

## VOLUME 28, NO. 2 Summer 2010

### Still Fighting the Good Fight

?White-nose Syndrome takes a heavy toll on those who battle it

Robert Locke

In years past, Al Hicks and his young son played a little game on the front porch of their Albany, New York, home. With a bat detector in hand and his son on his knee, they would listen for the detector's beeping to reveal an airborne bat. When the bat discovered a flying insect and the beeps became a frantic buzz as it "went into attack mode, I'd tickle him." Often, there were several tickles and giggles per minute. "A few days ago, he said, 'Dad, can we play that bat-tickle game again?' So we got the bat detector and went out on the porch. And we sat ... and we sat ... and we sat. I never got the chance to tickle him."

Tickles are in short supply among bat researchers and managers these days. So are bats in much of the eastern United States. The once-plentiful cave bats of eastern New York are largely gone, and the bat detectors have fallen silent.

Hicks, a wildlife biologist with the New York Department of Environmental Conservation, raised an alarm in 2007. Thousands of dead bats were found in four caves near Albany, and bats at one of them displayed curious white noses "their faces dusted with an unknown fungus. In an urgent request for information three years ago, Hicks wrote, "We do not yet understand exactly what happened or why." Thus began the scourge of White-nose Syndrome.


Professor Tom Kunz of Boston University has studied New England bats since 1964. Last year, he surveyed the Aeolus Cave in East Dorset, Vermont. He found the cave floor "literally covered with dead bats. Some of them were just bones and skulls, with a little band sitting there among the remains." Some of the bands bore the initials "THK" "Thomas H. Kunz. "Many of these bats that are dying, they're like old friends. I have studied them and watched them for years. I banded a lot of them. Standing there, I was literally almost in tears. It's devastating, one of the most disheartening experiences I've ever had."

Across the continent, bat biologist Pat Ormsbee of the U.S. Forest Service in Oregon, like many of her West Coast colleagues, waits and worries. "If the trends keep going the way they are, WNS is inevitable [in the West]. In my WNS presentations, I show a picture of a tsunami hitting a quiet beach. It feels like that."

These tragic days, researchers often talk of bats as old friends. "So many of these people have given countless hours and emotional energy to understand these bats and protect these colonies," says Mylea Bayless, BCI's WNS Emergency Response Coordinator. "Bats are long-lived, and sometimes you'll see the same banded bat year after year, or encounter it like an old friend 10 years after you caught and marked it. To watch these bats die by the thousands rips a hole in your soul that is hard to describe."

What does it mean that more than a million bats have been killed by WNS, that entire populations have been wiped out, that extinctions are likely if solutions are not found? Clearly, losing these bats will have enormous impacts on ecosystems around the continent.



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But there is another cost — an often-crushing emotional toll on those who do battle with this unprecedented disaster day after day. These scientists and wildlife managers, many of whom have devoted a lifetime to studying and protecting these remarkable creatures, watch with broken hearts as an unimaginable plague spreads across North America. Somehow, they still get up every morning and rejoin the fight. And White-nose Syndrome keeps moving faster and farther each winter.

Scott Darling, bat biologist for the Fish and Wildlife Department of Vermont, the second state hammered by WNS, says bats are noticeably rare now. WNS, he said, "means for us in Vermont the loss of some of the most fascinating animals on our landscape. These are animals that have been in places like Aeolus Cave for 10,000 years. And we lost them. We lost them on my watch. That's what hurts the most. I was responsible for the conservation of the bats of Vermont."

The fact that there is absolutely nothing Darling could have done to change that outcome offers little comfort.

"I feel utterly helpless," says biologist Brock Fenton of the University of Western Ontario in Canada, where WNS arrived this past spring. "In spite of the best efforts of so many, we appear doomed to just hoping that enough bats survive for species to recover. The light at the end of the WNS tunnel is just another train."

"The scope is staggering," says DeeAnn Reeder of Bucknell University in Lewisburg, Pennsylvania. "I've tried to walk a fine line [in alerting the public]. If you scream that the sky is falling, no one listens to you. But for over 20 species of North American hibernating bats, the sky is literally falling. Whatever our worst-case scenario is, WNS may get that bad."

How bad? Walk up to Aeolus Cave with Boston University graduate student Jonathan Reichard in January 2009. "I wear a filter mask in the caves, which masks odors, so I was at the gate before I saw the dead bats. I had to turn around and sit away from the cave for about 10 minutes to convince myself to go in" and face the carnage.

"As we approached, the snow was packed with scavenger tracks. Bat wings were scattered on the landscape. There was a clearing with tracks of a crawling bat terminating in wing and talon prints of a bird. Bats circling by the cave would crash to the ground and tumble head over heels into the pile of dead bats right in front of the cave. A tufted titmouse scavenged dead bats, eviscerating carcasses just outside the cave. Bats were frozen to ice stalagmites, seemingly having attempted to climb to high ground and to take flight after crashing to the ground."

Aeolus is the poster child of WNS, but similar devastation is repeated often in the wake of WNS. How do you react to that? "Acute depression, shock, horror, you name it," says Susi von Oettingen, an Endangered Species Biologist for the U.S. Fish and Wildlife Service in New Hampshire. "The first year or so, I was a basket case. I needed the emotional support of my colleagues, and my family suffered a bit because I would come back from fieldwork really bummed."

What does the future hold? "I don't know, and I don't want to know," von Oettingen says. "I need a sliver of hope. ... I can't imagine going on without hope."

"We had hoped that it wouldn't move as fast as it did," says Rick Reynolds of the Virginia

Department of Game and Inland Fisheries. "We also held hope that perhaps the southern latitude would minimize the impact. Now we are less optimistic that latitude will help us. If a vaccine could be developed, I think that's our best hope."

Cory Holliday of The Nature Conservancy of Tennessee met WNS while monitoring caves in eastern Tennessee this spring. At the last cave on the route, "I encountered large clusters of bats with obvious fungal growth on their wings and muzzles. I struggled to keep my emotions to myself while in the cave. [Among scientists,] it is practically unheard of to share emotions about the 'resources' we all so obviously care for. But that night, my mind raced with devastating thoughts. People had given great parts of their lives to protecting these bats and these caves. Was it all a waste? Will my career be wasted battling an unstoppable opponent? What can I do to stop this?"

And yet, he says, "as hopeless and frustrating as it seems, there are moments of hope" in the commitment of a growing band of scientists, managers and conservations who are dedicated to saving these bats.

After three years of increasingly desperate research by top scientists, we know quite a bit about WNS. Scientists understand much more about how bats are being killed, how they react to the fungus and how their immune systems respond. But they do not know how to prevent those deaths or stop the relentless spread of WNS. Magic bullets are hard to find. Sometimes, it seems that hope is all that remains.

Kunz says he's hopeful that, if enough funding becomes available, WNS might be solved "with a vaccine or some other tool" or naturally occurring resistance. Small, residual [bat] populations with resistance may survive and given time "many generations of bats" they will build back up again. That's my optimistic view.

"I think anybody who cares has to be frustrated at the pace (of progress), no matter what that pace might be," Hicks said. In New York, they watched bats die in small hibernation caves and hoped WNS might spare the biggest caves. When WNS arrived, they hoped to keep the big colonies from collapsing. "Now," he says, "I will be happy if these species don't go extinct, if enough can survive to repopulate the landscape."

And still, like all the rest, he keeps working. "The alternative is to sit and wring your hands and do nothing. Then at the end of the day, you haven't helped. We're not in the business of throwing in the towel."

Cal Butchkoski of the Pennsylvania Game Commission is the keeper of the map. When WNS or the fungus hits a new site, he gets the confirmation "and another county gets a block of color on his map. Then he emails the new map to those who fight WNS. He's sometimes known as the "Grim Reaper."

"Three years of producing the map has become a window into the professional crises of others," he said. "Not only do I view the catastrophic scenes at hibernacula that I've worked with for years, but I'm also dealing with pictures, updates and comments from colleagues as WNS continues its devastating flow into their lives, too. From the communications, I sense challenge, optimism, frustration, anger, resignation, hopeful denial and always sadness. My gut tightens when a report comes in to update the map; I say to myself, surely they're not reporting that cave "a natural jewel I've read of or experienced firsthand."

"I too get into hopeful denial "maybe the north has some colder hibernacula that will

slow the fungus growth and minimize its devastation; maybe the warmer south, with shorter hibernation periods, will provide more survival opportunities; maybe the disease will lose some virulence as it spreads across the continent. But the map just keeps growing. As a group, we stick Â-together, groping for solutions while regretfully welcoming newÂ-Â-comers onto the 'ragged and rattled WNS raft.' Maybe that map is kind of a comfort blanket â€“ visual confirmation we're not in this alone."

And despite everything, tomorrow they will all be back at their labs and caves â€“ the front lines in the battle to save the bats of North America.

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