

Experts watch health of bat colonies in wake of white-nose syndrome

September 18 2009, By Sandi Doughton

The tiny male bat didn't expect to wind up in a biologist's hand when he set out in search of a nighttime snack along Box Canyon Creek.

After being snagged in a net, weighed and measured, the unhappy creature gnashed its teeth and squirmed as Pat Ormsbee stretched its wing for inspection.

The light from a headlamp shone through the translucent tissue, revealing bones tinier than toothpicks.

"This is one of the key things we need to be looking for," Ormsbee said, scanning for rips or scars that could signal infection with white-nose syndrome, the mysterious blight that has devastated bat colonies in the northeastern United States.

This bat -- its body no bigger than an apricot -- is given a clean bill of health.

Though wildlife officials in Washington and Oregon have received scattered reports of bat deaths this year, there's no evidence of large-scale die-offs and no sign of the fungus believed to be the cause of white-nose syndrome.

"We don't expect it to be here already," Ormsbee said. "But we need to start doing surveillance early."

More than 1 million bats already have perished in what one expert described as the most precipitous decline in American wildlife in recorded history. Extinctions are likely if the white-nose disease continues to spread, and could lead to a [population](#) explosion of mosquitoes and other [insect pests](#) normally held in check by the winged predators.

Ormsbee, a bat expert with the U.S. Forest Service and Bureau of Land Management, leads the Bat Grid -- one of the nation's most comprehensive programs to monitor the flying mammals. Since 2002, she has enlisted more than 100 volunteers and biologists across the Northwest to regularly trap bats, record their calls and collect their DNA.

"I don't know of anyone else that has collected this level of data over ... such a large area," Ormsbee said.

With the appearance of white-nose syndrome, the project has taken on new urgency and significance.

Having good baseline data will alert scientists to abrupt drops in bat populations. Bat "gridders" also may be the first to spot signs of infection and identify bat caves and other sanctuaries that should be closed to protect the animals.

"For white-nose syndrome, one of the things we're finding is that we need a whole lot more monitoring," said Robert Locke, of Bat Conservation International, which helped fund the Bat Grid along with the Forest Service, BLM and Defense Department. The approach is being adopted by other bat researchers.

The state Department of Fish and Wildlife is stepping up its surveillance, with an improved database on bat roosts and dead-bat reports. First

discovered in 2006 in a popular tourist cave in New York state, white-nose syndrome has spread to hundreds of sites in nine states. Marked by a powdery, white fungus on the bats' noses and wings, the infection can kill 95 percent or more of hibernating animals in a cave.

"When I talk to colleagues back East, they tell me they go into these caves and they cry," said Greg Falxa, a bat biologist with Cascadia Research Collective in Olympia. "They can't walk without stepping on dead bats."

Some predict the disease will reach the West Coast in five to six years.

Though the Rocky Mountains might be a barrier to the westward movement of infected bats, it's likely people can transport the bug on their shoes or gear, said microbiologist David Blehert, of the U.S. Geological Survey's National Wildlife Health Center in Madison, Wis.

In fact, there are several hints the fungus -- similar to a less-harmful version found in Europe -- may have hitched a human ride to the United States.

"If somebody steps in a pile of it, doesn't clean their boots, then gets on an airplane to Seattle and enters a hibernation cave there, you have a potential introduction," said Blehert, the first to identify the new fungus.

Federal and state agencies have closed caves and abandoned mines where bats hibernate across much of the East. Washington hasn't taking that step, but is reaching out to spelunkers and miners to get a better handle on sites that might be used by hibernating bats, said Gerald Hayes, of the state Department of Fish and [Wildlife](#).

Ormsbee and her corps of volunteers are using diluted bleach and ammonia solutions to clean nets and instruments, in hopes of slowing the

disease's spread -- but it's not clear how effective such measures may be.

"You try to do the best you can in the field, but disinfection is fraught with challenges," said Blehert, who is also developing a rapid test to identify the fungus and studying its transmission.

A particular challenge in the Northwest is that researchers don't really know where most of the region's bats spend the winter, Ormsbee said, as she held her captive male against a hand warmer to stave off the evening chill.

This is the fourth summer the researchers have trapped bats along this stream, gathering standardized data that ensure the Bat Grid is reliable and comparable across the region. But it's tough to study bats in the winter, when most species hole up and dial down their metabolism -- and immune systems.

The white-nose fungus thrives at cold temperatures, and strikes when the animals' natural defenses are low. Infected bats often leave their hibernation sites, flying into a frigid world where they either starve or freeze to death.

The bats Ormsbee and her colleague Aimee Hart snared in their mist nets on this night in late summer are fattening up for hibernation. Some species can consume their body weight in [mosquitoes](#), moths and other flying insects on a warm evening.

Fifteen types of bats make their home in Washington, and it can be hard to tell some apart simply by sight. So Hart stood in the gathering dark and held a sensitive microphone that picked up the high-frequency clicks and squeaks the bats emit to zero in on prey by echolocation.

Ormsbee then consulted a computerized library of voiceprints developed

by researchers at Humboldt State University in California to determine which pattern most closely matched the bats flying overhead.

To identify the small male, Ormsbee and Hart used a technique that might be called "walking the bat." They attached a fluorescent glow stick shorter than a match to the animal's back, then slipped a dainty elastic harness over his shoulders.

The harness was attached to a plastic wand that Ormsbee held as she lofted the bat into the air. As he gained elevation, the blue light traced the animal's path.

Bats only call when they fly, and Hart was able to record the animal's voice before he slipped the noose and spiraled into the cobalt sky, gleaming like Tinkerbell.

The fluorescent bar falls off soon after the bat is freed, but the voice print, body measurements and small snippet of tissue the researchers collected for DNA analysis are now a permanent part of the Bat Grid database.

The animal's scientific name is *Myotis lucifugus*, or little brown bat -- one of the species being hit hardest by white-nose.

"They used to be so common in the Northeast," Ormsbee said, watching the blue light zigzag above the treetops. "Now they rarely see them anymore in some places."

BAT FACTS

Diversity: With 15 or more species, bat diversity in the Pacific Northwest is among the nation's highest.

Diet: North American bats feed almost exclusively on insects. In one eight-county Texas area, bats save farmers \$1.7 million a year by eating insects.

Health: Less than one-half of 1 percent of North American bats carry rabies.

Mating: Bats mate in the fall; females store the sperm, then fertilize their eggs in spring if conditions are good.

Family: During the summer, females and their pups gather in maternity colonies.

Hibernation: Some Northwest bats will emerge from hibernation on mild winter evenings and feed.

Vampires? Three species of vampire bats occur south of Central Mexico. They lick animal blood from small cuts made with their teeth.

Threats: Northwest [bats](#) are threatened by habitat loss and climate change.

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