



Aerial bat tracking © Cory Holliday/The Nature Conservancy

Science Leads the Way

TNC and partners gain knowledge about gray bats

Last year, Nature Conservancy scientists, together with colleagues from the Tennessee Wildlife Resources Agency and Copperhead Consulting, challenged the textbooks by proving that gray bats do not forage exclusively over water. Recently, the same team executed a new ground- and air-based radio telemetry study that revealed brand-new findings about the federally endangered species, this time related to their migration.

“When gray bats migrate, they can travel for hundreds of miles, which means we had a lot more ground, and air, to cover than in the previous study,” says Cory Holliday, TNC’s cave and karst program director in Tennessee. “They also fly faster and farther during



Gray bat © Cory Holliday/The Nature Conservancy

migration, usually seeking out caves for rest, which can compromise our signal.”

This study sought to answer the question of whether gray bats assume a straight line of flight or follow river

corridors, during summer migration. The prevailing theory favored the latter.

The data told a different story. Gray bats tracked in this study traveled between their hibernacula and summer roosting spots in a straight line. The information will guide future efforts to protect gray bats at every point in their life cycle, especially in light of wind development projects proposed in the state. It will also inform a range-wide gray bat migration model that TNC hopes to publish early next year.

“When out on the wing, gray bats are doing all sorts of interesting things,” adds Holliday. “It is a big deal to know more about this active part of their natural history.”

Looking Back

“When we launched a caves and karst program 25 years ago, most of our work entailed building protective steel gates across the entrances to endangered bat caves. While this is still important to safeguard the most sensitive sites, our subterranean work has expanded into collaborating with partners to study and understand some of the greatest challenges in caves and karst conservation, including white-nose syndrome and bat migrations.”

—*Gabby Lynch*, TNC’s Director of Protection in Tennessee



Bat study © Stephen Alvarez

Caves and Karst Program Prepares to Mark 25 Years

Milestones tell the tale of a successful conservation program

The Nature Conservancy launched its Tennessee Caves and Karst Program in 1995 with a grant from the Wallace Research Foundation and funding from the Tennessee Wildlife Resources Agency. However, conserving bats has represented a priority since TNC opened its doors in Tennessee. Highlights include:

- 1978** Acquires its first Tennessee nature preserve, Taylor Hollow, which contains a large cave system.
- 1984** Purchases Hubbard’s Cave, a premier bat cave in the Southeast, and builds the largest cave gate in the world to protect gray bats. (Since then, TNC has built 34 cave gates, with two more expected in 2020.)
- 1996** Convenes with partners to develop a list of Tennessee caves in most need of protection.
- 2000** Performs the first comprehensive biological inventory of a Tennessee cave, with assistance from local recreational cavers, to reveal overwhelming biodiversity and establish the subterranean world as a new conservation frontier in the region.
- 2004** Co-founds the Tennessee Bat Working Group, a coalition dedicated to sharing information between academia, land managers and the public.
- 2006** Acquires Pearson and Bellamy caves, which in addition to Hubbard’s Cave, account for the majority of gray bat breeding and hibernation habitat in Tennessee.
- 2007** Helps create and test new thermal video technology that improves the ability to understand gray bat populations and behavior.
- 2009** Facilitates a working group to create a management plan for Chiquibul Cave in Belize—Central America’s largest cave system.
- 2012** Constructs the world’s first artificial cave specifically designed for hibernating bats.
- 2014** Works with Bat Conservation International to establish a joint research fund targeting white-nose syndrome.
- 2019** Initiates a shared, Very High Frequency tower network to gather information on aerial wildlife. Leads the first project to actively track migrating gray bats. Works with The Conservation Fund to acquire 557 acres of priority Indiana bat habitat in East Tennessee.



Bat colony © Stephen Alvarez

Endangered Species Act Success Story

Listed as federally endangered in 1976, gray bats suffered drastic declines because of landscape changes associated with human population growth. Luckily, gray bats have responded well to protection efforts that include controlling human access to caves and growing knowledge about their life cycles. More than 40 years later, it is estimated that Tennessee has more gray bats than existed throughout their range when the species was listed in 1976.