

THE ROOST REPORT

White-nose Syndrome

White-nose syndrome (WNS) is **a disease that affects bats while they hibernate**. It's caused by an introduced, invasive fungus called *Pseudogymnoascus destructans* – or **Pd** for short. When bats are awake and active in summer, their warm bodies and working immune systems can fight off the fungus. But winter is different.

During hibernation, a bat's body slows way down: its body temperature drops, breathing and heart rate become very low, and its immune system essentially goes offline. This gives the fungus a chance to grow on the bat's wings, ears, and nose, often appearing as a white, fuzzy coating—hence the name “white-nose syndrome.”

The fungus doesn't kill bats directly. The real danger comes from how it wakes bats up during winter. An infected bat becomes irritated by the fungal growth and may become dehydrated, which results in the bat rousing itself from hibernation to groom and find water. **Each wake-up burns precious fat reserves**—the only energy bats have to survive the winter. **With no insects available to replace that lost energy, bats often run out of fat and starve before spring arrives.**

White-nose syndrome has caused devastating declines in several bat species across North America. **Experts estimate that we have lost over 10 million bats since 2006** when the disease was first noticed by bat scientists at a hibernation site in upper New York state.



Steve Taylor/USFWS

POPULATION EFFECTS



What is happening?

Not all bat species are experiencing population losses from WNS but a few species in Canada have seen numbers plummet. Little Brown Myotis, Northern Myotis and in eastern North America, Tricolored Bat, **have seen losses of 90–95%**. In some sites, entire populations have disappeared.

The Canadian federal government responded by listing these three species as **endangered in 2014**, many of the provinces have followed suit. Other bat species in Alberta may also be at risk from this disease, but it's too early to know for sure.

White-nose syndrome is the one of the most devastating wildlife epidemics ever recorded in North America.

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How Do We Detect Pd?

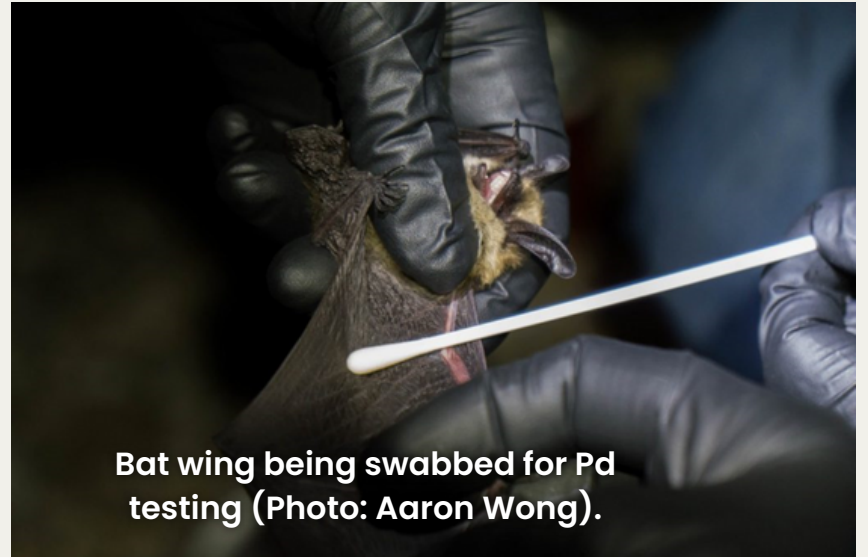
Right now, the fungus that causes white-nose syndrome (*Pseudogymnoascus destructans*, or Pd) can only be confirmed through laboratory testing. Researchers collect swabs from bat wings, roost surfaces, or they collect guano (bat poop), and then analyze them to see if DNA from the fungus is present.

There is also a helpful field tool: UV lights. When a bat's wings are gently illuminated with ultraviolet light during research surveys, any Pd infection will glow a bright orange, making it easier to identify bats that may be affected.

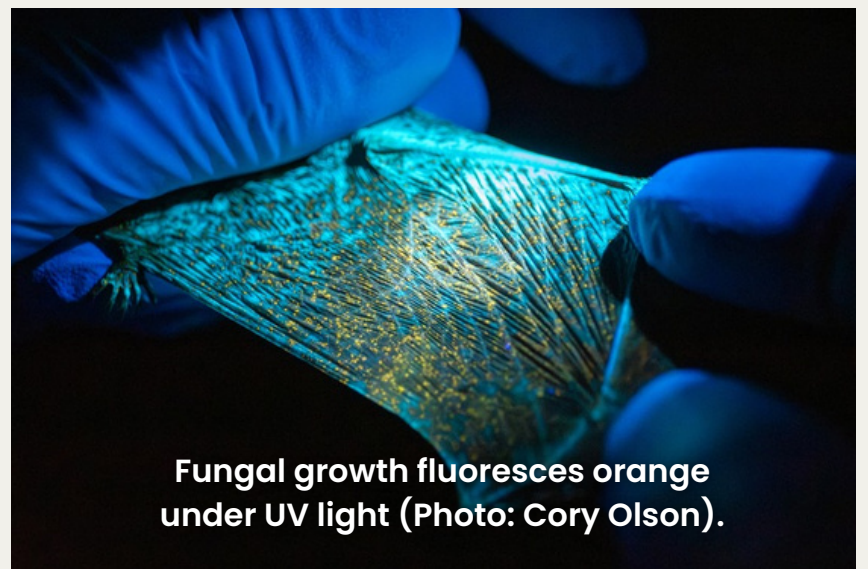
Tracking Pd tells us where the fungus is, but it doesn't confirm whether bats have white-nose syndrome (WNS).

To know if bats are actually infected, researchers must capture them, examine their wings, and sometimes take tiny wing biopsies to check whether the fungus is growing into the tissue. This hands-on work is more involved but provides essential information on how the disease is affecting different species. Some bats show no visible illness, while others develop severe wing damage.

Population crashes in areas where Pd is present are another warning sign of WNS-related die-offs. Our community science summer bat counts are one of the best tools we have for detecting these declines.



Bat wing being swabbed for Pd testing (Photo: Aaron Wong).



Fungal growth fluoresces orange under UV light (Photo: Cory Olson).



Collecting bat guano to test for the presence of Pd (Photo: Susan Holroyd).

MONITORING BAT HEALTH



Little Brown Myotis – endangered as a result of white-nose syndrome (Photo: Jason Headley).