A Research Proposal for a Study of the Non--breeding Biology of the Kirtland's Warbler (Dendroica kirtlandii).

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December 23, 1976

Abstract

Recent data strongly suggest that the critically endangered Kirtland's Warbler has been suffering significant stresses in the non-breeding season, and that cowbird control on the breeding grounds, though necessary, may be insufficient to guarantee recovery of the species. To date there have been no comprehensive studies on the biology of the species during the post-fledging stage, migration, or on the wintering grounds, so the specific problems they face are speculative. Among the possibilities, it is conceivable that the birds are having difficulty finding the wintering or breeding grounds because of the smallness of the targets. On the other hand, there could be problems with habitat changes, particularly cutting of pine, or with predation by feral cats on the wintering grounds in the Bahamas. There do not appear to be any practical methods for study of the birds in the non-breeding season other than radio-telemetry, and we do not recommend any other methods. While radio-telemetry introduces some risks into the study, these risks are probably acceptably small, providing the program is carefully administered.

I. Introduction and Summary of Proposal Development

A preliminary plan for a study of Kirtland's Warbler, developed from a review of pertinent literature and telephone interviews with experts on the species, was sent to you on September 30, 1976. Aware of the need for direct and extended input from individuals knowledgeable about the warbler, and for familiarity with actual field conditions on the wintering grounds in the Bahamas, we convened a meeting in Nassau, Bahamas, from November 10-13, 1976. The participants, in addition to curselves, included Harold Mayfield, Mary Clench, and William Cochran. The events associated with this conference are listed below.

November 10. A two hour overflight of Grand Bahama, the Berry Islands, and northern Andros, en route from Ft. Lauderdale, Florida, to Nassau, Bahamas.

November 10-12. Planning sessions, where background information on Kirtland's Warbler on the breeding grounds (Mayfield), on migration and the wintering grounds (Clench), and on the applicability of radio-telemetry to a warbler study (Cochran) preceded the development of an in-depth research proposal. Tentative agreement was reached on the research proposal design, delegation of responsibility, approximate funding needs, and assignment of administrative obligations.

The warbler meeting was held in conjunction with an international conference on the White-crowned Pigeon, a forum that provided opportunities for extensive contact with biologists familiar with the Bahamas and included representatives of the Bahamian government and leaders of the Bahamas National Trust, the major conservation agency in that country. Social functions for the conference, to which we were invited, allowed a free and informal interchange of ideas among all parties.

November 13. Presentation of the biology of the warbler, and our tentative study plans, to members of the Bahamian government, including Claude Smith, Director, Ministry of Agriculture, Fisheries, and Local Government, Oris Russell, Permanent Secretary for External Affairs, and David Campbell, Director, Bahamas National Trust. In addition, Sandy Sprunt, Director of Research, National Audubon Society, and interested biologists from the pigeon conference attended the formal session on Kirtland's Warbler.

November 13-19. Intensive reconnaissance of southern Abaco Island by C. Kepler, N. Snyder, and A. Kepler.

November 20-22. Reconnaissance of New Providence Island by the Keplers, and meetings with Claude Smith and David Campbell.

The results of the meetings and field work are embodied in the attached research-proposal.

II. The need for expanded research on Kirtland's Warbler

Kirtland's Warbler is a critically endangered species with a peculiar and restricted range. As far as has been determined, the entire breeding population is limited to a small area of scrub jack pine in north-central Michigan. The species nests almost exclusively in the early successional stages of pine following forest fires, and it apparently has been able to survive only in Michigan, largely because this region has been subjected to frequent enough burning that such habitat has been continuously available there. However, jack pine occurs in a huge range across southern Canada and the northern U.S., and much of this range is sparsely populated by man. It is not impossible that additional undetected breeding populations of the warbler might exist.

So far as is known from specimen records, the entire wintering range of Kirtland's Warbler is the Bahama Islands. However, a recent sight record from Mexico (Lane 1975) raises the possibility of a second wintering population. To date, the records of Kirtland's Warblers in migration have been too few and too scattered to rule out the possibility of wintering populations in areas additional to the Bahamas and breeding populations in areas additional to central Michigan. What the records do suggest is that if there are additional wintering and breeding populations these are probably of secondary importance to the presently known wintering and breeding populations (see maps in Mayfield 1960, and Clench 1973).

The breeding biology of Kirtland's Warbler has been thoroughly studied over a period of decades, especially by Van Tyne, Mayfield, and Walkinshaw. Mayfield (1960) summarized the state of knowledge for the species and suggested that it was suffering an enormous loss of reproductive potential due to cowbird parasitism. He suggested that the rate of parasitism (55% of nests) was sufficiently high that it was doubtful that the species could continue to sustain itself. Cowbirds evidently moved into Michigan in the latter part of the 19th century and have been increasing there since that time. The warbler has no known behavioral or ecological defenses against the cowbird.

Complete counts of the Michigan breeding population run between 1951 and 1972 suggested a declining warbler population in the 1960's, as predicted by Mayfield:

Year	# Singing Males
1951	432
1961	502
1971	201
1972	200

While Mayfield (1960) reported 55% of nests parasitized by cowbirds, later studies by Walkinshaw (1972) and others indicated even higher parasitism rates of 70% and above. It appeared there was no need to look further