



# Bats of Rhode Island

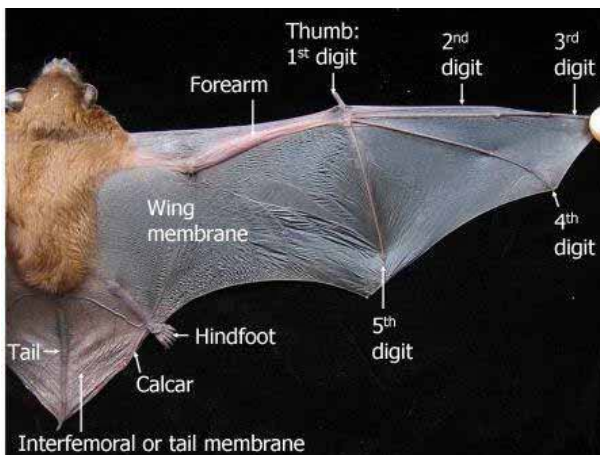
Although bats normally pose no threat to people and are beneficial in many ways, they have been largely misunderstood and regarded with fear. These winged mammals are the primary predator of night-flying insects and are important in the control of many insect pests. Other bat species are important plant pollinators. Unfortunately, many bat species are facing many threats including disease, habitat loss and wind turbines. Some populations of once-common species have experienced dramatic population declines in recent years.



Photo Courtesy of Charles Brown

## Description

Bats are a large and diverse group. With approximately 1,100 species found worldwide, they constitute about 20 percent of the world's total mammal species. There are 47 species of bats in the United States alone, and eight species of bats are known or believed to occur in Rhode Island at some time during the year. Bats belong to the mammal Order Chiroptera, which translates from Latin to mean “hand-wing”. They have specialized forelimbs and adaptations for flight which make them unique from all other mammals.



It is a misconception that bats are blind: in fact, most bats have excellent eyesight. Many bat species, particularly those that feed on insects, use high frequency sounds known as “echolocation” to detect prey, navigate, and communicate. Bats emit these high frequency sound pulses from their mouth or nose, which reflect off objects (such as a flying moth or beetle), and back to the bat. The bat can then pinpoint the distance, size and movement of the object. These calls are ultrasonic and beyond the range of human hearing. Each species of bat has a unique echolocation call frequency, and modern acoustic detection equipment can be used to identify the species by the calls produced while they are

searching for prey items or navigating.

## Life History

**Habitat and Range:** In temperate areas, cold weather and lack of insects as a food source force bats to migrate to other areas or hibernate during the winter. Hibernation is a state of inactivity in which an animal reduces its metabolism and does not feed or drink for an extended period, living off stored fat reserves. For bats, the ideal location is usually a natural cave or abandoned mine that has stable, cold, but generally above freezing temperatures with high humidity. The locations where bats hibernate are referred to as “hibernacula.” Some

species of bats migrate south for the winter and may remain active in warmer climates during the winter months, or hibernate only if necessary. The Eastern red bat (*Lasiurus borealis*), the silver-haired bat (*Lasionycteris noctivagans*), and the hoary bat (*Lasiurus cinereus*) are all migratory species. Silver-haired bats are occasionally found hibernating in man-made structures in Rhode Island and red bats are known to occasionally hibernate on the ground, under leaf litter.

Rhode Island does not have any natural caves or abandoned mines, so most bats that spend the summer here leave the state in late summer and fall to hibernate elsewhere. The big brown bat (*Eptesicus fuscus*), the most common species in our area, will frequently hibernate in buildings and is the bat species you are most likely to encounter in Rhode Island during the winter months. If disturbed, bats can arouse during hibernation, but disturbance can cost bats valuable energy reserves critical to their survival. If the weather is very mild bats may fly during winter months to drink or feed, although this is not typical in most winters.

**Food Habits:** Most bat species eat insects (insectivores), but there are many species that feed only on fruit or nectar. There are a few species that prey on small fish, frogs, or small rodents, and only three species of vampire bat which survive on vertebrate blood (sanguinivore), none of which occur in New England. All bat species in Rhode Island and the Northeast U.S. are insectivores.

**Reproduction:** Bats are long-lived, which is typically not the case for most small mammals. They can live 10-20 years with some known to live more than 30 years. Bats also have low reproductive rates. In many species, an adult female bat will only have one young per year. Young bats, called “pups” are born in early summer, the first or second week of June in our area. The pups are born blind and hairless but grow quickly and may be able to fly after only four to six weeks. Female bats of some species form “nursery” or “maternal” colonies, giving birth and raising their young together. These nursery colonies may consist of just a few adult females or in some cases hundreds or even thousands of female bats. Male bats do not participate in caring for young bats. In most species, male bats roost alone or collect together into small “bachelor” colonies of a few individuals, often near a nursery colony. Mating takes place in the fall, during “swarms” when male and female bats congregate before entering their hibernacula.



In Rhode Island there are two species of bats that frequently use man-made structures for giving birth and raising their young. The big brown bat is the most common bat species in our area, found in the most urban parts of the state to the most rural. The little brown bat (*Myotis lucifugus*) was until recently also very common in our area and a frequent user of man-made structures. After spending the winter in another location, female bats of both species begin to arrive at the maternity colony in late spring. They are very loyal to their maternity colony site and will return year after year to the same location, which was probably where they were born. Maternity roost sites are often located in attics or loft spaces where the day and nighttime temperatures can be very high. This is especially important for the young bats during early development when it is difficult for them to regulate their body temperature, especially when their mothers leave to feed. Bats will frequently move around within the roost to find the optimal temperature conditions. The adult females leave the roost at dusk to feed, returning numerous times to nurse and check on their young. After four to six weeks the pups will begin attempting to fly and by late

July are beginning to leave the roost nightly and feed with their mothers. By late summer the mothers and young bats gradually begin to leave the roost site entirely and move to other areas prior to migrating to their hibernacula.

Some bat species roost in trees and rarely if ever enter buildings unless by accident. In our area the eastern red bat, the silver-haired bat, and the hoary bat roost and have their pups high in the tree canopy, hanging from small branches. Females of these species roost alone. Other species such as the tri-colored bat (*Perimyotis subflavus*) and northern long-eared bat (*Myotis septentrionalis*) roost alone or in small groups in tree cavities or under loose bark but occasionally use man-made structures.

**White-nose Syndrome:** White-nose Syndrome (WNS) is a disease that has caused rapid, dramatic declines in bat populations of some once-common species in the Eastern United States and Canada. It is caused by a fungus, *Pseudogymnoascus destructans* (“Pd”) that occurs in the cold, humid environments of caves and mines. The disease is named for the white “fuzz” that sometimes appears on the face of affected hibernating bats. More frequently it causes deterioration of the bats wing membranes. The disease affects the bats during hibernation by disrupting their metabolism, causing dehydration and loss of fat reserves. Bats arouse from hibernation apparently to search for food and water only to encounter sub-freezing temperatures, predators, and no available food. It is now believed that the fungus may have been transported by humans, possibly on equipment or clothing, from caves or mines in Europe, where the fungus is now known to have originated. The fungus does not have the same impact on European bat species. The disease does not affect humans and the fungus does not occur in hot, dry environments such as attics.



Hibernating bats with characteristic white fungus on muzzle and forearm.  
Photo Courtesy of USFWS

First documented in upstate New York in 2007, by early 2017 it had been confirmed in 30 states and five Canadian provinces. It has resulted in the estimated deaths of more than 95% of the bats in many hibernacula and possibly 80% of the bats in the northeastern U.S. Since the time of its discovery, the disease is believed to have been responsible for the death of an estimated 5.5 million bats in North America, although this is likely a conservative estimate. The little brown bat, once one of the most common species in our area, has now become increasingly hard to find. The northern long-eared bat was listed as a Threatened Species under the federal Endangered Species Act in 2016 due to population declines caused by white-nose syndrome.

In 2016, the RIDEM/Division of Fish and Wildlife conducted sampling in the few known places where small numbers of bats hibernate in Rhode Island. The presence of the fungus was confirmed at all sites, and present on a single tri-colored bat ([WildRI Summer 2016](#)). It was not unexpected, as WNS had been previously confirmed in all other New England states. Although large die-offs of bats have not been documented here, the finding does not bode well for the long-term viability of bat populations in the region. For more information on WNS visit: [www.nwhc.usgs.gov/disease\\_information/white-nose\\_syndrome](http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome).

**Rabies:** Rabies is a disease caused by a virus that affects the nervous system of mammals. The rabies virus is typically transmitted from an infected mammal to another mammal by a bite wound. The virus passes from the saliva of the infected mammal into the bloodstream of another, eventually moving through the central nervous

system to the brain. The “incubation period”, or time that this process takes, depends on a number of factors, including where on the body the bite was received. Although rare, it is possible to become infected without being bitten, for example by having infected saliva come into direct contact with an open wound or eyes. Due to public education programs, post-exposure treatment, and vaccination programs for domestic animals, cases of humans contracting rabies in the United States are rare. Those few cases that occur are because people did not recognize the risk and did not seek medical advice.

You cannot tell if a bat or other mammal has rabies just by looking at it. Rabies can only be confirmed by laboratory testing. In a given year, the Rhode Island Department of Health may test between 100 and 200 bats for rabies. The average infection rate in a given year, and over a ten year period is about 4 percent. If one bat tests positive for rabies it does not mean all the bats in the colony also have rabies.

A bat that is found on the ground and can be easily captured may be sick or injured. Do not attempt to pick up or catch a bat with bare hands. Sick or injured bats are not aggressive but are likely to bite in self-defense if handled. If it is absolutely necessary to capture or secure the bat, only do so using leather work gloves or in such a way as the bat is not handled at all. When disturbed, whether sick or not, a bat will open its mouth and make a loud “clicking” or squeaking sound.

Any bat that is found within a home, especially a bedroom, or where there are pets, or a person who is unable to communicate that they have had contact with the bat should be tested for rabies. Do not immediately release a bat which was captured or found within a home. Contact the **Department of Health Rabies Hotline (401-222-2577)** for instructions. Do not allow a bat to escape, particularly if in a situation as described above. Only if the bat tests positive for rabies will vaccine treatment be recommended. Post-exposure rabies vaccinations may be recommended when the bat is not available for testing. The Rhode Island Department of Health Rabies Hotline is staffed 24 hours a day, seven days a week for reports of possible exposure or for consultation. If you are bitten by a bat, wash the wound with soap and warm water immediately and contact the Department of Health (**401-222-2577**). If you know or suspect a domestic animal has had contact with a bat or other wild mammal contact the local animal control officer and a veterinarian immediately.

Captured bats should be secured in a small container that can be sealed; preferably, a small, clear plastic container with a sealable lid. The bat can be kept in a cooler with ice until it can be delivered to the Health Lab. Do not put the bat in the freezer as this will affect test results. Excessive physical damage or decomposition can also affect test results.

If you are unable to capture the bat, or do not wish to attempt to capture the bat yourself, contact the Department of Health (**401-222-2577**) or the DEM Division of Law Enforcement (**401-222-3070**). If an Environmental Police Officer is available, they may be able to provide assistance. You may be directed to a licensed Nuisance Wildlife Control Specialist (NWCS). Nuisance Wildlife Control Specialists are licensed by the DEM to provide assistance in a number of ways to the public with respect to wild animals. They are familiar with the protocols for capture, handling, transport, and submission of specimens to the Department of Health Laboratory. A current list of Nuisance Wildlife Control Specialists is available on the DEM website: <http://www.dem.ri.gov/programs/bnatres/fishwild/pdf/relok8rs.pdf>.

**Histoplasmosis:** Histoplasmosis is a fungal disease associated with the droppings of birds and bats. Inhalation of dust containing spores can cause an infection in the lungs. Symptoms may include fever or congestion and in some cases a mild infection that may go unnoticed.

The disease is rarely fatal but people with compromised immune systems may be at risk. Do not sweep bat or bird droppings without protective clothing or an appropriate respirator. Wetting droppings before and during clean-up will reduce dust and most household disinfectants and bleach solutions will kill the spores.

## **Bat-proofing the Home**

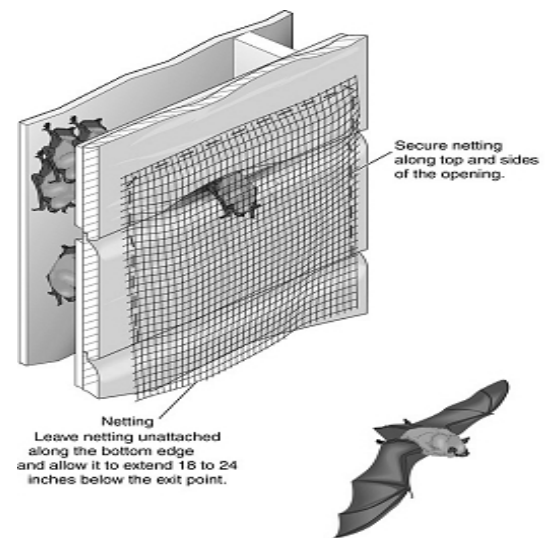
Bats are beneficial in the control of insect pests and generally do not pose a threat to humans. However, they can pose a health risk if they are handled or enter the living space of a home. There are a number of effective and humane ways to exclude bats from attics or other buildings. Sealing up entryways or using one-way devices are effective but must be done appropriately and with consideration to the time of year, otherwise these methods could lead to bats being trapped within the structure and subsequently dying. Remember, if it is between May and August and you have found a bat or evidence of bats in your home, it could be because there is a maternal colony of bats living there. On extremely hot days, bats may move down from the attic ceiling to find cooler areas to roost. Young bats attempting their first flights will often end up on the attic floor, and from there may crawl under an attic door or find other access into the living quarters. Indiscriminate use of repellents, such as **naphthalene** (moth balls), could also have the same effect and can make conditions for the homeowner unsafe. The use of poison is not a legal, humane or permanent solution and poses risks to human occupants. Poisons are toxic to humans and can remain harmful for years after they have been applied. Bats that leave the building and die on the ground outside could be handled by humans or become exposed to domestic or wild animals.

There are many ways that bats can enter a structure; Open or damaged louver vents or windows, cracks between the house and chimney, behind fascia or trim boards, or under loose shingles.

Bats do not chew wood or screens, but may use openings that were created by rodents. Look for evidence of dark staining on shingles or trim boards and also look on the ground for droppings, which are black and about the size of a rice grain, and often accumulate under entry/exit points. Most bats will exit the roost within a half-hour after the first bat leaves, usually just after sunset. However, on some nights, not all of the bats will leave or leave at the same time. Waiting outside at dusk may be the best way to determine how bats are gaining access.



Images courtesy of: Bat Conservation International, Inc.  
[www.batcon.org](http://www.batcon.org)



**For further information on rabies:**

Rhode Island Department of Health  
 3 Capitol Hill  
 Providence, RI 02908  
 (401) 222-2577

<http://www.health.ri.gov/topics/rabies>

Centers for Disease Control and Prevention,  
 National Center for Infectious Diseases  
[www.cdc.gov/ncidod/dvrd/rabies](http://www.cdc.gov/ncidod/dvrd/rabies)

**For further information on White-nose Syndrome:**

U.S. Fish and Wildlife Service  
 Northeast Region

[http://www.fws.gov/northeast/white\\_nose](http://www.fws.gov/northeast/white_nose)

**For further information about bats:**

Bat Conservation International, Inc.  
<http://www.batcon.org/>

**For general information:**

Rhode Island Department of Environmental  
 Management

Division of Fish and Wildlife  
 Great Swamp Field Headquarters  
 277 Great Neck Road  
 West Kingston, RI 02892  
 (401) 789-0281

Email: DEM.DFW@dem.ri.gov

<http://www.dem.ri.gov>

**Rhode Island Bat Species List**

For some bat species there is currently little known about their distribution or abundance in our state. Below is a list of species that are known or thought to occur in Rhode Island at some time during the year.

<b><u>Scientific name</u></b>	<b><u>Common name</u></b>	<b><u>Resident status</u></b>
<i>Eptesicus fuscus</i>	Big brown bat	year-round resident
<i>Lasionycteris noctivagans</i>	Silver-haired bat	summer resident (?), migrant
<i>Lasiurus borealis</i>	Eastern bed bat	summer resident, migrant
<i>Lasiurus cinereus</i>	Hoary bat	summer resident (?), migrant
<i>Myotis leibii</i>	Eastern small-footed bat	summer resident (?), migrant
<i>Myotis lucifugus</i>	Little brown bat a.k.a. Little brown Myotis	summer resident
<i>Myotis septentrionalis</i>	Northern long-eared bat a.k.a. northern Myotis	summer resident, migrant, known to hibernate in RI
<i>Perimyotis subflavus</i>	Tri-colored bat a.k.a. eastern pipistrelle	summer resident (?), migrant, known to hibernate in RI

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