

WILDLIFE IN CONNECTICUT

SPECIES OF GREATEST CONSERVATION NEED

Big Brown Bat

Eptesicus fuscus

Background

The big brown bat is the most common species of bat in Connecticut following dramatic declines of other previously common species, such as the little brown bat, due to white-nose syndrome (WNS). Although big brown bats are considered common, they are listed as a species of Greatest Conservation Need in Connecticut's Wildlife Action Plan and remain a focus of monitoring and conservation planning.

Range

Big brown bats can be found throughout most of the United States, Mexico, and the southern part of Canada.

Description

The body length of a big brown bat ranges from 11 to 13 cm, roughly the length of an adult's index finger, and weight ranges from approximately 15 to 26g. Big brown bats have thick, glossy brown fur on the back, contrasting with their black forearms and wing membranes. The tail bone extends approximately 3 to 5 mm past the tail membrane, and the bats have a wide, furless muzzle that can look "flattened". They also have a keeled calcar, meaning that there is a small, triangular protrusion of membrane at the base of the tail membrane near the heel. (The calcar is a special cartilaginous extension of the ankle on a bat's leg that is often used for identification.)

Big brown bats are most commonly confused with the little brown bat, which is much smaller. The little brown bat also has a furred muzzle which appears much more pointed, lacks the keel on the calcar, and the tail bone does not extend noticeably past the tail membrane.

Habitat and Diet

In Connecticut, big brown bats are very adaptable and can roost in a number of different areas, including trees, caves, and manmade structures, such as barns, attics, and bridges. If there are bats in your house, they are most likely big brown bats.

Big brown bats are insectivores and can eat thousands



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of insects each night. Pregnant or lactating females can even eat up to their body weight each night. Bats have good eyesight and rely on vision for long-distance orientation. For short-distance navigation and catching food at night, they use echolocation. This sonar system helps bats, like dolphins, locate targets and background objects from the echoes of ultrasonic pulses. The tempo of these pulses are slow when a bat is foraging and quicken as the bat pursues and captures an insect. Detection, pursuit, and capture of an insect take about one second.

While big brown bats eat many different types of insects, beetles are preferred. This includes major agricultural and forest pests, such as cucumber beetles, scarab beetles, stink bugs, and ground beetles.

Life History

Breeding: Big brown bats live an average of 6.5 years according to a 2011 Colorado study, but can live up to 20 years according to recapture of previously banded bats. Females return each year to the same location to give birth and raise their young in small groups known as maternity colonies. Maternity colonies typically form in late spring, and range in size from tens to upwards of hundreds of individuals. Each female will give birth to one or two "pups" in late May to June. The pups remain in the colony at night when the females leave to feed on insects;

the females will periodically return to nurse. The pups grow quickly and can begin to fly at 3 to 5 weeks old.

Overwintering: In the fall of more northern latitudes, big brown bats migrate to their hibernation areas (hibernacula). Mating also occurs at this time. These hibernacula can be caves, crevices, tree hollows, or manmade structures, such as a garage. Typically, the bats will hibernate between December and March, occasionally rousing to look for insects if the weather is very warm. The big brown bats of more southern climates will remain year-round residents and be active as long as there is adequate food.



Interesting Facts

Big brown bats are relatively less tolerant to extreme heat, and females will often switch roosts to avoid high temperatures. In Connecticut, during heat waves and other extreme temperature events, it is not uncommon to see a bat roosting on the outside of a tree or a house, even during the day, as they seek cooler temperatures. This is often the reason bats may end up inside a home and is not likely a sign that the bat is sick or carrying rabies. Such encounters also increase in frequency in late July through August as the inexperienced young of the year have now started to fly and forage on their own and often confuse a human dwelling for a potential roost site. This is also the period when you are more likely to observe dead bats.

Threats

Owls, hawks, raccoons, and snakes are natural predators of big brown bats, as are feral cats and house cats that are allowed to roam outside.

White-nose syndrome (WNS) is currently the biggest threat in North America to any bats that hibernate in caves, like the big brown and other bats. 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.

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 big brown 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>.

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.

