## **Rob Kanter/Environmental Almanac: The bad news about bats**

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**Photo by: New York Department of Environmental Conservation** A little brown bat (Myotis lucifugus) exhibits the symptoms of white-nose syndrome.

As a writer who loves wildlife, I find no story more difficult to tell than the story of how white-nose syndrome is affecting bats in North America.

Before white-nose syndrome arrived, which was only a decade ago, I enjoyed explaining why bats are so amazing in hopes that listeners would come to love, or at least appreciate, them. Today, I can only present the grim news of white-nose syndrome's progress.

White-nose syndrome is a fungal infection that attacks the skin of bats and that's named for its fuzzy, white appearance. It spreads directly from one bat to another and also via spores that survive in soil and on other surfaces.

Because of these traits, and the fact that it thrives in cool, moist conditions, white-nose syndrome is especially hard on bats that hibernate on the ceilings of abandoned mines and caves in tightly packed colonies.

The fungus that causes white-nose syndrome can cause extensive tissue damage in bats, but often it kills them indirectly. It agitates them so much they come out of hibernation and become active during the winter, which depletes their fat stores at a time no food is available to replenish them.

The fungus that causes white-nose syndrome apparently arrived in New York in the fall of 2006 and is thought to have been transported there from Europe by way of spores on the boots or other equipment of cavers. Since it was identified in caves there the following spring, it has spread rapidly in a wave radiating outward in all directions.

White-nose syndrome has now been confirmed on bats in 29 states and five Canadian Provinces, and the fungus that causes it has been confirmed in three additional states.

Sadly, in March of this year, white-nose syndrome was confirmed in a bat in the state of Washington, marking its first appearance west of the Great Plains, where it has not yet reached from the east. White-nose syndrome arrived in Illinois in 2013 and has to date been confirmed in 14 counties.

It's impossible to know exactly how many bats have been killed by white-nose syndrome, but estimates of the toll are staggering, most likely between 6 million and 7 million. In the eastern U.S., it has sometimes killed every single bat in an affected colony.

Here it is depressing but relevant to remember that bat populations do not rebound well, either, on account of the way they live and reproduce.

Many small mammals, such as mice, live short lives — a year or so — but produce multiple litters of multiple young in that time. This reproductive strategy results in populations that bounce back quickly from catastrophic declines.

Bats are different. They live long — typically 10-20 years among the species most afflicted by white-nose syndrome — and they reproduce very slowly, with females giving birth to only a single pup per year. This reproductive strategy is very ineffective for rebuilding a population that crashes.

Scientists have been hard at work investigating how white-nose syndrome works in the interest of helping conserve bats, but it's difficult to find much hope in what they've discovered so far.

One study at Illinois, for example, confirmed the depressing fact that the spores of white-nose syndrome can persist in the environment for years, even when there are no bats around.

Other studies have identified agents that kill the fungus or inhibit its growth. But there is a wide, wide gulf between identifying such agents and deploying them effectively to treat large numbers of animals in the wild.

Ultimately, I think, the devastation caused by white-nose syndrome should bring us around to the question of what we value as humans.

I suspect most people who enjoy the benefits of speedy international travel and trade — including myself — would not be willing to give those things up in order to stop the spread of invasive species (including pathogens such as the fungus that causes white-nose syndrome). But that doesn't mean our only option is to do nothing, does it? I'll keep you posted as I follow up on this question in the weeks to come.

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