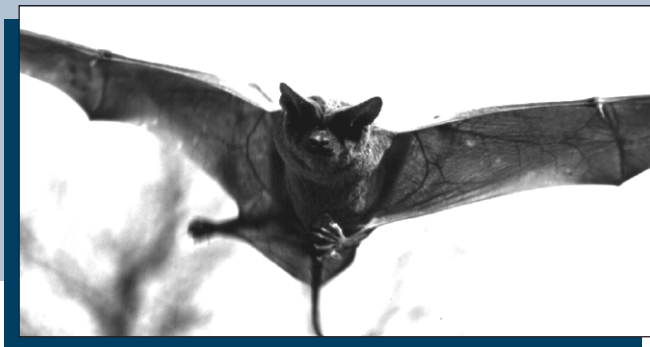


Controlling **BATS**



Throughout history, bats have aroused the curiosity and interest of humans. Their ability to fly, their secretiveness and their nocturnal habits undoubtedly have contributed to bat folklore, superstition and fear.

Most bats found in Texas live in caves and trees. Many roost under bridges, in buildings or in other man-made structures. Roosts are usually dark, secluded areas where the bats spend the day sleeping. Bats normally leave the roost to feed just after sunset and feed off and on throughout the night. Most bats return to the roost just before daylight.

The most common bat in urban areas is the Mexican free-tailed bat (*Tadarida brasiliensis*). Although they occur in most parts of Texas, Mexican free-tailed bats are more heavily concentrated in the southern half of the state. Mexican free-tailed bats form the largest colonies of any mammal. Some Texas cave colonies contain as many as 20 million individuals, which collectively can consume more than 100 tons of insects nightly. Most Mexican free-tailed bats are migratory. They spend the winter months in Mexico and return to Texas in February or March.

Although bats can see, they fly by means of an echo location system. By emitting high frequency sound waves, inaudible to humans and similar to sonar, flying bats are able to avoid obstacles and capture insects. Bats also emit audible sounds that may be used for communication.

Damage

In urban areas, bats may become a nuisance because of their squeaking, scratching and crawling in attics, walls, chimneys or other structures. Their droppings and urine create an objectionable odor and, in some cases, can present a health threat. In addition, bats also can carry rabies. Although the incidence of rabies is low compared to the total population, the disease can be transmitted very quickly within a colony.

Bat bites should always be considered as potential rabies exposures and treated accordingly. Most bites occur when people or pets pick up sick or dying bats that have fallen to the ground. Normally, bats are not aggressive and rarely attack people.

Biology and Reproduction

Mexican free-tailed bat

Total length: 3½ inches.

Wingspan: 11 to 13 inches.

Color: Brownish black above, grayish brown below.

Tail: Lower half of tail is free of connecting membrane or "free-tailed."

Gestation period: 77 to 86 days.

Litter size: One.

Litter numbers: One per year usually born in late spring or early summer.

Weaning: 6 weeks.

Life span: 10 years.

Control Methods

Before an attempt is made to control bats, it is essential to verify that bats are actually the cause of the nuisance. Twittering and rustling sounds in the chimney may be caused by chimney swifts. Scratching or thumping sounds in the attic or walls could indicate the presence of rats, squirrels, raccoons or other animals. Bats may sometimes be detected by the presence of a black-brown oily stain left by their body oils, and/or by the presence of droppings around openings they use to enter or leave a structure.

Exclusion. The best way to discourage bats from roosting in houses or other buildings is to close all openings through which they enter the structure. Bats may enter buildings through unprotected chimneys, louvers or vents, broken windows, eaves, loose flashing and other places. Bats can crawl through openings as narrow as $\frac{3}{8}$ inch, so you will need to inspect carefully to locate all possible entrances.

Exclusion methods should be used for at least 5 to 7 days before any bat proofing begins so that bats have time to leave the structure. The best time for bat proofing is in the fall after the bats have left for the winter. Because very young bats (pups) do not fly and remain in the roost area until they are older, any exclusion or repairs made from May through August may trap the pups inside the structure.

One exclusion method is to hang plastic or lightweight netting over entrance holes. The netting should have about $\frac{1}{6}$ -inch squares (birdnetting) and be at least 2 feet wide. It should be hung 1 to 4 inches in front of bat exit holes and extend at least 2 feet below the lowest exit point. This will allow the bats to leave the structure but keep them from finding their way back inside (see Fig. 1). Use waterproof duct tape, staples, wooden lathe strips, or other suitable material to attach the netting to the structure.

For smaller entry holes, use a tube of 2-inch-diameter PVC pipe to exclude bats. Exclusion tubes should be about 10 inches long. Squeeze one end of the tube so that it fits into the hole or crevice, or cut the end of the tube into flaps that can be fit over the opening and stapled, nailed, or taped to the inside wall of the building. Do not let the tube project more than $\frac{1}{4}$ inch into the open-

ing so that bats can easily enter the tube to exit. Bats are unable to cling to the smooth surface of the tube and will not be able to reenter. A piece of lightweight cloth or plastic can be taped around the end of the tube that projects to the outside to further reduce the likelihood of bats reentering, though this is usually not necessary.

After the exclusion period (5 to 7 days), cover openings with sheet metal or $\frac{1}{4}$ -inch hardware cloth. Smaller openings and cracks can be sealed with caulking, metal flashing, weather stripping, steel wool, insulation or other suitable material.

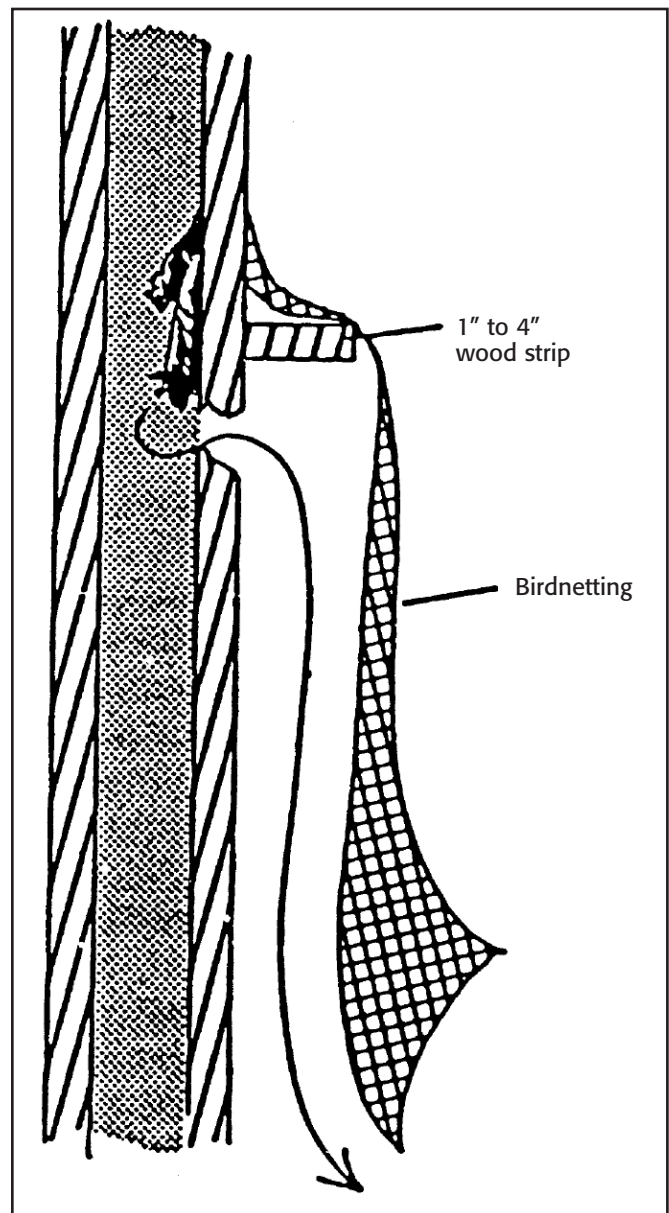


Figure 1. Birdnetting will allow the bats to emerge but keep them from finding their way back.

Unlike rodents, bats will not gnaw their way through wood or building materials and are easily deterred once the openings are sealed. If any entrances are overlooked, however, the bats will soon find them; so it may be necessary to observe the building closely for several evenings to make sure all openings have been sealed.

Trapping. Although exclusion is the preferred solution to bat problems, bats may be trapped alive before bat proofing is done. A variety of traps, tunnel nets or plastic cylinders can be used. These are usually placed over the building entrance the bats are using. The bats are captured when they try to leave the roost during the night (see Fig. 2). Trapping bats should be left to a professional or to persons experienced with handling bats.

Repellents. At present, naphthalene is the only chemical registered as a repellent for bats. Naphthalene crystals or flakes can be placed in areas where bats are roosting. The disadvantage of using naphthalene is that it is effective only for a limited time. Once the odor dissipates, the bats may return. Follow label instructions when using any chemical.

Illumination also can be an effective repellent. Because bats prefer dark, secluded areas for roosting, floodlights strung throughout the attic or near the roosting site may cause them to leave. Illumination is cleaner and safer for both humans and bats than chemical repellents, but in some situations using lights is difficult and costly.

It is believed that high frequency sound waves (4,000 to 18,000 cycles per second) may deter bats, perhaps by interfering with their ability to navigate when flying. A variety of ultrasonic devices are sold for this purpose, but their effectiveness is questionable.

Toxicants. There are no toxicants registered for bat control.

Safety Considerations

Frequently, one or two bats may be found in a house. They sometimes enter through the chimney, especially if the damper is left open. The U.S. Centers for Disease Control and Prevention

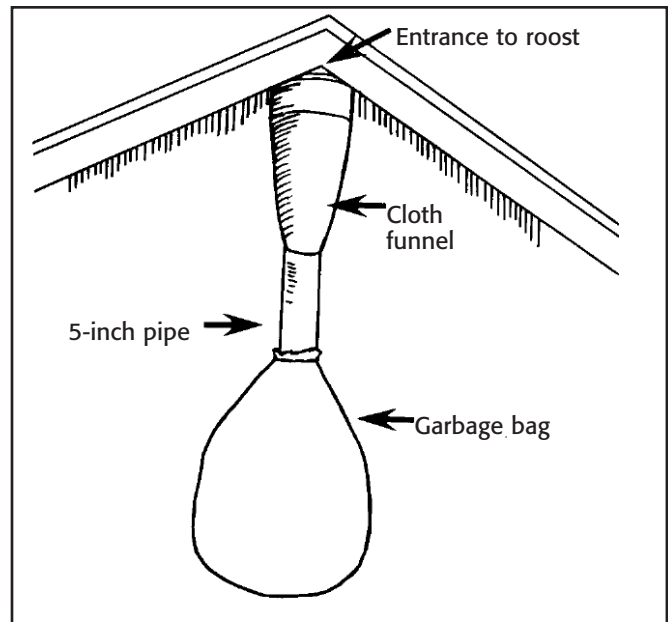


Figure 2. An effective bat trap can be made easily from available materials.

recommends that if a bat is found in the room of an unattended child or a person who is sleeping, intoxicated or mentally impaired, the person should seek medical advice and the bat should be tested for rabies. If there was no potential for a person to have direct contact with the bat, it can be removed by opening windows and outside doors. If the bat refuses to leave, it can be captured in a net, small box, can, or heavily gloved hand and then released outside. Avoid touching bats with bare hands. Although they are not usually aggressive, they will bite if handled improperly.

Restrictions

Many species of bats are found in Texas and some are protected by state law. Before conducting any type of bat control or relocating any bats that have been captured, contact local representatives of the Texas Parks and Wildlife Department.

For additional information, contact the nearest office of the Texas AgriLife Extension Service—Wildlife Services.

Texas A&M AgriLife Extension Service—Wildlife Services
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