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BAT CONSERVATION INTERNATIONAL

Bats in Buildings

A Guide to Safe & Humane Exclusions

If there's a bat in your house …

Don't panic. The solutions are simple.

Bats are rarely aggressive, even if they're being chased, but they may bite in self-defense if handled. As with any wild animal, bats should never be touched with bare hands. Always wear gloves when removing bats. Only a very small percentage of bats have rabies, but anyone bitten by a bat should immediately seek medical consultation.

A solitary bat – often a lost youngster – will occasionally fly into a home, garage or other building through an open door or window. When this happens, the bat's primary goal is to escape safely back outside. As long as no direct human contact with the bat has occurred, it can be released outdoors.

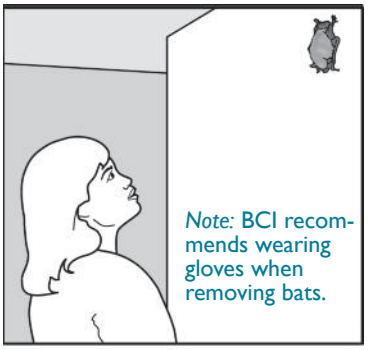
These bats will usually leave on their own if a window or door to the outside is opened, while interior entrances are closed.

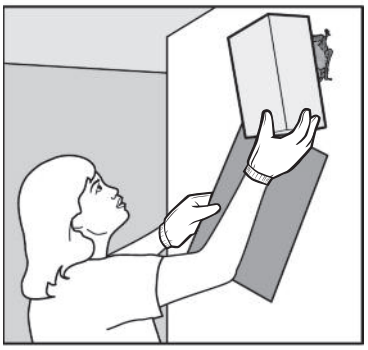
If the bat does not leave on its own, it can be safely captured and released outside. (*See the illustrations at right*). Wait until the bat lands, then cover it with a small box or other container. Slip a piece of cardboard between the wall and the container, gently trapping the bat inside. Wait until nightfall and, with the bat inside the cardboard-covered container, take it outdoors and release it.

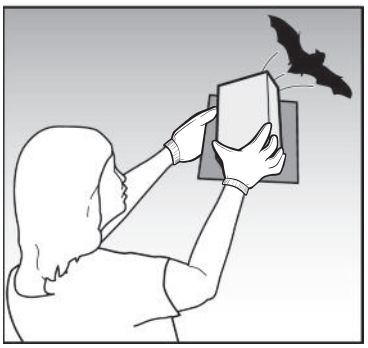
Most bats, however, cannot take flight from the ground. The bat can be released by holding the container aloft, lifting the lid and gently tilting the container to the side. The bat should fly out and away. Or you can hold the container against a high wall or the branch of a tree and slowly remove the cardboard. After a few moments, the bat should cling to the surface and can be left there.

If the bat appears unable to fly and falls to the ground, it may be injured or sick. In that case, gently return it to the box, cover it and call a local wildlife rehabilitator or your local animal control or public health office.

Excluding bats that are roosting in a building is more complicated, but you can do it yourself with the instructions that follow







Do-It-Yourself Bat Exclusions

If bats move in

As bats lose their natural roosts in trees and caves, they are sometimes forced to seek shelter in human-made structures. There is little reason to evict these highly beneficial animals unless they are causing a problem or are considered a nuisance. Bats should, however, be prevented from entering human living quarters.

Permanently – and humanely – evicting bats from buildings is not particularly difficult, but it requires patience and attention to detail. You can do it yourself with the following detailed instructions. Or you may prefer to contact a BCI-approved bat-exclusion professional. You'll find a state-by-state listing of professionals who pledge to use safe and effective exclusion methods at *www.batcon.org/excluders*.

Where bats roost in buildings

Bats may roost in attics, soffits, louvers, chimneys and porches; under siding, eaves, roof tiles or shingles; and behind shutters (*see diagram*). In stadiums and parking garages, bats sometimes roost in expansion joints between concrete beams.

Most North American bats have small teeth for eating insects and do not gnaw through wood or other building materials like rodents. But they can enter buildings through openings as small as one-half inch (1.3 centimeters) in diameter. Common entry points include open windows or doors, broken or poorly fitted screens, open soffits, loose or missing roof shingles or tiles, places where flashing or boards have come loose and where pipes or wiring enter buildings. Openings often occur where walls meet the eaves at the gable ends of an attic, where porches attach to a house or where dormers meet the roof. Other points of entry are associated with siding. For example, cracks and crevices are often created where siding forms corners or where it meets windows, doors or chimneys.

The existence of roosting bats in buildings is sometimes indicated by the presence of black or brown stains from body oils or droppings (guano) around cracks or crevices. Bat droppings may also appear on walls, under porches or decks, or beneath dilapidated ceilings. Bat guano may resemble small, hard rodent pellets; but it is soft, easily crushed to reveal shiny insect parts and does not contain any white fecal material.

Common bat-entry points on homes and buildings include corners, eaves and louvers.

Evicting bats from buildings

Excluding bats from buildings requires establishing one-way exits through which the bats can leave but cannot return, while also sealing all other potential entry points. This

process of eviction and exclusion is the only effective and permanent solution when bats in a building are unwanted.

Trapping and relocating is ineffective since bats have powerful homing instincts and will simply return, even when released at great distances. The use of pesticides against bats is illegal and counterproductive, and greatly increases the likelihood of bats coming into contact with people and pets. Naphthalene, the active ingredient in mothballs, and ultrasonic devices are often promoted as bat repellents. Ultrasonic devices have proven ineffective, however, and naphthalene, to be effective, would have to be used in such large quantities that it would pose a significant health hazard to humans.

Preventing access

Small bat colonies can usually be tolerated and simply left alone, but bats should always be prevented from entering human living quarters.

The first step in exclusions is to inspect the building's interior for small openings through which bats could enter. All openings connecting the attic or other potential roosting areas to living quarters should be sealed, while entry points on the outside of the building are left open. Caulking, flashing, screening or insulation can be used to seal most openings on the inside. Draft guards should be placed beneath doors to attics; electrical and plumbing holes should be filled with steel wool, caulking or weather stripping.

Caulking, flashing, screening or heavy-duty mesh can be used to bat-proof most openings on the outside. Expanding foam or similar products should never be used to seal cracks where bats are active because they can become entangled in the material as it hardens. Caulking should be water-based and applied early in the day so it has time to dry before bats emerge in the evening.

Never simply wait for bats to fly out at night and then seal openings. Not all of the bats leave at the same time, and some may remain inside all night, especially during storms. Instead, use tubes or netting as one-way valves that allow bats to leave, but not to reenter. These valves (or exclusion devices) must be placed over all openings that bats use to enter and exit. Valves may be constructed from well-cleaned caulk tubes or plastic pipes. Lightweight plastic netting, with mesh of one-sixth inch (0.4 centimeter) or smaller, may also be used for one-way valves. These exclusion devices should be left in place for five to seven nights to ensure that all bats have left the building. After careful observation to be sure all bats have left, the one-way valves may be removed and the openings sealed.

What about baby bats?

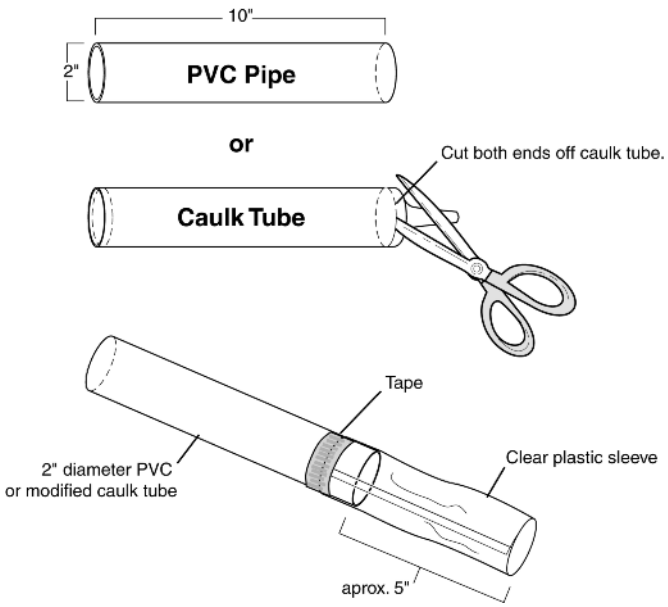
Bats often roost in buildings during maternity periods, when they give birth and raise their pups. Exclusions should not take place until young bats are able to fly; otherwise, they will be trapped inside, away from their mothers, and die of starvation. Separating pups from their mothers may also lead mother bats to search for other entrances to reach their young.

In North America, the maternity season begins as early as mid-April in the southernmost United States and in mid-June in the northern U.S. and Canada. Young bats are flying by late August. Exclusions should not be conducted between April and late August.

Most house-dwelling bats migrate to warmer climates or enter caves or abandoned mines to hibernate in the late fall. However, a few species can hibernate in buildings. If hibernating bats are present in cold regions during the winter, exclusions should be postponed until spring when they emerge to feed. In mild climates, some bats may remain active year-round, but exclusions should be carefully monitored or avoided during periods when night temperatures fall below 50 degrees F (10 degrees C).

The Townsend's big-eared bat is among species that sometimes roost in buildings. (Always wear gloves when handling bats.)

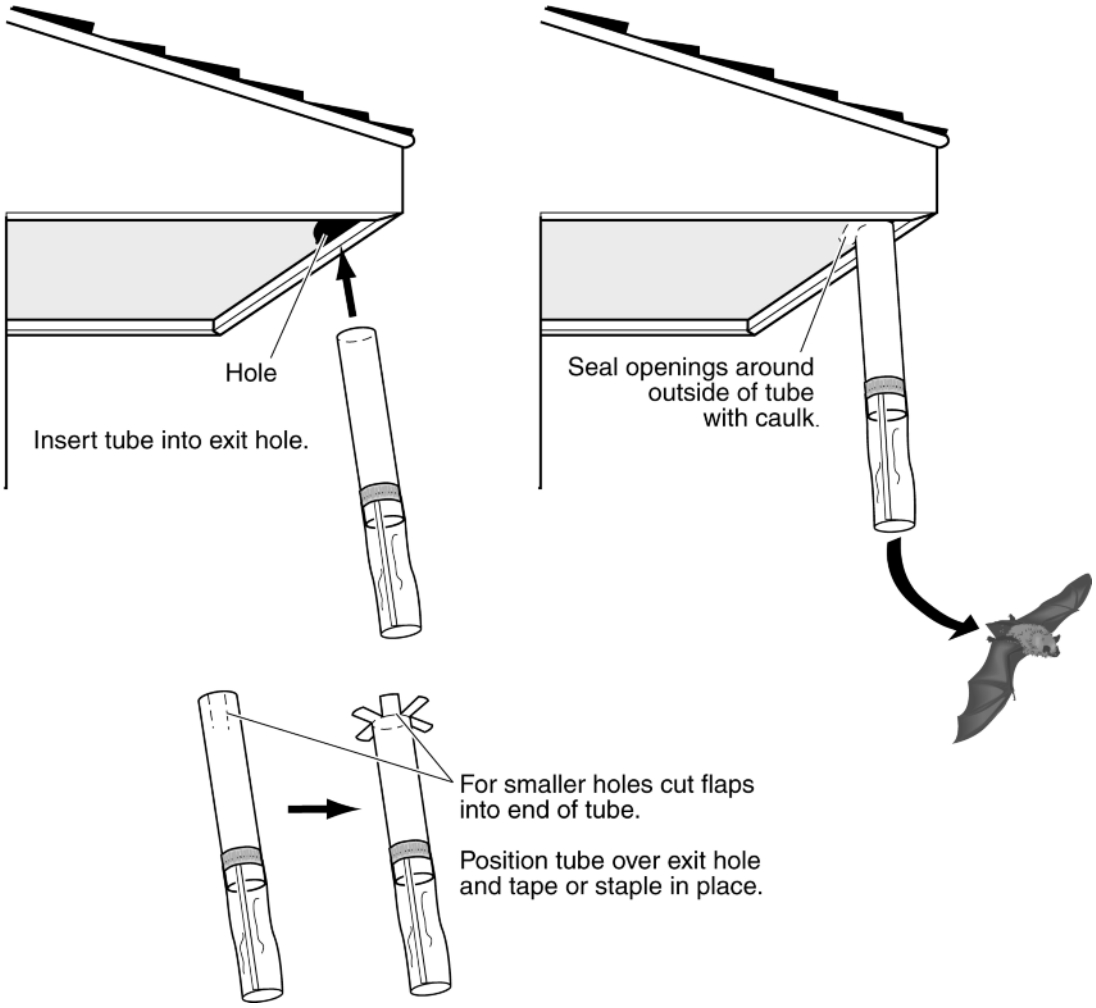
Excluding bats with tubes



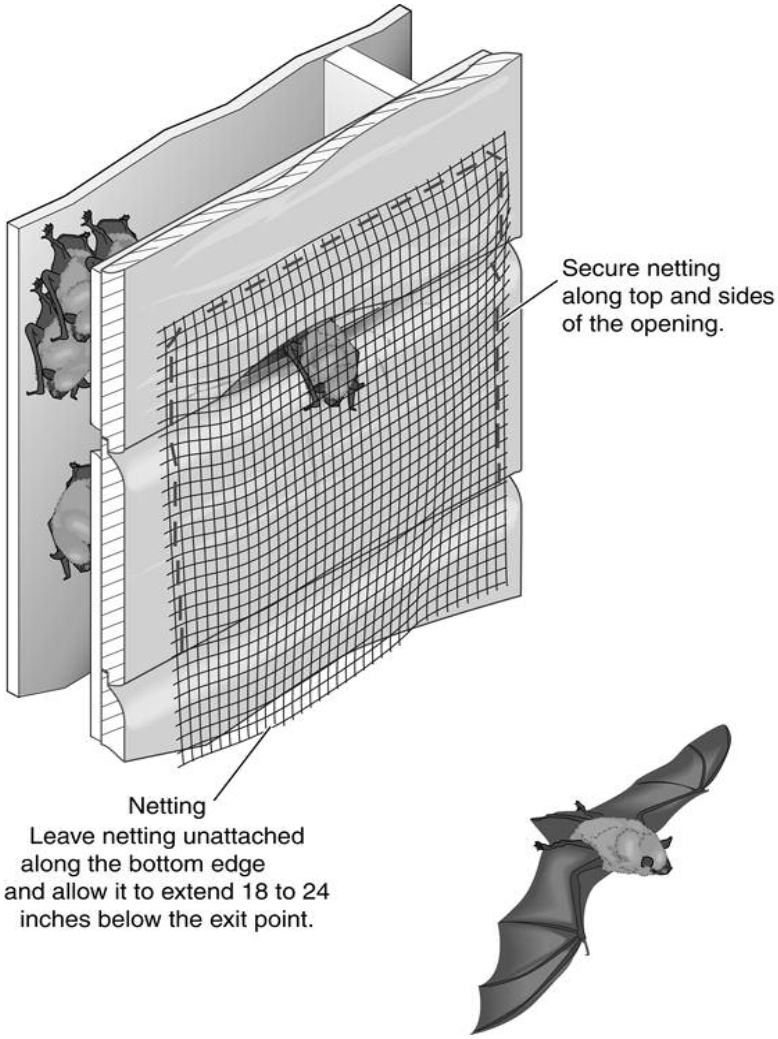
In most cases, tubes make the best bat-exclusion devices. These include openings on buildings with rough exterior walls, such as brick or stone houses and log cabins. Tubes also work best for holes at corners where walls meet and on horizontal surfaces such as soffits.

Exclusion tubes should have a diameter of two inches (five centimeters) and be about 10 inches (25.4 centimeters) in length. Exclusion devices can be purchased commercially or made from PVC pipe or flexible plastic tubing. Bats are unable to cling to the smooth surface of these tubes, so the tube should project no more than one-quarter inch (six millimeters) into the opening. This will ensure exiting bats can easily enter the tube. Laura Finn of Fly By Night Inc., says empty caulking tubes also work well after caps at both ends have been cut away. Caulking tubes must be thoroughly cleaned before they can be used for exclusions because dried caulk forms a rough surface that could allow bats to reenter. These flexible, plastic tubes let you squeeze one end so it fits into a crevice. Or you can cut one end into flaps that fit over an opening and can be caulked, stapled, nailed or screwed into place (*see diagram*).

Once the tube has been secured over the hole, a piece of lightweight, clear plastic can be taped around the tube's outside end (*see diagram*) to further reduce the likelihood of bats reentering, though this is usually not necessary.



Plastic sleeves collapse on themselves, preventing bats from reentering once they have crawled out through the tube. After the tube has been secured into or over an opening used by bats, any spaces between the outer rim of the tube and the building must be sealed shut. Also be sure to seal any other openings in the building that bats could use. Leave the tube in place for a minimum of five to seven days to ensure all bats have left. After the bats have been excluded, the tube should be removed and the opening permanently sealed.



Using netting for exclusions

Lightweight, flexible plastic netting with one-sixth-inch (0.4 centimeter) mesh or smaller can be used to form a one-way valve over openings on smooth surfaces of exterior walls or attic louvers. Secure the top and sides of the netting, as shown in the diagram. The netting should extend 18 to 24 inches (46 to 61 centimeters) below the lower edge of the opening with the bottom hanging loose.

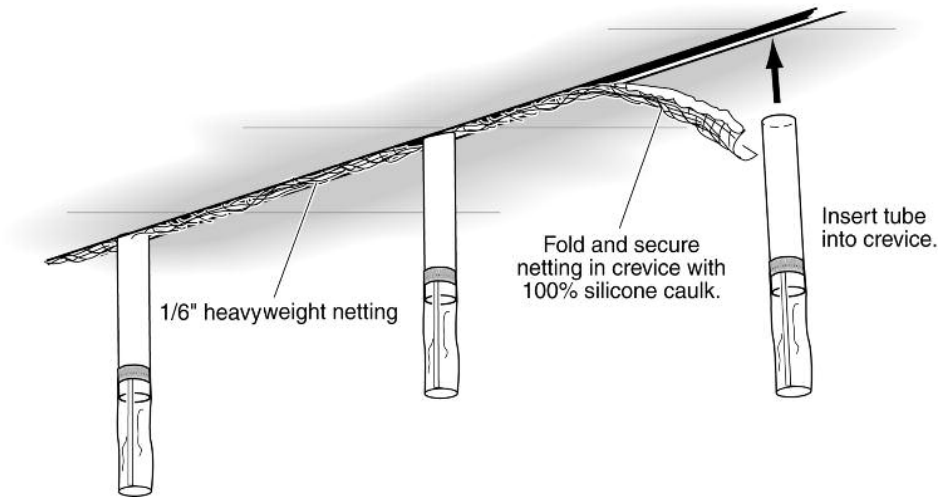
The netting should remain in place for a minimum of five to seven days to ensure all bats have left. Then openings should be permanently sealed with silicone caulking, caulk-backing rod, hardware cloth or heavy-duty netting. In some cases, sealing may require repair or replacement of old, deteriorated wood.

When bats are using multiple openings to enter and exit, exclusion material should be placed on each opening. If they do not appear to be exiting or seem to be having trouble doing so, add new valves as needed.

Special situations

Multiple exclusion tubes are often required to exclude bats from large structures or problem roofs.

When bats are roosting in long crevices, such as those found in some parking garages, exclusion tubes should be placed every few feet along the length of each crevice or in every discrete section to ensure all bats can easily exit through the valves. The spaces between the tubes should be bat-proofed with heavyweight mesh (*see diagram*). Fold the netting so it fits into the crevice and caulk it in place as shown. The same procedure can be used for crevices created where flashing has pulled away from a wall.



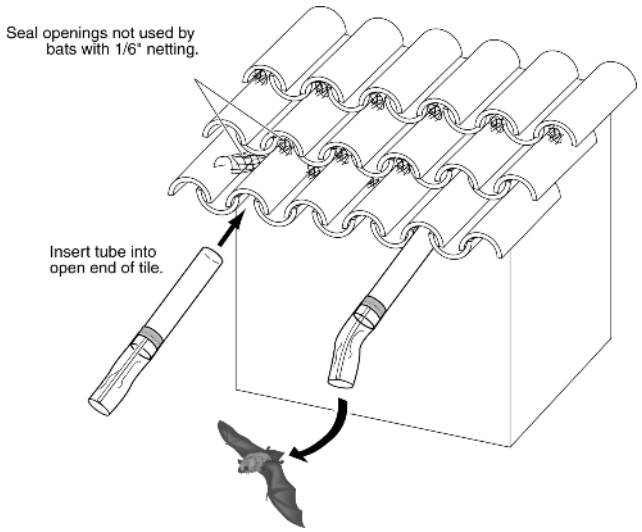
Plastic tubes also work well for excluding bats from under Spanish (clay) or concrete roofing tiles. Bats typically enter through open ends on the lowest row of tiles or through openings created where tiles overlap. Exclusion tubes should be placed at all active openings (*see diagram*).

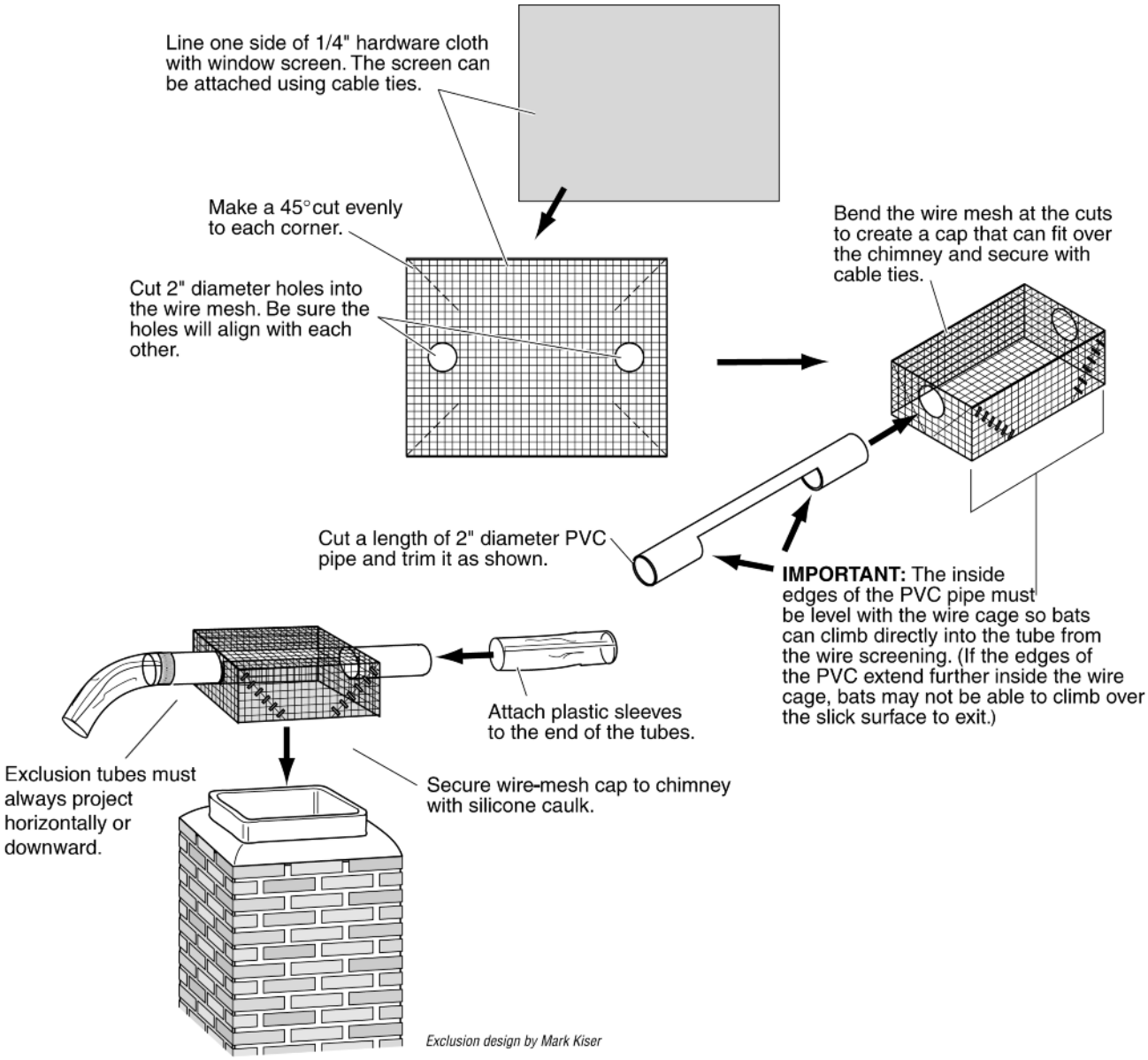
Collapsible plastic sleeves should also be attached to the ends of the tubes. Heavyweight plastic netting

can be folded and inserted into spaces where tiles overlap (*see diagram*).

Bats may also enter a building through spaces beneath corrugated or galvanized roofing sheets. These roofs can be sealed with a variety of materials after bats have been excluded.

Special modifications may be needed when bats roost in chimneys or in spaces between a chimney and roof. If bats are roosting inside the chimney, build a wire cage from quarter-inch hardware cloth lined with window screen. A section of PVC pipe can be inserted through holes cut into the sides of the cage (*see diagram*). Although bats are able to drop down and out of a vertically placed tube that extends below the roost, they cannot grip the slick surface to crawl out if the tube extends upward above the roost. Therefore, the tubes should project either horizontally or downward. A collapsible plastic sleeve should be placed over the ends of all horizontal tubes. Once the bats have been excluded, a chimney cap should be installed.





Exclusion design by Mark Kiser

Perching on porches

Bats sometimes roost briefly at night on porches or under overhangs while they digest insects they've eaten. These temporary roosts should usually be tolerated unless the bats are considered a nuisance. Nontoxic, aerosol dog or cat repellents may discourage bats from using these areas. The spray should be applied only during the day when bats are not present. (Aerosol repellents are not an adequate substitute for exclusion in the case of day roosts and should never be applied when bats are in a roost.) Mylar balloons, strips of aluminum foil or ribbons hung from the porch ceiling and allowed to move in the breeze may also discourage bats from roosting in that area.

Installing a bat house

When excluding bats from a building, it's always a good idea to provide bats with a new place to live. For information on building or purchasing bat houses, visit the Bat House section of our website (*www.batcon.org*). You can also purchase The *Bat House Builder's Handbook*, the *Building Homes for Bats* video or a variety of BCI-certified bat houses at our online catalog at *www.batcatalog.com*.

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