

Bats: Exclusion, Removal and Guano Cleaning Techniques

The presence of accumulated bat guano in an attic or crawlspace can cause a serious health risk for owners and building residents. Although bat guano has been sold as a fertilizer and can be useful in some situations, bat droppings are also a major breeding ground for **histoplasmosis**. Histoplasmosis is a fungal disease contracted through airborne spores in bat droppings.

When dried bat guano is disturbed, inhaling the resulting generation of dust rich in microscopic infective spores can cause histoplasmosis. (For more on histoplasmosis, visit the Centers for Disease Control and Prevention website www.cdc.gov/fungal/diseases/histoplasmosis/.)

Disturbing dirt (cleaning up the garden, sweeping out an empty building, or doing other seemingly harmless dirty work), may cause *histoplasma* spores to become airborne. Persons may then breathe in the spores and some may become ill if infected with the histoplasmosis fungus. Histoplasmosis symptoms may be anything from a mild influenza to blood abnormalities and fever, or even death. An eye condition has also been linked to histoplasmosis and can lead to blindness in those who contract it.

The following **precautions** should lower risk:

- Spray a mist of water over contaminated sites if you have to work there. This will help to keep down the dust (and thus the spores).
- If work must be done around a contaminated area, wear disposable clothing and specially designed facemasks that can filter particulate matter of one millimicron (1 μ) in diameter.
- Keep bats and birds from nesting in areas in buildings such as barns, and in the house attic, crawlspace or eaves. Putting up a bat house or shelter away from the dwelling might move them away from human living areas. (See page 4 on excluding bats from a structure.)
- Note that you may have to have your home or building cleared of bats and/or bird roosts. If that is the case, it is best to have a company specializing in bat control do this. They will know the proper ways to control the spores and have appropriate clothing and equipment to minimize the risk of getting or spreading the disease. (See page 3 for a list of bat removal companies.)

I have small amounts of droppings in my attic. What should I do?

Bat droppings that are scattered pose very little risk. If, however, the guano is accumulated and piles of the substance are observed, there is a risk of exposure to histoplasmosis. Of course, the dust often found in attics may be an irritant, and it is wise to wear a dust mask whether guano is present or not.

Before you handle bat droppings put on a mask to cover your nose and mouth, use disposable gloves. It is best to use the spray mist method described above under precautions.

Bat removal and exclusion experts use specialized equipment that employ high efficiency filters to remove bat droppings. Nevertheless, to further reduce risk, personal protective equipment and masks that are able to filter out infective spores are also utilized.

Are the inhabitants of my home or office safe if I've discovered a thick pile of bat droppings within the attic, walls or crawlspace?

If the guano is in an area where air is not circulated through HVAC or ventilation systems into the living or work area, generally there is no risk to inhabitants. Usually if the guano is sealed off and is not disturbed, the persons inside are not potentially exposed to spores. It is wise to verify the above with HVAC or ventilation experts.

What if I can smell bat guano in the walls of my house?

Again, if the HVAC or ventilation systems are not recirculating air from the space, there likely is no danger associated with the bad odor. Also, bats may die within the closed spaces of homes and offices, and while decomposing, the smell may be very unpleasant.

Are there other risks associated with bats in home or other human occupied structures?

Yes. Deadly rabies virus is very prevalent in bat populations, even in urban areas. This is the primary reason why bats should be excluded from all buildings in which humans dwell or work. Rabies is primarily transmitted through bites. Bats within the living areas of a home, especially in areas where people sleep, can be extremely dangerous.

What do bat droppings (guano) look like?

Bat droppings (guano) are the feces of the bat, and are usually black in appearance. Closer inspection may reveal a sheen or a speckled appearance due to components of the feces that includes wings and other body parts of insects that have not been fully broken down by the bat's digestive system. Large accumulations of guano are difficult to miss.

LOUISIANA BAT REMOVAL COMPANIES

The following is a short directory of bat exclusion personnel or companies that may be able to address bat exclusion from buildings in Louisiana. The individuals or companies on this list may or may not be able to address situations in all regions of the state.

The individuals or companies are listed in alphabetical order. The listing of any individual or company does not indicate an endorsement of services. It is usually recommended to seek at least two quotes for bat exclusion services before making a selection.

Representatives of companies on this list have informed OPH that they perform bat control in Louisiana. The Office of Public Health does not license or regulate bat control companies, nor does a company's appearance on this list indicate that professional or occupational licenses are maintained in any particular municipal, parish or state jurisdiction. Appropriate licensure should be verified by customers before engaging these companies.

If any of this information is found to be inaccurate, or if any persons or companies wish to be included in the list, please contact the state public health veterinarian, Dr. Gary Balsamo at (504) 568-8315 or at gary.balsamo@la.gov.

NAME	CONTACT INFO	HDQ OR AREA SERVED
Ace Services	318-752-9422	Bossier, Caddo, DeSoto, Webster
Bat Removal Pro	318-553-3006	Shreveport-Bossier, NW LA
Critter Control	800-274-8837	National
Parker Wildlife Control	504-338-7517	New Orleans/SE LA
United Bat Control	866-747-BATS (2287) www.UnitedBatControl.com	Statewide
Wildlife Rehabilitators*	www.wlf.louisiana.gov/wildlife/nwco	Louisiana by Region

*Wildlife Rehabilitators refers to an online list of wildlife removal, exclusion or rehabilitation experts that is published by the Louisiana Department of Wildlife and Fisheries. Not all listed persons have the ability or know-how to address bat problems, however some may. It is recommended to check with the people listed in your region.

EXCLUDING BATS FROM A STRUCTURE

If bats are located in the attic of a structure, the following procedures should be employed:

- All openings connecting the attic to inside living quarters should be sealed.
 - Draft guards and weather-stripping should be applied to doors and hatches into attics.
- All openings into the attic should be sealed and bat excluder(s) should be installed.
 - Electrical and plumbing holes, cracks and crevices should be filled with steel wool, caulking, weather-stripping, flashing or screening.
 - Caulk should be applied early in the day so that it is dry by evening.
- Bat excluders or devices that function as one-way valves must be placed over the openings bats use to enter and exit. The structure owner is advised to observe the entrance and egress sites of the bats (Figure 1).

Figure 1: Examples of Openings Where Bats May Enter and Leave Structures.



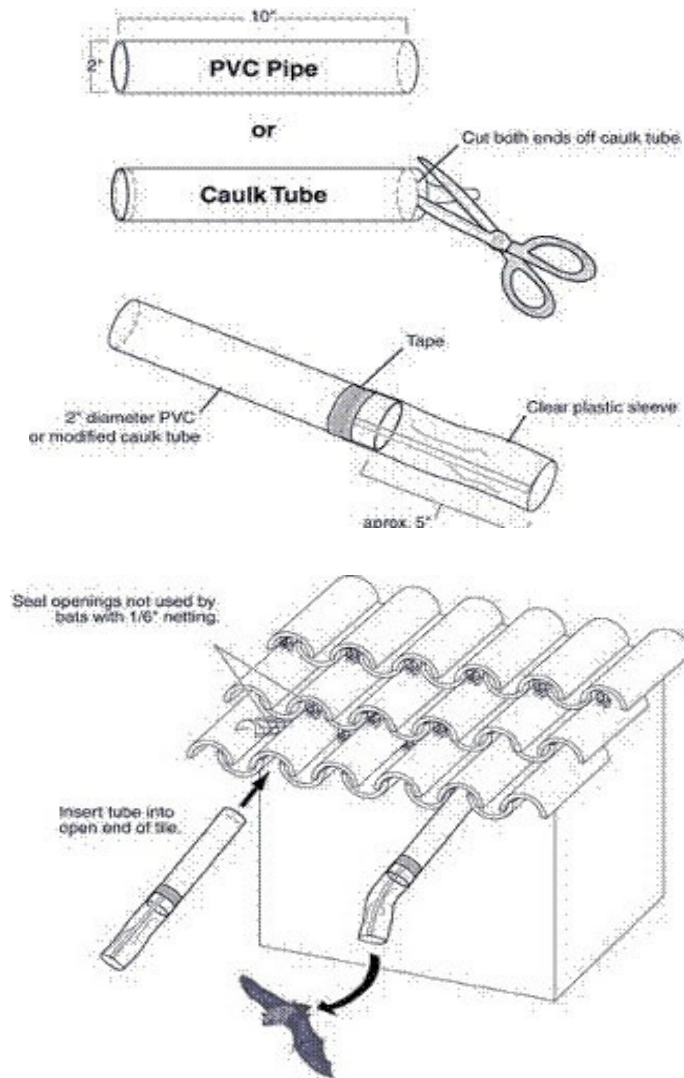
- One-way valves or bat excluders allow bats to leave, but not reenter the building. These exclusion devices should be left in place for five to seven days to ensure all bats have exited. It is not appropriate simply to wait for bats to fly out at night and then seal openings. Not all of the bats leave at the same time, and some bats may remain inside all night. Take weather

conditions into consideration when deciding how long to leave the netting or tubes in place; there may be evenings (such as during storms), when no bats exit.

Excluders may be constructed from lightweight plastic pipes (PVC pipe) or tubes (empty caulk tubes). Make sure the surface on the interior of the pipe or tube is cleaned and smooth before use.

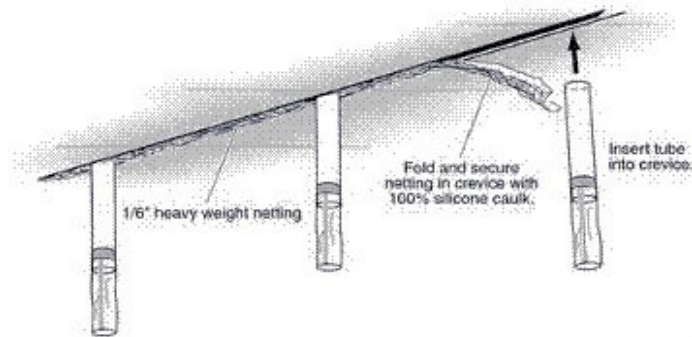
- Excluder tubes should have a 2-inch diameter and should be 10 inches in length. Flexible tubing can also be used, especially when sealing irregular openings into the structure (Figure 2).

Figure 2: Construction of One-Way Valves or Bat Excluders



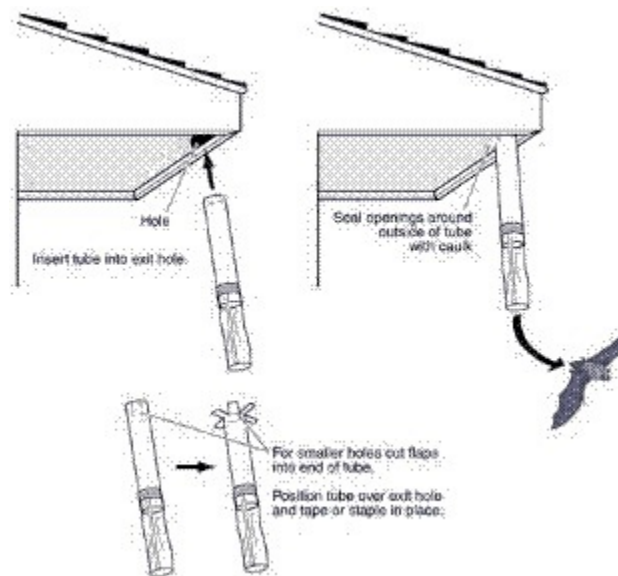
- When elongated crevices are present, multiple excluders need to be placed every few feet along the length of the crevice. The other areas of the crevice must be sealed with materials mentioned above (Figure 3).

Figure 3: Bat Excluder Construction



- Do not let the tube extend more than $\frac{1}{4}$ inch into the bat's dwelling (attic).
- Once the tube has been inserted into the hole, a piece of lightweight, clear plastic can be taped around the end (a long shirtsleeve can be substituted) of the tube that projects to the outside. Plastic sleeves or shirt sleeves collapse on themselves, preventing bats from reentering after they have crawled through the tube (Figure 4).

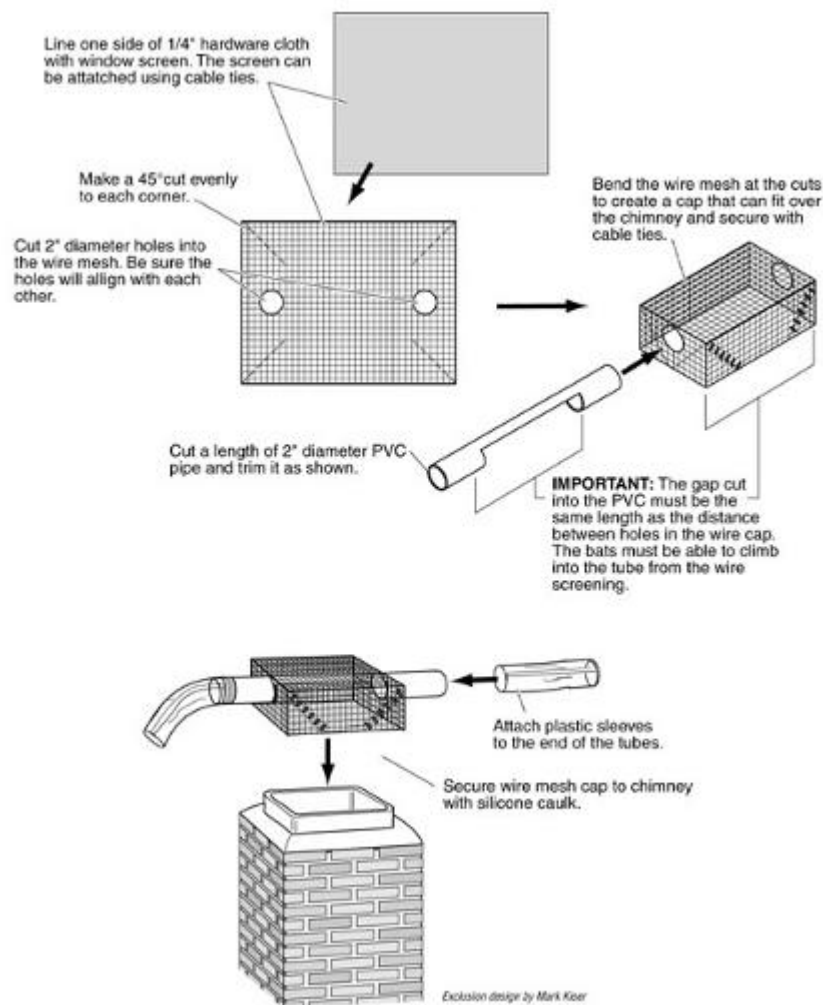
Figure 4: Bat Excluder Insertion



- Any spaces between the outer rim of the tube and the building must be sealed shut. Remember, all other openings into the building must also be sealed.

- Leave the tube in place for a minimum of five to seven days to assure the exit of all bats.
- After the bats have been excluded, the tube should be removed and the opening permanently sealed.
- Special modifications may be needed when bats roost in chimneys or in separations between chimneys and roofs. If bats are roosting inside the chimney, construct a wire cage from 1/4-inch hardware cloth lined with window screen. A section of PVC pipe can be cut and then inserted through holes cut into the sides of the wire cage (see diagram). Although bats are able to simply drop down and out of a vertically placed tube that extends below the roost, they are not able to grip the slick surface to crawl out if the tube extends upward above the roost. Therefore, the tubes should project horizontally or down. A collapsible plastic sleeve should be placed over the ends of all exclusion tubes used on chimneys. Once the bats have been excluded, a chimney cap should be installed (Figure 5).

Figure 5: Chimney Bat Exclusion



Exclusion is the ONLY effective solution for permanently removing bats from buildings. Trapping and relocating is ineffective since bats have excellent homing instincts and simply return, even when released at great distances. The use of pesticides against bats is illegal and counterproductive. Poisoning 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. However, ultrasonic devices are ineffective against bats, and to be effective, naphthalene must be used in such large quantities that it poses a significant health hazard to humans.

This information was excerpted from *Bats in Buildings: An Information and Exclusion Guide*, which is available on the Bat Conservation International website: <http://www.batcon.org> .