



## Introduction

White-nose Syndrome (WNS) is caused by a fungus called *Pseudogymnoascus destructans* (*Pd*) and is characterized by white powder-like/fuzz around the nose, mouth, ears, and wings of bats. *Pd* grows best in cold and humid environments, particularly where bats hibernate during the winter. WNS is responsible for the death of over six million bats in North America as it has a mortality rate of 90%-100%. WNS kills bats through means of starvation as *Pd* causes them to become more active than they should be in the winter. This burns valuable fat reserves that are unable to be replenished by food in colder months.

## Species Affected

WNS has been known to affect at least 12 bat species in North America, and an additional 6 species which do not show any signs but still carry the fungus. Species

affected by WNS are as follows: big brown bat (*Eptesicus fuscus*), little brown bat (*Myotis lucifugus*), eastern small-footed bat (*Myotis leibii*), northern long-eared bat (*Myotis septentrionalis*) (Threatened), tri-colored bat (*Perimyotis subflavus*), cave bat (*Myotis velifer*), fringed bat (*Myotis thysanodes*), long-legged bat (*Myotis volans*), western long-eared bat (*Myotis evotis*), Yuma bat (*Myotis yumanensis*), gray bat (*Myotis grisescens*) (Endangered), and the Indiana bat (*Myotis sodalis*) (Endangered).

## Clinical Signs

WNS is characterized by white fuzz or powder on bats' noses, faces, ears, and wings. Lesions and scarring may also be present on wings. Changes in behavior such as leaving the hibernacula during the day in the winter or groups of bats seen near the hibernacula entrance have been documented. *Pd* grows on bats in the winter months during hibernation. When bats

hibernate, their body temperature drops, and they begin to use fat reserves in order to survive the winter. When infected with *Pd*, bats become more active during hibernation and may even leave the hibernacula to search for food. Since they are unable to find food during the winter months, the energy and fat reserves they burn during this time will not be replenished. Often, bats will die of starvation and loss of fluids due to WNS. Wing damage and scarring from *Pd* can also contribute to bat deaths during the year. Currently, there is no treatment or vaccine for WNS. On-going research is being conducted to create vaccines, as well as antifungal chemicals, and to modify hibernacula to prevent and/or decrease the spread of WNS.

## Transmission

The fungus that causes WNS, *Pseudogymnoascus destructans* (*Pd*), is transmitted through direct contact with other bats and the environment. *Pd* can survive in the environment and persist until the next year, causing reinfection of bats. Bat hibernacula includes underground caves, which provide an environment that allows *Pd* to spread; it thrives in cool and humid places. There are six species of bats that are known to carry WNS but are not affected by it.

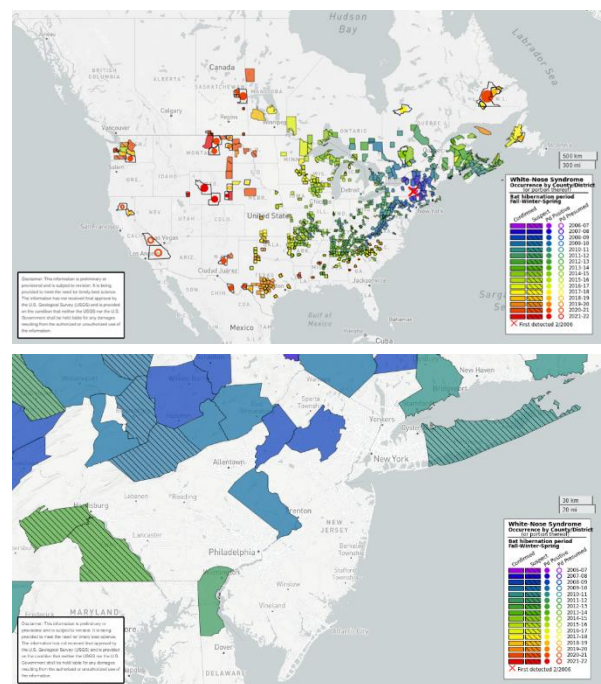
## Diagnosis

WNS can be presumptively diagnosed by observing lesions consistent with WNS. Laboratory testing is needed to confirm the presence of *Pd*. This can be done with the use of PCR, histology, and fungal cultures.

## Epidemiology

WNS was first documented in NY in 2006. It continues to rapidly spread across North America. It is currently documented in 37 states and 7 Canadian provinces. It has affected at least 12 different species of bats.

The first reported case of WNS in NJ was 2008/2009. WNS is present in Europe and Asia, where it does not appear to affect bats in the way it does in North America. Due to the severity of the disease in North America, WNS has a mortality rate of 90-100%, contributing to the rapid decline in bat numbers throughout North America. Since its first detection in 2006, WNS has caused the death of over 6 million bats in North America. NJ saw more than a 90% decrease of little brown bats in the summer roosts in the years following the first instance of WNS. In more recent years, NJ has seen a steady increase in reproduction of little brown bats as they begin to recover from such a large population decrease. Surprisingly, NJ has seen a 20% increase of big brown bats since the first instance of WNS, likely due to the increase of free resources after the decline in the little brown bat population. It is suspected that *Pd* made its way to America through means of human movement as *Pd* can persist in the environment, surfaces, and clothing.



Maps from <https://www.whitenosesyndrome.org/>

## **Surveillance / Management**

In 2015 the North American Bat Monitoring Program was started to track bat populations; NJ joined this effort in 2017. In partnership with the Conserve Wildlife Foundation, NJ also participates in the annual summer bat count which has given insight on the impact of WNS on Little and Big brown bats.

## **What to Do / Who to Contact**

Avoid handling bats or entering bat caves. If conducting research with bats, make sure to decontaminate all equipment and clothing thoroughly before working with a different bat colony.

If you see a group of dead bats or bats that are flying around during the daytime in the winter months contact 1-877-WARN-DEP (1-877-927-6337) or Makenzie Hall ([makenzie.hall@dep.nj.gov](mailto:makenzie.hall@dep.nj.gov)).

## **FAQ**

### **Can humans get WNS?**

No, *Pd* is not transmissible to humans.

## **Additional Information**

[White-Nose Syndrome \(whitenosesyndrome.org\)](http://whitenosesyndrome.org)

[White Nose Syndrome | Montana FWP \(mt.gov\)](http://mt.gov)

[White-Nose Syndrome | U.S. Geological Survey \(usgs.gov\)](http://usgs.gov)

[White-Nose Syndrome | Cornell Wildlife Health Lab](http://cornell.edu)

[White-Nose Syndrome Research - Conserve Wildlife Foundation of NJ \(conservewildlifenj.org\)](http://conservewildlifenj.org)

[White-Nose Syndrome - BioInnovation Laboratory | KSU \(kennesaw.edu\)](http://kennesaw.edu)



**Office of Fish and  
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