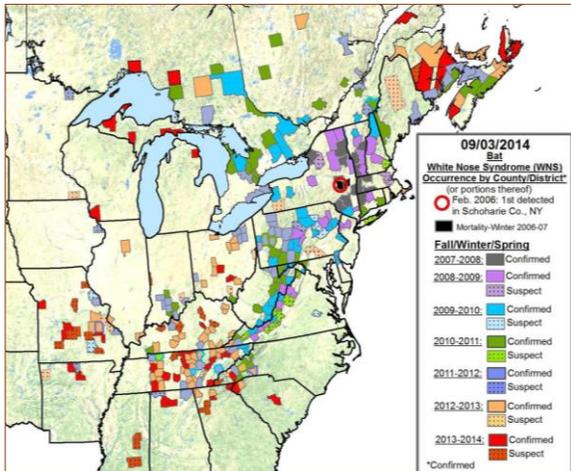


## The Spreading Infection

WNS, or the fungus associated with it, has been detected from northern Quebec south to Georgia's caves and west through Missouri.



Map by Lindsey Heffernan, Pa. Game Commission

## Taking Action

Scientists, private and university laboratories, wildlife officials, and non-profit organizations, including the NSS, collaborate in developing research strategies. A number of field and laboratory projects have been conducted, with more underway, to learn about WNS and determine how to save bat populations.

NSS members are providing vital manpower and skills for WNS-related studies, and our scientists have conducted important research in the laboratory and the field. We are particularly interested in monitoring bat populations and developing effective strategies for managing caves and caving activities in the face of the disease.

### We need your support!

**Please honor cave closures.** Check with your local NSS grotto for the status of caves and caving in your area.

**Follow the recommended protocols to disinfect** caving clothing and equipment.

**Stay out of cave and mine hibernation sites when bats are present.**

## Bats Need Your Help!

**Report unusual bat behavior** or bats that appear diseased to your state wildlife agency. Unusual behaviors may include daytime flight, especially during cold weather. Also report any dead or dying bats you find.

**Donate to the National Speleological Society's WNS Rapid Response Fund** to provide timely and much-needed support for WNS research. Grants from the Fund support important field and laboratory research on WNS, especially when other funding is not readily available.

**Your support is critical!**

### Send a check or call today:

NSS WNS Rapid Response Fund  
2813 Cave Ave.  
Huntsville, AL 35810-4431  
256-852-1300

### Donate securely online:

[caves.org/WNS/Rapid\\_Response.shtml](http://caves.org/WNS/Rapid_Response.shtml)

The NSS is a 501(c)3 non-profit organization.  
Donations are tax-deductible.

**For more information on WNS, including disinfection procedures, visit: [www.caves.org/WNS](http://www.caves.org/WNS)**



Updated September 3, 2014

# What Is Killing Our Bats?

## The White-nose Syndrome Tragedy



Al Hicks

## White-nose Syndrome

Scientists are describing white-nose syndrome (WNS) as “**the most precipitous wildlife decline in the past century in North America.**” Whole populations of bats in eastern North America are dying from this new disease as they hibernate in caves and mines. Bats lose their fat reserves before winter is over and die of starvation. One estimate, by the U.S. Fish and Wildlife Service, projects that bat deaths may exceed 5.7 million.

By killing our bats, WNS threatens ecosystems both in caves and aboveground, and presents new challenges for cave conservation efforts.

The earliest evidence of WNS was in a 2006 photograph taken in a non-commercial, rarely visited section of a show cave in New York. However, the condition wasn't recognized until a year later when hundreds of dead bats were found in nearby caves.

For 70 years, the National Speleological Society (NSS) and its members have been at the forefront of efforts to conserve and study caves, their unique geology and environments, and the life they contain. Now we are collaborating with wildlife managers and scientists to understand and combat WNS.

In addition, through our donor-supported **WNS Rapid Response Fund**, the NSS has provided 20 grants to scientists to conduct important white-nose syndrome research.

## The Cause

WNS received its name from the telltale white fungus growing on the noses of infected bats. This previously undescribed fungus, *Pseudogymnoascus destructans* may also appear on a bat's wings, ears, and tail. In addition, the fungus has been detected in WNS-infected cave sediments, thriving in the cold, humid conditions.

The fungus infects the skin of bats but isn't always apparent, and infected bats instead may display abnormal behavior.

## Bats Are Dying

Mortality rates of up to 100% have been documented in many hibernacula found to have WNS. **Little brown bats**, our most common species, have the highest mortalities (90+%). The federally **endangered Indiana bat** appears to be more resilient, with about a 50% mortality rate.

In caves where fewer than 100% of bats died the first year, populations continued to decline in successive years. Damage by *P. destructans* to wings and bodies persists in bats that survive a winter in WNS-affected populations.

Cave microclimates (humidity and temperature) seem to affect the ability of the disease to progress. These factors, matched with the roosting preferences of different species of bats, may hold some hope for survival.



Kevin Wenner/PGC Photo

## Additional Signs of WNS

- Bats flying outside during the day in near-freezing weather.
- Bats clustered in the winter in sections of caves or mines not normally used for winter roosts, especially near the entrance.
- Dead or dying bats on the ground or on buildings, trees, or other structures during the winter.
- Bats not arousing after being disturbed.

## How WNS Is Spread

- **Bat-to-Bat** - The pattern in which the disease has spread between caves over five years indicates that WNS is primarily spread by bats. Additionally, bat-to-bat transmission of *P. destructans* has been proven in a laboratory environment.
- **Cave to Humans to Bats?** - While not proven, many believe it is possible that human cave visitors could inadvertently help spread WNS. As a precaution, clean and disinfect clothes and equipment according to the latest protocols, which may be found at [www.caves.org/WNS](http://www.caves.org/WNS).

**It is particularly important that gear used in a WNS site is not taken into caves outside a WNS-affected area.**

## Bats Matter!

Bats are an essential, beneficial part of our ecosystem. Decimation of our bat populations will cause a substantial ecological ripple effect, with far-reaching consequences.

Guano from cave-roosting bats provides vital nutrients for cave ecosystems, and often is the basis of a cave's food chain. It is used by microorganisms and invertebrates, which become food for fish, salamanders, frogs, and other larger animals.

Additionally, bats are food for other animals, including hawks, raccoons, skunks, and owls.

Consuming over half their body weight in insects each night, bats are the major predator of night-flying insects. **Bats in the U.S. eat thousands of tons of insects nightly, including agricultural pests.**

Bats are important to science and medicine as well, enabling advancements in vaccines, sonar, and blood coagulation, to name a few.

**WNS not only affects bats, but impacts our whole ecosystem.**