



WHITE-NOSE SYNDROME

HEALTHY



Snout of a healthy bat.

Pseudogymnoascus destructans (*Pd*) is the causative fungal pathogen of white-nose syndrome (WNS). WNS is named for the characteristic white fungus which appears on hibernating bats, especially the muzzle. The disease was first detected near Albany, New York in February 2006. Since initial detection more than 10 years ago, WNS has been confirmed in 33 states and seven Canadian provinces. WNS has been confirmed in Arkansas, *Pd* has been detected in Mississippi and Texas, increasing the potential of spread into our state. Currently, 12 bat species in North America have been identified with diagnostic symptoms of WNS, four of these species occur in Louisiana (Table 1). *Pd* has been detected without diagnostic signs of WNS in six additional species of bats, four of which occur in Louisiana.

Pd is a psychrophilic (cold-loving) fungus which infects hibernating bats during winter torpor when body temperature decreases. Optimal growth of *Pd* occurs in more humid environments at ambient temperatures of 0° to 15° C. The fungus invades hair follicles, tissue, sebaceous and sweat glands. After invasion, ear and wing skin is eroded. Healthy wings allow bats to maintain water balance and is critical to homeostasis. As skin is eroded, individuals become dehydrated and have electrolyte imbalances. Fungal growth results in more frequent arousal, increasing animal movement during seasonal periods of food or water limitations. Additionally, unique behaviors such as flying outside during the day or clustering at hibernacula openings increases metabolic activity. The increased activity levels reduce or completely deplete fat reserves which are critical for hibernation, resulting in mortality.

TABLE 1. Bat species known to occur in Louisiana.

BAT SPECIES CONFIRMED WITH DIAGNOSTIC SYMPTOMS OF WNS	
Common Name	Species
Big brown bat	<i>Eptesicus fuscus</i>
Southeastern bat	<i>Myotis austroriparius</i>
Northern long-eared bat (threatened)	<i>Myotis septentrionalis</i>
Tricolored bat	<i>Perimyotis subflavus</i>
BAT SPECIES WITH <i>Pd</i> DETECTION BUT NO DIAGNOSTIC SIGNS OF WNS	
Common Name	Species
Rafinesque's big-eared bat	<i>Corynorhinus rafinesquii</i>
Silver-haired bat	<i>Lasionycteris noctivagans</i>
Eastern red bat	<i>Lasiurus borealis</i>
Mexican free-tailed bat	<i>Tadarida brazyi</i>
BATS SPECIES CURRENTLY UNAFFECTED BY WNS OR <i>Pd</i>	
Common Name	Species
Hoary bat	<i>Lasiurus cinereus</i>
Northern yellow bat	<i>Lasiurus intermedius</i>
Seminole bat	<i>Lasiurus seminolus</i>
Evening bat	<i>Nycticeius humeralis</i>

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Photo courtesy of USFWS

Snout of a bat with white-nose syndrome.

To date, the disease is responsible for more than 6 million bat deaths in United States. In some locations infection has resulted in 90 to 100 percent mortality in a hibernaculum. Drastic declines in bat populations threaten some species to regional extinction, such as the little brown bat (*Myotis lucifugus*), which was one of the most common species of bat in North America. The spread of WNS over the last decade can potentially lead to diminished ecosystem services as a result of declining population numbers. Bats aid in seed and pollen dispersal as well as insect control. Insectivorous bat species feed largely on arthropods and airborne insects. They can consume hundreds to thousands of insects per hour, many of which are known vectors of disease to humans and other mammals. Additionally, they help control agricultural crop pests and aid in ecosystem stability.

Louisiana is on the geographical leading edge of *Pd* disease spread. *Pd* was first detected in Arkansas and Mississippi in 2013-2014 and Texas in 2016-2017. Since those first detections, *Pd* has continued to spread closer to Louisiana borders, increasing the potential for spread into the state.

E. fuscus, *M. austroriparius*, *M. septentrionalis* and *P. subflavus* have been confirmed with diagnostic symptoms of WNS in other locations. *Pd* has been detected but without diagnostic sign of WNS in *C. rafinesquii*, *L. borealis*, *L. noctivagans* and *T. brasiliensis*.

In Louisiana bats typically roost in culverts and man-made structures due to a lack of available cave hibernacula. The Louisiana Department of Wildlife and Fisheries is working to monitor known bat hibernaculum and roost locations. To date *Pd* and WNS have not been detected in Louisiana. For additional information, visit www.whitenosesyndrome.org. To see current WNS and *Pd* detection locations, visit www.whitenosesyndrome.org/where-is-wns.

BAT SPECIES IN LOUISIANA

- Rafinesque's Big-eared Bat (*Corynorhinus rafinesquii*)
- Big Brown Bat (*Eptesicus fuscus*)
- Eastern Red Bat (*Lasiurus borealis*)
- Southeastern Myotis Bat (*Myotis austroriparius*)
- Northern Long-eared Bat (*Myotis septentrionalis*)
- Tricolored Bat (*Perimyotis subflavus*)
- Mexican Free-tailed Bat (*Tadarida brasiliensis*)
- Horay Bat (*Lasiurus cinereus*)
- Silver-haired Bat (*Lasionycteris noctivagans*)
- Evening Bat (*Nycticeius humeralis*)

CONTACT INFORMATION

If you observe bats exhibiting signs of *Pd* or WNS please report it to Nikki Anderson (NAnderson@wlf.la.gov) or Dr. Jim LaCour (JLaCour@wlf.la.gov).

SPREAD OF WHITE-NOSE SYNDROME

