SURVEY OF BATS AND SEARCH FOR ENDANGERED BAT SPECIES, PARTICULARLY THE INDIANA BAT (MYOTIS SODALIS), AT LAKE ISABELLA, HAMILTON COUNTY PARK DISTRICT CINCINNATI, OHIO

JOHN O. WHITAKER, JR.
(121-26-9994)

DEPARTMENT OF LIFE SCIENCES
INDIANA STATE UNIVERSITY
TERRE HAUTE, INDIANA 47809

812-237-2383

PROPOSAL TO
ROBERT MASON
HAMILTON COUNTY PARK DISTRICT
10245 WINTON ROAD
CINCINNATI, OHIO 45231

MARCH 18 , 1997

GRANT, CONTRACT, AND LOAN ADMINISTRATOR
MARK GREEN
CONTROLLERS OFFICE
INDIANA STATE UNIVERSITY
TERRE HAUTE, IN 47809
812-237-3553

ISU FEDERAL ID # 35-600-1670

SURVEY OF BATS AND SEARCH FOR ENDANGERED BAT SPECIES, PARTICULARLY THE INDIANA BAT (MYOTIS SODALIS), AT LAKE ISABELLA, HAMILTON COUNTY PARK DISTRICT CINCINNATI, OHIO

by

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INTRODUCTION

ABSTRACT: It is proposed that the levee in the area between Lake Isabella and the Little Miami River in Lake Isabella Park, Hamilton County, Ohio be repaired. However, the area contains appreciable forest containing large trees and there was some concern that Indiana bats, Myotis sodalis, might occur there. The main purpose of the proposed project is to sample for the Indiana bat, a federally endangered species, and other bats that might inhabit the area.

We propose three nights of mistnetting supplemented by bat detector to assess whether Indiana bats are present. The specific netting sites will be determined at the time of assessment.

INTRODUCTION

Eleven species of bats are considered to be inhabitants of Ohio (Gottschang, 1981): four species of Myotis including M. lucifugus (little brown myotis), M. sodalis (Indiana myotis) M. septentrionalis (northern myotis), and Myotis leibii (small-footed myotis), four other species of social bats including Pipistrellus subflavus (eastern pipistrelle), Eptesicus fuscus (big brown bat), Nycticeius humeralis (evening bat), and Plecotus rafinesquii (Rafinesque's big-eared bat): and three species of solitary bats, Lasionycteris noctivagans (silver-haired bat), Lasiurus cinereus (hoary bat) and L. borealis (red bat).

Two additional species, Myotis grisescens (gray myotis) and Tadarida brasiliensis (Brazilian free-tailed bat) have been taken in Ohio. However, both are considered to be of accidental occurrence rather than residents of the state.

Two of the species resident in Ohio are not likely to occur at the study site; Rafinesque's big-eared bat and the small-footed myotis. Each is known from only one county in Ohio; the small-footed myotis is from Erie County in north central Ohio, and the big-eared bat from Abrams

County in south central Ohio. Both species are rare and are candidates for federal listing. Their current status in Ohio should be investigated. The one individual of Myotis leibii known from Ohio is the type specimen for the species. It was taken by Audubon and Bachman (1851). Two individuals of the big-eared bat were taken in two separate caves in Green Township, Abrams County, one in March 1953, and the other in December 1960 (Gottschang, 1981).

Thus, nine of the 11 species of bats recognized as residents of Ohio are candidates for occurrence at the site, and all nine have been previously taken in the general area of Hamilton County. The little brown myotis has been taken in Hamilton and Butler counties, the big brown bat, red bat, hoary bat, evening bat and pipistrelle in Hamilton County, and the silver- haired bat, northern myotis, and Indiana myotis in Clermont County, the next county to the east of Hamilton County.

The least likely of the nine species to occur at the site is the evening bat. The evening bat has apparently declined in the northern part of its range. For example, eleven colonies of this species were known from Indiana 30 years ago and were distributed roughly along the major southern rivers in Indiana, the Ohio and the Wabash. All of the original 11 colonies are now gone. There is only one known colony in Indiana (Whitaker and Gammon, 1988), and as of this writing, it could be gone. Although the evening bat is currently unlisted in Ohio, it could be scarce or even extirpated in this state; however, no recent data are available. It should probably be state listed. The silver-haired bat is a spring and fall migrant and undoubtedly passes through the study site, probably in some numbers at that time. However, it should not be present at the base or even in Ohio at all in the summer. However. one individual was taken on 24 June 1988, in a bat survey by Advanced Sciences, Inc. (ASI) in the summer of 1988 (see description below), and one was taken by us on June 3, 1994, at Wright-Patterson Air Force Base in Greene County, Ohio. Most silver-haired bats pass through Indiana and Ohio in the spring from mid-April through May, and again in the fall from late August through early November.

THE SPECIES

Information is summarized below on the various species known or likely to occur at the study site, mostly from Gottschang (1981), and Mumford and Whitaker (1982).

SPECIES OF PARTICULAR INTEREST.

Myotis sodalis Indiana bat.

STATUS: FEDERALLY ENDANGERED

The Indiana bat forms maternity colonies under the loose bark of trees. It hibernates in large numbers in a very few caves. Barbour and

Davis (1969) found bats of this species at a number of Ohio localities. The bats had been previously banded by Barbour and Davis in two Kentucky cave hibernacula.

OTHER SPECIES

Myotis lucifugus. The little brown myotis could be present at the study site. This species forms maternity colonies usually in buildings and it migrates to caves to hibernate.

Myotis septentrionalis. The northern myotis is often referred to as Keen's myotis, Myotis keenii. However, Keen's myotis is currently recognized as a separate species which occurs only in the west. The northern myotis could occur at the study site. It usually forms relatively small maternity colonies under the loose bark of trees in summer or sometimes in buildings. In winter, it is solitary, with most individuals hibernating in tiny cracks or other hidden places in caves or mines.

Nycticeius humeralis. The evening bat is not not listed, but should be considered for state endangered status. It forms maternity colonies in buildings. It is not known where this species hibernates, but we suspect it may be in hollow trees along larger streams to the south. It could be present at the site; however, we suspect it may have declined in Ohio. Its status in Ohio needs to be investigated.

Pipistrellus subflavus. The pipistrelle is the smallest bat in Ohio and could easily occur at the site. It forms small maternity colonies in buildings or in hollow trees. In winter it is a solitary hibernator in caves and mines.

Eptesicus fuscus. In summer, the big brown bat forms maternity colonies usually in buildings or other human-made structures. A few big brown bats hibernate in caves and mines, but most individuals hibernate in buildings. There are usually not more than 1 to 10 in any one building, although a few buildings that have been available for a long time have larger numbers (Whitaker and Gummer, 1993). This is one of the most common bats in Ohio and is the only species that hibernates in buildings in Ohio.

Lasiurus borealis. The red bat is solitary, but is one of the most common bats in Ohio. It hangs among foliage in summer and migrates south where it probably hibernates in trees in winter. The northern edge of the hibernating range is probably just north of the study site.

Lasiurus cinereus. The hoary bat is the largest bat of Ohio and is one of the most colorful. Like the red bat, it hangs in foliage in the daytime in summer, but it migrates far south for the winter. It is probably present at the study site but is quite uncommon; therefore it is not likely not to be taken in a limited survey.

Lasionycteris noctivagans. The silver-haired bat is a distinctively colored migratory species. It migrates through the study sitee in spring and fall but should not be present in summer. This species has its young in trees to

the north of Ohio, then moves south to hibernate. Little is known of specific sites, but a very few individuals hibernate in caves and mines and some may hibernate in trees.

OBJECTIVES OF PROJECT

The principal objectives of this project are:

1. To locate populations of the federally endangered Indiana myotis, Myotis sodalis.

2. To accumulate further information on the bat community present at the site.

3. To make management recommendations, if appropriate, for the site concerning bats.

MATERIALS AND METHODS

Sites will be selected for study which are in or near areas with large dead standing trees, especially those with loose bark or which are hollow. Actual mistnetting sites will be selected in areas that appear suitable as bat flyways, as well as areas over which canopy occurs, since mistnets do not work well unless they extend upward to a canopy. If no canopy is present the bats generally sense and fly over the net. Mist netting should occur between May 15 and August 15, since some of the bats begin to disperse and head for the hibernaculae in late August.
For this site, netting will occur before June 1, and will generally occur from dusk to midnight or later, depending on results. One, two, or three seven foot high nets will be placed one above the other to reach the canopy. Three net lengths are available, 18, 30, and 42 feet, although nets can be placed end to end to extend further if necessary. The nets are on a pulley system on telescoping aluminum poles, so that they can be raised and lowered to remove bats.

Data to be recorded at each site will be type of habitat, water depth and permanence, type bottom, species and size of trees, and whether there were hollow trees or trees with loose bark in the vicinity.

In addition to mistnets, bat detectors will be used during all sampling to detect echolocation calls in the vicinity of the net. This allows one to determine bat activity during the netting. The number of calls heard on the detector during each sampling will be recorded, which gives an assessment of how well the nets are doing in relation to bat activity. Numerous calls on the detector, but no bats in the net would indicate that the nets should be repositioned. Some species of bats can be identified at least part of the time by their high frequency calls, particularly red, evening and big brown bats. Thus for some species, specific data can be accumulated using the bat detector. Also, the bat detectors can be used to sample areas of marginal habitat or areas with little canopy for bat activity to see if netting should be attempted there.

LITERATURE CITED

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Barbour, R. W. and W. H. Davis. 1969. Bats of America. the University Press of Kentucky. 286 pp.

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Mumford, R. E. and J. O. Whitaker, Jr. Mammals of Indiana. Indiana University Press. Bloomington. 537 pp.

Whitaker, J. O. Jr. and S. L. Gummer. 1992. Hibernation of the big brown bat, Eptesicus fuscus, in buildings. Jour. Mammal. 73:312-316.

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BUDGET

Financing is requested for travel, supplies and salary for this study as follows:

Cost per sample.

PI Salary	$250	
Assistant salary	200	
Travel (food and board)	130	
	580 x 3 = 1740	
Supplies		200
SS & Workmen's Comp (0.0915) 0.0915 x 1350		124
Subtotal		2064
Overhead (18% of total)		372
Total		2436

Travel and supply costs will be transferred directly into the research travel fund of John O. Whitaker,Jr.

RESEARCHER'S QUALIFICATIONS

the principal investigator has worked on mammals of Indiana for 35 yearS. He has published The Audubon Guide to Mammals of North America, The Mammals of Indiana (With R.E.Mumford), Endangered and threatened Vertebrate Animals of Indiana (with J. R. Gammon)and several papers specifically on bats.

This proposal must be considered tentative until approved by Indiana State University.

Bob,
401 Permit Approved
I left message on his voice
mail to proceed, but to call you
on friday to discuss details.
John

Memo To: Jack Sutton

Memo From: John Klein

Date: March 17, 1997

RE: LAKE ISABELLA INDIANA BAT SURVEY

I spoke to Dr. John Whitaker of Indiana State University about doing the Indiana Bat Survey. Dr. Whitaker is a leading authority on Indiana Bats and was referred to me by Jackie Bellwood of the Cincinnati Museum of Natural History.

Dr. Whitaker says that he should have time to do the survey during late May. He says that Indiana Bat surveys have to be done after May 15. He asked that I send him a map of the area. After examining the size of the area, he will give us a price.

Jackie Bellwood has offered to assist him with the survey. He mentioned that it should take two or three days to complete.

JOHN KLEIN

JBK/jlg

cc: Rick Johnson
Bob Kline
Bob Mason
Maureen Parsons

Indiana State University

Office of the Provost and
Vice President for Academic Affairs

April 10, 1997

Robert Mason
Hamilton County Park District
10245 Winton Park
Cincinnati, OH 45231

Title: Survey of Bats and Search for Endangered Bat Species, particularly the Indiana Bat (Myotis Sodalis) at Lake Isabella, Cincinnati, Ohio.

Project Director: Dr. John O. Whitaker, Jr.
Funds Requested: $2436
Project Period: May 15, 1997 to July 15, 1997

Dear Dr. Robert Mason:

Indiana State University submits the enclosed grant application with full University approval. It has been reviewed by all appropriate University committees and administrators.

For questions on matters of technical content, please contact the Project Director: Dr. John O. Whitaker, Jr. , (812) 237–2383.

On contractual or administrative matters, please contact the Associate Director of Sponsored Programs, William J. Foraker, (812) 237-3088, fax: (812) 237-3092.

All questions concerning financial matters and payments should be directed to: Mr. Mark Green, Grant, Contract, and Loan Administrator, (812) 237-3553.

We look forward to your favorable evaluation and support of this application.

Sincerely,

Richard H. Wells
Provost and Vice President for Academic Affairs

Terre Haute, Indiana 47809
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