United States Department of the Interior

FISH AND WILDLIFE SERVICE

Federal Building, Fort Snelling
Twin Cities, Minnesota 55111

January 24, 1986

Mr. George W. Irvine
Huron-Manistee NF
Cadillac, MI

Dear George:

By this time we had hoped to have a Mack Lake Burn Area (MLBA) research proposal fleshed out in a form that would be satisfactory to all parties, and to present it for the team's approval at the February meeting. However, the various opinions expressed over the past eight months (at the June team meeting; by members of the original proposal writing group; subsequent comments by Bart, Probst, and DeCapita) have been sufficiently disparate and strongly held that we believe a team discussion of the various research options is still warranted.

Attached is a paper briefly describing five levels of research effort that could be initiated at MLBA. Other levels, of course, are possible, but we believe these five levels represent a reasonable gradient of knowledge which could be used to identify optimal habitat. One end of the gradient is a rather risky judgment of optimal habitat based solely upon the number of singing males which show up in a habitat type. At the other extreme, optimal habitat would be measured by the number of late summer immatures that are produced by a habitat type over the life of the stand.

Our request is that the recovery team members give some serious thought to this issue so that a team consensus can quickly be attained at the February meeting. Following this, we can move on the chore of having the appropriate study proposal written, and make a stronger case for funding the work in 1988.

Sincerely,

James M. Engel
Chief
Division of Endangered
Species

Attachment

INTRODUCTION:

The following material is intended to provide a starting point for a comprehensive discussion of the extent of research that should be initiated at the Mack Lake Burn Area (MLBA). It provides one perspective of the information needed for a more successful habitat creation program and offers various levels of research effort which will satisfy the needs to various degrees. Primarily, however, this paper raises the two questions:

- how reliable do we want our habitat theories to be?
- at how much risk are we willing to place individual Kirtland's warblers (KW) in order to obtain the date needed to support our theories?

These questions must be answered now so a research plan can be developed which will be fully supported by all entities involved in KW recovery. Only with this full support do we have any chance of obtaining funding from a federal budget which is expected to decrease over the next few years.

PROBLEM:

The ever-present problem encountered in the KW management program has been not knowing how, with limited funding and manpower, to create habitat that will produce the most KWs and at the least cost. The chronic failures to reach the annual goals are likely to continue, thus we must strive to ensure that all habitat that is created is of optimal quality and location. The natural regeneration of KW habitat of various degrees of quality at the MLBA is providing an opportunity to study methods of alleviating this problem.

INFORMATION NEEDS:

1) What is the optimal habitat for Kirtland's warbler? This is not only knowing in what habitat KWs will nest (which we know fairly well by now) but also what habitat will produce the greatest number of successful fall migrants over the life of the stand. As this is very hard to get at, we had better be satisfied with a less accurate criterion to determine optimum habitat, e.g., singing males/100 acres over stand life, or estimated fledgling production per unit of area over stand life.

2) Where should an area of optimal habitat be located in relation to areas of existing habitat? Over what distance can newly developed habitat attract emmigrants from existing nesting areas?

3) How can we economically create optimal habitat?

OBJECTIVES:

1) To determine what constitutes optimal habitat. Optimal habitat can be defined at various levels of refinement, with the fifth and final level being the most desirable:

     a) that habitat attracting the first immigrant KWs

     b) that habitat hosting the highest density of singing males

over the life of the stand

   c) that habitat hosting the highest density of paired males over
      the life of the stand
   d) that habitat producing the highest number of fledglings
      per 100 acres over the life of the stand
   e) that habitat producing the highest number of fall migrant
      immature KWs per 100 acres over the life of the stand.

   2) To determine where such habitats should be located in relation to
occupied habitats in order to provide for maximum KW production.

   3) To develop methods to economically create habitat which resembles
optimal habitat as closely as possible.

   (The third objective should be addressed in a separate research
effort, subsequent to the completion of studies to meet objective 1.)

STUDY DESCRIPTION:

   Various levels of research effort can be described to achieve these
objectives and satisfy these information needs. The levels will provide
increasingly dependable data and conclusions as they also increase in their
manpower and funding needs, along with increasing risk to the individual birds
being studied. Each level should be viewed as also encompassing the research
in the preceding levels.

   Level 1 - Habitat description and continuation of census. This level
of effort will tell us which habitat type attracted the first immigrating males
and held the most singing males over the life of the stand. This is an
inexpensive, but very undependable measure of productivity, as we won't even
know if the censused males are mated. Limited data on dispersal and
immigration will be obtained, telling us only where males appear and disappear.
Objective 1b will be met. Objective 2 will not be met.

   Level 2 - Color band by natal area, followed by intensive searches in
MLBA and other nearby nesting areas. Coupled with the work from level 1, this
will tell us something of dispersal behavior: direction, distance, timing, and
trends over a few years. It still won't give a solid idea of reproductive
success, or even if the immigrating birds were successful in defending a
territory and mating at MLBA. Objectives 1b and 2 will both be met.

   Level 3 - Individually color band adult and hatch-year birds from 4 or
5 natal areas and follow up with intensive searches in MLBA and other areas.
Coupled with level 1, this will give us (with only a minimal increase in the
risk to the birds being studied) site fidelity and relocation data for age and
sex groupings, and which habitats have high or low turnover rates for the
various groups. It may warn us of habitat types which act as "sinks" by
pulling in a series of males and/or females but allowing them to have only very
limited reproductive success. This research level will also provide survival
and other demographic data. The individually marked birds will allow for a
study of matedness. And, if carried out over a sufficient number of years, it
will tell us when a stand ceases to attract new immigrant KWs. Objectives 1c
and 2 will both be met.

   Level 4 - Detailed nest studies in MLBA in various habitat types.