

The white-nose syndrome mystery

Something is killing our bats

In February 2006 some 40 miles west of Albany, N.Y., a caver photographed hibernating bats with an unusual white substance on their muzzles. He noticed several dead bats. The following winter, New York Department of Environmental Conservation biologists documented white-nose syndrome after seeing bats behaving erratically, bats with white noses and a few hundred dead bats in several caves. Some 400,000 hibernating bats have died since then.

Bat death zone

Biologists have found sick, dying and dead bats in unprecedented numbers in and around caves and mines in and around Vermont to Virginia. In some hibernacula (caves and mines where bats hibernate in the winter) in New York and New England, 90 to 100 percent of the bats are dying. In a hibernaculum, affected bats usually have white fungus on their muzzles and other parts of their bodies. They frequently lack adequate body fat to survive until spring. These bats may move to cold parts of the hibernaculum, fly during the day and during cold winter weather when the insects they feed upon are not available, and exhibit other uncharacteristic behavior.

Working together to find answers

A broad partnership of nearly 100 federal and state agencies, academia, researchers, non-government organizations and international partners are working in concert to solve the WNS mystery. State biologists are on the front line, doing the bulk of the survey work in bat hibernacula. The U.S. Fish and Wildlife Service is supporting and coordinating the partnership.

Researchers are exploring a variety of avenues they hope will lead to solving this wildlife health crisis. Despite the continuing search to find the source of WNS by numerous laboratories and state and federal biologists, the cause of the bat deaths remains unknown. Federal and state agencies are overwhelmed by the unanticipated WNS work, but they remain committed to finding answers and are doing everything they can within their limited resources.

Recent identification of the fungus (*Geomyces sp.*) found on affected bats may be one step toward an answer. It may be causing bat deaths, or it may be secondary to the cause of deaths. The fungus thrives in the cold and humid conditions characteristic of bat hibernacula. The fungus may not be readily visible on the bats, especially after they leave the hibernaculum and groom themselves.

Spreading WNS

Biologists do not know how WNS is transmitted, but they believe that it spreads primarily by bat-to-bat contact. In addition, people may inadvertently contribute to the spread since some caves used by people have WNS-affected bats, while other, nearby caves not used by people do not seem to be affected.

The Service issued a cave advisory in March asking cavers to stay out of caves in affected states and adjoining states. The advisory also asks cavers - when visiting caves outside of the affected and adjoining states - to refrain from using clothing and gear that has been used in affected and adjoining states. The Service hopes



Marvin Moriarty/USFWS

Bat affected with white-nose syndrome

that compliance with the cave advisory will help slow the spread of WNS until researchers can find the cause and cure. Some states and organizations have issued their own cave advisories.

As a precaution, biologists and researchers wear protective clothing when visiting WNS-affected caves, although there is no known human health risk associated with WNS.

The future of bats

If we cannot find how to eradicate WNS, we face the real possibility of losing entire bat species. The majority of bats dying are little brown bats, one of the most abundant bats in the United States. Other affected bat species include tri-colored, northern long-eared, big brown, small-footed and Indiana bats. Some 10 percent of the endangered Indiana bat population was in New York, the epicenter of WNS, but a significant number has

died. With its southward spread, WNS now is perilously close to endangered Virginia big-eared bats and endangered gray bats.

Losing huge numbers of bats now could affect the remaining bats' ability to survive and adapt in the future through loss of genetic variation.

Eastern bats are voracious predators of night-flying insects such as beetles, moths, aquatic flies and mosquitoes. The number of moths that damage our forests could increase as we lose the bats that eat them. Increased pesticide applications might be needed to protect them from insects like forest tent caterpillars. Backyard gardeners may see increases in moth caterpillars or beetles preying on their gardens and may need to use pesticides or handpick pests from their plants.

The many people who enjoy watching the silent flight of bats through the trees or over wetlands in the night sky may no longer have that privilege. With lower numbers of bats, our environment is already changing. We have no idea what our world would be like with a complete absence of bats.

For more information see http://www.fws.gov/northeast/white_nose.html

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