



# Fish & Wildlife



## BATS

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Fisheries and Wildlife

Seven species of bats live in Minnesota, all of them rather small. Four species (little brown, Keen's little brown, big brown, and pipistrelle) form colonies and can be found in groups in caves, hollow trees, and buildings. These animals typically feed over open fields, along woodland edges, or over lakes and streams.

The remaining three species (silver-haired, red, and hoary) are commonly called tree bats, reflecting their preferred habitat. They lead solitary lives, characteristically roosting in trees and feeding in or around forested areas.

All Minnesota bats are insectivores. They feed exclusively on insects—mostly beetles, moths, flies, midges, mayflies, and to a very minor degree, mosquitoes.

### Biology

Bats mate in fall and winter, and the young are born from April through July. An adult female will usually produce only a single newborn each year. Some have twins, and a few species have litters of three or four.

Young bats grow rapidly and are able to fly within three weeks. Female bats congregate in nursing colonies from the time the young are born until the time they are weaned in July and August.

### Property Damage

Bats may use the interior of buildings as roost sites. These roosts can cause a nuisance when the natural squeaking, scratching, and crawling sounds are heard through walls, ceilings, and chimneys. Bat droppings stain floors and walls and, if enough are present, may cause odor problems.

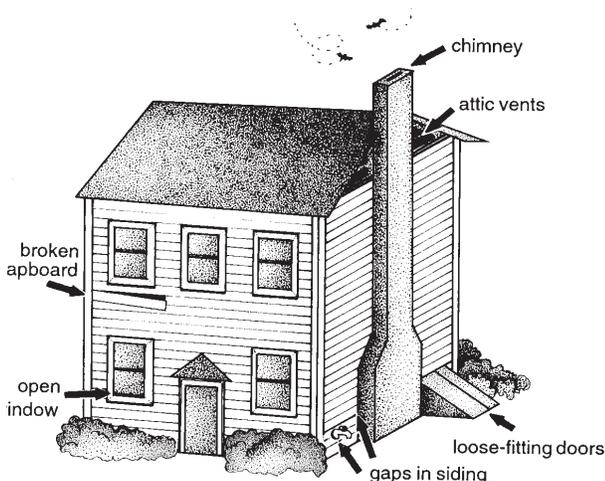


Figure 1. Possible roosting sites in houses

### Health Concerns

Because they are mammals, bats can carry rabies. This danger, however, is very minor. Since 1951, there have been only eight recorded fatalities throughout the United States and Canada attributed to bites from rabid bats. However, to be safe, never handle bats with bare hands.

Histoplasmosis is another disease associated with some bat colonies throughout the Ohio River and Mississippi River Valley areas. The disease is caused by inhalation of spores or fragments of the naturally occurring soil fungus *Histoplasma capsulatum*. This fungus is most frequently found in soil enriched by excreta from bats and birds (especially pigeons and starlings). There is no evidence that this disease is transmitted directly from bats to humans. Some infections produce flu-like symptoms, but many infections in humans produce no symptoms or distress.

### Control

Inspect the outside of a building to determine whether or not bats are living in the building. Begin the inspection about 1/2 hour before dusk. Station enough people around the building to keep the entire roof area under constant observation. If bats are present, they will start leaving the building about dusk; the last bat should be out of the building within one hour of the first bat. Bats most commonly enter a building at the roof-wall joint, under loose fascia boards, broken attic vents, or other cracks resulting from building deterioration. Bats can squeeze through an opening about 3/8-inch wide. There will often be dark, greasy smudge marks on the wall just below the region where the bats are entering and leaving the building. Note all of the bats' exit-entrance points as well as the number of bats. Perform this procedure at least twice to ensure that all the bats' holes are identified and to accurately determine the number of bats.

### Exclusion

Bat proofing is the only way to permanently rid a building of bats. Merely repelling bats may provide temporary relief, but will not provide long-term control.

Exclude bats in the late fall after they have left the building (they return in the early spring). If exclusion must be undertaken in the summer, do it in mid-August or later. DO NOT attempt to exclude bats between late April and mid-August, as the young are unable to leave the nest. Exclusion carried out between mid-May and mid-August will result in young bats being trapped inside where they will die and create an odor problem.

If inspection reveals only one exit-entry hole, plug the hole as soon as the last bat leaves the roost (hence the reason for counting the bats). If several holes are found, plug all but one during daylight. Wait a day or two to give the bats a chance to get used to using the last opening, then plug it as soon as the last bat has left in the evening. If all holes can be safely plugged at night, then it is not necessary to wait the extra day or two.

Bats will not gnaw and claw their way into a building as rats and mice will. Therefore, almost anything can be used as a temporary seal — fiberglass insulation, rags, oakum, steel wool, etc. Permanent bat proofing requires the use of more substantial material — sheet metal, 1/4-inch mesh hardware cloth or nylon netting, plywood, caulking compound, or aerosol-foam insulation. Exclusion can be very expensive on large buildings or on those having a great many openings.

## Bat Repellents

Sometimes exclusion is not possible or bats have already entered a building and must be forced out. Bat repellents can be successfully employed in these situations. If repellents are needed, use them only in late summer or early fall.

### *Naphthalene*

Naphthalene (crystals or flakes) is the only chemical currently registered by the EPA as a bat repellent for indoor use. Apply Naphthalene at the rate of 5 pounds per 2,000 cubic feet of attic or wall void space. As the material vaporizes, the bats are repelled and will not return as long as the strong odor remains. Once the material dissipates the bats will return. Humans should avoid breathing the fumes and those with respiratory problems should avoid all treated areas.

### *High frequency sound*

High frequency sound in the range of 4,000 to 18,000 cycles per second (cps) has been used successfully to repel bats from gymnasiums, large warehouses, and similar structures. Adjustable high frequency dog training

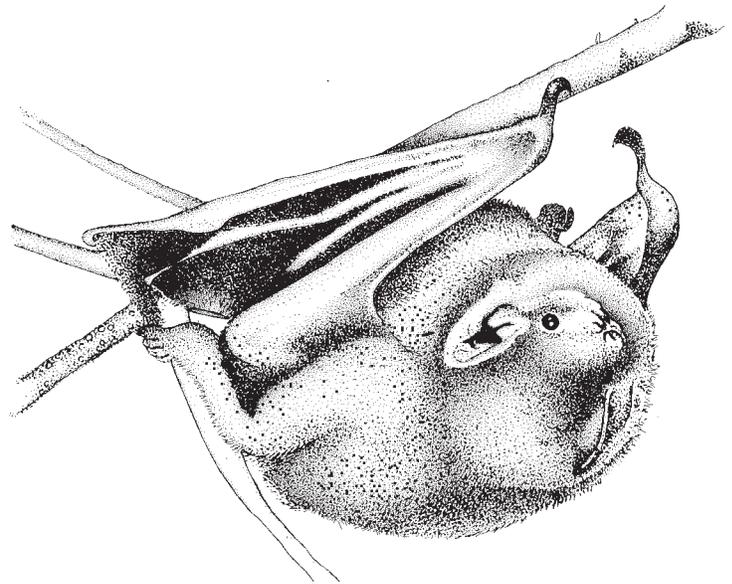
whistles connected to cylinders of compressed air or large aquarium pumps and placed close to the bats' roost have a repelling effect. High frequency sound is believed to interfere with the bat's ability to navigate. These whistles might also make people in the area irritable and nervous.

### *Bright lights*

Bright lights strung through an occupied attic to illuminate all roosting sites may repel bats. The key to success with this method is to illuminate all roost sites. Large attics may require several 100 to 150 watt bulbs. This method is cleaner than other methods and safer for both humans and bats.

### *Drafts*

Drafts from carefully directed electric fans have successfully repelled bats. Several fans set up in an attic to create good air flow will irritate roosting bats.



## REFERENCE

Greenhall, A.M. 1982. House bat management. U.S. Fish & Wildlife Service Resource Publication 143, Washington, D.C. 33pp.

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