

Hot Springs

National Park
U.S. Department of the Interior

Hot Springs National Park
Arkansas



Acoustic Monitoring of Bat Communities at Hot Springs National Park

White Nose Syndrome

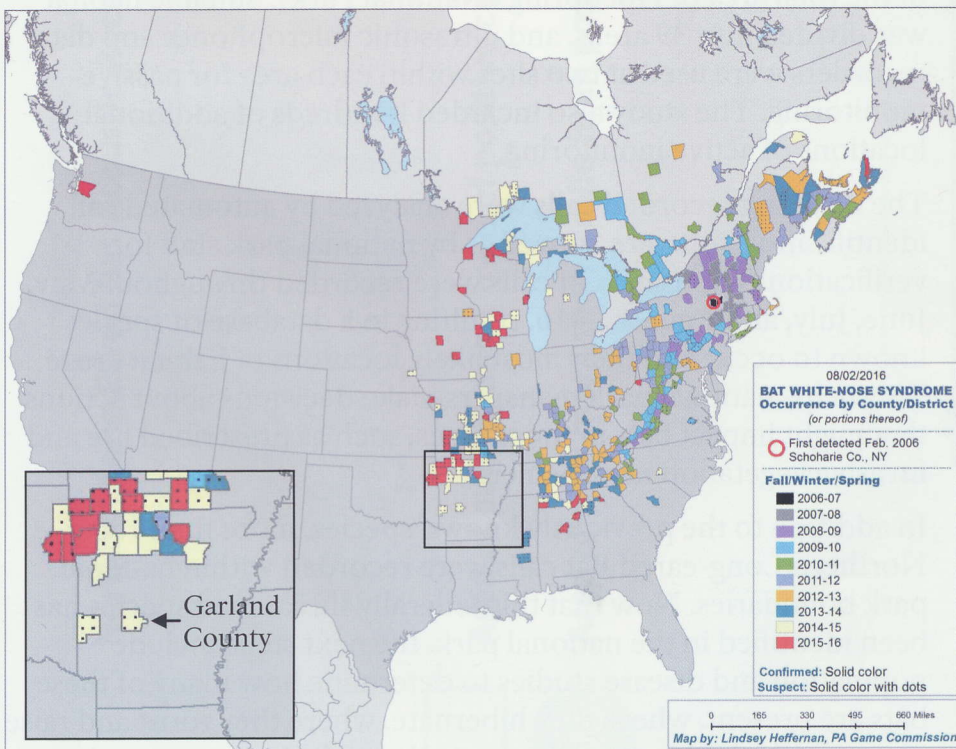


NPS

White nose syndrome (WNS), a disease that kills hibernating bats, has spread rapidly across the United States since its first discovery in New York in 2007. First confirmed in Arkansas in 2013, the fungus that causes WNS is now known to occur in Garland County, approximately 6 miles from the boundary of Hot Springs National Park. To date, no confirmed cases of bats infected with WNS have occurred in the county or the national park.

Named for the appearance of the most visible symptom—white fungus on the muzzles of bats—the syndrome is caused by a newly identified fungus, *Pseudogymnoascus destructans* (*Pd*). The fungus thrives in humid and cool conditions of caves many bats use for hibernation and roosting, passing most often from bat to bat. The most recent estimates place the population decline of bats because of WNS at 80% in the northeastern United States.

Three species known to occur in the national park have been identified as susceptible to WNS—the Little Brown Bat, Big Brown Bat, and Tricolored Bat. The federally threatened Northern Long-eared Bat (NLEB), whose range makes it likely to occur within the national park boundaries, is also susceptible to the *Pd* fungus. The NLEB, listed as threatened* in 2015, has declined in population by 98% in the northeastern United States due to the impacts of WNS. The syndrome is also now present within the ranges of at least four endangered* bat species.



*Endangered—any species that is in danger of extinction throughout all or a significant portion of its range. Threatened—any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

Bats of Hot Springs



ROOSTING BIG BROWN BAT—NPS

Studies of bats at Hot Springs National Park have been limited in scope and rare in recent years. In two studies from the 1980s, the national park learned that the Eastern Red Bat (*Lasiurus borealis*), Evening Bat (*Nycticeius humeralis*), Tricolored Bat (*Perimyotis subflavus*), Little Brown Bat (*Myotis lucifugus*), Hoary Bat (*Lasiurus cinereus*), Brazilian Free-tailed Bat (*Tadarida brasiliensis*), and the Big Brown Bat (*Eptesicus fuscus*) occurred in the national park. 320 bats were captured and identified between 1981 and 1987. The most common species collected (44% of all captures) was the Evening Bat.

Prior to 2016, no previous record of the Northern Long-eared Bat (*Myotis septentrionalis*) existed within national park boundaries, but the species had been recorded on adjacent US Forest Service (USFS) lands. The NLEB hibernates in caves and mines during the winter and prefers constant temperatures and high humidity environments with little to no air current.

Acoustic Monitoring



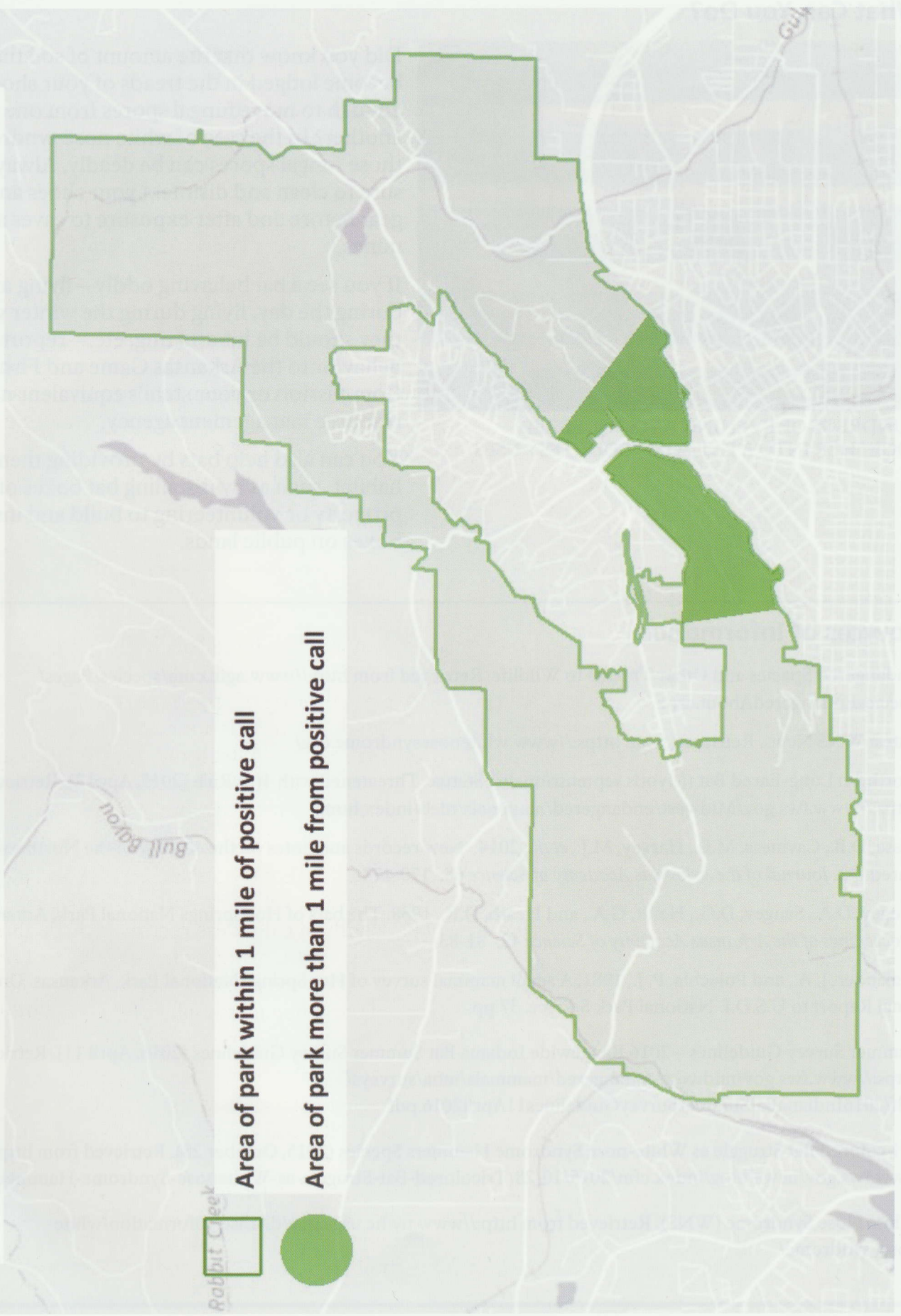
AN ULTRASONIC MICROPHONE SET UP IN A FLYWAY—NPS

Acoustic monitoring was conducted according to guidelines published by the US Fish and Wildlife Service, and included the active and passive monitoring of approximately 4,800 acres (86% of the total area of Hot Springs National Park). Suitable habitat was divided into 39 areas, and ultrasonic microphones and data recorders were used at two sites within each area for passive monitoring. The study also included hundreds of additional locations of active monitoring.

The resulting recorded calls were analyzed by automated call identification software, as well as by national park staff for verification. Thousands of calls were recorded throughout May, June, July, and August, 2016, resulting in a database of species known to occur and their most likely locations of habitat usage. This helps national park managers make decisions about actions that might impact bats in those areas, such as prescribed fire and invasive vegetation management.

In addition to the previously known species, more than 100 Northern Long-eared Bat calls were recorded within national park boundaries. Now that this federally threatened species has been identified in the national park, the next steps include population and disease studies to determine how many of these bats are present, where they hibernate, where they roost and raise young, and whether they show any signs of white nose syndrome.

Northern Long-Eared Bat Acoustic Records at Hot Springs National Park, Summer 2016



What Can You Do?



HUNDREDS OF EVENING BATS SQUEEZED TOGETHER INTO A BAT BOX—COURTESY USFS

Did you know that the amount of soil that can become lodged in the treads of your shoes is enough to move fungal spores from one place to another? In the case of white nose syndrome, those fungal spores can be deadly. Always be sure to clean and disinfect your shoes and other gear before and after exposure to caves and mines.

If you see a bat behaving oddly—flying around during the day, flying during the winter when they should be hibernating, etc.—report their behavior to the Arkansas Game and Fish Commission or your state’s equivalent natural resource management agency.

You can also help bats by providing them with habitat, such as by installing bat boxes on your property or volunteering to build and install bat boxes on public lands.

Sources of Information

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