

## What Can Be Done In the West?

- ∞ Encourage agencies and grottoes to work together to develop a better understanding of cave locations that are active or potential hibernacula.
- ∞ Identify caves that are popular attractions and monitor them for symptoms of WNS.
- ∞ Use decontaminated equipment, clothing, and decontamination procedures when entering mines and caves.
- ∞ Make sure that permittees leading visits to caves and mines on public lands are using decontaminated equipment, clothing, etc., and using decontamination procedures for their clients.
- ∞ Develop procedures for cave and mine entry and for monitoring WNS to ensure that these efforts do not become part of the problem by exposing roosting bats to excessive disturbance from surveys.

**We will never have more power to build a defense against this ecologically devastating disease than before it arrives.**



## Bats Need Your Help

- ∞ **Report unusual bat behavior** to your state wildlife agency and your Western Bat Working Group representative. Unusual behaviors may include daytime flight, especially during very cold weather. Report dead or dying bats found on the ground, trees, or buildings.
- ∞ **Do not use equipment, gear, or clothing in western caves or mines** that has been used in caves or mines east of the Mississippi River. **Decontaminate equipment, gear, and clothing** between caving sites.
- ∞ **Donate to the National Speleological Society's WNS Rapid Response Fund.** Grants from the Fund support field and laboratory research on WNS. **Donate securely online:** [http://www.caves.org/WNS/Rapid\\_Response.shtml](http://www.caves.org/WNS/Rapid_Response.shtml)

## More Information

- ∞ Decontamination procedures: <http://www.fws.gov/northeast/whitenose/FINALDisinfectionProtocolforBatFieldResearchJune2009.pdf>
- ∞ Western Bat Working Group: <http://www.wbwg.org/conservation/whitenosesyndrome/whitenose.html>
- ∞ The National Speleological Society website: <http://www.caves.org/WNS/>
- ∞ The NSS and USFWS collaborative WNS site: <http://www.batmanagement.com/wns/wns.html>

## White-nose Syndrome in Bats



Photo by: Al Hicks

**What Do We Need to Know Before It Comes West?**



## White-nose Syndrome

Something is killing whole wintering populations of bats in the eastern US as they hibernate in caves and mines. Bats are losing their fat reserves long before the winter is over and are dying of starvation.

This affliction has been given the name white-nose syndrome (WNS) because of the telltale white fungus growing on the noses of some infected bats. Only recently described as a new species, *Geomyces destructans* may appear on the wings, ears, and/or tail membranes of afflicted bats, but may also be absent.

White-nose syndrome is not well understood and scientists are investigating all potential aspects of this mysterious disease. One popular hypothesis focuses on the fungus itself, a cold-habitat obligate that thrives from 5 to 15 °C—the same range of temperatures typical of bat hibernacula. *G. destructans* infects hibernating bats as their bodies are cold and amenable to its growth. Infected bats may arouse from hibernation to attempt to deal with the fungal infection and in doing so prematurely burn up their fat stores and starve to death in mid-winter.

The earliest evidence of WNS was at a cave in New York in 2006. Since then, hundreds of thousands of bats have died.

## WNS out West

In the eastern United States, mortality typically exceeds 90% in hibernating colonies affected by WNS.

While WNS has not been reported in the western United States, the general consensus is that it will eventually spread to many regions of North America.

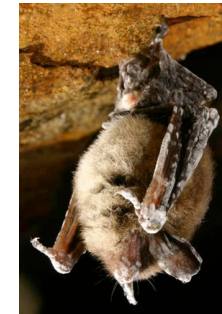
Bats in the western US tend to hibernate in small groups and are dispersed across large expanses and among various types of underground hibernacula. This dispersed winter distribution may be beneficial to western bats in slowing the spread of WNS. On the other hand, the extensive distribution and inaccessibility of western hibernacula could make it difficult to initially detect and subsequently document the effects of WNS. Most survey efforts of caves and mines for bats in the West have focused on Townsend's big-eared bat (*Corynorhinus townsendii*) and less is known about western winter habits of *Myotis* species and other species that have shown high rates of susceptibility to WNS in affected areas.

## Bats Matter

Bats are an essential and beneficial part of the ecosystem. Bats play critical roles in insect control, plant pollination, seed dissemination, cave ecosystems, and provide food for other animals.

## Signs of WNS

- ∞ White fungus growing on the nose, wings, ears, and/or tail membrane.
- ∞ Bats flying outside during the day in winter.
- ∞ Bats clustered during winter in sections of caves and 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 at all after being disturbed.

Photo by: Meteyer et al. July 2009 [In Press]

## How WNS Is Spread

- ∞ **Bat to Bat** – Bat to bat transmission of *Geomyces destructans* has been documented in lab conditions and the geographic pattern of spread appears to support lab findings. It is also possible that other unknown agents associated with WNS are spread bat to bat.
- ∞ **Cave to Humans to Bats** – Aspects of the geographic spread suggest that humans may transmit WNS from infected sites to clean sites. This kind of spread is most likely occurring from clothing and equipment that are not properly cleaned and decontaminated between sites. Formal testing of human spread WNS is ongoing. Because of the devastating effects of WNS, it is critical that people assume responsibility for the potential spread of WNS.