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Bat Conservation International’s 2002-2003 Annual Report
is included in this issue of BATS.
The surreal thermal image of Sir David Attenborough looking at a cluster of hibernating bats is one of the most striking scenes in the BBC series *The Life of Mammals*. Sir David glows yellow and orange, positively radiating heat. The bats are much darker – deep blue, approaching black. Some are even darker than the rock ceiling from which they hang: Their bodies are colder than the stone.

I have studied hibernating bats for many years, but I had not expected this, which demonstrates how air circulation can have a tremendous impact on bats during hibernation. The spellbinding footage was shot with a thermal-imaging camera in an abandoned molybdenite mine that has yielded a treasury of new information about bats. The old mine near Renfrew, Ontario, is vital to the lives of many bats of several species, and it has played a recurring role in my professional life for nearly 40 years.

A thermal-imaging camera produces bizarre – and informative – images of a bat in Renfrew mine and of filmmaker David Attenborough, who used the pictures in a BBC series.
Attenborough, perhaps today’s most honored maker of natural history films, visited the mine in February 2002 for the series that aired late last year. The mine had opened 90 years earlier and yielded some 46 tons of molybdenite (MoS₂), 85 percent of it at least 95 percent pure, before it closed. To a mining geologist, the deposit is a typical “contact zone metamorphism,” but to bat biologists the mine is entrancing for other reasons.

The key to the mine’s availability to bats is the original adit (an entrance excavated to a horizontal passage) that serves as a drain. In Ontario, underground mine tunnels accessible only by shafts (vertical passages) typically flood to the level of the water table, which almost always makes them unavailable to bats.

**A mine full of bats**

I first saw the mine on a Saturday in May 1965, when I should have been at convocation to receive my Bachelor of Science degree. My supervisor at the University of Toronto, Professor Randolph L. Petersen, had heard about a mine full of bats near Renfrew. Miners, who were exploring the possibility of reactivating the mine, discovered the bats and notified the Royal Ontario Museum. The prospect of a mother lode of bats was much more enticing than a convocation.

On my first visit, I found a few torpid male little brown myotis (*Myotis lucifugus*). Whether these bats were still hibernating or just taking a break from the spring weather remains unknown. The miners said they had seen many more bats three months earlier. Fortunately for the bats—and for me—the remaining molybdenum deposit was too small to warrant further exploitation. The miners abandoned the site. I seem to have adopted it. Though I had no idea at the time, there was a place that would draw me back year after year, as it still does.

By May 1966, we had learned a lot more about the bats and the mine. Five species hibernated there: little brown myotis, big brown bats (*Eptesicus fuscus*), eastern small-footed *myotis*...
The Bats in the Mine

(Myotis leibii), northern myotis (Myotis septentrionalis), and eastern pipistrelles (Ripistrellus subflavus). The little brown myotis were by far the most abundant, numbering perhaps 10,000, while eastern pipistrelles were the most rarely encountered.

Banding studies revealed that bats treated the mine as two separate sites. Until the 1964 effort to reopen the mine, two stretches of upper-level passages were separated by flooded workings. Bats could reach one area via the original adit and the other through a shaft. When the would-be miners drove a new adit into a lower level of the mine, it served as a drain for the flooded section, opening new areas for bats and connecting the two previously isolated passages.

Flapping wings and busy bats

By the time of Artenborough’s visit, some little brown myotis were hibernating in the once-flooded passages. Big brown bats and eastern small-footed myotis had been using some of these previously flooded, well-ventilated, cooler passages since winter 1963-66.

The mine soon became a central site for my studies of swarming behavior. Visit the mine on a summer day, and you will see virtually no bats. Visit it at night in August, and the passages are filled with the sounds of flapping wings and the shrill vocalizations of busy bats — swarming behavior.

Between the summers of 1966 and 1968, we banded more than 5,000 little brown myotis at the mine during swarming. The swarms included about the same numbers of adults and subadults, with about 60 percent of them males. Males account for more than 85 percent of the mine’s bat population in the winter. Recoveries of banded bats showed that a different group visited the mine every night during swarming, and that only about 10 percent of bats caught during swarming used the site for hibernation.

I also visited other mines and caves during this study. One notable band recovery reinforced my impression that swarming little brown myotis covered large distances. In August 1967, we caught a male at the mine that had been banded in December 1966 at an old mine on the north shore of Lake Superior.

By late September 1967, this individual was back at the north shore site. The straight-line distance between these two mines is about 500 miles (800 kilometers).

By mid-August each year, the little brown myotis swarming at the mine begin to mate. I think the swarming behavior familiarizes young bats — those born earlier in the year — with places to hibernate, and also sets the stage for mating. In late summer, hibernation sites like the Renfrew mine might be thought of as bat discos.

A biologist’s bonanza

By 1969, when I finished my Ph.D. dissertation, it was obvious that the old mine was a mother lode if you were a bat — or a bat biologist. The site served a central role in the theses of other graduate students, as well. Burleigh Trevor-Deutsch, now a lawyer, used the mine as the principal study site for his Ph.D. dissertation on the role of hibernating bats in the diet of white-footed mice. Donald Thomas, now a professor of biology at the University of Sherbrooke, did his master’s thesis on the mating behavior of little brown myotis. Robert Barclay, now a professor of biology at the University of Calgary, studied vocalizations of little brown myotis for his master’s thesis. Virginia Wai-Ping, now working in finance, did her master’s thesis on mate selection by little brown myotis at the mine.

More than 300 students have visited the
Bats & Mines

Bats have been moving into abandoned mines for about as long as miners have been packing up their picks and shovels to go in search of more promising diggings. Centuries of miners have left thousands of miles of underground passageways spiderwebbed beneath the surface of North America and much of the world. Bats use many of them for hibernating, for courtship and mating, for giving birth and rearing young, for night roosting, and as crucial rest stops on their migratory journeys.

Mines have become critical as traditional bat habitats disappear with alarming frequency. Cities encroach on natural caverns, while big, old hollow trees vanish from the forests. Old mines have become homes of last resort for millions of bats that represent 28 of the 46 bat species in the United States.

In the American West, some species, including Townsend's big-eared bats (Corynorhinus townsendii) and California leaf-nosed bats (Macrotus californicus), often depend on abandoned mines for their very survival. In eastern states, abandoned mines house some of the largest known populations of such endangered species as the Indiana myotis (Myotis sodalis). Our understanding of the intricate ways in which bats use mines continues to grow as researchers study the complex interactions between bats and mines.

A decade ago, many of North America’s largest remaining bat populations were severely threatened by plans to close thousands of bat-occupied mines on federal, state, and private lands because of safety concerns. BCI and the U.S. Bureau of Land Management created the Bats and Mines Project in 1994 to protect mine-dwelling bats. By building local partnerships with an array of federal and state agencies, private organizations, and leading mining companies, the project has installed bat-friendly gateways on more than 1,000 old mines. Local and national caver groups have contributed thousands of hours of labor.

Once countless bats were trapped inside mines that were blasted or bulldozed shut. Now, thanks to BCI’s Bats and Mines Project, pre-closure surveys are almost routine and thousands of mines have become bat sanctuaries. As a direct result, the endangered Indiana myotis is now showing real signs of recovery. The Townsend’s big-eared bat, which had seemed destined for a spot on the endangered list a decade ago, is growing in numbers in many areas. Approximately 200 of its most important roosts are now protected as mine sanctuaries.

Faith Watkins, BCI

Renfrew mine since 1969 on field courses or workshops designed to introduce bats to people, and people to field biology. We visit during the swarming season, when our work causes minimal disturbance and we can take advantage of the presence of banded animals. I especially enjoy the reactions of university students when they discover that some of the bats they are handling are older than they are.

Television discovers the mine

The Life of Mammals was not the first Attenborough film that featured the mine. In the acclaimed Life on Earth series filmed in 1979, the opening footage of bats is the winter landscape around the entrance to the mine. The mine has figured in other documentaries as well, including the Canadian Broadcasting Corporation’s Piercing the Dark, which first aired in the late 1980s.

As we studied the Renfrew bats over the decades, we also worked to protect them. In the early years, the old mine’s splendid isolation protected it. From 1965 to 1968, we visited the mine in winter to monitor the

Built around 1980, this gate consisted of old rails left in the Renfrew mine in hopes of keeping unauthorized human visitors away from the bats. It proved an inefficient barrier, however, as people broke in repeatedly. It was replaced a few years later, but vandals also breached the new one. A gate installed in the 1990s finally gave the mine full protection.
bats, and we spent three Augusts studying their swarming behavior. On winter visits, getting to the mine from Toronto meant a five-hour drive. We typically arrived around midnight on Fridays, shoveled out a parking place in the snow, then snowshoed to the mine, usually staying in Tom Guiney’s cabin on a nearby lake. But by 1970, the area was becoming popular among snowmobilers and its remote location no longer offered much protection.

When the would-be miners left in 1965, they wedged a piece of plywood into the old adit to keep people out. Bats and bat biologists could pass this obstacle. The following summer, we built a wooden gate on the mine. About 1980, we sold our aging mobile laboratory and used the proceeds to build a better gate from old rails that lay about inside the mine. This gate was good for a year or two, but then it was repeatedly breached by unwelcome visitors, usually by breaking the lock.

A series of gates

A few years later, Fred Hehn, then working for the Ontario Ministry of Natural Resources, convinced the ministry to install a new gate rather than seal the mine with explosives. Fred also convinced the ministry to declare the site a Nature Study Area. The new gates, one at the entrance and one farther in, turned out, however, not to be vandal-resistant.

Finally, in the early 1990s, the Macnamara Field Naturalists Club, working with Bat Conservation International and the Ontario Ministry of Natural Resources, installed the current angle-iron gate. This one has withstood all attacks.

The Renfrew mine shows how important such sites are to bats, to bat biologists, and to those who take bat conservation to the public. The site reminds us how gates on old mines can protect both bats and people. And it illustrates how some study sites can become an integral part of a scientist’s life.

M. BROCK FENTON, a member of BCI’s Board of Scientific Advisers, is Chair of the Department of Biology at the University of Western Ontario. He has studied bats at the Renfrew mine and around the world for almost four decades.
V INDICATION FEELS VERY GOOD,” says J. David Bamberger. “Some people were starting to call this ‘Bamberger’s Folly.’ Now, finally, I’m vindicated.” Overhead, tens of thousands of Mexican free-tailed bats – perhaps as many as 200,000 – were streaming out of the biggest artificial bat cave on Earth.

Bamberger had waited five years to see these dense columns of freetails (Tadarida brasiliensis). A few hundred bats had moved in within three years of completing the cave, with several thousand arriving last year. But this was the great leap that fulfills a dream and perhaps proves a key part of the conservation philosophy into which he has poured time, money, and energy for decades. “I wanted to demonstrate that manmade habitat can mitigate manmade damage.”

For 34 years, he has practiced a singular vision of conservation, of stewardship, at the Central Texas ranch he named Selah. A founder of the Church’s Chicken chain and former BCI trustee, Bamberger says he sought out the most worthless and undesirable property in the semiarid region. Carefully but relentlessly, he cleared the dense tangles of cedars and other plants that had invaded in the wake of overgrazing. He planted great fields of grasses like those that greeted the first settlers in the Texas Hill Country more than a century earlier. Soon natural springs reappeared, dry streambeds became year-round creeks, and ponds filled. Wildlife is abundant and diverse.

Selah, Bamberger Ranch Preserve, now spreading over 5,500 acres (22.25 square kilometers) of grasslands and wooded canyons and protected through a nonprofit foundation, is a working cattle ranch. It is also an educational center and a demonstration project for land restoration that Bamberger hopes will become a model for other landowners and conservationists.

The artificial cave is a centerpiece. Bamberger became hooked on bats more than 15 years ago, when he stood at BCI’s Bracken Cave and watched in awe as 20 million freetails circled up from the depths and spread their columns across the sky. “This,” he says as Selah’s bats stream overhead, “is like a mini-Bracken.”

The cave, called the Chiroptorium, was built in 1997–98 at a cost of about $170,000. (Bamberger estimates it could be duplicated now for about $50,000 by avoiding the difficult learning process and a few missteps.) He worked with BCI Founder Merlin Tuttle to design the original plan, then with other BCI staff and experts from around the world as he waited for bats to arrive. (See BATS, Winter 1997.)

The unique structure consists of two domes and a connecting arch that forms a
giant toadstool-like enclosure between them. The cave covers 3,000 square feet (279 square meters), and its walls offer roughly 8,000 square feet (745 square meters) of roosting space – enough, he figures, for at least a million bats. The domes were formed from 20 tons of steel bars bent to shape and covered with gunnite, the concrete used for swimming pools. It looked in 1998 like a modernist sculpture nestled into the scenic canyon. Now, covered with soil and native grasses except for the sculpted-concrete entrance, it seems at home in its canyon as part of the landscape.

The wait was frustrating. “The bottom line is that Mother Nature’s going to decide whether the bats are going to come or not. But I’ve been waiting all this time.”

Even after numbers swelled to several thousand last year, “Those bats had cost me about $10,000 apiece,” says the ebullient conservationist. “Now I’m getting ‘em down to about a nickel.”

One evening in mid-August, he drove out to check the cave and, “My God, they were just pouring out! This thing just went boom. It blows my mind.”

Why so many bats decided to move in all at once remains a bit of a mystery. But, Tuttle says, the timing is not surprising, since mid-August is when Bracken Cave becomes least comfortable for freetails because of accumulated heat and gases. He also notes that the largest artificial roosts typically require about three years to begin attracting bats, then the numbers zoom upward over the next several years.

During my visit in late September, the Chiroptorium bats emerged in two waves. The freetails form their long, snaking column in twilight. With darkness comes another wave, this one of individual bats that dart much closer to the ground as they head toward a nearby wood, occasionally streaking among a handful of onlookers on route. Mostly, their presence is revealed by individual calls on a bat detector. This second group, Bamberger says, comprises about 7,000 bats tentatively identified as cave myotis (Myotis velifer) that appear to occupy a smaller roosting chamber at the rear of the cave, an area that was designed with this species in mind.

With winter coming, the freetails soon will be leaving their artificial cave for Mexico. Bamberger will have to wait for another summer to see if numbers continue to grow, but he remains optimistic – as always. His vision of “the world’s largest manmade habitat designed specifically for free-will use of wild animals” is validated. Now, he says, “other minds can come up with other solutions” to apply the concept in new ways and places.

ROBERT LOCKE is BCI’s Director of Publications.

Margaret Bamberger (right), who shares her husband’s enthusiasm for bats and a wholehearted approach to conservation-based land stewardship at Selah, examines a Mexican freetailed bat caught during a recent emergence from the Chiroptorium – the artificial cave that this year became the summer home of an estimated 200,000 bats. Her observations are recorded by Amanda Fulton before the freetail is released.
Vampires in the House

A captive colony in New Mexico records rare births

by Daniel Abram

In rural New Mexico where I live, it’s not unusual to rise early every morning to feed and water the chickens, collect eggs, and clean out the chicken coop. But I don’t know of anyone besides myself who brings 15 chickens into their home each night. Of course, I don’t know anyone else who lives with vampire bats.

That’s what I’ve been doing for almost a year now. At my fledgling Rancho Transylvania – New Mexico Bat Research Institute in tiny Tijeras, New Mexico, I am housing a colony of 12 white-winged vampire bats (Diatremus youngi). These members of a little-studied species, whose numbers appear to be declining, were imported with great difficulty from the Caribbean island nation of Trinidad, where they faced almost certain death.

My little colony seems to be thriving. One female, Maria, was pregnant when she arrived in New Mexico and gave birth to Amelia last November. A second pup, a male, was conceived in captivity and born in April. These are the first of their species known to have been born in captivity. I am now keeping males and females separated while developing a harmless marking system so lineage can be tracked and inbreeding prevented.

The 10 wild white-wings were collected for me by Southampton College Professor William Schutt. A bat specialist and one of the few biologists who have studied white-winged vampires, Schutt knew exactly where to find them. He went to their food source: birds, in this case around chicken coops, where the animals are frequently caught and destroyed. Longtime BCI member Susan Barnard, a veteran zookeeper of Atlanta, Georgia, was instrumental in getting the vampires through the maze of import rules and restrictions.

The species is under severe attack in Trinidad because of its habit of feeding on chickens. It also suffers from widespread habitat loss. Our goal was to establish a breeding colony and educate the public about these fascinating and grossly misunderstood mammals.

Only three of the more than 1,100 species of bats worldwide are vampires, and all three live only in Latin America, where people spend a lot of time and effort eradicating them (and killing countless beneficial, non-vampire bats in the process).

All three vampire species subsist only on blood. The white-winged and hairy-legged (Diphylla ecaudata) vampires feed only on birds, and both are rarely seen or studied. The common vampire bat (Desmodus rotundus) has increased its numbers by often feeding on cattle and does pose a problem for ranchers.

As blood feeders, vampires are very well equipped. Their teeth are free of enamel and sharpen themselves as they occlude (when
the teeth come together as the animal closes its mouth). Vampires on the ground achieve a four-footed gait with their robust arms and legs and padded thumbs, which they use as front feet. Extremely agile, they run and jump nimbly.

In the wild, white-wings are arboreal hunters that creep up on their sleeping hosts from the underside of tree trunks and branches. Their eyes are large and piercing. The skin on their wing tips and first digit is not pigmented, earning them their common name.

White-wings are unique in having large oral glands in their cheeks, which inflate when threatened and emit a skunk-like odor.

The “Rancho” part of our name was inspired by the colony’s food source: live chickens. About 150 chickens were donated (rescued) from a large egg farm in Albuquerque, where they had been de-beaked and kept in small cages for their entire lives, which would have been rather short. After two years, when their egg production declines, the chickens are transformed into feathers and chicken meal.

I adopted these featherless, painfully thin, de-beaked chickens that had never seen the light of day and brought them to their new home with sunshine, spacious coops, and ... well, the occasional blood donation. Most of the chickens recovered nicely. Now they chase moths, take dust baths, and bask in the sun.

They are offered to the bats nightly at a ratio of one hen per bat, with each hen serving just one night a week at the vampire hotel. The bats sneak up on the chickens, make a small incision by biting them (usually around the toes), then lap up the blood with their grooved tongues. The vampires sometimes make a sound like that of baby chicks, which seems to calm the birds.

The chickens usually sleep right through the bloodletting, and in the morning, they are returned to the coop for protein-rich food and fresh water with iron supplements.

Meanwhile, my house, an eight-bedroom fixer-upper, is being transformed into the Youngblood Bed and Breakfast – a place where people can come, stay, eat lots of egg dishes, and help care for the vampires.

DANIEL ABRAM, founder and director of Rancho Transylvania – New Mexico Bat Research Institute, is a 1999 alumnus of a BCI Bat Conservation and Management Workshop.

For more information or to arrange a visit to Rancho Transylvania, please call (505) 281-6317 and leave a message.

The female vampire pup named Maria seems to be thriving at the New Mexico colony.

One of 10 wild white-winged vampire bats rescued from the island of Trinidad hangs in its roost at Rancho Transylvania in Tijeras, New Mexico. The captive colony of white-wings, which feed on the blood of birds, shares the facility with their food supply — 150 chickens adopted from an egg farm. The bats get their name because their wing tips and first digits are not pigmented.
A Gallery of Workshop Wildlife

Bats are the heart of BCI’s Arizona workshops, but the wonderfully diverse region also offers a staggering range of wildlife. Here’s a sampling of species spotted during recent workshops. Photos by Janet Tyburec.
Learning the Secrets of Bats
by Andy Moore

The moon is nearly full, but the darkness along the streambed, beneath the cottonwoods and cypress, is almost total. So is the silence. The only sound is the soft gurgle of the creek – an inches-deep hint of the river that carved this remote, rocky canyon in the distant past.

Then the detector comes to life with a string of noisy clicks. A thirsty bat is using the open flyway just over the stream, scanning for obstacles with constant echolocation calls. It swoops low over the little pool formed at a bend in the stream, dipping its chin to drink while skimming over the water. The bat detector goes suddenly silent. Two headlamps flick on, their beams bouncing over the pool.

The lights settle on a dark shape tucked into the barely visible fold of a mist net: “We got one!” Two people splash quietly into the water. Hands gently peel the net’s gossamer strands from the entrapped pipistrelle, starting with the feet, then moving to the wings and head. The tiny bat sits warily in the net as the humans disentangle it. Freed from the net and nestled in a gloved hand, the bat sits calmly for a brief examination.

Although the western pipistrelle (Pipistrellus hesperus) is fairly easy to identify, the pair nonetheless pull out their “identification key.” They measure its forelimbs and ears, weigh the bat, and determine its sex. Yep, it’s a male hesperus.

The keys run several pages, for this is one of the most diverse bat habitats in North America – the Arizona site of one of Bat Conservation International’s most popular and longest-running Bat Conservation and Management Workshops.

Sixteen species are often netted, studied, and safely released in a single night, and that can go as high as 18. Where else could wildlife professionals and amateur enthusiasts come face-to-face with so many different bats?

“My primary reason for taking the course was to get hands-on experience in trapping bats, field identification, and the use of keys,” says a delighted Joe Lowe of the U.S. Bureau of Land Management in Idaho Falls, Idaho. “That couldn’t have been done any better.”

Each night, after the nets are struck, the 14 participants gather in the canyon with captured bats of various species. Workshop leader Janet Tyburec, an energetic bat expert, guides the group through the process of species identification, using every thing from appearance and measurements to distinctive echolocation calls funneled through bat detectors.

The workshop, one of several that BCI...
Bats conduct each year, is held at the American Museum of Natural History’s renowned Southwest Research Station in the Chiricahua Mountains, about three hours east of Tucson.

The sheer diversity of the site – a biogeographical crossroads where desert and mountain biota meet – attracts researchers from around the world. Birders consider Cave Creek Canyon, where the pipistrelle met the mist net, one of the top birding locales. (Participant Janet Marchand said an early morning outing to see the elegant trogon was “a once-in-a-lifetime experience.”

The Research Station, complete with lodging, is at 5,400 feet (1,645 meters). Moving a bit higher or lower in the Chiricahuas takes you through five distinct life zones. Animal and plant species derive from the Sonoran and Chihuahuan Deserts, while mountain species come from the Rockies and Mexico’s Sierra Madre Occidental.

Besides the remarkable collections of bats and birds, participants often spot such seldom-seen wildlife as wide-eyed coatimundis, ringtail cats, and sometimes even Mexican wolves and reclusive mountain lions. During one evening training session along South Fork Creek, U.S. Fish and Wildlife Service biologist Carrie McCalman pointed out that the group was being watched with great interest by a ringtail. Bats were forgotten for a moment or two, as a half-dozen headlamps scanned the steep rock wall rising from the far side of the creek and finally focused on the curious, bushy-tailed cousin of the raccoon staring back at them.

BCI has been conducting workshops here for well over a decade, and Tyburec has been leading them since 1994. Participants split into

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**Really Learn About Bats**

Register now for one of BCI’s renowned Bat Conservation and Management Workshops. The 2004 schedule has been finalized and, to ensure the best possible workshop experience, the number of participants is strictly limited. Join us for an unequaled opportunity for in-depth, hands-on training in bat research, conservation, and management. Tuition covers all fees, lodging, meals, and transportation from the local departure city.

Information and registration: Contact Workshops Coordinator Andy Moore at amoore@batcon.org or (512) 327-9721.

**Arizona Workshops**

- **Session 1:** June 3-8
- **Session 2:** June 8-13
- **Session 3 (Acoustic Monitoring):** June 13-18

A field-identification extravaganza, this workshop in the Chiricahua Mountains features the catch-and-release of up to 18 bat species in a single evening. BCI expert Janet Tyburec and her well-trained crew, including biologists from the Arizona Game and Fish Department, will cover all aspects of species identification (including echolocation calls), conservation, management, education, public health, nuisance issues, and artificial habitats.

Session 3 is a specialized acoustic-monitoring workshop hosted by Joe Szewczak and other renowned bat-detecting experts. This is a unique opportunity to improve your skills with ultrasonic bat detectors, including Anabat, Pettersson, and Sonobat models.

This workshop is intended for those who have completed the Bat Conservation Management workshop or have bat-research field experience. Learn how to design and implement an acoustic survey and which monitoring system is best for your needs.

Each session limited to 12 participants

- **$1,195** from Tucson, Arizona

**Pennsylvania Workshop**

**August 29-September 3**

Our popular Pennsylvania workshop offers the opportunity to net and trap bats over trout streams and beaver ponds and watch thousands of endangered Indiana myotis swarming at the entrance to a mine where they will later hibernate. Workshop Co-leader Cal Butchkoski of the Pennsylvania Game Commission, with two decades of experience, is a leading expert on surveying and radiotracking Indiana myotis. He is also one of America’s most successful builders of bat houses and other artificial roosts. Hands-on training includes mist netting and trapping, radiotracking, night-vision observation, bat-house use, acoustic monitoring, and habitat assessment.

Limited to 20 participants

- **$1,195** from Harrisburg, Pennsylvania

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Left: Workshop leader Janet Tybursc displays a handful of tiny California and western small-footed myotis as she explains the intricacies of bat identification to Terry Enk, a New Mexico Department of Game & Fish biologist, and other participants. Above: Graduate student Ellen Nelson consults an "identification key" as U.S. Fish & Wildlife Service Biologist Curt McCasland displays a captured bat in the glow of Terry Enk's headlamp.

at a 2004 BCI Workshop

**Kentucky Workshop**
*September 7-12*

Focused on cave-dwelling bats, this workshop takes us to the heart of America’s karst country at the Cave Research Foundation’s Hamilton Valley facility. In the company of experts, we’ll visit hibernation and nursery caves of endangered gray and Indiana myotis, and learn how to detect bats’ prior use of caves and to identify habitat conditions that meet their needs. Fieldwork includes netting and harp trapping at cave entrances and at nearby feeding and drinking habitats, with hands-on identification of 10 eastern species. We will visit bat gates with their designers and also discuss habitat assessment, field research techniques, bat houses, and public health issues.

Cosponsored by Mammoth Cave National Park and the Kentucky Department of Fish and Wildlife Resources.

Limited to 20 participants
$1,195 from Nashville, Tennessee

Bats, the Amazon & Ancient Incas: A Spectacular Ecotour

**Natural History Tour of Southern Peru — April 7-19**

Travel with BCI deep into the Amazon Basin on a spectacular journey that blends exotic wildlife with one of the New World’s most breathtaking ancient cities. The ecotour of southern Peru explores two very different ecosystems: the Andes highlands and lowland tropical rain forests. While staying at the Jungle Lodge and Research Center on Tambopata National Park, we will encounter a wide variety of bats from fish-, nectar- and fruit-eating bats to frog-eaters and vampires. In addition, there will be ample opportunities to spotlight for nocturnal wildlife and experience the dawn arrival of more than 1,000 colorful macaws to riverside clay licks (as featured in *National Geographic*, January 1994). The clay licks will also serve as good nighttime netting locations.

At the remains of Machu Picchu, a city built by the Incas high above the cloud forest nearly 550 years ago, we’ll explore this priceless cultural heritage by day and net bats at night. Highland big-eared bats and nectar-feeders should be among the species we will encounter.

This once-in-a-lifetime trip will be led by Fiona Reid, author of *A Field Guide to the Mammals of Central America and Southeast Mexico*.

Limited to 16 people
$4,500 from Lima (includes a tax-deductible $500 contribution to BCI’s Global Grassroots program)
Regena Orr of the California Department of Parks and Recreation cited especially the information on conflict resolution. Noelle Ronan, a Bureau of Land Management biologist in Spokane, said, “The lecture on educating the public made a big impression on me” and will prove valuable in the future.

Cave Creek Canyon, meanwhile, is a near-perfect classroom. Its rock walls are peppered with caves, many of them roosts for a medley of bats; the canyon floor offers rich riparian and desert-scrub habitats and even an abandoned mine closed with a bat-friendly gate.

South Fork Creek, visited on the first night, offers a special attraction. Tyburec's discussion of bat detectors came to an abrupt intermission when a student shouted: “There they are! Wow!” About 100,000 Mexican free-tailed bats (Tadarida brasiliensis) stream out of Statue Cave above the creek, weaving a black ribbon across the sky over the Cave Creek Canyon cliffs. “I’ve seen the emergence at Bracken Cave [in Texas, home of the world’s largest bat colony], but this one was right up there,” says Rick Lance, biologist for the U.S. Army Corps of Engineers.

It gets even better from there, as the five-day workshop moves on to nets and species identification. The experience, says Noelle Ronan, “helped me improve my bat-ID skills, as well as my capture effectiveness.” And, she adds, “the workshop was great fun.”

Getting into the field begins with an early dinner to allow time for scouting out locations and setting up the nets. Participants split into groups and look for natural flight corridors that the bats use to maneuver the canyons. They stretch nets across likely spots, especially the little pools in Cave Creek.

Then everyone settles down with headlamps and gloves to wait for the action to begin. The fluttering pipistrelles usually are the first to arrive. They execute a “zip and run” over the pools, swooping down quickly for a drink, then moving on. Less maneuverable free-tails need a longer drop zone; they come in long and low and leave the same way. Among the most entertaining to watch are Townsend’s big-eared bats (Corynorhinus townsendii) and Allen’s big-eared bats (Idionycteris phyllotis). They can almost hover like helicopters and typically dart straight in and out.

Nets are checked constantly after the first capture, since bats are invisible in the darkness and most hit the nets silently. The exceptions are bigger bats, such as the irascible hoary bats (Lasiurus cinereus). They thunk into the net and often protest their capture with a distinctive hissing and clicking sound. This, along with beautiful fur in hues of orange, brown, yellow, silver, and white, makes hoary bats easy to identify.

If all this doesn’t sate your enthusiasm, the spring-fed swimming pool at Research Center headquarters is a popular watering hole for big and pocketed free-tailed bats (Nyctinomops macrotis and Nyctinomops femoravaccus) which are also netted and studied. Nearby hummingbird feeders even attract Mexican long-tongued bats (Choeronycteris mexicana).

When asked how the workshop might be improved, Kim Hall, a wildlife technician with the Vermont Fish and Wildlife Department, said simply, “Make it longer. I didn’t want to leave. It was nice being with people who are as crazy about bats as I am,” she said as she showed off her bat tattoo.

ANDY MOORE is Conservation Programs Administrator at BCI.
Dharma Webber of the Indigo Wings bat-education group in Placerville, California, shows a pallid bat to enthusiastic youngsters during one of the organization’s outreach projects. Indigo Wings worked with BCI to help install a ‘bat lodge’ to shelter bats that had been roosting too near a public hiking trail. The project earned Eagle Scout rank for Brandon Brinsko.

**Education & Rescue in California**

by Dharma Webber

A nursery colony of Mexican free-tailed bats has roosted near a public hiking trail in Northern California’s El Dorado County for more than 20 years. But because of a recent increase in colony size and an extreme hot spell, pups began dropping onto the trail. After one pup was collected by a youngster and taken to a local elementary school, the area was designated a public health hazard.

That’s when Indigo Wings entered the picture. The nonprofit public-education and bat-rescue organization in Placerville, California, a dedicated partner of BCI, appealed to the El Dorado Public Health Officer and the Animal Control Department.

To protect the colony and minimize future contact with the public, we sponsored an Eagle Scout project for Boy Scout Brandon Brinsko to provide a nearby “bat lodge” to shelter the bats well out of harm’s way.

Working with BCI experts Mark and Selena Kiser, we designed a lodge consisting of four BCI bat houses. Brandon and his troop built the lodge and, with help from El Dorado Parks and Recreation, raised it into place. The colony was preserved and Brandon earned his Eagle Scout rating.

While rescuing individual bats is rewarding, the future of wild bat colonies lies in the hands of the public. Indigo Wings educates thousands of people, primarily children, about bats each year. Education is the most critical component of our efforts.

In other conservation action, we recently conducted a bat education training session for El Dorado County Animal Control with living examples of six bat species the staff might expect to encounter. We described each species’ habitat and most likely response to an attempted capture. We also demonstrated bat-friendly nets and capture techniques that were safe for both animal and officer.

More than half of California’s 24 native bat species are in decline. Yet not a single species receives full protection under California law. Indigo Wings’ mission statement prominently features the phrase: “Never be silent.” When people share the truths about the world’s only flying mammals and work to dispel myths, each of us can help shape the future of bat conservation.

**DHARMA WEBBER** is Director of Indigo Wings – California Native Bat Conservancy in Placerville, California.
Solar-powered Bats

An Australian researcher finds that some small, insect-eating bats unexpectedly choose hibernation roosts that expose them to the vagaries of Australian winters. These nocturnal hunters seem to rely on solar power to rouse them from torpor on sunny winter days for a night of foraging.

New technology — tiny, temperature-sensitive transmitters — allowed Christopher Turbill, a BCI Scholarship recipient from the University of New England in New South Wales, to locate hibernating bats and record their fluctuating temperatures.

During the summer, Turbill says, long-eared bats typically roost under peeling bark or shallow tree crevices. “We expected that in winter they would shift to better-protected and well-insulated tree roosts and hibernate in a similar way to cave-dwelling bats.”

Instead, by radiotracking bats to their roosts, he found that they settle into surprisingly exposed positions — still under bark or in shallow crevices — on the sunny sides of tree trunks. The bats’ skin temperatures during winter torpor, as recorded in these roosts and transmitted to remote data-loggers, can vary daily by as much as 32.4 degrees F (18 degrees C).

The data suggest that these mammals, after being warmed by the sun, can more easily rouse themselves after as much as two weeks of continuous torpor, enabling them to hunt insects that abound on warm winter evenings.

Turbill, whose BCI-funded research is part of his Ph.D. work, studied lesser long-nosed bats (Nyctophilus geoffroyi), Gould’s long-eared bats (Nyctophilus gouldi), and chocolate wattled bats (Chalinolobus morio). The transmitters were attached to captured bats with nontoxic glue and the bats were released. The transmitters fall off in about five weeks.

To help support Bat Conservation International’s Graduate Student Scholarship Program, please contact BCI’s Andy Moore at amoore@batcon.org or (512) 327-9721.

A Rare Bulgarian Bat

One of the rarest bats in Bulgaria, Geoffroy's bat (Myotis emarginatus) roosts mostly in caves and old mines. That may be its undoing, as disturbances by cave explorers seem to be the major threat to the nation's few Geoffroy's nursery colonies.

Rumyana Panduraska-Whitcher of the Bulgarian Institute of Zoology, with a grant from BCI’s Global Grassroots Conservation Fund, is beginning to remove that threat.

All of Bulgaria's 29 insect-eating bat species are protected by law, but Geoffroy's bat needs special attention because of the vulnerability of its roosts.

The researchers, led by Panduraska-Whitcher, studied 10 nursery colonies, monitoring temperatures and other cave conditions, as well as the bats’ population and reproductive status. The study found that colonies in caves visited by humans often declined, while those spared such disturbance remained constant or increased their numbers in the past 10 years.

With these data in hand, the team proposed federal protection for Kozamika Cave, which houses approximately 150 of the threatened bats. The Ministry of Environment says it will declare the cave and its surroundings a protected site and national monument.

The team also proposed that regional authorities protect the entrances to other caves and bunkers used by Geoffroy’s bats. Signs were posted at seven important roosts to restrict visits while the bats are giving birth and raising their pups.

The team produced 1,500 Geoffroy’s bat posters for distribution to schools, cavers’ clubs, tourism groups, and others.
Gating Idaho’s Risky Mines

The Idaho Panhandle National Forest, with assistance from Bat Conservation International and others, has been installing bat-friendly gates on scores of hazardous, abandoned mines scattered across the region. The long-running effort was recently featured on National Public Radio’s All Things Considered program.

The area contains an estimated 1,000 old mines, ranging in size from short, simple shafts to miles of underground passageways, and some of them have proven a dangerous attraction for visitors, says U.S. Forest Service geologist Jeff Johnson. An order forbidding access to the mines without a formal permit had limited effect, he said.

The Panhandle National Forest instituted a program several years ago to remove access to the abandoned mines, focusing first on those that are most dangerous or accessible. This past summer, BCI’s Faith Watkins helped University of New Mexico researcher Rick Sherwin survey many of the mines for current or potential use by bats to determine which should be gated rather than back-filled.

At least 380 of the mines were potentially accessible to the public, and about 145 have been closed – 83 of them with gates that keep people out while giving unimpeded access to bats. The special focus is on protecting Townsend’s big-eared bats (Corynorhinus townsendii), although at least seven other species use Idaho mines and will also benefit.

BCI Member Snapshots

Longtime BCI member Erica Miles of Gainesville, Florida, has been collecting bat paraphernalia for more than 15 years. Here she peeks over a few of her favorite bat items.

Share a snapshot of your bat activities with your fellow members: Send it to Robert Locke, Bat Conservation International, PO Box 162603, Austin, TX 78716.

The Wish List

Your help with any of these special needs will make BCI more effective. To contribute or for more information, please contact Nicole Daspit at (512) 327-9721 or ndaspit@batcon.org.

A BatCam for Bracken Cave

BCI Science Officer Barbara French is developing a unique remote-TV monitoring system that will be lowered more than 40 feet into Bracken Cave. When completed next spring, this unique project will give researchers and BCI members who visit the cave a close-up, round-the-clock window into the daily lives of 20 million Mexican free-tailed bats. And BCI will have extraordinary footage for science-education programs. For a taste of the possibilities, go online to www.batcon.org/bracken.mpg to see footage shot with a borrowed camera hooked up to a rope. The project needs a Sony DCR-TRV800 Super NightShot video camera: $1,100.

Testing for Lethal Gases

Few things are more important for safely conducting bat surveys in abandoned mines than a gas meter. This crucial device tests the underground air for the presence of lethal gases. Our existing meter is aging none too gracefully and needs repair. A new Industrial Scientific gas meter costs about $2,000.

Coffee Growers Consider Bats

Researchers in Colombia are exploring ways to grow coffee profitably without clear-cutting the rain forest, and they hope to include bats in their equation. The coffee research organization Centicafe is studying coffee production in shady areas, much as wild coffees once grew. As part of that effort, the group has been researching species diversity in various coffee-growing landscapes. The researchers request a BCI Global Grassroots grant of $5,011 to add bats as a centerpiece of that project.
Conserving Borderland Caves for Migratory Bats

L eaves and temperatures have fallen across America, and millions of bats have begun their perilous journey south. Migratory bats face even greater challenges than other wildlife, since two governments, two cultures, and twice as many people must be convinced that bats are gentle and beneficial, rather than the menacing creatures of lore.

To meet this challenge, Bat Conservation International is launching a new effort to identify critical bat caves on private lands along la frontera, the borderlands of the United States and Mexico. In the year ahead, BCI staff will go into the field to identify the most critical caves and locate their owners. Many of these caves have never been visited by bat biologists, and the conservation potential is enormous. We will also educate owners of these caves in how best to manage their caves for bats.

Fern Cave near Del Rio, Texas, clearly demonstrates both the need and the potential of this conservation effort. The cave now houses some 250,000 Mexican free-tailed bats – but 10 million or more once lived there. A BCI survey team last summer identified two obstacles to the bats’ full use of the cave. A shaft drilled by guano miners penetrates the main dome, allowing heat to escape and leaving the cave too cool to raise pups. In addition, vegetation partially obstructs the entrance, which increases mortality during emergences. Both problems are easily solved. By simply sealing the shaft and clearing brush from the entrance, this cave could once again shelter millions of bats! And this is but one of many caves along the border.

You can protect these critically important migratory bats! Donations of any size will help. Just $500 can potentially save 20,000 bats. What a wonderful return on your investment in conservation!

To help BCI protect bat caves of the borderlands, please contact Nicole Daspit, Acting Director of Development, at (512) 327-9721 or ndaspit@batcon.org.

Bat Conservation International
P.O. Box 162603
Austin, TX 78716-2603 U.S.A.