

Kit No. _____

THE SEARCH FOR THE KIRTLAND'S WARBLER IN CANADA

A SEARCH KIT



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April
1978

PREFACE:

The search for the Kirtland's warbler in Canada will be conducted in three phases.

- I The Ontario Ministry of Natural Resources is coordinating a search through selected areas of natural jack pine in southern Ontario. Cooperating organizations include the Canadian Wildlife Service, the Royal Ontario Museum and the University of Toronto.
- II The University of Toronto is coordinating a search through selected pine plantations in Southern Ontario, in cooperation with local field naturalist groups.
- III The Province of Quebec Society for the Protection of Birds is conducting a search of selected jack pine stands and plantations in Southern Quebec.

This search kit has been prepared as a research tool to aid phases II and III above. It is produced in limited quantity for distribution only to qualified birders cooperating in the search for the Kirtland's warbler in selected areas.

We gratefully acknowledge the assistance and cooperation received from the following organizations in support of research relating to the search for the Kirtland's warbler in Ontario:

- The Canadian Forestry Service
- The Canadian Wildlife Service
- The Department of National Defence
- The Federation of Ontario Naturalists
- The Kirtland's Warbler Recovery Team, Michigan
- The Ontario Ministry of Natural Resources
- The Province of Quebec Society for the Protection of Birds
- The Royal Ontario Museum
- The Sir Joseph Flavelle Foundation
- The Westwind Estates Ltd.

We also acknowledge copyright and use of the Kirtland's warbler songs for research and educational purposes, by permission of Dr. William H. Gunn and the Federation of Ontario Naturalists, and M. Brigham.

Basic Reference: Mayfield, Harold. 1960. The Kirtland's Warbler. Cranbrook Institute of Science, Michigan. 242 pp. (Out of print)

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The Kirtland's warbler (*Dendroica kirtlandii*) is one of the world's endangered bird species, verging on extinction. Its population has fallen from about 1,000 adults in 1961 to an estimated 440 in 1977. The reason for this reduction in numbers is not known. It could be due to habitat change, parasitism by cowbirds, death from storms during migration, dispersal to other regions, or other causes.

A small North American songbird, the Kirtland's warbler winters in the Bahama Islands and migrates to and from its only known breeding grounds in the State of Michigan. Until recently, it has been considered a rare visitor to Canada.

There are only twenty-six previous sightings of the Kirtland's warbler in Canada, with just one in the last decade. In June, 1977, a team from the Faculty of Forestry and Landscape Architecture at the University of Toronto organized a search for the Kirtland's warbler near Petawawa, Ontario. On the second day of the search a lone male Kirtland's warbler was found on territory in a young jack pine stand on the Canadian Armed Forces Base, Department of National Defense at Petawawa.

The behaviour and habitat of the Petawawa bird were studied closely for the next five weeks. During this period the bird was mist netted, banded, a feather clipped for chemical analysis, and then released. An analysis of Kirtland's warbler feathers at Ohio State University suggests that the Petawawa bird represents a distinct sub-population that has either wintered, summered, or both, in a region quite different from Michigan birds.

These findings support the theory that the Kirtland's warbler may be breeding somewhere beyond Michigan.

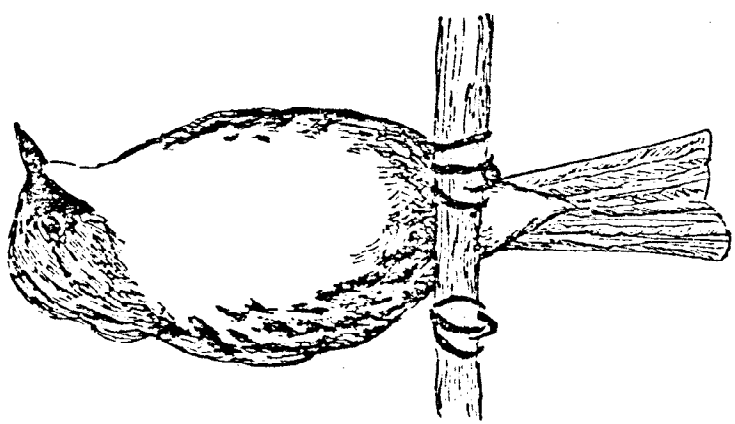
THE SEARCH KIT

The status of the Kirtland's warbler in Canada is unknown. Suitable habitat for this endangered species exists widely throughout Canada. This search kit has been prepared to encourage volunteers to help with the search for the Kirtland's warbler, both in natural pine stands and in pine plantations.

The kit comprises a fourteen-page description of how to identify the Kirtland's warbler, its behaviour and habitat, and the recommended search procedure plus a tape recording of the bird's song. We believe that familiarization with this search kit will markedly increase the probability of finding the Kirtland's warbler if it is present in the area of search.



KIRTLAND'S WARBLER (male)
(1/2 normal size)



THE KIRTLAND'S WARBLER: IDENTIFYING CHARACTERISTICS

The quality of light has a marked effect on how the bird's colouration appears to the observer. In strong light its back may appear blue and the breast bright yellow. Poor light gives the bird a drab appearance, and characteristics such as streaking on the head and back may not be as noticeable.

The most obvious identifying characteristics are:

- (1) the clear yellow breast with varying amounts of black streaking on the sides,
- (2) the split white eye-ring.
- (3) the dark-grey streaking on the head and back.
- (4) the slate- or bluish-grey back.
- (5) the black facial mask of the male.

Description of Male

- Size:** - about the size of a small sparrow (5-1/2 to 5-3/4 inches long).
- one of the largest warblers.
- Head:** - dark, fine bill which is shorter than the head.
- black mask fading into the cheeks.
- split white eye-ring.
- iris of the eye is brown.
- crown and nape are blue- or slate-grey with faint dark streaks.
- throat is lemon-yellow.
- Breast:** - lemon-yellow.
- sides are streaked with black, the degree of streaking is variable.
- Back:** - slate- or bluish-grey with heavy dark streaking.
- Wings:** - long and pointed.
- dusky brownish-grey with two faint wing bars and faint streaking.
- Tail:** - notched.
- dusky brownish-grey.
- inner web of two outermost tail feathers have a white section (not often visible)
- undertail coverts are white.
- Legs and Feet:** - dark brownish-black.

Description of Female

The colouration is similar but duller than the male. The face mask is faint or non-existent. The slate blue-grey of the back is replaced by a brownish-grey and the dark streaks are narrower. The yellow breast is paler and is sometimes dusted with faint specks.

Feeding:

- Kirtland's warblers feed primarily on insects found among the needles and branches. They have been seen to hover like a hummingbird to tease an insect out of a needle cluster.

Pair Formation:

- The males begin to arrive a few days before the females, and arrive over a two-week period. Hence the females will arrive together with later males.

Territory:

- Within a few days of arrival the male will establish a territory which he will keep until the end of the nesting season. Territories can range from 1-1/2 to more than 15 acres in size. On rare occasions a male may have two territories as much as one-half mile apart.

Colonies:

- Suitable habitats tend to have no birds or several pairs. It is rare to find a lone nesting pair.

While the female searches for a site and builds the nest, the male is always in the vicinity. He usually sings loudly in the tree tops such that an observer may watch him without noticing the female on or near the ground. On occasion the male will approach the female. The female seldom moves more than 100 metres from the nest. The female usually keeps near the ground, searching for a nest site or building material. She feeds during these activities and may stop to preen or rest for short intervals. She pays little attention to the male.

The female spends most of the time incubating the eggs, sitting with an alert appearance. Occasionally she makes a quick exit to feed nearby.

The male's degree of attentiveness varies with each individual. He will bring food to the female while she is nesting and at times the female will leave the nest to be fed by him.

Both adults feed the nestlings. The female broods them during the early stages and defends the nest while the male defends the territory.

The male becomes anxious when an intruder approaches the nest. Some birds may hunch down and wag their tails when concerned.

The nests are extremely well concealed. BE VERY CAREFUL WHERE YOU WALK.

Nest Location

The nest is located on the ground in the central part of the territory, usually in an area with heavy ground cover. It may be partly embedded into the ground and is surrounded by herbaceous vegetation. The nest is often placed in such a way that it can be approached and left in cover. Nests are seldom found more than eight feet from a pine tree. Nests are built from dead leaves of sedge or grass and lined with fine plant fibres and perhaps animal h

Fall Plumaged Adults and Immatures

Immature warblers generally have dull plumages that are similar to spring adults. Fall adults are less brilliantly coloured than in the spring. Immatures may have brownish upper parts, especially on the head.

Other Birds Which May Be Confused With The Kirtland's Warbler

Magnolia Warbler (*Dendroica magnolia*):

The broad white wing-bars, white tail-band and yellow rump of adult males are features which distinguish it from the Kirtland's warbler. Confusion can arise in observation of females or immature Magnolia warblers. One of the easiest characteristics to detect is the yellow rump in the Magnolia and its absence in the Kirtland's warbler. The Magnolia warbler is much smaller than the Kirtland's warbler (4-1/2 to 5-inches).

Myrtle Warbler (*Dendroica coronata*):

Immature or fall plumaged adults may be mistaken for Kirtland's warblers. However, the yellow rump and lack of a solid yellow breast should distinguish the Myrtle warbler from the Kirtland's warbler.

Canada Warbler (*Wilsonia canadensis*):

The Canada warbler with its yellow breast, blue-grey back and yellow eye-ring or spectacles may also be mistaken for the Kirtland's warbler. The lack of streaking on the back, the generally prominent black necklace on the breast in the male, and the light coloured legs of the Canada warbler should prevent confusion. Fall plumaged adults and immatures are difficult to identify in poor light.

BEHAVIOURAL CHARACTERISTICS

Tameness: - both sexes are very tame and observers may usually get quite close without scaring the bird.

Song: - the male has a loud, clear song and can sing almost constantly. Some birds sing all day from about sunrise to sunset. The greatest number of songs are heard in the morning. Singing tapers off in early July but can continue till late July or early August.

- the female does not sing.

Tail wagging: - both sexes may wag their tails up and down, especially when observers are near the nest or young.

DISCOVERY OF A NEST

Nests are situated on the ground and are extremely well concealed. Be very careful where you walk.

If a nest is discovered, do not disturb it in any way. Mark a nearby tree with flagging tape and cautiously leave the area.

Cutting or removal of adjacent vegetation to permit photography has resulted in death of the nestlings from exposure. Experience warns that cowbird eggs or young should not be removed from the nest until the Kirtland's warbler young have hatched, or the female may abandon the nest.

KIRTLAND'S WARBLER HABITAT: (preferred Nesting Requirements)

- (1) Young jack-pine stands of 80 acres or more.
- (2) Trees that are 5 to 20 feet in height.
- (3) Trees in dense clumps interspersed with many open areas.
- (4) Trees with live branches to the ground.
- (5) A dry, well-drained site with coarse textured sands or exposed bedrock.
- (6) Topography flat or mildly undulating.

Although jack pine is the preferred species, colonies of nesting Kirtland's warblers have been found in red pine plantations. Other pine species may also be suitable. Birds have been known to nest in stands as small as thirty acres, and this may not be the lower limit. The Kirtland's warbler will feed in small and tall trees if they are both present in the area.

How to Identify Jack Pine

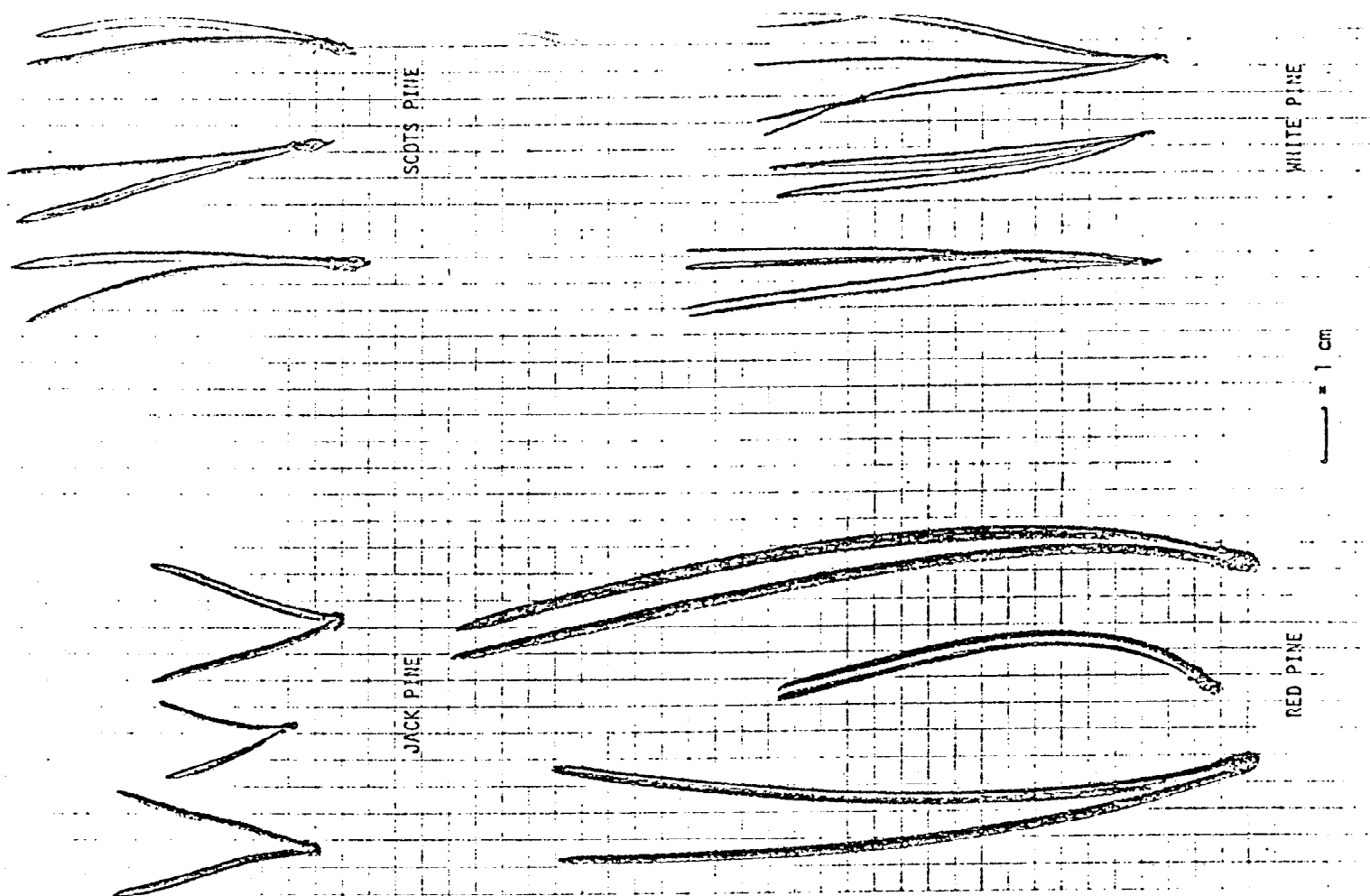
Jack Pine (*Pinus banksiana* Lamb.)

Range: - The jack pine in Canada ranges from Nova Scotia to the Mackenzie Valley in the Northwest Territories. In Ontario the jack pine range extends over the entire province except for the Hudson Bay Lowlands and the area south of a line between Parry Sound and Ottawa. Plantations also occur sporadically throughout southern Ontario.

Habitat: - found on rocky or sandy soils.

Tree Form:- variable, may reach 70 to 80 feet of height on good soil.

- the Kirtland's warbler prefers trees that are 5 to 20 feet in height, with living branches to the ground.



- Needles:
- two per cluster.
 - 1-1/4 inches long.
 - stiff, straight or slightly twisted.
 - spread apart from each other to form a "v".

- Cones:
- generally paired on the branch, they may grow straight off the branch or they may curve inward along it.
 - scales are usually smooth, tight fitting and closed.
 - some open cones may be present.

Other Pines Which May Be Confused With Jack Pine

Scots Pine (Pinus sylvestris L.)

Scots pine needles, also two per cluster, are longer than jack pine. The needles are blue-green and are usually twisted.

The cones are usually pointed back on the branch. When the cone is closed it has a uniform conical shape. Open cones are common on trees.

The most obvious identifying characteristic is the orange colour of the upper trunk. The bark on this part is papery and flakes easily.

Red Pine (Pinus resinosa Ait.)

The needles of this pine are 5-6 inches long and are two in a cluster. The cone is about two inches long. Open cones may be present on the tree. The bark has a pinkish hue, especially on the upper trunk.

White Pine (Pinus strobus L.)

- White pine has five needles per cluster.

KIRTLAND'S WARBLER SONG RECORDINGS

The cassette tape included with this kit contains Kirtland's warbler songs from both Michigan and Ontario. The first sixteen songs represent eight birds, each with two songs, that were recorded in Michigan and copied by permission from the Federation of Ontario Naturalist "Warblers" record, which is Volume 4 in their "Sounds of Nature" series. The next eight songs, ending with an abbreviated song,

are recordings of the Petawawa bird by M. Brigham, Ottawa. This set of twenty-four songs is repeated five times to make fifteen minutes of tape. These songs are copyrighted and may not be reproduced by any means without permission of the owners.

The cassette tape will sound best if played in a tape-recorder similar to a Sony TC-110 or better. Play it at high volume. There is no need to amplify the song if the search procedure is followed.

SEARCH PROCEDURE

The search procedure is based on the following behavioural characteristic of the male Kirtland's warbler.

- (1) Kirtland's warbler males generally establish and stay on territory.
- (2) Kirtland's warbler males are loud, persistent singers. On a still day they can be heard from a one-quarter mile distance.
- (3) Observations suggest that there is an 85% probability that a male on territory will sing at least once during any five minute period between sunrise and 11:00 a.m. in good weather. (Mayfield, 1960).

Details of Search Procedure (based on the census procedure used in Michigan.)

- (1) For safety reasons the minimum recommended group size is two persons.
- (2) The search area should be identified in advance on a map or aerial photograph and the traverse lines should be predetermined and marked on the map or aerial photo.
- (3) The traverse lines should be spaced 0.2 miles (320 metres) apart.
- (4) The study area should be traversed along lines using a compass or suitable landmarks. Pacing is advised to keep track of location or position on the line.
- (5) Stop every 500 feet (150 metres) and play the Kirtland's warbler record for five songs, listen for two and one-half minutes, then play another five songs and listen for two and one-half minutes. Then move on 500 feet (150 metres) and repeat.

Recommended Search Period

The first Kirtland's warblers have arrived on the nesting grounds in Michigan as early as May 3 and as late as May 20. The earliest Canadian sightings are at Point Pelee, Ontario, on May 10.

The recommended census period for 1978 is June 3 - 18 inclusive. However two weeks before and after this period are also considered suitable times to search. During the daytime the search period should be confined to between sunrise and 11:00 a.m.

PROCEDURE IF A BIRD IS FOUND

- (1) Do not search any farther, and discontinue use of the tape recorder as it may harass the bird.
- (2) Mark trees with flagging tape. The area should be well marked for ease in relocation. Be careful not to step on a hidden nest.
- (3) Mark the exact location on the map or aerial photograph.
- (4) Contact any one of the people listed below as soon as possible. Please do not inform anyone else. The Kirtland's warbler is now protected under the Endangered Species Act of Ontario and the Migratory Birds Convention Act, and protective measures should be established before public announcement of the discovery.

(5) DO NOT LOOK FOR A NEST UNLESS ACCOMPANIED BY AN EXPERIENCED OBSERVER OF GROUND NESTING BIRDS. UNLESS YOU ARE FAMILIAR WITH THE BEHAVIOR OF GROUND NESTING BIRDS YOU COULD STEP ON THE NEST BEFORE YOU SEE IT.

- (6) It is a criminal offense under the Migratory Birds Convention Act and the Endangered Species Act to molest the birds or in any way alter their habitat. Contact any of the following members of the Warbler Search Group before proceeding with any further activity.

Paul L. Aird Faculty of Forestry and Landscape Architecture University of Toronto, Toronto	Bus. (416) 978-8660 Home (416) 233-4196
Ted Brown The Province of Quebec Society for the Protection of Birds Montreal, Quebec	Bus. (514) 866-5421
Steve Curtis Canadian Wildlife Service, Ottawa	Bus. (613) 998-4693 Home (613) 821-2939
Ross James Department of Ornithology Royal Ontario Museum, Toronto	Bus. (416) 978-3684 Home (416) 745-4491
Mabel McIntosh The Province of Quebec Society for the Protection of Birds Pointe Claire, Quebec	Home (514) 695-5576

Gerald McKeating Wildlife Branch Ontario Ministry of Natural Resources Toronto	Bus. (416) 965-4251 Home (416) 481-5407
Dan Strickland Ontario Ministry of Natural Resources Algonquin Park, Whitney	Bus. (705) 633-5592 Home (705) 637-5242
Jo Wright The Province of Quebec Society for the Protection of Birds Hudson, Quebec	Home (514) 458-5805

APPENDIX

CHECKLIST OF BASIC FIELD EQUIPMENT

- 1. Map or preferably an aerial photograph of the search area.
- 2. Compass
- 3. Pencils and Field Notebook
- 4. Bird Field Guide
- 5. Binoculars
- 6. Tape Recorder
- 7. Spare Batteries
- 8. Kirtland's Warbler Search Kit including Tape Recording
- 9. Flagging Tape
- 10. Personal Gear: sturdy boots, insect repellent, matches, food, first-aid kit, knife, sun glasses/hat, water bottle, spare socks, rain gear, etc.

WHERE TO BUY AERIAL PHOTOGRAPHS AND MAPS

Black and white photographs with a scale of one inch = 1320 feet inches = 1 mile) are recommended. Each 10-inch by 10-inch print covers out 5 square miles, or 1.5 square miles due to overlap if stereoscopic coverage is desired.

Prints can be ordered from:

Administrative Services Branch
Whitney Block, Main Floor
Queen's Park
Toronto, Ontario, M7A 1W3
(416) 965-1123

National Air Photo Library
615 Booth Street
Ottawa, Ontario, K1A 0E9
(613) 994-5779

Photo-Cartotheque
Ministère des Terres et Forêts
200 Chemin Ste. Foy
Quebec, Quebec, G1R 4X7
(418) 643-4130

Maps can be ordered also from the Administrative Services Branch in Toronto from the Canada Map Office (same address as the National Air Photo Library), telephone (613) 994-9663.

Draw a sketch map of the area surveyed on the reverse side. Mark census routes followed. Complete one form for each area surveyed.
Form prepared by the Ontario Ministry of Natural Resources

SITE DESCRIPTION:

Size of area: _____

Topography: _____

Ground cover: _____

Tree cover: (species) _____

Soil type: _____

NUMBER OF KIRTLAND'S WARBLERS:

Heard: _____

Males seen: _____

Females seen: _____

GENERAL COMMENTS:

Date surveyed: _____

Survey team members: _____

Starting time: _____

Finishing time: _____

WEATHER CONDITIONS:

Wind speed: _____

Cloud cover: _____

Precipitation: _____

Temperature: _____

SITE LOCATION:

Latitude: _____

Longitude: _____

Map No.: _____ Grid Ref.: _____

Aerial Photo Flight No.: _____

Description of location:

(county, township, lot and concession number, section)

Form completed by: _____

Telephone No.: _____