Wild Things in Your Woodlands

Bats in the Forest and Beyond

Nine species of bats live in New York State. All of these species are small, from the diminutive eastern pipistrelle (2.9-3.5 inches long; wingspan 8-10 inches), to the more sizeable hoary bat (5.1-5.9 inches long; wingspan 14.5-16.5 inches), the largest bat in the northeast. Although bats worldwide feed on a variety of items including nectar, fish, frogs, blood, and fruit, all of New York's bats feed exclusively on night-flying insects.

While some types of bats tend to specialize on one or more groups of insects, others eat a variety of prey items. The big brown bat, for instance, has strong, powerful jaws and feeds mainly on beetles and other hard-bodied insects. Hoary bats and silver-haired bats like to eat moths, and little brown bats and eastern pipistrelles have a diverse diet that includes beetles, true bugs, moths, flies, wasps, and other insects. Most species, even those with strong preferences, can vary their diets depending upon the season and availability of prey. Because of the number of insects bats consume, they are believed to regulate populations of forest and agricultural insect pests. For example, in a study of a colony of 150 brown bats in an agricultural area, researchers estimated that the colony consumed over 1.25 million insects in a year. This is not surprising, considering that a single bat may eat 3,000 insects on a given summer night. Bats roosting and foraging in New York forests consume forest and eastern tent moths, and a variety of other potential forest pests.

All nine species of bats in New York use forests and trees to some extent, though some are more strongly tied to woodlands than others. Our two most common species – the little brown bat and the big brown bat – roost and raise their young primarily in buildings (though at times in tree cavities) during the summer months. Female bats of these species form large maternity colonies, while males roost singly or in small groups. Another bat, the eastern long-eared bat, roosts on the exterior of buildings or in trees. Most species

however, including the eastern pipistrelle, small-footed myotis, red bat, silver-haired bat, hoary bat, and the federally endangered Indiana bat, roost in trees during the summer and are strongly tied to forest habitat during the summer months.

When temperatures drop in the fall, most bat species move short distances to caves and mines in New York or nearby states. Three of our tree bat species – the red bat, hoary bat, and silver-haired bat – migrate south for the winter. Red bats and silver-haired bats move as far as the southern states, while hoary bats may go all the way to Mexico. After moving south, some individuals remain active year-round, while others hibernate. All other species in New York State move short distances, often 20 miles or less, to overwinter in caves and mines where winter temperatures remain above freezing. During hibernation, a bat's heart rate slows, and body temperature drops, resulting in energy conservation that allows the bat to make it through the winter on just a few grams of fat. Bats usually lose from ¼ to ½ their body weight during hibernation, and emerge in spring when insects are once again available.

Beginning the winter of 2006/2007, scientists in New York, Vermont, Connecticut and Massachusetts began observing bats flying outside during the day in the winter, clustered near cave entrances, or dead or dying inside their winter hibernacula. Because many of these animals had a mysterious white fungus on their nose, or on the tail, wings, or ears, this affliction has been termed "white nose syndrome". Although the fungus may be a symptom and not the cause of the bat deaths, scientists have been unable to determine the cause of mortality to date. The Eastern Pipistrelle, little brown, northern long-eared, small-footed myotis, and the federally endangered Indiana bat all have been affected. Last winter, tens of thousands of bats died. In eight caves in New York, 80 to 100 percent of bats died in the past two winters. The declining number of bats could mean the loss of entire local populations, and have far-reaching effects on our forest ecosystems.

While the cause of this syndrome has yet to be determined, landowners and homeowners can help by providing the best habitat possible for bats. Because bats are known to forage regularly along riparian corridors, maintaining or restoring forest cover adjacent to streams and other waterways benefits bats in your area. Maintaining or creating snags (standing dead trees), particularly those over 14 inches in diameter, is also beneficial. The holes, or cavities, that develop in snags provide roost sites for bats. Snags are particularly beneficial when left along riparian areas, forest edges, and in regenerating stands. However, snags left in mature or old growth stands also provide benefits, as do living trees with cavities.

The characteristics of certain trees can also attract and provide habitat for bats. For instance, many bats will roost under exfoliating bark of dead or dying trees, or under the bark of trees like shagbark hickory. Others roost in trees with furrowed bark like walnut, locust, fir, and some pines. Red bats roost in the foliage of deciduous and coniferous trees. By retaining trees with deeply furrowed, or shaggy bark, you can help provide habitat for bats. Because bats are roosting in trees and raising their young during the summer months, avoiding timber harvesting from May to early August is also a good way to safeguard the bats in your forest so you and your forest can continue to benefit from the insect-eating services they provide.

Bats in your home or other buildings may present additional challenges. If you would like more information on keeping bats out of unwanted places while taking steps to conserve them, visit http://wildlifecontrol.info/pubs/Pages/CornellUniversity.aspx for a fact sheet about managing bats in buildings.

Kristi Sullivan coordinates the Conservation Education Program at Cornell's Arnot Forest. More information on managing habitat for wildlife, as well as upcoming educational programs at the Arnot Forest can be found by visiting the Arnot Conservation Education Program web site at ArnotConservation.info

Big brown bat photo courtesy of
U.S. Fish and Wildlife Service