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Bat-tastic Biodiversity: Big Thicket National Preserve Bat Inventory Update

[Big Thicket National Preserve](#)

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Deep into the wonders of the old-growth forest, several bats gather to rest in the shelter of the roost trees. They nestle into hollow, cozy cavities of the mature trees until the night calls them back into flight.



NPS

At Big Thicket National Preserve (NPRES) in Texas, the presence of bats yields several [ecological benefits](#) while roost trees offer the vital havens they need to thrive. Both foster a balanced ecosystem as the bats help control insect populations, such as mosquitoes, and the trees provide refuge to a variety of wildlife. Researchers at Big Thicket NPRES

conducted a [species inventory](#) to assess the bat population and health of their preferred habitat. This project was in collaboration with the National Park Service's [Inventory and Monitoring Division](#) and [Bat Conservation International](#) (BCI).



Researchers worked together to set up large mist nets in challenging terrain to find and track the bats.

NPS/Stankovich

Researchers used several methods to find and [study the bats](#), such as recording their [echolocation](#) calls. To follow the bats to their roosting sites, researchers used large mist nets to catch the bats and place temporary radio tags on them for tracking. Finding the roost trees was of utmost importance because two at-risk species— Rafinesque's big-eared bat and southeastern myotis, require old-growth wetland forest habitats with hollow trees for survival.

Andrew Bennett, biologist at Big Thicket NPRES, pointed out how the preserve is on the very edge of the species' range, so any changes in their population or distribution will be more noticeable than in areas closer to their core range. These bats have specific needs, making them sensitive to environmental changes, which positions them as an indicator species. Bennett noted how the preserve is also like an "indicator park" situated at an ecotone between the eastern and western United States.



The bats' primary roosting habitat are old growth trees with hollow trunks.

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During the inventory, surveyors found three roost cavities in three different species of tree. They concluded the bats were not limited by availability of roost trees in the preserve. Biologists observed lots of other trees with similar characteristics to the roosts they identified, suggesting that bats could potentially use these trees to roost. Bennett explained how accessing roosting areas deep within the forested wetlands was sometimes challenging, but their observations indicate there are plenty of suitable trees amongst the thousands of acres of mature trees. The preservation of habitats with old-growth trees is vital for the health of bats and other species.

Conservation lands would, at least for our area, be the only place where you'd find forests with trees that are mature enough to provide habitat to the species really tied to it.

—Andrew Bennett



Excessive amounts of saltwater in forests can cause a decline in trees that are then replaced by grasses, ultimately changing the habitat.

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A drought with record-high nighttime temperatures occurred during the survey period. Over the course of this inventory, [climate change](#) emerged as one of the threats to bats. Locating the roost trees offered staff a glimmer of hope, but observing the impacts of rising temperatures on the bats revealed a major threat they face. Climate change can contribute to rising sea-levels and droughts, which may result in saltwater intrusion and habitat loss. This cascades into the decline of mature trees which affects the overall health of the forests.



Biologists confirmed eleven different species of bats found during the survey period.

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Protecting the old-growth forests of Big Thicket NPres is crucial for safeguarding bat species and conserving other wildlife in the area. Park managers plan to monitor the health of the mature trees, especially the cavity-bearing ones. They intend to gather data on the effects of high temperatures on bats using new acoustic monitoring technology.

A long-term monitoring plan has also been established to assess climate change impacts on birds and amphibians in the park, complementing the existing efforts of the [Gulf Coast I&M Network](#). Some of these efforts involve monitoring land birds and 60 vegetation plots, including several in forested wetlands. This initiative reflects the collaborative approach between Big Thicket NPres and the I&M Division to track the park's ecological health.