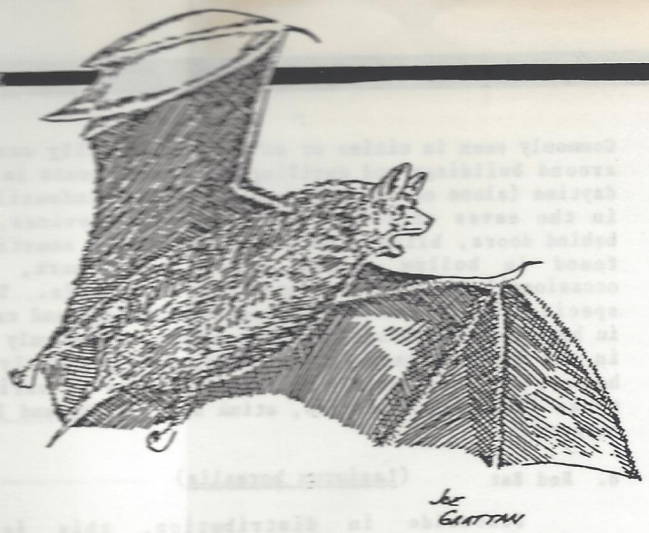


# BATS OF MARYLAND

Next to snakes, bats are the most maligned, misunderstood, feared and persecuted of all wildlife species. Tales of bats getting caught in people's hair, transmitting bedbugs to people, sucking blood, and the general association of bats with evil all have contributed to a less than knowledgeable and less than desirable attitude about bats by the general public. In fact, bats are highly specialized, beneficial mammals which can readily co-exist with man in today's world if we allow them to.

There are 40 species of bats known from the United States, largely from the southwest. Twelve species are found in the northeastern United States and 10 of those are known from Maryland. The majority of bats in the United States are insectivorous, with the exception of a few species in the southwestern United States which feed on nectar, pollen and fruit. All Maryland species are insectivorous, feeding on flies, moths, mosquitoes, beetles, etc. Six species hibernate in caves during the winter. Caves are used for hibernacula based on certain micro-habitat conditions: temperature, moisture, surrounding habitat, etc. Some bats hibernate near the mouths of caves, others deep in the bowels of the earth, depending on their ecological requirements.

Three other species do not hibernate but migrate to warmer southern climates during the Maryland winter and one species (the Evening Bat) is only an occasional visitor to Maryland, and breeds further south.

## BATS AND PEOPLE

Bats are normally shy, secretive and nocturnal animals which don't often come in contact with man. Occasionally, however, they will find their way into homes; or use an attic or abandoned building for a roost.

Individuals trapped in a room can usually be induced to leave at night by closing all doors, turning on a light and opening a window.

Building/attic roosts can be eliminated by observing bats leaving the roost area to determine exits, and then closing the exits with wire, caulking, etc., while the bats are out. Major problems should be dealt with by wildlife professionals.

The use of pesticides to destroy bat roosts is discouraged because sick bats are more likely to come into contact with people and pets. Furthermore, poisoned bats can present secondary poisoning hazards to domestic pets and other wildlife. Bats that are killed by the pesticide have to be removed from the roost site, and then entrances to the roost must be closed, so that other bats do not take up residence.

## RABIES

All mammals are susceptible to rabies and bats are no exception. While we don't know the incidence of rabies in bats in the wild, it probably does not exceed that of most other mammals. Regardless, caution should be used if sick or "friendly" bats are found, as in the case of any wildlife acting strange or unusual.

## BAT CONSERVATION

Bats play an important role in our ecosystems as consumers of vast quantities of harmful insects, and pollinators of thousands of tropical and subtropical trees and shrubs. Some foreign countries have long recognized bats value and protected them with strong conservation laws. A better understanding of their ecology will aid in the conservation of these unique mammals in Maryland and the United States.

## SPECIES DESCRIPTIONS

A brief description of each Maryland species follows, with notes on distribution, status and habitats.

1. Little Brown Myotis (Bat) (Myotis lucifugus)

Statewide in distribution, this is our most common species of bat. This small brown bat is 3 to 3.5 inches in length, with an 8.5 to 10.5 inch wingspan. During the winter months, they hibernate in caves. During the warmer months, they spread out over the countryside to settle in barns, deserted buildings, attics, in hollow trees, and behind shutters. They are commonly seen about towns and villages feeding largely on soft-bodied insects: flies, moths, caddisflies, midges, mosquitoes and beetles.

2. Keen's Myotis (Bat) (Myotis keenii)

Also statewide in distribution, this species is similar in size and habitat to the Little Brown Myotis. This dark brown bat is 3 to 4 inches long and has a 9 to 11 inch wingspan. They hibernate in caves during the winter, and at other times of the year they may be found in buildings, hollow trees, mine tunnels, caves, storm sewers, and forested areas, where they roost under loose bark of trees. There are differences in the proportions and types of insects taken by Keen's Myotis and the Little Brown Myotis, but food species are similar.

3. Indiana Myotis (Bat) (Myotis sodalis)

A federally listed endangered species, this bat is known only from 2 caves in Maryland, and only during the late summer. Similar in size and appearance to the Little Brown Myotis, it is difficult to distinguish from this species. The majority of the known winter population of this species hibernates at several caves in Missouri, Oklahoma and Illinois. Smaller winter colonies are known from West Virginia and Pennsylvania, but none from Maryland. Summer habitat is believed to be forested areas along rivers and large streams where hollow trees are used as nursery sites. Food is primarily soft insects: flies, moths and caddisflies.

4. Small-footed Myotis (Bat) (Myotis leibii)

This species hibernates in caves in the Appalachian Province, and passes through the rest of the state during migration. The Small-footed Myotis is characterized by glossy brown fur, a black facial mask and black ears. Total length is 2.5 to 3 inches, with a wingspan of 8 to 10 inches. It occurs in caves, mine tunnels, crevices in rocks, in or near forested areas, primarily hemlock associations. They are often found under rocks on cave floors and rock outcrops. They hibernate near the mouths of caves but only in small groups of 2's or 3's. Information on feeding habits is limited, although moths, beetles, flies and lacewings are known to be taken. Little else is known about the life history of this species.

5. Silverhaired Bat (Lasionycteris noctivagans)

Largely a migratory species, this bat may breed in the Allegany Plateau section, but is seen largely as a migrant in the spring and fall. Little is known about the life history of this species, but they do not hibernate in caves. This species probably spends the colder parts of our winters in a torpid state in cellars, hollow trees, or beneath slabs of bark. During the warmer months, this species prefers the vicinity of stream courses and lake shores, feeding on summer insects. Unlike the drab color of the cave species, the Silverhaired Bat is blackish brown but has white-tipped hairs along the middle of the back. It is 3.5 to 4 inches long with a 10.5 to 12 inch wingspan.

6. Eastern Pipistrelle (Pipistrellus subflavus)

One of the smallest eastern bats, this species is statewide in distribution. Color varies from yellow to dark brown. The Eastern Pipistrelle is 3 to 3.5 inches in length and has an 8 to 10 inch wingspan Most frequently encountered in wooded areas near water, these bats are early flyers, coming forth from a building, rock crevice or other retreat to feed in early evening. During the summer, it probably spends daylight hours in trees, or occasionally buildings. It hibernates in caves, mine tunnels or rock crevices, usually deep within these structures, and individually rather than in a group.

7. Big Brown Bat (Eptesicus fuscus)

This species is abundant in the lower Piedmont and Upper Western Shore sections in the vicinity of the fall line, but may not be as common in the rest of the state. Our second largest species, the wingspan exceeds 12 inches and the fur is pale to dark brown. Commonly seen in cities or suburbs, it usually occurs around buildings and dwellings where it roosts in the daytime (alone or in small groups) under windowsills, in the eaves of roofs, in cracks or crevices, or behind doors, blinds, or awnings. It is sometimes found in hollow trees, under loose bark, and occasionally in caves or crevices in cliffs. This species roosts and hibernates in buildings and caves in both open and wooded country. This is the only bat in the United States that hibernates regularly in houses. It feeds mainly on larger insects of various types including: beetles, stink bugs, moths and leaf hoppers.

8. Red Bat (Lasiurus borealis)

Statewide in distribution, this is a non-hibernating tree bat usually found in or near woodlands. The Red Bat is rusty brick red in color with white-tipped hairs. Length is 3.5 to 5 inches with an 11 to 13 inch wingspan. It prefers deciduous woodlands, orchards and parks with trees and tall shrubs. It roosts in trees, hanging on the undersurface of a leaf or twig protected from the elements. They migrate south from Maryland during the winter. Moths and beetles are the two most common food items.

9. Hoary Bat (Lasiurus cinereus)

The largest bat of the eastern forests, this species has a body length of 5 to 6 inhes and a wingspan of 14.5 to 15.5 inches. The Hoary Bat is yellowish to dark brown in color and the hairs are frosted at the tips. It occurs as a migrant in all sections of the state, and may breed in the Allegany Plateau, although the majority of the population of this species breeds in the Adirondacks and Canada. Maryland is on the northern limit of its winter range with the majority of the migrating population over-wintering south of here. This species prefers to roost in coniferous forests, but may also be found in farmyards, city parks and yards. Food habits are poorly known.

10. Evening Bat (Nycticeius humeralis)

A southern species, this bat is infrequently found in Maryland. It may occur occasionally as a summer resident, roosting in hollow trees. Dark brown in color, it is similar in size to the Little Brown Myotis.

MARYLAND DEPARTMENT OF NATURAL RESOURCES
FOREST, PARK & WILDLIFE SERVICE

**FOREST, PARK & WILDLIFE SERVICE**
Tawes State Office Building
Annapolis, MD 21401

# SUGGESTIONS FOR BUILDING BAT HOUSES AND ATTRACTING BATS

Bat houses of the designs illustrated for models 1 and 2 (see attached plans) have en used successfully for a variety of bat species in Europe. Their exact size and shape robably are not important except for the width of the entry space. This should not xceed one inch, with the ideal width being only 3/4 of an inch. Regardless of the kind f house built, all inner surfaces must be rough enough to permit the bats to climb on hem with ease, and rough outer surfaces are preferred.

Young bats grow best where daytime temperatures are in the 80-90°F range. For this eason maternity colonies are most likely to use bat houses that either provide mperatures in this range or that are so well insulated that body warmth is easily apped. Europeans often cover their bat houses on top and for an inch or two down the des with two or more pieces of tar paper. The dark covering absorbs heat from the sun day end provides added insulation by night, in addition to protecting the bats from in.

Several means of insulating or providing a range of temperatures in bat houses are ailable but as yet largely untested. One involves covering bat houses with styrofoam on p and on all four sides. An additional covering of dark colored shingles or tar paper ght prove helpful, especially in northern areas where the bats may need higher tempera- res. Also making bat house model 1 two feet tall, with only the upper six inches and p covered with dark material might provide a better range of temperature. By moving up d down and from front to back bats could find roost temperatures more continuously to eir liking. Paint or varnish reportedly is somewhat repellent to bats, at least until ll cured.

Bat houses should be fastened securely to a tree trunk or the side of a building ughly 12-15 feet above ground, preferably where they will receive morning sun but will shaded during the afternoon. Inside temperatures above 90°F generally are intolerable. r this reason a well insulated bat house that receives only morning sun should prove st suitable. Male bats do not live with the females while young are being reared, and ese bachelor colonies may be attracted to sheltered, cooler locations. Additionally, st bats seem to prefer sites that are relatively protected from wind.

It is important to note that bats can live only where local food supplies are equate. For this reason most colonial bats are found near places such as rivers, es, bogs or marshes where insect populations are high. The closer bat houses are to h places the greater the probability of being used. Those located more than a half e from these habitats have greatly reduced probability of being occupied unless ernate food sources are available.

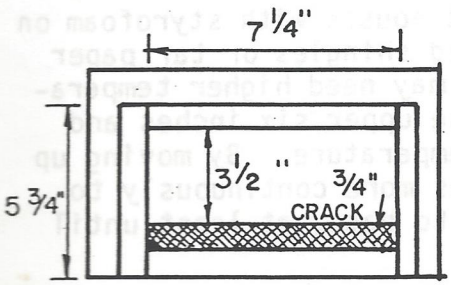
Sometimes bats occupy a bat house within a few weeks. Often, however, bats require a r or two to find the new house. Chances of early occupancy probably are increased if ses are hung before or by early April and also if bats already live in barns or attics adjacent areas.

Since use of bat houses is very new in the United States, we have much to learn about al bat preferences. Your reporting of successes and failures in building houses for s could contribute measurably to our knowledge of how to attract bats. Write to Bat servation International

Bat Conservation International
P.O. Box 162603
Austin, Texas 78716-2603
or phone: (512) 499-0207

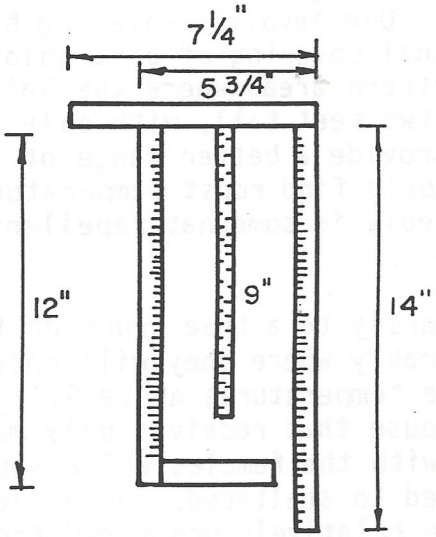
# PLAN 10
## BAT HOUSE
## (SMALL)

**BOTTOM VIEW**

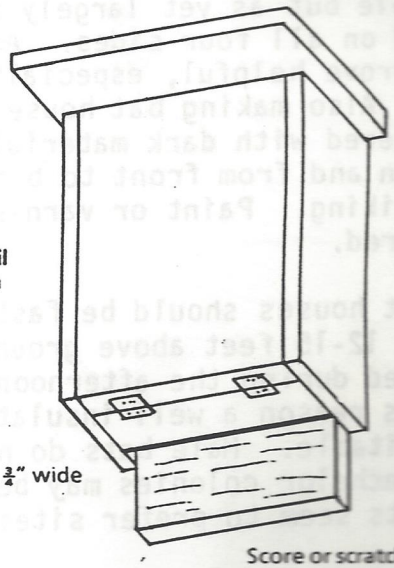



Cover top and 2" down sides with tarpaper.

**SIDE VIEW (cut-away)**



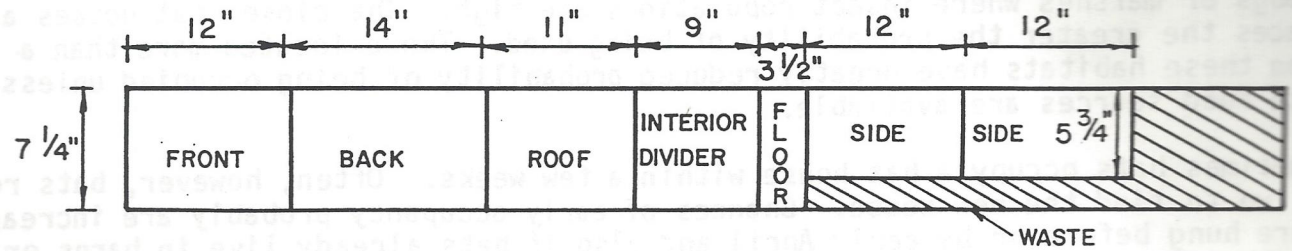

**FRONT VIEW as mounted on building**



One nail on each side holds floor closed.

Entry crack ¾" wide

Score or scratch entryway and all inner surfaces to roughen.




**LUMBER: One 1" X 8" X 8'0"**