

U.S. FISH AND WILDLIFE SERVICE
DIVISION OF ENDANGERED SPECIES

SPECIES ACCOUNTS

Source: *Endangered and Threatened Species of the Southeastern United States (The Red Book)* FWS Region 4 -- As of 2/91

INDIANA BAT

[Myotis sodalis](#)

FAMILY: Vespertilionidae

STATUS: Endangered throughout its range, *Federal Register*, March 11, 1967

DESCRIPTION: The Indiana bat is a medium-sized myotis, closely resembling the little brown bay (*Myotis lucifugus*) 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 in *M. lucifugus*. The calcar (heel of the foot) is strongly keeled.

Little is known of the 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 the densely wooded area at tree top height (LaVal et al., 1976, 1977).

RANGE AND POPULATION LEVEL: The Indiana bat occurs in the Midwest and eastern United States from the western edge of the 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 apparently absent from Michigan, Ohio, and northern Indiana where suitable caves and mines are unknown. About 500,000 individuals of this species still exist.

REPRODUCTION AND DEVELOPMENT: This bat has a definite breeding period that usually occurs during the first 10 days of October. Mating takes place at night on the ceilings of large rooms near cave entrances. Limited mating may also occur in the spring before the hibernating colonies disperse.

Hibernating colonies disperse in late March and most of the bats migrate to more northern habitat for the summer. However, some males remain in the hibernating area during this period and form active bands which wander from cave to cave.

Limited observations indicate that birth and development occur in very small, widely scattered colonies consisting of 25 or so females and their young. Birth usually takes place during June with each female bearing a single offspring. About 25 to 37 days are required for development to the flying stage and the beginning of independent feeding.

Migration to the wintering caves usually begins in August. Fat reserves depleted during migration are replenished largely during the month of September. Feeding continues at a diminishing rate until by late November the population has entered a definite state of hibernation.

The hibernating bats characteristically form large, tight, compact clusters. Each individual hangs by its feet from the ceiling. Every 8 to 10 days hibernating individuals awaken to spend an hour or more flying about or to join a small cluster of active bats elsewhere in the cave before returning to hibernation.

HABITAT: Limestone caves are used for winter hibernation. The preferred caves have a temperature averaging 37 degrees to 43 degrees Fahrenheit in midwinter, and a relative humidity averaging 87 percent. Summer records are rather scarce. A few individuals have been found under bridges and in old buildings, and several maternity colonies have been found under loose bark and in the hollows of trees. Summer foraging by females and juveniles is limited to riparian and floodplain areas. Creeks are apparently not used if riparian trees have been removed. Males forage over floodplain ridges and hillside forests and usually roost in caves. Foraging areas average 11.2 acres per animal in midsummer.

CRITICAL HABITAT: The following caves have been designated as Critical Habitat within the Southeast Region:

Tennessee:	White Oak Blowhole Cave, Blount County
Kentucky:	Bat Cave, Carter County
	Coach Cave, Edmonson County

REASONS FOR CURRENT STATUS: 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. 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 of 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.

MANAGEMENT AND PROTECTION: 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 acquisition. The National Speological Society and the American Society of Mammologists are taking measures within their respective organizations to promote conservation of the Indiana bat.

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