



Kirtland's Warbler

Dendroica kirtlandii

The first Kirtland's warbler in North America was identified in 1851 from a specimen collected on Dr. Jared Kirtland's farm near Cleveland, Ohio. Biologists did not learn where it nested until 1903 when they found a warbler nest in northern lower Michigan. Today, Kirtland's warblers face two significant threats: lack of crucial young jack pine (*Pinus banksiana*) forest habitat and the parasitic brown-headed cowbird (*Molothrus ater*).

A pair of Kirtland's warblers requires at least eight acres of dense young jack pine forest to nest, but often 30 to 40 acres is needed to raise their young. Their exacting requirements for nesting, as well as cowbird parasitism, caused a drastic decline in numbers and led the U.S. Fish and Wildlife Service to list the Kirtland's warbler as an endangered species in 1967.

Endangered means a species is in danger of extinction throughout all or a portion of its range, while the less dire *threatened* designation means a species is likely to become endangered within the foreseeable future.

Until 1995 Kirtland's warblers had only been known to nest in the northern part of Michigan's Lower Peninsula. Today, they also nest in the Upper Peninsula, and since 2007, have nested in Wisconsin and Canada. They migrate from their nesting grounds to the southeastern coast of the United States on their way to wintering grounds in the Bahamas.

Kirtland's warblers have bluish-gray backs with black streaks, yellow breasts, black side streaks and split white eye rings. They measure about six inches in length. Females are not as brightly colored as males.

Primarily insect eaters, Kirtland's warblers forage for insects and larvae near the ground and in lower parts of pines and oaks. They also eat blueberries.



Photo by USFWS; Joel Trick

Forest fires, once thought to harm the environment, are crucial to the survival of the Kirtland's warbler. Without fire, jack pine cones do not completely release their seeds and the natural establishment of new jack pine stands is prevented.

Kirtland's warblers nest only on the ground near the lower branches and in large stands of young jack pines that are 5 to 20 feet tall and 6 to 22 years old. The tree's age is crucial, although biologists are not sure why. It is possible that the birds need low branches near the ground to help conceal their nests. Before the trees are six years old, the lower branches are not large enough to hide the nest. After 15 years, these lower branches begin to die.

Concealed by branches, overhanging grass and low shrubs, the warbler's cup-shaped nest is made of grasses. While being fed by their mates, females incubate four to five eggs for about 14 days. After hatching, the chicks remain in the nest for another nine or ten days before *fledging*, or leaving the nest.

Once it was believed that forest fires harmed the environment. However, we now

know that fires play an important role in forest ecosystems. For example, without fire, jack pine cones do not completely release their seeds. Suppressing forest fires prevented the natural establishment of new jack pine stands. Since Kirtland's warblers will only nest in stands of young jack pines, the population dwindled dramatically before scientists realized that there is a role for fire in forest ecology — and in the Kirtland's warbler life history.

The second greatest threat to Kirtland's warbler survival is the brown-headed cowbird. Cowbirds lay eggs in other bird's nests, leaving the unsuspecting *hosts* to incubate and care for the young cowbirds. This is called nest parasitism. When a female cowbird lays its egg in a nest, it often removes one of the host's eggs. The cowbird egg hatches a day before the others, getting a head start on growth. The young cowbird is bigger and



Photo by Ron Austing

Kirtland's warbler populations have rebounded thanks to protection under the Endangered Species Act and conservation measures by the U.S. Fish and Wildlife Service, U.S. Forest Service and the Michigan Department of Natural Resources and Environment. Biologists counted 1,773 singing male Kirtland's warblers in 2010.

able to claim more food than other nestlings, and may crowd or push the other baby birds out of the nest.

Some species have developed ways to combat cowbird nest parasitism. They may abandon their nest and lay eggs elsewhere or build another nest on top of the cowbird egg. However, Kirtland's warblers have not developed such defenses. Because of cowbird nest parasitism and Kirtland's warblers' inability to protect their nest and young, less than a third of their nests produced young in 1971.

The U.S. Fish and Wildlife Service, in cooperation with the Michigan Department of Natural Resources and Environment, the U.S. Forest Service and the Michigan Audubon Society, initiated an aggressive cowbird removal program in 1972 that has continued to this day. As a result, Kirtland's warblers now have very good nesting success and enough young are being produced to increase the population.

Biologists, naturalists, and bird watchers began to recognize the dire plight of the Kirtland's warbler in the 1950s. To keep track of the dwindling numbers of Kirtland's warblers, birders counted the number of singing males every 10 years

starting in 1951. Females do not sing and therefore are almost impossible to count accurately, but studies indicate there is approximately one female for each male. In 1961, the total population of males and females was more than 1,000. By 1971 the population had plummeted to about 400 birds. At that time, biologists began counting singing male warblers every year.

In 1973, the U.S. Fish and Wildlife Service (Service) appointed the Kirtland's Warbler Recovery Team, the first endangered species recovery team established by the Service. This team included representatives from the Michigan Department of Natural Resources and Environment, the Service, U.S. Geological Survey, U.S. Forest Service and interested citizens. The team's job was to determine how to save the warbler from extinction. They identified and prioritized conservation actions.

Today, warbler conservation measures are working. About 190,000 acres of public lands have been set aside by the Michigan Department of Natural Resources and Environment, the U.S. Forest Service and the Service specifically for Kirtland's warbler management. From a low of 167 in 1974, the number of singing males increased to 1,803 in 2008.

The recovery team has recommended that 38,000 acres of warbler nesting habitat always be available—enough to reach the recovery goal. Since the trees continuously grow older and warblers cannot nest in forests older than about 22 years, land managers must create new habitat every year. About four thousand acres of forest are clearcut and 2-year-old jack pine seedlings planted each year. The cut trees are chopped and used for fuel or particle board—nothing is wasted. Over ninety-five percent of the warblers counted in the 2010 census were on these managed land areas.

A portion of the Michigan Department of Natural Resources and Environment annual habitat management is funded through State Wildlife Grant money from the U.S. Fish and Wildlife Service. In recent years, the amount of these grants has decreased, along with other funding for similar work by the U.S. Forest Service and the State of Michigan.

Due to many dedicated people, the Kirtland's warbler has met the recovery population goal. However, as a conservation-reliant species, the continued success of Kirtland's warbler is dependent on annual habitat management and cowbird control. It is hoped that soon, provisions can be made to ensure that these management activities are continued into the future, allowing Kirtland's warblers to be removed from the list of threatened and endangered species. Once these commitments are in place, we can be assured that Kirtland's warbler will continue to search out young jack pine forests each spring for generations to come.

*U.S. Fish & Wildlife Service
<http://www.fws.gov/midwest/endangered>*

Revised November 2010