

**COUNTING BATS**  
BY REMOTE CONTROL

**BATS OF CAMEROON**

**SAVING FRUIT BATS**  
ON SULAWESI ISLANDS

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SUMMER 2010

# BATS

BAT CONSERVATION INTERNATIONAL



The Ravages of  
**White-nose Syndrome**  
take an emotional toll  
on those who fight it

# THE MEMO

from our

## EXECUTIVE DIRECTOR

It has been a busy few months for all of us here at BCI. Sadly, we continue to hear devastating news about the spread of White-nose Syndrome into new states and species. In May, we learned that the WNS fungus had reached as far west as Oklahoma, where it hit a new species, the cave myotis. That's a tragic development, but what could be even worse is that these bats commonly share caves with migratory Mexican free-tailed bats. Though biologists are uncertain whether this catastrophic disease will harm Mexican freetails or other non-hibernating species, this dramatically raises the threat to bats all across America. With migratory routes of 1,000 miles or more, freetails could spread the fungus from coast to coast and into Mexico.

Equally devastating was news that five gray myotis have tested positive for the White-nose Syndrome fungus in Missouri, at one of only a handful of gray myotis hibernacula. BCI has a long history of working on behalf of this species. After decades of concentrated effort, populations were recovering and gray myotis were well on the road to being removed from the Endangered Species List. Now, however, the gray myotis' future is again uncertain.

BCI remains at the forefront of this issue. We have provided key funding for urgent research, helped coordinate essential meetings among scientists and wildlife managers, and we are collaborating with partners on national standards for WNS monitoring and mitigation.

This spring, I submitted testimony to both the House and Senate Appropriations Committees requesting urgent funding for WNS research and conservation actions. Mylea Bayless, our WNS staff lead, working with other conservation organizations, enlisted nearly 60 other groups



and prominent individuals to join us in this testimony. For the latest on WNS, see Mylea's report on page 5.

We also have some exciting news: In April, I was invited to the White House Conference on America's Great Outdoors. The daylong event was attended by the CEOs of several hundred conservation and environmental groups. The goal of this initiative is to explore innovative new approaches and partnerships for conservation by reconnecting Americans to our magnificent natural heritage.

President Obama opened the conference by officially establishing America's Great Outdoors Initiative. Agriculture Secretary Tom Vilsack led a panel discussion on "Conserving Working Lands," and Interior Secretary Ken Salazar led a panel on "Connecting People to Our Lands, Water and Wildlife." At afternoon sessions, participants were asked for input on how to move this initiative forward. I offered several suggestions for how bat-related activities could get Americans outdoors again. Our invitation to this event is a measure of BCI's status as a conservation leader at the national level and a recognition that bats play a key role in our nation's ecosystems.

Finally, I had the privilege in early May of participating in my first BCI ecotour – to the island nation of Trinidad, renowned for its spectacular biodiversity. It was a pleasure meeting some long-term BCI supporters, and we all had a terrific time learning about bats from naturalist Fiona Reid, who leads many of our ecotours. In addition to seeing numerous bird species, a silky anteater and both howler and capuchin monkeys, we caught 32 of Trinidad's 70 bat species. What a week!

We're already planning our next trip for 2011. Expect an announcement soon.

*Nina Fascione*  
**Nina Fascione**



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## FEATURES

### The Memo

## 2 Still Fighting the Good Fight

*White-nose Syndrome takes a heavy toll on those who battle it*  
by Robert Locke

## 5 WNS: Three More Species Join a Grim List

by Mylea Bayless

## 6 Breaking Beams to Count Bats

*Technology monitors colonies around the clock*  
by Michael Baker

## 11 The Bats of Cameroon

*Proving the benefits of forgotten fruit bats*  
by Eric Moise Bakwo fils

## 14 A Slaughter of Fruit Bats

by Scott Heinrichs

## NEWS & NOTES

## 15 Bats & hummingbird feeders

*Pagoda bats of Vietnam*

*'Call to Action' gets a lot of action*

*Water for Wildlife*

*BCI Member Snapshot*

*The Wish List*

COVER PHOTO: This dead northern myotis, killed by White-nose Syndrome, was found in a hibernation cave in Pennsylvania. Scientists and wildlife managers who fight the relentless scourge of WNS are paying a steep emotional price. (Story on Page 2.)

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# STILL FIGHTING THE GOOD FIGHT

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

by *Robert Locke*

The floor of Aeolus Cave in Vermont is littered with the bodies of bats killed by White-nose Syndrome.

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.

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

# WNS Timeline

**February 2006:** A caver photographs hibernating bats with a white powder on their muzzles at Howes Cave west of Albany, N.Y. The photograph – the first evidence of what would become known as White-nose Syndrome – was not distributed until 2008, when its significance became clear.

**January 2007:** A caver reports that bats, which normally hibernate deep in the cave, were clustered near the entrance of Schoharie Cavern, near Howes. This was followed by scattered reports of bats flying around urban neighborhoods in the area with deep snow on the ground – something bats don’t do.

**March 2007:** A New York Department of Environmental Conservation team visits Hailes Cave, 20 miles from Howes, for a scheduled survey of endangered Indiana myotis. They left soon after entering and reported thousands of dead bats in the cave. The team also photographed bats in the cave with white noses. Dead bats are confirmed in a total of four caves in the area.

**Summer through Winter 2007:** Al Hicks of the New York Department of Environmental Conservation raises the alarm, seeking information about bats with “this white nose condition” from colleagues and cavers. White-nose Syndrome is named.

**Spring 2008:** WNS is reported in Vermont, Massachusetts and Connecticut. Aeolus Cave in Dorset, Vermont, shocks biologists with thousands of bat carcasses strewn across the cave floor.

**June 2008:** An emergency Science Strategy Meeting on White-nose Syndrome is held June 9-11, in Albany, New York, to set research priorities. The meeting was organized by BCI, Boston University, Cornell University, New York Department of Environmental Conservation, the U.S. Geological Survey and the U.S. Fish and Wildlife Service.

**October 2008:** The fungus found on WNS-affected bats is identified as a member of the genus *Geomyces*. A similar white fungus has been informally reported on some European bats, but without significant mortality.

**Spring 2009:** WNS is confirmed in New Hampshire, New Jersey and Pennsylvania, but also moves beyond the northeastern states into Virginia and West Virginia.

**April 2009:** The White-nose fungus is confirmed as a new species: *Geomyces destructans*.

**May 2009:** The Second Science Strategy Meeting on WNS is hosted by BCI, in partnership with Boston University, in Austin, Texas.

**June 2009:** Officials of BCI, Boston University, the U.S. Fish and Wildlife Service and Forest Service, the National Speleological Society and

‘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 together, groping for solutions while regretfully welcoming newcomers onto the ‘ragged and rattled WNS raft.’ Maybe that map is kind of a comfort blanket – visual confirmation we’re not in this alone.”

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

*ROBERT LOCKE is Director of Publications for Bat Conservation International.*

the Vermont Department of Fish and Wildlife testify about WNS to a congressional subcommittee, requesting \$15 million in federal funds for WNS research and monitoring for the coming fiscal year. They received \$1.9 million.

**August 2009:** The U.S. Fish and Wildlife Service, with sponsorship from BCI and the NSS, hosts an annual meeting to advance collaboration on WNS research and management.

**September 2009:** The U.S. Fish and Wildlife Service, working with the U.S. Geological Survey and National Park Service, presents the framework for its national plan for confronting White-nose Syndrome. The process began with an initial meeting in May.

**December 2009:** The WNS fungus is confirmed on a bat in France that shows no WNS symptoms.

**February/March 2010:** WNS is confirmed on bats in Tennessee and Maryland, and in Ontario, Canada.

**April/May 2010:** The WNS fungus is confirmed on bats in Delaware, Missouri and Oklahoma, and Quebec, Canada. In Missouri, the fungus was identified for the first time in endangered gray myotis (*Myotis grisescens*). It’s also confirmed on a southeastern myotis (*Myotis austroriparius*) in Virginia. A cave myotis (*Myotis velifer*), a western species, is found with the WNS fungus in Oklahoma, potentially opening the American West and possibly Mexico to the disease.

**May 2010:** BCI Executive Director Nina Fascione submits testimony, endorsed by 60 other conservation organizations, to the House and Senate Appropriations Committees requesting urgent funding for WNS research and mitigation. The U.S. Fish and Wildlife Service, Pennsylvania Game Commission and BCI sponsor the 2010 WNS symposium in Pittsburgh.



This 2007 photograph of bats with white muzzles in a New York cave played a critical role in the WNS story. Among the first widely circulated images, it convinced many biologists that something new and dangerous was coming.

## WNS: Three More Species Join a Grim List

The White-nose Syndrome fungus – probable cause of this devastating disease – was confirmed on bats of three additional species this past spring. The fungus expanded westward an astonishing 980 miles (1,577 kilometers) since last year. It now puts the impressive recovery of endangered gray myotis at extreme risk and opens a potential gateway to western states and perhaps even Mexico. WNS or the fungus is now affecting nine species in 14 states. And it continues to spread.

The fungus, *Geomyces destructans*, was found on gray myotis (*Myotis grisescens*) in Missouri, southeastern myotis (*M. austroriparius*) in Virginia and in cave myotis (*M. velifer*), the first truly western species, in northwestern Oklahoma, a state with no previous signs of WNS.

This year, the fungus has been detected much farther west and has affected more new species much sooner than most of us had imagined possible. The WNS fungus has been confirmed on these newly infected bats, but they apparently show none of the typical symptoms of the disease. The fungus was on the skin, but was not detected in the underlying tissue; the bats were not emaciated; and they did not appear to be emerging early from hibernation or flying about during winter.

The presence of the WNS fungus on bats without symptoms of the disease raises intriguing questions. Perhaps the fungus has always preceded the disease by a season or more, but we only now have the tools to detect it, and bat-monitoring efforts are much more intense. Or perhaps as the disease moves south and west, WNS behaves differently and bats are able to contract the fungus without succumbing to the disease. I wish we knew the answers to these crucial questions, but until we do we'll keep trying to find out.

BCI has been a key player in gray myotis' recovery efforts since its founding in 1982. By protecting critical gray myotis caves and other actions, the species, which was listed as endangered in 1976, has dramatically increased in numbers and was being considered for graduation off the Endangered Species list.

Roughly 95 percent of all gray myotis hibernate in a handful of caves in Tennessee, Missouri, Arkansas, Kentucky and Alabama. If WNS hits these major colonies, the species would once again be in imminent peril.

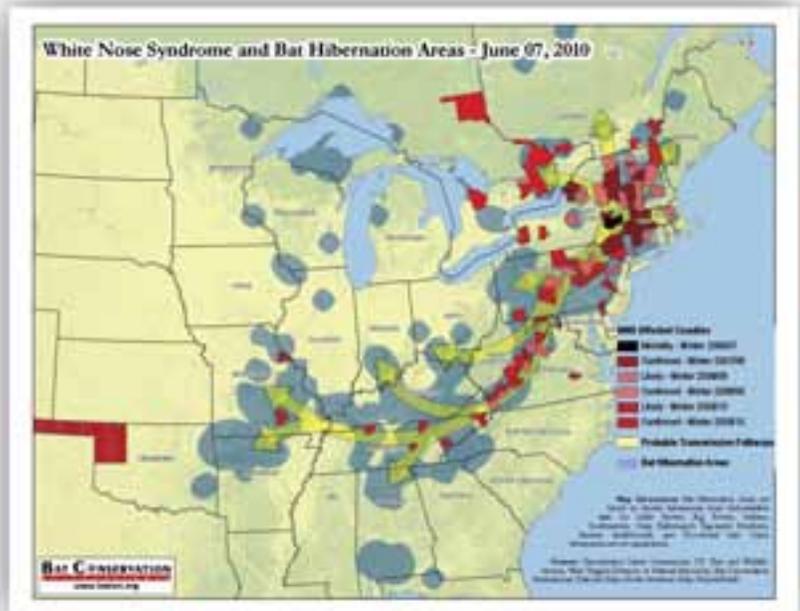
The arrival of the WNS fungus among cave myotis in Oklahoma may well open a gateway to the West, exposing a whole new community of bat species to White-nose Syndrome. Cave myotis are very likely to spread the WNS fungus to bats in other western states.

But an even greater risk of WNS expansion involves cave myotis' tendency to share caves with migratory Mexican free-tailed bats, one of the most widely dispersed and far-ranging species of bats in the American West and South. Huge colonies of Mexican freetails typically spend their summers in the United States, where they are found from coast to coast, then migrate south for the winter. Their migration routes can cover 1,000 miles (1,600 kilometers) or more and reach deep into Mexico.

With the fungus now confirmed on southeastern myotis, this

southern bat is likely to test researchers' hopes that the White-nose Syndrome fungus cannot work its damage in warm climates of southern states. The hibernating species' U-shaped range reaches from parts of Indiana and Illinois, down the Mississippi Delta and into East Texas, then along the Gulf and Atlantic coasts to North Carolina. In addition to caves, these bats often roost in hollow trees, bridges, buildings and underground cisterns. To date, WNS has been reported only in caves and mines used for hibernation.

We do not know how White-nose Syndrome might affect bat populations in warmer climates where they do not hibernate as deeply as bats living farther north. But if southeastern myotis transport the fungus to Gulf Coast populations, we are very likely to find out. BCI, meanwhile, has been working in partnership



with the Southeastern Bat Diversity Network to develop a conservation strategy for southeastern myotis, one of the most poorly understood species in the South.

Bat Conservation International and its partners are working to raise the awareness, funding and political will that are desperately needed to support aggressive WNS research and mitigation efforts. BCI Executive Director Nina Fascione recently submitted written testimony to the House and Senate Interior Appropriations Committees urging the federal government to commit an additional \$5 million for research and management of WNS in 2011. The request was endorsed by nearly 60 other organizations, including the Center for Biological Diversity, Natural Resources Defense Council, Defenders of Wildlife and the National Speleological Society.

*MYLEA BAYLESS is WNS Emergency Response Coordinator for Bat Conservation International.*

**You can help Bat Conservation International in its fight against White-nose Syndrome and other critical threats: [www.batcon.org/donate](http://www.batcon.org/donate).**

# BREAKING BEAMS TO COUNT BATS

## Technology monitors colonies around the clock

by Michael Baker

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Entering a cave where bats are hibernating always carries a risk for the bats, whether by casual visitors, experienced cavers or dedicated scientists. Any disturbance can cause hibernating bats to awaken and burn the precious energy they stored as fat to survive the winter. When bats use up their energy stores, they starve to death. The problem is magnified many times over where White-nose Syndrome is present or threatened. Yet scientific information is critical in conserving bats and confronting WNS. Biologists too often are forced to weigh the harm caused by entering a cave against the value of the data they need.

Now Bat Conservation International and its partners are tapping powerful new technology that promises more and better information about hibernating bats – without venturing into their caves. It should also provide an early warning of the arrival of WNS at a cave.

Bat Ecologist David Redell of the Wisconsin Department of Natural Resources began with well-established infrared technology that is commonly used in motion detectors. From that he developed an automated bat-counting system that can precisely track the comings and goings of bats at specific roosts 24 hours a day, 365 days a year. The GateKeeper beam-break system operates remotely and requires only occasional human attention.

By stacking paired sets of infrared-beam emitters and receivers across a cave or mine opening, GateKeeper can record each time a bat passes through a beam. The system also determines whether the beam-breaking bat is entering the cave or leaving it.

GateKeeper's continuous bat count can be automatically uploaded to a dedicated Internet site over a cell phone or satellite network and made available to researchers virtually anywhere. This remote-reporting capability not only makes data quickly available, but conserves scarce conservation dollars



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(Top photo) This unusual gate structure over the entrance to Saltpetre Cave complicated the beam-break project. (Above) David Redell, who designed this bat-counting system, examines the alignment of beam emitters and receivers on custom-fitted uprights for the installation.

by allowing biologists to collect critical data from far-flung sites without the expense of getting there.

The beam-break system will, for example, determine exactly when and how rapidly bats begin entering a hibernation site in the fall and when they emerge in the spring, as well as how long these movements last and when they peak. Overwinter mortality estimates could also be found in the data, along with the timing and pace of warm-weather nightly emergences and returns. The results from a range of sites and climates can be compared, including differences between sites that are subject to human disturbance and those that are not.

This information can be vital in areas that lie in the expected path of White-nose Syndrome, which is decimating hibernating-bat populations. WNS is now in 14 states and 2 Canadian provinces, and it continues to spread rapidly. Our first series of GateKeeper installations is in Kentucky, apparently untouched so far by the infection, but encased on three sides by WNS-stricken states.

Bats infected by WNS typically arouse frequently from hibernation and are often emaciated. Any disturbance of such sites could increase the losses. Infected bats also sometimes exhibit very abnormal behavior: they emerge too soon from hibernation and are reported flying around in midwinter, occasionally during the daytime. Beam-break systems will document such behavior and could even be programmed to send an immediate

email or text message to local biologists.

Scientists and wildlife managers consider it crucial to know exactly where the expanding WNS front is located. That lets them track how fast the disease is spreading and determine where funds and conservation efforts can be most effective. The dreaded arrival of WNS in a new state or region also triggers emergency response plans. Non-disruptive monitoring will be-



The endangered Indiana myotis is being battered by White-nose Syndrome. BCI's efforts to remotely monitor its hibernation caves with beam-break systems should provide valuable data about the status of critical colonies.



Bats fly along this entrance/stairway (left) as they enter or leave Saltpetre Cave, so that's where the high-tech counting system was mounted. BCI has worked for years to restore airflow and temperature conditions that once allowed the cave to support hundreds of thousands of hibernating Indiana myotis. These volunteers (right) built an airflow barrier in 2004.

# The Technology

The GateKeeper beam-break system monitors underground bat roosts by essentially filling a cave or mine opening with a stack of infrared beams that are invisible to bats (and to people).

Each focused beam is produced by a small emitter and received by two side-by-side electronic “eyes.” These paired detectors effectively divide the single infrared beam into two horizontal beams. When a bat flies through in either direction, the animal breaks first one beam and then the other. The detectors record each brief loss of the infrared signal.

GateKeeper’s processors analyze the beam breaks with enough precision to determine which detector was triggered first, thus establishing whether the bat was going out or coming in. The system’s beam-break analysis is so rapid that virtually every bat that passes through any of the beams is counted – and its direction is recorded.

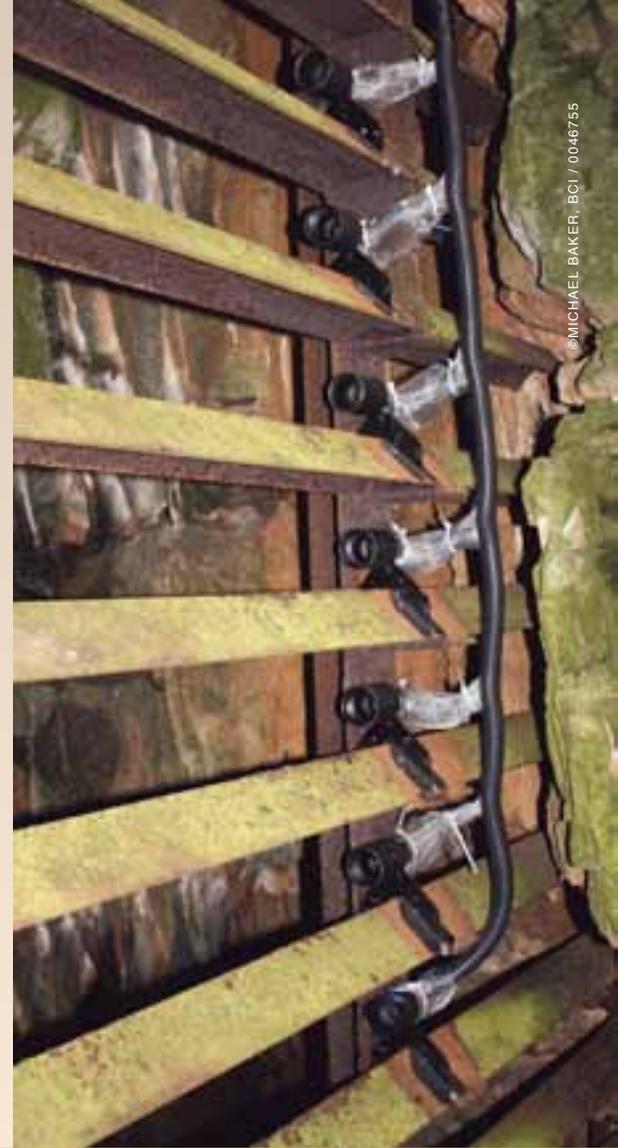
The number of beams required to adequately cover a cave entrance depends first on the size of the opening. The beams must be aimed horizontally and currently have a maximum effective range from emitter to detector of 10 feet (3 meters), although two can be installed together to span wider openings.

Openings protected by bat-friendly gates offer the simplest beam-break installations. Emitters and detectors can be mounted on the gate itself and arranged so each beam effectively fills the gap between two horizontal bars for complete coverage. A temporary “gate” can also be used.

The GateKeeper systems, including data processors, operate on 12-volt DC electrical current, which can be provided by AC service with a converter or by batteries or solar/battery systems.

GateKeeper was created by David Redell, of the Wisconsin Department of Natural Resources, as part of his Master’s Thesis work at the University of Wisconsin. It was originally developed and tested on the shaft of a mine where roughly 145,000 little brown myotis (*Myotis lucifugus*) hibernate.

A typical GateKeeper system currently costs approximately \$1,200 (seven beams or more are often needed for each site), plus about \$1,500 for supporting equipment, but they are expected to last for decades with limited maintenance and can be removed and re-installed at other sites at will.



©MICHAEL BAKER, BCI / 0046755

come essential to track the immediate impact of WNS and the long-term effects on each colony.

Also, of course, a continuous stream of data from multiple sites can help researchers learn much about bat behavior – and what is normal and abnormal for different areas and weather conditions. Such analyses should prove invaluable for all cave-bat populations, not just those facing the specter of White-nose Syndrome.

Traditional bat counts, limited by available technology, typically collect a “snapshot” of a hibernating population – and that single count often varies according to the skill and experience of the counter. At least since the 1960s, such efforts typically involve a team of counters who move through a hibernation cave, examining clusters of bats, counting each visually or after taking photographs. Depending on the size of the colony and the complexity of the cave, the total number is estimated with various extrapolation techniques.

Besides the inherent disturbance of hibernating populations, such low-tech bat counts are basically estimates, with an uncertainty – a margin of error – that can rarely be stipulated. GateKeeper is designed to resolve that shortcoming.

The beam-break count will be somewhat conservative. Since some bats are likely to slip through without breaking a beam and others might hit a beam at exactly the same time, the final

count will probably be a bit low. On the other hand, it should prove virtually impossible for the system to report more bats than the site contains. GateKeeper is not meant to immediately replace traditional counts. Using comparisons among these and other counting techniques at the same sites will, over time, allow GateKeeper counts to be statistically adjusted to produce more accurate numbers and predictable margins of error.

The prospect of multiple bats breaking a beam at the same time – and being counted as a single pass – suggests beam break could significantly undercount emerging bats at large colonies. And current beam-break systems likely would be ineffective with populations such as the millions of Mexican free-tailed bats (*Tadarida brasiliensis*) that often share single caves.

For such huge colonies (and probably in other situations, as well), novel thermal-imaging video systems being developed separately by Boston University and the U.S. Army Corps of Engineers offer an alternative. These systems use automated-counting software to tag each bat’s thermal (infrared) signature. They have been tested successfully at several freetail caves. The video can be streamed onto the Internet, although the systems require more human interaction and cannot be left unattended for long periods.

BCI teamed with the Kentucky Department of Fish and Wildlife Resources (KDFWR) this year for initial GateKeeper

installations to monitor high-priority hibernation caves in Kentucky used by Indiana myotis (*Myotis sodalis*) and gray myotis (*M. grisescens*), both federally listed as endangered species.

The first site we outfitted was Saltpetre Cave, where BCI has been working for a decade on behalf of the Indiana myotis. BCI discovered in 1998 that Saltpetre, a popular tourist site at Carter Caves State Resort Park, displayed extensive roost stains on its ceiling – evidence it once was used by hundreds of thousands of Indiana myotis. Only a few dozen bats remained. Winter tours of the cave were halted that year, however, and the bat population began to rebound.

More dramatically, BCI Caves Coordinator Jim Kennedy worked with partners and volunteers to restore the historic air-flow conditions that had originally attracted so many hibernating bats – and which had been lost to a century of alterations for mining and tourism. By 2007, some 7,000 Indiana myotis were hibernating at Saltpetre Cave each winter, confirming the potential of systematic cave restoration for species recovery. Now White-nose Syndrome threatens these and other bats in Kentucky, and non-contact monitoring is critical.

So we – Redell, KDFWR Bat Ecologist Brooke Slack, Endan-

gered Species Biologist Mike Armstrong of the U.S. Fish and Wildlife Service's Kentucky Field Office and I – brought beam break to Saltpetre early this year. The installation turned into a challenge because the primary entrance is protected by an unusual bat-friendly gate. With a solid roof and bars on all four sides, the gate looks a lot like a frontier “jail house.” Bats emerge through all four sides, but the cost of covering all those gates with infrared beams was prohibitive. So we chose an alternative.

The jail house sits over a four-foot-wide (1.2-meter) stairway that leads down into the cave. We placed an upright post – one bearing beam emitters and the other with paired detectors – on either side of this constriction through which the bats must pass as they come or go through the gate.

The associated dataloggers, circuit boards and assorted wiring are tucked inside a waterproof box inside the gate structure. This GateKeeper system, operating off an existing electrical system, draws a paltry seven watts and, with continuous operation, should cost about 35 cents a month to operate. And the bats of Saltpetre Cave are being counted around the clock.

In the spring, we completed beam-break installations at the James and Coach caves in southeastern Kentucky. Together,



This datalogger weather station at Kentucky's Saltpetre Cave both stores and transmits continuous data from a GateKeeper beam-break system to biologists via the Internet.

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A cluster of endangered Indiana myotis hibernate in a Kentucky cave before the arrival of White-nose Syndrome.

these two sites host some 300,000 hibernating gray myotis each winter, as well as smaller numbers of Indiana myotis. Both caves are part of the privately owned Park Mammoth Resort, which is cooperating with the installation.

We plan one more installation in Kentucky this summer and, as funding permits, we will set up GateKeeper systems to monitor two near-legendary Indiana myotis hibernacula: Wyandotte Cave in Indiana and Magazine Mine in Illinois. These two are among five hibernation sites that give refuge to half of all the remaining Indiana myotis in America. An installation at the critical gray myotis site of Bellamy Cave in Tennessee is also in the planning stage.

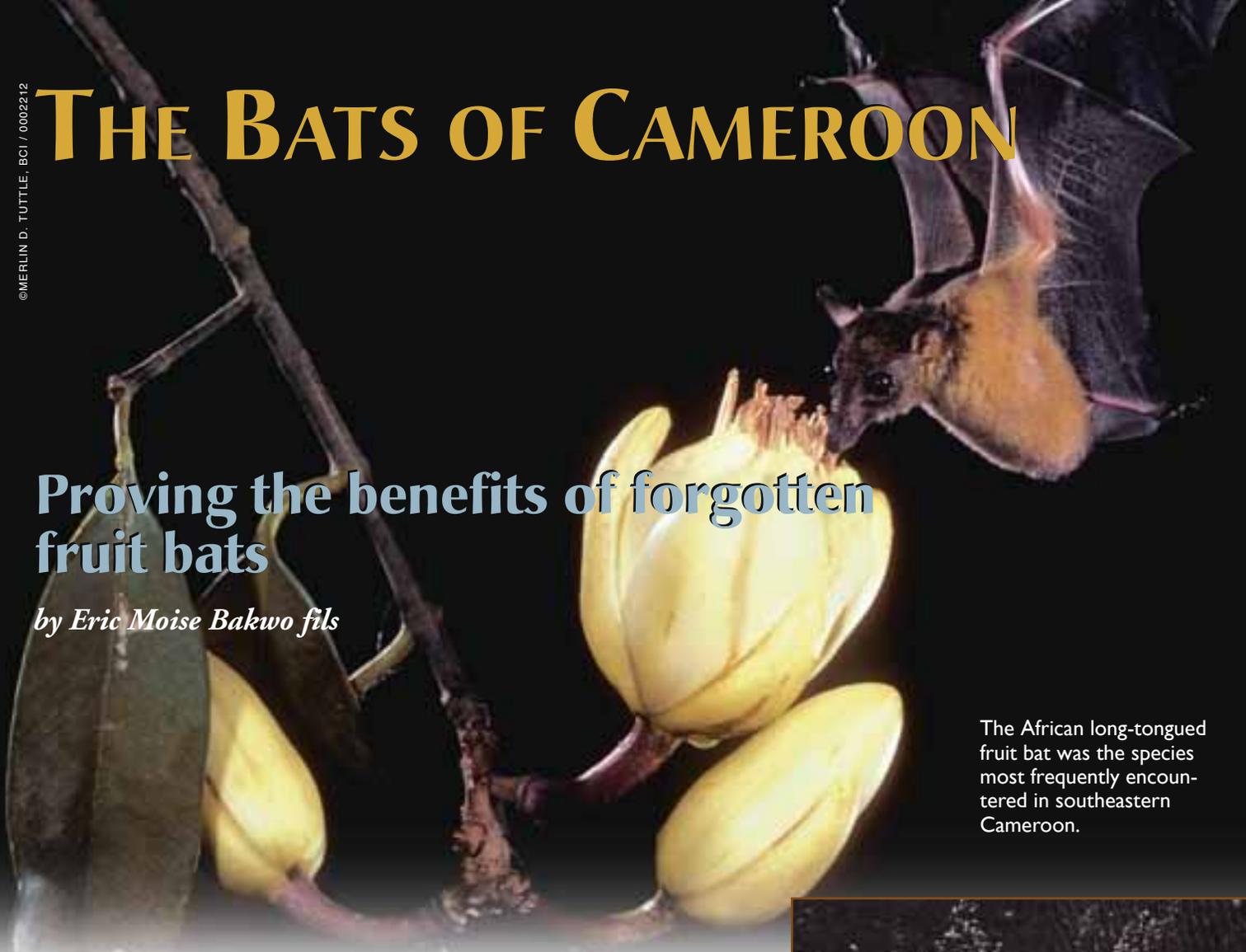
This new ability to systematically collect such basic data day after day will allow us to learn much that we have never understood about bat behavior and conservation needs. Such knowledge will certainly help us manage many sites that are vital to bat populations, whether threatened by WNS or not. In the wake of WNS, however, automated monitoring will be an essential part of species-recovery efforts. There are countless sites around North America and much of the world where beam-break systems would be invaluable.

*MICHAEL BAKER is Coordinator of Bat Conservation International's Indiana Myotis Program.*

# THE BATS OF CAMEROON

## Proving the benefits of forgotten fruit bats

by Eric Moise Bakwo fils



The African long-tongued fruit bat was the species most frequently encountered in southeastern Cameroon.

**Editor's Note:** The people of southeastern Cameroon really depend on their bats, but hardly anyone in the central African country realized it. Then Eric Bakwo fils went to work, with a little help and a scholarship from BCI and U.S. Forest Service International Programs. Bakwo fils hopes to earn his Ph.D. at Cameroon's Yaoundé University by studying fruit bats and their importance to the nation. He contacted BCI's scholarship program about a problem: He had no one to turn to for advice or guidance. "The subject is not of interest to my teachers or my university because there is no bat specialist in the country," he said in an email.

BCI sought help from Paul Racey, a top bat expert at the University of Exeter in Cornwall, the United Kingdom. Racey, who had conducted research in Africa, offered to review Bakwo fil's research proposal. He was impressed with the project, offered continuing advice and recommended the young biologist highly. BCI provided a BCI/Bats in International Forestry Scholarship in 2008 and another in 2009. The following report documents what Bakwo fils accomplished with that support.

Now Cameroon has its first bat biologist, and a champion for bat conservation.

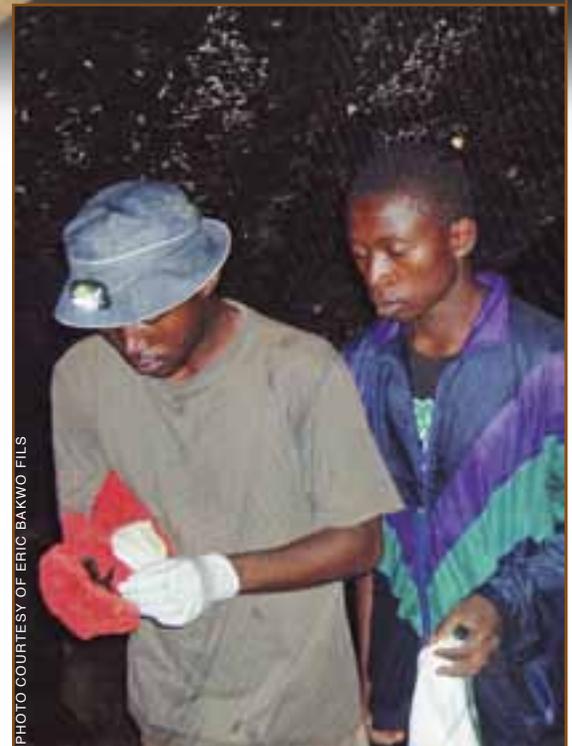


PHOTO COURTESY OF ERIC BAKWO FILS

BCI Scholar Eric Bakwo fils (left) removes a bat from his mist net, as a field assistant observes, during a rare survey of bats in the region.



PHOTO COURTESY OF ERIC BAKWO FILS

Villagers in the Dja Reserve of Cameroon are fascinated by bats displayed by Eric Bakwo fils as part of the public-outreach efforts of his graduate research project.

**R**emarkably little is known about the bats of Cameroon. They were rarely studied by a handful of visiting European biologists. Worse, there has been no scientific interest in bats at all among universities and conservationists in our west-central African nation. They are not even considered in long-term conservation plans, and most Cameroonians either ignore bats or despise them. The best way to change the status of bats from persecuted to protected in Cameroon is to demonstrate the unappreciated ecological and economic value of these animals.

My two-year study did just that, demonstrating that the fruit bats of southern Cameroon play a key role in dispersing the seeds of many plants that are critical to healthy tropical forests and of considerable economic value to the people of those forests.

As the foundation of my Ph.D. research at the University of Yaoundé, I conducted the first inventory of bat species in the huge Dja Faunal Reserve of southern Cameroon. The reserve, which sprawls across 1.3 million acres (526,000 hectares) of lowland tropical rainforest, is the largest protected area in Cameroon. It has been designated a World Heritage Site and IUCN Biosphere Reserve, although bats are largely ignored among such popular mammal species as gorillas, chimpanzees, elephants and buffalo.

My work was supported by a Bats in International Forestry Scholarship from Bat Conservation International. These BCI scholarships are funded by U.S. Forest Service International Programs.

Several field assistants and I used mist nets to capture bats for at least seven consecutive nights each month at various sites in both old-growth and secondary forests. We used this opportunity to train three professional foresters who work in the Dja Reserve in bat-capture techniques and identification. Educating those who manage Cameroon's forests about the nature and importance of bats should greatly enhance their conservation.

While surveying bats around the reserve, we interviewed residents of the region to help us locate bat roosts, to assess attitudes toward bats and to determine the level of bat hunting for food. In a pleasant surprise, we found that, unlike many other areas in Africa and elsewhere, people of the Dja region make relatively little use of bats as "bushmeat."

In two years of mist netting, we captured and identified a total of 491 bats of 29 species. About 80 percent of these (394 captures) were fruit bats of nine species. The rest were low numbers of mostly insect-eating species.

The fruit bats included two Buettikofer's epauletted bats

(*Epomops buettikoferi*), a species that previously had not been reported in Cameroon or central Africa. This raises the number of fruit-bat species confirmed in Cameroon to 15.

The most common species among our captures was the African long-tongued fruit bat (*Megaloglossus woermanni*), a nectar-feeding bat that had been described as rare in Cameroon. Our mist nets caught 153 of them. The only other species that numbered at least 100 in our sample was Franquet's epauletted bat (*Epomops franqueti*) at 102.

Each captured bat was identified, measured and weighed, and its sex and reproductive condition were determined. After the data were logged, each bat was placed in a clean, cloth bag for up to two hours to obtain fecal samples. The droppings were collected, labeled and stored.

The droppings were later examined for seeds, which were identified by a plant taxonomist. We also spread plastic sheets on the ground beneath bat roosts to collect feces for similar examination.

Research throughout the Old and New World Tropics – although not in Cameroon – clearly shows the crucial role of fruit bats in dispersing seeds that allow damaged rainforests to regenerate. And this is a region that, like most tropical ecosystems, is losing its forests at an alarming rate. Land is cleared for agriculture, population growth and various development projects.

Fruit-eating bats disperse huge amounts of seeds in their feces. Bats, which often cover great distances nightly, are much more likely than birds to fly across large clearings, and bats usually defecate in flight, so they are especially effective at reseeding cleared spaces. In addition, research suggests that passing through a bat's gut can increase the likelihood that a seed will germinate.

Given their abundance in the region and their seed-scattering abilities, along with the declining numbers of large fruit-eating animals, fruit bats could well be the main agent of plant dispersal.

And certainly there is good reason to believe that the loss of fruit bats would have a catastrophic impact on tropical forests.

We have so far identified at least 52 plant species in fruit-bat fecal samples, and that number will no doubt increase, since our seed-identification process continues. We include in this list only plant species representing at least 5 percent of all seeds from each bat species.

These bat-dependent plants include those that produce such economically important products as papaya, guava, mango, fig and banana fruit, iroko and kapok wood, plus a variety of foods and medicines.

The importance of bats for people and forests of southern Cameroon is clear. Now we must convince Cameroonians of that.

During our research, we periodically visited villagers and schoolchildren in and around the Dja Reserve to explain the value of the bats among them and the need to avoid damaging their habitat. Our goal is to demystify bats and teach people that their fears are unwarranted.

To this end, my colleagues and I have created, in partnership with ECOFAC IV Cameroon (which conducts conservation programs in the Dja Reserve), an educational program to teach the importance of bats in our country. We are giving presentations to students, conservationists and local leaders at villages around the area.

The bats of southern Cameroon are invaluable to their human neighbors, and at least some of those humans are discovering that. We hope our research can help, finally, to begin conserving these animals.

*ERIC MOISE BAKWO FILS conducted this research while a Ph.D. candidate in the Laboratory of Zoology at the University of Yaoundé in Cameroon. He is now a lecturer at the University of Maroua, also in Cameroon.*

## A sampling of Cameroon's exotic bats



Buettikofer's epauletted bat  
(*Epomops buettikoferi*)



Straw-colored fruit bat  
(*Eidolon helvum*)



Hammer-headed fruit bat  
(*Hypsignathus monstrosus*)



Egyptian rousette fruit bat  
(*Rousettus aegyptiacus*)



Franquet's epauletted bat  
(*Epomops franqueti*)

PHOTOS © MERLIN D. TUTTLE, BCI

**YOU CAN HELP US** support aspiring young scientists and their often-unprecedented research around the world. To donate to this critical scholarship program, go to [www.batcon.org/donatescholarships](http://www.batcon.org/donatescholarships).

# A SLAUGHTER OF FRUIT BATS

© SCOTT HEINRICHS

by Scott Heinrichs

Fruit bats on their way to the markets of Sulawesi are jammed into crates for miserable journeys that can last several days.

Fruit bats have a brutally hard life in Sulawesi, an orchid-shaped island in the heart of Indonesia. A remarkable 22 species of fruit bats live on the island and some of them are found nowhere else. But their numbers are being decimated by overhunting for the commercial “bushmeat” trade, and their treatment on the way to market can only be described as torture.

Now a previously untouched colony of some 10,000 Sulawesi fruit bats (*Acerodon celebensis*) has been discovered by commercial hunters on a small, uninhabited island off the coast of Sulawesi. And the bats are being destroyed with frightening speed.

As founder of the Flying Fox Conservation Fund on Sulawesi, I have spent more than a decade documenting the horrible toll that overhunting is taking on these intelligent and beneficial animals.

After capture by hunters, they are packed tightly into bamboo crates for the journey to market, a trip that can take up to four days in blistering heat without water or food. Many perish along the way. Some that survive are hit in the head with steel rods or pulled on hooks from the crate and smashed against the ground. The stunned bats, still alive, have a stick inserted down their throat, their wings chopped off and their fur removed with a blow torch. Seeing such treatment is heartbreaking.

I was alerted to this latest threat by Marcy Summers, director of Alliance for Tompatika Conservation (AITo), an organization working to protect the lands and waters around Mount Tompatika in central Sulawesi.

She reports that this colony of some 10,000 Sulawesi flying foxes (a species found only in Sulawesi) has for years spent their days roosting in trees on the small island off the coast, near the village of Taima. The bats fly to the mainland at dusk each

evening to feed in the rainforests.

Although the local people do not eat the bats, commercial hunters discovered the island about two years ago. They erected four enormous poles on which to hang nets above the roost trees. In the past 18 months, she said, they have taken thousands of bats from their island for the bushmeat market in North Sulawesi.

“The colony has been devastated, and the remaining bats recently left the island entirely,” Marcy said. The locals say that although the bats occasionally left the island over the years during windy seasons, they returned when the winds settled. Perhaps that is why the surviving bats departed – but “we are very concerned that the intense hunting pressure may have decimated bat numbers and/or disturbed their haven so much that they may be gone forever. Only time will tell.”

But there is hope. AITo has been working closely with villagers in the area to raise awareness about the importance of bats and their conservation. Ironically, just as the bats left the island, the villagers had begun tentative moves toward permanently protecting the island’s bats. Those plans are moving ahead, but much work remains to be done.

BCI Members can help save the remnants of this battered colony: **WRITE A LETTER** or email urging villagers to protect their bats, to refuse permission for commercial hunters to take these bats and to permanently protect the island for wildlife. Address your letter to “Kepala Desa, Village of Taima,” in care of AITo and send it to [info@tompotika.org](mailto:info@tompotika.org).

*SCOTT HEINRICHS is founder of the nonprofit Flying Fox Conservation Fund, which protects Old World fruit bats.*

You can help these dedicated Sulawesi conservationists protect Sulawesi’s fruit bats by donating to a special BCI Global Grassroots Conservation Fund grant to support their work: [donate.batcon.org/sulawesi](http://donate.batcon.org/sulawesi).

## Bats & hummingbird feeders

Southern Arizona residents have noticed for years that their hummingbird feeders were being drained during summer nights, when hummingbirds are supposed to be sleeping. The culprits, only occasionally spotted by their human benefactors, are bats. And that leads to an intriguing citizen-science project.

Almost all of the 46 bat species in the United States eat insects, but three species feed on nectar from flowers of desert cacti and agave, plants that depend on bats for pollination. Two of these pollinators are found in southern Arizona, where they are increasingly adding backyard hummingbird feeders to their foraging routine.

The lesser long-nosed bat (*Leptonycteris yerbabuena*) is listed as endangered in both the U.S. and Mexico, while the Mexican long-tongued bat (*Choeronycteris mexicana*) is an Arizona species of concern. Both spend their winters in Mexico, then migrate into Arizona for the summer. (The other U.S. pollinator – the Mexican long-nosed bat [*Leptonycteris nivalis*] – migrates to the Big Bend area of West Texas and the Bootheel of New Mexico.)

In recent years, increasing numbers of bats have been reported at hummingbird feeders in and around Tucson and across a broad swath of southern Arizona. This sounded to wildlife managers and biologists like an excellent research and monitoring opportunity. Since 2006, a growing crew of volunteer monitors has been documenting bats' use of their backyard hummingbird feeders. Their reports provide important information on when bats arrive and leave the area and, combined with other data, help scientists identify roosts, foraging behavior and migratory corridors.



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It also provides critical information for bat-conservation planning, especially in urban areas such as Tucson.

Data collection is managed by Biologist Ted Fleming of the University of Arizona. The citizen-science project is spearheaded by the City of Tucson and the Town of Marana. Partners in this innovative program include Bat Conservation International, the U.S. Fish and Wildlife Service and the Arizona Game and Fish Department.

Volunteers need only monitor their hummingbird feeders two or three times a week through the summer, measuring the level of fluid in the feeder just before dark and again in the morning. Your results can be reported online or on data-sheets submitted in the fall, after the bats have left.

For more information on this program, please visit <http://marana.com/bats>.

Show your **support** with every purchase you make!  
Apply for the Bat Conservation International credit card.



To learn more visit: [www.CardLabConnect.com/batconservationinternational](http://www.CardLabConnect.com/batconservationinternational)

# Pagoda bats of Vietnam

The Ma Toc Pagoda of Vietnam was built almost 450 years ago in the Mekong Delta of southern Vietnam. It's also called the Bat Pagoda because thousands of flying foxes roost in the trees of its scenic grounds. But high school teacher Ly Quoc Dang worries that "the number of bats decreases day after day because the hunters greatly outnumber the monks." He asked Bat Conservation International to help him do something about it.

Although a few local people try to guard the ancient Khmer pagoda in Soc Trang Province, he said, "the confrontation between conservationists and bat hunters goes on, and more and more bats seem to end up on restaurant tables." The only solution, he decided, is to educate the people, beginning with children, to the benefits of the bats in their midst.

With a BCI Global Grassroots Conservation Fund grant, Ly designed and conducted a pilot program to teach area children about bats and their importance to the environment. Ultimately, he hopes to generate enough local enthusiasm to have the pagoda declared a protected Natural Reserve.

He developed games built around ecological associations, especially those involving bats, quizzes and artwork and introduced them at three elementary and middle schools. The games taught children about the connections between plants and the pagoda's Lyle's and large flying foxes. The bats spend their days

roosting in the pagoda's trees, then leave each night to feed on fruit. They scatter the seeds so new trees will grow and the forests will remain healthy. Other bats eat troublesome insects or pollinate plants.



PHOTO COURTESY OF LY QUOC DANG

In one game, bats' benefits were described, along with the threats that bats face. Then students suggested and discussed possible solutions. They drew pictures of the plants and animals to demonstrate how bats fit into the environment. In a pollination game, students were rewarded with fruit after they scattered a bit of flour (to represent pollen) on a basket of flowers.

The children demonstrated an increased awareness of bats and their benefits for their community and, Ly says, they took that information home to share with their parents and siblings. He hopes to expand his educational efforts in the future.

*BCI's Global Grassroots Conservation Fund supports critical conservation efforts around the world. Help us sow the seeds of bat conservation. Support Global Grassroots and other critical bat-conservation efforts at [www.batcon.org/donate](http://www.batcon.org/donate).*

## 'Call to Action' gets a lot of action

They called the video "Bat Tennis." The episode of Discovery Channel's *Man vs. Wild* television series featured host Bear Grylls gleefully killing bats with a homemade club vaguely similar to a tennis racket. The video clip shows Grylls throwing a flaming torch into a bat cave to "smoke out" the bats. Then he swats the emerging bats to the ground with the club and stomps some with his feet.

This disturbing video was aired internationally and posted on YouTube for wide and continued viewing.

BCI notified its members and friends with a "Call to Action" email describing the televised slaughter. We urged everyone to express their disappointment at this anti-conservation message by completing a feedback form at the Discovery Communications website and by forwarding the email to others.

Meanwhile, Bat Conservation Trust of the United Kingdom was raising the alarm among its members and colleagues. The message spread rapidly and support poured in from organizations including the French Society for the Study and Protection of Mammals, the Italian Chiroptera Research Group, EURO-BATS, the Latin American Network for Bat Conservation and others. BCI and these farflung groups joined forces in an unprecedented collaborative campaign that covered much of the world.

The response was awesome. Within a couple of days, the Discovery-posted video was removed from YouTube. Several concerned conservationists set up online Facebook pages to expand their protest against such programming. Although Discovery's feedback form was complicated to complete, the channel was flooded with online criticism, as well as letters from conservation leaders and supporters around the world.

The email from Executive Director Nina Fascione stated: "Though we understand the show is about survival, we feel that this clip perpetuates negative attitudes toward bats and could generate senseless copycat activity and/or the type of vandalism that is driving many bat species to the brink of extinction. Only four months ago, a Kentucky man was sentenced to eight months in jail after pleading guilty to beating to death 105 endangered Indiana bats."

"This was a heartbreaking video that sends all the wrong messages about bats, conservation and safety," says BCI Marketing Director Susan Kwasniak. "We hope that this remarkable international response will encourage Discovery Channel to avoid featuring such thoughtless cruelty in the future."

You can register your concerns about this video at <http://extweb.discovery.com/viewerrelations>

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## Water for Wildlife



Livestock watering tanks have become essential resources for countless bats in arid Western states, where natural water sources are dwindling. But these artificial tanks can also become inadvertent death traps, drowning thirsty bats that fall in while attempting to drink on the wing. During the last four years, BCI's Water for Wildlife Program has conducted more than 20 workshops for over 700 ranchers and range managers in six states to help them improve access and safety for bats and other wildlife at small water sources. At a recent workshop in Livermore, California, Water for Wildlife Coordinator Dan Taylor (center) explains how simple escape ramps can ensure that bats have a safe place to drink.

## BCI Member Snapshot



**B**CI Member Karen Waschinski of Stratford, Ontario, Canada, discovered this bat in a dry "burr bush," hopelessly entangled in burrs. She'd once found a similarly trapped bird that died before it could escape, so she went to work. Remembering never to touch a bat bare-handed, she broke off the bat-bearing branch and dropped it into a discarded plastic cup. Back home, Karen and her mom, Edeltraud Waschinski, used twigs like chopsticks to carefully remove the burrs. Slightly bloodied, the de-burred bat failed in its

first attempt at flight, but finally got airborne (soon after this photo was taken) and flew away – delighting its rescuers.

*Share a snapshot of your bat activities with fellow members: Email it to [pub@batcon.org](mailto:pub@batcon.org) or mail it to Snapshot, Bat Conservation International, PO Box 162603, Austin, TX 78716.*

## The WISH LIST

*Your help with any of these special needs will directly improve BCI's ability to protect bats and bat habitats. To contribute or for more information, contact BCI's Department of Development at (512) 327-9721 or [development@batcon.org](mailto:development@batcon.org).*

### A Gate for Indiana Myotis

Flash floods in eastern Kentucky destroyed a critical gate that protects bats at the country's fifth-largest hibernation site for endangered Indiana myotis. The bat-friendly gate across the upstream entrance to Bat Cave at the Carter Caves State Resort Park was twisted apart after heavy rains soaked the region. With some 37,000 hibernating bats, this is one of only 13 caves and mines federally designated as Critical Habitat for recovery of this species. Given the condition of the economy, state or federal funding is not currently available for this vital project. BCI needs to raise \$10,000 immediately to buy materials and hire a contractor to replace this gate and continue protecting these endangered bats.

### Bat Houses for Nepal

The wonderfully diverse bats of Nepal are rapidly losing their homes as population growth transforms the landscape and habitats disappear. The threat worsens in the face of mostly negative public attitudes about bats because of widespread misconceptions and a general lack of knowledge. Sanjan Thapa of the Small Mammals Conservation and Research Foundation of Nepal plans an innovative pilot program using bat houses to provide alternative habitats as part of a bat-education campaign. The group hopes to build and install bat houses for interested families in 15 communities. The installations are the centerpiece of the awareness program, and the families agree to monitor and maintain the bat houses. Thapa requests a BCI Global Grassroots Conservation Fund grant of \$2,000.

### Caring for 'Bat Stars'

There's nothing like seeing a real, live bat up close to get people excited about bat conservation. BCI has for years maintained a few African straw-colored flying foxes that charm both children and adults at educational events. Our two current stars – Zoe and Zuzu – are in the care of BCI staffer Dianne Odegard. She also cares for, and sometimes displays, an occasional wayward bat, such as Chira, a very photogenic Mexican free-tailed bat that has fully recovered from a broken wing that Dianne treated. Feeding and caring for these bats takes about \$750 every six months. Your support can help ensure that BCI's bats keep turning on the charm.

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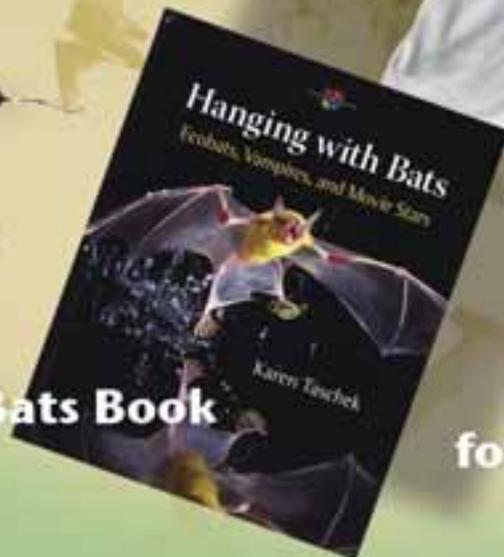
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