INDIANA BAT IN NEW YORK AND VERMONT

The Issue

In most of its range this species is declining from loss of winter hibernating sites in caves and mines, but in New York winter sites appear to be less vulnerable. Even so, New York's Indiana bats disperse to other parts of the state and to Vermont in the summer, where tree roosts are vulnerable to cutting and development. Researchers are only now beginning to understand the species summer needs in the Northeast, thanks to research undertaken since 2001.

USFWS

Natural History

Measuring about 3 inches long from nose to tail tip and weighing less than half an ounce, the dark-gray to grayish-brown Indiana bat is one of 45 bat species in the United States and one of nine in New York and Vermont. During winter it hibernates in caves and abandoned mines from Mississippi and Arkansas, north to the Great Lakes and east into Vermont. Since the 1960s, the population has dropped from about 800,000 nationwide to about 390,000. Even in such depleted numbers, the bats consume millions of flying insects, eating about 25 percent of their body weight nightly.

These bats are highly vulnerable because their very restricted temperature requirements limit the number of useful caves, mines and other wintering sites that biologists call hibernacula. If caves are disturbed repeatedly, the bats lose energy to unnecessary arousal and movement, a burden to adults and potentially fatal to young.

New York State is home to about 42,000 hibernating bats. Unlike bats in other parts of the country—which in summer disperse widely from their hibernacula (wintering caves)—Indiana bats in New York go from their winter caves to specific summer roost sites, as research since 2001 has revealed. For example, thousands of bats from New York cross Lake Champlain in summer to roost in trees in Vermont's Champlain Valley. They prefer trees, dead or alive, with shaggy bark or narrow crevices within which they can shelter. More than 250 bats may roost in a single tree. The bats shift every few days from such primary roosts to secondary roosts and back again. Each group of bats may have a circuit of five to eight roosts. Females give birth to single pups in roosts called maternity trees.

Listing

The bat was federally listed in 1967 as endangered under the predecessor law to the Endangered Species Act throughout its entire range.

Management

The U.S. Fish and Wildlife Service and state agencies put management emphasis on protecting the bat's hibernacula. In New York State, the bats winter in caves and in mines dating to the 19th century. The mines are large and remote, so the bats are relatively safe during winter. In the Northeast, bats use summer and maternity roost trees (see above under *Natural History*) that are vulnerable to logging and development. Consequently, protection in the Northeast also has focused on finding and evaluating summer roost sites. Almost all of the roosts are on private land, requiring cooperation with landowners. Roost studies have been a cooperative effort among the U.S. Fish and Wildlife Service, the New York Department of Environmental Conservation, the Vermont Fish & Wildlife Department, various academic researchers and dozens of volunteers from New York and neighboring states.

INDIANA BAT

Funding

Funding from all government sources for Indiana bat recovery nationwide ranks the species number 42 out of 1,311 species, according to the U.S. Fish and Wildlife Service fiscal year 2004 report (the most recent available) to Congress, *Federal and State Endangered and Threatened Species Expenditures*.* Total recovery funding for the bat from all government sources that year was about $4.9 million, with $1 million coming from the Service. **"Recovery for this species is moving in a positive direction," says John Kostyack, director of Wildlife Conservation Campaigns at the National Wildlife Federation.** "To ensure that recovery for this and other species is done efficiently and with speed, Congress should make sure that the Service has the funding it needs to study, monitor and manage listed species."

Despite the bat's high funding rank, the application of that funding is relatively narrow. Most of it goes to protecting species population centers in the Midwest. Research on the summer roosts used by New York's Indiana bats has succeeded because researchers have cobbled together adequate funds and equipment from a variety of sources. Money came from Fish and Wildlife Service grants to New York State and from Fish and Wildlife Service regional office end-of-year funds. Additional money came from a U.S. Geological Survey grant that funded two years of research, from the U.S. Forest Service and from the Department of the Army.

In addition, the research relied on using New York state police airplanes to track bats tagged with radio transmitters. Ham radio operators also volunteered to help track the bats, and more volunteers helped with tagging and studying the bats. The Vermont Fish & Wildlife Department also participated, and the U.S. Fish and Wildlife Service hired seasonal and contract personnel as well.

Local Contacts

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THREATS FROM GLOBAL WARMING

Global warming is a broad threat because warmer winters threaten to warm up bat caves. According to an Environmental Protection Agency report on global warming, "Higher-than-normal winter temperatures could boost temperatures inside cave bat roosting sites, which has been shown to cause higher mortality due to increased winter body weight loss in endangered Indiana bats (e.g., an increase of 9°F during winter hibernation has been associated with a 42 percent increase in the rate of body mass loss)."

Hibernacula in the warmer parts of Indiana bat range, where the bulk of the animals currently live, will likely become too warm for the animals to tolerate. Without swift and decisive action to stem global warming, the problem may become so severe that none of the occupied hibernacula across the species' range will be suitable for the bats. Biologists do not know if the Indiana bat or components of its summer habitat can adapt to increased warmth by shifting northward in the time needed to do so.

Other Threats

Loss of winter hibernating sites or summer roosting trees to development are the current primary threats to this species. According to the Vermont Fish & Wildlife Department, the state loses about 525 acres of significant habitat yearly to regulated development, which accounts for only a third of total annual development in the state.

Wind-powered turbines may pose a future threat to Indiana bats and other bat species, as well as to birds. Some studies suggest that turbines may account for thousands of dead bats and birds yearly and could become a factor in species' recovery.

* The U.S. Fish and Wildlife *Federal and State Endangered and Threatened Species Expenditures* report incorporates subjective estimates provided by regulated entities without any independent verification and without effort to segregate Endangered Species Act expenditures from other related expenditures. However, for most listed species, no other funding data is available.