



THE BIRD WATCH ^W

The Bird Populations Institute

Kansas State University, Manhattan, Kansas 66502

Vol. 5, No. 2

February 1977

Kirtland's Warbler Project Report

Last summer, we analyzed in detail the situation facing the Kirtland's warbler, and proposed some steps which we felt were needed to fully understand the problem. We considered the idea that the warblers are rare and becoming rarer because they are experiencing special shortages and problems on their breeding grounds. This once-plausible alternative has been adequately tested, but little evidence can be found to support it. When breeding grounds problems are solved, the warblers do not respond as hoped. We then advocated an idea which is even more plausible in light of current ecological research. We argued that winter competition for food on the Bahaman winter grounds limits the warblers' numbers, the competition being imposed by similar species of warblers (e.g. the palm and prairie warblers). We proposed a test of this idea, set up a fund to pay for the test, and called for help.

The response to our article was substantial; we received several helpful letters offering aid with the field work in the Bahamas, contributions now totalling over \$600.00, and suggestions for ways to improve our grasp of the problem. We have substantial hope of beginning field work next winter (1977-1978). How fast we succeed depends upon the rate at which the project is supported.

Partly as a result of correspon-

dence stemming from the articles, we were able to carry out some theoretical research on the problem, reanalyzing data collected on the breeding grounds. We found this data to dramatically support the winter-limited hypothesis.

This analysis (available in manuscript from the editor of *The Bird Watch*) showed that 1) the population of Kirtland's warbler will decrease to the lowest level ever recorded in the summer of 1977, but 2) will recover over the next three years (or sooner) to 1976 (rather high) levels. The analysis claims that erratic cycles will be a part of the birds' population for the immediate future. Finally, 3) a more stable population (and generally higher breeding numbers) can be obtained only by reducing the nesting success (moderately) from the levels now obtained by the cowbird control, or reducing the competition in the Bahamas.

Existing data on the Kirtland's warbler says that the species is vulnerable to overexploitation of winter resources, so that when more birds are sent back to the Bahamas from the breeding grounds they somehow change their environment and mortality increases. The increase in mortality is so great that actually fewer birds survive than would be the case if fewer had been produced the preceding summer. For example, when 700 are alive

at the end of summer, 435 will return the next spring. However, when 1050 go to the wintering ground, only 320 will return the next spring.

This interpretation is only one of those possible. The available data, the most extensive on any warbler, are yet too few to provide a completely convincing argument. If the warbler population does not crash this spring to very low levels, we shall have to entertain substantial doubt as to the extent of winter regulation. We must, as always, keep looking for better answers.

An Alternative View

Lawrence Walkinshaw probably has more first-hand experience with the Kirtland's warbler on its breeding grounds than anyone else, with the possible exception of Harold Mayfield. Walkinshaw has a genius for studying the nesting of small open-nesting birds that seems unmatched. His contribution to the Kirtland's warbler story is therefore irreplaceable. We are very fortunate to have Mr. Walkinshaw present his views of the situation facing the Kirtland's warblers.

Mr. Walkinshaw expresses the opinion that the breeding grounds are more important than we

think. We want to express our earnest hope that he is right, and that we are wrong. We can easily carry on our management of the species on its breeding grounds, but the possibilities of effective effort on the wintering grounds would be much more difficult. If Mr. Walkinshaw is right, we can view the task of saving this species with more optimism.

In response to Steve Fretwell's article in *The Bird Watch* Vol. 4, No. 5, May 1976 I wish to present some questions; some experiences; some statistics. First—the questions. What effects do our cats, dogs, mini-bikes, motorcycles, etc. have? What is the effect of an increase in blue jays in the habitat? Does anyone know anything about blue jays, thirteen-lined ground squirrels, red squirrels, and garter snakes? These animals have all been observed taking the contents of Kirtland's warbler nests. Has an increase of blue jays been produced by a lowering of numbers of hawks and owls? What birds are affected by pesticides? Since pesticides have been used, why have some birds increased while others have practically disappeared?

We have property along Lake Michigan with two adjoining pieces, the total being 300 feet wide and about 1600 feet in length. We had in 1949 black and white warblers, pine warblers, ovenbirds and redstarts nesting and nearby black-throated green, black-throated blue and Canada warblers. Now none can be found even in our neighborhood. Why? The same is true of flycatchers, wood pewees, least and acadian flycatchers. Even the red-eyed vireos have decreased so that we now have no more than three pairs. Why did the cowbirds increase? Better habitat? A decrease in predators which preyed on them? Better food for them? Why has the cowbird been selective for its host species—the Kirtland's warbler? In hundreds of nests of other species oc-

cupying the same habitat as the Kirtland's warbler, such as prairie, myrtle, pine, and Nashville warblers, vesper, Lincoln, song, field, chipping and clay-colored sparrows, along with many other species, only about 12 nests have been parasitized, nearly all with dire results. These statistics have been published or are in manuscript form.

I began studying the Kirtland's warbler in 1931. At that time few people lived in the biotope occupied by the species. Now there are houses scattered all through the jack pine forests. Fires are scarcer except where the Michigan, Ohio, and Indiana National Guards have their maneuvers. These fires, some of questionable origin, are regular, including fires that sweep through Kirtland's warbler nesting regions. Mini-bikes abound on the back roads and sometimes leave the roads. Cats and dogs are to be found where there were none. Of course these pets may also help decrease such mammals as red squirrels and thirteen-lined ground squirrels.

During 1931, when I began studying Kirtland's warbler there were not as many cowbirds, and fewer nests were parasitized. That increase came after 1940. Beginning with the 1972 season, cowbirds were removed regularly. (This was documented and published.) Up to 4,000 were removed during a single summer. Nesting studies have been made from 1966 on and comparisons made in the same region before and after cowbirds were removed. These are here presented in tabular form and provide an estimate of what would have happened if no cowbirds had been removed. The tremendous loss of singing males (and of course the entire population) between 1973 and 1974 could possibly be attributed to a hurricane which went through the Bahamas in late October 1973, something we have no control over.

We have had Kirtland's warblers live to be 7, 8 (several), and

even 9 years of age. We have had many pairs produce two broods during a single season and one female produced two broods three years in succession. I have observed 276 Kirtland's warbler nests myself and during the years 1972-1976 inclusive. I found that without cowbird parasitism, the species produces regularly 5 eggs for their first clutch, and 4 eggs for the second. Most early nestings have nestlings fledge around 25 June, second nestings around 25 July. Their incubation period is fairly long, 13-15 days, and that was the main reason cowbird parasitism was fatal to them. Cowbird incubation periods are normally 11-12 days. Nestlings of both species remain in the nest 8-11 days. Except for 1975 when I was not allowed to band nestlings, we have banded around 85-90 annually and we have a high (known) percentage return to the nesting regions. Most one-year old males take up territories in new habitat; old males remain in their original territories in the majority of cases. In cases where nesting habitat is destroyed, individuals have shifted up to 13 miles from where they originally had their territory.

Nesting success has increased tremendously. Before cowbirds were eliminated, during 1966-1971 in the region I was studying in Crawford County, nesting and egg percent successes respectively were 1966: 14.28, unknown; 1967 and 1968: 28.57, 29.41; 1969: 22.22, 25.00; 1970: 56.25, 35.41; 1971: 46.15, 41.38. In these six years, out of 52 nests, 19 succeeded (36.53 percent) in which were laid 55 cowbird eggs (many were removed) and 10 cowbirds fledged. Thus from 52 nests (belonging to 52 pairs), 42 Kirtland's nestlings fledged (0.807 per pair per summer).

In this identical region during 1972-1976 inclusive, when adult cowbirds were removed (4-5 cowbird traps) from early May until August, 71 Kirtland's warbler nests were located on which 43 were successful (60.56 percent)

