

SFI Biodiversity Species Fact Sheet

Indiana Bat (*Myotis sodalis*)

Globally Imperiled Bat Species; State Rank: S1 (critically imperiled) Global Rank: G2 (imperiled)

Identification

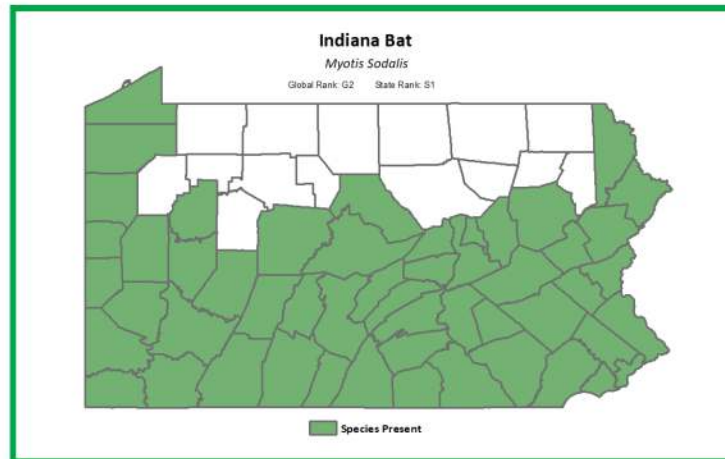
Indiana bats are relatively small, at approximately 2 to 4 inches in length and 0.2 to 0.3 ounces in weight. The wingspan is 9.5 to 10.5 inches. Their fur is brown and grey with lighter bellies. They closely resemble the little brown bat, though the hind feet of Indiana bats are smaller and with fewer hairs that do not extend beyond the claws, along with a cartilaginous spur on the inside of the ankle. The facial area is pink and the ear and wing membranes have a dull appearance. When hibernating they can be identified by their tight clusters, brown-grey fur, and pink noses.



Photo by A. Stauffer

Biology-Natural History

Indiana bats are nocturnal insectivores, feeding nearly exclusively on flying insects after sunset. They eat up to half their body weight each night. The annual cycle for Indiana Bats consists of four phases: winter hibernation, spring migration, pup rearing, and fall migration. Hibernation typically lasts from October to April. Because of their limited number in Pennsylvania, Indiana bats often hibernate with little brown bats, using them as surrogate roosting partners. Mating occurs in fall, though females store sperm through the winter with fertilization only occurring in the spring. In mid-April to June females form colonies at summer maternity sites under loose bark. They give birth to a single pup around mid-June and the pups learn to fly by mid-July.



Distribution and Habitat

In the winter Indiana Bats hibernate at low, but non-freezing temperatures in caves and cave-like locations, for example, abandoned mines. These hibernacula tend to have large volume and extensive passageways to conserve a suitable microclimate. In the summer reproductive females will roost in forested areas, typically under thick, loose bark. Maternity roosts can occur in riparian zones, bottomlands, floodplains, wooded wetlands, and uplands. Foraging often occurs in semi-open to closed forests, forest edges, and riparian zones.

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Conservation Concerns

The most significant threat to Indiana bat is the fungal disease, white-nose syndrome (WNS), which has caused massive declines. Range-wide, Indiana bat populations have declined 19% since 2007, when it was first observed in the U.S. WNS disrupts hibernation, causing bats to rouse too early when there is no food available and subsequently burns fat reserves. Human exposure to hibernacula is dangerous as they can spread WNS to new locations in addition to disturbing hibernating bats. Changes to hibernacula and the surrounding habitat, including urban development and highway traffic, can also greatly affect bat populations. They are affected by natural predation from owls and snakes, but unnatural predation by feral cats pose a larger threat. Wind turbines and bioaccumulation of pesticides also threatens bat populations.



Management Practices

The Pennsylvania Game Commission conducts annual bat population research. This research includes hibernating bat counts, banding and recapture, migration telemetry, mist-netting, alternative roost installation, and hibernacula and habitat protection. The Pennsylvania Game Commission and the Department of Conservation and Natural Resources are jointly implementing a PA Forestry Habitat Conservation Plan for Indiana and Northern Long-Eared Bats. For more information, see either agency's website. For further conservation and management, more research is needed, including on maternity sites, environmental pollutants and human conflicts. Other good management practices include:

- Protect hibernacula from disturbance. Avoid activities around caves where bats hibernate during wintertime because bats are very sensitive to changes in their environment during hibernation.
- Minimize impacts to preferred roosting trees. During a timber sale, reserve several snags or dead/dying trees especially those that are 11" to 20" dbh or larger, if present. Reserve shag or shellbark hickory trees, and larger trees with peeling bark or cavities. This allows suitable habitat for mother bats to rear their pups.
- Protect baby bats. Avoid harvesting potential roost trees (snags, shag/shellbark hickory, loose or peeling bark) from early June to late July, when pups are still too young to fly.
- If you see a bat fleeing a tree, stop cutting operations and call the PA Game Commission.
- Maintain a healthy forest in a variety of stages. Bats make use of patchiness, vertical height diversity and a mix of tree sizes along with dead or hollow trees in each management unit.
- Maintain good water quality by avoiding pollutant spills from vehicles or equipment. This keeps bats' prey base of insects healthy.

If anyone observes this species they should call the jurisdictional agency, Pennsylvania Game Commission Headquarters at 833-742-4868.