

Jerry Warrick

February 11, 1983

Mr. Harvey K. Nelson
Regional Director
U. S. Department of the Interior
Fish and Wildlife Service
Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

Attention: Ron Refsnider

AFF(FA) Michigan
E-1
E-1-13

Dear Mr. Nelson:

Enclosed are the proposals for our 1983 endangered species funding (see enclosed priority list). The Kirtland's warbler habitat work is absolutely the first priority. Without that work, of course, the entire recovery program is jeopardized. The Kirtland's warbler census, protection, and plan development work is needed to support the habitat work.

The eagle work is high priority. We have been funding some eagle work through our state forest wildlife funds. However, the severe state budget problems will cause cutbacks which would threaten this work as well as preclude switching Kirtland's warbler census and planning work to state funding.

Of these first five priority items, all but the eagle work are presently being funded by Section 6 money. We sincerely hope that all of the first five will be funded.

Priority six and seven items are definitely needed to make the habitat work more effective and efficient. Work can go on without them, but we will accomplish much more in the future if we are able to fund these items.

The orchid work covered in item eight is sorely needed. This species' range is confined to the Lake States and appears to be shrinking rapidly.

Our wolf work was given relatively low priority because we have few, if any, wolves and little prospect of improving their range without a massive amount of money. However, it would be cost effective if we could fund the Wisconsin team to census wolves in areas adjacent to known Wisconsin wolf populations.

The cross-fostering and sonogram studies are certainly going to be important elements in the expansion of the warbler range. However, we placed them at the bottom of our priority list because they are not absolutely essential to the immediate recovery. The problem will arise if, when these techniques are needed, they have yet to be explored. If we do not fund the sonogram study, it may be several years before an appropriate researcher is again available to do the work.

Mr. Harvey K. Nelson

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February 11, 1983

I have attached all of our Kirtland's warbler proposals to our present Kirtland's warbler study regardless of priority ranking. This will allow everyone to be aware of the umbrella study under which our warbler jobs operate. I did not attach the other proposals to any of our past studies. If this would be helpful, I can supply those write-ups.

I hope this quick compilation is satisfactory. If you have any questions, please call.

Sincerely,

WILDLIFE DIVISION

Keith L. Heezen
Federal Aid Coordinator

KLH:mh

cc J. Taylor
S. Taylor

MICHIGAN PRIORITY LIST OF ENDANGERED
SPECIES PROPOSALS FOR FY 1983

<u>State Priority</u>	<u>Title</u>	<u>Job Number for Presently-Funded Jobs</u>
1	Implementing the Kirtland's warbler work plan	601.2
2	Monitor breeding population of Kirtland's warbler	601.5
3	Annual inventory and mapping of bald eagle breeding areas with summer nest checks	
4	Provide protection and public relations for Kirtland's warbler	601.4
5	Development of Kirtland's warbler work plan	601.1
6	Analysis of prescribed burning methods for Kirtland's warbler	
7	Habitat use by Kirtland's warbler fledglings and post-breeding adults	
8	A comprehensive survey for <u>Platanthera</u> <u>leucophaea</u> in Michigan with recommendations for recovery action	
9	Survey of timber wolf numbers and distribution in the western Upper Peninsula	
10	Experimental cross-fostering of a wood warbler species	
11	Analysis of songs of the Kirtland's warbler: A method of identifying individuals	

KLH:mh
2/11/83

State: Michigan

Project Number: E-1
Study Number: 601

Study Title: Management of the Kirtland's Warbler

Problem: The Kirtland's warbler, a federally designated endangered species, nests only in a small area in northern Michigan. Its breeding population remains critical and numbered only 232 singing males in the spring of 1981 (down from an estimated 1,000 plus in 1961). Failure to protect the nesting population and to provide for its needs may result in the extinction of this species. If the Kirtland's warbler is to be saved from this fate, efforts must be intensified to maintain, improve, and expand nesting habitat and to increase protection against disturbances. These include human disturbances and parasitism of the nests by cowbirds. Efforts to develop management opportunities in new directions are being hampered now by our lack of more detailed knowledge about the parameters that make up the special habitat that the Kirtland's warbler needs and by our lack of success in developing economical silvicultural techniques for jack pine regeneration on Grayling Sand.

Another problem hampering efforts to come to the aid of rare, threatened, and endangered species is the lack of techniques with which to help them. Techniques previously developed to employ in various disciplines (wildlife management, fisheries research, forest inventory, etc.) were dependent upon a large number of subjects to which they were applied. Species with very low population numbers require different techniques--very few of which have yet been developed.

Objectives: 1) to develop and implement a recovery plan to produce a breeding population of 1,000 pairs of Kirtland's warblers; 2) to quantitatively document factors limiting the recovery of the Kirtland's warbler population.

Justification: The true value of the Kirtland's warbler cannot be easily assessed. Science is unable to qualify the contribution of a single species to the ecosystem, and in the case of the warbler (where few direct economic benefits occur) it is even more difficult. The preservation of a species headed to extinction (due to man's influence) is the greatest benefit to be derived.

Of direct benefit to the bird itself, this project will result in an expansion of acceptable breeding habitat--one of the major factors limiting the population. Currently only 4,000 to 5,000 acres of good productive habitat is available, however, 30,000 to 36,000 acres are needed to produce and maintain the goal of 1,000 pairs.

Paralleling the management efforts to expand suitable habitat for the Kirtland's warbler, research projects within this study have been included with the intent of finding ways to improve the quality of the habitat and to enhance utilization of existing habitat by the warbler. These findings will then be incorporated into the recovery plan.

Status: The breeding range of the Kirtland's warbler has been identified in Michigan. Certain components of habitat we assume to be essential to them are also known. The population has been censused regularly in recent years, and we are beginning to develop an understanding of their dynamics. Through the efforts of several researchers, ornithologists, and natural historians, we have some knowledge of the bird's life history and behavior. Enough information is presently available to begin intensive management aimed at the Kirtland's warbler recovery. Pursuant to this a recovery plan has been written.

Procedures: Job 601.1 Objectives: 1) to annually prepare a detailed field procedure for expediting the Kirtland's warbler recovery program; 2) to coordinate objective 1 with the Kirtland's Warbler Recovery Team. Job 601.2 Objectives: 1) to increase and improve the breeding habitat; 2) to coordinate objective 1 with the Kirtland's Warbler Recovery Team. Job 601.3 Objectives: 1) to develop an understanding of how the Kirtland's warbler is faring, both during its migration and on its wintering range. Job 601.4 Objectives: 1) to protect the species and the habitat from any disturbance by people, predators, fire or man-made activities. Job 601.5 Objectives: 1) to monitor the breeding population to evaluate responses to management practices; 2) to search, record and make investigations to locate new populations of Kirtland's warbler. Job 601.6 Objectives: 1) to reestablish independent, self-sufficient colonies of Kirtland's warbler. Job 601.7 Objectives: 1) to prepare a select list of private land descriptions for acquisition that lie within the boundaries of essential Kirtland's warbler habitat; 2) to pursue acquisition of selected parcels. Job 601.10 Objectives: 1) to develop a realistic model of the Kirtland's warbler population; 2) to mathematically examine the relationships between recent population changes and weather histories for both the winter and summer ranges; 3) to examine the compatibility of various hypotheses about the population dynamics of the Kirtland's warbler with known information about population levels and environmental conditions; 4) evaluate research needs for Kirtland's warbler recovery. Job 601.11 Objectives: 1) to identify ecological implications of cross-fostering in sparrows; 2) to determine the feasibility of cross-fostering in a closely-related species, the yellow warbler; 3) to prepare a report covering the findings of this job.

Schedule:

<u>Job No.</u>	<u>Job Title</u>	<u>COST</u>	
		<u>FY 1981-82</u>	<u>Cooperator</u>
601.1	Develop work plan	\$ 6,000	DNR
601.2	Implement the work plan	\$179,000	DNR
601.3	Monitor activities on Kirtland's warbler wintering range and along its migration route	*	DNR
601.4	Provide protection and public relations	\$ 7,000	DNR
601.5	Monitor breeding population of Kirtland's warbler	\$ 7,000	DNR
601.6	Reestablish independent, self-sufficient colonies of Kirtland's warbler	*	DNR
601.7	Land acquisition program	*	DNR
601.10	Develop research needs of the Kirtland's warbler	\$ 1,000	DNR
601.11	Use of vesper and chipping sparrows as foster parents for the Kirtland's warbler	*	WMU

Geographic Location: Upper and northern Lower Peninsulas of Michigan

Personnel: Study Group Leader
Endangered Species Program Coordinator
Jerome Weinrich, DNR
Harry Hill, DNR
Lawrence Ryel, DNR
Other support personnel (biologists, foresters, consultants,
student assistants)

Michigan State 1 State Priority No. 1 Implementing the Kirtland's Warbler Work Plan (Job 601.2) Activity/Study Title & Number 1.3 Ongoing Est. Completion Date

New Work, or Ongoing Work Work will be performed under cooperative agreement with the state of Wisconsin Recovery Plan Task #

Funding Needs:	Total \$\$ Needed	Federal \$\$ Requested
Federal FY <u>1983</u>	<u>\$150,000</u>	<u>\$135,000</u>
Federal FY <u>1984</u>	<u>\$160,000</u>	<u>\$144,000</u>

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

NEED: Habitat deterioration caused primarily by an intensive fire suppression program and a poor distribution of age classes in jack pine stands is the prime reason for the decline of the Kirtland's warbler. The immediate short-term or emergency objective to provide sufficient habitat by 1982 to stop the rapid decline by 1987 has not been entirely met. However, the long-term objective to provide habitat sufficient to allow a rapid expansion and stabilization must proceed on the assumption that the partial measures will slow the decline enough so that it will not proceed to extinction and there will be suitable populations to expand into the new range.

TASK PRIORITY NUMBER: 1

OBJECTIVE: Produce habitat suitable to support a breeding population of 1,000 pairs of Kirtland's warblers.

BENEFITS: The true value of the Kirtland's warbler cannot be easily assessed. Science is unable to qualify the contribution of a single species to the ecosystem, and in the case of the warbler (where few direct economic benefits occur) it is even more difficult. The preservation of a species headed to extinction (due to man's influence) is the greatest benefit to be derived.

The eventual stabilization of the habitat will lead to a self-sustaining rotation to maintain the needed 30,000 to 36,000 acres of 8-to-20-year-old jack pine. This will have a positive economic benefit (see An Economic Analysis of the Joint U. S. Forest Service, Michigan Department of Natural Resources Management Plan for Lands Designated as Kirtland's Warbler Critical Habitat, Jeffrey T. Olson, Michigan Department of Natural Resources, July, 1982).

This is a joint U. S. Forest Service, U. S. Fish and Wildlife Service, State of Wisconsin, and State of Michigan project. The proposed silvicultural manipulation on Michigan's state-owned lands is a key element in the entire recovery plan.

APPROACH: Through cutting and burning merchantable stands, or burning nonmerchantable stands, some natural reproduction is encouraged. However, because of poor burning conditions or poor weather for seedling survival, many areas require additional planting of jack pine seedlings.

Approximately 800 acres will be planted. Some of the area treated by controlled burns will need follow-up or fill-in planting.

This will be accomplished through writing up detailed specifications and contracts to cut, controlled burns, seed, plant, and use herbicides or pesticides to establish and protect new jack pine stands.

Prepared by Keith Heezen

1983 DETAILED FINANCIAL PLAN

CSS&M	
1,000,000 jack pine seedlings	\$ 22,000
Leasing crawler tractors to pull tree planters	25,000
Fuel, lubricants, hydraulic fluid	8,000
Misc. supplies, safety equipment, etc.	5,000
TOTAL	<u>\$ 60,000</u>
SALARY AND WAGES	
Laborers	\$ 25,000
Lead Worker	<u>5,000</u>
TOTAL	\$ 30,000
PRESCRIBED BURNS	
Fuel, supplies, contract labor and evaluation	\$ 60,000
1983 TOTAL	\$150,000

<u>Michigan</u> State	<u>2</u> State Priority No.	<u>Monitor Breeding Population of Kirtland's Warbler</u> Activity/Study Title & Number	<u>Annual</u> Est. Completion Date
<input type="checkbox"/> New Work, or <input checked="" type="checkbox"/> Ongoing Work	Work will be performed under cooperative agreement with the state of <u>Wisconsin</u>		<u>4.1</u> Recovery Plan Task #
Funding Needs:		Total \$\$ Needed	Federal \$\$ Requested
Federal FY	<u>1983</u>	<u>\$7,000</u>	<u>\$6,300</u>
Federal FY	<u>1984</u>	<u>\$7,500</u>	<u>\$6,750</u>

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

NEED: With such very low populations, very accurate annual census records are needed. We must know if the birds are moving into newly created habitat, if they are abandoning existing habitat prematurely, and at what densities they are utilizing existing habitat.

TASK PRIORITY NUMBER: 1

OBJECTIVE: 1) To monitor the breeding population to evaluate responses to management practices; 2) To search, record and make investigations to locate new populations of Kirtland's warbler.

BENEFITS: We must know population densities and locations if the recovery effort is to succeed.

APPROACH: Conduct survey to determine overall population level on nesting range by counting singing males. Evaluate census data. Recruit and train personnel. Develop procedure and establish time schedule for censusing. This job will be completed in cooperation with P-R Project W-124-R.

<u>Michigan</u> State	<u>4</u> State Priority No.	<u>Provide Protection and Public Relations for Kirtland's Warbler</u> Activity/Study Title & Number	<u>Ongoing</u> Est. Completion Date
<input type="checkbox"/> New Work, or <input checked="" type="checkbox"/> Ongoing Work	Work will be performed under cooperative agreement with the state of <u>Wisconsin</u>		<u>3.1 and 3.2</u> Recovery Plan Task #

Funding Needs:	Total \$\$ Needed	Federal \$\$ Requested
Federal FY <u>1983</u>	<u>\$7,000</u>	<u>\$6,300</u>
Federal FY <u>1984</u>	<u>\$7,400</u>	<u>\$6,660</u>

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

NEED: As with any scarce resource, the pressure to view, photograph, or otherwise disturb Kirtland's warblers becomes overwhelming. What would be normal predation, parasitism, or competition becomes unbearable. A great need develops for protection of individuals.

TASK PRIORITY NUMBER: 1

OBJECTIVE: To protect the species and the habitat from any disturbance by people, predators, fire, or man-made activities.

BENEFITS: Without providing secure nesting areas, the entire recovery effort would be jeopardized.

APPROACH: Post and sign against trespass. Restrict activities detrimental to developing habitat. Restrict against any use of the area during the breeding season. Keep the public informed on the warbler situation regularly. Work with National Guard of Michigan to coordinate military activities during the nesting season.

Prepared by Keith Heezen

(Job 601.1)

Michigan State	5	Development of Kirtland's Warbler Work Plan	Ongoing
	State Priority No.	Activity/Study Title & Number	Est. Completion Date

<input checked="" type="checkbox"/> Ongoing Work		Work will be performed under cooperative agreement with the state of <u>Wisconsin</u>	1.1 and 1.2 Recovery Plan Task #
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Funding Needs:	Total \$\$ Needed	Federal \$\$ Requested
Federal FY <u>1983</u>	\$6,000	\$5,400
Federal FY _____	\$6,400	\$5,760

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

NEED: The entire present range and potential range of the Kirtland's warbler requires a periodic field check and review. Areas scheduled for future treatment need revisions to take advantage of or compensate for unplanned habitat changes caused by such disturbances as insect outbreaks or wildfire.

TASK PRIORITY NUMBER: 1

OBJECTIVE: 1) To annually prepare a detailed field procedure for expediting the Kirtland's warbler recovery program; 2) To coordinate objective 1 with the Kirtland's Warbler Recovery Team.

BENEFITS: This job greatly expedites and increases the efficiency of the remaining jobs.

APPROACH: Select and schedule the treatment of areas for constructing new habitat. Review and select areas for improvement of presently-used habitat. Prepare program outline for Kirtland's warbler management activities.

Michigan State	6 State Priority No.	Analysis of Prescribed Burning Methods Activity/Study Title & Number	October, 1984 Est. Completion Date
X New Work, or Ongoing Work	Work will be performed under cooperative agreement with the state of <u>Wisconsin</u>		1.311 Recovery Plan Task #

Funding Needs:	Total \$\$ Needed	Federal \$\$ Requested
Federal FY <u>1983</u>	<u>\$32,711</u>	<u>\$29,440</u>
Federal FY _____	_____	_____

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

NEED: The Kirtland's warbler management plan is based on natural regeneration of jack pine by a regularly scheduled prescribed burning program. Unfortunately, regeneration success is currently much lower than regeneration after wildfires. As a result, it is necessary to expend annually at least an additional \$100,000 for forest cultivation on state management areas to prevent extinction of the Kirtland's warbler. Habitat prepared by other methods such as direct seeding and machine planting not only require large outlays of capital but is of inferior value for the Kirtland's warbler. Territory size is usually larger in artificially regenerated habitat necessitating management of larger tracts of lands to meet the Recovery Plan goal of 1,000 pairs. There is great concern that forest cultivation funds will not consistently become available at needed levels for the Kirtland's warbler. There is doubt that artificially regenerated habitat can meet recovery plan goals.

The Kirtland's Warbler Recovery Team, consisting of members of the Department of the Interior, Michigan Department of Natural Resources, U. S. Forest Service, and two private citizens, has asked for detailed studies of prescribed burn methods to find ways to improve success rates of natural regeneration of jack pine. The Recovery Team maintains a research committee to review research needs and proposals. This study has been selected by the Kirtland's warbler research committee as first priority among projects currently under their review.

TASK PRIORITY NUMBER: 2

OBJECTIVE: To compare the results of backfiring an entire jack pine area with conventional prescribed burning (headfires) to determine which is most effective in obtaining jack pine regeneration.

BENEFITS: This is the first step in solving the difficult problem of raising regeneration success rates after prescribed burns. Gains achieved will benefit not only the Kirtland's warbler, but all jack pine management in the Great Lakes states.

APPROACH: There will be a minimum of four replications of each of the two treatments: conventional burning (headfires) and backfiring. Each replicate will be of adequate size to be operational on a forest land management basis. In each replicate, the two treatment areas will be adjacent to each other, separated by an adequate firebreak. By conducting burns at the same time and in the same location, burning conditions and after burn weather patterns, critical factors in determining regeneration success, will be identical between the test area and the conventionally burned area. This leaves fire intensity (as related to method of burning) as the only variable factor between the two

Prepared by Sylvia Taylor areas. Valid comparisons can then be made between regeneration success and method of burning.

Michigan	7	Habitat use by Kirtland's warbler fledglings and post-breeding adults.	October 15, 1983
State	State Priority No.	Activity/Study Title & Number	Est. Completion Date
X New Work, or Ongoing Work	Work will be performed under cooperative agreement with the state of Wisconsin		2.221, 2.222 and 3.123
			Recovery Plan Task #

Funding Needs:	Total \$\$ Needed	Federal \$\$ Requested
Federal FY 1983	\$2,000.00	\$1,800.00
Federal FY _____	_____	_____

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

NEED: An evaluation of habitat utilization by fledgling and post-breeding adult Kirtland's warblers has not been made. This is a serious gap in our knowledge of the needs of the species while on the breeding grounds.

TASK PRIORITY NUMBER: 3

OBJECTIVE: To describe habitat utilized by Kirtland's warbler fledglings and post-breeding adults.

BENEFITS: To date, habitat management has been aimed solely at creating desirable nesting habitat. It is conceivable that optimum survival of fledglings and post-breeding adults may depend on the availability of a different sort of habitat.

Results of this study could result in changes in the dates when nesting areas are closed to access, as well as the habitats which are closed. The Michigan National Guard is very concerned about these matters since they directly affect their maneuvers.

APPROACH: A systematic approach to sampling habitat and searching for warblers in late summer will be developed. Preliminary work was carried out in 1982. The U. S. Fish and Wildlife Service has plans to test radio telemetry equipment on a few Kirtland's warblers in 1983 which could greatly facilitate this study. In turn, the Service's study will benefit by our personnel tracking the radio-equipped birds. Radio tracking of associated species such as black-capped chickadee will facilitate searching for warblers in late summer.

Michigan	10	Experimental Cross-fostering of a Wood Warbler Species	October, 1984
State	State Priority No.	Activity/Study Title & Number	Est. Completion Date
X New Work, or Ongoing Work		Work will be performed under cooperative agreement with the state of <u>Wisconsin</u>	5.21 Recovery Plan Task #

Funding Needs:	Total \$\$ Needed	Federal \$\$ Requested
Federal FY '83	\$25,000	\$22,500
Federal FY '84	\$30,000	\$27,000

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

NEED: With the low population levels of Kirtland's warblers in recent years, their breeding range has shrunk to the point where pairs were found in only six counties of northern Lower Michigan in 1982. Since 1951, singing males have been located in 12 different counties. In the past, it is very probable that the breeding range was much more extensive. In the 1940's, for example, there is good evidence that a breeding colony was present in Ontario. The most promising means of expanding the species present range is through cross-fostering.

TASK PRIORITY NUMBER: 3

OBJECTIVE: To determine the feasibility of raising wood warblers using sparrows as surrogate parents.

BENEFITS: At present, no other technique has been advanced which would introduce Kirtland's warbler to new nesting areas with some assurance they would become imprinted there and subsequently return. The time necessary for reaching the Recovery Team's goal of 1,000 pairs can likely be shortened significantly by establishing new colonies in unoccupied breeding habitat. There is good evidence that yearling birds returning to the breeding grounds for the first time, do not have the navigational capabilities that older birds do. If colonies were spread across a larger portion of Michigan and perhaps into Wisconsin and Ontario as well, additional yearlings would be able to locate mates. At present we suspect that many are unable to target in precisely enough to find existing colonies. Expanding the current range of the species would also insure that a single catastrophe (fire, storm, pollution) wouldn't destroy a major portion of the breeding population. Both Ontario and Wisconsin have expressed strong interest in introducing Kirtland's warblers.

APPROACH: This study would use another wood warbler species, the yellow warbler, as a test animal. Yellow warbler eggs would be placed in either field sparrow or chipping sparrow nests. Success would be measured by (1) fledgling rate, (2) returns of fledged birds to suitable yellow warbler habitat, and (3) success of their mating with other yellow warblers. Preliminary work done in 1980 and 1981 was promising, but the scale was such that only one returned bird was found, and it soon disappeared. The proposed study would be larger in scope to increase the chance of getting several returns the following year. The Kalamazoo Nature Center or similar area would be used. If tests with yellow warblers are successful, a field trial with Kirtland's warbler eggs in vesper sparrow or field sparrow nests would be carried out if the status of the species warrants.

Prepared by Drs. Richard Brewer and Lawrence Rye

Michigan	11	Analysis of Songs of the Kirtland's Warbler: A Method of Identifying Individuals	1984
State	State	Activity/Study Title & Number	Est. Completion Date
	Priority No.		
<input checked="" type="checkbox"/> New Work, or	Work will be performed under cooperative agreement		4.111-1
<input type="checkbox"/> Ongoing Work	with the state of <u>Wisconsin</u>		Recovery Plan Task #

Funding Needs:	Total \$\$ Needed	Federal \$\$ Requested
Federal FY <u>1983</u>	<u>\$2,300</u>	<u>\$1,725</u>
Federal FY _____	_____	_____

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

NEED: In attempting to understand the population dynamics of the Kirtland's warbler, it is essential to clarify the pattern of individual movements and the changes in composition of colonies in successive years. This project would analyze recorded territorial songs, through sonograms, as a method for tracing movements of individual warblers both within and between breeding seasons. Observation by experts suggest that songs of individuals differ from other male Kirtland's warblers to permit identification of individuals. Also, the song of a specific male warbler does not change from year to year. If proven, this system would present a needed opportunity to study movements of individual warblers with a minimum of disturbance to nesting pairs.

TASK PRIORITY NUMBER: 3

OBJECTIVE: Determine the degree of variation in individual Kirtland's warbler songs during a single breeding season as a basis of comparison with the songs from these same populations in subsequent years.

BENEFITS: This study could provide a basis for further study of key aspects of the warbler's biology such as site fidelity, longevity, and territory size. Results will contribute substantially to evaluations of performance of dedicated management units. Information gained will allow development of census techniques which involve less disturbance of nesting territories.

APPROACH: Extended song sequences would be recorded for as many males as possible in three or four separate populations throughout the period of greatest vocal activity--mid May to early July. In the following year, recordings would be made of males occupying territories where songs were recorded in 1983. Sonograms will be made from the recordings.

Prepared by Victor Janson

Michigan	3	Annual Inventory and Mapping of Bald Eagle Breeding Areas with Summer Nest Checks	October, 1984
State	State	Activity/Study Title & Number	Est. Completion Date
	Priority No.		

<input checked="" type="checkbox"/> New Work, or Ongoing Work	Work will be performed under cooperative agreement with the state of <u>Wisconsin</u>	<u>1.11 and 1.1221</u>
		Recovery Plan Task #

Funding Needs:	Total \$\$ Needed	Federal \$\$ Requested
Federal FY <u>1983</u>	<u>\$39,000</u>	<u>\$35,100</u>
Federal FY _____	_____	_____

Justification (concisely cover Need, include Task Priority Number; Objective; Benefits; Approach)

Michigan's nesting population of bald eagles has been censused and reproductive success measured each year since 1961. Between 1977 and 1981 part of the cost of this effort was by Section 6 grants. In 1982, the survey was paid from the State of Michigan, Fish and Game Protection Fund. Current budget cuts in wildlife programs make it doubtful that surveys can be funded by the state.

U. S. Forest Service biologists cooperate with the Michigan Department of Natural Resources in the annual census. Current safety regulations, however, preclude their use of low flying aircraft for aerial surveys. The three national forests in Michigan, therefore, depend on the state for aerial eagle surveys.

Census information is used to determine availability of eaglets for reintroductions for other states, monitor the slow recovery of reproductive success resulting from controls of the use of toxic chemicals, provide up-to-date information for environmental review of various land uses that may affect the eagle, monitor annual variations in the status of Michigan eagles, and provide data for the regional eagle census.

The Draft Bald Eagle Recovery Plan (Northern States) designates Task 1.11, annually inventory and map bald eagle breeding areas, as priority 2. The Michigan survey includes Task 1.1221, follow-up nest checks and banding by Sergej Postupalsky and Jack Holt. This task is designated priority 3 by the Recovery Plan.

In 1982, the summer Upper Peninsula nest check resulted in discovery of unusually high (22 percent) nestling mortality occurring between the second survey in late May and banding visits three-to-five weeks later. Sixteen eaglets were either missing or their remains were found in or below the nest. Losses included five entire broods of two young each. These deaths remain unexplained. As a result of the losses, Michigan has determined that no eaglets will be available for reintroduction programs in 1983. Because of the gravity of the situation, Task 1.1221 should receive a priority rank for at least the next two years in Michigan.

The first aerial survey will be undertaken early during the incubation period, but late enough for most pairs to have laid eggs. The objective is to determine the number of mated pairs present on the breeding sites, to identify those pairs breeding, and to determine which nests are being used. The second survey will be made during the late part of the nesting period to determine the number of young produced in each nest. The follow-up check and banding will be confined, for the most part, to nests which were occupied on the first check, to sites suspected to be frequented by nonbreeding individuals, and to places where adults had been reported during the breeding season. Active nest localities will be mapped. Survey results will be published in Michigan's annual eagle/osprey survey report.

Prepared by Sylvia M. Taylor