectives in this CCP will support the goals and objectives of the legacy plan.

Nebraska Natural Legacy Plan

The planning process for the legacy plan solicited public input and the help of state, federal, and nongovernmental agencies. One of the plan's purposes was to identify areas in the state that have unique wildlife and habitat characteristics. These unique areas—"biologically unique landscapes"—are focus areas for the conservation of the state's rarest species and natural habitats.

Nebraska's mission to "develop and implement a blueprint for conserving Nebraska's flora, fauna, and natural habitats" provides the state with a way to address pressing natural resource issues. When formulating proposed actions, planners must take into account the state's strong agricultural background. Farms and ranches cover 93% of the total land area and support a significant share of Nebraska's overall biological diversity. Maintenance of biological diversity throughout the state requires that conservation efforts be directed at a broad range of land issues and management practices on public and private lands. Maintaining and improving existing habitat on working farms and ranches is essential to conserving biological diversity and offers the greatest hope for success.

Nebraska plans to improve the efficiency and effectiveness of conservation by taking a more systematic approach to identifying and prioritizing the components of biological diversity through a "course filter/fine filter" approach. Monitoring of Nebraska lands becomes a priority as the state begins implementation of the plan. Monitoring of management actions is conducted at two levels: (1) response of individual species, and (2) response of habitats or ecological communities. Monitoring trends in abundance and distribution of different habitat types can be used to detect land use changes and can help direct conservation action toward those types that are showing the steepest decline.

Nebraska divides the state into four ecoregions for management purposes: tall-grass prairie, mixed-grass prairie, sandhills, and short-grass prairie. The ecoregions that occur in the basin—mixed-grass prairie and tall-grass prairie—are further described.

Mixed-grass Prairie Ecoregion

The mixed-grass prairie ecoregion lies between the tall-grass prairie to the east and the short-grass

prairie to the west, acting as a transition zone for the two. The region's climate is semiarid with annual average precipitation ranging from 28 inches in the east to 20 inches in the west. Average annual temperatures range from 52ºF to 57ºF. Starting in 1940, the government put in place policies to subsidize and facilitate conversion of marginal land such as playa wetlands to croplands. Center-pivot irrigation facilitated cultivation of steeper slopes and lands isolated from surface irrigation sources. Two-thirds of the land in the ecoregion is engaged in cropland production with most of the remaining grasslands used for livestock grazing.

Tall-grass Prairie Ecoregion

The tall-grass prairie ecoregion covers primarily the eastern quarter of the state, with parts extending further westward. Loess and organic matter form the basis for the deep, fertile soils that typify eastern Nebraska. Annual precipitation ranges from 25–36 inches, with summer temperatures reaching highs of 90ºF and dropping to lows of 10ºF in winter. The tall-grass prairie ecoregion is considered to have more diversified farming operations than the western part of the state.

Ecoregion Threats

Native animal species and ecoregion threats are essentially the same for all four regions in Nebraska. More than 300 species of resident and migratory birds have been found in the area. Most of the 55 mammal species are widespread with no distinct affiliation to the regions. Native, large predators have become extremely rare or extirpated from the regions. The 75 species of fish present in the ecoregions are "big river" generalists that can withstand a wide variation of environmental extremes. Wetlands are used for breeding by all the amphibians and reptiles. Insects are the most diverse and perhaps the most important group ecologically and economically because they play vital roles as herbivores, predators, pollinators, decomposers, soil aerators, and as food for other wildlife.

Several stresses face and affect the ecoregions, as follows:

- Conversion and fragmentation of natural habitats.
- Wetland drainage.
- Wetland sedimentation.
- Altered hydrology of wetlands.
- Fire plays an important role in prairie maintenance by promoting nutrient cycling, creating microhabitats, and increasing plant vigor and native plant diversity. Currently, less than 1% of the state's grasslands and woodlands are burned annually. Loss of fire has resulted in the degradation of thousands of acres of prairie by invasive plant species.
- Most grazing takes place in the absence of fire and with relatively little variation in timing and intensity. Overgrazing can severely impact the composition of grasslands, and increase the amount of sediment and other pollutants entering waterbodies. Grazing systems used on prairie remnants cause losses of plant and animal diversity and ecological functions.
- Spread of invasive plants has threatened the ecoregions' biological diversity.
- Altered hydrology and channel degradation of rivers and streams cause reductions in natural flows and reduce habitat available.
- Large-scale habitat fragmentation from conversion of native habitats to crop fields, housing developments, and roads has occurred over most of the state with the exception of the Nebraska Sandhills.

1.5 ECOSYSTEM DESCRIPTION AND THREATS

The Service has adopted watersheds as the basic building blocks for carrying out ecosystem conservation (see figure 5, ecosystem map). The district is located within the Platte-Kansas rivers ecosystem. In addition, the Nebraska Natural Legacy Plan (2005) identifies the Rainwater Basin as one of 40 "biologically unique landscapes."

Platte-Kansas Rivers Ecosystem

The Platte-Kansas rivers ecosystem includes almost all of Nebraska, southeast Wyoming, northeast Colorado, and northern Kansas (see figure 6). This ecosystem encompasses approximately 182,000 square miles and is home to the Nebraska Sandhills, the largest sand dune complex in the Western Hemisphere. The sandhills and many other areas 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, Engelmann spruce, and subalpine fir. Pinyon pine and juniper woodlands and aspen communities are common throughout. Alpine meadows and lakes, willow shrub lands, and barren rocky areas are common at high elevations. 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 buffalograss, blue grama, hairy grama, and western wheatgrass. The short-grass prairie turns into mixed-grass prairie, due primarily to greater annual rainfall, in central Nebraska and Kansas.

Many federally listed endangered and threatened species including the piping plover, whooping crane,

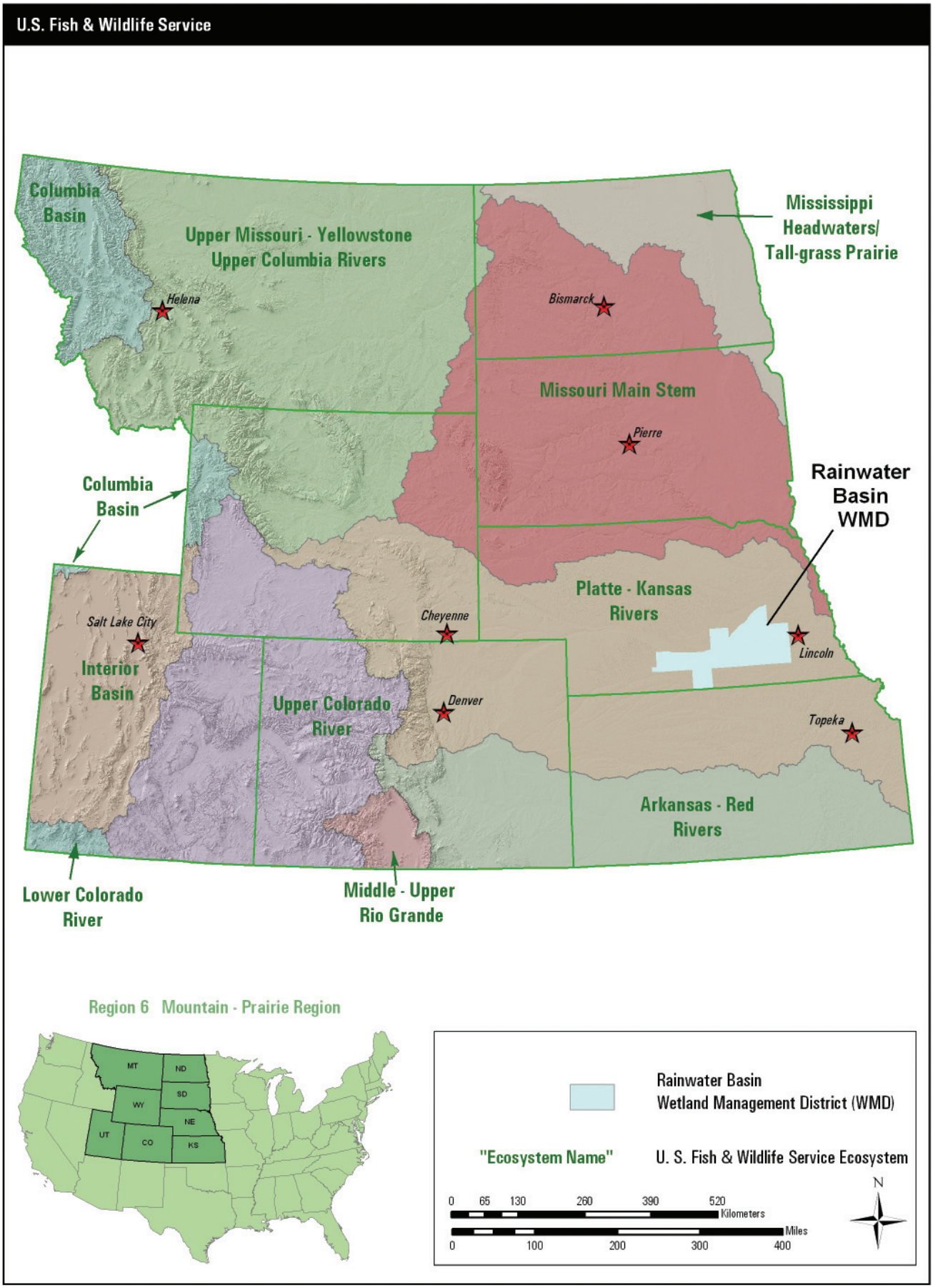


Figure 5. U.S. Fish and Wildlife Service ecosystem map.

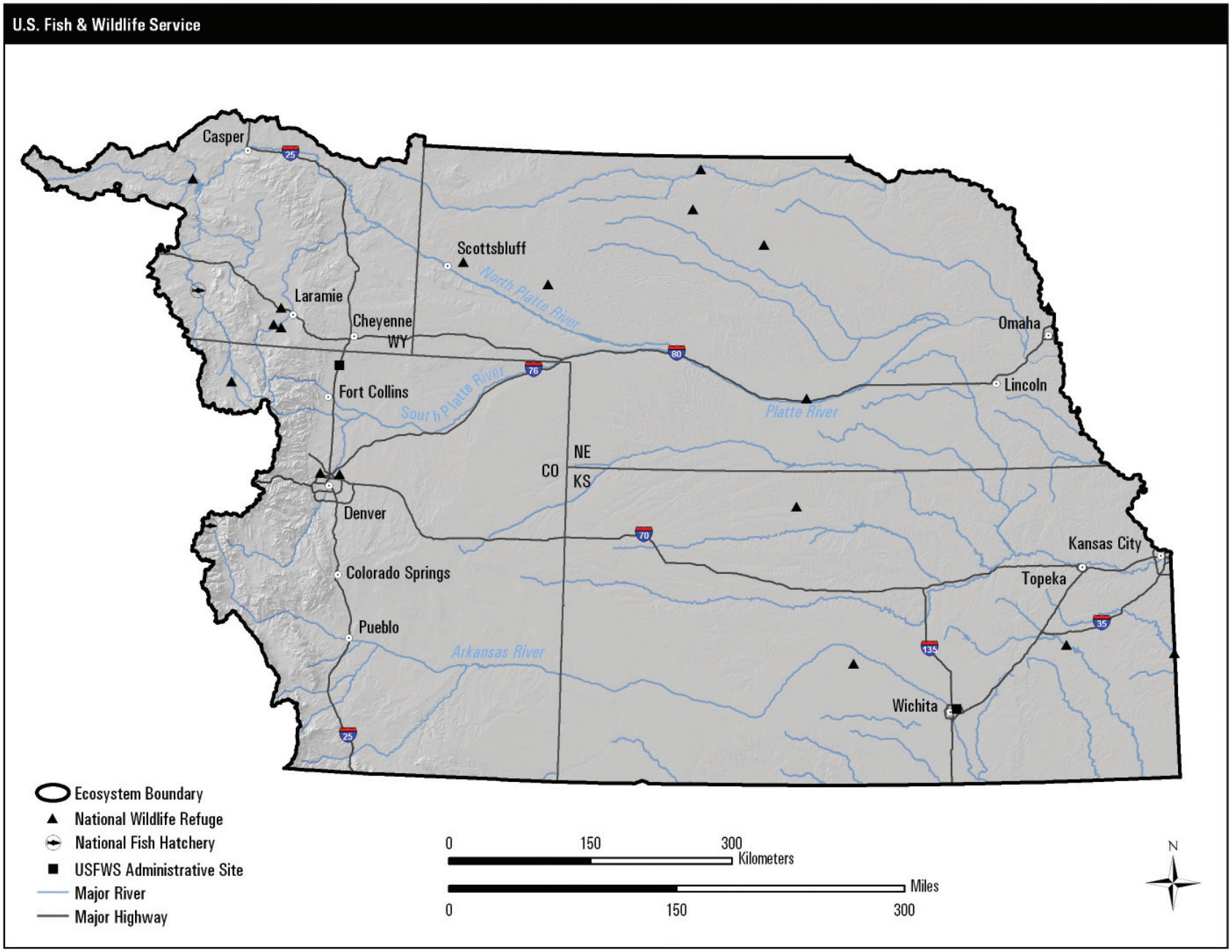


Figure 6. Platte-Kansas rivers ecosystem and Arkansas-Red rivers ecosystem map.

and Eskimo curlew have sought out this area as a refuge.

Threats to the Platte-Kansas rivers ecosystem that require attention include overgrazing, invasive plants, population growth and housing development, and groundwater and surface water depletion. To overcome these threats, priorities for the ecosystem are to ensure that (1) natural, healthy ecological processes dominate; and (2) economic development complements environmental protection.

The district contributes to the accomplishment of goals and objectives for this ecosystem through its Partners for Fish and Wildlife Program and existing partnerships.

1.6 THE PLANNING PROCESS

The steps involved in the development of this CCP are intended to comply with the Improvement Act, the NEPA, and the implementing regulations of the acts. The Service issued a final refuge planning policy in 2000. This policy established requirements and guidance for refuge and district 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 7, steps in the planning process). Table 1 displays the planning process used by the Service in the development of CCPs for all units of the Refuge System.

This CCP was prepared by a planning team composed of representatives from various Service programs including district and regional office staffs and from the Rainwater Basin Joint Venture (RWBJV), U.S. Geological Survey's biological resources division (USGS–BRD), Nebraska Game and Parks Commission (NGPC), and region 6's division of refuge planning (see appendix C, preparers).

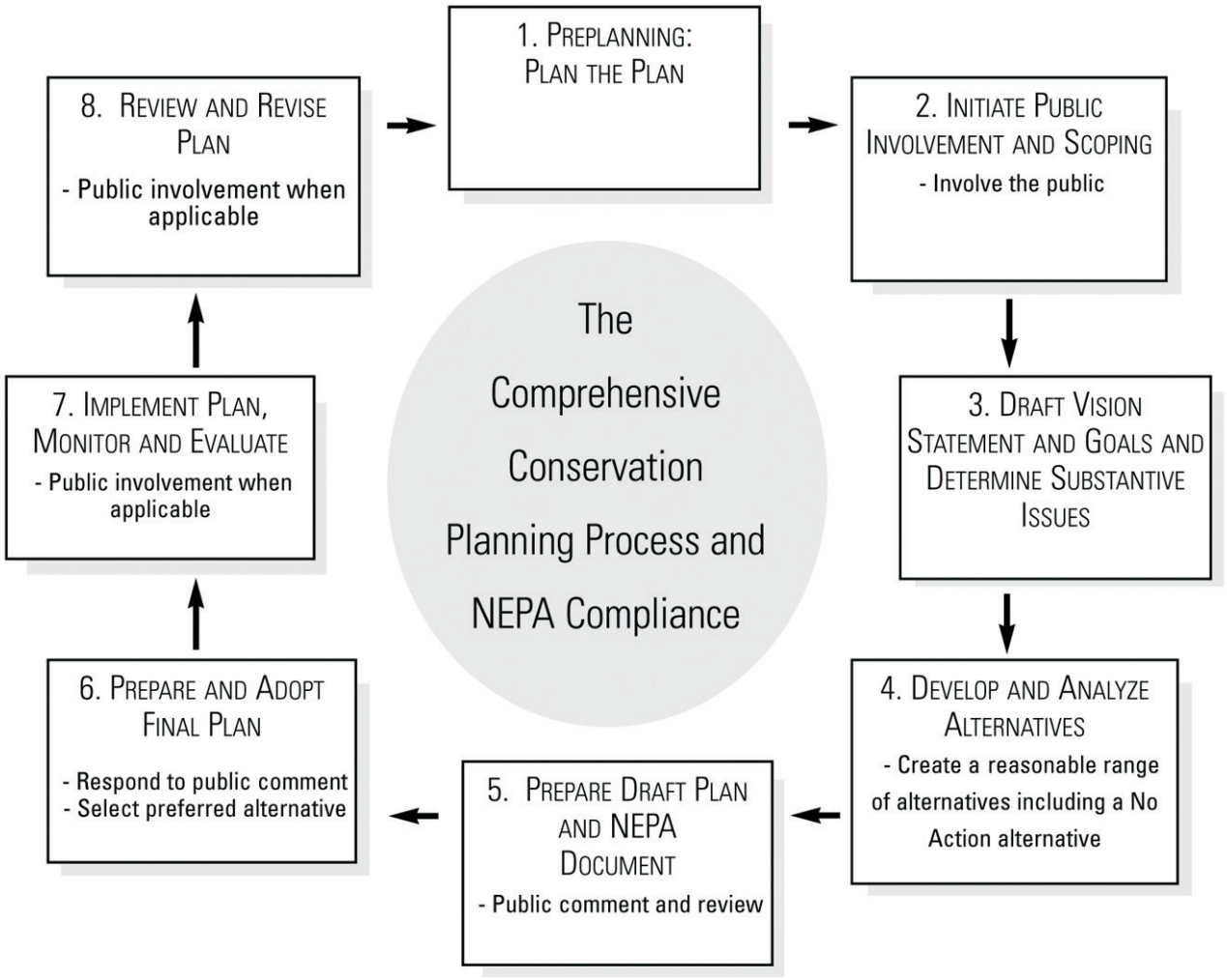


Figure 7. Steps in the planning process.

Table 1. Planning process summary for Rainwater Basin Wetland Management District, Nebraska.

Date	*Event*	*Outcome*
June 10, 2005	Initial conference call between the district staff and regional office planning staff.	Initiated contacts to organize development of the CCP and an overview of district issues. Started development of a mailing list.
July 13–15, 2005	Site visit to the district and initial meeting with the proposed planning team.	Acquainted regional office staff and state personnel with district activities and issues. Developed a preliminary list of qualities and issues.
October 13–14, 2005	Purposes, vision, and goals workshop; Kearney, NE.	Reviewed purposes for the district. Developed a vision statement and set of goals for the draft CCP and EA.
December 5, 2005 (5–8 p.m.)	Public scoping meeting; Kearney, NE.	Presented the district's background information and the CCP process. The public queried staff and provided comments.
December 6, 2005 (5–8 p.m.)	Public scoping meeting; York, NE.	Presented the district's background information and the CCP process. The public queried staff and provided comments.
December 7, 2005 (5–8 p.m.)	Public scoping meeting; Clay Center, NE.	Presented the district's background information and the CCP process. The public queried staff and provided comments.
December 8, 2005 (5–8 p.m.)	Public scoping meeting; Holdrege, NE.	Presented the district's background information and the CCP process. The public queried staff and provided comments.
December 6–7, 2005	CCP kickoff meeting.	Finalized the planning team. Updated list of issues and qualities. Identified biological and mapping needs. Determined the CCP steps and schedule.
February 28–March 2, 2006	Alternatives development workshop; Grand Island, NE.	Developed a range of alternatives for managing the district.
March 23–24, 2006	Impacts assessment workshop via conference calls: Kearney–Lincoln–Denver.	Assessed environmental impacts, by focus area, from each alternative developed. Recommended a proposed action.
August 1–3, 2006	Biological objectives, strategies, and rationale development workshop; Kearney, NE.	Drafted the biological objectives, strategies, rationale, and bibliography for the proposed action.
August 29–31, 2006	Nonbiological objectives, strategies, and rationale development workshop; Kearney, NE.	Drafted the nonbiological objectives, strategies, rationale, and bibliography for the proposed action.
December–March 2007	First draft CCP and EA preparation.	Prepared the first draft of the CCP and EA.
April–June 2007	Internal Service and state review of the draft CCP and EA.	Collected internal comments about the draft CCP and EA. Addressed comments; prepared the draft CCP and EA for public review.

Table 1. Planning process summary for Rainwater Basin Wetland Management District, Nebraska.

Date	*Event*	*Outcome*
July 18–August 18, 2007	Public review of the draft CCP and EA; open house meeting in Hastings, NE, about the draft CCP and EA.	Met with interested public and collected public comments about the draft CCP and EA in person and via mail and email.
August 20–September 14, 2007	Analysis of comments and finalization of the CCP.	Briefed the Service's region 6 directorate on the outcome of the public review period. Finalized the plan with approval of the regional director.

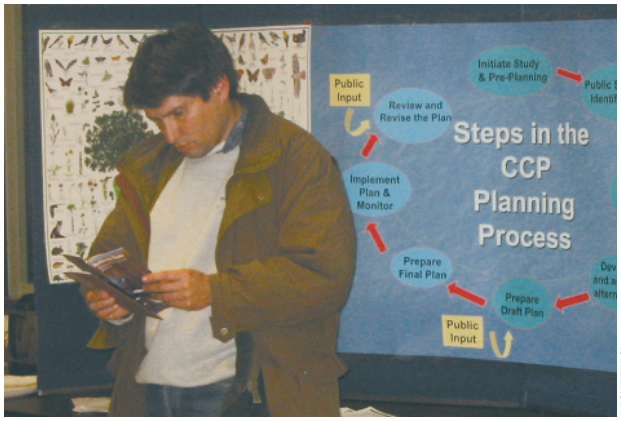
The Service began the preplanning process in September 2005 (see appendix D, public involvement). During preplanning, the team developed a mailing list, internal issues, and a special qualities list. The planning team identified current district program status, compiled and analyzed relevant data, and determined the purpose of the refuge.

Compliance with the NEPA was achieved through involvement of the public. After the notice of intent (NOI) to prepare the draft CCP and EA was published in the *Federal Register* in November 2005, scoping began in December 2005 with public meetings. Scoping is the process of obtaining information from the public for input into the planning process. Over the course of preplanning and scoping, the planning team collected information about resources of the district and the surrounding areas, which is summarized in chapter 3.

The Service developed alternatives for management of the district after reviewing a wide range of public comments and management needs. After careful consideration of the environmental consequences of the alternatives, the Service chose alternative B as the proposed action to be implemented. The evaluation of these alternatives was documented in the "Draft Comprehensive Conservation Plan and Environmental Assessment for the Rainwater Basin Wetland Management District." The Service published the notice of availability (NOA) for the draft CCP and environmental assessment (EA) on the same day it was released for public review—July 18, 2007. The draft CCP and EA outlined long-term guidance for management decisions, set forth proposed objectives and strategies to accomplish district purposes and meet goals, and identified the Service's best estimate of future needs.

Public review of the draft CCP and EA concluded on August 18, 2007. After an analysis of the public's comments, the Service's regional director of region 6 selected alternative B (the proposed action) as the preferred alternative for the final CCP. Subsequently, the draft CCP was modified in accordance with substantive public comments to produce this final CCP, which the regional director approved in August 2007 after documentation of a "finding of no significant impact" (see appendix E, environmental compliance).

For further details of the planning process including comments and responses, see appendix D, public involvement.



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The public came to four open houses to learn about the district and offer ideas and concerns.

Coordination with the Public

A mailing list was developed by the planning team, consisting of more than 500 names—private citizens; local, regional, and state government representatives and legislators; other federal agencies; and interested organizations (see appendix D, public involvement).

The Service held four public scoping meetings, in open-house format, during December 2005 (see table 1 for details). Attendees provided written and oral comments and were informed that comprehensive planning was an open process where they could submit their comments at any time and by any means (letter, telephone, or Internet) until the time the CCP was final.

The combined total attendance to these public meetings was 63 persons. The planning team received additional written comments via mail. Seventeen written comments were received throughout the scoping process. Input obtained from meetings and correspondence, including emails, were considered in development of this CCP.

For information about the results of the public review period and the comments received, see appendix D.

State Coordination

In November 2005, an invitation letter to participate in the CCP process was sent by the Service's region 6 director to the director of the NGPC. Two representatives from the NGPC actively participated in the development of this CCP as part of the core planning team. Local NGPC wildlife managers and the district staff maintain excellent and ongoing working relations that precede the CCP process.

Tribal Coordination

The planning team contacted Native American tribal representatives of the Pawnee Tribe and Otoe-Missouria Tribes. The tribal governments are part of the mailing list.

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 that are addressed in the CCP.

The Service determined which alternatives could best address these issues. The planning process ensured that issues with the greatest effect on the district were resolved or given priority over the life of the CCP. Identified issues, along with a discussion of effects on resources, are summarized in chapter 2, section 2.6.

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