

# White-Nose Syndrome

## Frequently Asked Questions Oregon and Washington



### *What is white-nose syndrome?*

White-nose syndrome (WNS) of bats is a disease caused by the fungus *Pseudogymnoascus destructans* (*Pd*; formerly known as *Geomyces destructans*). The disease is estimated to have killed over six million bats in the eastern United States and Canada since 2006, and can kill up to 100% of bats in a colony during hibernation. This fungus thrives in cold and humid microclimates found in caves and abandoned mines. Several species of bats require these same cold and humid microclimates for hibernation.

The disease received its name because infected bats are often observed with “white fuzz” around their nose and muzzle, and also on their wings, ears, or tail. The external white fungus may not always be visible, and is often absent when bats are found outside their roosts or hibernating sites. The fungus invades deep skin tissues and causes extensive damage. Infection by WNS causes the bats to arouse from hibernation during winter, which utilizes their very limited fat reserves and can ultimately lead to starvation and dehydration before spring, when their insect prey are available.

Bats with WNS may exhibit a white fungus growing on their muzzles, ears, or wings while in their hibernacula (roosts where they hibernate) during winter months. Abnormal occurrences of bats near cliffs, rocks or the entrances to caves or mines during winter, exiting and flying around in the daytime during cold winter weather, and dead or lethargic bats on the ground are behaviors associated with WNS.

### *Is white-nose syndrome here in the Pacific Northwest?*

Unfortunately, yes. WNS was confirmed in the western variety of little brown bat (*Myotis lucifugus*) in March 2016, about 30 miles east of Seattle, Washington – the first recorded occurrence of this devastating bat disease in western North America. The presence of this disease was verified by the U.S. Geological Survey’s National Wildlife Health Center. Prior to this discovery, WNS or the *Pd* fungus had not been detected west of eastern Oklahoma and eastern Nebraska. Since that initial discovery in Washington in 2016, more little brown bats have been found with WNS or the *Pd* fungus, as well as two other bat species: a silvered haired bat (*Lasionycteris noctivagans*) and a number of Yuma myotis (*Myotis yumanensis*). The fungus has also now been documented in a second Washington County, Lewis County.

### ***Does white-nose syndrome pose a risk to human health?***

Thousands of people have visited affected caves and mines since white-nose syndrome was first observed and there have been no reported human illnesses attributed to WNS. We are still learning about WNS, but we know of no risk to humans from contact with WNS-affected bats. However, we urge biologists and researchers to use protective clothing when entering caves or handling bats. White-nose syndrome has also not been documented to affect other wildlife, pets or livestock.

### ***What species of bats are affected?***

In North America, white-nose syndrome has been confirmed in eleven bat species and the fungus that causes the disease, *Pd*, has been found on an additional six species. Those six species of bats have not shown symptoms of the disease.

#### Confirmed: Bat species identified with diagnostic symptoms of WNS

- Big brown bat (*Eptesicus fuscus*)
- Cave bat (*Myotis velifer*)
- Eastern small-footed bat (*Myotis leibii*)
- Gray bat (*Myotis grisescens*) \*endangered
- Indiana bat (*Myotis sodalis*) \*endangered
- Little brown bat (*Myotis lucifugus*)
- Long-legged bat (*Myotis volans*)
- Northern long-eared bat (*Myotis septentrionalis*)\*threatened
- Southeastern bat (*Myotis austroriparius*)
- Tri-colored bat (*Perimyotis subflavus*)
- Yuma myotis (*Myotis yumanensis*)

#### *Pd* positive: Bat species on which *Pseudogymnoascus destructans* has been detected, but no diagnostic sign of WNS has been documented

- Eastern red bat (*Lasiurus borealis*)
- Mexican free-tailed bat (*Tararida brasiliensis*)
- Rafinesque's big-eared bat (*Corynorhinus rafinesquii*)
- Silver-haired bat (*Lasionycteris noctivagans*)
- Townsend's big-eared bat (*Corynorhinus townsendii*)
  - Ozark big-eared bat (*Corynorhinus townsendii ingens*) \*endangered
  - Virginia big-eared bat (*Corynorhinus townsendii virginianus*) \*endangered
- Western small-footed bat (*Myotis ciliolabrum*)

Of the bat species in the east known to be susceptible to WNS, little brown bats and big brown bats also occur in Washington. In addition, another 13 species of bats in Washington are potentially at risk.

### ***How are bats and bat habitat different in the Pacific Northwest compared to the eastern US?***

Most bat species in the Pacific Northwest utilize a variety of microhabitats for hibernation, including cracks and crevices found on cliffs, talus slopes, underneath loose bark of trees or in hollow trees and snags, bridges, buildings and other structures, in addition to caves and abandoned mines.

In Washington, the species of bats documented with WNS or the *Pd* fungus are the western subspecies of little brown bats (*Myotis lucifugus alascensis*), Yuma myotis (*Myotis yumanensis*), and silver-haired bat (*Lasionycteris noctivagans*). Little is known about where any of these bat species hibernate. Most of the few hibernating sites of *Myotis* bats that we know of contain small numbers of bats (2 or 3).

However, we do have some larger cave colonies (300+) of Townsend's big-eared bat (*Corynorhinus townsendii townsendii*) and some wintering colonies have several species of bats that share a cave or mine. It is not currently known if Townsend's big-eared bat is susceptible to WNS. Eastern bats that are the same species (*Corynorhinus townsendii*) but different subspecies (Virginia big-eared bats; *Corynorhinus townsendii virginianus*) have not been found to succumb to the disease even though *Pd* has been detected on them. For another subspecies, the Ozark big-eared bat (*Corynorhinus townsendii ingens*), WNS is now within the range of the bat, but so far the bats have not displayed symptoms of the disease.

For our other Pacific Northwest bat species, their susceptibility to WNS is unknown; however, for management purposes, we assume that they may be susceptible to WNS until proven otherwise.

### ***How did WNS get here?***

It is not known how WNS was introduced into Washington. Bats do not migrate long distances from east to west, particularly over the Rocky Mountains, and although bat-to-bat contact is one of the primary means of transmission of the disease, monitoring of bats in other western states has not detected WNS.

Humans do have the potential to spread the fungus to new locations as the fungal spores may attach to clothing and gear used in caves, mines and other roosts. *Pd* fungal spores can be incredibly resilient and can survive in the environment for long periods of time.

Genetic testing was completed in 2016 to determine the strain of *Pd* that was on

the first WNS-infected bat found in Washington state. The testing indicated that the lineage of the fungus was likely from the eastern United States.

***What proof exists that people are contributing to the spread of white-nose syndrome?***

While all mechanisms of transmission have yet to be identified, in the eastern U.S., research on the fungus that causes WNS has found that the spores of the fungus can persist and grow in the absence of bats. The *Pd* fungus can survive in a variety of temperatures and humidity conditions on a wide range of surfaces for relatively long periods of time.

In the eastern U.S., evidence shows human activity may also be responsible for spreading *Pd* fungal spores even during seasons when bats are not occupying caves. The discontinuous nature of the rapid spread of WNS and the associated fungus suggests that something other than bat-to-bat transmission is also contributing to the spread of WNS and the fungus. The potential for human-assisted spread is further supported by the fact that *Pd* fungal spores have been found on gear after the gear was taken into affected caves. Scientists from the U.S. Geological Survey were able to successfully culture the fungus from just 200mg of soil that contained *Pd* spores.

***Are agencies closing their caves, mines or rock climbing areas?***

It is not yet clear that closing all caves to recreation in the Pacific Northwest would be effective at limiting the spread of WNS. To our knowledge, the species of bats thought to be susceptible to mortality from WNS are not found primarily in caves in the Pacific Northwest. However, it is best to avoid entering caves where bats may be living to limit the potential of spreading the disease and to reduce disturbance to the bats.

We will maintain existing winter cave closures (October 1 to April 30; or later, depending upon access) at select sites. These include Lava River Cave on the Deschutes National Forest and Boulder Cave on the Okanogan-Wenatchee National Forest. Existing seasonal closures of many caves on the Gifford Pinchot National Forest will also be maintained (November 15-April 15). To date, a Region-wide emergency cave closure on federal lands has not been implemented in the Pacific Northwest. However, agencies are currently assessing their management options and the situation may change as more information becomes available.

Members of the public should never enter abandoned mines. Abandoned mine entry is dangerous and can be deadly to humans because of toxic air, potential collapse, or obscure holes. A “Stay Out, Stay Alive” strategy is the best approach for abandoned mines any time of year.

Bats wintering in cliffs and crevices apparently occur in very low numbers at any one given site, and it is not yet clear if or how WNS could persist and spread at these sites. Because of this, rock climbing areas are not being recommended for closure.

***What is being done in response to the Washington detection of white-nose syndrome?***

Washington Department of Fish and Wildlife is the lead agency for the response to WNS detection in Washington, in cooperation with the US Fish and Wildlife Service's local and national WNS response efforts. The USDA Forest Service, USDI Bureau of Land Management, National Park Service, and United States Geological Survey, as well as many other state, local, and private entities are cooperating in the response efforts. First steps included a multi-agency effort to document colonies, monitor bats and collect samples to test for presence of WNS. Both Washington and Oregon Departments of Fish and Wildlife, in cooperation with Forest Service and Bureau of Land Management biologists are conducting environmental sampling (bats, guano, soil samples) to determine the distribution of *Pd* throughout both states.

Additional efforts include increasing measures to screen visitors to popular "show caves"; requiring cleaning or decontamination measures for footwear, clothing and gear prior to entering caves or roost sites; and increasing public education efforts.

***What can people do to help prevent further spread of WNS?***

Both states are asking that anyone who observes dead or sick bats to please report information about the bats on the states' online reporting databases:

- In Washington, Washington Department of Fish and Wildlife: <https://wdfw.wa.gov/species-habitats/diseases/bat-white-nose>
- In Oregon, Oregon Department of Fish and Wildlife: [www.dfw.state.or.us/wildlife/health\\_program/WNS/reporting.asp](http://www.dfw.state.or.us/wildlife/health_program/WNS/reporting.asp)

In addition:

- Whenever possible, avoid entering areas where bats may be living to limit the potential of spreading the disease. Do not allow dogs to access areas where bats may be roosting or overwintering as they may act as carriers of the fungus to new sites.
- Avoid disturbing bats in winter and at maternity colonies whenever possible.
- People who come into contact with areas where bats live, including crevices in rock cliffs, buildings, talus areas and talus caverns, caves or mines should clean their equipment and clothing immediately afterwards. Whenever

possible, use the decontamination protocol available at [www.whitenosesyndrome.org](http://www.whitenosesyndrome.org)

- Do not handle live bats.
- Improve bat habitat and construct homes for bats. Reduce lighting around your home, minimize tree clearing, and protect streams and wetlands. For more information on living with bats, and instructions for how to build a bat house, visit: <https://wdfw.wa.gov/publications/00605>

### ***Why care about bats?***

There are over 1,300 different species of bats worldwide and they make up about one fifth of all mammal species. They are important insect predators and natural pollinators of such plants as agave, mango, banana, and cashews. Fruit-eating bats act as seed dispersers and are very important in rain forest regeneration. They spread over half of the initial seeds in a cleared rain forest.

Bats are an important part of the ecosystem. Entire cave ecosystems depend upon the nutrients brought in by bats and released from their guano (feces).

Bats act as natural biological controls, keeping in check nocturnal insects, including many of the worst agricultural pests, as well as those annoying to humans. For example, 70% of all the bats in the world eat insects, and many of them use echolocation to find food and move around in the dark.

Almost any insect that is active at night can be food for a bat, including moths, beetles, flies, crickets, gnats, mayflies, wasps, and mosquitoes. Many small insect-eating bats can eat more than 1,000 mosquito-sized insects in one hour. Another way to look at it is an individual bat can eat up to its body weight in insects in one night. With bats eating so many insects, fewer pesticides are needed to protect agricultural crops. A recent study showed that nationwide, bats save farmers \$3 billion a year in pest control costs.

Bats have contributed much to human knowledge through scientific studies of their echolocation abilities, their biology, and certain aspects of their physiology. There is even a component of vampire bat saliva used to treat human stroke victims.

Bat populations all over the world are declining. In the United States, nearly 30 percent of our bat species are either listed as endangered by the federal government, or are candidates for such listing.

They are long-lived animals that reproduce slowly and are unlikely to recover quickly from the devastating mortalities associated with WNS.

***Where can I find out more about white-nose syndrome, cave closures, and bats?***

The U. S. Fish and Wildlife Service maintains a web site with the latest scientific information about white-nose syndrome, including a list of all cave closures across the United States, as well as the most up-to-date decontamination protocol that is advised or required for caves in the U.S.: [www.whitenosesyndrome.org](http://www.whitenosesyndrome.org)

Bat Conservation International, Inc. provides an array of educational information about bats on its web site: [www.batcon.org](http://www.batcon.org)

The U. S. Geological Survey has a web site that details why white-nose syndrome is a concern to bat diversity, including endangered bats: [www.fort.usgs.gov/WNS](http://www.fort.usgs.gov/WNS)

The National Wildlife Health Center's website offers information related to the fungal pathogen tied to white-nose syndrome:

[www.nwhc.usgs.gov/disease\\_information/white-nose\\_syndrome/index.jsp](http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/index.jsp)

The National Speleological Society maintains a website that contains media information about white-nose syndrome, cave closures, and the U. S. Fish and Wildlife Service's decontamination protocol: [www.caves.org](http://www.caves.org)

For the latest on the situation in Washington, visit the Washington Department of Fish and Wildlife website: <https://wdfw.wa.gov/species-habitats/diseases/bat-white-nose>

For information in Oregon, visit:

[www.dfw.state.or.us/wildlife/health\\_program/WNS/index.asp](http://www.dfw.state.or.us/wildlife/health_program/WNS/index.asp)

Region 6 of the Forest Service hosts a website on WNS related information for the Bureau of Land Management and Forest Service in Oregon and Washington:

<https://www.fs.usda.gov/detail/r6/plants-animals/?cid=FSEPRD501165>

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