

BAT WHITE NOSE SYNDROME

**STATEMENT
JOEL HOLTROP
DEPUTY CHIEF
NATIONAL FOREST SYSTEM
FOREST SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE**

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REGARDING**

“WHITE-NOSE SYNDROME: WHAT IS KILLING BATS IN THE NORTHEAST”

Madame Chairman and Mr. Chairman, Ranking Members Bishop and Brown and members of the Subcommittees, thank you for the opportunity to testify before you today on bat white-nose syndrome. The subject of white-nose syndrome is important to forest managers, wildlife managers, agricultural producers and the public-at-large. This hearing is timely because white-nose syndrome is an emerging disease of cave dwelling species of bats that is both perplexing and potentially devastating. The interest of Congress and in particular the joint Subcommittees on National Parks, Forests and Public Lands and the Insular Affairs, Oceans and Wildlife is welcomed and commendable.

The Forest Service is very concerned about white-nose syndrome and the future of bats in the United States and North America. White-nose syndrome (WNS) is a name given to a fungal agent recently identified in the genus *Geomyces* associated with mass mortality of several bat species at hibernation sites in the New England, Mid-Atlantic and northern Appalachian States. Once introduced into a cave or abandoned and/or inactive mine, WNS has the potential to kill more than 90 percent (Blehert, et al 2009 Science Vol. 323 pg. 227) of the hibernating bats. WNS has killed an estimated 500,000 to 1 million bats during the last three years. Since 2007, when WNS was first documented in New York, at least six bat species, including the Endangered Indiana bat have been affected. The Forest Service can contribute towards the larger effort to better understand WNS, and can play a role in attempting to slow the spread of WNS to hibernation sites in caves and abandoned and /or inactive mines. The mission of the Forest Service is “*to sustain the health, diversity and productivity of the Nation’s forests and grasslands to meet the needs of present and future generations*”. This mission includes sustaining the health, diversity and productivity of the many species that use the Nation’s forests and grasslands as habitat, including bats.

Declining bat populations diminish the integrity of our forest and grassland ecosystems. The continued loss of bats in forested ecosystems could have significant ecological and economic impacts. Because bats are primary predators of night-flying insects, a significant decline in bat

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populations could contribute to larger insect pest populations, a possible decrease of agricultural crop production, and a potential decline in forested ecosystem resiliency, including forest health. Increases in insect pest populations could lead to an increase in the perception of the need for pesticides, which would have both environmental and economic consequences.

Coordination and cooperation among all parties involved in addressing WNS is critical. The Forest Service is committed to full partnership and cooperation with the Department of Interior (U.S. Fish and Wildlife Service, National Park Service, U. S. Geological Survey), State and Tribal wildlife management agencies, universities, industrial and non-industrial private forestland owners and non-governmental organizations such as Bat Conservation International to identify the species of the genus *Geomyces* afflicting bats and arrest its spread throughout bat species. We will continue to assist in the cooperative effort for the monitoring, epidemiology and isolation procedures required to prevent the spread of WNS to unaffected areas and regions of the United States.

THE ROLE OF THE NATIONAL FOREST SYSTEM

The Eastern and Southern Regions of the National Forest System have adopted a very aggressive response to the threat posed to bats by WNS. This includes specific budget direction to address bat species conservation relative to WNS in the Forest Service fiscal year (FY) 09 budget advice. There are approximately 24 million acres of National Forest System lands in the Eastern and Southern Regions of the Forest Service with approximately 2000 caves and abandoned and/or inactive mines that serve as bat hibernation sites. It is in these hibernacula where WNS mortality is most evident among hibernating bats. White-nose syndrome has not yet been documented in populations of migratory bat species that hibernate in trees or forest leaf litter. There are approximately 2,000 caves and abandoned and/or inactive mines in Eastern and Southern Region national forests. Several species of bats listed as Endangered by the US Fish and Wildlife Service under the Endangered Species Act use these sites including the Indiana bat, gray bat, Virginia big-eared bat, and Ozark big-eared bat. Other bat species classified as Sensitive, a designation established by the Forest Service, include Rafinesque's big-eared bat, southeastern bat, eastern small-footed bat, and tri-colored bat, formerly known as the eastern pipistrelle.

For the Eastern Region of the Forest Service, WNS is confirmed in one abandoned and/or inactive mine within the Green Mountain National Forest (Vermont) and confirmed in a cave in West Virginia's Monongahela National Forest. At present, there are no caves or abandoned and/or inactive mines in the Southern Region National Forests confirmed as infected with WNS. In Virginia, two caves on private lands adjacent to the George Washington and Jefferson National Forests are infected. Of significant concern, is the short six-mile proximity between the contaminated cave on the Monongahela National Forest and the privately owned Hellhole Cave, which is designated critical habitat for both the Indiana bat and the Virginia big-eared bat—both Endangered Species. Hellhole Cave is habitat for approximately 45% of the known population of Virginia big-eared bats and more than 100,000 little brown bats, the species hit hardest by WNS. Species of bats killed by WNS include little brown, big brown, northern long-eared, eastern small-footed and tri-colored bats, as well as the Endangered Indiana bat. In New York State, approximately 25,000 Indiana bats or about 50% (Blehert, et al 2009 Science Vol. 323 pg. 227) of the known New York population has died since 2006. The Finger Lakes National Forest (NY) does not have any caves or abandoned and/or inactive mines within its land base.

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Forest Service Cave and Mine Closures

It is critical we stop or slow the spread of WNS before it reaches the larger bat hibernacula of the Midwest and Southeast. In an attempt to slow the spread of White-nose syndrome, the Regional Foresters for the Eastern and Southern Regions closed all caves to the public and abandoned and/or inactive mines, unless posted as open with official Forest Service signs. Exceptions to the closure order are for research and monitoring, law enforcement and search and rescue operations. The closure does not include El Yunque National Forest in Puerto Rico because it is unlikely the fungus thought to cause white-nose syndrome would survive in the tropics. The fungus grows in cold conditions (Blehert, et al 2009 Science Vol. 323 pg. 227).

There is evidence to suggest humans can spread WNS, from cave to cave on their gear and equipment (Blehert, et al 2009 Science Vol. 323 pg. 229). This includes cavers as well as resource managers. Researchers and managers working on WNS are permitted to enter caves or abandoned and/or inactive mines if decontamination protocols are implemented. The protocols include the use of specific clothing and equipment for each individual cave and abandoned and/or inactive mine. Thus limiting a vector suspected of transmitting WNS. The closure orders are crafted to reduce concerns that they would deny access for Tribal rights and ceremonies by allowing requests for Tribal ceremonies to be authorized by permit on a case-by-case basis. Our Tribal partners are supportive of our efforts to slow the spread of WNS.

Although the US Fish and Wildlife Service requested a limited moratorium on caving in WNS confirmed states and adjacent states (available at <http://www.fws.gov/northeast/wnscaveadvisory.html>), the Eastern and Southern Regions of the Forest Service expanded their closure orders region-wide. The Forest Service acted because we observed WNS jump from New York to southwest Virginia in one winter, a far greater distance than bats or small mammals could travel in such a short timeframe. There are critical bat hibernacula in the Midwest and Southeast that we intend to protect from contamination. For the Southern Region, the closure order may help slow the spread to significant gray bat, Indiana bat and Ozark big-eared bat caves in Alabama, Arkansas, Georgia Kentucky, Oklahoma and Tennessee. Approximately 1,900 Ozark big-eared bats remain in the world and they all occur in Oklahoma and Arkansas. In the Eastern Region, Michigan and Wisconsin have large populations of bats residing in abandoned and/or inactive mines, while large populations of Indiana bats occur in Illinois and Indiana, all of which are currently free of WNS. If we fail to keep WNS contained, there could be a rapid and precipitous population decline for many bat species. Therefore, it is critical that we keep their hibernacula isolated from the *Geomyces* that is linked to WNS. There is no known cure for WNS, so we must rely upon the basic principles of epidemiology, which includes trying to limit disease spread between geographic regions and using decontamination procedures when visiting hibernacula.

Management of National Forests

Bats need healthy forests and healthy forests need bats. Other than implementing the cave and abandoned and/or inactive mine closure order, the best thing we can do to conserve bats is manage for healthy and resilient forests. While the national forests are approximately six percent (6%) of the forested lands in the Eastern and Southern U.S., they play a critical role in

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conservation of all endemic species. We are using research findings to develop management strategies to benefit bats. Our primary management tools include thinning forested stands, creating canopy gaps, managing mid-story and under-story vegetation, conserving potential roost structures such as snags, and providing upland water sources. The objective is to create suitable roosting and foraging habitat across large landscapes. The Eastern and Southern Region national forests are ideally suited to contribute to large forested landscape ecosystems. There is a significant but discontinuous corridor of national forests from northern Georgia to New Hampshire. If we can retain healthy bat populations on national forests, the corridor could serve as a conduit to repopulate bat populations in areas decimated by WNS. This assumes our ability to arrest the spread of WNS; that the bats develop some resistance to it; or a method is found to address the fungus that causes the hallmark WNS skin infection.

There may be potential to increase our management efforts to develop suitable habitat at an accelerated rate. Forest Service biologists are cooperating with State and Federal partners to inventory and monitor bat populations on National Forest System lands to establish baseline data. This will allow us to assess the impact of WNS on bat populations. These efforts are in conjunction with other Federal, State, and private partners in bat conservation.

FOREST SERVICE RESEARCH & DEVELOPMENT (R&D) ROLE IN BAT HABITAT RESEARCH

Because bats are difficult to study and their role in forested ecosystems was not clearly understood, little research was conducted by Forest Service scientists on bats prior to the late 1990's. However, with advances in technology such as miniature radio-transmitters and field-hardy, easy-to-use bat detectors, biologists soon realized that forested ecosystems are critical for bat survival and forest management activities could have consequences for the habitat and bat populations. Coupled with growing concerns over the viability of bat populations and advancing knowledge of the role of bats in maintaining healthy ecosystems, the Forest Service Research Stations developed bat research programs throughout the United States.

Five Forest Service Research scientists are currently conducting research on the role of bats in forested ecosystems in the U.S. Two scientists are in the Northern Research Station (Massachusetts and Missouri), two are in the Southern Research Station (South Carolina and Arkansas), and one is in the Pacific Southwest Research Station (California). At the Forest Products Lab in Madison, Wisconsin, two research mycologists have recently offered their expertise to support the effort to understand the *Geomyces* fungus and its relationship to WNS.

Research on bats by Forest Service scientists falls into three main areas:

- basic habitat requirements of bats,
- the effects of forest management on bats, and
- development and testing of inventory and monitoring methods.

Although many bats roost in caves and abandoned and/or inactive mines during winter hibernation, most bats roost in trees during the summer months. Summer is a critical period for bats because this is when the young are born and nurtured. Thus, much of the research conducted by Forest Service scientists has focused on determining optimal roosting requirements of bats during the maternity season. In general, our research has found that bats prefer large

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trees or snags, often in relatively open areas. However, there is still considerable unexplained variation within and among species that needs further study.

Since 1990, Forest Service research scientists and their cooperators have produced over 85 papers on bats that have been published in refereed journals, books, or Forest Service Research Papers, General Technical Reports or Research Notes. Scientists are also engaged in a variety of other lines of research such as bat population genetics, the use of stable isotopes to study migration patterns, and the consequences of wind turbine development and siting on bat populations. Information from all lines of research is valuable for managing the possible recovery of bats from WNS.

Maintenance of optimal foraging habitat and insect prey is also critical for the survival and viability of bat populations. Much Forest Service research has focused on the impacts of forest management; particularly the consequences of harvest methods and fuels reduction treatments such as thinning and prescribed fire on bat foraging habitat and use. The results of these studies have found that many forest management practices, particularly thinning, prescribed fire, and creation of small canopy gaps or openings, do not reduce habitat attributes for bats and may be very beneficial.

National forests and grasslands are required to inventory and monitor all Threatened, Endangered, and Sensitive species on their lands, including bats. Bats are an extremely difficult group of animals to survey and monitor, however, several Forest Service scientists have been working to develop robust methods to obtain reliable estimates of changes in bat species composition and relative abundance over time.

Information gained from Forest Service R&D studies on habitat requirements, bat response to forest management, and the consequences of human development on bat habitat and populations will be critical to understanding the direct, indirect and cumulative effects of WNS and other stressors on bat populations. The science surrounding bats would contribute to the management strategies for the National Forest System and other public and private lands in the future. These studies will provide managers and the public with the information needed to provide optimal habitat to sustain current populations and foster the recovery of bat species populations rebounding from WNS. Further, Forest Service studies of migration patterns and population genetics of Indiana bats and other species are critical for predicting the spread of WNS and its consequences at the population level. The robust inventory and monitoring methods developed by Forest Service scientists will be critical for documenting the spread of WNS and its effects on bat populations on National Forest System lands and other lands at a regional or multi-regional scale.

THE ROLE OF STATE AND PRIVATE FORESTRY AND CONSERVATION EDUCATION

Another approach for the management of healthy and resilient forests is to implement efforts with State Foresters through State and Private Forestry. The Forest Stewardship Program provides financial and technical assistance to State Forestry organizations for private forestland management advice, consultation, and plans. Targeting private forest management efforts to implement prescriptions that would enhance or develop attributes for bat foraging, roosting or

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maternity habitat in privately owned forests in and near areas affected by WNS could help to ensure populations of bats capable of withstanding WNS infection.

Conservation Education

We know the public is a critical partner in the effort to help save the bats. The Forest Service is actively involved in educating people regarding WNS, bat species conservation and ensuring the public understands the ecological and economic importance of bats. Children find bats fascinating and are a key part of our education programs. We are informing people why Eastern and Southern National Forest System caves and abandoned and/or inactive mines are closed to the public until more is learned about the pathology of WNS.

CONCLUSION

The Forest Service is in the process of responding to the serious threat to bat populations posed by WNS. The Forest Service Deputy Areas for National Forest Systems, Research and Development and State and Private Forestry are contributing to this vital cause. This agency-wide effort includes targeted closures of cave and abandoned and/or inactive mine features on approximately 24 million acres of National Forest System lands, scientific knowledge and applied research; and broad, private land forest stewardship to ensure populations of bats for present and future generations. To further the conservation management of the vast and diverse habitat and fauna, the Forest Service is committed to cooperation and partnerships with Federal, State, Tribal and nongovernmental organizations interested in the conservation and preservation of bats. Madame Chairman and Mr. Chairman, this concludes my testimony. I am pleased to answer any questions that you or the Members of the Subcommittees may have.