

BAT HOUSES

The Washington County Land Conservation Department now offers Bat Houses through the Washington County Tree Program (an annual program event). If you would like to order a bat house you may do so by printing out the order form, send your order form along with your payment to the address indicated on the brochure - order form is found by clicking on the attached file (clicking here). If you would like to construct your own bat house there is information on how to construction your own BAT HOUSE provided below.

Please note that Tree seedlings and shrubs are only offered during December - March but Prairie Seed mixes, Tree Protectors, Soil Kits and Bat Houses, Butterfly Houses and Bluebird Houses are offered year round.



BACKGROUND INFORMATION ON BATS

DID YOU KNOW THAT BATS SEE WITH THEIR EARS!

Even though no bats are blind, some 70% use a sonar system, called echolocation, to navigate in the dark and find food. They can detect the size, texture, even the direction of a moving insect, using sound alone. Bats emit sound pulses, produced in the larynx through the mouth or nose. As these sounds come in contact with objects - trees, building, potential food - they are reflected back as echoes and collected by the bat's ears. Information from the echoes is processed in the bat's brain instantaneously, enabling the bat to fly without a collision. Most of these sound pulses are produced at a frequency too high for humans to hear without the aid of special equipment.

Bats - Our Essential Allies

Until recently the words "bat conservation" were rarely heard. Today, more people understand how beneficial bats are, but less bats are being seen flying through the night sky. Now more than ever, bat conservation is an important and extremely necessary action.

Why do bats need our help? Believe it or not, nearly 40% of all bats are endangered or threatened. Consider their importance to our ecosystem, and you will agree this figure is frightening. Bats perform many essential services from eating millions of tons of pesky insects annually to dispersing seeds in tropical rainforests.

Fruit bats, which live in the tropics, disperse seeds that help rainforests regenerate after a disturbance. Bats eat the ripe fruit growing on trees and then spit or defecate out the seeds, usually while flying. These seeds then grow into new trees. You can imagine how important this is in our rapidly disappearing tropical rainforest ecosystems.

Many types of bats drink nectar from flowers. Like hummingbirds and butterflies, these bats actually pollinate the flowers from which they drink. As a matter of fact, many fruits that we enjoy rely on bats for pollination. Some examples are mangos and avocados. Most bats in the United States feed on insects. Not only do bats eat many backyard pests, but they also consume insects detrimental to farm crops. One bat can eat up to 1,200 mosquito-sized insects each hour - eating up to their full body weight in insects nightly. This is equivalent to an adult human eating about 60 large pizzas each day!

Bats are important, but why do they need our help? Unfortunately many people still believe myths about bats and will go out of their way to destroy them. Some examples of false myths include the beliefs that bats will fly into your hair; that they will attack you; and that all of them have rabies. Of course none of these tales are true. An easy way to stop these widespread beliefs and help bats is to take the time to teach others the truth. If you know someone who is afraid of bats, ease their fears. Let them know bats are not frightening and are beneficial to us all.

A major problem bats face every day is habitat destruction. Many bats in the U.S. prefer to roost in dead or dying trees (called "snags"), crawling under loose and peeling bark or using tree cavities. However, most of us tend to remove snags from our yards. Here are two simple ways you can help.

First, if you have snags in your yard, and they pose no hazard to your home, leave them up. They not only provide homes for bats, but for birds as well. Second, build or buy bat houses. Bat houses, properly designed and placed, provide alternative roosting sites for bats. They also give bats a place to live outside of our attics and garages. They provide natural pest control for our yards.

Although bat houses are an easy way to help bats, there are some important requirements in making sure your bat house will actually work. Another way to help bats is to keep your yard as natural as possible. Don't use pesticides, plant trees and vines to provide roosting areas for the many types of bats that don't use bat houses. You can also plant herbs and flowers that bloom at night; or leave on one outdoor light to attract night flying insects for bats to eat. Add a water garden or backyard pond as a water source for the bats.

Bat conservation may be one of the most important, but difficult endeavors of the 21st century. Many bats need our help, and it remains difficult to convince people that bats are beneficial to everyone. Teaching others to overcome fears and providing bats with roosting sites and natural habitat are simple ways we can help these intriguing night flying mammals.

STEPS TO BAT PROOF YOUR HOUSE

Provide the colony with an alternate roost or bat box near by.

May-August: Watch your house at dusk to identify bat entrances. During the day, turn off the attic lights and look for openings where outside light is visible. Do not seal the openings now.

August - October: Install one way door(s) (pieces of mesh fastened over a bat entrance to form a long sleeve or tent with an open bottom). These doors allow bats to exit at night but prevent their reentry at dawn.

November - April: Seal entrances after bats leave in fall and before they return in spring. Bats potentially can enter holes as small as $\frac{3}{4}$ " in diameter. If you suspect bats are hibernating in the building, install a one-way door in September or October.

HABITAT HINTS & KEY CRITERIA FOR SUCCESSFUL BAT HOUSES

Materials Needed (makes 2):

$\frac{1}{2}$ sheet (4' x 4') $\frac{1}{2}$ " cdx (outdoor grade) plywood

$\frac{1}{2}$ sheet (4' x 4') $\frac{1}{4}$ " cdx (outdoor grade) plywood

2 pieces 1" x 6" (0.75" x 5.25" finished) x 8' pine or cedar

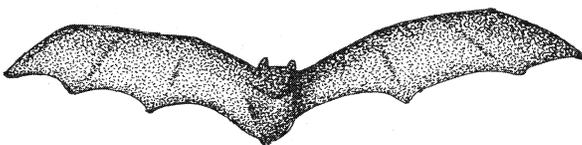
1/8" mesh HDPE (plastic) netting, 7' x 36"

1 lb. 1-5/8" multipurpose (drywall) screws

1 quart latex acrylic paint

1 tube paintable acrylic caulk

5/16" staples



Construction Procedure:



1. Measure and mark all wood. Cut out all parts.
2. Cut six pieces of netting 14' x 21". Staple to partitions.
3. Screw back to sides, caulking first. Be sure top angles match.
4. Cut a piece of netting 16" x 30' and staple to inside surface of back, starting at the bottom. Be sure netting lies flat (curve down) and does not pucker.
5. Attach 5" and 10" spacers to inside corners as per drawing.
6. Place a partition on spacers to within $\frac{1}{2}$ " of roof. Place 20" spacers on partition, screw to first spacers (through partition). Be careful not to block side vents
7. Repeat step six for remaining spacers.
8. Screw front to sides.
9. Attach roof supports to the top inside of front and back pieces. Be careful that screws do not protrude into roosting chamber.
10. Caulk around all top joints, sanding first if necessary to ensure good fit with roof.
11. Screw roof to sides and roof supports.
12. Paint exterior at least twice.

Design: The most successful bat houses are approximately two feet tall, at least 14 or more inches wide and have 3 to 6 inch landing areas extending below the entrances. Houses with one to six chambers can be successful but 3 or 4 chambers seem to be optimum, especially for nursery colonies. Roost partitions should be spaced between $\frac{1}{2}$ inch and $\frac{3}{4}$ inch apart (see diagram below). Partitions and landing areas must be roughened. Wood surfaces can simply be scratched, but are best covered with durable plastic screening (1/8 inch or $\frac{1}{4}$ inch mesh). Do not cover ventilation slots and be sure screening is attached to one side of each roost partition as well. Ventilation slots are critically important in all houses to be used where average high temperatures in July are 85 degrees or above. They should be $\frac{1}{2}$ inch wide to reduce entry of light and unwanted guests, such as birds. The front vent should extend from side to side about six inches above the bottom. A vertical vent, $\frac{1}{2}$ inch wide by six inches long, should be included at each end of the rear chamber of multiple-chamber houses. The vents greatly reduce the odds of overheating on extra hot days and especially contribute to success in moderate or hot climates. They may be unnecessary in exceptionally cool areas.

Construction: Half-inch plywood is ideal for fronts, backs, and roofs, while 1-inch board lumber is best for the sides. Use of $\frac{1}{4}$ inch plywood for roosting partitions substantially reduces overall bat house weight and enables more roosting space for a given house size. Staples used to attach plastic mesh should not protrude from the far sides of panels and will last longer if they are exterior grade and galvanized. All seams must be caulked, especially around the roof, prior to painting. Latex caulk is easiest to use. Providing sufficient warmth without overheating is a key element in attracting bats. All outer surfaces and entry areas of bat houses should be painted with at least two coats of exterior latex paint to ensure against moisture, air leaks and wood deterioration.

Sun Exposure: When choosing a bat house location, both sun exposure and heat absorption (according to house color) must be carefully considered. Bat houses in cool climates need to absorb much more solar heat than those in hot climates. They should be black where average high temperatures in July are 80 -85 degrees Fahrenheit or less; dark (such as dark brown, gray or green) where they are 85 - 95 degrees Fahrenheit; medium or light where they are 95 -100 degrees Fahrenheit; and white where they exceed 100 degrees Fahrenheit. Bats in nursery colonies like warm houses, ideally where temperatures are between 80 degrees and 100 degrees Fahrenheit, meaning that their roosts require solar heating in all but the hottest climates.

Mounting: Bats find houses mounted on poles or buildings more than twice as fast as those on trees. Trees may be less preferable, in part, because tree mounted houses tend to receive less sun and may be more vulnerable to predators. Houses mounted under the eaves on wood or stone buildings, but still exposes to the sun, tend to be better protected from rain and predators and have been especially successful. Generally, bat houses should be mounted 15 - 20 feet above ground, though 10 - 12 feet may suffice. The best locations are along the borders of streams, rivers, or lakes or along a forest edge, because these are natural bat flyways.

PROTECTION: Safety from predators appears to be a key factor in bat choice, and houses mounted on sides of buildings or high up on poles provide the best protection. Locations at least 20 - 25 feet from trees reduce obstructions and predation and may receive more necessary sunlight. In areas where climbing snakes occur, it may be necessary to purchase predator guards from a supplier of purple martin house products. You may make your own guards by tightly covering the upper end of a 2 foot section of 10 inch diameter galvanized stove pipe with $\frac{1}{2}$ inch hardware cloth, allowing a hole in the middle for a bat house pole. Place one such predator guard around each pole about four feet above the ground.

Bat House Diagram

