

Scientists stake out bat colonies to track a killer: White nose syndrome

July 15 2012, By Renee Schoof

As green cricket frogs screeched and the sun set, researcher Kate Langwig and a small band of fellow scientists set a trap of black nets to nab bats and inspect them as part of a scientific quest to understand a spreading disease that's killed these small mammals by the millions.

Moments after two hours of work hoisting tall poles and positioning the nets was finished, the first bat - a tiny juvenile - was caught. Langwig, wearing white latex gloves, gently untwisted the net and popped the baby bat into a brown paper lunch bag. More [bats](#) emerged from four bat boxes near a pond in Pocahontas State Park, west of Richmond. In less than an hour, 38 bagged bats were ready for inspection.

The fungus grows on bats in [cold weather](#). They wake too early from hibernation, use up their fat reserves and die. Langwig - a graduate student at the University of California, Santa Cruz - and other researchers are trying to get a deeper understanding of how the disease called white-nose syndrome spreads and what might halt it before some species of insect-devouring bats, the only mammals that fly, go extinct.

"We're interested in how intense the infections are - how much they have and how much causes mortality," she said.

Her co-workers on a recent night of field work - Chris Hobson, a Virginia state [zoologist](#), and his colleagues - were banding bats to learn where they travel between their hibernation places and their summer colonies. Because bats live a long time - little [brown bats](#) can have a

[lifespan](#) of 35 years or more - the bands can provide useful data about bats that survive.

Langwig is the lead author of a new paper that reports some good news about little brown bats, a common species in the Northeast: Their populations are starting to stabilize after a steep decline.

One surprise was that these bats, now living in smaller colonies, have started to roost apart from other bats, instead of in large, dense clusters as they used to do.

"Our analysis suggests that the little brown bats are probably not going to go extinct because they are changing their social behavior in a way that will result in them persisting at smaller populations," A. Marm Kilpatrick, an assistant professor of ecology and evolutionary biology at UC Santa Cruz and a co-author of the study, said in a news release. The report was published last week in the journal *Ecology Letters*.

Another species hit by the fungus, Indiana bats, continues to hibernate in dense clusters and may decline to extinction, Langwig said.

But solitary roosting doesn't always appear to be the answer, either. Another species, the northern long-eared bat, is known for roosting individually. While its populations declined less rapidly than those of some other species did, 14 populations of northern long-eared bats became locally extinct within two years after white-nose syndrome was detected, and no populations remained in a study area after five years.

Langwig said northern long-eared bats appeared to be particularly susceptible to the disease: They were hit hard even after the transmission rate was reduced.

Little brown bats also have been among the hardest hit. Virginia state

scientists have found caves where their numbers are down by 90 percent. The disease has spread to seven bat species in 19 states and four Canadian provinces.

Government and academic scientists are working together in a major effort to understand the fungus.

On the night of field work near Richmond, the team worked at a brisk, steady pace, with no breaks. After they took down the nets, they sat around plastic containers that served as tables. Langwig took a bagged bat, weighed it, took it out of the bag and swabbed it, checking for the fungus and other microbes.

Hobson stretched out each bat's translucent wings - about 10 inches fully extended - over a light table. An assistant took photos and recorded data. Another biologist popped a tiny aluminum-alloy band onto each bat's wing. Hobson used a UV flashlight to check for the fungus, which would glow bright orange but didn't show up on any bats here.

By midnight, the 38 paper bags were empty. Their former inhabitants all turned out to be little brown bats from a maternity colony of females and the young that some of them had given birth to five or six weeks earlier.

The finger-sized bats struggled, chattered and bared their tiny teeth as the biologists gently clasped them. Once the inspection routine was over, each bat fell silent the moment Hobson held it up and let it flutter off to hunt insects by the hundreds before the night would end.

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