

Additional Information

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Cover Photo: Indiana Bat, courtesy Florida Fish and Wildlife Conservation Commission website

Vermont Cooperative Fish and Wildlife Research Unit

POPULATION DYNAMICS OF THE INDIANA BAT (*MYOTIS SODALIS*) IN THE CHAMPLAIN VALLEY, VT AND NY



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Project Description

Indiana bats (*Myotis sodalis*) are medium-sized, brown bats less than 2 inches long that live in the Eastern and Midwestern United States. The Indiana bat was listed as endangered in 1967 under the Federal Endangered Species Act of 1973. However, populations have declined by 60% since the 1980's. Recently, a consortium of agencies initiated studies on a bat hibernaculum in the Adirondack Mountains of New York (the Barton Hill Mine). Although the hibernaculum is located in the northern portion of the species' range, it houses approximately 5,000 individuals. Currently a full, well-integrated understanding of the summer needs of individuals that use the Barton Hill Mine has yet to be reached. This lack of knowledge potentially impedes wildlife managers from identifying critical resource needs throughout the annual cycle. In particular, information is needed on where the Barton Hill Mine bats breed and the habitat requirements needed to promote successful reproduction and survival. Radio-telemetry studies in 2001 and 2002 tracked bats emerging from the



Barton Hill Mine to the Champlain Valley in Vermont and New York. Effort is now being focused on understanding the habitat requirements and breeding colony dynamics of Indiana bats at their spring and summer roost sites.



An Indiana bat outfitted with a radio-transmitter.

Methods

At field sites in Middlebury and Monkton, VT, and Crown Point, NY, bats are captured with mist nets and outfitted with a radio-transmitter. These radio-transmitters are lightweight (0.5g), and attached by surgical cement which will eventually degrade and allow the transmitter to fall off. Roost trees are identified during the day through reception of signals from radio-outfitted bats. Once a roost tree is identified, exit counts are performed to estimate how many bats are using that tree. Data is collected on the roost tree itself, as well as the surrounding forest stand. Bats are then tracked throughout the night to monitor their foraging habitat. Locations are determined by taking compass bearings from three antennas, and then triangulating, every five minutes on alternating bats.

Results

Field research was initiated in the summer of 2003. A total of 11 Indiana bats (five at each VT site and one in NY) were outfitted with radio-transmitters, and these bats were tracked to a total of 36 different roost trees over the course of the field season. Data was taken on each roost tree along with a 0.1ha plot surrounding the roost tree. Telemetry observations were conducted at one site per night, resulting in 20 nights of data. Observations started around 10:00pm and lasted until the bats

returned to their roost tree in the early morning. We are currently entering and proofing data from the 2003 field season. We are in the process of downloading landcover maps and generating landscape level statistics within the maximum foraging distance for all roost trees, including degree of fragmentation, slope, elevation, distance to associated feeding habitat, distance to other significant features (i.e. streams, forest openings, agricultural lands).



Comparison of a Little brown bat (*Myotis lucifugus*), on left, to an Indiana bat on right. Although extremely similar, certain characteristics tell them apart; Indiana bats have a keeled calcar and smaller feet with shorter toe hairs.

Funding Agency (s)



VT Fish and Wildlife Department



US Fish and Wildlife Service



US Geological Survey