



MCDOWELL  
SONORAN  
CONSERVANCY

## Long-Term Bat Monitoring

### Why It Matters

Although seldom seen and often misunderstood, bats provide critical ecosystem services. Most bats are insectivorous and offer substantial pest control, potentially saving communities and farmers millions of dollars each year. Others are nectar feeders and help pollinate and distribute seeds for plants, such as saguaros and agave.<sup>1</sup> However, many bat species are in serious decline. Across the U.S. and Canada, eight species (18%) of bats are federally endangered or threatened, and half the species are of conservation concern. Global threats to this group include white-nose syndrome, loss of habitat, wind turbines, and intentional disturbance or killing.<sup>2</sup>

Habitat loss can occur through loss or destruction of important features, such as caves or through other effects of urbanization, such as artificial lighting, fragmentation, and sound. One of the leading causes of mortality to bats in the US is white-nose syndrome (WNS), a fungal infection that kills bats in hibernation. Diseased bats have not yet been detected in Arizona, but WNS has been confirmed in neighboring states, including California and New Mexico. Regular monitoring can help detect population declines and also determine if WNS enters Arizona so that proactive steps can be taken to control its spread.

### The Conservancy's Work

McDowell Sonoran Preserve's diverse landscape provides abundant habitats for various bat species. Using a combination of acoustic monitoring, emergence counts, and captures provides information about bats across the Preserve as well as at specific sites.

The Preserve has several old mines, one of which is known to support bat populations. Partner agencies have periodically conducted emergence counts and captures at this site since 1981 to learn more about the population. In 2019, the Conservancy began more rigorous monthly emergence counts to determine when bats use this site and seasonal changes in population size. Occasional captures at this site are used to monitor the bats' health and reproductive timing and to test for WNS. Through acoustic monitoring, the Conservancy assesses what species occur within the broader Preserve and how their distribution might change over time.

These data allow detection of potential future declines in bat populations from white-nose syndrome or other threats. If declines are observed, they can be investigated and appropriate conservation interventions implemented. This monitoring not only helps better manage the Preserve but also gives a greater understanding of bat species across the region and North America through inclusion in the North American Bat

Monitoring Program (NABat).

### What's Been Found

Through the Conservancy's work, an impressive 13 species of bats have been identified in the Preserve! Some of these species are known to be sensitive to urbanization, whereas others might benefit from urban resources.<sup>3,4</sup> The Conservancy and partners have discovered that an old mine is a maternity roost for Townsend's big-eared bat, a sensitive species that is highly susceptible to human disturbance and specific in its roosting requirements. Maternity roosts are sensitive habitats because bats nurse young for the first 4–5 weeks until they can fly and forage for food. If disturbed, this species may abandon their young, which could significantly affect the health of the population. The Conservancy's surveys also show that the mine is used year-round by bats, which has important implications for when certain activities can occur in that area to protect this population.

### How You Can Help

1. Explore how White Nose Syndrome is affecting bats at [US Geological Survey \(USGS\)](#).
2. Be a friend to bats by following [U.S. Fish & Wildlife Service](#) tips:
  - Reduce pesticides
  - Leave dead and dying trees as habitat
  - Protect clean water
3. Support McDowell Sonoran Conservancy [with a donation](#) or volunteer as a [Conservancy Steward](#)

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### Literature cited:

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2. "What Is White-Nose Syndrome?" White-Nose Syndrome, [www.whitenosesyndrome.org/static-page/what-is-white-nose-syndrome](http://www.whitenosesyndrome.org/static-page/what-is-white-nose-syndrome). Accessed 29 July 2024.
3. Russo, Danilo, and Leonardo Ancillotto. "Sensitivity of bats to urbanization: a review." *Mammalian Biology* 80.3 (2015): 205-212.
4. Gehrt, Stanley D., and James E. Chelsvig. "Species-specific patterns of bat activity in an urban landscape." *Ecological Applications* 14.2 (2004): 625-635.