

Bats and White-Nose Syndrome

Pictured Rocks National Lakeshore
National Park Service
U.S. Department of the Interior



A Devastating Disease

Seven of eight hibernating little brown bats show the distinctive white fungal growth that indicates white-nose syndrome.



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What is white-nose syndrome?

White-nose syndrome (WNS) is a fungal disease impacting North American bat populations. Several bats showing unusual white markings on their muzzles were discovered in a New York cave in 2006. The following winter 10,000 bats in four nearby caves were dead. The newly-identified fungus (*Pseudogymnoascus destructans*), which is native to Europe but does not appear to affect European bats,

spread quickly throughout the eastern United States. By 2010 it had reached 14 states. By 2014 it had spread to 25 states and 5 Canadian provinces, and killed over 7 million bats. Researchers first detected WNS in Michigan in early 2014 and it will likely continue to spread west. There is currently no known cure or treatment for infected bats.

How does WNS kill bats?

While the exact mechanism is unknown, the fungus appears to primarily affect hibernating bats, particularly those that crowd together in cool, moist hibernacula (shelters for hibernating animals) such as caves and abandoned mines. The fungus irritates hibernating bats and wakes them

from sleep; repeated wakings deplete their limited energy and food reserves. Most infected bats die from starvation. Others become disoriented and exhibit unusual behavior, such as flying outside in winter where they freeze to death.

Why are hibernating bats so vulnerable?

The cool temperatures and high humidity of bat hibernacula create a perfect climate for this particular fungus to grow. Also, since hibernation suppresses the immune system as well as other bodily functions, bats are especially vulnerable



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to disease during this time. Most importantly, since thousands or even millions of bats can crowd together in a single communal hibernaculum, WNS can and does spread quickly, with devastating results. In some hibernacula, more than 90% of susceptible bats are killed.

Which bat species in Michigan are affected?

Of the eleven species currently affected in the U.S., six of them (little brown bat, big brown bat, northern long-eared myotis, tricolor bat, silver-haired bat and the endangered Indiana bat) live in Michigan. Little brown, big brown, northern long-eared and silver-haired bats also live at Pictured Rocks and will likely be impacted by WNS. It is estimated that 300,000 bats in Michigan are at risk. Those

that hibernate in colonies are most threatened, and small *Myotis* bat species appear to fare worse than others. The little brown and northern-long eared bats have been especially hard hit. Also, since bats reproduce slowly, usually with just one pup a year, decimated populations will not recover quickly.

How is WNS spread?

White-nose syndrome can be passed from bat to bat, but it appears that the primary source of spread is humans. Recreational cavers, casual explorers, vandals and even bat researchers accidentally carry fungal spores on their clothes and equipment as they move from one site to another.

The only way to halt the spread of WNS is to keep the fungus from getting into new areas where bats hibernate. Strict decontamination protocols are in place for those who enter caves and abandoned

mines. Some underground sites are closed completely year round. Once the fungus gets into a hibernaculum, it can remain viable for years.

The fungus typically develops on the muzzle, although it can also appear on ears, legs, wing membranes and other patches of bare skin. In some cases the fungus is not visible at all. Biological testing is the only way to determine whether a bat is infected.

Why should we care about WNS?



Bats are extremely important to the health of our ecosystem and our economy. In the U.S., bats eat a staggering number of insects, including many damaging agricultural pests. A study of one colony of 150 big brown bats showed that they consumed 1.3 million insects in a single summer. At Pictured Rocks, bats help keep certain forest insects in check and reduce mosquito populations. One little

brown bat can eat as many as 1,000 mosquito-sized insects in an hour, and consume almost half its body weight each night.

Bats are also prey for large owls, hawks and occasionally snakes. Loss of large numbers of Michigan bats may have unforeseen ecological consequences that researchers are just beginning to investigate.

Are humans or pets at risk from WNS?

So far, neither humans nor pets seem to be affected but more research is needed. The risk of WNS infecting other hibernating mammals is not known. However, significant loss of bats could negatively impact human health if insect-borne

diseases like West Nile Virus spread due to larger mosquito populations. More agricultural pests might require increased use of pesticides, which could also impact human health.

How can we help our bats here in Michigan?



Researchers are exploring the feasibility of several treatments against WNS but for now the only method available to slow the spread is restricting access to underground hibernacula. In the Upper Peninsula, colonial bats such as the little brown and big brown spend the winter in caves and abandoned mines in the western part of the U.P. In early 2014 WNS was detected for the first time in Michigan, in three counties: Alpena, Mackinac and Dickinson. White-nose syndrome will likely continue to spread throughout these and other counties where bat hibernacula are common. Protecting uninfected hibernacula is critical as well as ensuring that surviving bats have healthy summer habitat for roosting, feeding and raising young.

What You Can Do

- Educate others about the benefits of bats and the threat of WNS.
- Support funding for efforts to understand and fight this devastating disease.
- Stay out of abandoned mines and adhere to official cave closures. Where entry is permitted for recreational cavers, follow all decontamination protocols.
- Encourage state and local legislators to secure abandoned mines with bat gates so that humans are prohibited entry but bats can pass through freely.
- Report any unusual bat behavior (such as bats flying outside in winter) or unexplained bat deaths to your state wildlife agency.
- Support conservation efforts to protect bats and bat habitat.