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## Mysterious Ailment Could Wipe Out U.S. Northeast Bats

Brian Handwerk  
for [National Geographic News](#)

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This summer scientists hope to finally crack the case of the mysterious ailment afflicting bats in the U.S. Northeast—before time runs out for the animals and the local environment.

The emergence of pregnant females from their wintering grounds should provide vital clues to the extent and transmission mode of the affliction, known as white-nose syndrome.

First identified in February 2007 among hibernating bats in caves outside of Albany, New York, the ailment has become especially troubling this year, with [signs of the illness spotted at more than two dozen caves and mines](#) used by hibernating bats around New England and [New York](#).

Mortality rates in affected hibernation sites can be as high as 80 to 100 percent, and tens of thousands of bats have been found dead.

Because a single bat may typically eat some 3,000 insects a night, experts say, the consequences could be dire for entire ecosystems. (Related: ["Early Bats Flew First, Developed 'Sonar' Later](#) [February 13, 2008].)

"What we saw last year was kind of just one cave affected, and this year we have seen many hibernation sites in multiple states," said wildlife disease specialist Kimberli Miller at the National Wildlife Health Center in Madison, Wisconsin.

"It's hard to predict whether next year it will be in even more locations or whether it won't," she added. "It is definitely a big concern."

### Winter Sleep Cut Short

The mysterious ailment gets its name from the white fungus that grows on bats' noses and often on other body parts. It has been seen in little brown, big brown, northern long-eared, and eastern pipistrelle bats so far.

Scientists are unsure how, or if, the disease is spread from bat to bat. The fungus may be the primary pathogen causing the syndrome. Or it may be that normally present fungi have been able to grow unchecked in animals weakened by illness.

"They've used up all of their fat stores, they are emaciated, and instead of having enough fat to make it through the winter—they didn't," Miller said.

"We don't know at this point if they weren't in healthy condition going into hibernation or if something occurred during hibernation," she said, noting that some bats even emerged from their winter slumbers when food is scarce—a clear sign of trouble.

### The Lost Generation?

To find answers, National Wildlife Health Center scientists are performing necropsies on nearly a hundred bat carcasses, and many other labs are following suit and eagerly awaiting results.

"Labs have done that first level of analysis looking for known pathogens or obvious contaminants—[something in the] physiology that might indicate an infection of some sort," said Susi von Oettingen, an

endangered-species biologist with the U.S. Fish and Wildlife Service in Concord, New Hampshire.

"Many of these bats were malnourished, dehydrated, basically starving, [but] otherwise seem to look normal."

Meanwhile the bats that have emerged from hibernation this spring, especially pregnant females, offer a new opportunity to decode white-nose syndrome—or at least find out how devastating it has been over the winter.

"Most females [mate] in the fall [but utilize] delayed gestation. They emerge pregnant, and then the fetus starts to grow once they reach their summer habitat," von Oettingen said.

"The female bats that survived and emerged, are they going to have enough strength to have offspring?" she asked.

Because bats typically have only one pup a year, they are in a poor position to recover from population plunges.

### **Bat Barn Key Study Site**

An otherwise unassuming barn in Peterborough, [New Hampshire](#), is one of the key sites that may help experts answer their many questions about the affliction.

Independent bat expert Scott Reynolds, a teacher at St. Paul's School in nearby Concord, has studied and tagged little brown bats (*Myotis lucifugus*) at the site for 15 years.

The barn is a maternity habitat. In summer it fills with female bats that have hibernated all winter in far-off caves or mines. (Related: ["Bats Use Magnetic "Compasses" to Navigate, Study Says"](#) [December 6, 2006].)

This winter, four bats from the Peterborough barn were found in hibernation sites, or hibernacula, in New York and Vermont where white-nose syndrome was reported.

But the vast majority of the bats in Reynolds's long-term study hibernate in areas unknown to humans. During some 14 years of banding the barn's bats, only a handful have ever been found in hibernacula.

"Because we've gone into every hibernacula that we know of in the Northeast, we presume that at least 2,000 [bats from the barn] are living at any one time and we can't find them. Huge populations are wintering somewhere that we don't know about," Reynolds said.

"Is white-nose syndrome localized at the [two dozen-odd] sites where it has been discovered? Or is it much more pervasive and these hibernation sites that we don't even know about yet are going to get wiped out?"

In early June, when Reynolds begins to revisit the little brown bats, the Peterborough barn and other oft-studied sites may provide some answers.

"If numbers are down a lot, it means that even these hidden hibernacula are under threat, and [the ailment] is even bigger than we think," he said.

The prospect is unnerving. Reynolds warned that the Northeast's bats are facing their gravest known threat.

"If this is transmissible, it could really wipe out the flying, nocturnal insectivores section of the ecosystem."