

Kirtland's Warbler file

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Noel Simon • Paul G eroudet

LAST SURVIVORS

The Natural History of Animals
in Danger of Extinction

Illustrations by Helmut Diller and Paul Barruel

Preface by H. R. H. The Prince of the Netherlands
President of the World Wildlife Fund



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In 1930, 65 in 1934 and 100 at the end of 1935. At the beginning of 1936, there were 250 to 300 individuals, of which a hundred breeders remained after the spring dispersal and counting was over. Furthermore, the ponds scattered over the plain make excellent water supplies for waterfowl. The Eagle Lake Sanctuary is an achievement which may serve as an example: its creation has not only saved the southern race of the prairie chicken from extinction, but also preserved a natural environment of great interest.

To complete the story, mention must be made of the lesser prairie chicken, which many ornithologists consider to be a separate species *Tympanuchus pallasi*, but which others regard as a geographic subspecies of the prairie chicken. It occurs in New Mexico, Colorado, Kansas, Oklahoma and northern Texas. Although it does not appear to be in any immediate danger, its numbers have already substantially decreased. The conservation of its habitat should be considered while there is still time.

KIRTLAND'S WARBLER

Dendroica kirtlandii

Almost all the species of songbirds threatened with extinction live on islands, where their decline, in common with other types of fauna, has been caused mainly by changes in their natural habitat and the introduction of foreign animals upsetting the ancient balance of nature. Some continental species appear to have been always numerically few and very limited in range, either because of a special preference for an ecologically restricted breeding area, or for unknown reasons, apparently unrelated to human influence. At least two examples belong to the large family of Vireonidae, the American warblers.

This species is nearly extinct, wrapped in mystery and nothing can be done.

On the other hand, the case history of the Kirtland's warbler has a happy ending. On May 13th, 1851, an unknown singer was captured on the shores of Lake Erie near Cleveland, Ohio, and given to the naturalist J. P. Kirtland. He, in turn, gave to it the name of *Sialia kirtlandii* in honor of his friend. Later incorporated in the genus *Dendroica*, the new species was to remain a warbler for more than half a century.

The most incomplete knowledge of the Bachman's warbler (*Dendroica bachmani*) discovered in 1833 in New York and described by Audubon. Thereafter it was seen occasionally and isolated breeding was noted from time to time in as many as ten different states, situated between Arkansas, Louisiana and Virginia. Some wintering birds were found also in Florida and Cuba.

An amazing accident concerns the fact that a specimen had already been collected ten years earlier, in October 1841, Samuel Cabel, on an expedition to Yucatan, had picked it up on board his ship off the Bahamas. The specimen remained forgotten in a drawer of his collection until 1865. In the event, the winter quarters of this rare bird were discovered in the Bahamas in January, 1879.

The natural habitat of Bachman's Warbler is an swampy river edge, evidently rapidly dwindling.

Over the years, a certain number of migrating birds were recorded between the Great Lakes and Florida, but the breeding sites were unknown until 1939, in that year, E. J. Frothingham, being for

even so, no one had discovered. Nobody knew of an unknown song which led to an ordinary rare little bird, a species of Kirtland's warblers. A subtle and fatal appearance of the species, numerous A. Wood's reproduction, was able to find the first nest in a stand of oak

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in 1936, 65 in 1964 and 100 at the end of 1966. At the beginning of 1968, there were 350 to 400 individuals, of which a hundred breeders remained after the spring dispersal, an encouraging sign. Furthermore, the ponds scattered over the plain make excellent winter quarters for waterfowl. The Eagle Lake Sanctuary is an achievement which may serve as an example; its creation has not only saved the southern race of the prairie chicken from extinction, but also preserves a natural environment of great interest.

To complete the story, mention must be made of the lesser prairie chicken, which many ornithologists consider to be a separate species *Tympanuchus pallidicinctus*, but which others count as a geographic subspecies of the prairie chicken. It occurs in New Mexico, Colorado, Kansas, Oklahoma and northern Texas. Although it does not appear to be in any immediate danger, its numbers have already substantially decreased. The conservation of its habitat should be considered while there is still time.

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Almost all the species of songbirds threatened with extinction live on islands, where their decline, in common with other types of fauna, has been caused mainly by changes in their natural habitat and the introduction of foreign animals upsetting the ancient balance of nature. Some continental species appear to have been always numerically few and very limited in range, either because of a special preference for an ecologically restricted breeding area, or for unknown reasons, apparently unrelated to human influence. At least two examples belong to the large family of Parulids or American warblers.

The most incomprehensible case is the Bachman's warbler *Vermivore bachmanii*, discovered in 1833 in South Carolina and described by Audubon. Thereafter it was seen occasionally and isolated breeding reported from time to time in as many as ten different states, situated between Arkansas, Louisiana and Virginia. Some wintering birds were found also in Florida and Cuba.

The natural habitat of Bachman's Warbler is in swampy river edges, admittedly rapidly dwindling, but large areas are still to be found; even so, no stable population has yet been discovered. Nobody knows why this extraordinarily rare little bird makes such unpredictable and fitful appearances, nor how its tiny relic or surviving population still exists. The

species is nearly extinct, wrapped in mystery and nothing can be done. . . .

On the other hand, the case history of the Kirtland's warbler has a happier ending. On May 13th, 1851, an unknown songbird was captured on the shores of Lake Erie, near Cleveland, Ohio, and given to the naturalist J. P. Kirtland. He, in turn, gave to it the name of *Sylvicola kirtlandii*, in honour of his friend. Later incorporated in the genus *Dendroica*, the new species was to remain a problem for more than half a century.

An amusing anecdote concerns the fact that a specimen had already been collected ten years earlier; in October 1841, Samuel Cabot, on an expedition to Yucatan, had picked it up on board his ship off the Bahamas. The specimen remained forgotten in a drawer of his collection until 1865. In the event, the winter quarters of this rare bird were discovered in the Bahamas in January, 1879.

Over the years, a certain number of migrating birds were recorded between the Great Lakes and Florida, but the breeding areas were unknown until 1903. In that year, E. H. Frothingham, of the University of Michigan, fishing for trout in the Au Sable River near Oscoda, was intrigued to hear an unknown song which led him to a small colony of Kirtland's warblers. Following his instructions, Norman A. Wood was able to find the first nest in a stand of jack

pine in the vast forests of the lower peninsula of Michigan.

That these historical incidents are so few is surprising, because the bird is easily recognized in the spring by an experienced observer. It is one of the largest Parulids, $5\frac{3}{4}$ inches in length. Its plumage is bluish-grey above with black streaks on the back and lemon-yellow below; it has dark spots on the flanks and two white bars on the wings. Its habit of "wagging" its tail up and down is characteristic. Furthermore, the male's song, clear and lively cadences, attracts attention and the adult is not at all shy in its summer territory. Only the ecological needs and very limited range of its small population can explain why the mystery surrounding this bird has taken so long to clear up.

Today, complete information is available, thanks to the painstaking research of Josselyn van Tyne and the monograph by Harold Mayfield (1960). The Kirtland's warbler breeds only in the pine forests between Lake Michigan and Lake Huron, where all its colonies are grouped within a radius of 60 miles. In 1951, Mayfield and his colleagues organized a census and 432 singing males were counted. In the following year, the count was 502. The total population, therefore, is about a thousand individuals at the beginning of the breeding season, the numbers appearing to be fairly stable. However, for a continental migratory bird, this is an extremely low figure, the reason being that it depends upon a very special habitat which is constantly changing.

On their arrival in May, all the breeding pairs of *Dendroica kirtlandii* settle in dense groves of young jack pine *Pinus banksiana*, which must not be more than five to 18 feet high and six to 13 years old, with interlocking branches reaching to ground level, alternating with clearings of low vegetation. Finally, a dry, permeable soil, preferably sandy, is necessary. If all these requirements are met, the birds settle in loose colonies of six to 12 pairs, each occupying a territory of about eight and a half acres.

The nest is built on the ground, well hidden in the undergrowth. Four or five eggs are laid in June and incubation by the female lasts two

weeks. Both parents raise the nestlings which are ready to leave after nine days. The production of a second clutch after the young birds have flown away is exceptional but if the first clutch is destroyed a second is normally produced. Autumn migration occurs between the end of August and mid-September. By then, however, the birds are a darker brown colour and more difficult to recognize. In the winter quarters on the Bahamas, the warblers are found on all the islands in the low scrub where they are scattered and inconspicuous.

The collectors who frequented these islands found the species fairly abundant between 1880 and 1900. This is no longer true today; a relatively large population which existed at the end of the last century has since decreased. Mayfield's study tends to prove that the population increase during the eighties and nineties was caused by the heavy lumbering operations in the Michigan forests and the species' subsequent decrease resulted from this practice being abandoned and also from the parasitism of the cowbird.

The cowbird *Molothrus ater*, was limited formerly to the vast bison prairies farther to the west, but settlement favoured its expansion in the forest regions cleared by the felling of trees and cattle breeding. This bird seems to have reached Michigan around 1840, and the north of the state towards 1870, at the same time as the wave of lumbermen and farmers. Some thirty years later, it was plentiful even in the forest clearings, where the Kirtland's warbler had just been discovered. It is known that, like the cuckoo, the cowbird lays its eggs separately in the nests of other songbirds for the young parasite to be incubated and raised by its foster parents. It instinctively pushes out the eggs and chicks which bother it, and, therefore, any nest adopted by the cowbird is lost for reproduction of its involuntary host. From 1900, this factor has certainly contributed to reducing the number of *Dendroica kirtlandii*. According to Mayfield's statistics, 55 per cent of the nests of this species are taken over by the cowbird and, if other natural factors of destruction are taken into account, it appears that less than 34 per cent of the

warbler's eggs produce fledged young. His conclusion is that parasitism is the most important limiting factor for the species.

The natural habitat, described above, obviously plays a fundamental role. To put it briefly, the Kirtland's warbler depends on fire. In fact, since time immemorial, the dry forests have been ravaged by fires, caused by lightning or by the indigenous human inhabitants. Fires raged unchecked until extinguished by rain, changes in wind or water obstacles. If the flames ravaged great tracts of forest, they also prepared the way for regeneration, because only great heat can burst the tight cones of the jack pine and disperse the seed. After a few years, the burnt areas are covered with a thick carpet of young pines and the warblers settle in at once as soon as the trees are the right height, that is after six or seven years. As soon as the trees grow too high, the birds abandon the site and look for another one. Thus, the existence of the species has always been linked with forest regeneration in the aftermath of fire. The nesting sites are not destroyed, as the fires occur at the end of the summer, in the dry season.

If the jack pine is very widely distributed across Canada and extends to the south of the Great Lakes, it appears that only the north of the peninsula, between Lakes Michigan and Huron, satisfy the requirements of the Kirtland's warbler, as much by the type of soil as by the few natural fire breaks. According to Mayfield, this would account for the extremely limited territory of this bird. Furthermore, the jack pine plains offer ideal shelter for its nest and few enemies and competitors exist. In any other habitat, it would perhaps have been wiped out.

From about 1875 to 1900, lumbering operations developed considerably in Michigan. In the vast areas felled, the unwanted jack pine was usually burnt, and this practice certainly increased the regeneration favourable to the warbler. In any event, the increase in population observed during this period has been credited to this factor. Later on, the great felling operations ceased; fires, fought by the forest services, affected smaller areas and resulted in a decrease in numbers, intensified by the intervention of

the cowbird. Mayfield writes, however, that during this century, the availability of breeding areas was not the factor limiting the population of the bird. Today, modern fire-control methods are becoming more and more effective, and, in the long run, could result in the disappearance of the Kirtland's warbler by depriving it of the habitat vital to its survival. On the other hand, the jack pine is used extensively for the pulp industry and replantings are probably less favourable than natural regeneration brought about by the great fires of earlier days. Finally, the jack pine stands are subject to variable economic conditions. The future of the species, therefore, now depends, above all, on man.

In 1950, ecological research and the almost nation-wide interest in this little bird encouraged the consideration of ways and means of maintaining the jack pine plains without sacrificing forestry interests. In collaboration with the local sections of the Audubon Society, as from 1957, the Michigan Department of Conservation set aside 4,010 acres as an experimental area for carrying out prescribed and controlled burning. This was a remarkable change in policy. In 1964, a block of approximately 500 acres of jack pine was felled, trees heavily loaded with cones were left standing (15 or so per acre), and controlled burning was then attempted. The natural regeneration proved successful, and it may be hoped that this area, especially prepared for the Kirtland's warbler, will be colonized by the birds as soon as the pines grow to the height required. Other blocks must be treated in the same way every five years, to create favourable jack pine plains in the Huron National Forest.

Along with these experiments, observers are continuing to study the population of the species, in particular by ringing the breeding birds. Their research also includes the parasitism of the cowbird and the method of controlling its numbers. Excellent co-operation between the authorities, societies and ornithologists offers a better future for this unassuming little songbird. Although it is of no economic significance the very rarity of the Kirtland's warbler ensures that it remains for the public a symbol that must not be allowed to disappear.



SYLVETTE DE KIRTLAND

Dendroica kirtlandii

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