

AN ECONOMIC ANALYSIS OF THE JOINT U. S. FOREST SERVICE,  
MICHIGAN DEPARTMENT OF NATURAL RESOURCES  
MANAGEMENT PLAN FOR LANDS DESIGNATED AS  
KIRTLAND'S WARBLER CRITICAL HABITAT

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Jeffrey T. Olson  
Forest Economist  
Michigan Department of Natural Resources

## Introduction

The Kirtland's warbler is an endangered songbird that is known to nest only in Michigan's Lower Peninsula. The target of the management plan is to provide suitable nesting habitat for 1,000 mated pairs of warblers. Current census estimates place the population of warblers at 242 mated pairs (Ryel 1980). The management program began on state forest land in 1957 with the dedication of 7,680 acres to Kirtland's warbler management. In 1962, the Lower Michigan National Forest (now the Huron-Manistee) dedicated 4,010 acres to Kirtland's warbler management. Both agencies established these areas not as preserves, but as management units in which multiple use concepts could be applied. This has been a major feature of the warbler management effort.

A significant decline in population of the warbler was observed in 1971 when the third ten-year census was conducted. At that time, 201 singing males were counted, down from 502 in 1961 and 432 in 1951. The most important factor in this decline was thought to be a decline in suitable nesting habitat from 10,000 to 15,000 acres in the 50's and 60's to 5,000 acres in 1976. A second limiting factor in the bird's survival, cowbird parasitism was also cited as a casual factor in the declining population of the warbler. As a result of the serious decline in warbler population observed in 1971, a meeting was held to consider emergency measures to reverse the dwindling population. The U. S. Fish and Wildlife Service agreed to begin trapping cowbirds in the spring of 1972, a program which has continued through the spring of 1980. Annual population census counts were also begun in the spring of 1972. By 1975 it was clear that the cowbird trapping program had succeeded

in its goal to reverse the decline in numbers of warblers, but no real increase in their population had been observed.

A recovery plan was begun in 1975 and published in 1976 by the Kirtland's Warbler Recovery Team, a group of concerned individuals and agencies. The primary objective of the plan was to stabilize the warbler population. The ultimate goal stated by the Team was to increase the population to 1,000 actively nesting pairs, which continues to be the target of the warbler management efforts in Michigan. Jack pine type suitable for nesting habitat, or that is capable of producing suitable nesting habitat in the future, was recommended for inclusion in the Warbler Management Areas on state forest and Forest Service land. A total of 135,000 acres was recommended for inclusion. Management was designed to maintain and develop 36,000 to 40,000 acres of suitable nesting habitat available in any given year. A habitat management plan that would coordinate timber and wildlife treatments within the habitat was called for to achieve the desired nesting habitat objectives stated in the Recovery Plan. This resulted in the Kirtland's Warbler Habitat Management Plan, released jointly by the U. S. Forest Service and the Michigan Department of Natural Resources in 1980. This plan details location and management actions to be taken by the two agencies in order to meet the objective of habitat maintenance and development.

The analysis that follows is intended to provide a measure of the economic impact of the management program put forth. It is assumed at the outset that this impact will be primarily attributable to management actions that are required to implement the warbler program and are different from the program of land management that would be employed if the Kirtland's warbler were not a major management goal. This analysis is not intended to establish a social

value for the Kirtland's warbler. The designation of the warbler as an endangered species under the provisions of the Endangered Species Act establishes the importance of the warbler.

#### Location and Description of Critical Habitat

Specific criteria used in designating critical habitat are as follows:

1. Soil type - Grayling sand.
2. Forest cover type currently jack pine and where management for jack pine is feasible. May contain a limited hardwood (oak) component.
3. Areas currently occupied or previously occupied by the species.
4. Tracts of 320 acres and larger, preferably where five or more of them lie within two miles of each other. Tracts of less than 320 acres and larger than 80 acres, where they occur in close proximity to the larger tracts.
5. Lands preferably in public ownership (state or national forest).
6. Limited development potential, or where development could be controlled.
7. Relatively level topography.

The map on the following page shows the general location of designated critical habitat. The U. S. Forest Service administers 53,537 acres. State forest land comprises 72,536 for total dedicated habitat in public ownership of 126,073 acres. In addition, approximately 7,500 acres of nesting habitat are found on lands owned by the Michigan National Guard, who are cooperating in the management program. The total, 133,578 acres, represents 15 percent of the jack pine cover type in Michigan and approximately 19 percent of the jack pine type that is publicly owned. Most of this is

