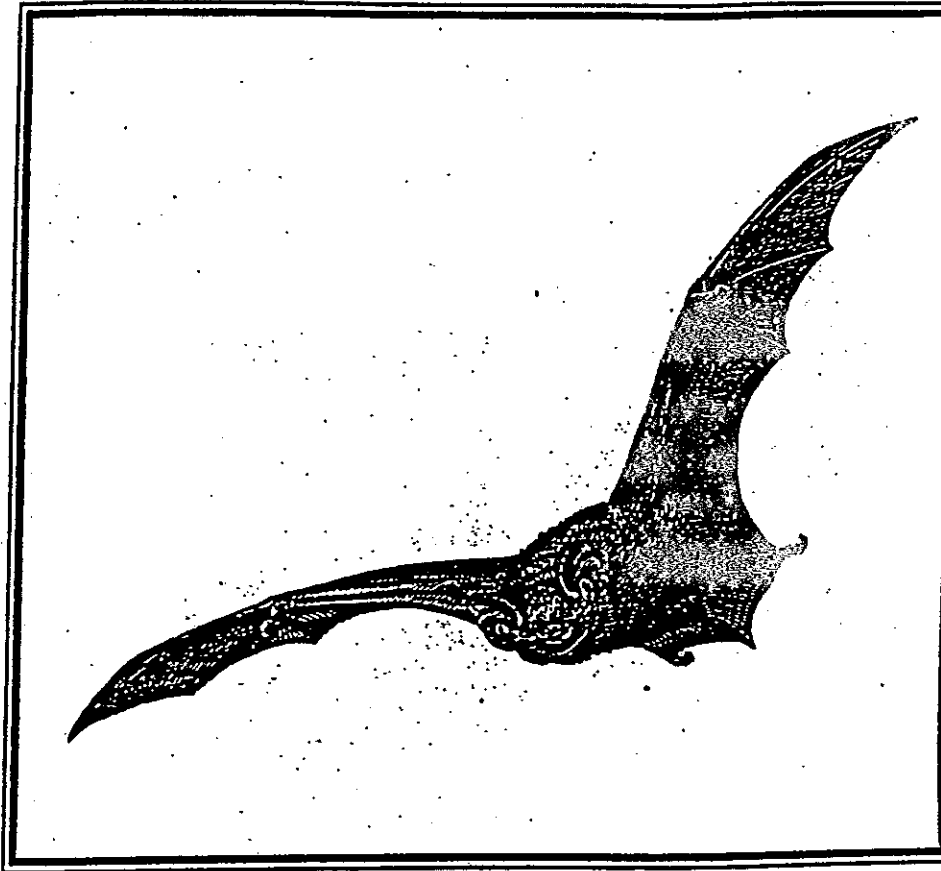


BAT HOUSES

*Birds work during the day eating pesty insects;
bats work during the night!*

FEAR OF THINGS we do not understand is an unfortunate aspect of human behavior and is a problem faced by today's bats. Lack of knowledge, coupled with late night horror shows, fear of things in the dark, myths and/or superstitions, leave us believing that bats are harmful.

This amazing mammal is a wonderful creature who flies during the night searching for mosquitoes and other insects to eat. Seventy percent of all bat species eat insects. The few bats who are carnivorous hunt only small vertebrates, such as fish, frogs, mice and birds. The persecuted vampire bat consists of 3 species, all of which are found **ONLY** in Latin America. All bats in the United States and Canada are insectivores and are major predators of night-flying insects. Besides mosquitoes, numerous crop pests are their prey. The bat's eyes and echolocation technique enable them to see well in dim light as they search for food, primarily at dusk. Under a controlled study, scientists found that bats are capable of catching up to 600 mosquitoes per hour. Large colonies consume countless billions of insects each season.



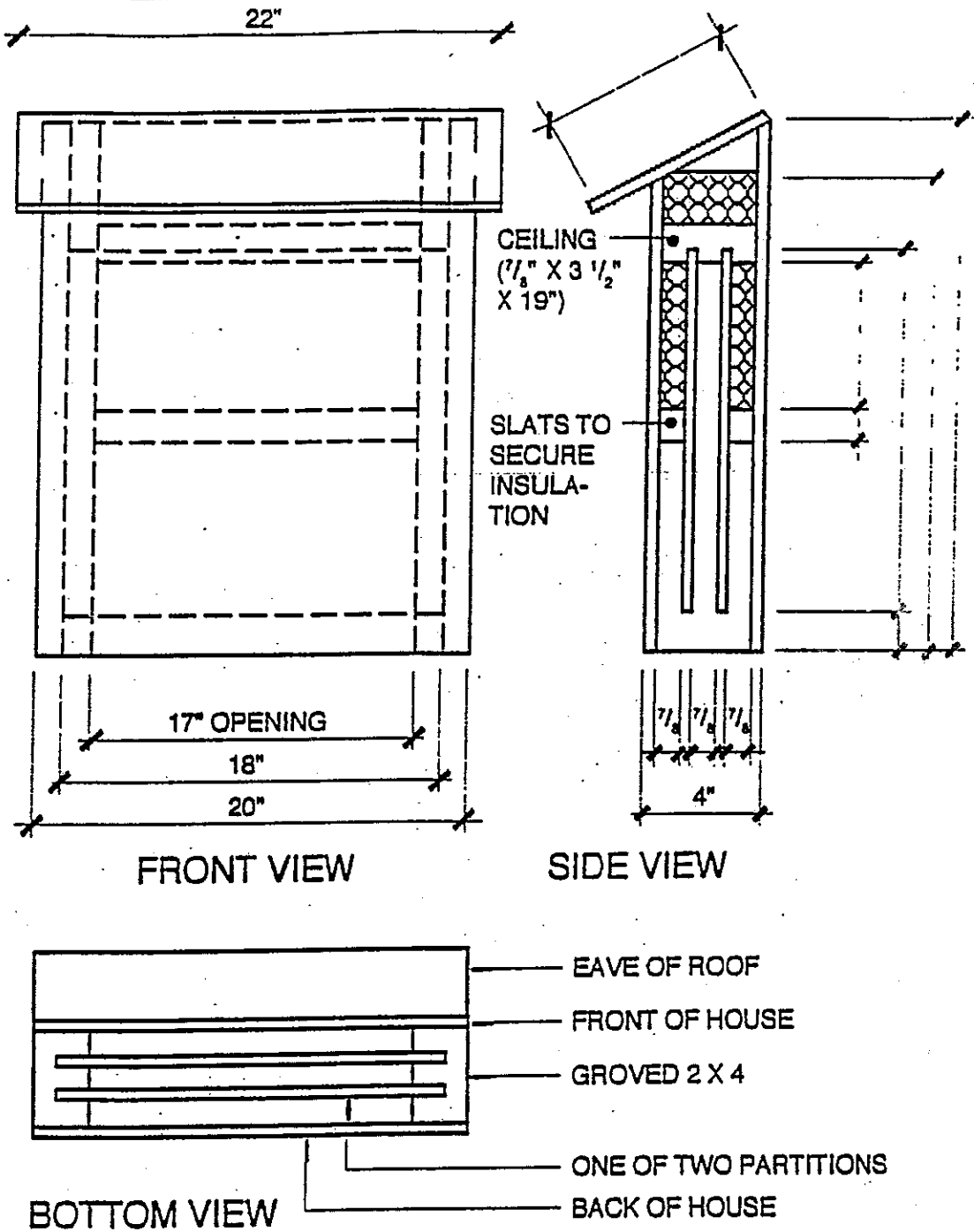
Above is the little brown bat, one of America's most abundant and widespread species.

The mouse-eared bat (genus *Myotis*) is the most widely distributed species in North America. Their color can range from brown or russet to gray. All are small with a wingspan of 8 to 12 inches. Mouse-eared bats occupy a wide variety of summer roosts, including caves, buildings, and tree hollows. Summer roosts are abandoned in August or September for a winter roost. Some colonies travel up to 200 miles or more to reach the nearest suit-

able cave for their six to eight month hibernation.

Bats are the only mammals that truly fly. Their large skin wings are well suited for flying. Bats are relatively helpless when it's on the ground because their legs are weak and their knees bend backward. Their back feet have tiny sharp claws that allow them to hang upside down from walls, cave ceilings, old buildings, or in the cavity of a tree.

SPECIAL NOTE ABOUT WOOD SIZES: Wood sizes (except plywood) are nominal, e.g., 2 x 4 x 8 (width x height x length) actually measures 1 1/2" x 3 1/2" x 8"; 2 x 2 actually measures 1 1/2" x 1 1/2".



SMALL NURSERY HOUSE

MATERIALS NEEDED:

One 4' piece of 2 x 4 lumber (sides)
 One 4' x 4' piece of 3/8" no-grooved exterior plywood (front, back, two partitions, roof)
 One 10' piece of 1 x 4 lumber (ceiling, mounting boards, remainder to be cut for slats to secure insulation: two 7/8" x 18" pieces)
 Two 17 1/2" x 17 1/2" pieces insulation, folded double (for attic)

Two pieces 39" x 19" fiberglass insect screening (folded around both sides of both partitions)

NOTES:

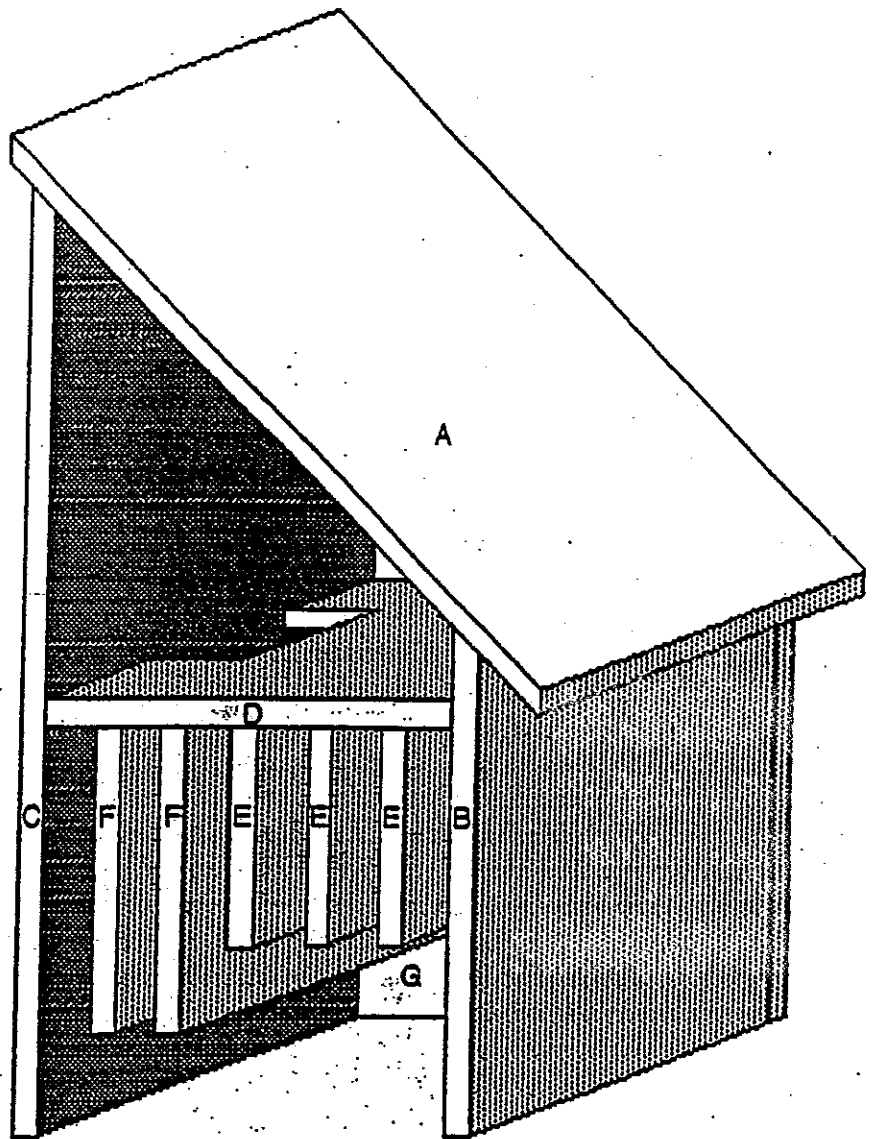
If you do not have access to a table saw with router attachment, wooden slats can be substituted for grooves to hold partitions in place to reduce air exchange between chambers.

LARGE BAT HOUSE

Bats need dark places with varied temperatures to rest during the day. The Bat Conservation International (BCI) has found that temperature is a key factor in determining bat house use. The BCI states that bat requirements vary daily, due to weather extremes and seasonally, due to the changing physiological requirements of pregnancy, rearing young, and storing fat for winter. Mounting two bat houses back-to-back on a pole could create a variety of different temperature areas for bats to choose or move to. This would also balance the weight of the boxes mounted on a pole. When bat houses are mounted on a pole, the BCI recommends painting or staining the houses to allow for optimum solar radiation. For the Ulatis watershed area, paint the house that will face southeast a medium to dark brown color. The second house, facing northwest, can be left its natural wood color. Both houses should receive four hours or less of direct morning sunlight and should be in the shade the rest of the day.

Build your bat house and locate it in a high place, 10 to 15 feet off the ground, facing east or southeast to catch the morning sun. The entrance should be free of obstructions such as branches. When building your bat house, keep in mind that bats hang by the tiny claws on its back feet; thus, rough, sawed wood on

(continued on page 6)



DIMENSIONS:

A.	Roof	16 $\frac{1}{2}$ " x 11 $\frac{1}{4}$ "
B.	Front	18 $\frac{3}{4}$ " x 9 $\frac{1}{4}$ "
C.	Back	27" x 9 $\frac{1}{4}$ "
D.	Ceiling	9 $\frac{3}{4}$ " x 9 $\frac{1}{4}$ "
E.	Partitions	9 $\frac{1}{4}$ " wide x 8" high
F.	Partitions	9 $\frac{1}{4}$ " wide x 14" high
G.	Sides	11 $\frac{1}{4}$ " wide x 27" at back and 18 $\frac{3}{4}$ " at front

CONSTRUCTION NOTES FOR LARGE BAT HOUSE:

1. Use 2" finishing nails when constructing the house.
2. Western cedar or redwood will withstand outdoor exposure better than pine or plywood; although they are all suitable.
3. Use $\frac{1}{2}$ " rough sawed wood for the interior walls. Spacing between partitlons frong to back: $\frac{3}{4}$ ", $\frac{3}{4}$ ", $\frac{3}{4}$ ", 1", 1 $\frac{1}{2}$ ", 1 $\frac{1}{4}$ ".
4. Mount the bat house on 3" nails.

ANSWERS TO MOST FREQUENTLY ASKED BAT HOUSE QUESTIONS

1. What kinds of bats are most likely to use bat houses?

Throughout the northern two-thirds of the United States and Canada, the Little Brown Bat (*Myotis lucifugus*) and the Big Brown Bat (*Eptesicus fuscus*). These species also occur in the southeastern U.S. but are gradually replaced by the Southeastern Bat (*Myotis austroriparius*) and the Mexican Free-tailed Bat (*Tadarida brasiliensis*) in the Gulf states. In the southwest and western U.S., the Mexican Free-tailed Bat and a variety of small bat species (often loosely referred to as little brown bats) may occupy bat houses. Pallid bats (*Antrozous pallidus*) may also use bat houses, especially in arid areas. In general, any species that naturally roosts in crevices and that is known to occupy bridges and buildings is a likely candidate for bat house occupancy. For further details, consult Barbour, R. W. and W. H. Davis, 1969. BATS OF AMERICA. University Press of Kentucky, 286 pp. (Available in some libraries or can be purchased from Speleobooks, P.O. Box 10, Schoharie, NY 12157)

2. Can bats live in a bat house year-round, or do they leave for winter?

In Canada and the northern two-thirds of the U.S. all bats must migrate south or find safe hibernating sites for winter. Very few species can long survive subfreezing temperatures. Tree roosting species travel south like birds, while species that would occupy bat houses generally move to an undisturbed cave or an abandoned mine. The Big Brown Bat is so exceptionally hardy that it sometimes overwinters in the outer walls of buildings. Bats might overwinter in bat houses only in southern or coastal areas where winters are mild.

3. How does one attract bats to a bat house?

Bats find bat houses just as birds find bird houses. If a house is appropriately located, meets bat requirements and is needed, bats will move in on their own. Some people have painted the insides of bat houses with moistened bat droppings to establish a bat odor, but there is no documentation that this makes houses any more attractive to bats.

4. How can I determine the likelihood of attracting bats to bat houses in my area?

Most North American bats apparently prefer to live within a few hundred meters of water, especially streams, marshes or lakes, though colonies are sometimes found up to a mile or more from such places. In some western areas they may travel several miles, utilizing only a cattle trough or other similarly small source. Wherever bats live, they must find enough insects to eat, largely explaining their preference for aquatic habitat. In urban areas, the oldest neighborhoods, with their larger trees and better established yards and vegetation, are most likely to meet bat needs.

There are several reasons why bats might not be attracted to bat houses in some areas. For example, heavy use of agricultural or other pesticides may poison bats or their insect prey. Also, many bat hibernating sites in caves have been eliminated through careless human disturbance. Loss of such overwintering roosts can prevent species, such as the Little Brown Bat, from using otherwise ideal summer habitat over thousands of square miles of surrounding area. Foliage roosting species, such as the Red Bat, would be unaffected, since they migrate south for the winter, but they are not likely to use bat houses. Finally, like birds, bats are unlikely to move into a house unless it is needed.

5. How can I tell if bats live in my area?

You can watch for them at dusk or around street lights at night. You might also check with local nature centers or pest control companies to see if they receive calls about bats entering buildings. Bats that enter buildings are usually the same species that are most likely to use bat houses. If you want to have some fun, bat detectors are available from BCI (\$159) and can be tuned to listen to the echolocation calls of bats as they feed at night. Most species are easily heard from distances of from 30 to 100 feet, depending on the species.

6. Can bats be introduced into areas where they do not already live?

If appropriate bat species still pass through your general area, you may, by putting up a bat house, attract a colony to live in your yard and also increase the number of bats in your neighborhood. Nevertheless, there is nothing you can do to artificially introduce them. They have strong homing instincts and would immediately leave for their original homes. Thus, catching or purchasing (illegal) bats elsewhere for introduction into a new bat house would be useless.