

## Characteristics of Indiana Bat Summer Habitat

Potential summer habitat for Indiana bats features at least 16 suitable roost trees per acre. Tree characteristics such as loose or shaggy bark, crevices, and hollows are more important than tree species. Suitable roost trees include any of the following:

- live shagbark hickories (*Carya ovata*) over 9 inches in diameter at breast height (dbh);
- lightning-struck trees over 9 inches dbh;
- dead, dying, or damaged trees of any species over 9 inches dbh with at least 10 percent exfoliating bark;
- den trees, broken trees, or stumps over 9 inches dbh and over 9 feet in height; and
- live trees of any species over 26 inches dbh.

Trees as small as 5 inches dbh have been used as maternity roosts and trees as small as 3 inches dbh have been used by roosting males; therefore, smaller dbh trees with the aforementioned characteristics should be retained if larger dbh trees are not present.

The following are examples of native tree species that should be included in planting plans designed to provide suitable roosts for Indiana bats in New Jersey.

Red maple	<i>Acer rubrum</i>
Silver maple*	<i>Acer saccharinum</i>
Sugar maple *	<i>Acer saccharum</i>
Yellow birch	<i>Betula alleghaniensis</i>
Gray birch	<i>Betula populifolia</i>
Bitternut hickory	<i>Carya cordiformis</i>
Sweet pignut hickory	<i>Carya ovalis</i>
Shagbark hickory *	<i>Carya ovata</i>
White ash	<i>Fraxinus americana</i>
Green ash*	<i>Fraxinus pennsylvanica</i>
White pine	<i>Pinus strobus</i>
Eastern cottonwood*	<i>Populus deltoides</i>
White oak*	<i>Quercus alba</i>
Pin oak	<i>Quercus palustris</i>
Northern red oak	<i>Quercus rubra</i>
Post oak	<i>Quercus stellata</i>
American elm*	<i>Ulmus americana</i>
Slippery elm	<i>Ulmus rubra</i>

\* preferred roost tree species

**U.S. FISH AND WILDLIFE SERVICE SPECIES NARRATIVES:  
Biology and Threats of Federally Listed Species in New Jersey**

**Indiana bat (*Myotis sodalis*)**

The Indiana bat was federally listed in 1967 and classified as an endangered species in 1973.

The Indiana bat is a small, brown mammal about 1.5 to 2 inches long. This species closely resembles the little brown bat, from which it can be distinguished by small differences in fur coloration and the structure of the feet. As with all eastern U.S. bat species, Indiana bats feed almost exclusively on insects.

Each fall from late August through October, Indiana bats migrate from their summer habitats to congregate in the vicinity of their hibernation sites, which include caves and abandoned mine shafts. During this time, the bats engage in mating activity and feed in the surrounding area to build the fat reserves needed during hibernation. The bats then hibernate from late October to April, the precise timing dependent on climatic conditions. After emerging from hibernation, Indiana bats forage in the vicinity of the hibernation site before migrating to summer habitats. Studies indicate that Indiana bats typically forage within 10 miles of hibernacula before and after hibernation.

When not hibernating, Indiana bats roost under loose tree bark by day, and forage for flying insects in and around the tree canopy at night. A variety of upland and wetland habitats are used as foraging areas, including flood plain, riparian (along rivers), and upland forests; pastures; clearings with early successional vegetation; cropland borders; and wooded fencerows. Preferred foraging areas are streams, associated flood plain forests, and impounded bodies of water such as ponds and reservoirs.

During the summer months, numerous female bats roost together in maternity colonies under the loose bark of dead or dying trees within riparian, flood plain, and upland forests. Maternity colonies use multiple roosts in both living and dead trees. Female Indiana bats raise a single offspring each year. Adult males usually roost in trees near maternity roosts, but some males remain near the hibernaculum and have been found in caves and mines during the summer.

Protection of Indiana bats during all phases of their annual life cycle is essential to preserving this species. Threats to the Indiana bat include disturbance or killing of hibernating and maternity colonies; vandalism and improper closure of hibernacula; fragmentation, degradation, and destruction of forested summer habitats; and use of pesticides and other environmental contaminants. In recent years, White Nose Syndrome has also emerged as a major threat to the Indiana bat and many other bat species.