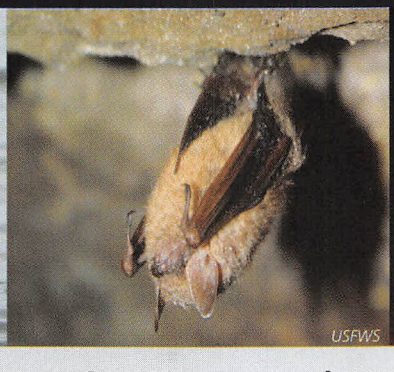
Appomattox Court House

National Park Service
U.S. Department of the Interior

Appomattox Court House
National Historical Park



Bat Population Monitoring and White-nose Syndrome

Why bats?

Bats are an important part of ecosystems and food webs. They consume huge numbers of insects every night, filling a unique ecosystem role as nocturnal insect predators. Unfortunately, a new disease called white-nose syndrome is affecting bats across the United States. To better protect bats, the park is working to understand how local bat populations are changing.

Do bats help people?

Due to their massive appetites, bats are a valued component of biodiversity. Bats can eat more than half their body weight every night—that's hundreds to thousands of bugs! Some of these insects, such as mosquitoes, can transmit human diseases. Others can be agricultural or forest pests. Scientists estimate that bats save U.S. farmers almost $3.7 billion per year by eating crop-destroying insects.

What habitats do bats need?

During the summer, bats use a variety of forests, fields, and wetland habitat for foraging. Live and dead trees, as well as buildings, are utilized by many species for roosting and raising their young. Bats that hibernate need secure caves, mines, buildings, or rock outcrops during winter seasons.

What's white-nose syndrome?

White-nose syndrome is a bat disease caused by the fungus *Pseudogymnoascus destructans*. The disease is named for the white fungal growth that occurs on bats' faces and wings. The fungus was first observed in 2006 in a New York cave and is believed to have originated in Europe. In Virginia, the disease has reduced some bat populations by more than 90%.

Which bat species get the disease?

Many species of bats spend the winter hibernating in caves, mines, buildings, or rock outcrops. Bats that hibernate in caves and mines are most likely to get the disease. Other bat species migrate south to warmer climates for the winter. These bats, in general, are not susceptible to white-nose syndrome.

Highlights

- *Recent monitoring detected nine species of bats in the park, including two federally threatened or endangered species.*
- *White-nose syndrome has negatively affected several of these species.*
- *The park is providing important bat habitat, particularly for state endangered tri-colored bats and little brown bats.*

How are bats infected? What happens?

Once introduced, the white-nose fungus can persist in the cold, humid environment of caves and mines, infecting bats when they return to hibernate. The fungus can also spread from bat to bat when they touch. Bats that hibernate in large groups are most susceptible. Humans don't get the disease but can spread it from cave to cave via contaminated clothing or equipment.

Ongoing studies suggest that the fungus irritates and damages the skin of an infected bat. The infection causes the bat to wake up more frequently during winter hibernation. When bats wake up, they use precious energy to stay warm. If they wake up too frequently, they can die of starvation before spring arrives.

A hibernating tri-colored bat showing symptoms of white-nose syndrome. NPS Photo.

How do biologists study bats? What have they learned about bats in the park?

Biologists have creative ways of studying these unique animals. Bats use echolocation (i.e. sonar) to navigate and catch insect prey during the dark of night. People can't hear these bat calls, so biologists use special microphones, called acoustic detectors, to record the sounds. By analyzing the bat calls, biologists can identify which specific bat species are present in an area during certain times of the year.

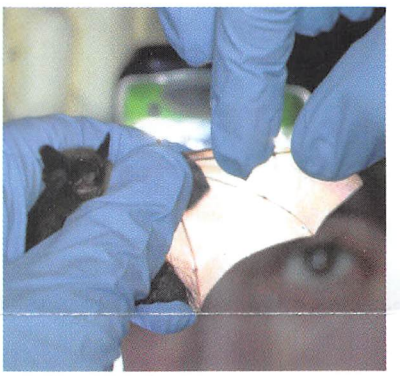
From 2016-2017, scientists used acoustic detectors to document nine species of bats in the park. The two most commonly detected bats were tri-colored bats (*Perimyotis subflavus*) and little brown bats (*Myotis lucifugus*). This is surprising since both of these species are state endangered and have suffered tremendous recent declines due to white-nose syndrome. Their high activity levels indicate that the park might provide important summer habitat for these rare species.

Researchers also use special nets to capture bats at key locations in the park. Following capture, biologists can attach tiny radio-tracking devices to bats and follow the bats to important habitats. Park managers can then better protect these areas. For example, some bats return to the same breeding locations every year, including specific individual hollow trees, snags, or buildings. Limiting disturbance to these areas can help bats.

Bats have been roosting and raising their young behind the shutters of historic buildings in the village for over 40 years. Protecting nesting areas, whether in buildings or in forests, is important in safeguarding the survival of bats. NPS photo.

What about other rare bat species?

During the summer, there are four rare bat species that can be found at Appomattox Court House. In addition to the little brown bat and the tri-colored bat, the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) are also present. Both of these species are protected by the Endangered Species Act and were rarely recorded by the acoustic detectors. This indicates that they are not common. All four of these rare species are very sensitive to white-nose syndrome.



After a bat is captured, biologists can check the wings for damage from white-nose syndrome. NPS photo.

These rare bats spend their summer days roosting in tree cavities and snags, under tree bark, or in buildings. At night, they emerge to feed across the park's landscape. During the fall, these species of bats usually travel to caves or mines, where they hibernate for the winter. In these caves and mines, they can contract white-nose syndrome and die.

What is the park doing to help bats?

The data being collected on bats will help park managers conserve bats and their habitat. Protecting hollow trees, snags, and buildings where bats raise their young and preserving mature hardwood forests will help reduce the impacts of the disease.

White-nose syndrome remains an extraordinarily dangerous threat to bat populations—sadly, some species may ultimately disappear from the region. To learn more about bats, visit www.nps.gov/subjects/bats or www.whitenosesyndrome.org.

Want to learn more about bats? Let's bust some bat myths!

Are bats blind?

No! Bats found in Virginia use echolocation to find their food. That said, they can still see, particularly in dark conditions. Some tropical bats can see better than people!

Do bats get stuck in your hair?

Bats have absolutely no desire to land on your head! Even in the pitch dark, they can use their well-adapted eyesight and amazing echolocation to avoid hitting you. They might want that mosquito that's bothering you though.

Do bats want to suck your blood?

No, they don't. There are no vampire bats in the United States. Vampire bats do live in Central and South America, but they generally feed on cattle.

Do all bats carry rabies?

Nope. Only a small percentage of bats carry rabies. Even so, rabies is very dangerous and you should never touch a bat. It is definitely not worth the risk.

Aren't bats a little bit evil?

Not at all! Bats are gentle and intelligent creatures. They are social too! For example, some mother bats group together in special roosts after having babies. When a mom gets hungry, she can leave the "maternity roost" and the other moms will take care of her baby until she returns.

Are bats awesome?

Yes! They are incredible creatures and an important part of healthy ecosystems.

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