College of Agricultural Sciences
Agricultural Research and Cooperative Extension

A Homeowner's Guide To Northeastern Bats And Bat Problems

Contents

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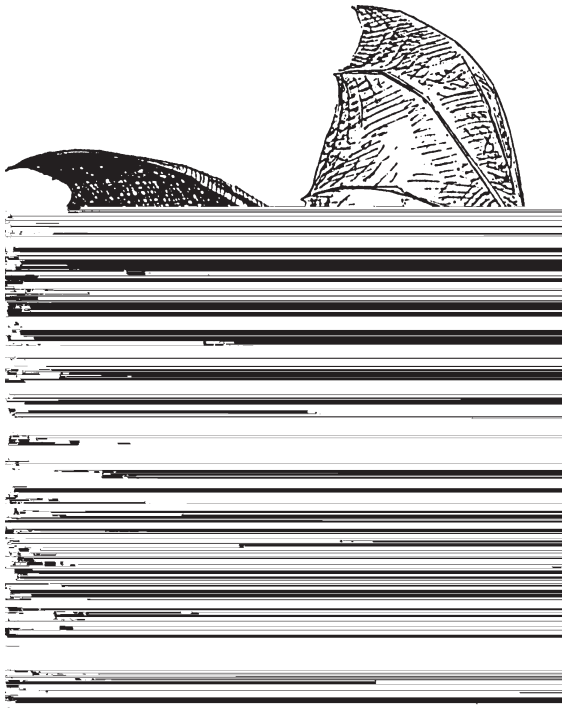


No other mammals in the Northeast are as misunderstood as bats. A variety of myths and misconceptions surround these small, nocturnal, ying mammals. Many people think of bats as vicious animals that carry diseases and get tangled in hair. Others consider them to be friendly, cuddly animals that need only our love and understanding. Both images are somewhat misguided.

This publication will describe the important role that bats play in our environment and will explain what to do if you nd yourself sharing living quarters with them. It will also discuss the reality behind the most commonly held misconceptions surrounding these bene cial mammals.

Bats In Homes and Buildings

There are primarily two scenarios in which humans and bats nd themselves in con ict: (1) when a lone bat ies into a building, or (2) when a maternity colony of bats roosts in a building. The proper techniques for dealing with these uninvited visitors will be outlined in the following sections.

A Single Bat in the House

Individual bats occasionally enter houses, most often during summer evenings in mid-July and August. These wayward bats are usually pups that are just beginning to y. Fortunately, these incidents can be dealt with quite easily. A bat ying in the house will usually circle a room several times in search of an exit. The best method for getting a bat out of the house is to allow it to nd its own way out. Chasing or swatting at the bat will cause it to panic and y erratically around the room, which needlessly prolongs the incident.

If you do encounter a bat ying in a room, follow this procedure:

1. Shut all doors leading into other rooms to con ne the bat to as small an area as possible.
2. Open all windows and doors leading outside to give the bat a chance to escape. (Don't worry about other bats ying in from the outside.)
3. Remove pets from the room, leave the lights on, stand quietly against a wall or door, and watch the bat until it leaves.
4. Do not try to herd the bat toward a window. Just allow it to calmly get its bearings, and don't worry about it swooping at you. When indoors, a bat makes steep, banking turns, so it ies upwards as it approaches a wall and swoops lower near the center of the room.
5. Within ten to fteen minutes the bat should settle down, locate the open door or window, and y out of the room.

If the bat tires and comes to rest on a curtain or wall, you can easily remove it without directly touching it. (See diagram.) Follow the steps below, and remember to never handle a bat, or any other wild animal, with your bare hands.

1. Put on a pair of leather gardening or work gloves.
2. Place a container, such as a large plastic bowl,

over the bat as it rests on the wall. At this point, the bat is probably exhausted and disoriented, and will not y as you approach it. (If it does take ight, follow the procedure for ying bats.)

3. Slide a piece of rigid cardboard between the container and the wall to trap the bat. Hold the cardboard rmly against the container and carry the container outside.
4. Place the container (facing away from you) on a secure place above the ground—such as on a ledge, or against a tree—and slide away the cardboard. The bat will not y right away, so

the day, turn off the attic's lights and look for openings that are allowing outside light, and possibly bats, to pass through.

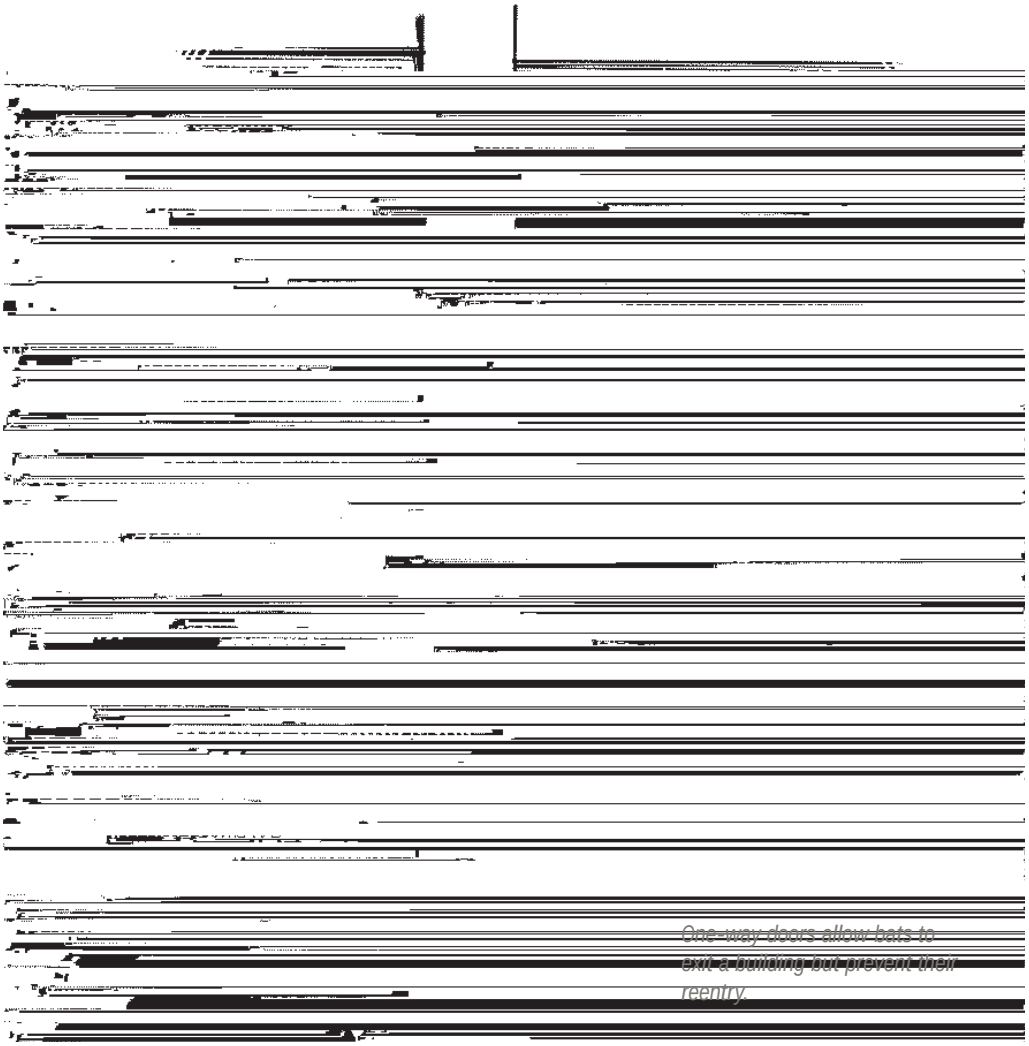
Staging a "bat watch" can also help you locate the bats' entrances. At dusk, station a person on each side of the building and watch as the bats exit the building. Once the rst bats are seen leaving, focus on that area of the building and watch for other exiting bats until you have pinpointed their exit(s). Dawn is another good time to identify their entrances, because the returning bats will swarm around their entrances a few times before actually entering the building.

Sealing Entrances

Once the bat entrances have been located, the next step in bat-proo ng is to seal these openings. Use window screening or hardware cloth to cover louvered vents or large gaps and cracks in the building. To ll in smaller cracks, use expanding foam insulation or caulking compound. After hardening, these can be trimmed or painted as needed. Unlike mice, bats will not gnaw new holes in the building, so sealing the existing holes will keep them out. Most batproo ng materials can be obtained in local hardware or building supply stores. A listing of suppliers of bat exclusion products is included at the end of this booklet (Appendix 1).

Timing of Bat-proofing

One important aspect to consider before bat-proofing your building is the timing of the procedure. *Beca e e a c ed he he a e e gh , ba - g h e e be*



One-way doors allow bats to exit a building but prevent their reentry.

Installing One-way Doors

1. Choose 0.25- to 0.5-inch wire screening or heavy plastic mesh to cover the bats' points of entry. Cut the screening so that it covers the width of the hole and extends approximately three feet below the hole. The screening should project three-to- ve inches clear of the hole, so that the bats can crawl between the screen and the building and exit at the bottom.
2. Secure the mesh at the top and sides with duct tape or staples and leave the bottom open.
3. Leave the door in place for at least three to four days, or until you are sure that all bats have left the building, then remove the one-way door and permanently seal the opening.
4. Again, never use a one-way door during May through August, or young bats will be trapped inside and die.

Providing an Alternative Roost

Bat-proo ng has two potential drawbacks. One is that exclusion can be very stressful for a maternity colony. When prevented from using their traditional roost, the bats may move into a nearby building, where they may be expelled again, or even exterminated. Also, research has shown that displaced colonies will not relocate into buildings that already house other maternity colonies (Neilson 1991). In other words, an excluded colony cannot just move down the road into a barn or church that already has bats. If a displaced colony cannot nd a new roost, it may leave the area. In fact, researchers have found that expelling bat colonies can contribute to serious declines in local bat populations (Humphrey and Cope 1976, Neilson 1991).

The second drawback is that homeowners may nd it dif cult to completely bat-proof their home. Bats can crawl through a crack as small as 0.5 by 1.25 inches, so persistent bats may nd a way to reenter their traditional roost.

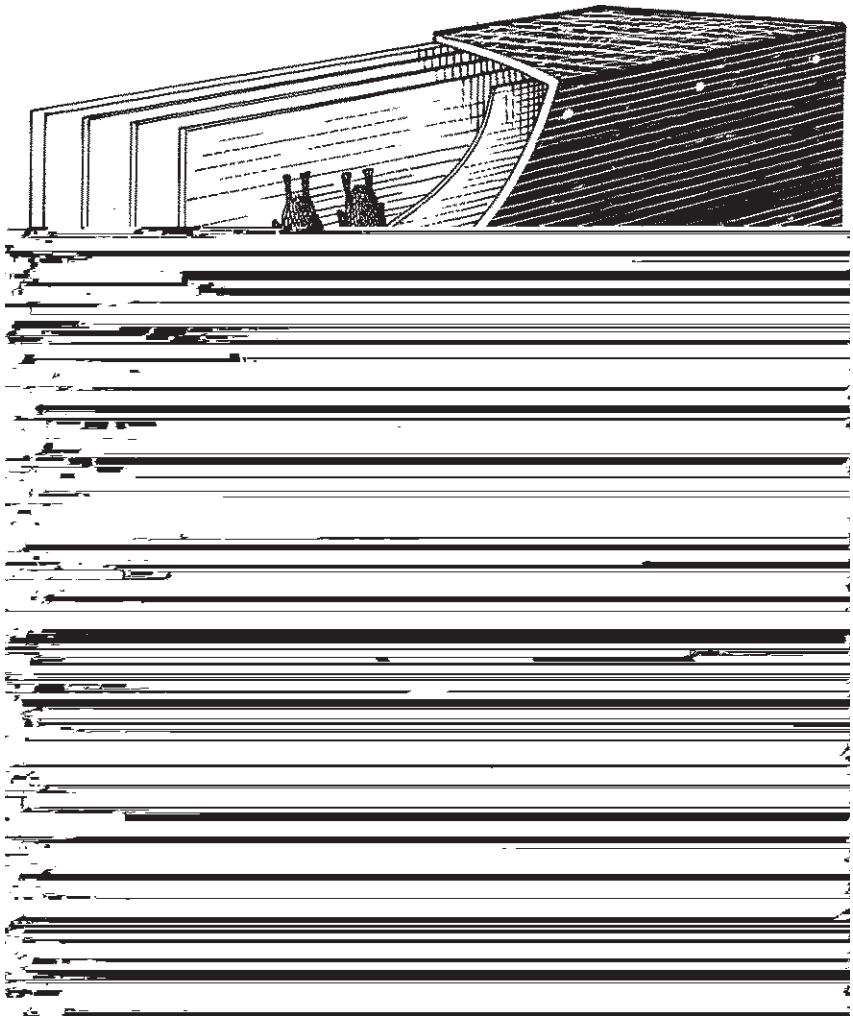
Bat boxes may solve both of these problems because they provide alternative roosting sites for maternity colonies. When constructed properly, bat boxes can serve as suitable places for females to raise their pups. With bat boxes, the bats get a safe roosting site outside the home, while homeowners still bene t from the bats' control of insects.

Bat Box Design

Size, interior construction, and temperature control are the three most important design elements of bat boxes. Homeowners should consider building their own bat box, because commercial bat boxes do not provide the living space or roosting temperatures that maternity colonies require.

A bat box must be large enough to adequately house a maternity colony. Boxes should be at least 7 inches deep, 24 inches wide, and either 12 or 24 inches tall (depending on the size of the colony). Boxes 12 inches in height will house up to 100 bats, and boxes 24 inches in height will house as many

The interior of a bat box is divided into several roosting crevices.



Care of Your Bat Box

Once bats move in, homeowners should never disturb a bat box during the day and should always watch the bats' evening departure from a distance. Fencing off the area under the bat box will prevent people and pets from walking underneath it, and also helps to minimize any disturbance to the bats. (See diagram.) If fencing is not practical, planting ornamental ground cover beneath the box can serve the same purpose. (This option also takes advantage of the fertilizing quality of bat droppings.)

Bat boxes require no maintenance when bats are present in the spring and summer. However, any active wasp nests can be removed with a long stick during cool mornings or evenings when wasps are less active. (Do not disturb the box if bats are present.) In the fall and winter (after the bats have left the area), homeowners can inspect the box and make any necessary repairs to it. Also, old wasp nests should be removed at this time.

Occasionally, a bat pup may fall from the box. A fallen pup will die unless it is retrieved by its mother or it crawls back into the box. If a grounded bat or bat pup must be handled, homeowners should wear

Attracting Bats With Bat Boxes

Once people learn of the bene cial role that bats play in controlling insects, they often want to attract bats to their yards and gardens. It is dif cult to predict whether a bat box will attract bats to hunt and feed in a desired area. Bat boxes provide shelter, but an ample supply of food and water is also needed to attract bats. Even in a location that has bats living nearby, a new bat box may remain vacant because the bats have other roosts in the area. Conversely, in

signs of histoplasmosis, which is often mistaken for in uenza. While histoplasmosis often does not produce any symptoms, severe symptoms such as high fever, problems with vision, and life-threatening complications occasionally do occur (Greenhall 1982, Fenton 1992).

The fungus that causes the disease occurs naturally in soils throughout warmer regions of the world, including parts of North America (Fenton 1992). The fungus also is associated with bat droppings, called guano, which accumulates in caves where bats live in summer months. Hibernating bats do not produce guano, and therefore do not deposit the fungus in caves where they hibernate (Fenton 1992). In the eastern United States, surveys in buildings that had accumulations of guano from several colonies of big brown and little brown bats produced no evidence of the fungus causing histoplasmosis (Fenton 1992).

Homeowners should still take safety precautions against inhaling any particles that may contain the fungus, particularly if large amounts of bat droppings are to be disturbed in an attic. To limit the amount of airborne particles, the droppings should be vacuumed, rather than swept or shoveled. Hom- fungus partic

Bats In Caves

People occasionally come into close contact with bats in caves, particularly during winter, when bats are hibernating. As stated earlier, the risk of exposure to histoplasmosis and airborne transmission of rabies in northeastern hibernation caves is negligible. In fact, bats experience the greater risk when people enter their caves in winter.

Recreational cave exploring, or spelunking, can threaten the survival of bat colonies. During hibernation, bats survive without eating by slowly metabolizing stored fat. To conserve their fat resources, bats drastically lower their metabolic rate and enter a state of deep sleep. When people enter a cave, their lights, voices, and body heat disturb the bats' sleep, often to the point where they awake completely and take ight. It is estimated that a bat can burn ten to thirty days worth of stored fat reserves during each of these awakenings. If this happens too many times over the course of a winter, the bats may starve to death before spring or leave the cave in such a weakened condition that they cannot successfully reproduce.

Recreational cavers can prevent disturbing bats by avoiding trips to recreational and commercial caves during the hibernation season (December through March). When cavers do encounter hibernating bats, they should leave the cave quickly and quietly, taking care not to shine their lights on the sleeping bats. Fortunately, most spelunkers are very considerate of bats and have found ways to minimize their impact on bats and cave environments.

Responsible caving is an important aspect of bat conservation. Some caves in the Northeast have had gates installed to limit human access. This is usually done to protect vulnerable bat populations or caves that have been heavily vandalized. These gates should be respected to give the caves and bat populations time to recover.

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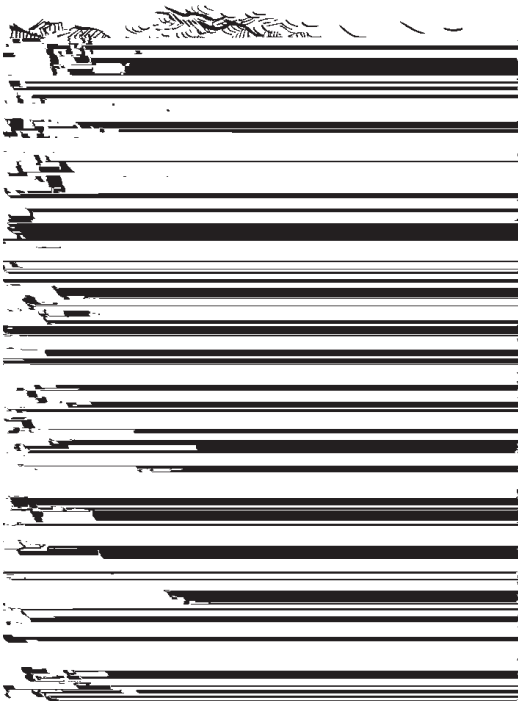

Most northeastern bats hibernate in caves and mines during the winter months.

Appendix 1
Bat-Proofing Materials And Suppliers

1 aterials for Sealing Holes:

Expanding Foam Insulation/Caulking Compound
Available from most building supply stores. Expanding foam insulation is available as an aerosol and can be sprayed into cracks and crevices. The foam expands to ll the opening and then hardens, after which it can be trimmed or painted.

One-Way Doors:

Metal Hardware Cloth/Window Screening/Plastic Structural Grade Bird-Netting
Available from most garden supply stores. Any material used for one-way doors should have a mesh no larger than 0.25 to 0.5 inch in diameter. (Mesh diameter is measured on the diagonal, from corner to corner.) Mesh with larger size openings will allow bats to crawl through and reenter the building.

InterNet, Inc.
1201 Lund Blvd.
Anoka, MN 55303-1092
800-328-8456
www.internetplastic.com
(netting and fastener clips)

"Bat Net"
The "Bat Net" kit contains a 14 x 20 foot piece of structural grade bird netting with Velcro fasteners for attachment to buildings. They also sell rolls of netting for making one-way doors of any size.

Wildlife Control Technology, Inc.
2501 N. Sunnyside Ave.
Fresno, CA 93727
800-235-0262
www.wildlife-control.com

"Bat Check Valve"
The "Bat Check Valve" kit includes a 100 square foot (7 by 14 foot) section of structural grade bird netting, including mounting clips and installation instructions. The company also sells rolls of netting for making one-way doors of any size.

Wildlife Management Supplies
9435 E. Cherry Bend
Traverse City, MI 49684
800-451-6544
www.wildlifemanagementsupplies.com

Diatomaceous Earth:

Diatomaceous earth scratches the cuticle of insects as they crawl through it. It is useful in eliminating bat parasites from an attic after the bats have been evicted.

Biocontrol Network
615-370-4301
www.biconet.com

Small Maternity Colony Bat Box (12" x 24" x 8") Assembly

Capacity: 150 Bats

This bat box is suitable for small to medium-sized summer maternity colonies (up to 150 bats). This box should be installed in the spring before the colony is evicted from the building.

Tools/Materials:

See Small Bat Box Instructions

Pieces: (height x width)

front: 12" x 24" exterior plywood or

Pieces: (height x width)

front: 24" x 24" exterior plywood or board

back/landing board: 30" x 24" exterior plywood or board

sides: 24" x 7 3/4" board

baf es: 1/4" lightweight plywood

three 22" x 22 1/2" (if using spacer strips)

two 23" x 22 1/2"

three 22" x 23" (if using router)

two 23" x 23"

spacer strips: ten 1" x 1" x 22" board strips

Assembly:

1. Cut out pieces.
2. Use a knife, saw, or router to roughen all interior surfaces with horizontal scratches or grooves 1/4" to 1/2" apart. Pay special attention to landing board at bottom of box. (The portion of the back that extends below the box will serve as the landing board.)

   Note for router users: At this point, use a router to cut 1/4" vertical grooves in side pieces at 1 inch intervals, then skip the following instructions on installing spacer strips and baf es. Simply t the baf es into the side piece grooves, then attach front, back, and roof.

If not using a router:

3. Attach sides to front using wood screws. (Caulk the seams, but do not use wood glue on any part of the bat box.)
4. Attach roof to sides and front using wood screws (caulk the seams). Roof can be slightly slanted to promote water runoff.

Installing spacer strips and baffles:

5. Position the box so that the front rests on a table top, and the sides and roof extend upwards.
6. Attach two 1"

Appendix 3
Further Information

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Videos

The Sea f he Ba . (27 minutes) available from:
The Pennsylvania Wild Resource Conservation Fund
P.O. Box 8764
Harrisburg, PA 17105-8764

Ba -F ee Be e : A G de Ba -P g. (23 minutes) available from:
The Penn State Cooperative Extension of ce in your county.

or

Publications Distribution Center
The Pennsylvania State University
112 Agricultural Administration Building
University Park, PA 16802

Web Sites

Bat Conservation and Management
BCM is a Pennsylvania company that provides extensive information and on-site assistance for both attracting and excluding bats.
www.batmanagement.com

Bat Conservation International
The BCI Web site has information on bat ecology, management, and conservation.
www.batcon.org

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