

White-Nose Syndrome in Bats: Briefing Note for DFG Managers and Directorate

Prepared by Scott Osborn and Deana Clifford - May 22, 2009

Issue: White-Nose Syndrome (WNS) is associated with mass mortalities of bats in hibernation colonies in the eastern United States. WNS appears to be caused by a previously unidentified fungus. The disease has shown a dramatic rate of spread over the past three years and currently threatens two endangered bat species. If introduced into California, WNS could significantly impact the viability of our bat populations.

Background: Dead and dying bats with a white fungus on their muzzles, ears, and wing membranes were first detected by a caver in upstate New York in February 2006. The following winter, state biologists documented hundreds of dead bats with the same fungus in several New York caves. According to US Fish and Wildlife Service estimates, hundreds of thousands of bats have died in 2008 and 2009. Mortality rates in surveyed hibernacula range as high as 90-100%. WNS has now been documented from northern New England to western Virginia (see map on reverse).

Etiology: The fungus associated with WNS may be the primary cause of death or may contribute to illness and death by opportunistically attacking bats weakened by another cause. Bats with WNS arouse from hibernation more frequently than normal, which greatly reduces the fat stores necessary to survive the winter. Dead and dying bats with WNS have very low body fat content. Histological studies have shown that fungal hyphae replace hair follicles, sebaceous and sweat glands, and invade tissues underlying the epidermis. It is possible the fungal growth is an irritant that stimulates arousal from hibernation. It may also disrupt the metabolism of hibernating bats in some way.

Transmission: Bat-to-bat transmission of the fungus is probably the primary means of spread. However, humans may also spread the fungus if contaminated clothing or equipment introduces spores or hyphae into an uninfected population.

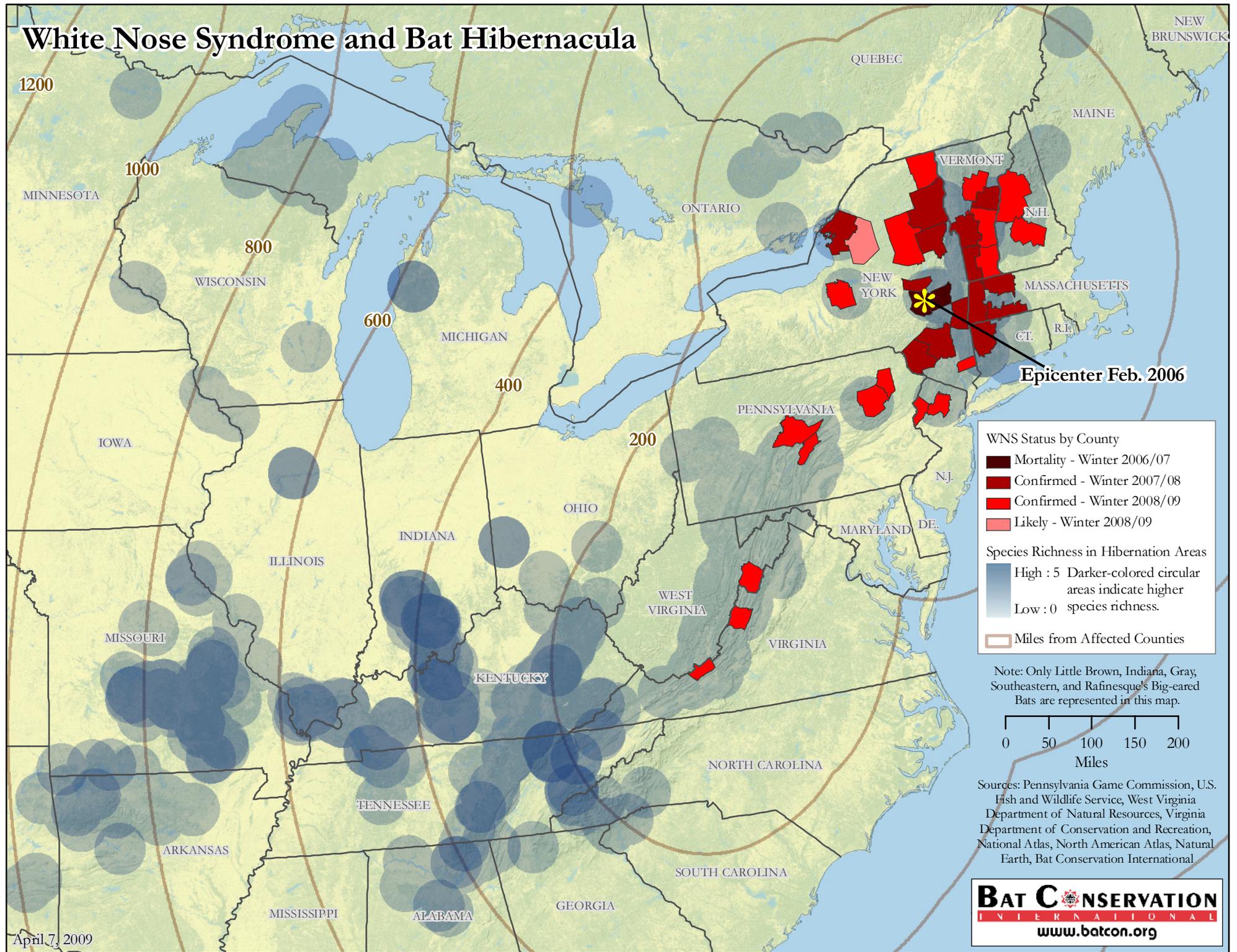
Recommended Actions: We recommend DFG take the following actions as part of its on-going bat conservation efforts:

1. Coordinate with other wildlife agencies to keep abreast of WNS developments and minimize the potential for spread of WNS into the West. *As a first step, WNS should be on the agenda for the July 2009 WAFWA meeting.*
2. Researchers and consultants working with bats should implement measures to minimize the potential for introducing or spreading WNS. This is already being implemented through the Scientific Collecting Permit/Letter Permit process.
3. Prepare press releases and other educational materials to ensure the public is aware of WNS. Coordinate with caving clubs to reduce the potential for spread of WNS.
4. Work with the Western Bat Working Group and other wildlife agencies to prepare a surveillance and response plan before WNS is detected in California. Surveillance activities might include coordination of population monitoring data and increased surveillance for cases by animal health laboratories, bat researchers, and wildlife rehabilitators. Response actions might include: cave and mine closures, heightened WNS monitoring, among other actions.

Additional Information and Photos:

1. Blehert D.S. et al. 2009. Bat White-Nose Syndrome: An Emerging Fungal Pathogen? Science 323:227.
2. http://www.fws.gov/northeast/white_nose.html
3. http://www.nwhc.usgs.gov/disease_information/white-nose_syndrome/

White Nose Syndrome and Bat Hibernacula



Epicenter Feb. 2006

WNS Status by County

- Mortality - Winter 2006/07
- Confirmed - Winter 2007/08
- Confirmed - Winter 2008/09
- Likely - Winter 2008/09

Species Richness in Hibernation Areas

- High : 5 Darker-colored circular areas indicate higher species richness.
- Low : 0 species richness.

Miles from Affected Counties

Note: Only Little Brown, Indiana, Gray, Southeastern, and Rafinesque's Big-eared Bats are represented in this map.



Sources: Pennsylvania Game Commission, U.S. Fish and Wildlife Service, West Virginia Department of Natural Resources, Virginia Department of Conservation and Recreation, National Atlas, North American Atlas, Natural Earth, Bat Conservation International

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www.batcon.org