

# Northern Long-Eared Bat and Mississippi Forestry: *Impacts of the Endangered Species Act*



Odds are the average person reading this publication is unfamiliar with the northern long-eared bat (*Myotis septentrionalis*). Consequently, he or she will not be familiar with a 2015 ruling announced by the United States Fish and Wildlife Service (USFWS) identifying Endangered Species Act protections for the northern long-eared bat. The USFWS listed the northern long-eared bat as threatened under the Endangered Species Act on May 4, 2015, and it established an interim 4(d) rule to help protect the species. The northern long-eared bat final 4(d) rule was published in the Federal Register on January 14, 2016, and went into effect February 16, 2016 (Docket No. FWS-R5-ES-2011-0024). This 4(d) rule identifies prohibitions intended to protect this bat species during sensitive life stages in areas where bats are affected by white-nose syndrome. The range of the northern long-eared bat extends into portions of Mississippi, and this ruling has potential impacts on the practice of forestry.

## Northern Long-Eared Bat

The northern long-eared bat is one of only 15 species of bats known to live in Mississippi. Adults average around 3.5 inches in length including their tails and weigh between 0.2 and 0.3 ounce. They are light brown and have long ears compared to other species of the same genus. The species roosts in trees (primarily hardwood species) or artificial structures from spring through early fall, usually switching roosts every other day. Males and females without young tend to roost singly or in small groups. However, reproductive females and their young typically form relatively large maternity colonies.

Northern long-eared bats typically hibernate in caves and enter hibernation sometime between September and November. They emerge during the spring between March and May depending on latitude. The species typically does not hibernate as a single species, but with large numbers of other bats of varying species.

The species frequents forest interiors and consumes a diet consisting predominantly of moths, beetles, and flies. They forage both under forest canopy and along forest edges primarily during the first two hours after sunset. Mating occurs between July and October, with births taking place between May and July.



Figure 1. Northern long-eared bat.  
Photo courtesy of Al Hicks, USFWS.

## What Is a 4(d) Rule and What Does It Mean for Forestry in Mississippi?

A 4(d) rule is a regulatory provision within the Endangered Species Act that directs the USFWS to issue regulations necessary and advisable to provide for conservation of threatened species. One of the goals of a 4(d) rule is to clarify when a threatened species may or may not be removed. In the case of the northern long-eared bat, the 4(d) rule prohibits purposeful take (harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting) inside the bat's range. Exceptions include removing from human structures, defending human life, and removing hazardous trees for the protection of life and property.

Incidental take (occurring while carrying out otherwise lawful activities) outside of areas affected by white-nose syndrome (WNS) is not prohibited. However, for areas within the bat's range, incidental take is prohibited in areas within the WNS zone (see



U.S. Fish & Wildlife Service

# Northern Long-Eared Bat Final 4(d) Rule

## White-Nose Syndrome Zone Around WNS/Pd Positive Counties/Districts

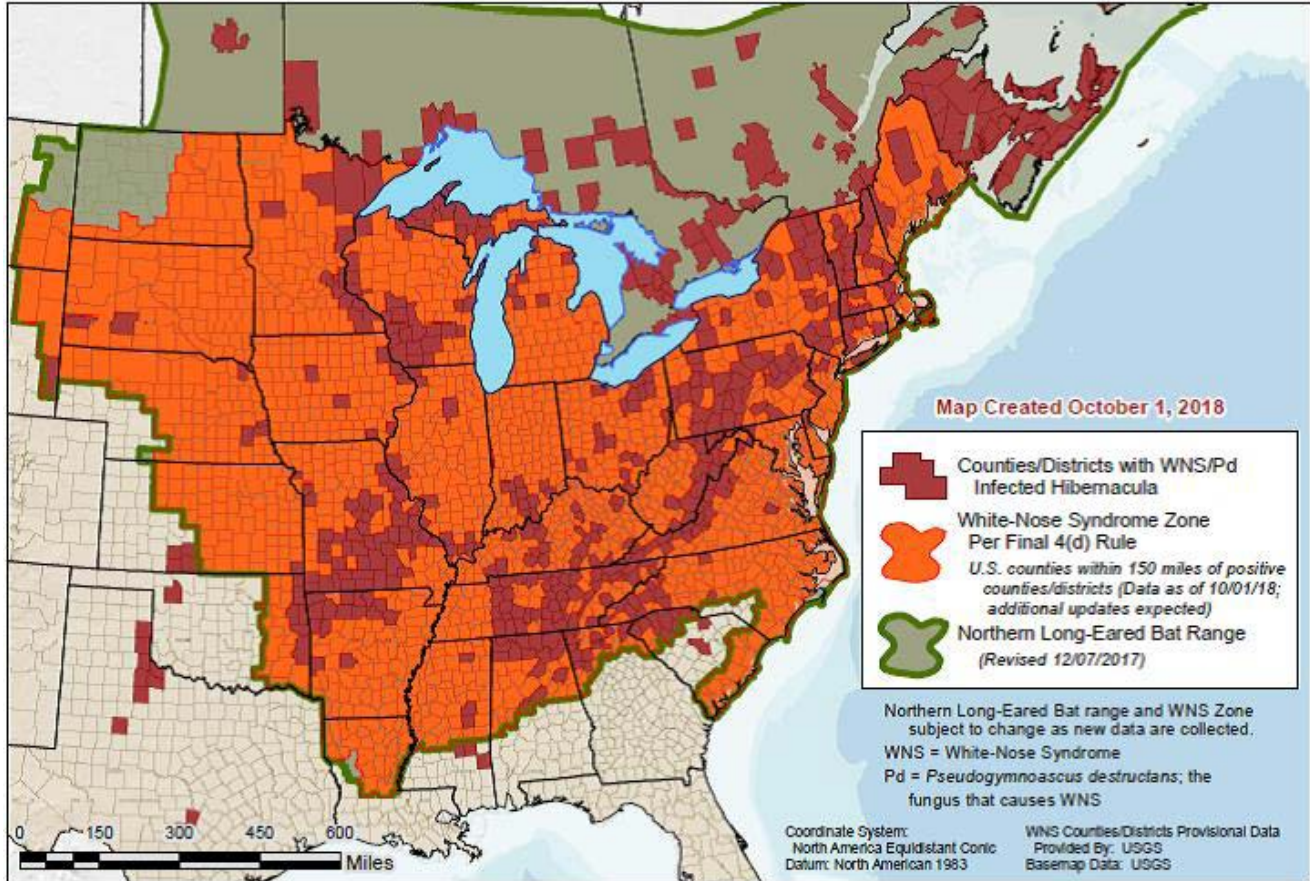


Figure 2. Northern long-eared bat range and counties with WNS-infected hibernacula. Map courtesy of USFWS.

**Figure 2)** under certain circumstances. Incidental take is obviously prohibited within a hibernacula (place of hibernation) in areas impacted by WNS. Incidental take is also prohibited if resulting from the removal of trees within 0.25 mile of a known and occupied hibernacula, or if take results from the cutting of a known maternity roost tree or from another tree within a 150-foot radius of a known maternity roost tree during the months of June and July. In consideration of these prohibitions, it would be prudent to refrain from any tree harvest within a quarter of a mile of a known hibernacula and within 150 feet of a known roosting tree, especially during June and July. It is during this time period that northern long-eared bat females and their young are at their most vulnerable because young bats cannot fly.

### What Is White-Nose Syndrome and Why Should It Affect my Forest?

WNS is caused by a fungus (*Pseudogymnoascus destructans*) found in cold environments where bats hibernate. Hibernating bats with WNS often display a

white frosted appearance around their muzzles and other hairless parts of their bodies, giving rise to the common name for the syndrome. It is not always visible to the naked eye. Estimates indicate that WNS has killed more than 6.7 million bats in North America. Some assessments of bat mortality in WNS-affected hibernacula have shown mortality levels approaching 100 percent, and the disease often kills 70 to 90 percent of bats within a colony.

The fungus is suspected to have arrived sometime in the early 2000s from Europe. It does not kill bats living in that region. WNS was first discovered in a cave system in New York State in February 2006 and has since spread to 33 states and seven Canadian provinces. Scientists and biologists are still attempting to determine why WNS results in such high levels of bat mortality in North America. Subsequently, as a precaution to limit habitat loss until more is learned about the disease, the USFWS petitioned for the 4(d) rule. Obviously, restrictions on timber harvest/cutting of trees do not offer a cure for WNS. However, the USFWS prohibits incidental take of northern long-eared bats through tree cutting activities



in the hope that decreased habitat reduction and/or manipulation will help maintain northern long-eared bat populations until a time when WNS is less problematic for North American bats. The motivation behind this effort is that, by decreasing forest fragmentation and logging through tree harvesting activities, the species will be afforded its best chance at surviving.

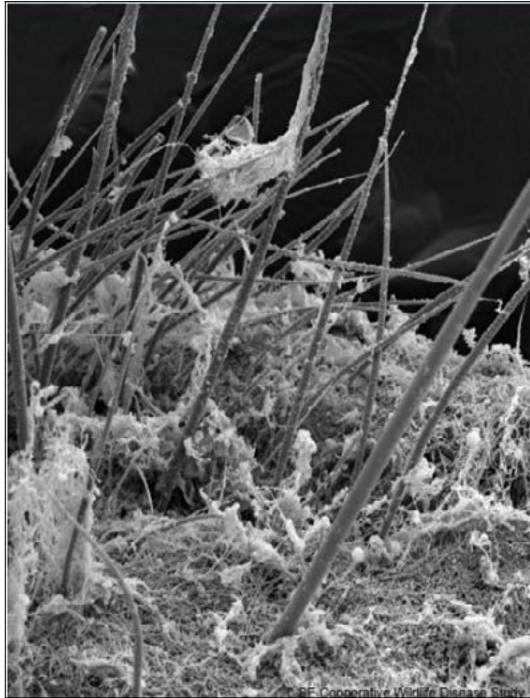


Figure 3. *Pseudogymnoascus destructans* viewed using electron microscopy. Photo courtesy of USFWS, SE Cooperative Wildlife Disease Study.



Figure 4. Northern long-eared bat suffering from white-nose syndrome. Photo courtesy of USFWS.

## Practical Implications of the 4(d) Ruling for Forest Landowners

While the new threatened status afforded to the northern long-eared bat does bring potential restrictions on tree harvest across much of Mississippi, these restrictions should not prove onerous for the vast majority of forest landowners across the state. Just remember the prohibitions outlined by the 4(d) rule:

No purposeful take of northern long-eared bats within the bat's range with the exception of—

1. removal from human structures,
2. defense of human life (public health monitoring for rabies), and
3. removal of hazardous trees for protection of human life and property.

Additionally, no incidental take of northern long-eared bats is allowed—

1. within a hibernacula,
2. if it results from tree removal activities within 0.25 mile of a known hibernacula, and
3. if it results from tree removal activities that cut or destroy a known, occupied maternity roost tree or other trees within 150 feet of a known, occupied maternity roost tree during June and July.

In the event that you intend to remove trees near a maternity roost tree or near a known and occupied hibernaculum, the USFWS suggests contacting the nearest Ecological Services Field Office for information regarding proximity of maternity roost trees and hibernacula. Please visit [www.fws.gov/offices](http://www.fws.gov/offices) to find the closest office if you have any doubt when scheduling timber-harvesting activities. Some states provide online access to maps and information regarding locations of known roosting trees and hibernacula. However, some do not in an attempt to offer further protection for the species. Much of this information can be found in state Natural Heritage Inventory databases. These databases are available at [www.fws.gov/midwest/landangered/mammals/nleb/nhisites.html](http://www.fws.gov/midwest/landangered/mammals/nleb/nhisites.html). Currently, private landowners are not required to conduct bat surveys on their property. However, the USFWS recommends performing surveys to reduce uncertainty regarding the presence of northern long-eared bats. Contact your local USFWS office regarding advice on appropriate survey methods.

## Additional Reading

- Faure, P.A., et al. 1993. The Gleaning Attacks of the Northern Long-Eared Bat (*Myotis septentrionalis*) are Relatively Inaudible to Moths. *Journal of Experimental Zoology*, 178: 173–189.
- Foster, R.W. & A. Kurta. 1999. Roosting Ecology of the Northern Long-Eared Bat (*Myotis septentrionalis*) and Comparisons with the Endangered Indiana Bat (*Myotis sodalists*). *Journal of Mammalogy*, 80(2): 659–672.
- Hall, J.S., et al. 1957. Longevity Records and Notes on Tooth Wear of Bats. *Journal of Mammalogy*, 38(3): 407–409.
- Thomas, D.W. 1993. Lack of Evidence for a Biological Alarm Clock in Bats (*Myotis* spp.) Hibernating Under Natural Conditions. *Canadian Journal of Zoology* 71(1): 1–3.
- Department of the Interior, Fish and Wildlife Service. 2016. Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat. *Federal Register*, 81(9): 1900–1922.
- Whitaker, J.O. & W.J. Hamilton, Fr. 1998. *Mammals of the Eastern United States*. Comstock Publishing Associates, Cornell University Press, Ithaca, NY. 583 pp.

---

The information given here is for educational purposes only. References to commercial products, trade names, or suppliers are made with the understanding that no endorsement is implied and that no discrimination against other products or suppliers is intended.

Publication 2935 (POD-03-19)

By A. Brady Self, PhD, Associate Extension Professor, Forestry.



Copyright 2019 by Mississippi State University. All rights reserved. This publication may be copied and distributed without alteration for nonprofit educational purposes provided that credit is given to the Mississippi State University Extension Service.

Produced by Agricultural Communications.

Mississippi State University is an equal opportunity institution. Discrimination in university employment, programs, or activities based on race, color, ethnicity, sex, pregnancy, religion, national origin, disability, age, sexual orientation, genetic information, status as a U.S. veteran, or any other status protected by applicable law is prohibited. Questions about equal opportunity programs or compliance should be directed to the Office of Compliance and Integrity, 56 Morgan Avenue, P.O. 6044, Mississippi State, MS 39762, (662) 325-5839.

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. GARY B. JACKSON, Director