Chapter 1: Introduction and Background

Introduction

By the mid-twentieth century, the Kirtland's Warbler was a bird in trouble. Wildfire, a natural ecological process vital to producing its habitat, had been reduced in frequency and extent, severely reducing the population.

A small, neotropical migrant bird that is a summer native of Michigan, the Kirtland's Warbler relies on a very specific type of fire-dependent forest habitat to thrive.

The situation isn't unique for either bird or habitat. Many native ecosystems of North America have been altered during the last three centuries due to human changes in land use and other factors. In many cases, natural ecological processes such as flooding and wildfire have been controlled or eliminated in favor of human settlement.

Kirtland's Warbler female and nest.
Photo credit: Ron Austing

A survey of Kirtland's Warbler in 1951 found 432 singing male birds. By the 1970s, fewer than 200 singing males were surveyed on an annual basis. In 1967, the species was placed on the Federal Endangered Species list.

Due to concerted management efforts by federal and state agencies, however, beginning in the 1990s the population began to increase. By 2001, the total estimated population of singing male Kirtland's Warblers had reached the recovery objective of over 1,000 singing males and has stayed above this value for seven consecutive years. In 2008, the total estimated population of singing male Kirtland's Warblers in Michigan was 1,791, the greatest number yet recorded.

Kirtland's Warbler Listing Status

The Kirtland's Warbler population has surpassed numeric recovery goals and there has been discussion about removing it from the list of threatened and endangered species. However, prior to delisting, safeguards must be in place that will ensure continued active management for this species. The persistence of the Kirtland's Warbler depends on the dynamic management of jack pine stands, Brown-headed Cowbird control, and monitoring of wintering habitat. The Kirtland's Warbler population would sharply decline without this critical management completed on an annual basis.

Long-term conservation of this species will take the long-term commitment and funding of state and federal agencies that manage nesting habitat for the species. Jack pine management and cowbird control on the nesting grounds alone costs hundreds of thousands of dollars annually. To that end, the Kirtland's Warbler Recovery Team and other partners have proposed the creation of a private endowment fund to ensure management efforts are sustained. The endowment, along with a commitment from state and federal agencies for continued management, may make long-term conservation and delisting of Kirtland's Warbler a reality.

The Kirtland's Warbler nests in young jack pine forest growing on sandy glacial outwash soils. Warblers prefer to nest in jack pine forests that are 80 acres or larger with numerous small (less than 1 acre), grassy openings. This species tends to nest in groups; nests are placed on the ground among grasses or other plants and under limbs of 5-to-16-foot tall jack pine. As jack pine trees mature, upper branches block the sun and the lower branches die; warblers cease to use the area.

The jack pine habitat used by Kirtland's Warbler is also used by a number of other bird species, including Spruce Grouse, Nashville Warbler, Yellow-rumped Warbler, Eastern Towhee, Eastern Bluebird, Black-backed Woodpecker, and Brown Thrasher. Larger openings in jack pine-dominated ecosystems are inhabited by Upland Sandpiper, American Kestrel, and Sharp-tailed Grouse.

Kirtland's Warbler Wildlife Management Area was established in 1980 in response to the need for more land dedicated to the recovery of this species. The U.S. Fish and Wildlife Service (Service) established the wildlife management area, in part, due to the recommendations of the Kirtland's Warbler Recovery Team. The original goal was to acquire 7,500 acres of land on which habitat would be managed for the benefit of Kirtland's Warbler. At present, the area contains 125 separate tracts totaling 6,684 acres (Figure 1). While management for Kirtland's Warbler is paramount, the WMA provides habitat for a diversity of wildlife species, both migratory and non-migratory.

The Kirtland's Warbler WMA does not have a permanent staff. The staff at Seney National Wildlife Refuge (NWR) oversees the WMA and provides limited services on an as-needed basis. These duties include, but are not limited to, administration of timber sales, coordinating with the state on harvestng and replanting efforts, participation in Kirtland's Warber Recovery Team efforts, research, the Kirtland's Warbler census, Brown-headed Cowbird trapping, public education, and on-site law enforcement.

The U.S. Fish and Wildlife Service

Kirtland's Warbler WMA is administered by the U.S. Fish and Wildlife Service, which is the primary federal agency responsible for conserving, protecting, and enhancing the nation's fish and wildlife populations and their habitats. It oversees the enforcement of federal wildlife laws, management and protection of migratory bird populations, restoration of nationally significant fisheries, administration of the Endangered Species Act, and the restoration of wildlife habitat such as wetlands. The Service also manages the National Wildlife Refuge System, which includes the Kirtland's Warbler WMA.

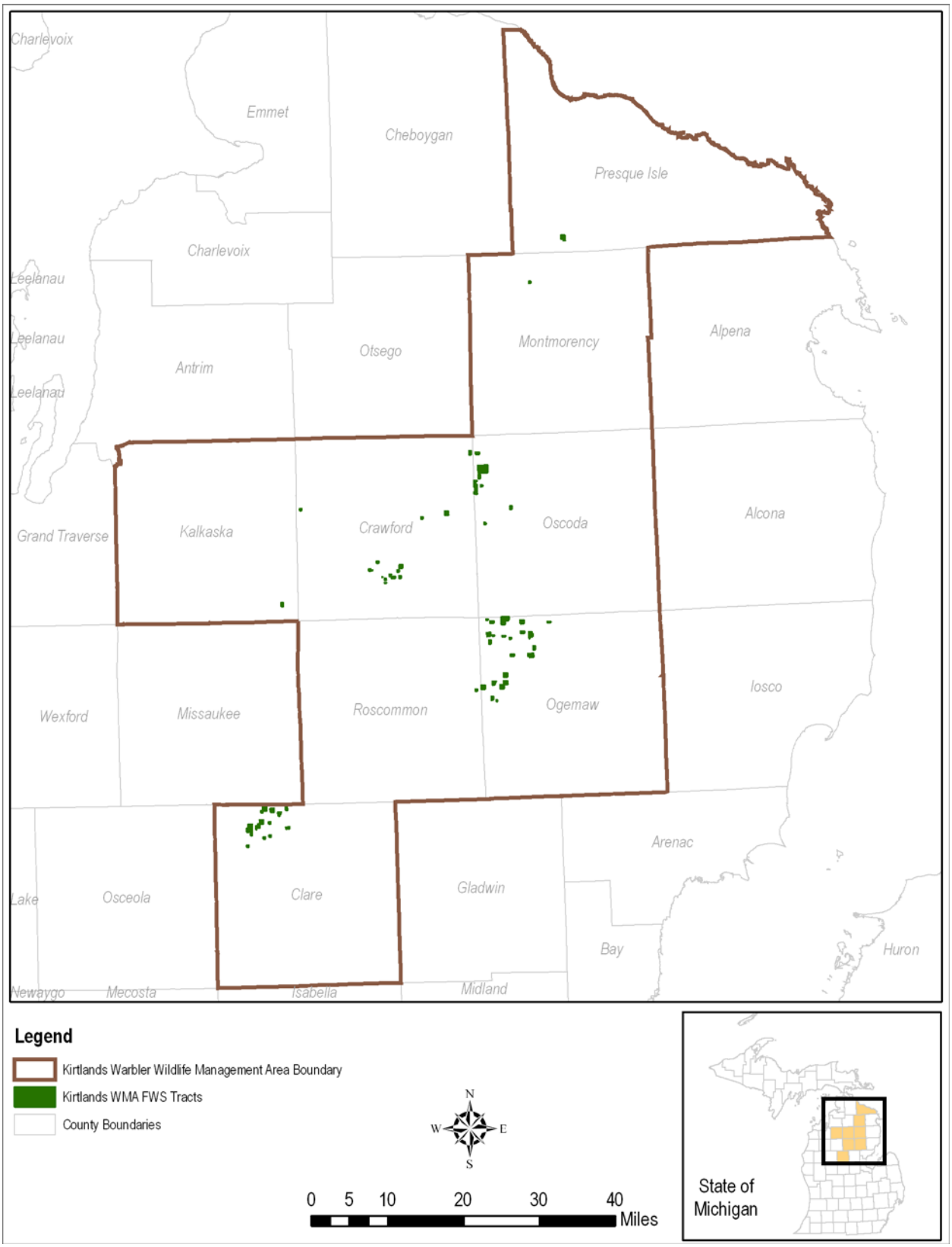
The National Wildlife Refuge System

The Kirtland's Warbler WMA is part of the National Wildlife Refuge System, which was founded in 1903 when President Theodore Roosevelt designated Pelican Island in Florida as a sanctuary for Brown Pelicans. Today, the Refuge System is a network of 550 refuges and wetland management districts covering more than 96 million acres of public lands and waters.

The National Wildlife Refuge System is the world's largest collection of lands specifically managed for fish and wildlife. Overall, it provides habitat for more than 5,000 species of birds, mammals, fish, amphibians, reptiles, and insects. As a result of international treaties for migratory bird conservation and other legislation, such as the Migratory Bird Conservation Act of 1929, many refuges have been established to protect migratory waterfowl and their migratory flyways.

Refuges also play a crucial role in preserving endangered and threatened species. Among the most notable is Aransas NWR in Texas, which provides winter habitat for the highly endangered Whooping Crane. Likewise, the Florida Panther Refuge protects one of the nation's most endangered predators. Refuges also provide unique recreational and educational opportunities for people. When human activities are compatible with wildlife and habitat conservation, they are places where people can enjoy wildlife-dependent recreation such as hunting, fishing, wildlife observation, photography, environmental education, and environmental interpretation. Many refuges have visitor centers, wildlife trails, automobile tours, and environmental education programs. Nationwide, approximately 30 million people visited national wildlife refuges in 2004.

Figure 1: Location of Kirtland's Warbler Wildlife Management Area, Michigan



The National Wildlife Refuge System Improvement Act of 1997 established several important mandates aimed at making the management of national wildlife refuges more cohesive. The preparation of Comprehensive Conservation Plans (CCPs) is one of those mandates. The legislation directs the Secretary of the Interior to ensure that the mission of the National Wildlife Refuge System and purposes of the individual refuges are carried out. It also requires the Secretary to maintain the biological integrity, diversity, and environmental health of the National Wildlife Refuge System.

The goals of the National Wildlife Refuge System are to:

- 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.

Michigan's Northern Lower Peninsula Ecoregion

The Northern Lower Peninsula ecoregion encompasses 17,109 square miles and includes all or portions of 25 counties. Landcover in this ecoregion is primarily forest (67 percent) and wetlands (20 percent). Agricultural land use covers 4 percent and urbanization covers approximately 2 percent. The remainder of the landcover consists of open grasslands, sparsely vegetated areas, beaches and rock areas.

This region is characterized by diverse topography with extensive outwash plains and large moraines. The ecoregion remains predominantly forested with northern hardwoods, early successional aspen forest, pine systems, and lowland conifer. Most air masses cross the Great Lakes before entering this ecoregion. As a result, the ecoregion experiences a climate that differs from that of the surrounding continent. Lake-effect snow is common throughout portions of the ecoregion within 20-30 miles of the Great Lakes shoreline. The highest elevations in the Lower Peninsula occur in this ecoregion in the High Plains area. The High Plains, which is also the portion of the ecoregion most distant from the Great Lakes, experiences the most continental climatic conditions within the ecoregion: it has more summer precipitation, the greatest summer and winter temperature extremes, the shortest growing season, and the greatest risk of spring freeze (Denton 1985). The average length of the growing season for this ecoregion is 126 days (Albert 1995).

Retained forest structure in jack pine harvest for Kirtland's Warbler habitat management. U.S. Fish & Wildlife Service photo.

Extensive logging occurred in the latter half of the 19th century, causing major changes in forest composition. Early successional forest types (aspen/birch forest) are more prevalent today because of past and current management. Fire suppression has resulted in the conversion of many of the barrens systems to closed-canopy forest. Following logging, farming was attempted on a broad range of soil types within the ecoregion. Farming was unsuccessful on most of the sandy soils of the ecoregion, but row crops are grown locally on some of the loamy soils. Some pasturing is also done, especially on the loamy moraines. Orchards and vineyards are numerous along the Lake Michigan shoreline, where microclimatic conditions extend the growing season and reduce frost damage to fruit crops.

Threats to biodiversity in this ecoregion are industrial, residential and recreational development and invasive species, including the spread of established species and the introduction of new species not yet found in the region. Fragmentation, an altered fire regime, non-consumptive recreation, disease, pathogens, parasites, social attitudes and lack of scientific knowledge are additional threats to this ecosystem.

Refuge Purpose

Kirtland's Warbler Wildlife Management Area was established in 1980:

> ... to conserve (A) fish or wildlife which are listed as endangered species or threatened species .... or (B) plants ...16 U.S.C.1534 (Endangered Species Act of 1973)

Refuge Vision

The planning team considered the past vision statements and emerging issues and drafted the following vision statement as the desired future state for the Kirtland's Warbler WMA:

> "The Kirtland's Warbler Wildlife Management Area will be managed to promote jack pine ecosystems that contribute to a sustainable population of Kirtland's Warblers and associated wildlife species. Lands will be actively managed to mimic historic disturbance regimes and resulting structural and compositional attributes, such as dense stands of jack pine with barren-like openings, snags and coarse woody debris. Research will be encouraged and the public will be invited to learn about the jack pine ecosystem and the wildlife it supports."

Purpose and Need for Plan

This CCP articulates the management direction for Kirtland's Warbler WMA for the next 15 years. Through the development of goals, objectives, and strategies, this CCP describes how the WMA also contributes to the overall mission of the National Wildlife Refuge System. Several legislative mandates within the National Wildlife Refuge System Improvement Act of 1997 have guided the development of this plan. These mandates include:

- Wildlife has first priority in the management of refuges.
- Wildlife-dependent recreation activities, namely hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation are priority public uses of refuges. We will facilitate these activities when they do not interfere with our ability to fulfill the refuge's purpose or the mission of the Refuge System.
- Other uses of the refuge will only be allowed when determined appropriate and compatible with refuge purposes and mission of the Refuge System.

The plan will guide the management of Kirtland's Warbler WMA by:

- Providing a clear statement of direction for the future management of the WMA.
- Making a strong connection between WMA activities and conservation activities that occur in the surrounding area.
- Providing WMA neighbors, users, and the general public with an understanding of the Service's land acquisition and management actions on and around the WMA.
- Ensuring that WMA actions and programs are consistent with the mandates of the National Wildlife Refuge System.
- Ensuring that WMA management considers federal, state, and county plans.

- Establishing long-term continuity in WMA management.
- Providing a basis for the development of budget requests on the WMA's operational, maintenance, and capital improvement needs.

Scope of the Plan

The goals, objectives and strategies presented in this CCP apply only to the scattered, generally small parcels managed by the Service as the Kirtland's Warbler WMA. However, the Service works closely with the Michigan DNR, the U.S. Forest Service, and other neighboring landowners to ensure appropriate habitat management of larger habitat blocks.

The Kirtland's Warbler WMA was established for the nesting habitat requirements of the endangered Kirtland's Warbler. The habitat needs, protection, and monitoring of the Kirtland's Warbler during wintering and migration are also vital to the survival of the species. Strategies for management of the species outside of the Kirtland's Warbler WMA are beyond the scope of this plan. However, the Kirtland's Warbler Recovery Plan (1985) addresses the needs of the warbler throughout its life cycle.

History of Kirtland's Warbler WMA Establishment and Management

A survey of Kirtland's Warbler in Michigan in 1951 found 432 singing male birds. By the 1970s, fewer than 200 singing males were being surveyed on a yearly basis. Beginning in the 1990s, the population began to increase in response to management that occurred in the 1970s and 1980s through a multi-agency effort. By 2008, the total number of counted singing male Kirtland's Warblers in Michigan was 1,791.

In response to the need for more land dedicated to the recovery of this species, the Service established the Kirtland's Warbler WMA in 1980 due, in part, to the recommendations of the Kirtland's Warbler Recovery Team. The original goal was to acquire 7,500 acres of land on which habitat would be managed for the benefit of Kirtland's Warbler. At present, the area contains 125 separate tracts totaling 6,684 acres.

Legal Context

In addition to the authorizing legislation for establishing the WMA, and the National Wildlife Refuge System Improvement Act of 1997, several federal laws, executive orders, and regulations govern administration of Kirtland's Warbler WMA. Appendix F contains a partial list of the legal mandates that guided the preparation of this plan and those that pertain to WMA management.