Chapter 1: Introduction and Background

The U.S. Fish and Wildlife Service is required to prepare and implement a Comprehensive Conservation Plan (CCP) for each unit in the National Wildlife Refuge System. This document is the Comprehensive Conservation Plan for Crab Orchard National Wildlife Refuge (Figure 1). The CCP will guide the administration and management of the Refuge for 15 years.

Located in southern Illinois, Crab Orchard National Wildlife Refuge (NWR) was established in 1947 for wildlife, agriculture, recreation and industry. The Refuge consists of 43,888 acres. Figure 2 shows the location of the Refuge.

National Wildlife Refuge System Mission, Goals and Principles

The U.S. Fish and Wildlife Service is the principal federal agency responsible for conserving, protecting and enhancing fish, wildlife and plants and their habitats for the continuing benefit of the American people. The Service manages the 95-million-acre National Wildlife Refuge System of more than 540 national wildlife refuges, thousands of small wetlands and other special management areas. It also operates 66 national fish hatcheries, 64 fishery resource offices and 78 ecological services field stations. The agency enforces Federal wildlife laws, administers the Endangered Species Act, manages migratory bird populations, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, and helps foreign governments with their conservation efforts. It also oversees the Federal Aid program

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that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

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

Mission of the National Wildlife Refuge System

By law, 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.”

Figure 1: Crab Orchard NWR

Figure 2: Location of Crab Orchard NWR

Goals of the National Wildlife Refuge System

The development of comprehensive conservation plans and the administration, management, and growth of the System are guided by the following goals:

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

- Foster understanding and instill appreciation of the diversity and interconnectedness of fish, wildlife, and plants and their habitats.

Guiding Principles of the National Wildlife Refuge System

- We are land stewards, guided by Aldo Leopold's teachings that land is a community of life and that love and respect for the land is an extension of ethics.
- We seek to reflect that land ethic in our stewardship and to instill it in others.
- Wild lands and the perpetuation of diverse and abundant wildlife are essential to the quality of the American life.
- We are public servants. We owe our employers, the American people, hard work, integrity, fairness, and a voice in the protection of their trust resources.
- Management, ranging from preservation to active manipulation of habitats and populations, is necessary to achieve Refuge System and U.S. Fish and Wildlife Service missions.
- Wildlife-dependent uses involving hunting, fishing, wildlife observation, photography, interpretation, and education, when compatible, are legitimate and appropriate uses of the Refuge System.
- Partnerships with those who want to help us meet our mission are welcome and indeed essential.
- Employees are our most valuable resource. They are respected and deserve an empowering, mentoring, and caring work environment.
- We respect the rights, beliefs, and opinions of our neighbors.

Brief History of Refuge Establishment, Acquisition, and Management

President Franklin D. Roosevelt authorized the Crab Orchard Creek Project in 1936 as a Works Progress Administration (WPA) project. The project was "proposed largely as a recreational and conservation program for water, soil and forestry conservation." Several benefits were envisioned for the project: "(1) it will materially aid in eliminating economic and social distress, (2) create the largest recreational area in the state of Illinois, (3) conserve a large water supply and eliminate flooding of privately-owned lands, (4) conserve existing forests, (5) control soil erosion." (Preliminary Plan for Land Acquisition, Crab Orchard Creek Project, 1936)

In late 1937, the U.S. Department of Agriculture Soil Conservation Service assumed administration of the Project. From 1937 to 1942, the federal government purchased 32,000 acres within the Project area from private landowners. Over 80 percent of the acquired land had been cleared and used for agricultural crops and grazing. Civilian Conservation Corps (CCC) workers planted more than 4.6 million trees in the area from 1938 to 1941. The Crab Orchard Lake dam was completed in 1941. Crab Orchard Lake was the largest lake in Illinois at that time. In 1942 the Department of War appropriated 10,223 acres of the Crab Orchard Creek Project land and purchased an additional 12,352 acres to build the Illinois Ordnance Plant. Between 5,000 and 8,000 people worked at the plant, known as Ordill, manufacturing bombs and anti-tank mines during World War II.

Crab Orchard National Wildlife Refuge was established on August 5, 1947, by Public Law 80-361. This Act of Congress transferred 22,575 acres from the Department of War (Illinois Ordnance Plant) and 21,425 acres from the Soil Conservation Service (Crab Orchard Creek Project) to the Secretary of the Interior.

The Crab Orchard Creek Project proposed dams for Little Grassy Creek and Grassy Creek to store water and prevent siltation of Crab Orchard Lake. The dam that created Little Grassy Lake was completed in 1950. The dam that created Devils Kitchen Lake was completed in 1959.

Congress designated a 4,050-acre portion of the Refuge as the Crab Orchard Wilderness in 1976.

Since the Refuge was established, the Service has acquired and divested several parcels of land. In 1959, the Refuge transferred 921 acres of land located in its southeast corner to the U.S. Department of Justice for construction of a maximum security prison. In 1969, the Refuge acquired several scattered tracts of land in exchange for 160 acres that is now the site of the John A. Logan College. In a 1974 exchange, the Refuge acquired 15 acres of State of Illinois land in the vicinity of Little Grassy Fish Hatchery. In a 1979 exchange, Southern Illinois University acquired the current site of Touch of Nature Environmental Center and the Refuge

Figure 3: Protected Lands in Southern Illinois

acquired land south of Little Grassy Lake. Through the years the Refuge has purchased a few scattered parcels. In 2000, the Refuge used Natural Resource Damage Assessment funds to purchase 216 acres on its western edge. Several small land exchanges are pending.

In addition to Crab Orchard NWR, a variety of other state and federal agencies manage land in the vicinity of the Refuge. Figure 3 illustrates these protected lands.

Recent Refuge Management Activities

Wildlife and Fish Habitat

Refuge biologists use various techniques to maintain and enhance wildlife habitat. They manipulate water levels in moist soil management units and seed tallgrass prairie species to reestablish native grasslands. Silvicultural treatments such as thinning, regeneration cutting, and improvement cutting are used in forest habitats to alter species composition and increase growing space. Trees are also planted to reduce forest fragmentation. Biologists use prescribed fire in pine and hardwood forests and grasslands. Biologists monitor wildlife populations and, in cooperation with the Illinois Department of Natural Resources staff, monitor fish populations in the lakes and ponds, stock game and prey fish, and enhance fishing opportunities by placing discarded Christmas trees to increase underwater structure. Trapping nuisance beavers in the closed area is authorized by special use permit. Biologists monitor and apply treatments for control of invasive plants and animals.

Agriculture

The Refuge agriculture program includes about 4,500 acres of row crops (rotation of corn, soybeans, clover) tended by cooperative farmers, about 800 acres of hay fields harvested under special use permits, and about 1,000 acres of pasture grazed under

special use permits. The principal goal of the agriculture program is to provide habitat for wintering Canada geese.

Recreation

The Refuge receives an estimated 1.1 million recreational visits annually. To accommodate the wide variety of recreational uses, the Refuge operates a visitor information center, environmental education sites, hiking trails, four campgrounds, five marinas, boat launch ramps, picnic areas, swimming beaches, auto tour route, and observation deck. The Refuge offers many opportunities for fishing, hunting, environmental education, interpretation, and wildlife observation and photography. In addition, the Refuge permits camps under cooperative agreements to Girl Scouts, Boy Scouts of America, United Methodist Church and Southeastern Illinois Presbytery. Law enforcement officers provide safety and security for visitors and Refuge resources.

Industry

The Refuge leases 1.2 million square feet of facilities that are used for manufacturing, cold storage, and explosives storage. In support of the industrial operations, the Refuge also maintains extensive transportation and utility infrastructure. The Refuge provides water and waste water services to an adjacent college campus and water service to the federal prison.

Wilderness

The Refuge staff disseminates wilderness use information to visitors, controls vehicle access and patrols and conducts informal monitoring to protect the resources of the 4,050-acre Crab Orchard Wilderness.

Contaminants

The Service's Ecological Services branch has Environmental Contaminants staff co-located at the Refuge who manage the investigation, monitoring, and remediation activities associated with sites contaminated with hazardous chemicals. The Refuge is on the U.S. Environmental Protection Agency's National Priority List of hazardous waste sites.

Archaeological and Cultural Resources

The Refuge Manager ensures historic properties are identified and protected as much as possible while achieving Refuge purposes and the Refuge System mission. The manager is guided by several historic preservation laws and regulations. Early in the planning of all projects, the Refuge Manager asks the Regional Historic Preservation Officer (RHPO) to initiate the Section 106 process, which is a set of procedures specified in the National Historic Preservation Act. Then the manager informs the public about the project and its cultural issues through presentations, meetings, and media notices. The manager asks for comments from the public and local officials. Any comments relevant to cultural issues are reported to the RHPO.

Archeological investigations and collecting on the Refuge are performed only in the public interest. Qualified archeologists perform the work under an Archaeological Resources Protection Act permit issued by the Regional Director. Refuge personnel take steps to prevent unauthorized collecting. If unauthorized collecting is detected, Refuge officers cite violators or take other appropriate action and report the violations to the RHPO.

Guided by a Scope of Collection Statement dated November 1992, the Refuge manages museum collections that contain archeological artifacts, art work, historical items and documents, and zoological specimens. To date, twelve archeological investigations have produced in excess of 55,400 artifacts from Refuge lands. The artifacts are stored at 7 repositories, although most are kept at the Center for Archaeological Investigations at Southern Illinois University, Carbondale, under a cooperative agreement.

Refuge Purposes

Public Law 80-361 mandated that the lands transferred from the Department of War and Soil Conservation Service be administered by the Secretary of the Interior through the Fish and Wildlife

Service "for the conservation of wildlife, and for the development of the agricultural, recreational, industrial, and related purposes specified in this Act."

An additional purpose was acquired when Congress designated the 4,050-acre Crab Orchard Wilderness in 1976. The establishing legislation for the Wilderness (Public Law 94-557) states that "wilderness areas designated by this Act shall be administered in accordance with the applicable provisions of the Wilderness Act...". The purposes of the Wilderness Act (Public Law 88-577) are additional purposes of that part of the Refuge that is within the Crab Orchard Wilderness. The purposes of the Wilderness Act are to secure an enduring resource of wilderness, to protect and preserve the wilderness character of areas within the National Wilderness Preservation System (NWPS), and to administer the NWPS for the use and enjoyment of the American people in a way that will leave these areas unimpaired for future use and enjoyment as wilderness.

Refuge Vision Statement

The planning team considered the past vision statement and emerging issues and drafted the following vision statement as the desired future state of the Refuge:

> The citizens of Southern Illinois recognize the staff of Crab Orchard National Wildlife Refuge as government employees who listen and care and who meet significant management challenges in a sensible way. Within the Fish and Wildlife Service, Crab Orchard National Wildlife Refuge is recognized not for its exceptions, but for its exceptional management. The Refuge is held as an example of an area once contaminated that is now clean and safe for humans and wildlife. The viewer of a satellite photograph can easily distinguish the Refuge with its large blocks of habitat and its clean water lakes from the surrounding fragmented and developed landscape. Wildlife thrives. Farmers take pride in their operations on the Refuge because they use model conservation practices, benefit wildlife, and make money. The Refuge and the community are proud to contribute to the Nation's defense through the industry that is hosted on the Refuge. In Southern Illinois where a spectrum of outdoor recreation opportunities ranges from the highly developed to the primitive, the Refuge is known for high quality wildlife-dependent opportunities.

Refuge Goals

Based on the purposes of the Refuge, the mission of the National Wildlife Refuge System and ecosystem considerations, the planning team established the following Refuge goals for the next 15 years.

Wildlife Conservation Goals

Canada Geese:

- Provide enough food for wintering Canada geese to support 6.4 million goose-use-days annually, in support of the Mississippi Valley Population Canada Goose Management Plan.

Forest, Early Successional and Grassland Birds:

- Maintain or enhance populations of forest, early successional and grassland birds, with emphasis on priority species, as identified in Partners in Flight Physiographic Area Bird Conservation Plans.

Ducks, Shorebirds, and Other Waterbirds:

- Maintain or enhance populations of ducks, shorebirds, and other waterbirds, with emphasis on priority species, as identified in the North American Waterfowl Management Plan, U.S. Shorebird Conservation Plan, and North American Waterbird Conservation Plan.

Threatened and Endangered Species:

- Maintain or enhance populations of federal and, where compatible, state threatened and endangered species that occur at or near Crab Orchard National Wildlife Refuge.

Water Quality:

- Maintain or enhance quality of water in streams and lakes at Crab Orchard National Wildlife Refuge.

Resident Fish and Wildlife:

- Maintain or enhance resident fish and wildlife populations consistent with management activities for federal trust resources in cooperation with the Illinois Department of Natural Resources (DNR). Maintain a mixed-species, warm-water sport fishery in cooperation with the Illinois DNR.

Recreation/Public Use Goals

Hunting, Fishing, Wildlife Observation and Photography, Interpretation and Environmental Education:

- Hunters, anglers, viewers and photographers of wildlife, general visitors and students will enjoy

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high quality experiences through a variety of opportunities that promote an understanding and appreciation of natural and cultural resources and their management.

Customer Service:

- Visitors of all abilities will feel welcome and enjoy a safe visit to an area that they recognize as a national wildlife refuge.

Volunteers and Support Groups:

- Volunteers and Refuge support groups will be stewardship partners and strong advocates for the Refuge.

Other Land and Water-based Recreation:

- Visitors will enjoy high quality, land- and water-based activities that fulfill the recreation purpose of the Refuge.

Agricultural Goal

- Provide opportunities for agricultural uses on Refuge lands that help attain wildlife conservation goals.

Industrial Goal

- Provide an industrial complex and attendant utility and transportation infrastructure, which conform to prescribed safety, health, environmental and maintenance standards.

Wilderness Goal

- Protect the ecological integrity, preserve the wilderness character, restore natural conditions to the extent practicable and provide opportunities for solitude and primitive recreation within the Crab Orchard Wilderness.

Protection Goal

- Protect the integrity of Refuge biological and cultural resources and the health and safety of visitors, industrial workers, farmers, and Service staff.

Outreach Goal

- Visitors, cooperators, tenants, and local residents will understand Refuge goals, issues and activities. Service personnel will understand the expectations and concerns of the general public by being receptive to their feedback.

Ecosystem Goals

Upper Mississippi River/Tallgrass Prairie Ecosystem

The Service has adopted an ecosystem approach to conservation and designated 53 ecosystem units (Figure 4). The ecosystem units delineate portions of the landscape where the Service and its partners can set ecosystem-wide resource goals and work together to achieve these goals.

The Refuge is located in the Upper Mississippi River/Tallgrass Prairie Ecosystem (Number 23), an ecologically diverse area encompassing 186,133 square miles in Illinois, Iowa, Minnesota, Missouri and Wisconsin. An ecosystem team has identified the following goals in response to resource management challenges and opportunities:

Goal 1: Protect, restore, and enhance populations of native and trust species and their habitats.

Goal 2: Restore natural ecosystem processes, including hydrology and sediment transport to maintain species and habitat diversity.

Goal 3: Promote environmental awareness of the ecosystem and its needs with emphasis on sustainable land use management.

Goal 4: Identify water quality problems affecting native biodiversity and habitat of trust species.

Goal 5: Reduce conflicts between fish and wildlife needs and other uses.

Figure 4: U.S. Fish & Wildlife Service Ecosystem Units

Goals and Objectives for Other Landscape Level Plans

Migratory Bird Conservation Initiatives

Over the last decade, bird conservation planning has evolved from a largely local, site-based focus to a more regional, landscape-oriented perspective. Significant challenges include locating areas of high-quality habitat for the conservation of particular guilds and priority bird species, making sure no species are inadvertently left out of the regional planning process, avoiding unnecessary duplication of effort, and identifying unique landscape and habitat elements of particular tracts targeted for protection, management and restoration. Several migratory bird conservation initiatives have emerged to help guide the planning and implementation process. Collectively, they comprise a tremendous resource as Crab Orchard NWR engages in comprehensive conservation planning and its translation into effective on-the-ground management.

The North American Waterfowl Management Plan

Signed in 1986, the North American Waterfowl Management Plan (NAWMP) outlines a broad framework for waterfowl management strategies and conservation efforts in the United States, Canada, and Mexico. The goal of the NAWMP is to restore waterfowl populations to historic levels. The NAWMP is designed to reach its objectives through key joint venture areas, species joint ventures, and state implementation plans within these joint ventures.

The Refuge is in the Upper Mississippi River-Great Lakes Region Joint Venture. One of 12 habitat-based joint ventures, this Joint Venture encompasses the states of Michigan and Wisconsin in their entirety, plus portions of Minnesota, Iowa, Nebraska, Kansas, Missouri, Illinois, Indiana and Ohio. The goal of this Joint Venture is to increase populations of waterfowl and other wetland wildlife by protecting, restoring and enhancing wetland and associated upland habitats within the Joint Venture region.

The objectives of this Joint Venture are:

1. Conserve 9,118,884 acres of habitat capable of supporting an annual breeding duck population of 1,542,000, under average environmental conditions, by the year 2013.

   The breeding duck population objective for Illinois is 20,000, which is a 365 percent increase over the average breeding population of 4,300 birds.

2. Conserve 532,711 acres of habitat on migration focus areas capable of supporting 266 million duck use days during annual fall migration, under average environmental conditions, by the year 2013.

   The migration habitat objective (acres of managed wetland habitat) for the Southern Illinois Focus Area is 77,950 acres, which is a 34 percent increase over the 58,171 acres available in 1998.

3. When consistent with Objectives 1 and 2, contribute to the protection and/or increase of habitats for wetland and associated upland wildlife species in the Joint Venture, with emphasis on declining non-waterfowl migratory birds.

Partners In Flight

Formed in 1990, Partners in Flight (PIF) is concerned with most landbirds and other species requiring terrestrial habitats. Partners in Flight has developed Bird Conservation Plans for numerous Physiographic Areas across the U.S. (see http://www.partnersinflight.org). These plans include priority species lists, associated habitats, and management strategies. Reflecting the local physiography, the northern portion of Crab Orchard NWR lies within PIF Physiographic Area 31, the Prairie Peninsula Physiographic Area. The southern portion of the Refuge lies within PIF Physiographic Area 14, the Interior Low Plateaus Physiographic Area.

U. S. Shorebird Conservation Plan and the North American Waterbird Conservation Plan

The U. S. Shorebird Conservation Plan and the North American Waterbird Conservation Plan are plans that address the concerns for shorebird and waterbirds. These plans have corresponding regional plans that cover the Upper Mississippi Valley/Great Lakes Region, which includes the Refuge. These regional plans contain more specific information about the species priorities and habitat conservation needs of birds using the Refuge. These plans are available at http://www.shorebirdplan.fws.gov and http://www.nacwcp.org.

North American Bird Conservation Initiative

In a continental effort, the Partners in Flight, North American Waterfowl Management, U. S. Shorebird Conservation, and the North American Waterbird Conservation plans are being integrated under the umbrella of the North American Bird Conservation Initiative (NABCI) (http://www.nabci-us.org). The goal of NABCI is to facilitate the delivery of the full spectrum of bird conservation through regionally-based, biologically-driven, landscape-oriented partnerships (see http://www.dodpif.org/nabci/index.htm). The NABCI strives to integrate the conservation objectives for all birds in order to optimize the effectiveness of management strategies. NABCI uses Bird Conservation Regions as its planning units. Bird Conservation Regions are becoming increasingly common as the unit of choice for regional bird conservation efforts; Crab Orchard NWR lies within Bird Conservation Region 24, Central Hardwoods.

Each of the four bird conservation initiatives has a process for designating conservation priority species, modeled to a large extent on the PIF method of calculating scores based on independent assessments of global relative abundance, breeding and wintering distribution, vulnerability to threats, area importance (at a particular scale, e.g. Physiographic Areas or Bird Conservation Regions), and population trend. These scores are often used by agencies in developing lists of bird species of concern; e.g., the U. S. Fish and Wildlife Service based its assessments for its 2002 list of nongame Birds of Conservation Concern primarily on the PIF, shorebird, and waterbird status assessment scores.

Region 3 Fish and Wildlife Resource Conservation Priorities (January 2002)

The Resource Conservation Priorities list is a subset of all species that occur in the Region and was derived from an objective synthesis of information on their status. The list includes all federally listed threatened and endangered species and proposed and candidate species that occur in the Region; migratory bird species derived from Service-wide and international conservation planning efforts; and rare and declining terrestrial and aquatic plants and animals that represent an abbreviation of the Endangered Species program's preliminary draft "Species of Concern" list for the Region.

Although many species are not included in the priority list, this does not mean that we consider them unimportant.

The list includes 99 species or populations for the Service's Upper Mississippi River/Tallgrass Prairie Ecosystem. Approximately 45 of the listed species inhabit the Refuge or immediate vicinity.

Legal and Policy Guidelines

In addition to the Refuge's establishing legislation (Appendix G), several laws, executive orders, and regulations govern its administration. See Appendix C for a list and discussion of the guiding laws and orders.