Indiana Bat *(Myotis sodalis)*

Common Name
Indiana Myotis/Indiana Bat

Scientific Name
Myotis sodalist

Status
The U.S. Fish and Wildlife Service lists the Indiana myotis as Endangered throughout its range.

West Virginia Status
West Virginia is on the edge of the range of this species, but significant numbers of these bats hibernate in certain West Virginia caves. This bat has been reported from caves in the eastern highlands of the state. Populations are increasing as a result of protection efforts. Until 1995, the Indiana myotis was not documented as a summer resident of the state. During the summer of that year, a few male Indiana myotis were captured in Tucker County.

Description
The Indiana myotis is a rather nondescript small brown bat with a wingspan of approximately 240 to 265 millimeters (9.5-10.5 inches). This bat is very similar in appearance to the common little brown myotis (a bat often found in houses), but can be distinguished by the duller luster of its fur and toe hairs that do not extend beyond the tips of the claws. The Indiana myotis also has a more pinkish colored nose. The calcar (the cartiladge which extends from the ankle to support the tail membrane) of the Indiana myotis usually has a keel, but this is often difficult to see. During hibernation Indiana myotis congregate in more densely packed clusters than other bats in its range.

Habitat
Caves are important for the Indiana myotis. During the winter, large numbers of Indiana myotis gather in a few caves which provide suitable conditions for hibernation. These caves usually have fairly stable winter temperatures ranging from 2.8 to 6.1 degrees centigrade (37 to 43 degrees Fahrenheit) and a high relative humidity (66% to 95%). The summer habitat of this species was almost unknown until recently, and it is still poorly understood. During the summer, females form small colonies under the loose bark of trees. Here they raise their young. Males also appear to form small colonies in trees, either in hollow trees or under loose bark. Feeding areas for the Indiana myotis consist of wooded habitats. Early studies indicated that wooded areas along rivers were the preferred feeding areas, but more recent studies suggest that upland forests are also used.

Threats and Prospects
Because these bats are concentrated into just a few caves during the winter, they are very vulnerable to disturbance. It is estimated that 94% of the population winters in only 13 caves, and one cave in Pendleton County harbors over 90% of the Indiana myotis in West Virginia. Indeed, disturbance by cavers during the winter is probably the major factor leading to the decline of the species. Indiana myotis are more sensitive to disturbance than most other bats, and each time the bats awaken during the winter, valuable fat reserves are used up. Repeated disturbances can leave the bats with too little fat to survive the remainder of the winter. Contamination of their food supply through the use of pesticides in agricultural areas and loss of summer habitat may also be contributing to the species' decline. Eight caves in West Virginia are closed to human traffic from September 1 to May 15 to protect hibernating Indiana myotis. Gates and fences have been constructed at some of the cave entrances to keep exclude people. Indiana myotis populations in these caves are increasing, and some are now equal to or above the population levels observed in the 1950's and 1960's. The species seems to be recovering, but populations in some mid-western caves are still declining, even where the cave is protected. This suggests that there may be problems in the bats' summer habitats. Much still needs to be

(Photo by Craig Stihler)

learned concerning the summer requirements of this species.

Range

The range of the Indiana myotis includes much of the Midwestern and Eastern United States from the Ozark Mountains to southern Wisconsin and Michigan to central Vermont and south to northwestern Florida. In West Virginia it has been reported from caves in Greenbrier, Hardy, Monroe, Pendleton, Pocahontas, Preston, Randolph, and Tucker counties.

Life History

During the autumn, Indiana myotis put on extra body fat in preparation for hibernation. Wintering bat concentrations begin to assemble in mid-September. The bats feed on warm nights into late fall, but enter hibernation as insects become less abundant. By late-November, most bats have settled in for the winter. Where conditions are suitable, large numbers of Indiana myotis may gather in tightly-packed clusters (up to 300 per square foot) on the cave ceiling. During hibernation all body functions are reduced including heart rate and breathing, and the bat's body temperature drops to nearly that of the cave. By lowering their metabolic rate, these animals can survive the winter on stored fat. To find their way in the total darkness of the caves were they hibernate; the bats rely on a sensitive "echolocation" system. They emit ultrasound clicks (above the hearing range of humans) and listen to the echo to determine if there is an object in front of them. They can detect objects as fine as monofiliment fishing line. Indiana myotis mate in the fall before entering hibernation, but the young do not develop until the following spring. Little is known about the rearing of the young, but the females appear to give birth to a single "pup" around June. The young are born blind and naked. Nursed on their mothers' milk, the pups develop rapidly and can fly within 4 to 5 weeks. Summer habitat may be many miles from the cave where the bats hibernate.

Diet

Like all bats in West Virginia, the Indiana myotis feeds solely on insects. Their diet probably consists of flies and, to a lesser extent, moths and other insects.

Additional Comments

The common names of bats in the genus Myotis have been changed recently, and now the term "myotis" is used rather than "bat." Thus the little brown bat is now known as the little brown myotis, and the Indiana bat is now the Indiana myotis.

Help

Avoid going into any closed caves during the official closure period and encourage others to do likewise. If you find what you think are Indiana myotis (very tightly packed clusters of small brown bats) in a cave that is not closed, please report this information to the Endangered Species Program at (304) 637-0245 or write Bat Report, P. O. Box 67, Elkins, WV 26241