

# **Appendix A: Environmental Assessment**



# Kirtland's Warbler

## *Wildlife Management Area*

### Environmental Assessment

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## Finding of No Significant Impact

### Environmental Assessment and Comprehensive Conservation Plan for the Kirtland's Warbler Wildlife Management Area, Michigan

An Environmental Assessment (EA) has been prepared to identify management strategies to meet the conservation goals of the Kirtland's Warbler Wildlife Management Area. The EA examined the environmental consequences that each management alternative could have on the quality of the physical, biological, and human environment, as required by the National Environmental Policy Act of 1969 (NEPA). The EA evaluated three alternatives for the future management of Kirtland's Warbler WMA.

The alternative selected for implementation on the refuge is *Alternative 3*. The preferred alternative for Kirtland's Warbler WMA over the next 15 years directs management towards a more ecologically broad and holistic jack pine ecosystem management standpoint based on benchmark conditions derived from jack pine stands regenerated by wildfire. This alternative would include management practices that place a greater emphasis on ecological integrity and better emulating wildfire-produced jack pine stand composition and structural patterns and resulting biodiversity. An increased emphasis would also occur within law enforcement and visitor use. Land exchanges with the State, and possibly the U.S. Forest Service, to consolidate State and WMA parcels would be explored. Proposed land exchanges would likely increase the total area of land managed for Kirtland's Warbler, as well as increase management efficiency by both Federal and State agencies.

For reasons presented above and below, and based on an evaluation of the information contained in the Environmental Assessment, we have determined that the action of adopting Alternative 3 as the management alternative for Kirtland's Warbler WMA is not a major federal action which would significantly affect the quality of the human environment, within the meaning of Section 102 (2)(c) of the National Environmental Policy Act of 1969.

#### Additional Reasons:

1. Future management actions will have a neutral or positive impact on the local economy.
2. This action will not have an adverse impact on threatened or endangered species.

#### Supporting References:

Environmental Assessment  
Comprehensive Conservation Plan

ACTING

  
Regional Director

  
Date



## ENVIRONMENTAL ASSESSMENT FOR IMPLEMENTATION OF COMPREHENSIVE CONSERVATION PLAN FOR KIRTLAND'S WARBLER WILDLIFE MANAGEMENT AREA

*Abstract:* The U.S. Fish and Wildlife Service is proposing to implement a Comprehensive Conservation Plan (CCP) for Kirtland's Warbler Wildlife Management Area (WMA) located in the northern Lower Peninsula of Michigan. This Environmental Assessment considers the biological, environmental and socioeconomic effects that implementing the CCP (which is the preferred alternative in this assessment), or an alternative, would have on the issues and concerns identified during the planning process. The purpose of the proposed action is to establish the management direction for the WMA for the next 15 years. The management action will be achieved by implementing a detailed set of goals, objectives, and strategies described in the CCP.

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# Chapter 1: Purpose and Need

## 1.1. Background

The purpose of the proposed action is to specify a management direction for the Kirtland's Warbler Wildlife Management Area (WMA) for the next 15 years. This management direction will be described in detail through a set of goals, objectives, and strategies in a Comprehensive Conservation Plan (CCP).

Kirtland's Warbler WMA 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 established Kirtland's Warbler WMA, in part, based upon 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. While management for Kirtland's Warbler is paramount, the WMA provides habitat for a diversity of wildlife species (including a number of Regional Priority Species), both migratory and non-migratory.

We prepared this Environmental Assessment (EA) using guidelines established under the National Environmental Policy Act (NEPA) of 1969. NEPA requires us to examine the effects of proposed actions on the natural and human environment. In the following sections we describe three alternatives for future management of WMA lands, the environmental consequences of each alternative, and our preferred management direction. We have selected our preferred alternative based on environmental consequences and the ability to achieve the WMA's purpose.

## 1.2. Purpose

The purpose of the proposed action is to specify management directions for Kirtland's Warbler WMA over the coming 15 years. These management directions will be described in detail through a distinct set of goals, objectives, and strategies in a CCP.

The action is needed because adequate, long-term management direction does not currently exist for the Kirtland's Warbler WMA. Management is now guided by various general policies and short-term plans. The action is also needed to address current management issues and to satisfy the legislative mandates of the National Wildlife Refuge System Improvement Act of 1997, which requires the preparation of a CCP for all national wildlife refuge system lands in the United States.

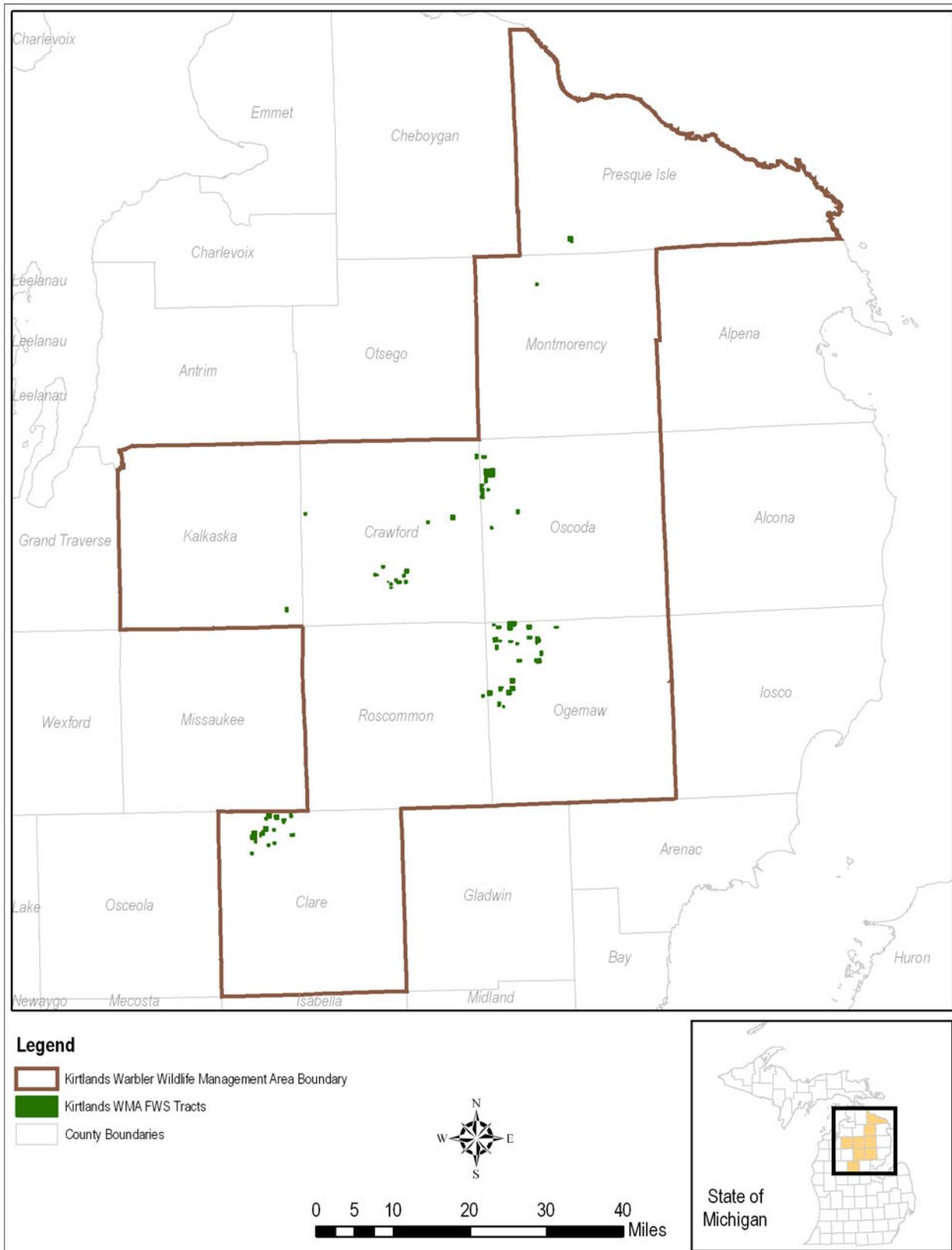
## 1.3. Need for Action

The CCP ultimately derived from this EA will establish the overall management direction for the Kirtland's Warbler WMA over the next 15 years. The WMA currently lacks a long-term management plan. Instead, management is broadly guided at present by general Service policies, by interpreting the official purposes for which the Kirtland's Warbler WMA was created, and by short-term, step-down management plans.

The action is needed to address current management issues and to satisfy the legislative mandates of the National Wildlife Refuge System Improvement Act of 1997, which requires the preparation of a CCP for all national wildlife refuge lands in the United States.

This EA will present three management alternatives for the future of Kirtland's Warbler WMA. The preferred alternative will be selected based on its ability to meet identified goals. These goals may also be considered as the primary need for action. Goals for the WMA were developed by the planning team and encompass all aspects of management, including wildlife management, habitat management, and public use. Each of the management alternatives described in this EA will be able to at least minimally achieve these goals.

**Figure 1: Kirtland's Warbler WMA Location**



## 1.4. Kirtland's Warbler WMA Goals

- Goal 1: Wildlife – Management will play an integral role in the recovery of the Kirtland's Warbler. Kirtland's Warbler WMA lands will support the broad array of wildlife species that are dependent on each seral stage of the jack pine ecosystems (from barrens to mature jack pine).
- Goal 2: Habitat – Manage habitat to support Kirtland's Warblers and associated wildlife species by providing near benchmark conditions across all seral stages of the jack pine ecosystem. Employ sound management practices that emulate patterns of structure and composition resulting from wildfire and other natural disturbances.
- Goal 3: People – Encourage the public to explore jack pine ecosystems and learn about its associated wildlife.

## 1.5. Vision Statement

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 historical 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 jack pine ecosystems and the wildlife they support.

## 1.6. Decision Framework

The Regional Director for the Midwest Region (Region 3 of the U.S. Fish and Wildlife Service) will need to make two decisions based on this EA: (1) select an alternative future management, and (2) determine if the selected alternative is a major federal action significantly affecting the quality of the human environment, thus requiring preparation of an Environmental Impact Statement (EIS). The planning team has recommended Alternative 3 (Ecological Management and Land Ownership Con-

solidation) to the Regional Director. The Draft CCP was developed for implementation based on this recommendation.

## 1.7. Authority, Legal Compliance, and Compatibility

The National Wildlife Refuge System includes federal lands managed primarily to provide habitat for a diversity of fish, wildlife and plant species. National wildlife refuges, and a few wildlife management areas such as Kirtland's Warbler WMA, are established under many different authorities and funding sources for a variety of purposes. The purposes for Kirtland's Warbler WMA were derived from the Endangered Species Act of 1973. Appendix D of the CCP contains a list of the key laws, orders and regulations that provide a framework for the proposed action.

## 1.8. Scoping of the Issues

The CCP planning process began in March 2006 and included internal discussions, a meeting with the Kirtland's Warbler Recovery Team, and a public open house. Please see Chapter 2 in the CCP for details of the issue scoping process.

### 1.8.1. Kirtland's Warbler WMA Issues, Concerns and Opportunities

The following list of issue topics was generated by internal scoping, the public open house sessions and program reviews.

#### 1.8.1.1. Habitat Management

- *Forest Management:* How can we change current silvicultural practices to better emulate historic conditions?
- *Fire Management:* How can we restore prescribed fire to Kirtland's Warbler WMA lands?
- *Land Consolidation:* Kirtland's Warbler WMA parcels are inholdings within larger Michigan DNR parcels. Administration and habitat management would be more efficient if WMA parcels were consolidated into larger blocks by exchanging for other DNR or U.S. Forest Service lands.

### 1.8.1.2. Wildlife Management

- *Brown-headed Cowbird Management:* Are there ways other than trapping to deal with Brown-headed Cowbirds?
- *Kirtland's Warbler Census:* Will we be able to census birds each year?
- *Delisting:* What can we do from a land management standpoint to facilitate delisting of the species?
- *Biodiversity:* What can be done to improve habitat for native species other than the Kirtland's Warbler?

### 1.8.1.3. Public Use

- *Hunting:* Kirtland's Warbler WMA units are open to hunting per state regulations. Some hunting practices are generally not allowed on Refuge System lands such as baiting, construction of blinds, all-terrain vehicle (ATV) use, and using dogs to hunt bears.
- *Environmental Education:* If land exchange/consolidation occurs it would change outreach, interpretation, environmental education, staffing needs and opportunities.
- *Residential Development:* Rural housing construction causes direct habitat loss and complicates prescribed burning.

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# Chapter 2: Description of the Alternatives

## 2.1. Formulation of Alternatives

Based on the issues, concerns and opportunities we heard during the scoping process, the Planning Team developed three alternative management scenarios that could be used at Kirtland's Warbler WMA. These alternatives and the consequences of adopting each are presented in this Environmental Assessment. The alternatives were formulated under the assumption that staffing and budgets would remain constant or grow slowly throughout the life of the Plan.

The three management alternatives were developed to address most of the issues, concerns, and opportunities identified during the CCP planning process.

## 2.2. Management Alternatives

### 2.2.1. Alternative 1: Current Direction of Habitat Management (No Action)

The current management direction of Kirtland's Warbler WMA would be maintained under this alternative. For NEPA purposes, this is referred to as the "No Action" alternative, a misnomer as some changes will occur over the next 15 years. Nonetheless, in Alternative 1, intensive management of existing jack pine stands would continue to occur in close cooperation with the Michigan DNR, with the primary objective to produce dense jack pine plantations for Kirtland's Warbler breeding habitat. The WMA staff and Michigan DNR land managers would continue to monitor habitat prescription effects and make improvements in jack pine habitat management as it pertains primarily to Kirtland's Warbler. Public use would follow the current direction and be linked to uses of the surrounding state lands. Environmental education and outreach would be conducted primarily by other agencies and non-government organizations.

### 2.2.2. Alternative 2: Management from an Ecological Perspective

Alternative 2 would seek to make changes from the current high intensity habitat management that produces jack pine plantations for Kirtland's Warbler by trenching and planting. Future management would continue to involve the Michigan DNR, but would use a more ecologically broad and holistic jack pine ecosystem management approach based on benchmark conditions derived from jack pine stands regenerated by wildfire. This alternative would include management practices that place a greater emphasis on ecological integrity. Management would include emulating wildfire-produced jack pine stand composition and structural patterns that result in greater biodiversity. Timber harvests would try to better emulate wildfire-produced stand conditions and a range of regeneration options would be used, including prescribed fire when and where possible. An increased emphasis would also occur within law enforcement and visitor use. Enforcement of hunting regulations, trespass, and other violations would likely require more staff time and year-round presence. Visitor use would be facilitated by delineating the boundaries of some properties, developing interpretive signs and conducting outreach to surrounding communities.

### 2.2.3. Alternative 3: Ecological Management and Land Ownership Consolidation (Preferred Alternative)

Alternative 3 would seek to manage existing lands as suggested in Alternative 2, but would also explore land exchanges with the state (and possibly U.S. Forest Service) to consolidate DNR and WMA parcels. Proposed land exchanges would likely increase the total area of land managed for Kirtland's Warbler, as well as increase management efficiency by both federal and state agencies. Existing lands and any new lands acquired through exchange would be managed to benefit the Kirtland's Warbler and other native flora and fauna of jack pine ecosystems. However, the management of jack pine stands

would shift away from plantations toward a more ecologically-based approach. As an example, if consolidation were to occur, and the Service obtained upland jack pine stands in the eastern Upper Peninsula, prescribed fire would be a more likely management tool. Guidelines for selection of lands for consolidation are found in Chapter 4 of the CCP.

#### **2.2.4. Comparison of No Action and Preferred Alternatives**

Under Alternative 1, the Current Direction or No Action Alternative, little change will occur overall in how Kirtland's Warbler WMA is managed and what wildlife species benefit from this management. The general management scheme will include clearcuts in jack pine-dominated stands, with follow-up treatment consisting of Michigan DNR trenching and hand-planting of jack pine seedlings. No land consolidation is proposed and Kirtland's Warbler WMA will continue to exist in a landscape of multiple ownerships. Those species for which habitats are being provided will continue to have their needs met by management actions. However, the small size of WMA tracts will preclude management actions that directly benefit many Regional Conservation Priority Species, especially those that inhabit only the largest patches of a habitat such as Upland Sandpiper and Northern Harrier.

Alternative 3, the Preferred Alternative, will result in substantially more change in how Kirtland's Warbler WMA is managed and what wildlife species benefit from these actions. These changes will likely result due to an increased focus on enhancing residual stand structure after trees are harvested (i.e., increasing the number of snags retained) and because land consolidation will allow the possible incorporation of prescribed fire into management of larger patches of jack pine. This is especially true if consolidation occurs within regional landscape with more public lands (e.g., the Upper Peninsula).

The management actions described in Alternative 3 would likely benefit more area-sensitive Regional Conservation Priority species and better emulate the natural biodiversity of jack pine ecosystems. However, relatively little shift in wildlife species composition would occur. Species shifts would occur if future land consolidation includes obtaining larger patches of xeric, jack pine-appropriate lands in the Upper Peninsula (Probst et al. 2003). Prescribed fire as a management tool would likely

increase and this would allow for more heterogeneity in terms of resulting jack pine stand structure. Range-restricted wildlife species that would either be added to the species composition of Kirtland's Warbler WMA or increase in abundance include Sharp-tailed Grouse, Palm Warbler and Spruce Grouse. Species that would likely drop out include Prairie Warbler. Overall, a significant shift would occur if exchanges happen between existing land holdings in the northern Lower Peninsula and the eastern Upper Peninsula. Species to primarily benefit include those dependent on openland or grassland-shrubland-early successional forests.

**Table 1: Comparison of Objectives and Environmental Consequences by Management Alternatives**

<b>Alternative 1: Current Direction of Habitat Management (No Action)</b>	<b>Alternative 2: Management from an Ecological Perspective</b>	<b>Alternative 3: Ecological Management and Land Ownership Consolidation (Preferred Alternative)</b>
<p>Goal 1: Wildlife – Management will play an integral role in the recovery of the Kirtland’s Warbler. Kirtland’s Warbler WMA lands will support the broad array of wildlife species that are dependent on each seral stage of the jack pine ecosystems (from barrens to mature jack pine).</p>		
<p><b>Objective 1.1:</b> Continue to be an active partner in the Kirtland’s Warbler recovery effort.</p>	<p><b>Objective 1.1:</b> Same as Alternative 1</p>	<p><b>Objective 1.1:</b> Same as Alternative 1.</p>
<p><i>Strategies:</i></p> <ul style="list-style-type: none"> <li>■ Participate in the annual Kirtland’s Warbler Census to aid in monitoring the population trends.</li> <li>■ Work with Ecological Services to continue annual trapping efforts to remove Brown-headed Cowbirds from nesting areas and explore new ways to eliminate cowbirds parasitism of Kirtland’s Warbler nests.</li> <li>■ Coordinate harvest and regeneration of jack pine, on Kirtland’s Warbler WMA lands with the, Michigan DNR to insure that the Services lands are contributing to the Kirtland’s Warbler recovery effort.</li> <li>■ Conduct and participate in research to better understand the ecology and management of Kirtland’s Warbler populations.</li> </ul>	<p><i>Strategies:</i></p> <p>Same as Alternative 1</p>	<p><i>Strategies:</i></p> <p>Same as Alternative 1</p>

**Table 1: Comparison of Objectives and Environmental Consequences by Management Alternatives**

<b>Alternative 1: Current Direction of Habitat Management (No Action)</b>	<b>Alternative 2: Management from an Ecological Perspective</b>	<b>Alternative 3: Ecological Management and Land Ownership Consolidation (Preferred Alternative)</b>
Objective 1.2: By 2016, implement a monitoring program to track the presence, abundance, population trends, and/or habitat associations of Trust Resources and determine ways to emulate natural species diversity.	<b>Objective 1.2:</b> Same as Alternative 1.	Objective 1.2: Same as Alternative 1.
<p><i>Strategies:</i></p> <ul style="list-style-type: none"> <li>■ Determine the presence, abundance and habitat associations of Trust Resources currently using Kirtland’s Warbler WMA lands.</li> <li>■ Develop and implement a monitoring program to track population trends, and/or habitat associations of Trust Resources.</li> <li>■ Conduct annual reviews of trends to determine if there are priorities for research or management.</li> <li>■ If a Trust Resource research or management issue is identified, initiate action at the local level. If the issue goes beyond the boundary of the Kirtland’s Warbler WMA, take lead role in coordinating with federal, state, and NGO partners to develop broader scale projects to resolve issues.</li> </ul>	<p><i>Strategies:</i></p> <ul style="list-style-type: none"> <li>■ Same as Alternative 1 but including:</li> <li>■ Hire a Refuge Manager to be located in the WMA.</li> <li>■ Provide facilities for local staff including an office and storage areas.</li> </ul>	<p><i>Strategies:</i></p> <p>Same as Alternative 1</p>
<p>Goal 2: Habitat – Manage habitat to support Kirtland’s Warblers and associated wildlife species by providing near benchmark conditions across all seral stages of the jack pine ecosystem. Employ sound management practices that emulate patterns of structure and composition resulting from wildfire and other natural disturbances.</p>		
<p><b>Objective 2.1:</b> Continue to manage jack pine stands in conjunction with Michigan DNR, but place greater emphasis on promoting ecological integrity within managed stands.</p>	<p><b>Objective 2.1:</b> Continue to manage jack pine stands in conjunction with Michigan DNR, but place greater emphasis on promoting ecological integrity within managed stands. Emulate natural structural and compositional patterns of jack pine forests produced through wildfire.</p>	<p><b>Objective 2.1:</b> Continue to manage jack pine stands in conjunction with Michigan DNR, but place greater emphasis on promoting ecological integrity within managed stands.</p>

**Table 1: Comparison of Objectives and Environmental Consequences by Management Alternatives**

<b>Alternative 1: Current Direction of Habitat Management (No Action)</b>	<b>Alternative 2: Management from an Ecological Perspective</b>	<b>Alternative 3: Ecological Management and Land Ownership Consolidation (Preferred Alternative)</b>
<p><i>Strategies:</i></p> <ul style="list-style-type: none"> <li>■ Work with federal, state and local officials to garner support for the use of prescribed fire in the management of jack pine to create Kirtland’s Warbler nesting habitat.</li> <li>■ Work with federal, state and local fire officials to employ prescribed fire as a management tool where it can be applied safely without risk to life and property.</li> <li>■ Elsewhere, attempt to emulate the compositional and structural patterns of jack pine stands resulting from wildfire through mechanical treatments (i.e. timber sales). Place increased emphasis on maintaining “legacy” trees (e.g., large red and white pine, red and white oak, etc.) and providing more (and larger) standing snags and coarse woody debris.</li> <li>■ Parcels that contain habitats other than jack pine will be managed to emulate patterns resulting from natural disturbances.</li> <li>■ Develop research demonstration sites that exemplify ecologically-based jack pine management and illustrate how emulating natural conditions can provide multiple species benefits.</li> <li>■ Develop a map and monitor spotted knapweed distribution within and near Kirtland’s Warbler WMA parcels. Initiate removal if the species spreads into nesting areas.</li> </ul>	<p><i>Strategies:</i></p> <p>Same as Alternative 1</p>	<p><i>Strategies:</i></p> <p>Same as Alternative 1.</p>
<p>Not Applicable</p>	<p>Not Applicable</p>	<p><b>Objective 2.2: Land Consolidation –</b>                      Within 5 years of completion of this CCP, develop a land consolidation plan for the Kirtland’s Warbler WMA that maintains or increase habitat for the warbler and increase management efficiency for all agencies involved.</p>

**Table 1: Comparison of Objectives and Environmental Consequences by Management Alternatives**

<b>Alternative 1: Current Direction of Habitat Management (No Action)</b>	<b>Alternative 2: Management from an Ecological Perspective</b>	<b>Alternative 3: Ecological Management and Land Ownership Consolidation (Preferred Alternative)</b>
		<p><i>Strategies:</i></p> <ul style="list-style-type: none"> <li>■ Interagency team will follow land consolidation guidelines to establish priority exchange scenarios</li> <li>■ Land appraisals, following federal and state guidelines, will be conducted on all lands identified for exchange.</li> </ul>
<p>Goal 3: People – Encourage the public to explore jack pine ecosystems and learn about its associated wildlife.</p>		
<p><b>Objective 3.1 – Hunting:</b> Provide the public with opportunities to hunt on Kirtland’s Warbler WMA lands in accordance with state and federal regulations.</p>	<p><b>Objective 3.1 – Hunting:</b> Same as Alternative 1.</p>	<p><b>Objective 3.1 – Hunting:</b> Same as Alternative 1.</p>
<p><i>Strategies:</i></p> <ul style="list-style-type: none"> <li>■ Increase law enforcement on Service properties to ensure consistency with federal hunting regulations (e.g. no deer baiting, permanent blinds, bear hunting with dogs, and off-road vehicle use).</li> <li>■ In cooperation with the Michigan DNR, produce maps to show the hunting public areas subject to federal regulations.</li> </ul>	<p><i>Strategies:</i></p> <p>Same as Alternative 1 but including:</p> <ul style="list-style-type: none"> <li>■ Hire a Refuge Operations Specialist with law enforcement credentials.</li> <li>■ Post the boundaries of WMA parcels with appropriate refuge signs.</li> <li>■ Develop interpretive signs and place them at key locations.</li> </ul>	<p><i>Strategies:</i></p> <p>Same as Alternative 1.</p>
<p><b>Objective 3.2 – Wildlife Observation, Wildlife Photography, Environmental Education and Environmental Interpretation:</b> Within 5 years of approval of the plan, increase opportunities for wildlife observation and photography, environmental education and interpretation to correspond with an increase (from 2008 level) in WMA visitation. The level of knowledge about, and the positive attitude toward, the WMA will increase among visitors throughout the next 15 years.</p>	<p><b>Objective 3.2 – Wildlife Observation, Wildlife Photography, Environmental Education and Environmental Interpretation:</b> Within 10 years of approval of the plan, increase opportunities for wildlife observation and photography, environmental education and interpretation to correspond with an increase (from 2008 level) in WMA visitation. The level of knowledge about, and the positive attitude toward, the WMA will increase among visitors throughout the next 15 years.</p>	<p><b>Objective 3.2 – Wildlife Observation, Wildlife Photography, Environmental Education and Environmental Interpretation:</b> Same as Alternative 1.</p>
<p><i>Strategies:</i></p> <ul style="list-style-type: none"> <li>■ Continue active support of the annual Kirtland’s Warbler Festival and Tours.</li> <li>■ Encourage wildlife-dependent activities on Kirtland’s Warbler WMA lands by providing outreach materials, such as brochures and displays, at local public events and in community facilities.</li> </ul>	<p><i>Strategies:</i></p> <p>Same as Alternative 1 but including:</p> <ul style="list-style-type: none"> <li>■ Hire a full-time Visitor Services specialist to increase community outreach and involvement.</li> </ul>	<p><i>Strategies:</i></p> <p>Same as Alternative 1.</p>

# Chapter 3: Affected Environment

This chapter includes a brief overview of the affected environments of Kirtland's Warbler Wildlife Management Area. More detail is contained in Chapter 3 of the CCP itself.

## 3.1. Introduction

Kirtland's Warbler WMA was established in 1980 in response to the need for more land dedicated to the restoration of this species. The U.S. Fish and Wildlife Service established the wildlife management area, in part, based on 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. While management for Kirtland's Warbler is paramount, the WMA provides habitat for a diversity of wildlife species, both migratory and non-migratory.

## 3.2. Archeological and Cultural Values

No prehistoric resources or historic resources eligible for the National Register of Historic Places have been found on Kirtland's Warbler WMA properties. Please refer to Chapter 3 of the CCP for more details.

## 3.3. Social and Economic Context

Please see Chapter 3 of the CCP for more details.

## 3.4. Natural Resources

### 3.4.1. Habitats

The physical characteristics of the Kirtland's Warbler WMA are consistent with most of the northern half of the Lower Peninsula of Michigan. Topographically, the land is flat to gently rolling. Landforms are glacially derived. In terms of physiography and land classification, the majority of the stands (94 percent) are in the Highplains Landtype Association with 6 percent in the Presque Isle Landtype Association. Three soil associations dominate the tracts namely Grayling – Graycalm - Au Gres (35 percent), Rubicon – Grayling - Croswell (34 percent), and Grayling – Rubicon - Au Gres (21 percent). Heavy sands are a major component in all three soil associations.

#### 3.4.1.1. Wetlands

Approximately 2 percent of the Kirtland's Warbler WMA or 137 ac is characterized by wetland ecosystems and 0.6 percent is classified as lakes. No detailed inventories or research have been conducted within these habitat types, however.

#### 3.4.1.2. Uplands

According to the contract work completed by Goebel et al. (2007), 41 percent of the stands (2,695 acres) are between 5-23 years old, while 14 percent (959 acres) are less than 5 years old and 45 percent (2,298 acres) are greater than 23 years old. It is important to note that many of the stands have multiple cohorts; to determine the age of each stand the most extensive cohort was considered indicative of the overall stand age.

Seventeen overstory (stems greater than 4 inches dbh) tree species have been found at Kirtland's Warbler WMA. Jack pine, red pine, scarlet oak, trembling aspen, black cherry, black oak, northern red oak, and bigtooth aspen are the most common over-

**Table 2: Bird Species Strongly Associated with Young (< 5 years old), KW (5-23 years old), and old (> 23 years old) Stands of the KWWMA**

Young (< 5 years old)	KW (5-23 years old)	Old (> 23 years old)
Indigo Bunting***	Kirtland's Warbler***	Eastern Wood-Pewee***
Eastern Bluebird***	Nashville Warbler***	Hermit Thrush***
Field Sparrow***	Eastern Towhee***	Ovenbird***
Lincoln's Sparrow***	Brown Thrasher**	Rose-breasted Grosbeak***
Black-billed Cuckoo*	Alder Flycatcher**	Red-breasted Nuthatch***
		Red-eyed Vireo***
		Black-capped Chickadee**
		Chipping Sparrow**
		Mourning Dove*

\*P < 0.05; \*\* P < 0.01; \*\*\* P < 0.001.  
 Table 2 provides the results of a statistical procedure that assigns species to each of the three stand ages based on frequency of encounters. It also only shows species whose P-value is <0.05. Some species are also highly associated with these stands, but at greater P-values.

story species. Less common species include eastern white pine, red maple, balsam fir, green ash, black ash, white spruce, northern pin oak and fire cherry.

### 3.4.2. Wildlife

#### 3.4.2.1. Birds

The loss of landscape structural diversity in jack pine ecosystems (from barrens to forests) can influence ecoregional populations of many bird species. Whereas jack pine plantations provide food and shelter for a certain suite of species, other jack pine ecosystems offer habitat for a different suite of birds, many of which are of conservation priority. Species that utilize mature jack stands include Black-backed Woodpecker, Spruce Grouse, and Olive-sided Flycatcher. In young jack pine stands and open areas of pine barrens, many openland (grassland and shrubland) birds of conservation concern breed. Species found in the early successional stages of jack pine ecosystems include (of course) Kirtland's Warbler, Palm Warbler, Black-billed Cuckoo, Brown Thrasher, Eastern Towhee, and Nashville Warbler. American Kestrel, Northern Harrier, Upland Sandpiper, and Clay-colored Sparrow can be found in the larger, more open areas.

#### 3.4.2.2. Mammals

Based on state-wide distribution patterns (Kurta 2001), there are approximately 52 extant mammal species possible within the Kirtland's Warbler WMA (Appendix C). However, range expansion of some

species is likely to occur soon. For instance, although not prevalent within the Lower Peninsula of Michigan now, the gray wolf is likely to become more common in the future. Species of high public interest include river otter, beaver, snowshoe hare, and white-tailed deer.

#### 3.4.2.3. Fish

No fish surveys have been conducted. Only a few small water bodies are found on WMA parcels.

#### 3.4.2.4. Reptiles and Amphibians

Based on state-wide distribution patterns (multiple authors), 36 species of herptofauna possibly exist within the Kirtland's Warbler WMA and many of these species are Conservation Priority Species (Appendix C). Much more inventory work is required at the Kirtland's Warbler WMA and much of this work should be done as part of applied research.

#### 3.4.2.5. Threatened and Endangered Species

Aside from Kirtland's Warbler, no other current federally-listed species is known to use the Kirtland's Warbler WMA tracts. The gray wolf, a federally listed endangered species, was delisted in 2007 but their status is subject to ongoing court actions. It is unlikely that the Kirtland's Warbler WMA tracts are used by wolves during any time of the year as this species is at best rare in the northern

Lower Peninsula. The Michigan DNR conducts aerial surveys for the wolves all year long and reports the information.

### **3.5. Visitor Services**

Although most statistics regarding the use of Kirtland's Warbler WMA for Visitor Services are lacking, the WMA provides opportunities for wildlife-dependent activities such as hunting, wildlife observation, wildlife photography, environmental education and environmental interpretation. Please see Chapter 3 of the CCP for more detail on visitor services at Kirtland's Warbler WMA.

## Chapter 4: Environmental Consequences

### 4.1. Effects Common to All Alternatives

Specific environmental and social impacts of implementing each alternative are compared in Table 1 within the broad categories of wildlife, habitat and people. However, several potential effects will be very similar under each alternative and are summarized below:

#### 4.1.1. Environmental Justice

Executive Order 12898 “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” was signed by President Clinton on February 11, 1994. Its purpose was to focus the attention of federal agencies on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Order directed federal agencies to develop environmental justice strategies to aid in identifying and addressing disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The Order is also intended to promote nondiscrimination in federal programs substantially affecting human health and the environment, and to provide minority and low-income communities access to public information and participation in matters relating to human health or the environment.

None of the management alternatives described in this EA would disproportionately place any adverse environmental, economic, social, or health impacts on minority and low-income populations. The percentage of minorities in the northern Lower Peninsula of Michigan is lower than in Michigan (and much lower than the United States) as a whole. Average incomes and poverty rates within the counties is comparable to other rural counties in the state. Public use activities that would be offered

under each of the alternatives would be available to any visitor regardless of race, ethnicity or income level.

#### 4.1.2. Climate Change Impacts

The U.S. Department of the Interior issued an order in January 2001 requiring federal agencies, under its direction, that have land management responsibilities to consider potential climate change impacts as part of long range planning endeavors. The increase of carbon dioxide (CO<sub>2</sub>) within the earth’s atmosphere has been linked to the gradual rise in surface temperature commonly referred to as global warming. In relation to comprehensive conservation planning for national wildlife refuges, carbon sequestration constitutes the primary climate-related impact to be considered in planning. The U.S. Department of Energy’s “Carbon Sequestration Research and Development” defines carbon sequestration as “...the capture and secure storage of carbon that would otherwise be emitted to or remain in the atmosphere.”

Please refer to Chapter 3 of the CCP for more detail on potential climate change impacts in Northern Michigan and the Great Lakes Region.

#### 4.1.3. Cultural Resources

The USFWS is responsible for managing archeological and historic sites found on national wildlife refuges. There are no identified cultural resources on Kirtland’s Warbler WMA. However, there may be cultural resources awaiting discovery. Under each alternative evaluated in this EA, WMA management would ensure compliance with relevant federal laws and regulations, particularly Section 106 of the National Historic Preservation Act. Prior to all habitat and facility projects, appropriate efforts will be made to identify cultural resources within the area of potential impact by contacting the Regional Historic Preservation Officer.

#### **4.1.4. Other Common Effects**

None of the alternatives would have more than negligible, or at most minor effects on soils, topography, noise levels, land use patterns, transportation and traffic, waste management, human health and safety, or visual resources.

## **4.2. Cumulative Impacts Analysis**

“Cumulative environmental impacts” refer to effects that result from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions, regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Land parcels under the jurisdiction of the Kirtland’s Warbler WMA are relatively small and scattered over eight counties. No cumulative impacts have been identified for actions suggested in this EA.

## **Chapter 5: List of Preparers**

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- Gabriel DeAlessio, Biologist-GIS, Region 3,  
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- John Dobrovolny, Regional Historian,  
Region 3, USFWS (retired)
- Jane Hodgins, Technical Writer/Editor,  
Region 3, USFWS

## **Chapter 6: Consultation and Coordination with Stakeholders**

The Refuge and Regional Planning staffs have conducted extensive consultation and coordination over two years with stakeholders in developing the CCP and EA for Kirtland's Warbler WMA. In the course of scoping and other meetings, the Service consulted with more than two dozen individuals representing Michigan DNR, conservation organizations, neighboring communities, and other stakeholders. See Chapter 2 of the CCP for a more detailed description of the process

