

# Indiana Bat

## Indiana Bat (Indiana Myotis)

### *Myotis sodalis*

New York Status: **Endangered**

Federal Status: **Endangered**



## Description

The Indiana bat is one of nine bat species found in New York. All are small as mammals go, this species being roughly 2 inches (51 mm) in length and weighing approximately .2 - .3 ounce (6-9 gm). Identifying most of New York's bats is not easy and the Indiana bat is one of the most difficult. It can be distinguished from its closest look alike, the little brown bat (*Myotis lucifugus*), by several rather obscure features. Generally, the Indiana bat is uniformly dark grey to grayish-brown in color and often has a pinkish colored nose. The little brown bat has brown fur; its ears and nose are often slightly darker, giving the appearance of a faintly contrasting dark mask, a feature that is noticeably lacking in the Indiana bat. An Indiana bat's feet are smaller, about 1/3 in. in length, with few if any hairs. These hairs do not extend beyond the tips of the toes. The calcar (a cartilaginous projection from the foot which helps support the membrane between the foot and the tail) is generally keeled in the Indiana bat but not in the little brown. Indiana bats are generally found in tightly packed clusters. In the center of the cluster, only the faces and wrists are visible. Little browns generally occur in loose clusters.

## Life History

With the coming of spring, Indiana bats disperse from their winter homes, known as hibernacula, some going hundreds of miles. They feed solely on flying insects and presumably males spend the summer preparing for the breeding season and winter that follows. Females congregate in nursery colonies, only a handful of which have ever been discovered. These were located along the banks of streams or lakes in forested habitat, under the loose bark of dead trees, and contained from 50-100 females. A single young is born to each female, probably late in June, and is capable of flight within a month. With luck, it may approach the ripe old age of 31, a record set by the little brown bat.

In August or early September, Indiana bats swarm at the entrance of selected caves or mines. This is when mating takes place. Sperm is stored in the female's body; eggs are

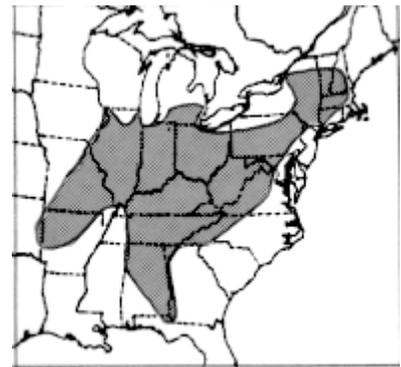
fertilized in the spring. Like other hibernating species, the Indiana bat accumulates layers of fat which sustain it over the winter period of dormancy.

Indiana bats spend the winter months in secluded caves or mines which average 37 to 43 degrees F. Criteria for selecting hibernacula are not clearly understood; many apparently suitable sites are not occupied. Where this species is found, however, it can be extremely abundant, congregating in densities of more than 300/square foot. Year after year, bats often return to exactly the same spots within individual caves or mines. Hibernation can begin as early as September and extend nearly to June.

## Distribution and Habitat

The Indiana bat is found within the central portion of the eastern United States, from Vermont to Wisconsin, Missouri and Arkansas and south and east to northwestern Florida. In New York, knowledge of its distribution is limited to known wintering locations-caves and mines in which they hibernate.

There are eight hibernacula currently known in Albany, Essex, Warren, Jefferson, Onondaga and Ulster Counties. It is certain that the summer range of this species extends well beyond these counties since the animals disperse to breeding areas and other habitats to feed and raise their young.



## Status

The Indiana bat was one of the mammals included on the original federal list of Endangered Species. In terms of sheer numbers, the species is rather abundant, with an estimated 550,000 existing range-wide as recently as the late 1970s. However, 85 percent of these bats winter in only seven caves or mines, with nearly one-half of the world's population being found in only two caves. Even though other populations have been discovered in recent years, the additions have not offset the losses recorded over the full extent of the specie's range.

In New York, approximately 13,000 Indiana bats are known to exist in 8 of the 120 sites searched to date. Surveys conducted since the early 1980s suggest they are doing fine in this state and may in fact be increasing. Where declines are suspected in some other states, the reasons are not clearly understood. Because bats hibernate in caves and mines,

they are subject to flooding or ceiling collapses, both of which can and have killed thousands of individuals in the past.

The most serious problem for hibernating bats is believed to be disturbance by people exploring caves. Bats are sensitive to noise and light and can be aroused from their motionless state by passing cavers. Each time they are awakened, precious energy reserves stored as fat are depleted. Too many disturbances and the animals will not survive until spring. Outside of the hibernating season, factors which may be contributing to declines probably vary. For instance, pesticide poisoning is believed to be contributing to the decline of some North American bat species.

## Management and Research Needs

Since the most vulnerable period in the life-cycle of the Indiana bat is during winter hibernation, management efforts are concentrated on protecting the hibernacula. The problem of human disturbance is curtailed by eliminating unauthorized access at major hibernacula through gating or agreements with the landowners. Searches for additional wintering sites continue so that they too can be protected. Long-term monitoring is needed to identify population trends. We will also need to know if population trends we observe in the caves and mines reflect what is occurring in the entire population.

## Little Brown Bat

### Did You Know?

*Little brown bat - Myotis lucifugis*

- Bats are the only mammals that can fly.
- They are insect-eating machines, eating thousands of mosquitoes and other flying insects in a single night.
- Bats use echolocation (rapid pulses of sound that bounce off an object) to detect and catch insects. They scoop the insects up in their tail or wing membranes and then place them in their mouth; this is what gives them such an irregular flight pattern.
- As temperatures decrease in the fall and the number of insects diminish, bats migrate to their hibernacula in caves or mines for the winter. During hibernation a bat will reduce its body temperature, slow its heart rate to only one beat every four or five seconds, and rely on their stored fat reserves to survive until springtime.



## What to watch for:

### *Size:*

Little brown bats have a wingspan of 8-9" and a body length of 3-4½ inches with a 1 ½ inch forearm.

### *Appearance:*

Covered in a coat of silky cinnamon and dark brown hair, and pale grey underneath, with black hand-like wings.

### *What to listen for:*

Bats make sounds by echolocation, which are generally too high pitched for the human ear to hear. You may be able to hear a click or squeak as they fly by directly overhead.

## When to watch:

In the spring or summer, during early dawn or dusk, look up above a body of water (lake, pond, stream, etc.) and or among trees, and you may see them flying back and forth and dipping and diving for insects. Looking in areas where flying insects are most abundant usually in areas near water provides a good chance to spot bats.

## Where to watch:

Bats can be found in caves and mines during the winter, but do not look for bats in these areas. Entering into caves or mines is dangerous without the proper knowledge or guidance. White Nose syndrome is a serious disease in bat populations that can be spread from cave to cave by humans (see below). In addition, it is important not to disturb and awaken hibernating bats in the winter, because they will lose necessary fat reserves that they rely on to survive.

**How to safely remove a bat from your home:** Do not attempt to handle a bat under any circumstances. If provoked or threatened, just like any other animal, bats will defend themselves typically by biting. In general, bats are not dangerous animals and are very beneficial to our environment, so harming or killing these animals is wrong and unnecessary.

- *A bat in flight in your home:* Turn on some lights in order to see the bat. Close doors to other rooms of the home in order to restrict the bat's access to a small area. Open all

exterior windows or doors in the room. The bat can then use its echolocation to navigate a safe path outside.

- *Bats roosting (resting) in your home:* The best solution is to contact a wildlife damage control company. Do not attempt to exclude bats during the winter while they are hibernating; instead wait until the spring and summer when they are active. Make sure the site is clear of any hibernating bats before sealing all potential entry points into your home spaces.
- *Build or buy a bat house to keep bats out of your home.*

## White-nose Syndrome

### *White-nose Syndrome Threatens New York's Bats*



*White-nose Syndrome in Hailes Cave  
Albany County, NY - Photo by N. Heaslip*

Many thousands of hibernating bats are dying in caves and abandoned mines in New York, Massachusetts and Vermont from unknown causes, prompting an investigation by the New York State Department of Environmental Conservation (DEC), as well as wildlife agencies and researchers around the nation. The most obvious symptom associated with the die-off is a white fungus encircling the noses of some, but not all, of the bats. This has led to the name "white-nose syndrome", which is actually a collection of related symptoms, including a fungus. It is not clear how this fungus alone can cause bats to die, however, impacted bats deplete their fat reserves months before their normal springtime emergence from hibernation, and starve to death as a result.

Bat biologists across the country are evaluating strategies to monitor the presence of the disease and collect specimens for laboratory analysis. Biologists are taking precautions (using sanitary clothing and respirators when entering caves) to avoid unintentionally spreading a disease in the process. Bat populations are particularly vulnerable during hibernation as they congregate in large numbers in caves, in clusters of 300 individuals per square foot in some locations, making them susceptible to disturbance or disease. The vast majority of the hundreds of thousands of bats known to hibernate in New York do so in just five caves and mines. Because bats migrate hundreds of miles to their summer range, the

impacts of white-nose syndrome are expected to have significant implications for bats throughout the Northeast.

Indiana bats, a state and federally endangered species, are perhaps the most vulnerable. Half the estimated 52,000 Indiana bats that hibernate in New York are located in one former mine that is now affected with white-nose syndrome. Eastern pipistrelle, northern long-eared and little brown bats are also dying. Little brown bats, the most common hibernating species in New York, have sustained the largest number of deaths.

DEC has been working with the Vermont Fish and Wildlife Department, the U.S. Fish and Wildlife Service, the Connecticut Department of Environmental Protection, the Northeast Cave Conservancy and the National Speleological Society, along with researchers from universities and other government agencies to study the problem.

## Rabies

### Protect your family and your pets from this fatal disease.

#### What is rabies, and how is it spread?

Rabies is a deadly virus that infects the central nervous system of mammals, including humans. It's most common in bats, raccoons, foxes, and skunks. Although rabies is primarily transmitted by a bite, there is some risk of infection if saliva or nerve tissue from a rabid animal gets into someone's eyes, nose, or mouth, or into an open wound. Rabies can only be positively diagnosed by testing tissue from the suspected animal, but it's usually characterized by changes in behavior.

#### How a rabid animal MAY behave:

- Unusual aggressiveness or tameness.
- Excessive drooling, "foaming at the mouth."
- Dragging the hind legs, mobility problems.

#### When to call the Health Department:

- Wildlife had contact with a person or pet.
- Human contact with pet after pet/wildlife fight.
- Bat found in the living space of your home.

**If I see a nocturnal animal out during the day, does that mean it has rabies?**

Nocturnal animals DO come out during the day. Often. This, alone, is not a sign of illness. Pet food, bird seed, and garbage can be powerful attractants. Weather changes also affect wildlife.

### **What should I do if I see an animal that appears to be rabid?**

Stay away from any animal that's acting strangely, and let your neighbors know about its presence in the area. Sometimes your local police will come out and shoot the animal; however, even a sick animal will often wander off by the time outside help can get there. We do not recommend approaching the animal with a baseball bat or other club because that would require close contact. Crazy as this sounds, a vehicle can be used to run over the animal in some instances. The advantage? No contact.

### **If an animal does have rabies, how long will it take to die?**

The infected animal usually dies within seven days of becoming sick. This seems like a long time to be on guard, but you also have to consider that the infected animal may have bitten other animals in the area. Not to alarm you, but it's a good idea to stay on guard.

### **How long will the rabies virus remain alive in the body of a dead animal?**

The length of time that rabies remains alive in a dead animal depends primarily on the outside temperature. The virus could die within a few hours in warm weather and could stay alive for months in freezing temperatures.

### **Could my dog or cat get rabies from a dead animal that had rabies?**

Yes, through an open wound or by chewing on the carcass. Have your vet administer a booster shot within five days. If your pet is unvaccinated, it must be confined for four months, or euthanized. You're not always going to know what your pet has been up to while outside, so the best protection for both your pet and your family is for you to keep your pet *current* with its rabies shots.

### **How do I safely dispose of a dead animal?**

Use care when disposing of any dead animal. Wear gloves. Pick up the animal with a shovel. Then bury it (deep) or double-bag it and put it in the garbage. To kill the virus, sprinkle the ground and wash the shovel/gloves with a 10% solution of bleach in water (9 parts water, 1 part bleach).