

Bats On The Golf Course

Environmental Report from the Audubon Cooperative Sanctuary System

There are 40 species of bats in North America and none deserves its negative reputation for getting tangled in people's hair, drinking blood or always carrying rabies. Less than 3% of bats sampled with rabies are found to carry the virus. In fact, bats can be good neighbors and a vital resource for controlling pests and pollinating flowers.

What About Bats?

Bats are furred, warm-blooded mammals with body lengths of 3-6 inches and wingspans varying from 8-12 inches. Most bats hunt flying insects and navigate by emitting pulses of sound through the mouth. Their sensitive ears hear the echoes reflected from even tiny insects. This allows them to steer towards prey and avoid obstacles. Bats also have keen eyesight on which they rely for long-distance orientation.

Bats in North America eat primarily insects such as cut worms, corn borer moths, potato beetles and mosquitoes.

A single bat can consume between 500 to 1000 mosquitoes and insects in an hour depending on the species and the size of the bat. Given this appetite, you can easily see why bats are the most important natural controller of insect pests that fly at night. Having a population of bats on

your golf course can be a welcome addition to your integrated pest management program.

How Can I Attract Bats?

It is very difficult to attract bats to an area if they are not already present in your woodland, neighboring caves or man-made structures. Bats normally return to the roost where they were born. However, construction and loss of habitat may cause local bats to seek new homes, such as a "bat roosting box" placed on your course. Natural roosting areas for bats include hollow trees, caves and rock crevices. They also roost in human structures such as old barns, attics, basements, bridges and other structures.

When you are outside at dusk, observe the sky for "birds" that flap their wings quickly, fly slowly and erratically and often swoop over water features. They may also be found flying around a building or parking lot lights looking for an evening meal.

Why Is Bat Conservation Important?

Unfortunately, nearly 40% of America's bats are on the Federal Endangered Species List or are candidates for it.

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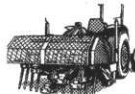
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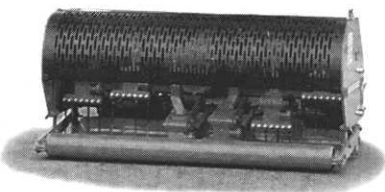


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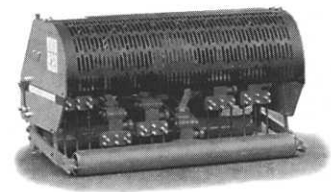
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Bats—

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Many factors have led to the decline of bat populations. When old buildings and barns are demolished, valuable bat roosting habitats are destroyed as well. The use of insecticides and pesticides are easily ingested by these insect-eating mammals. The popularity of spelunking or "caving" often puts people in bat caves just as young bats are maturing. Often, if adult bats are disturbed by humans, they will abandon their young. Because bats usually raise only one pup each year, their populations do not increase quickly. Lastly, the myths about bats do not endear them to the general population.

Do All Bats Carry Rabies?

If a random sample was taken of all bats in a given area, less than 1/2 of one percent would be found to be infected with the rabies virus. However, when bats are brought in to health departments for sampling for rabies, approximately 4% are found to carry the rabies virus. This finding is due to the number of sick bats that are easily brought in to be sampled.

Is It Safe To Install Bat Houses On My Golf Course?

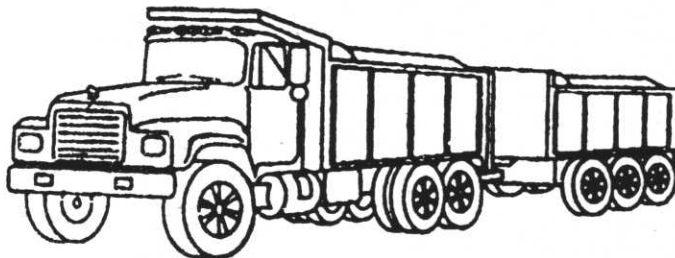
Bat houses are currently a part of habitat enhancement projects on state parks throughout the country as well as

on some golf courses and in back yards. Bats will be a positive addition to your habitat management program if you follow these guidelines:

1. Place bat houses in remote areas of your property.
2. Locate bat houses away from areas of high pesticide applications.
3. Do not use chemically treated wood and avoid paints; both can be harmful to bats.
4. Use the roughest sides of the wood on the inner areas of the house.
5. Caulk all outside seams to limit air flow. This helps trap the bat's body heat inside the box. Place tar paper or dark shingles on the top 4-6 inches down the sides to increase inside temperatures. Nursery roosts often require temperatures of 90° F.
6. For the best success, locate bat houses in a sunny location — bats prefer warm roosting sites. East and southeast exposures are best for providing maximum solar gain.
7. Hang houses on the side of a building or on a tree, 10 to 15 feet above the ground.
8. Bats prefer sites that are within a few hundred yards of streams, lakes or wetlands.
9. Install the house before April to improve the chance of occupancy. It is not unusual for a house to stand empty for at least a year before it is used.
10. Educate golfers about the addition of bat houses on the course. Post bat house information or use your newsletter to explain this project.

Bats are an important part of many ecosystems. Bats pollinate flowers, keep insect populations at a manageable level and provide an excellent opportunity for public education. Let a bat take up residence in your belfry!

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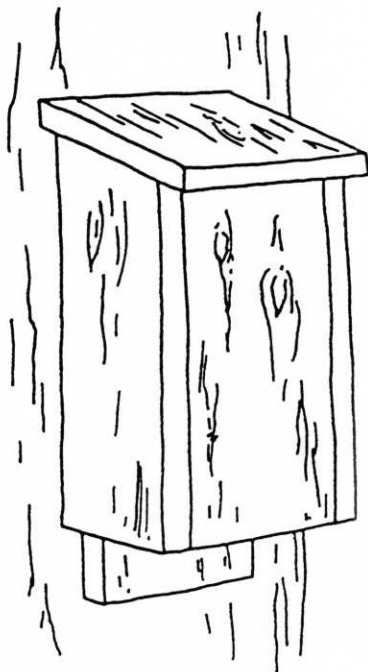
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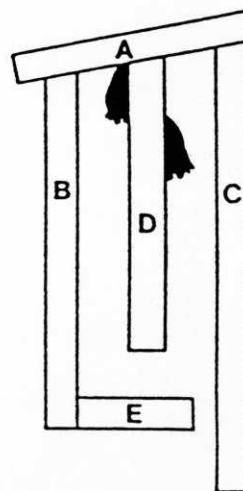
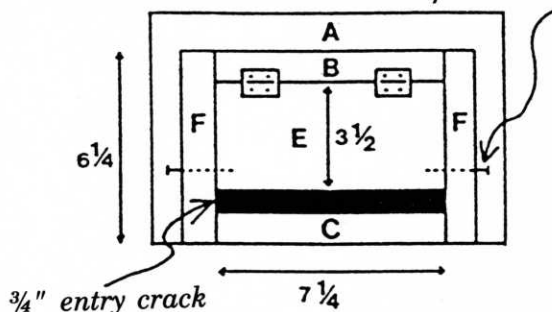
SMALL BAT HOUSE

WILL ACCOMMODATE UP TO 30 BATS



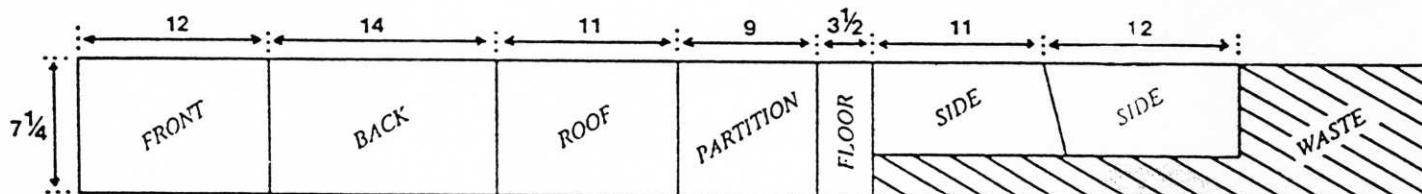
BOTTOM VIEW

Hinges on floor allow for cleaning.
One nail on each side holds floor closed.



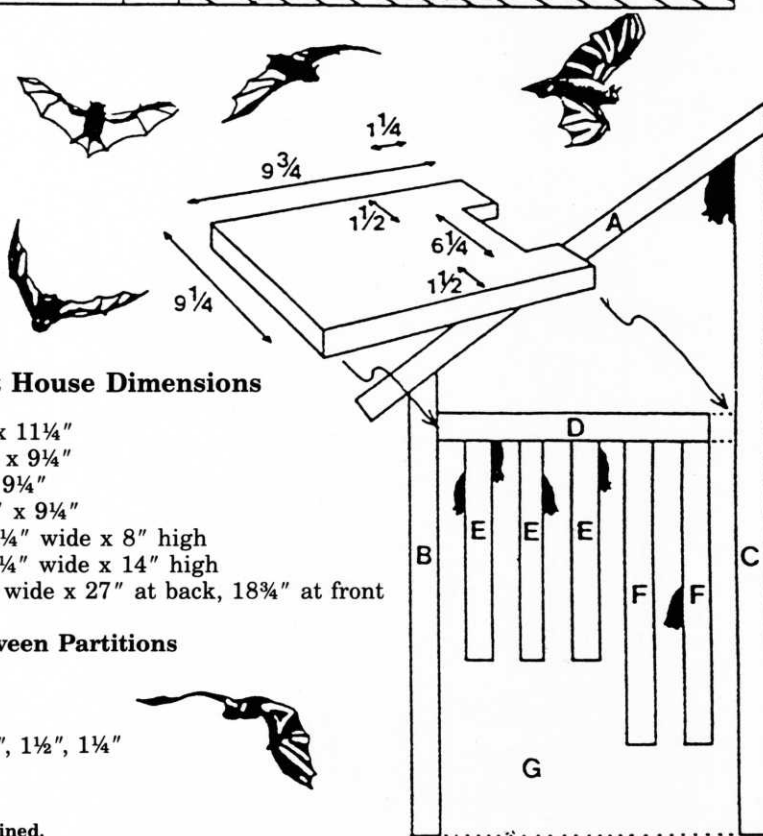
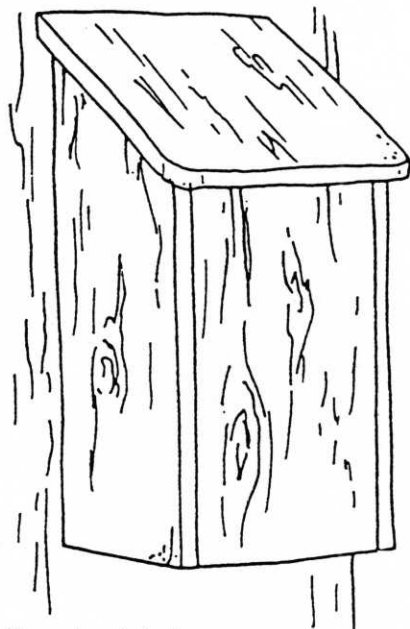
Small Bat House Dimensions

- A Roof 7 1/4" x 11" wide
- B Front 12" x 7 1/4" wide
- C Back 14" x 7 1/4" wide
- D Partition 9" x 7 1/4" wide
- E Floor 3 1/2" x 7 1/4" wide
- F Sides 6 1/4" wide x 12" at back, 11" at front



LARGE BAT HOUSE

WILL ACCOMMODATE UP TO 100 BATS



Large Bat House Dimensions

- A Roof 16 1/2" x 11 1/4"
- B Front 18 3/4" x 9 1/4"
- C Back 27" x 9 1/4"
- D Ceiling 9 3/4" x 9 1/4"
- E Partitions 9 1/4" wide x 8" high
- F Partitions 9 1/4" wide x 14" high
- G Sides 11 1/4" wide x 27" at back, 18 3/4" at front

Spacing Between Partitions

Front to Back

- 3/4", 3/4", 3/4", 1", 1 1/2", 1 1/4"

All dimensions in inches.

Wood should be untreated and interior should not be painted or stained.

Large bat house plans adapted from Bat Conservation International with permission.