Nothern Long-eared Bat

Myotis septentrionalis

Background

Northern long-eared bats are relatively small and, as their name suggests, have much longer ears than other species of the genus *Myotis*. They have been especially impacted by white-nose syndrome, leading to their listing as endangered under Connecticut's Endangered Species Act and across the Northeast, as well being listed as threatened under the federal Endangered Species Act. Like all bat species, long-eared bats play a critical role in ecosystems, and many measures have been put in place to protect remaining populations. This bat species was recently discovered roosting and overwintering on the east end of Long Island, New York, and other nearby coastal regions, such as Nantucket Island and Martha's Vineyard in Massachusetts. In Connecticut, long-eared bats are rarely detected when biologists use acoustic monitoring and winter count numbers have decreased by over 99%.

Range

The range of the northern long-eared bat extends from Canada to Georgia in the south. In Canada, the bats can extend west to eastern British Columbia, while in the United States they are located in the north as far west as Montana.

Description

Northern long-eared bats average approximately 7.8 cm in length and typically weigh between 6-9 grams. They have a narrow, sharply pointed tragus and their ears extend past the nose when flattened down on the head. (The tragus is a piece of skin in front of the ear canal that plays an important role in directing sounds into the ear for prey location and navigation via echolocation.) The pelage ranges in color from pale tan to reddish to dark brown. Long-eared bats can be mistaken for little brown bats but are distinguishable mainly by the length and shape of the tragus and the duller appearance of their fur. They may also be mistaken with the Indiana bat, which has a keeled calcar and the eastern small footed bat, which also has a keeled calcar as well as a conspicuous black "mask" that contrasts the face with the rest of the fur. (The calcar is a special cartilaginous extension of the ankle on a bat's leg that is often used for identification.)

Habitat and Diet

Northern long-eared bats will roost by themselves or in small groups. In summer, they prefer tree roosts, particularly in intact forests. Tree cavities or spaces under loose bark will be used. A survey in the Appalachian Mountain region observing female bats showed that they preferred deciduous trees, but their preferences varied depending on the geographic area. While uncommon, long-eared bats will also use human habitations, such as basements or sheds. In winter, they are most typically found in caves or mines for hibernation. Interestingly, they have recently been found wintering on offshore islands in southern New England, such as Martha's Vineyard and Nantucket.

Like all bats in Connecticut, Northern long-eared bats are insectivores. They prefer moths but will also eat leafhoppers, flies, caddisflies, and beetles.

Life History

Northern long-eared bats are estimated to live between 18 and 19 years of age. They mate in the fall before hibernation, like many other bat species. In a process called delayed fertilization, the females do not actually become pregnant until after emerging from hibernation.

In spring, females will typically form relatively small "maternity" colonies of 30 to 60 individuals, using snags or tree crevices available in deciduous trees like black locust. The bats will also move from tree roost to tree roost, staying a few days at each one. They will give birth to their "pups" anytime from late May to late July, depending on how far north (later) or south (earlier) in their range they are. The pups are dependent on the female, but mature quickly and are able to start flying at about three weeks of age.

Overwintering

Northern long-eared bats hibernate in caves or mines over winter, preferring areas with large passageways, high humidity, and a constant cool temperature. They will often use relatively tiny cracks, making them hard to find. Unlike related species like the Indiana bat, they will not hibernate in large groups, choosing to generally hibernate by themselves.

Interesting Facts

Northern long-eared bats typically capture their insect prey by gleaning them directly off surfaces rather than catching them in flight (aerial hawking). One study showed that the calls emitted by northern long-eared bats are far less detectable by moths than calls emitted by aerial-hawking bats.

Threats

White-nose syndrome (WNS) is currently the highest threat in North America to any bats that hibernate in caves, like the northern long-eared bat. WNS is caused by a fungus, *Pseudogymnoascus destructans (Pd)*, and is called such for the white fuzz that can grow on a bat's nose or wing membranes. A cold and moisture-loving fungus, *Pd* infects bats when they are hibernating in caves (passing bat-to-bat or cave-to-bat). It attacks the skin, causing bats to wake up from hibernation much more frequently and thus burning their precious fat stores much faster. The bats can die from starvation or exposure from flying out of the cave in the winter.

WNS was first discovered in a cave in New York during the winter of 2006/2007. Since then, it has killed millions of bats and spread to at least 37 states and 7 Canadian provinces. It is believed WNS was accidentally introduced from somewhere in Europe where bats have been co-evolving with it for a long time (and, therefore, are not as badly affected). While multiple approaches have been researched for treatment or a vaccine for WNS, there have not been any successful field trials as of yet.

Wind turbines can be a threat to any bat that migrates to other regions or a hibernacula. Even though bats may be able to detect the turbines using echolocation, bat fatalities from wind turbines remains high. Bats can be harmed through direct impact or barotrauma. Barotrauma occurs when a rapid air pressure loss is caused by the moving blades. The fast air pressure change causes extensive lung damage, such as hemorrhaging, edema, and burst alveoli.

Habitat loss is a general threat to all bats that use trees to roost. Intact forest habitat is particularly important to the Northern long-eared bat for roosting, and the loss of that habitat means loss of good roost spots for maternity colonies and nonreproductive individuals. The loss of habitat can happen through clearing for development and agriculture.

Pesticides can be a general threat to bats and other species. Besides pesticides killing the insects that bats would normally eat, the chemicals can affect them directly. Insecticides, such as DDE, become stored in a bat's fat reserves and can be passed through milk to pups. The bats then become poisoned when their fat stores are used in winter. A 2016 study showed that low doses of imidacloprid, a neonicotinoid pesticide, interfered with the spatial memory of bats by killing neurons in key parts of their brain.

What You Can Do to Help

Bat houses can be installed on your property to give northern long-eared bats (and other bats) a place to stay. There are multiple types of bat houses, and multiple installation possibilities. For more information on bat houses, their installation, and pitfalls to avoid, visit Bat Conservation International's website to see what works best for your property (http://www.batcon.org/resources/getting-involved/bat-houses). Bat house plans are also available on the DEEP website at https://portal.ct.gov/DEEP/Wildlife/Fact-Sheets/Bats. If you have old, sound trees on your property, keep them up for tree bat roosts.

Report any bat sightings to the CT DEEP Wildlife Division at https://portal.ct.gov/DEEP/Wildlife/Learn-About-Wildlife/Bats-in-Connecticut, especially any maternity colonies in man-made structures. For species identification, please include a picture of the bat(s).

If you see a bat in distress (injured, sick, on the ground, obviously a pup, etc.), please call either the Wildlife Division (860-424-3011) or a certified bat rehabilitator (https://portal.ct.gov/DEEP/Wildlife/Rehabilitator/Animals-in-Distress/Bats-in-Distress). DO NOT TOUCH THE BAT WITH BARE HANDS! This will potentially expose you to rabies and the bat will have to be euthanized and tested for rabies.

State of Connecticut
Department of Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division
https://portal.ct.gov/DEEPWildlife

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