

Conservation of Kirtland's Warbler

Ever since its discovery in the middle of the last century, Kirtland's Warbler has been considered a rarity. The first individual known to science was a migrant shot near Cleveland, Ohio, in May 1851. The breeding range in Michigan and the wintering range in the Bahamas were discovered in the 1870s, but relatively few birds were seen in either place. A total of 71 specimens were taken in the Bahamas in the two decades after Kirtland's Warbler was discovered there, and only 6 in Michigan in roughly the same period. In 1903 the bird's nesting grounds in central Michigan were located, and in the 1980s its wintering grounds were found to extend farther south (to the Dominican Republic) and into drier habitat than previously thought.

A survey of Kirtland's Warblers in 1951 turned up 432 singing males. In 1961 the number had increased to 502, but by 1971 it had declined sharply to 201. However, by 1995 the number of singing males had recovered to 765. The species is now restricted to just six Michigan counties. It is an extreme habitat specialist, nesting only in areas of 5- to 6-year-old jack pines -- if the stand is extensive enough and contains grassy clearings. Such areas are produced when a fire of appropriate intensity sweeps through a mature stand of pines permitting the germination of their seeds. The birds will start to nest in an area when the pines are young. Wildfires once provided abundant habitat, but now improved forest fire-fighting capability has greatly reduced burned areas. To compensate, jack pine stands specifically designed to meet the needs of Kirtland's Warblers rather than the needs of forestry have been planted.

In addition to habitat shrinkage in this century, population increases of Brown-headed Cowbirds threaten the warblers. Cowbirds have been abundant in Kirtland's habitat only recently as forests in the area were cleared for agriculture. The warblers are not adapted to defend against them. The percentage of parasitized nests increased from about 55 percent in the 1940s and 1950s to over 70 percent in the 1960s. The cowbird is an especially dangerous enemy because it parasitizes numerous species and is thus not dependent on Kirtland's Warbler. As it reduces the warbler population, its own population size will not necessarily decline -- its assault can be unrelenting. Thus when the decline in warbler populations was observed, the U.S. Fish and Wildlife Service (with the aid of several state agencies and the Detroit and Pontiac Audubon Societies) began a program of trapping and removing cowbirds. By about 1980 over 40,000 cowbirds had been removed, and as a result the level of parasitism of warbler nests became negligible. Kirtland's fledging rates have tripled, so that their nesting success is now higher than that known for any other warbler. By 1977 the decrease in warbler numbers had clearly been halted, and 219 singing males were counted, a slight increase over 1971. There were 210 pairs censused in 1986, but a sharp decline to 167 in 1987.

That rate of recovery seems quite low, however, considering the great increase in reproductive success. Survival through the first year of life seems to be less than 20 percent. This could be due to high fledgling mortality before migration or perhaps unusual mortality during migration in recent years. Other possibilities are that the now limited breeding habitat makes too small a "target" for inexperienced birds returning from the Bahamas, that there is simply not enough of that habitat to support a larger population (although it seems uncrowded), or that some change unrecognized by ornithologists has made the northern West Indies a less satisfactory wintering ground. Ecologists John Terborgh and David Wilcove have speculated, however, that the main reason that Kirtland's has not gone extinct already is its semicolonial breeding behavior which keeps individuals returning to the small target area. Were it not for that, failure to find mates might have pushed it down the path taken by Bachman's Warbler, where returning migrants scattered over the entire southeastern United States, and many of the last sightings were of apparently unmated males.

The future of Kirtland's Warbler remains in doubt. Some Blue jays, important nest predators, are removed in the course of the cowbird control program, but more intensive predator control may

be required, along with increased production of suitable pine stands, if the species is to be saved. The only long-range solution will be to maintain enough habitat in Michigan for Kirtland's Warblers to persist without constant human interference to control the warblers' parasites and predators, and good luck (or constant vigilance) to keep the West Indian wintering grounds in suitable condition.

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