



RARE SPECIES OF THE...
**Huron-Manistee
National Forest**

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Indiana Bat

Myotis sodalis

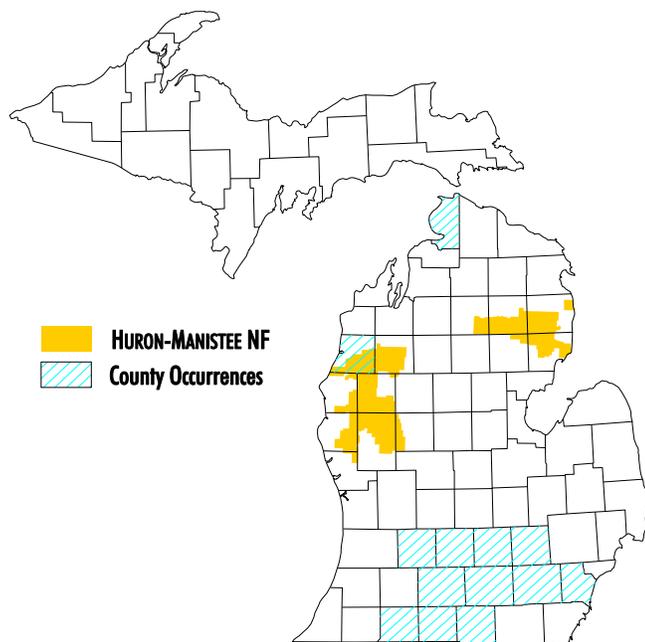
Federal Status: **Endangered**
Regional Status: **Endangered**
State Status: **Endangered**
Forest Status: **Endangered**

Description

The Indiana bat is a medium-sized bat, closely resembling the little brown bat (*Myotis fucifugus*) but differing in coloration. Its fur is a dull grayish chestnut rather than bronze, with the basal portion of the hairs of the back dull lead colored. This bat's underparts are pinkish to cinnamon, and its hind feet smaller and more delicate than the Little brown bat. The heel of the foot is strongly keeled.

Life History

Courtship and mating occurs in late summer near the hibernaculum. Pregnancy occurs in the spring after the female leaves the hibernaculum. Indiana bats disperse widely to suitable maternity areas. Females leave the hibernaculum in late March or early April, giving birth to only one young in June or July. Females form maternity colonies. Warm temperatures in spring and early summer are critical to growth and success. Young can fly one month



following birth and by mid to late August most bats arrive at the hibernaculum. Males disperse to separate habitats during the summer and use different roosts during the day. Indiana bat survival can be relatively high and average life spans can be ten years in females or six years in males.

Bats are most active during early evening and nighttime hours. Echolocation is used to locate food and avoid obstacles. Moths comprise a large portion of their diet along with small beetles, wasps, true bugs, flies, and other insects.

Little is known of this bat's diet beyond the fact that it consists of insects. Females and juveniles forage in the airspace near the foliage of riparian and floodplain trees. Males forage in the densely wooded area at tree top height.

Distribution

The Indiana bat occurs in the Midwest and eastern United States from the western edge of the

Endangered Species are plants and animals in danger of becoming extinct.

Threatened Species are plants and animals likely to become endangered in the foreseeable future.

Ozark region in Oklahoma, to southern Wisconsin, east to Vermont, and as far south as northern Florida. In summer it is apparently absent south of Tennessee; in winter it is thought to be absent from Ohio, and northern Indiana where suitable caves and mines are unknown. About 200,000 individuals of this species still exist. In Michigan, it is known to hibernate in only one location in the western part of northern Lower Michigan. Its known summer range has generally been thought to be within southern lower Michigan.

Habitat

For approximately one-half of the year, October through April, the Indiana bat hibernates in caverns. These areas provide winter protection where the temperature varies little, usually between 39 and 43 degree F and the humidity is high. In the summer, females disperse in small groups to bear and rear their young. Little is known about the summer habitat of males.

Females with young have generally been found under loose tree bark, in hollow trees, and in



buildings. Slow-moving streams lined with trees are favored foraging areas. They do not tend to join other bats in summer daytime retreats. Between feeding flights the bats may use other habitats for roosting. Indiana bat prey on flying insects. Moths may be preferred foods, along with beetles, small wasps, true bugs, flies, caddis-flies, and other insect groups.

Threats to Survival

The decline is attributed to commercialization of roosting caves, wanton destruction by vandals, disturbances caused by increased numbers of spelunkers and bat banding programs, use of bats as laboratory experimental animals, and possibly

insecticide poisoning. Some winter hibernacula have been rendered unsuitable as a result of blocking or impeding air flow into the caves and thereby changing the cave's climate. Recent concerns relating to summer habitat needs have become a significant issue. Factors affecting roost trees are very important. The Indiana bat is nearly extinct over most of its former range in the northeastern states, and since 1950, the major winter colonies in caves in West Virginia, Indiana, and Illinois have disappeared. A high degree of aggregation during winter makes the species vulnerable. During this period approximately 87 percent of the entire population hibernates in only seven caves.

Habitat Management

The original Indiana bat recovery plan was approved in 1976, and a revised plan was approved on October 14, 1983. Some of the major recovery goals include: (1) Preserving critical winter habitat by securing primary caves and mines and restricting entry; (2) Initiating an information and education program; and, (3) Monitoring population levels and habitat (to include an evaluation of pesticide effects).

To date, the primary conservation efforts have been to control access of people by the installation of properly designed gates across cave entrances. Some gating has already been accomplished on Federal and State lands. Gating of all seven of the major wintering hibernacula would provide protection for about 87 percent of the population. Some privately-owned caves in Missouri and West Virginia are being negotiated for public ownership. Several bat conservation groups are promoting conservation for the Indiana bat.

Selected References:

- Baker, R. H., 1993. *Michigan mammals*. Michigan State University Press, East Lansing. 670pp.
- Evers, D. C., 1997, *Endangered and Threatened Wildlife of Michigan*, The University of Michigan Press, Ann Arbor. 412pp.
- Fish and Wildlife Service, 1991, *Endangered and Threatened Species of the Southeastern United States (The Red Book)*, Fish and Wildlife Service, Region 4. 3pp.