Bats

People are becoming increasingly aware of the importance of the bats they once persecuted. Increased pesticide use, the loss of roosting and foraging habitat has resulted in the current decline of many bat species. North Carolina supports 16 species of bats, including three federally listed as endangered. This publication provides information about bats, their benefits, and steps to encourage bats on private lands.

The Importance of Bats

Bats serve as important pollinators of many food plants as well as provide useful aids for medical research, particularly for the blind.

Bats are the only major predator of night-flying insects. Bat prey includes lacewings, cockroaches, gnats, and mosquitoes as their major food source. A single big brown bat can eat between 3,000 and 7,000 mosquitoes in a night, with large populations of bats consuming thousands of tons of potentially harmful forest and agricultural pests annually.

Permanent wet areas are critical because they supply water and a consistent insect supply.

Flying Mammals

Bats are the only mammals capable of true flight. Their wings are like hands with skin stretched between modified finger bones. They are not blind, but rely on echolocation instead of their eyes for locating and capturing food at night. Bats are more closely related to primates than the rodents with which they are often compared. They have slow reproductive rates with typically only one offspring cycle. Like all other mammals, female bats nurse their young.

Figure 1. The endangered Virginia big-eared bat.

Balancing Bat Habitat

A balance of foraging habitat and roosting habitat is essential. Bats spend over half of their lives in roosts and rely on sheltered, undisturbed natural sites such as caves, crevices in rocks, and tree cavities to meet their needs. In the winter months, insulated roosts are important for hibernating bats, while in late spring and early summer, roosts that can sustain daytime temperatures between 80 and 90 degrees Fahrenheit are important for raising young bats. Bats are somewhat opportunistic in their roost selection and often utilize man-made structures such as attics, abandoned houses, church lofts, and barns where natural roosts are unavailable.

Promoting Bat Habitat

Encourage bats on your property by furnishing foraging and roosting habitats in close proximity. Maintain and manage snags in mature woodlots to increase the availability of natural roosts. Ensure foraging habitat by protecting all permanent water sources such as beaver ponds, swamps, marshes, and streams.

Figure 2. Bat habitats to protect.

Install properly constructed artificial roosts in areas were natural roosts are scarce or absent. Solitary species such as the Hoary bat will not use bat houses consistently as will the colonial bats, which include the Little brown bat, Big brown bat, and Eastern pipistrelle. **Use the following diagram to build effective, maintenance-free bat houses for roosting and raising young.**

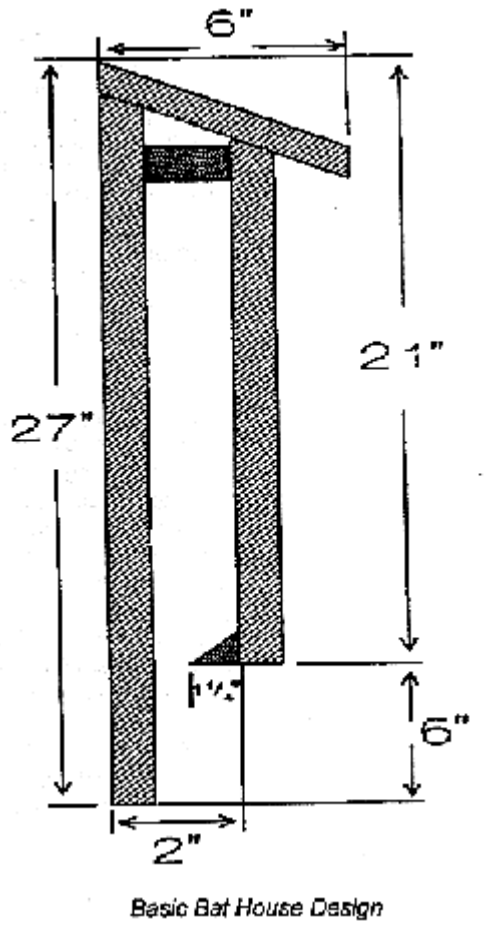

Figure 3. Basic bat house design.

Construction Tips

- Use cedar, cypress, or pressure-treated pine lumber to insure durable, longer-lasting boxes.
- Use rough lumber, cut shallow grooves, or attach fine plastic or mesh wire to the inner surfaces of the box so bats can easily crawl up and into the house.
- Avoid painting or varnishing the *inside* of the house.
- Paint or cover the roof and the top four inches of the sides with tar paper or another dark material to insure the high temperature ranges required by both young and adult bats.
- Seal all seams with silicone caulk to waterproof houses and prevent heat and moisture losses.

Installation Tips

- Place bat boxes close to rivers, lakes, ponds, marshes, or other permanent water sources where insects are abundant.
- Secure boxes to the sides of trees with a ten penny nail or with crimped wire or a lag bolt that can be loosened as the tree grows. Boxes mounted on fast-growing conifers may have to be remounted every 2 to 3 years.
- Tilt houses at a 10 degree angle to help young bats stay in the box.
- Place bat houses 10 to 15 feet off the ground. Always seek assistance when using folding or extension ladders.

- Locate boxes where they will absorb maximum sunlight. Where possible, place four boxes per tree, one each facing North, South, East, and West, to allow the bats to choose the box they need.
- Install bat houses by early April. Don't worry if bats do not begin using them immediately. A recent survey by Bat Conservation International (BCI) showed a 52% occupancy rate for all boxes. It may take up to two years for bats to find and begin using artificial roosts.
- Inspect bat houses annually and remove any vegetation that could interfere with entry to the roost or allow predators to enter. Attach predator guards of roofing tin on the mounting post or tree at a height of three feet to protect roosting bats from house cats, raccoons, and snakes.

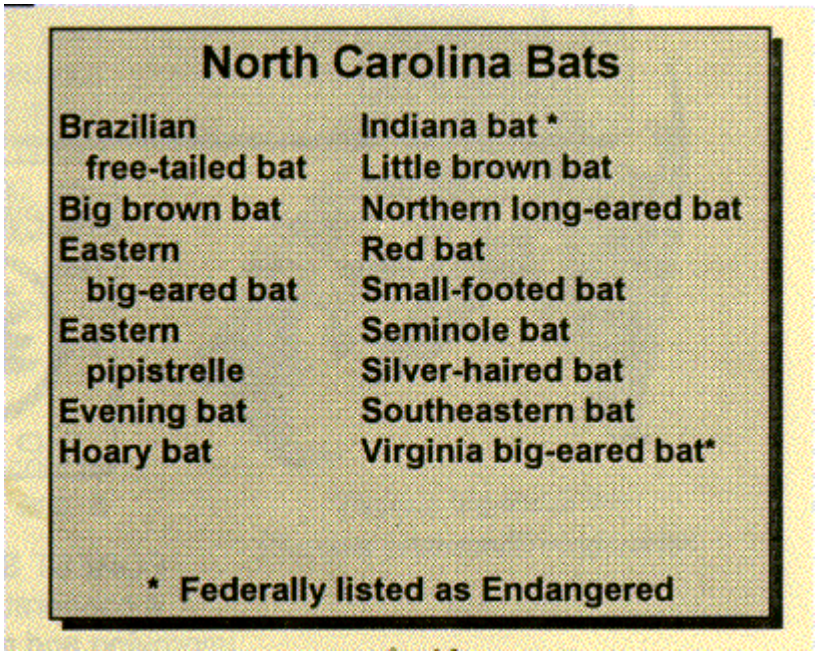

Figure 4. Bats found in North Carolina.