

White-Nose Syndrome & the U. S. Show Cave Industry



Photo courtesy Nancy Heaslip, New York Department of Environmental Conservation

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What is WNS?

- A syndrome causing the most dramatic decline of North American wildlife in the past century.
- First detected in a New York cave in 2006.
- Still do not know where it originated.
- Responsible for the death of over 1,000,000 bats.
- WNS is likely caused by the fungus *Geomyces destructans*, a fungus new to science.

Symptoms

1. White fungus that grows on the nose, ears and wing membranes.
2. Depleted fat reserves.
3. A compromised immune response.
4. Damage or scarring of the wings.
5. Abnormal bat behavior.

Little brown bat; close-up of nose with fungus, New York, Oct. 2008.



Photo courtesy Ryan von Linden/New York Department of Environmental Conservation

Why are the bats dying?

- Increased arousal from hibernation can deplete critical fat reserves resulting in starvation.
- Emerge too soon from hibernation and freeze.
- Fungal infiltration of the wing may be particularly problematic.

Little brown bat; Fungus on wing membrane Oct. 2008, New York

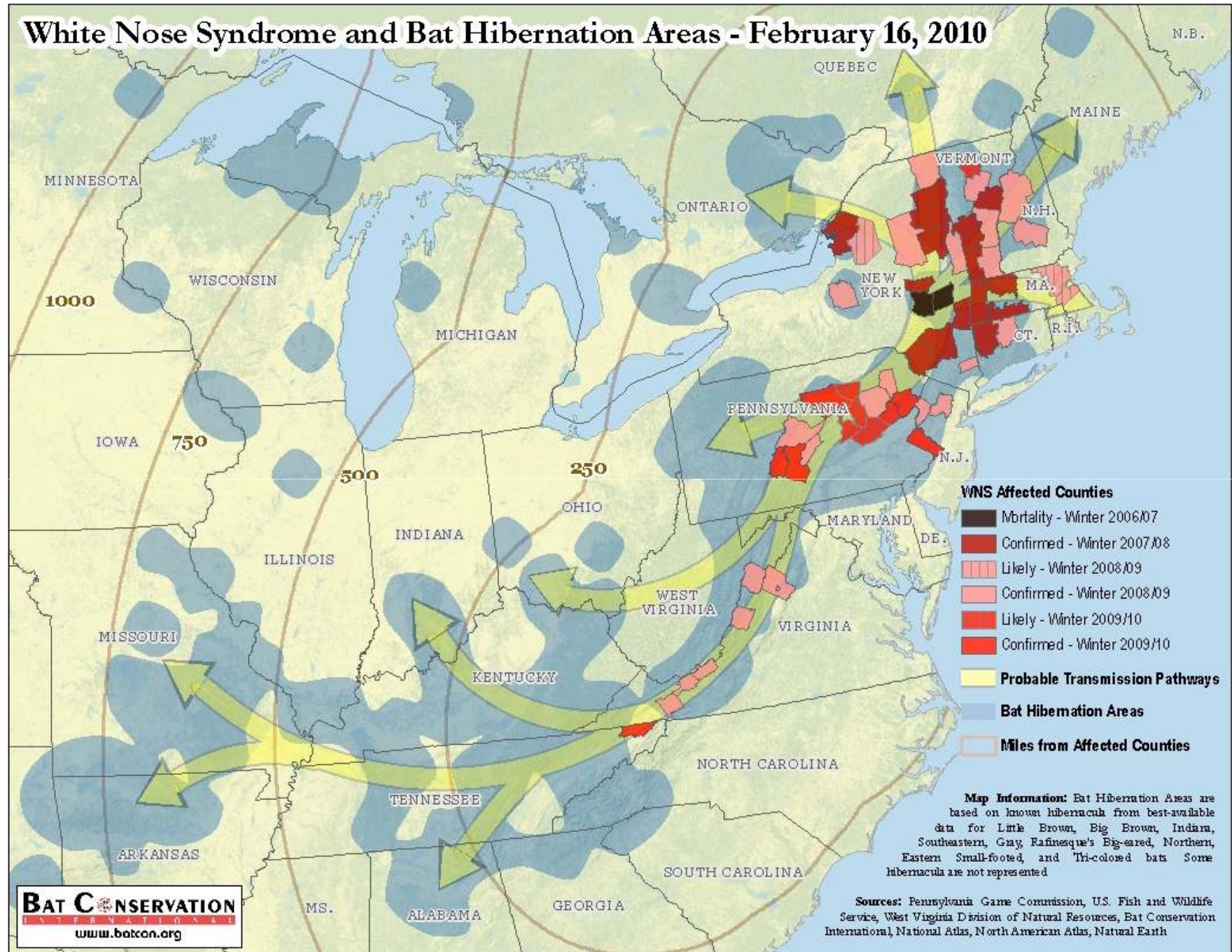


Photo courtesy Ryan von Linden/New York Department of Environmental Conservation

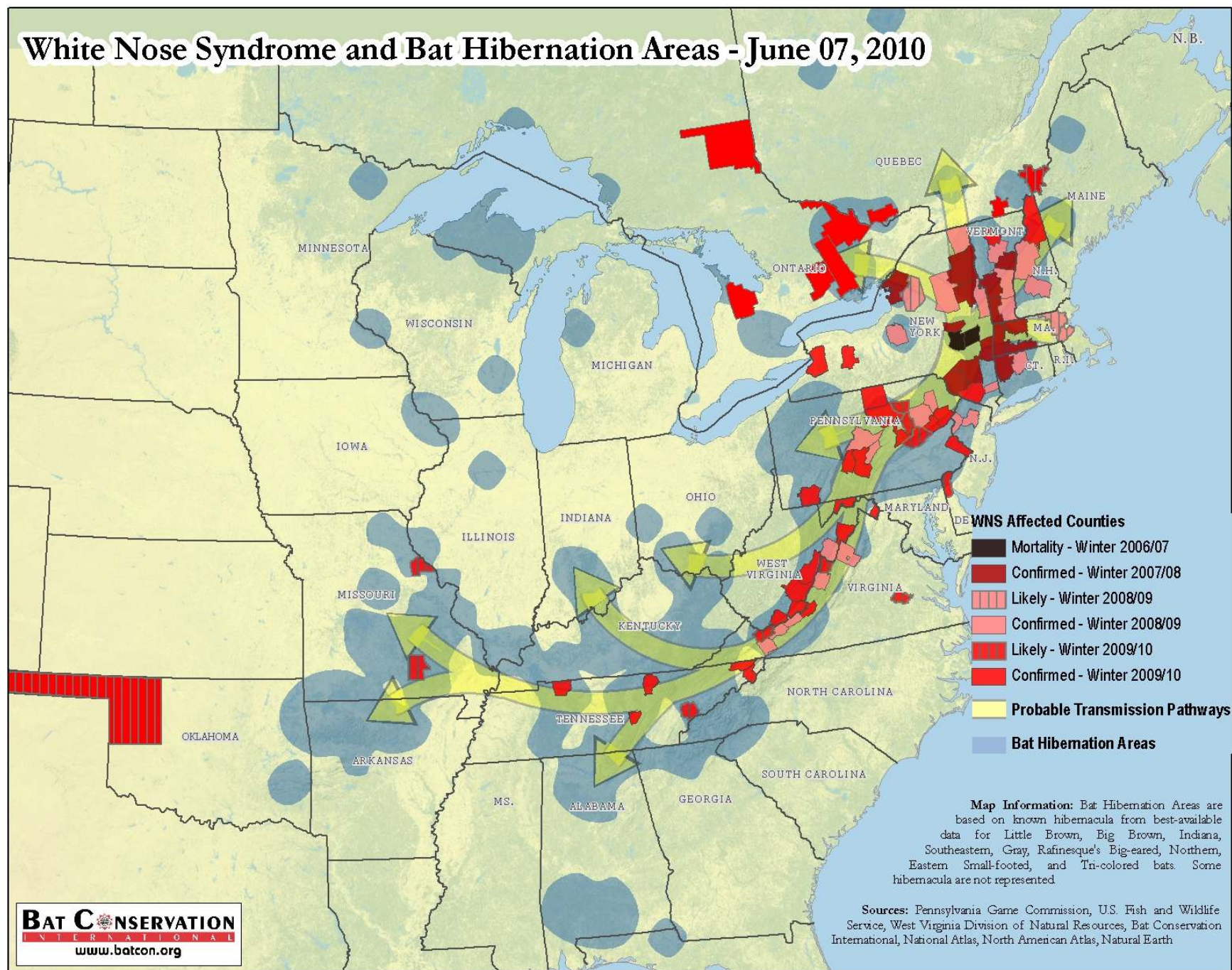
Spread of WNS

- WNS/fungus in 14 US states and 2 Canadian provinces.
- Biologists fear it will reach the colonies of endangered Indiana, gray, Virginia and Ozark big-eared bats this winter.

White Nose Syndrome and Bat Hibernation Areas - February 16, 2010



White Nose Syndrome and Bat Hibernation Areas - June 07, 2010



Six Species Currently Impacted



Indiana bat



little brown bat



tricolored bat



big brown bat



small-footed bat



northern long-eared bat

*On the federal endangered
species list*

Another 3 species have been detected with the fungus associated with WNS



Gray bat



Cave myotis



Southeastern bat

On the federal endangered species list

How is WNS spread?

- Bat-to-bat transmission believed to be primary route.
- Likely that humans can inadvertently contribute to spread from spores on shoes, clothing and/or gear used in affected sites.

What can be done to minimize the possibility of people spreading WNS?

- Restrict access to **targeted** wild caves/mines.
- Within show caves, restrict access to areas where bats hibernate.
- Either decontaminate or do not use gear that has been in WNS affected sites.
- Other treatments being explored... (antifungal drugs, antiseptics, etc.)
 - **Must be careful not to damage the sensitive and complex cave ecosystem!**

Why Should People Care?

- Bats play critical roles in:
 - Insect control
 - Plant pollination
 - Seed dissemination
 - Food chain
 - Cave ecosystems
- Bats are important to the environment and to the economy.



Photos courtesy of Bat Conservation International





Photos courtesy of Bat Conservation International



www.flickr.com/photos/id8.html

Congress Street Bridge
Austin, TX

Carlsbad Caverns, NM



Show Caves care because:

- Stewards of natural resources.
 - Concerned about the populations of all bat species.
 - Concerned about overall health of the cave ecosystem.
- Economic impact—both direct and indirect.



Show Caves Positively Impact the Economy

- Local, state, country
- Help attract visitors to other local businesses (hotels, restaurants, retail).
- Generate tax revenue.
- 142 show caves in the United States:
 - Over 9 million visitors annually.
 - Total annual revenue is over 144 million dollars.
 - Employ over 4700 people.

Public perception is so important!

- Misleading headlines:


USA TODAY ■ Home ■ News ■ Travel ■ Money ■ Sports ■ Life ■ Tech ■ V

News » Nation ■ Census ■ Troops at Risk ■ Lotteries

Caves closed in hope of helping bats

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By **Oren Dorell, USA TODAY**



Enlarge By Jeremy Portje, AP

Visitors explore a cave May 2 at Maquoketa Caves State Park in Iowa. All caves at the park have been closed to the public indefinitely.

A fungus that has decimated hibernating bats in the Northeast is flitting across the country and prompting state and federal agencies to close caves to prevent further spread of the disease by humans trekking through them for recreation.

More than a million bats have died since 2006 when the disease, known as white nose syndrome, was first documented in [Upstate New York](#). Now it has spread around the Northeast and has been detected as far south as Virginia and as far west as Missouri.

Wildlife agencies in 17 states have issued cave closings, saying that people may be contributing to the spread of the disease by tracking the fungus on shoes and other equipment. Caves are popular destinations for Boy Scouts, mineral clubs and "cave junkies" who try to visit as many caves as possible in one day, said Peter Youngbaer of the National Speleological Society, a group of cave enthusiasts.

Caver Peter Haberland, of New York, said caving groups should not object to the closings. "For a period of a year, most people can deal with that," he said.

Youngbaer says blanket cave closings are counterproductive because while the closings are obeyed by organized cavers who get the message, they are "ignored by people not in the loop."

BAT-KILLING DISEASE: Still a mystery

Show caves, such as privately owned Luray Caverns in Virginia and Kentucky's Mammoth Cave, owned by the [National Park Service](#), have stayed open.

Jeremy Coleman, the national white-nose coordinator for the Fish and Wildlife Service, said park rangers at Mammoth have implemented decontamination stations.

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Cause for Concern:



CENTER for BIOLOGICAL DIVERSITY

Because life is good.

For Immediate Release, January 21, 2010

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Emergency Petitions Filed to Close Caves and Save Bats From Extinction

WASHINGTON— The Center for Biological Diversity today filed two emergency petitions with the federal government in an effort to stop the spread of a deadly bat disease and step up government action to save two rare bat species from extinction. The [first petition](#) asks federal agencies to [close all bat caves](#) under their jurisdiction and asks Interior Secretary Salazar to [pass regulations restricting travel between bat caves under any jurisdiction](#). Such measures are necessary until it can be shown that people are not a vector for the newly emergent bat disease known as white-nose syndrome, and that measures to eliminate risk of spread are effective. The [second petition](#) asks for the eastern small-footed bat and the northern long-eared bat, both hit hard by [white-nose syndrome](#), to be protected as endangered species under the federal Endangered Species Act.

"White-nose syndrome has decimated bats in the Northeast and is quickly spreading to other regions," said Mollie Matteson, a conservation advocate with the Center. "Our government needs to increase its response by an order of magnitude to offer any hope for bats in the eastern United States and to ensure that the disease does not spread across the country."

The Center's actions come as scientists and wildlife agencies brace themselves for a fourth winter of bat deaths across the eastern United States. Since white-nose syndrome was first documented in caves in the Albany, New York area in early 2007, the disease – since confirmed as a previously unknown fungus – has spread to bat populations in a total of nine states. Biologists believe it will show up in new areas this winter, and may reach some of the densest and most diverse bat populations in the world, in the South and Midwest, within the next year or two. Thus far, over a million bats are dead from the syndrome.

"This is the worst wildlife catastrophe the country has seen since the extinction of the passenger pigeon," said Matteson. "Bats eat millions of insects every year, meaning their loss could have far-reaching consequences for people and for crops."

The Center is requesting that the secretaries of the Interior, Agriculture, and Defense close all bat-inhabited caves and mines on federal lands throughout the continental United States to prevent the possible human transmission of the fungus that causes white-nose syndrome and to ban travel between caves with bats under any jurisdiction. Scientists suspect that people are partially responsible for the fungus'



For Immediate Release, June 23, 2010



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Lawsuit Launched to Protect Two Bat Species Threatened by White-nose Syndrome

RICHMOND, Vt.— The Center for Biological Diversity today filed a formal notice of intent to sue Interior Secretary Ken Salazar for not acting quickly enough to give endangered species protections to two bat species hit hard by a fast-spreading, lethal disease known as white-nose syndrome. The Center says the agency has hurt both eastern small-footed and northern long-eared bats by missing legally required deadlines for responding to an Endangered Species Act petition to protect them.

“Bat numbers are plummeting, bat biologists across the country have been urgently sounding the extinction alarm, and yet the U.S. Fish and Wildlife Service is silent,” said Mollie Matteson, a conservation advocate at the Center.

The Interior Department missed an April deadline for responding to the endangered species petition and has given no indication of when and how it intends to answer the call for stronger protections for the two species. Both bat species were thought to be uncommon to rare prior to the appearance of white-nose syndrome in the northeast United States in 2006. Since then, the disease has spread into [14 states](#) and two Canadian provinces, taking a harsh toll on the two species as well as seven others.

In Massachusetts, New York and Vermont, the states where the disease has been present for the longest, the eastern small-footed bat population has decreased by nearly 80 percent over the past two years, and the northern long-eared bat population has shrunk by 93 percent.

“These two bat species are on a fast track to extinction,” said Matteson. “How close to extinction do these bats need to be before the agency acknowledges the need to grant them the strongest protections possible?”

Researchers believe white-nose syndrome is caused by a fungus, new to science, that spreads from bat to bat and from bats to the caves where they hibernate. There is compelling evidence that humans can also transmit the fungus via caving gear and clothing. The petitioned bat species are also threatened by human disturbance and vandalism in caves, habitat loss and environmental toxins.

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Concern about implications & extent of regulation

- For example, in Wisconsin:
 - Emergency listing of 4 bats as threatened.
 - Emergency listing of *G. destructans* as a prohibited invasive species.
- Could have serious implications for landowners, bats, and the entire cave ecosystem.
- US Forest Service blanket cave closures in Region 2.
- Other states and regions may attempt similar measures.

Let's all be on the same team.

- Bats will benefit when all stakeholders work together.
 - Government agencies
 - Non-profit conservation groups
 - Academia
 - Private landowners





Good Job!



Government Agencies Involved

- US Fish & Wildlife Service (coordinating the response)
- National Park Service
- US Forest Service
- US Geological Survey—National Wildlife Health Center
- Bureau of Land Management
- Department of Defense
- State Wildlife Agencies
- *US Congress—approved 1.9 million dollars in federal funding for white-nose syndrome

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Bat Conservation International (BCI)

National Speleological Society (NSS)

- Each has a Rapid Response Fund to finance WNS research.
- Educate the public and caving community about WNS.
- Assist managers/owners of caves with resource management concerning WNS.
- Lobby federal and state governments for funding.
- Work closely with state and federal agencies to coordinate response.



National Caves Association

- Produced educational material and talking points.
- Commissioned scientist Tom Aley to develop our [“Management Strategies for Responding to White-Nose Syndrome in Bats”](#).
- Working with state/federal agencies and non-profits.
- Advocating on behalf of the Show Cave industry.
- Raising funds for education and research.
- Keeping members informed.

What Are Show Caves Doing?

- Taking appropriate management measures.
- Educating employees and guests about WNS and ways they can help. (Over 9 million guests visit show caves annually— **huge educational opportunity!**)
- Helping raise money for WNS research.
- Working with other stakeholders.



Natural Bridge Caverns, TX



Natural Bridge Caverns, TX



Natural Bridge Caverns, TX



Howe Caverns, NY



Mammoth Cave, KY



What can you do to help?

- Keep informed on the latest developments regarding WNS.
- Help educate people about WNS and the benefits of bats and our Show Cave industry.
- Donate money to help fund research.
- If WNS threatens your region, work closely with other stakeholders to develop appropriate response plans and management strategies.

