

Cave Advisory
March 26, 2009

**U.S. Fish and Wildlife Service recommends suspending activities
in caves to protect bats from white-nose syndrome**

Advisory:

White-nose syndrome (WNS) is a malady of unknown origin that has killed hundreds of thousands of bats across the northeast United States during the past three years and continues unchecked. It threatens to spread to the Midwest and Southeast, home to many federally endangered bat species as well as some of the largest bat populations in the country.

The evidence collected to date indicates that human activity in caves and mines may be assisting the spread of WNS. The primary agent of concern is a fungus that is new to science and may possibly be an invasive species. This fungus grows best in the cold and wet conditions common to caves and abandoned mines and likely can be transported inadvertently from site-to-site on boots and gear of cave visitors. Therefore, the U.S. Fish and Wildlife Service is recommending actions to reduce the risks of further spread of WNS. We hope that slowing the spread of WNS will buy time that is critical to confirming the cause and potentially implementing management actions to minimize the impacts to native bat populations.

We recognize that the steps we are recommending will require sacrifice from the caving community and others, and we regret this inconvenience. However, the observed devastation to bat populations, exceeding 90 percent mortality at many affected sites, and the evidence for human-assisted spread justifies that we exercise an abundance of caution in managing activities that impact caves and bats. These measures will not be a cure for WNS, but they are necessary to help slow the spread of this affliction and to reduce the risks to bat populations in North America. While it is generally recommended that cavers avoid all caves and mines containing hibernating bats (hibernacula), even in states where WNS is not known to occur, we strongly recommend the following steps to further reduce risks of WNS:

1. A voluntary moratorium, effective immediately, on all caving activity in states known to have hibernacula affected by WNS, and all adjoining states, unless conducted as part of an agency*-sanctioned research or monitoring project. Caves infected with the WNS fungus may not show any obvious signs of its presence, and we do not know the actual geographic distribution of all affected sites. Human activity in affected caves may cause fungal spores and particles to become airborne, thereby contaminating exposed materials and allowing for transport. Although we have confidence in the current protocols for decontamination, there is no way to guarantee efficacy for all equipment in all circumstances, and they may not adequately address needs for technical or vertical gear.
2. Cavers in regions outside the WNS-affected and adjacent states should be using clothing and gear that has never been used in caves or mines in the affected or adjacent states, and should thoroughly clean and contain all clothing and gear upon exiting those locations. Because there is a lag time between the initial point of contact with the causative agent(s)

of WNS and the first visible evidence of its presence, we cannot be certain that apparently unaffected sites do not pose a risk for contamination. In order to minimize the risk that WNS could travel across state, regional or national boundaries on clothing and equipment, we are advising that clothing and equipment used outside of the affected region be decontaminated following the protocols available on the Service WNS Web site (see below). This recommendation does not supersede state or local caving orders, and we request that cavers respect and observe all state and local cave closures and advisories.

3. All scientific activities that involve entry into caves or mines where bats reside should be evaluated to determine if the activity has the potential to facilitate the spread of WNS. Much of the research currently under way in bat hibernacula is related to WNS and/or monitoring, and continued research is essential to advancing our understanding of WNS. All non-WNS related research conducted in caves and mines should be coordinated with federal and state conservation agencies (as per No. 1 above). Potential benefits of research will be weighed against the risk posed to bats. Research or monitoring activities should not be conducted if risks cannot adequately be addressed.
4. For all scientific activity, no equipment or clothing that has been used in any cave or mine in a WNS-affected or adjacent state should be used in a cave or mine in an unaffected state. Within an affected state, no equipment or clothing that has been used in a WNS-affected county should be used in an unaffected or unknown county. As an added precaution, researchers should decontaminate all clothing and gear, using protocols available from the Service or a local state agency, when exiting any hibernacula.

At the issuance of this advisory, the investigation of key elements of the cause and spread of WNS has been under way for less than one year. Laboratory and field research currently being conducted will require time for analysis and replication. Therefore, these recommendations will remain in effect until the mechanisms behind transmission of WNS are understood, and/or the means to mitigate the risk of human-assisted transport are developed. We will provide quarterly updates on the status and scope of this advisory via the Service WNS Web site (http://www.fws.gov/northeast/white_nose.html).

Background and supporting evidence:

We estimate that more than 400,000 bats have died from WNS, including 25,000 federally endangered Indiana bats, and many more bats are at immediate risk. As of March 18, 2009, at least 60 hibernacula in nine states (Connecticut, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Vermont, Virginia and West Virginia) are known to be affected by WNS.

Current data indicate that a newly identified fungus (*Geomyces* sp.) that thrives in the cold and humid conditions characteristic of the caves and mines used by bats is responsible, at least in part, for the impacts and mortality associated with WNS (see: Bat White-Nose Syndrome: An Emerging Fungal Pathogen? <<http://www.sciencemag.org/cgi/content/abstract/1163874>> by Blehert et al. in Science Magazine, vol. 323, 2009, p.229).

While the mechanism of transmission is still unknown, the rapid dispersal of WNS from a single New York cave in 2006 to numerous sites in contiguous northeastern states by 2008 suggests that WNS is likely spread through direct bat-to-bat and bat-to-cave contact. Bats are likely the primary vector for WNS based on the rate of spread through 2008 and the behavior of the species affected. There is mounting evidence, however, that human activity may also be responsible for spreading the causative agent(s) of WNS, even during seasons when bats are not occupying caves. The fungus can grow on many different organic materials, and appears to persist in caves and mines year-round. Fungal spores, and/or other microscopic organisms, can easily become attached to skin, hair, clothing and equipment, and it is possible that such elements could remain viable for weeks or months after leaving a subterranean environment. The discontinuous nature of the rapid spread of WNS, especially to the most recently discovered sites in West Virginia and Virginia, suggests that something other than bat-to-bat transmission is contributing to the spread of WNS. The potential for the human-assisted spread of WNS is further supported by the fact that many of the recently affected sites are also popular destinations for recreational cavers, while many bat hibernacula in less-popular or inaccessible caves between the newly affected caves and those affected in 2008 remain unaffected. Records of caver movements also reveal a connection between sites in these affected regions, additionally suggestive of a link to human activity.

Given the current evidence, and the recent advances in knowledge of the fungus associated with WNS, we have developed our recommendations to address the activities that are likely to contribute to the spread of WNS. At this time, the evidence is lacking to recommend the closure of commercial sites that offer cave tours to the general public. Visitors to commercial sites are less likely to visit multiple caves in a short time-period, generally wear plain clothes and shoes that are not repeatedly used for cave-related activities, and are considered to pose a very low risk for the spread of WNS to new caves. Additionally, we will be working with the owners and operators of commercial caves to help them employ methods to minimize the potential for contaminated materials from entering or leaving their sites.

Caves and mines in the newly affected regions of West Virginia and Virginia shelter bat species not previously impacted by WNS. They are also home to some of the largest wintering colonies of hibernating bats in the world, including some of the largest known U.S. populations of the Indiana bat, Virginia big-eared bat and gray bat, all endangered species. Because the Service has responsibility for endangered species, it is imperative that we take the measures necessary to protect these bats. If WNS spreads to these critical hibernacula, or to other significant hibernacula around the world, the impact on bat populations could be devastating.

Moving forward:

Service biologists are working with our federal, state, provincial and private partners to confirm the cause of WNS and to examine the ways in which the affliction spreads. We encourage those agencies and partners who manage cave resources to strongly consider limiting access to caves and mines to slow the spread of WNS.

As we learn more about the potential role of human transmission of WNS, or when we have the means to greatly reduce such risks, we will make the information available on the Service Web site and will revise these recommendations accordingly. Until then, we appreciate the high level of cooperation from all partners in this ongoing effort, as well as the continued cooperation of the public. We fully support all efforts to exercise caution in caving activities, such as the caving moratorium in Virginia, and we applaud the local and national caving organizations for their dedication to a strong conservation ethic. Furthermore, we encourage our partners with national and local caving organizations to continue their outreach and education efforts to spread the word about WNS and about responsible resource stewardship.

For more information, updates, and a map showing affected counties, see http://www.fws.gov/northeast/white_nose.html.

* agency - federal or state natural resource conservation agency, e.g., U.S. Fish and Wildlife Service, U.S. Forest Service, New York State Department of Environmental Conservation, Pennsylvania Game Commission, etc. See the Service WNS Web site for links to Web sites of several state and federal partners.