

# THE DISPERSAL OF THE KIRTLAND'S WARBLER: MYTHS AND REALITY

by Paul Aird

---

Truth is a myth, fact is a fable  
- till we learn the difference.

The Kirtland's Warbler (Dendroica kirtlandii Baird) has become known during this century as a species that breeds in the jack pine (Pinus banksiana Lamb.) forests of Michigan, winters in the Bahamas and nearby islands, is seen occasionally in migration between these points, and exists in such low numbers that it is among the world's most endangered species.

Some Kirtland's Warblers have been observed in Ontario and Wisconsin, several hundred kilometres from the expected migration route. Usually, these strays were seen for a few days at most, and were simply classified as accidental visitors. It was assumed that they were either blown off course, and were returning to Michigan, or were disoriented.

While tracing the sight records of these visitors to Canada, I postulated that they were not accidental. Perhaps there was a pattern to the dispersal of the species from the Michigan breeding centre, and the following hypothesis emerged:

Since the jack pine habitat of the Kirtland's Warbler may be suitable for nesting for only about 20 years, the dispersal of

the Kirtland's Warbler to establish new nesting grounds, beyond the known Michigan centre, must be inherent in the species and evident in its behaviour.

This hypothesis was opposed to the prevailing theory that the Kirtland's Warbler range diminished as the population fell. In Michigan, the counties occupied by the bird had fallen from 13 to 6, as the population diminished by about one-half. But according to my hypothesis, the dispersal of the Kirtland's Warbler beyond the Michigan centre was inherent in the species, and would continue, irrespective of the size of the population.

In 1977, I decided to search for the Kirtland's Warbler in Ontario. The known sight records of the species contributed greatly to the early success of the project.

The first record of a Kirtland's Warbler sighted in Canada occurred in 1900, when a bird was shot on Toronto Island by J. H. Samuel (1900). This specimen was collected three years before the species was known to breed in Michigan. The mounted specimen was sold to John Lewis Childs of Floral Park, New York; then to Arthur T. Wayne of Charleston, South Carolina; then to J. E. Keays of London, Ontario; and then to W. R. Campbell of Lobo, Ontario. In 1922, the Royal Ontario Museum bought the Campbell collection, including this bird.

Another confirmed sighting was of a pair feeding young in 1945 near Barrie, about 100 km (60 miles) north of Toronto (Speirs 1984). Both this sighting and the Samuel sighting were

south of the jack pine forest.

Among about twenty Ontario sightings known to us when the search began, only four were in jack pine stands: two by Lake Huron, near Dyer Bay and Pointe au Baril, and two by the Ottawa River, near Petawawa (Figure 1).

The range of jack pine in Ontario and Canada is extensive. Our search for the Kirtland's Warbler was concentrated along the southern edge of the jack pine range, to approximate the relative position of the breeding areas in Michigan's jack pine.

The search began in young jack pine stands on National Defence's Canadian Forces Base at Petawawa, Ontario. The species had been observed there by Paul Harrington (1939) in 1916, 1939, and, as we learned later, in 1947 (Harrington 1947).

We found our first male Kirtland's Warbler at Petawawa in 1977, and it returned again in 1978. Also in 1978, a male was found near Kazabazua, Quebec. It had been banded four years earlier as a nestling in Michigan.

An independent search was organized in 1978 in Wisconsin, where Nancy Tilghman (1979) found two male birds near Black River Falls. One of these had been banded six years earlier as a nestling in Michigan (Walkinshaw 1983).

In 1977, it seemed reasonable to consider that the Petawawa bird could be a remnant of an Ontario population of the Kirtland's Warbler, perhaps separate and distinct from the Michigan race. But in 1978, this theory was demolished by the



Figure 1. The Kirtland's Warbler summer range based on confirmed sightings in jack pine stands since 1958 (Number 1 to 9) and the winter range based on confirmed sightings in the Bahamas (Number 10) and unconfirmed sightings at Palenque and Veracruz (Number 11 and 12): 1. Kazabazua; 2. Petawawa; 3. Severn Bridge; 4. Pointe au Baril; 5. Dyer Bay; 6. Mio; 7. Gwinn; 8. Black River Falls; 9. Spooner; 10 Bahamas; 11. Palenque; 12. Veracruz.

finding of birds in Quebec and Wisconsin that had been banded as nestlings in Michigan.

Prior to these 1977-78 findings, it had been generally assumed that Kirtland's Warblers could not be found by systematically searching beyond Michigan, because there was no pattern to their dispersal. But in reality, Aird (Aird and Pope 1987) and Tilghman (1979) had each found Kirtland's Warblers, by deliberately searching for them in jack pine habitats that resembled the known breeding areas.

It had also been assumed that these outlying birds were temporarily off course and would return soon to the Michigan breeding centre. But the male Kirtland's Warbler found at Petawawa, Ontario, defended a territory for more than five weeks in 1977, and returned to the same territory for more than six weeks in 1978.

Likewise, at least one of the birds found by Nancy Tilghman (1979) near Black River Falls, Wisconsin, in 1978, and a bird found by John Probst near Gwinn in Michigan's upper peninsula in 1982 (Walkinshaw 1983), had each established a territory where first observed, and returned to it the following year.

The theory that the Kirtland's warbler population had imploded into a smaller range within Michigan was exploded by these findings. Male warblers on territory in Ontario, Quebec, Wisconsin, and Michigan's upper peninsula have therefore confirmed part of the original hypothesis, i.e., the dispersal of

the Kirtland's Warbler to establish new nesting grounds, beyond the known Michigan centre, must be inherent in the species and evident in its behaviour. But these results have not yet confirmed that nesting beyond the Michigan centre is accomplished.

Since the spring of 1977, fifteen male Kirtland's Warblers have been found on territory in jack pine stands beyond the Michigan centre:

1977 - Petawawa, Ontario - 1 bird.

1978 - Petawawa, Ontario - same bird returned.

1978 - Kazabazua, Quebec - 1 bird.

1978 - Black River Falls, Wisconsin - 2 birds.

1979 - Black River Falls, Wisc. - 2 birds (one a return).

1982 - Gwinn, Michigan - 1 bird.

1983 - Gwinn, Michigan - same bird returned.

1985 - Severn Bridge, Ontario - 1 bird.

1988 - Black River Falls, Wisconsin - 4 birds.

1988 - Spooner, Wisconsin - 4 birds.

The four birds found in Ontario, Quebec and Wisconsin in 1978 represented 2.0 percent of the census for that year, evenly split east and west of the Michigan centre. The eight birds found in Wisconsin in 1988 represented 3.7 percent of the census, all on the western side. An equivalent number should be on the eastern side, yielding a theoretical outlying population of 7.4 percent. But the small amount of area covered in these

extralimital searches suggests a larger outlying population than this.

Though fifteen males were found from 1977 to 1988, no females were associated with them. This has suggested that the males are more wide-ranging than the females. But in reality, we do not know. Since the females do not sing, they are much more elusive, and could be just as wide-ranging as the males, but located in different areas.

The confirmed summer range of the Kirtland's Warbler now stretches east-west from Kazabazua, Quebec, to Spooner, Wisconsin, a distance of about 1250 km (750 miles). The north-south extension is about 215 km (130 miles). At the centre of this region lies the only known breeding range for the species, near Mio, Michigan, with an east-west range of about 115 km (70 miles), and a north-south range of about 60 km (35 miles).

The winter range for the species in the Bahamas and nearby islands has been well documented by Mayfield (1960) and Walkinshaw (1983). It stretches at least from Abaco Island in the north to the Caicos Islands in the south -- an east-west range of about 670 km (400 miles), and a north-south range of about 600 km (365 miles).

The winter range of the Kirtland's Warbler may extend further west into Mexico. Lane (1975) reported sighting a male and an immature or female near Veracruz in November 1974. Based on personal correspondence provided by a Canadian wildlife

biologist, a male Kirtland's Warbler was observed near Palenque, at the base of the Yucatan Peninsula, in February 1977. These Mexican sightings may be of wandering birds. But we should also consider the possibility that the winter range for the species may extend from the Caicos Islands to Veracruz, a distance of about 2500 km (1500 miles).

The statement that the Kirtland's Warbler migrates solely between Michigan and the Bahamas now appears to be a myth. In reality, it migrates to Quebec, Ontario, and Wisconsin as well. Perhaps its summer range extends further east in Quebec, New York or Vermont, and further west to Minnesota, while its winter range may extend from the Bahamas through Cuba to Mexico.

In summary, there are severe limitations to conducting research on an endangered species. It is far easier to generate research data and research dollars for an abundant than a rare species. But if research on an endangered species can help to sustain or enhance its existence on earth, then there can be no greater reward.

Since 1977, we have learned that fifteen male Kirtland's Warblers have established territories far beyond the Michigan breeding centre; at least three of these returned the following year to the same territory; some defended two territories as much as one-half mile apart; their habitat may include jack pine trees up to 18 m (60 feet) tall, or jack pine on rock outcrops; the summer range now extends at least 1250 km (750 miles), from



Quebec to Wisconsin, and perhaps beyond; and the winter range may extend from the Bahamas into Mexico.

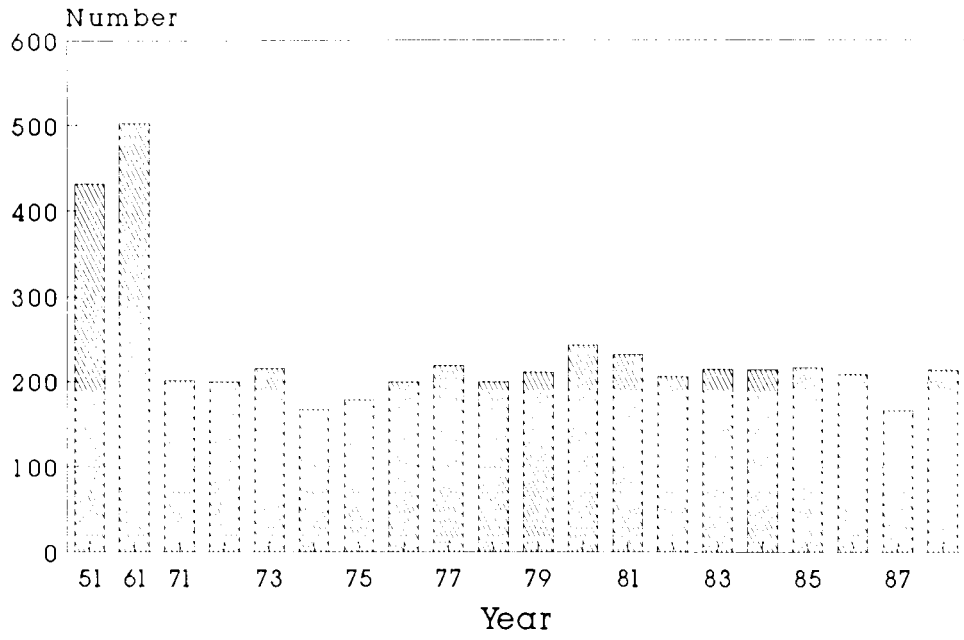
As an associate of the Kirtland's Warbler Recovery Team for the last decade, I have strongly supported the plan to manage the species in its natural habitat, without taking any birds into captivity. Providing enough suitable habitat to sustain the species is a priority item. At the same time, I have strongly supported the need for more research to add to our knowledge and understanding of the dynamics of this endangered species and, by extension, of other endangered species.

In my judgment, more research effort is urgently needed to study the outlying population of Kirtland's Warblers. Someday, someone will find another breeding area. Most likely, it will be in Michigan, or close by. It will consist of a few breeding pairs that can be managed to increase their numbers substantially. But if we do not search and find them, we will lose this opportunity.

The research to establish the range of the Kirtland's Warbler in Ontario, Quebec, and Wisconsin, which led to the 1988 finding in Wisconsin of more than three percent of the male population, suggests that a new breeding area will be found soon. With proper management to increase the population in the new area, some of the young will disperse back to swell the Michigan core, as some from the core disperse and add to it.

The Kirtland's Warbler population has remained relatively stable since 1971 (Figure 2). The continuing plight of the species justifies the need to examine all opportunities to build up the population. To find and manage a new breeding area may be the key needed to restore the Kirtland's Warbler species to normal numbers throughout its range.

Figure 2: Annual Census Data of Singing Male Kirtland's Warblers





ACKNOWLEDGMENTS

Personal help and financial assistance provided by the following people and organizations is gratefully acknowledged: Jacques and Chris Bouvier, Jo Wright, Mabel McIntosh, Susan Greenwood, Kandyd Szuba, Andrew Blinoff, Donald Pope, National Defence Canada, World Wildlife Fund (Canada), Wild Leitz Canada Ltd., Sir Joseph Flavelle Foundation, Westwind Estates Ltd., Royal Ontario Museum, Ontario Ministry of Natural Resources, Canadian Pacific Forest Products Ltd., Quebec and Ontario Paper Co. Ltd., Canadian Wildlife Service, Canadian Forestry Service, Federation of Ontario Naturalists, Elsa Wild Animal Appeal (Canada), Province of Quebec Society for the Protection of Birds, and the Faculty of Forestry, University of Toronto.

This paper is a contribution of the Faculty of Forestry, University of Toronto, Toronto, Ontario M5S 1A1.

REFERENCES CITED

Aird, P., and D. Pope. 1987. Kirtland's Warbler, pages 388-389 in Atlas of the Breeding Birds of Ontario, Federation of Ontario Naturalists and the Long Point Bird Observatory, University of Waterloo Press, Waterloo, Ontario.

Harrington, P. 1939. Kirtland's Warbler in Ontario.

Jack-Pine Warbler 17 (4): 95-97.

Harrington, P. 1947. Personal Fieldbook, SC 31, Library  
Archives, Royal Ontario Museum, Toronto, Ontario.

Lane, J. 1975. Kirtland's Warbler in Mexico. American Birds 29  
(1): 144.

Mayfield, H. 1960. The Kirtland's Warbler. Cranbrook Institute  
of Science, Bloomfield Hills, Michigan, Bulletin 40.

Samuel, J.H. 1900. List of the rarer birds met with during the  
spring of 1900 in the immediate vicinity of Toronto.  
Auk 17(4): 391-392.

Speirs, D.H. 1984. The first breeding record of Kirtland's  
Warbler in Ontario. Ontario Birds 2(2): 80-84.

Tilghman, N.G. 1979. The search for the Kirtland's Warbler in  
Wisconsin. Passenger Pigeon 41(1): 16-24.

Walkinshaw, L.H. 1983. Kirtland's Warbler: the natural  
history of an endangered species. Cranbrook Institute  
of Science, Bloomfield Hills, Michigan, Bulletin 58.