

Bat Battle



Canadian Geographic's November/December issue opens our eyes to the devastating effects of the white-nose syndrome spreading through North American bat populations. Recent data has revealed a sharp decline in bat populations and scientists are concerned about what could potentially be "the most rapid decline of wild mammals ever". Hope remains that new methods for fighting the disease will help bat populations rebound in the near future. Use the infographic and the following questions to learn more about this important issue and the ways in which researchers are trying to help bats survive the white-nose syndrome.



Check for understanding

1. Explain in your own words what white-nose syndrome is.

2. Which bat species are most affected by it?

3. The syndrome affects bats predominantly in eastern North America. Why do you think the author says that an expansion into western Canada is seemingly inevitable?

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4. What are some methods that researchers are developing to battle the rapid decline in bat populations caused by the white-nose syndrome?

5. What are some additional considerations researchers must take into account before they apply the methods listed in question 4? For example, could these methods impact other cave species?

6. What are heritable traits? Can you think of some examples of traits that would help bats survive an infection?

Extend your geographic thinking

1. White-nose syndrome is considered by some to be one of the worst mammal diseases in modern times. In groups of two or three, research this disease using the information put together by the [white-nose syndrome response team](#). Then, choose a photo album from the U.S. Fish and Wildlife Service [White-Nose Syndrome and Bats image gallery](#) and come up with a narrative based on your research. This can be done in an essay format, short descriptions, or even simple captions. Present your narrative to the class while sharing photos from your album.

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2. Document any questions that came up during your research. These could be questions that you would be interested in asking a bat expert about white-nose syndrome. Next, find and reach out to a local bat expert using the [white-nose syndrome response team's interactive map](#). Ask your teacher to invite your local bat expert to your classroom, or chat remotely with them using a platform such as Skype or Google Hangouts. Your teacher can facilitate a discussion between you and your local bat expert and help you learn more about the disease and its effects on bat populations in your region.
2. As a class, come up with some ideas on how to take action and make a difference. For example, you can [become bat heroes](#), [build a bat house](#), [record neighbourhood bat sightings](#), [plant a pollinator garden](#), or [inform others](#) about the decline in bat populations in your region by holding a poster session, school meeting or town hall. Note: For health and safety reasons never touch a bat or disturb a bat habitat.

Resources

- [Bat Conservation International](#) has a research library, species profiles, children's activities, and a photo and video resource library.
- The United States Geological Survey has detailed information and interactive maps on how bats are [affected by wind turbines](#) and [what to do](#) if you find dead or dying bats that exhibit signs of white-nose syndrome.
- The Smithsonian Institution has an [article](#) which details the use of UV light in the battle against white-nose syndrome.
- The white-nose syndrome response team have put together a [list of videos](#) related to this issue.
- The Bat Conservation Trust has a [map](#) of white-nose syndrome occurrence by county/district in North America.

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As white-nose syndrome devastates bat populations across North America, biologists are fighting to find tactics to save them

By *Brian Banks*

“We sort of knew it was coming, but it doesn’t prepare you for the horror show of an affected cave,” says Craig Willis, biology professor and bat researcher at the University of Winnipeg. The “it” is white-nose syndrome, a disease caused by a fungus that grows on the nose, wings and other exposed skin of hibernating bats. The disease dehydrates the creatures, disrupts their torpor and has up to a 99 per cent mortality rate. This past spring, researchers from Willis’s lab recorded its first appearance in a little brown bat hibernaculum in Manitoba. “It was a typical mass mortality event,” he says, “with bats flying out in the snow and carcasses all clustered near the entrance.”

The syndrome was first detected in North America in New York state in 2006 and has since spread across eastern North America, with an expansion into Western Canada seemingly inevitable. The estimated death toll is seven million, potentially the most rapid decline of wild

mammals ever. “It’s devastating,” says Hugh Broders, biology department chair at the University of Waterloo.

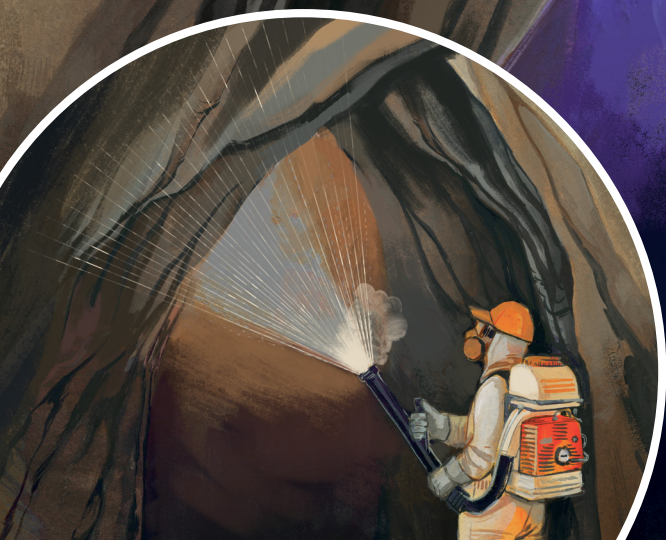
But there are grounds for optimism. Researchers have had success in the lab fighting the fungus with chemicals and biological agents akin to antifungal viruses or probiotics. And in January 2018, mycologists at the U.S. Department of Agriculture’s Forest Service reported that the fungus is easily destroyed by exposure to UV light. Subsequent testing on bats has shown promising results.

Still, some biologists think recovery of afflicted bats might depend on a few individuals that have survived the onslaught. Some bats may possess heritable traits that help them make it through the winter with the disease. “If they can weather the consequences of being such a small population, they may be able to establish again,” says Broders. “But it’s going to take a long time.”

Little brown bats (pictured) are found in every province and territory except Nunavut, and as far south as southern Mexico. The three species most afflicted by white-nose syndrome — little brown, northern long eared and tri-coloured — are endangered in Canada.

In lab tests in early 2018, simple exposure to UV light was shown to kill more than 99 per cent of the white-nose syndrome fungus. Exciting results, but biologists still have to determine if the treatment works on infected bats and how it might be applied in infected hibernacula. One hypothetical approach is setting up motion-activated lights at cave entrances to expose bats to shots of UV as they pass in and out.

Spraying antifungal chemicals and probiotics is another approach being considered, either by installing automated systems or visiting caves in person to administer the fungus-killing substances. But deploying anything widespread in the field will be challenging: in most places where such treatments could be applied, most bats are already gone. Meanwhile, bats in the West hibernate in much smaller groups than their eastern cousins, which makes them harder to find, let alone treat.



Teachers! Bring this and other science innovations into your classroom by visiting cangeoeducation.ca/resources.