

WHITE-NOSE SYNDROME SURFACES IN PENNSYLVANIA

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SHINDLE, Mifflin County – Aware since 2008 that White-Nose Syndrome appeared to be making its way to the Keystone State, the Pennsylvania Game Commission now has evidence that the deadly bat disorder is likely present in a mine near this small community in the state’s heartland. Where else this may be occurring and the consequence to bats – a fragile guild of wildlife species – remains an unfolding story.

In late December, Dr. DeeAnn Reeder, a biologist with Bucknell University, and Greg Turner, a biologist with the Game Commission’s Wildlife Diversity Section, found bats in an old Mifflin County iron mine that exhibited some of the signs of White-Nose Syndrome (WNS), during field investigations into bat hibernation patterns that included weekly monitoring for the disorder’s presence in several Pennsylvania hibernacula. During this work, which had been ongoing for weeks, dozens of bats suddenly had a fungus appear around their muzzles and on wing membranes, while many more displayed other symptoms associated with this disorder. Several bats were submitted to the National Wildlife Health Center in Madison, Wisconsin, which now is reporting that the bats have preliminarily tested positive for the cold-loving fungi found on many bats with WNS.



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In Deep – Game Commission Biologist Greg Turner and Dr. DeeAnn Reeder of Bucknell University monitor the signals of transmitters affixed to hibernating bats in Shindle Iron Mine. [Get Image](#)

“Our agency, with assistance from the U.S. Fish and Wildlife Service and other management partners, will work diligently and methodically to measure the extent of the problem in Pennsylvania and monitor the disorder’s progression,” said Carl G. Roe, Game Commission executive director. “This find is a direct result of the Game Commission’s ongoing initiative to proactively monitor for WNS.

“To date, no dead bats have been found in Pennsylvania. That’s a plus, but it comes with no promise of what will or won’t follow. In New York and New England, the disorder seems to arouse bats from hibernation prematurely. Once they depart from caves and mines, they quickly sap their energy reserves and die on the landscape. Mortality in some colonies has exceeded 90 percent, ensuring that any local recovery will be quite lengthy given the low reproductive rate of bats. Little brown and the federally-endangered Indiana bats produce only one young per year.”

Currently, researchers still are unsure exactly how bats contract WNS and how it initially and, ultimately, affects a bat’s body. They cannot confirm whether the fungus appearing on some bats is a cause or a symptom of the disorder. What is clear is that the geographic area where WNS has been documented is expanding. It was first found in bat colonies in New York in 2006, and subsequently in populations in Connecticut, Massachusetts and Vermont in 2007. Now bats in Pennsylvania and New Jersey appear to be affected.

“We do know that the visible fungus appears on some – but not all – bats afflicted with WNS, and that a significant percentage of bats in affected hibernacula move closer to the entrance,” explained Turner. “The bats eventually leave their hibernacula – often in daylight, which is unnatural. Most of those bats likely die on the landscape, but some may return to the cave or mine they left. Researchers cannot determine what bats are searching for, or if they’re hunting for anything. Most bats found dead on the landscape have depleted their fat reserves.”

About the only thing certain about WNS is that its ambiguity continues to baffle the cadre of researchers who are working long hours to positively identify what it is, and if there is anything wildlife managers can do to disable it. WNS does appear to be spreading bat-to-bat, but it’s unknown whether it’s passed in summer roosts, or hibernacula, or both. It also is unknown yet whether the



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Troubled Future – A few of these hibernating little brown bats in Shindle Iron Mine exhibit what is

cause of WNS will linger in hibernacula without bats.

"Of course, there's also the possibility that bats have been – or are being – poisoned somehow," Turner said. "The source could vary; insecticides, herbicides, livestock supplements, changes in the composition of building materials, even changes in air and water quality. That's what makes this whole search so open-ended. But, to date, the disorder is found only in America's Northeast, so it would appear the source is here, too. That's a solid lead, if it is something like a toxin."

New York and New England have lost tens –maybe even hundreds – of thousands of bats to WNS over the past two years. Significant losses to bat populations could have ecological consequences because of the role that bats play in the environment. Across Pennsylvania, bats eat tractor-trailer loads of insects on summer nights, making our backyards more bearable and crop yields more bountiful.

"Bats have survived for more than 50 million years because they are tough mammals," said Lisa Williams, a Game Commission wildlife diversity biologist. "But they have become increasingly vulnerable. Destruction and disturbance of caves, changes to summer habitat, all have impacted bat populations. White-Nose now presents more uncertainty for bats. Quite frankly, we're not sure yet that we can help them survive this threat. We're looking for answers. An impressive team of researchers is in place. But this whole situation has been so sudden, so fluid and so devastating to bats, that it makes it incredibly hard for wildlife managers to develop a conservation response."

The Game Commission spent last summer monitoring the state's bat maternity colonies for signs of mortality, both in adults and juveniles. Bats also were mist-netted and checked for abnormalities. Both efforts shed light into Pennsylvania's unfolding situation, but neither provided conclusive evidence as to what's happening.

"We came out of summer knowing that we hadn't lost major numbers of bats, but we did notice that some bats had small white spots on wing membranes," Turner said. "What the white spots represent is still unclear, but some researchers believe they may be the early signs of WNS."

"This past fall we began to examine the health of our bats to see if they came into their winter quarters prepared for hibernation. We also are using telemetry gear and data-loggers to monitor the body temperatures and arousal patterns of hibernating bats, hoping to shed light on how the emergence of WNS may be affecting individuals, hibernating clusters and the wintering colony."

Weekly battery changes are needed to keep the telemetry receivers (data recorders) going. It was during one of these battery changes that Reeder and Turner noticed changes occurring in the Mifflin County hibernating colony. As recently as Dec. 12, there was no change to bats in the mine. Then on Dec. 20, they noticed bats starting to shift toward the mine's entrance and a small amount of fungus on some of them. Bats normally don't hibernate at entrances, so this movement was interpreted as a red flag. On Dec. 29, about 150 of the 2,200 bats in the mine appeared to be affected. By Jan. 5, about 45 percent of the mine's wintering colony had relocated toward the mine's gated entrance.

Reeder and Turner are monitoring three sites in Pennsylvania to record the arousal patterns and body temperatures of hibernating bats. This work, part of a multistate effort funded primarily by the U.S. Fish and Wildlife Service, also is being conducted in New York, Vermont, Michigan and Kentucky.

"This research may tell us if bats are arousing too frequently and consequently burning off fat reserves prematurely, or if they're not lowering their body temperature enough to support hibernation," Reeder explained. "It may also show that bats are having difficulty going back into hibernation after being aroused."

The Game Commission will be surveying 20 to 30 hibernacula between January and March as part of annual fieldwork and during those visits will be monitoring for signs of WNS. The agency may add more sites to the scheduled list of caves and mines to ensure good coverage across the state. The agency also will assist researchers who are doing fieldwork instate. This work includes investigating metabolic rate of hibernating bats; studying the immune response capabilities of bats; and measuring whether bats have sufficient amounts and types of fat heading into hibernation.

likely the fungus associated with White-Nose Syndrome.

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– **Hibernating Cluster** – Bats hibernate in tight clusters, frequently on top of each other. One's arousal often disturbs others.

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"This winter and early spring, the Game Commission is asking the public to keep an eye on Pennsylvania's bats," Roe said. "It is unusual to see bats flying outside or around your home in January, February and March. If you see winter-flying bats, if you find multiple dead bats or if you or neighbors repeatedly find dead bats in a particular area, please report the incidents to the nearest Game Commission region office."

For Region Office contact information, as well as a listing of counties each serves, please visit the agency's website (www.pgc.state.pa.us), and click on "[Contact Us](#)" in the left-hand column and scroll down to the region listings.

For more information on bats, visit the Game Commission's website (www.pgc.state.pa.us), select "[Wildlife](#)" and then click on the [photo of the bat](#). To learn more about WNS, visit the USFWS's website at www.fws.gov/northeast/white_nose.html.

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– **Early Riser** – Bats do arouse occasionally during hibernation. But they can't afford to do it often because it saps their stored energy. [Get Image](#)