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COVER
Brown big-eared bats (Plecotus auritus) are found in temperate regions of Europe, Asia, and northern Africa. In summer, they frequently roost in tree cavities, which are becoming more and more scarce with intensive logging. European researchers are now conducting experiments with artificial roosts to help this bat survive (see BCI Highlights, page 15).

COVER PHOTO BY ROLLIN VERLINDE, BCI / 916-5308

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Bat Conservation International is dedicated to preserving and restoring bat populations and habitats around the world. Using a non-confrontational approach, we educate the public about the ecological and economic values of bats, advance scientific knowledge about bats and the ecosystems that rely on them, and preserve critical bat habitats through win-win solutions that benefit both humans and bats.

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The Western Pipistrelle

*North America’s smallest bat...*

by Merlin D. Tuttle

Next time you are enjoying a beautiful sunset in an arid western canyon, anywhere from Canada to Mexico, take a closer look at the sky a hundred feet or so overhead. Chances are, you will see one or more western pipistrelles getting a head start on dinner. Sometimes they are seen as much as two hours before sundown.

These tiny bats, with their silky straw-gold fur, striking black face masks, and unusually large eyes, rank among the west’s most attractive animals. On average, they weigh only slightly more than a penny, and even with their wings spread, they are only about the width of a human hand.

Amazingly, despite their small size, western pipistrelles rank among America’s hardest animals. Year-round, they typically live in rock crevices, mostly in cliff faces, though given their almost magical evening appearances in even the remotest desert flat-lands, it has been speculated that they probably also occupy rodent burrows in the ground. With tiny bodies and large areas of wing surface, such bats are exceptionally vulnerable to dehydration and temperature stress.

To minimize water loss and maintain appropriate body temperatures, pipistrelles wedge themselves into narrow rock crevices, relying on just the right combination of sun exposure and crevice depth to keep their bodies at required temperatures with minimal expenditure of metabolic energy. In summer, they move closer to entrances for greater warmth, doing the opposite to avoid extreme cold in winter. This approach is very energy-efficient, but to find appropriate crevices, pipistrelles must be extraordinarily selective, often finding just one in thousands of crevices suitable to meet their needs.

Most western pipistrelles mate in late September or early October, prior to entering winter hibernation. In that season, pairs have been observed alternately chasing each other and landing together, apparently courting on cliff-faces. Sperm are stored in female reproductive tracts until spring, with mothers becoming pregnant in April or May and giving birth to twins in June or July, depending on latitude. In sharp contrast to

On average, western pipistrelles weigh slightly more than a penny. With their wings spread, they are about the width of a human hand.
Found in arid regions, western pipistrelles often reside in the very few cliff face crevices that provide suitable temperatures.

The western pipistrelle is strikingly marked with a black face mask that contrasts with its silky straw-gold fur.

Other tiny animals, such as shrews, young pipistrelles do not reach maturity until they are two years old, and banding records indicate survival to ages of at least six years.

These bats do not form large nursery or bachelor colonies like many others. However, several mothers and their young occasionally share an extra-attractive crevice while rearing young. Males are typically found roosting alone, often at higher elevations or in deep, cool valleys. Mothers normally rear young in warmer locations.

Females seldom become active in winter and are never active when temperatures are below freezing. However, males are amazingly capable of flying in sub-freezing temperatures and have been seen traveling over snow-covered ground when air temperatures were just 18°F (−7.8°C). Such bats are presumably in search of water, because feeding in such cold is unlikely. In order to survive the energy stress of low-temperature activity, they are able to fly at body temperatures of only 71.6°F (21.9°C), in contrast to the 100.4°F (38°C) maintained during summer flight.

Pipistrelles feed on a wide variety of small insects, including caddis, stone, and house flies, mosquitoes, flying ants, and many kinds of moths, bugs, and beetles. Many insects are caught high above the ground, though aquatic kinds are often skimmed directly from the surface of ponds or rivers as they hatch. If you would like to eavesdrop on these bats while they hunt, you will need to tune your bat detector a bit higher than usual, probably to at least 60–70 kHz.

Like many other bats, despite their unusually small size, western pipistrelles appear to be highly social and intelligent. They have been known to land on researchers and run down an arm to join others that have already been captured and placed in a cage, and they quickly learn from observing other bats. While photographing bats in the Big Bend region of Southwest Texas, I once trained a pallid bat to come to my hand on call in the same enclosure where I also had released a pipistrelle. After just a few minutes of watching the pallid bat get fed as a reward for flying to my hand on call, the next time I called, the pipistrelle came instead. It had learned from simply watching me train a bat of another species!

To better observe these tiny bats, try watching a small, isolated pool of water at dusk. With luck, you may see them dipping down to drink by the dozens.

Merlin D. Tuttle is Bat Conservation International’s founder and executive director.
Guyanese Villagers Discover Bats

Surveying for bats in remote regions of Guyana, South America . . .

by Rebecca Shapley

Mount Kowa is an isolated plateau topping out at 4,000 feet, cut off from the surrounding forest by sheer rock walls. My partner, Adrian Barnett, and I came here because even the field guides had question marks about the animals found in this region known as the Potaro Plateau. Our team’s two-month expedition would include a survey of mammals from many altitudes and habitats. I was in charge of bats.

We flew into the Guyanese jungle, landing at Kaitete Falls, then traveled up the Potaro River to Chenapou. There, following the villagers’ advice, we set mist nets next to the local village shop/disco/pub. The building’s tin roof sheltered Pallas’ mastiff bats (Molossus molossus). A crowd of all ages gathered around the nets as we disentangled the bats. We were providing splendid entertainment!

The shop-owner ran his generator and provided light for us. While most of our spectators had seen bats flying at night, they had never viewed them closely. They were surprised to see us measure them, peer at their teeth, take notes, and then let them go. Most villagers viewed bats as pests. But, as one local diamond miner said proudly, “This may look funny, but this is science!”

Netting along creeks, we found the tiny tufted bat (Rhynchonycteris naso), which is about the size and weight of a peanut with wings, a long snout, and tufts of white hairs spaced along its forearms.

After leaving the village, we hiked through the forest for seven days, stopping at Tappa, a mining concession headquarters with a small shop and farm. The owner, BeBe, showed us the blood stained wooden rails where her chickens perched at night—definite signs of vampire bats.

Just before dusk, we set two nets next to the chicken coop. Again, people emerged to watch. That night, the bats caught in the act of raiding the chicken roost were common vampires (Desmodus rotundus). I showed the first one to BeBe. It was a pregnant female. As a guest on BeBe’s farm where the bats plagued her animals, I hesitated, and asked permission to let it go. “She’s pregnant? asked BeBe. “Let her go.” BeBe was apparently sympathetic with the particulars of being female in the jungle.

The next morning we continued on our uncharted way, through a gorge, and finally arrived at the top of Mount Kowa, where we spent 10 days at the summit.

In a cave along the gorge, we discovered a family of nine striped fruit bats, which we identified as El Dorado broad-nosed bats (Platyrhinus aurarius). One became our guest for a night. After being captured and measured, she decided to sleep on our hammock string rather than immediately fly away. We also later netted both varieties of yellow-shouldered bats (Sturnira liliwm and S. ludovici) on the mountain top.

Although our short list of bats and other small mammals contained few surprises, the information was hard earned and helped fill in the question marks about the region’s species. But in the end, the experience was also about conservation. Each time we weighed, measured, and studied a bat, we learned more about them, and shared our appreciation for these night-flying creatures with the villagers who live in this forest habitat and can make a lasting difference in the survival of these invaluable allies.

Rebecca Shapley is a graduate of BCI’s Bat Conservation and Management Workshop in Pennsylvania. She conducts bat species surveys in the rain forests of Central and South America. Recently she received a grant from BCI’s Global Grassroots Bat Conservation Fund to support work in Jari National Park, Amazonas, Brazil. She hopes to use a satellite phone and the Web to take school classrooms along on future trips.
Bats and Biodiversity Education in Bulgaria

European researchers promote conservation amid political unrest...

by Paul Elliott

Despite a decade of political, economic, and social upheaval, Bulgaria’s bat population is hanging on, thanks to dynamic and dedicated people working to better understand the needs of their country’s bats and how to protect them. There have been significant declines in bat populations, but all 30 European species still thrive in Bulgaria’s warm summers, extensive forests, and caves. Twenty-five percent of Bulgaria is composed of limestone karst that is riddled with caves, gorges, and underground rivers. In a country the size of Tennessee, there are more than 5,000 caves, at least 74 of which are known to be used by bats.

In August 1993, I attended the European Bat Research Symposium in Evora, Portugal. There I met Teodora Ivanova, “Tea” to her friends. She discussed Bulgaria’s bats and their conservation needs with transparencies that showed more roosting bats in a single photo than most British bat workers can hope to see in a lifetime. I resolved to help Tea promote public knowledge of the region’s bats and biodiversity.

A researcher at the National Museum of Natural History in the capital city of Sofia, Tea also runs the Bat Research and Protection Group, a lively collection of professional ecologists and dedicated amateur scientists. My opportunity to help Tea came when I and my colleague Sue Barker won funding from the British Government’s Darwin Initiative for the Survival of Species. This is a fund to help Britons work in countries that are richer in biodiversity than Britain, but have limited economic resources. After discussing our ideas with Tea and other Bulgarian contacts we decided to design a program for biodiversity education in Bulgarian schools. We wanted to develop exciting, interactive ideas to help teachers introduce their students to the rich diversity of their country and to the issues and conflicts raised by the need for conservation.
We believe raising public awareness of biodiversity issues in schools is essential to conservation and sustainable development. School children are not only the next generation of decision-making adults, but are often effective at lobbying their parents and other adults on conservation matters. Whatever we produced, it had to be low-cost or no-cost if teachers were going to be able to use it in the classroom.

During our first visits to Bulgaria, Tea and Dimitar Uzunov, a fellow bat enthusiast, wildlife photographer, and botanist, took us to several bat sites, including two caves that demonstrate the type of disturbances that bats have had to endure in Bulgaria. Just to the north of the Stara Planina Mountains that run like a backbone across Bulgaria, in the valley of the River Osam, is the 1,650-yard-long (1,508.76 m) Devetaska Pester Cave. It is an ancient place with evidence of human occupation dating back 70,000 years: a reminder of Bulgaria’s geographic position on the crossroads between southern Europe and Asia.

More recently the cave and its bats have suffered at the hands of the military, which installed giant oil storage tanks in the 1960s. Fortunately, they have been removed and the Ministry of the Environment has declared it a fully protected area. In practice, however, there is nothing to inform people of its protected status, and enforcement is difficult. While we were there, two men took a small tractor and trailer into the cave to remove sand from the riverbed. The diesel engine caused tremendous noise and filled the cave with fumes. There was also evidence of picnics and people camping in the entrance to the cave through the summer. Despite these disturbances, Tea pointed out more than 6,000 bats in the cave, including Schreiber’s bent-winged bats (Miniopterus schreibersi), European greater myotis (Myotis myotis), long-fingered myotis (Myotis capaccini), and Mediterranean horseshoe bats (Rhinolophus euryale). This was in September when maternity colonies had mostly dispersed.

In June, the cave is home to around 17,000 expectant mothers. Tea hopes to install interpretive signs at the cave entrance to inform locals and visitors of the importance of protecting the bats.

The following day we visited the Nevanka Gorge and Ememskata Peschtera Cave. We soon encountered bats, including a large colony of the majestic greater horseshoe bats (Rhinolophus ferrumequinum). This also is a site that has suffered from human disturbance. From 1959 to approximately 1977, the cave was used for commercial mushroom growing, evidenced by the fact that it now has a flat concrete floor. Later, it was used as a military store with an
Access to Uchlovitsa Cave is restricted by a gate covering the entrance, which still allows access by bats. While this gate design is adequate for the highly maneuverable bats that use this cave for hibernation, such gates are not recommended for most other locations.

When the army abandoned the site, the cave received legal protection in 1980. There has been an increase in ecotourism to the area in the last three years; while a welcome boost to the local economy, the development must be managed in a sustainable way if it is to avoid threatening the very wildlife people have come to admire. Bulgaria has huge potential as a destination for wildlife viewers and the region already attracts many bird watchers. Bat-watching tours could be an economic benefit for local communities that safeguard important sites, but careful planning is needed to work within the law and to avoid activities that disturb colonies.

After developing ideas for biodiversity education and producing draft resources that were translated into Bulgarian, we returned to Bulgaria in May 1999 to conduct a series of workshops around the country. Because of the bombing campaign in neighboring Serbia, many foreigners had canceled their visits to Bulgaria. Our presence was much appreciated, because the fledgling tourism industry had virtually collapsed.

In our honor, the show cave of Uchlovitsa was opened near one of our workshop venues. This cave is protected by a gate and is closed to visitors during the winter when it is used by hibernating bats. Our visit was featured in the local newspaper, the Smolian Echo, which helped us to reach the public with a pro-biodiversity, pro-bat message.

The aim of the workshops was to test our ideas with teachers, student teachers, and others interested in environmental education. Most of the workshop participants were familiar with fairly traditional and formal teaching approaches and were surprised by the role-playing, poster-designing, model-making, and game-playing ideas, but they were gradually won over and everyone had fun. The workshops were conducted using interpreters, which led to some amusing misunderstandings, and we were disconcerted by the way participants demonstrated agreement or understanding by shaking their heads rather than nodding.

The workshop members knew very little about bats and asked questions such as, "Why do bats hang upside down?" but by the end they appreciated the animals and their conservation needs. Of all the case studies worked on, it was the bats that stole the show and generated the most enthusiastic response. Indeed, it was an excellent recruitment opportunity for the Bat Research and Protection Group.

With the help of our Bulgarian friends, we produced, Ecological Adventures in Bulgaria: From the Classroom to the Karst, a Teaching Resource for Biodiversity Education in Bulgaria, being distributed free of charge to teachers all over Bulgaria. The resource is also available in English and Bulgarian language versions at a Web site accessible from the University of Warwick at www.warwick.ac.uk.

It was a rewarding experience getting to know Bulgaria, its people, and its wildlife. We were honored to work with such dedicated people and hope we made a useful contribution to raise young people's awareness of bats and other wildlife. With luck, Bulgaria will soon begin to enjoy greater prosperity that will help protect the country's wonderful natural heritage.

Dr. Paul Elliott is based in the Warwick Institute of Education at the University of Warwick, England. He is involved in teacher education programs, specializing in science education and biology. He also chairs the Warwickshire Bat Group and offers advice to bat roost owners.
Conserving Fishing Bats in the Sea of Cortez

by Luis Gerardo Herrera Montalvo and Jose Juan Flores Martínez

At first glance, the islands rising from the Sea of Cortez appear as barren, rocky outcroppings. In fact, these biological treasures are teeming with life. The endangered Mexican fishing bat (Myotis vivesi) lives on these islands, and is found nowhere else in the world. In 2000, through a grant from the North American Bat Conservation Partnership, we began investigating its status.

The Mexican fishing bat does not outwardly resemble its closest relatives in the genus Myotis. It is large, with huge hind feet, and white fur on its abdomen. It feeds mostly on small fish and crustaceans, although it also eats insects. Unlike most other bats, Mexican fishing bats roost by wedging themselves among island rocks and in rock crevices, often sharing their roosts with least and black petrels.

We became interested in these unique bats because little is known about their current status, threats or needs, although they are believed to be endangered and their few known colonies and populations appear to be decreasing. For example, the population estimates on Partida Island, Mexico’s most important colony, were made more than three decades ago when an estimated 10,000 to 12,000 bats were present. On other islands, rats and house cats have been introduced with devastating impact on bat populations. Our first objective was to estimate current numbers on Partida Island, which remains free of such threats.

We were also interested in this bat’s unusual feeding habits. More than 350 species of bats from the same family feed exclusively on insects, while this one eats seafood. Previous accounts of its feeding habits are mostly anecdotal, based on reports from casual observers. Thus, we also examined the bat’s feces and used stable isotope analysis (an analysis of the chemical behavior of atoms) to determine what they ate. Marine crustaceans and terrestrial insects differ in their nitrogen composition, which allows us to identify the types of foods the bats have eaten.

The traits that make Mexican fishing bats most interesting also make them vulnerable. For example, their roosting habits make them easy prey for rats, cats, and snakes. In fact, this bat has completely disappeared on islands where exotic rats have been introduced. Pollution and commercial fishing are additional threats.

Today, we know that bats of both sexes are present on Partida Island during most of the year. However, during the reproductive season the colony is apparently composed mostly of pregnant and lactating females. This past May, we estimated that there were 7,846 adult females and 4,232 young in this island’s most prominent rock slides. Adult males probably roost on nearby islands or in other Partida Island sites not sampled.

Mexico places a high priority on the conservation of these islands and their diverse fauna. Our study is part of a larger project being conducted in collaboration with Dr. Bernard May and biologist Chris Floyd from the University of California in which we are estimating the genetic diversity of fishing bats along their geographic range. We believe that our efforts to conserve this bat and its habitat will ultimately benefit the islands’ many other species of plants and animals that are also found nowhere else in the world.

The photographs on the following four pages were taken during a research trip in March 2001.
The most important remaining colony of Mexican fishing bats is found on Partida Island, a 297 acre (120 ha) island located in the northern Sea of Cortez east of Baja California.

Mexican fishing bats typically eat crustaceans and small fish such as sardines and mullet.

Access to Partida Island is possible only through the cooperation of the Mexican navy, which ferries researchers and gear to and from the site.
Researchers use wooden frames to measure approximately 10.8 square feet (1 m²) of roosting area at a time to guide their population estimates. Pictured from left to right: Osiris Gaona Pineda, Gerardo Herrera Montalvo, Leticia Reyes, Jose Juan Flores Martínez.

By quickly removing rocks within the grid area, researchers discovered colonies of bats roosting beneath the rocks and were able to estimate the population size.

Least and black petrels roost among the rock slides alongside the Mexican fishing bat. This roosting bird has just been exposed while surveying for bats.
Rodrigo Medellín, one of BC1's scientific advisors and leader of Mexico's Program for the Conservation of Migratory Bats, visited Partida Island in May. Here, he examines a Mexican fishing bat.

All bats captured for the study were carefully weighed and measured before being released.

The Mexican fishing bat has huge hind feet and claws that are well-suited for catching small fish and crustaceans.

By collecting and analyzing feces, student researcher Jose Juan Flores Martínez (seated) and Professor Luis Gerardo Herrera Montalvo learn more about the feeding habits of the Mexican fishing bat.
The Mexican fishing bat also feeds on insects. Here, the authors collect samples of insects found on Partida Island.

Partida Island is remote and uninhabited by humans. The authors camped below the rock slide study area.

This project was funded, in part, through a grant from the North American Bat Conservation Partnership.

Luis Gerardo Herrera Montalvo is a professor of ecology at the National University of Mexico. He researches the feeding ecology and physiology of bats and assists in conservation of bats throughout the country. Jose Juan Flores Martinez is a student researcher at the National University of Mexico majoring in environmental biology. The authors dedicate this article to Dr. Bernardo Villa, an old friend of the Mexican fishing bat.
STAFF IN ACTION

by Kari Gaukler

BCI in the Classroom

Thanks to BCI-funded internships, lucky college students and thousands of elementary students each year are learning to appreciate bats...

Standing in front of a roomful of 22 fourth graders at Allan Elementary in east Austin, Texas, lights dimmed, I take a deep breath and nervously plunge into my slide presentation. With the first slide and the gasps from the children’s mouths, I realize how lucky I am to be here. “Hi, my name is Kari Gaukler and I work at Bat Conservation International. How many of you have heard the word ‘conservation’ before?”

Five years ago, BCI pulled together local sponsors and businesses and began a successful internship program. Each year, BCI hires three interns to educate the public about bats. Two “Bat Interpreters” are present on summer weekend nights to answer questions at the Congress Avenue bridge in downtown Austin. In addition, one intern is responsible for presenting lectures to Austin-area elementary schools. I was fortunate enough to be hired for this position in fall, 1999.

As a senior at The University of Texas at Austin, I was preparing to receive a degree in Physical Anthropology with a minor in Biology with a focus on conservation. Searching through the internship database at the career center, I came across an internship at Bat Conservation International. “Bats?” I thought to myself, “Well, why not?” Although I knew next to nothing about bats, I was excited to find a position that focused on wildlife conservation and education so close to home.

On my first day, Bob Benson, BCI’s Public Information Manager, handed me a video, The Secret World of Bats, a number of books, and a manila folder crammed with articles about bats. “First things first,” he said. “You’ll need to take a crash course on bats.” I was directed to BCI’s library where I spent almost every waking hour for the next two weeks learning everything I could about bats. After spending hours learning about bats at work, I would come home and eagerly curl up in bed with my new treasured book, Bats in Question. I began spending evenings at the Congress Avenue bridge. As I watched the magnificent emergence each evening, my interest grew even stronger. Barely able to contain all the interesting things I had learned, I frequently found myself blurtting out facts to friends, neighbors, classmates, family, and just about anyone else who would listen.

Finally, I was ready to begin my lectures. I hit the schools armed with a slide projector, a stack of kids’ brochures, a preserved bat specimen in a plastic display case, and Discover Bats!, BCI’s multi-media education kit.

Luckily my task was facilitated not only by the fascinating subject, but also by some of the most entertaining, amusing, and intriguing photographs ever taken of bats. The reaction from kids and teachers was great. Even now I laugh to myself when I think of the predictable shouts of glee I
would hear when they saw a picture of an epauletted fruit bat with its pouches stuffed full of fruit, its big, distended eyes, and soft, wet, pink tongue sticking out. They especially got a kick out of the “dancing” common vampire bat (Desmodus rotundus). Students would jump up and strut, while others were certain that the bat was break dancing or performing the Macarena. “How did you get him to dance like that for you?” they would ask in wide-eyed amazement.

Initially, I was worried about questions I might not be able to answer and concepts I might not be able to explain. With many exceptional adaptations and nearly 1,000 species of bats, it was hard to know the answer to every question. Some of the tricky ones included, “How do bats go to the bathroom?” “Why do vampire bats eat blood?” “What is the scientific name of the false vampire bat? The white fruit bat? The yellow-winged bat?” “How many bats are there in the whole world?” (not species, but actual numbers of bats), and from one studious second grader: “If an ounce of bat guano contains billions of bacteria, and a single guano deposit may contain thousands of bacterial species, then how can it be used for detergent?”

Through their questions I was learning along with the children. Although I knew the answers to most of the questions (with the exception of the species’ names), I was learning to answer questions on a level that children could understand and relate to while incorporating other concepts. I can now quickly and comfortably explain to any child how a bat goes to the bathroom (they turn around and hang by their thumbs. Do you think you could do that?), or how bacteria can help improve detergents (some bacteria produce enzymes that “eat” away the dirt). I also now have a long list of bats that I can name and pronounce scientifically.

The children were astonished with what they learned about bats. Their jaws would drop and their eyes would get as big as baseballs when I told them that some flying foxes could have wingspans of up to six feet. Students often exclaimed, “That’s as tall as my dad!” Furthermore, they were fascinated by the white Honduran fruit bats and their ability to make “tents” out of banana leaves and other foliage.

At times I was amazed at the capacity kids had to relate bats to themselves or other animals. For example, when they learned that the bulldog bat could catch fish, many of the children would say, “just like an eagle!” Or when they saw slides of the bats’ faces they frequently compared them to other animals. Often, these analogies were essential to overcoming irrational fears that many of them had about bats. Bats seem much less scary when they are compared to a soft white bunny rabbit, a little dog, or a monkey. And when they learned that bats are responsible for many of our favorite fruits, eat mosquitoes, and pollinate flowers, they began to appreciate them whole-heartedly.

Standing in front of 40 eager faces at the end of my four-month internship, I turn off the slide projector and ask, “Any more questions?” Hands pop up all around me, kids are rising to their knees to be called on first, hands wiggle back and forth to get my attention. I fearlessly call on a young girl in the front row. “I want to help save bats,” she proclaims. Eager to tell her how to become involved, I suddenly realize how effective and beneficial the BCI internship program is, not only for bat conservation and environmental education, but for me.

Kari Gaukler served as BCI’s student intern during fall 1999 and spring 2000. Thereafter, she joined BCI’s staff as a biological technician, assisting the program staff in international conservation and research projects. This coming fall, she plans to volunteer with the Peace Corps where she will continue her role as an environmental educator.
North American Bat Conservation Partnership (NABCP)

- Awarded $50,009 for the 14 most important conservation projects submitted for 2001. Partners matched this funding 8 to 1, bringing the total value to $401,987. The projects range from studies of bat refuges in California’s giant sequoias to the gating of an Alabama cave that will protect a key, bat-dependent cave ecosystem.

- Established major artificial bat roost experiments on forest lands in Oregon and Minnesota in partnership with several state and federal agencies and private corporations. Tests at approximately 25 sites will help address how artificial roosts can be used by wildlife managers to enhance habitat for forest-dwelling bats, especially while habitat is being restored where natural tree roosts have been lost.

- Cosponsored the Indiana Bat Symposium in Lexington, KY, with the U.S. Forest Service, the U.S. Fish and Wildlife Service, the University of Kentucky, the Northeast Bat Working Group, and the Southeast Bat Diversity Network. Held from March 29 to April 1, participants gathered to investigate and address the causes of this endangered species’ continuing decline.

- Completed the second year of analysis of data on critical roosting requirements for endangered Indiana bats and submitted a paper for publication in the proceedings of the Indiana Bat Symposium.

Latin American Initiatives

- Sponsored the second Agribats Workshop, held November 15-17, 2000. Eleven researchers from seven U.S. and Mexican universities met in Monterrey, Mexico, and began developing economic models that document the impact of bats in controlling corn earworm moths. The results will play an essential role in promoting bat conservation by emphasizing the enormous economic benefits of bats to North American agriculture.

- Worked with the National Program of Reforestation in Tamaulipas, Mexico, to plant agave plants to prevent soil erosion statewide. Approximately 70,000 seedlings are already being cultivated and will be planted soon. Tequila production has stripped agaves from large areas, and this now threatens the survival of endangered long-nosed bats that rely on agave flowers for food during migration.

Bats & Mines Project

- Conducted joint surveys with the National Park Service of 37 mines in Joshua Tree and Death Valley National Parks and Mojave National Monument. BCI recommended bat-friendly gating of approximately 20 openings. These mines shelter 10 bat species, including the California leaf-nosed bat (*Macrotus californicus*), a sensitive species.

- Hosted “Bat Conservation and Mining: A Technical Interactive Forum” in partnership with the Office of Surface Mining, November 14-16, 2000. More than 110 people attended from state, federal, and private agencies, learning about the importance of mines as bat habitat, and how to close mines with bat-friendly gates to protect both bats and people.

Bat House Research Project

- Added nearly 50 new bat houses through a partnership with the Cayman Islands Bat Conservation Program, the Caribbean Utilities Co., Ltd., and the island’s prison workshop. The houses will provide roosts for more than 7,000 bats.
Approximately 20 houses are now occupied, one with a colony of more than 400 bats.

**Bats and Buildings**

- Consulted with Southwest Texas State University in San Marcos, Texas, on how to provide alternative roosts for approximately 50,000 bats that created a nuisance by roosting in a campus parking garage. Two large bat houses are currently being tested to help displaced bats and, if successful, more will be added.

**Global Grassroots Conservation Fund**

- Educated communities near San Pedro Sula, Honduras, through EDUECO, a conservation organization led by Jaime Bustillo and Suyapa Dominguez. The group is working to preserve bat populations in agricultural communities. To date, they have visited 26 schools reaching 915 students and 26 teachers, and have broadcast their conservation message via radio some 1,050 times.

- Provided advice and partial funding in collaboration with the Wildlife Conservation Society and Mlup Baitong, a local conservation organization, to educate schoolchildren about the roles of bats in Cambodia’s ecology and to protect more than a million bats of four species roosting in the National Museum of Cambodia. Although bat droppings have damaged treasured artwork in the past, sales of the guano have also paid salaries of the museum staff. Repairs to the museum’s structure will now protect both bats and artwork.

**Education and Scholarships**

- Teamed with Enron engineers to help establish a bat-oriented network among the science faculties in Houston’s private schools, including the Kinkaid School. The Kinkaid campus includes nearly four acres of pristine habitat along Buffalo Bayou, an area that will now serve as an important testing site for BCI’s bat house research project. Advanced biology students are currently working with Enron to equip the houses with dataloggers and peeper cameras.

- Awarded $54,617 in research scholarships to 23 students in 15 countries. Projects range from evaluation of bat dependence on old-growth redwoods of the U.S. Northwest, to bat habitat needs in Panamanian cloud forests.

**Outreach**

- Educated more than 2,500 Austin, Texas, school children through BCI’s fall internship program. Intern Julie Jenkins visited 28 schools and delivered 67 presentations using the “Kids Discover Bats” video. Children learned to appreciate the benefits of bats and to “look but not touch.”

- Teamed with the Sierra Club to gain legislation to protect Texas bat colonies from exploitation by wild animal dealers. Bryan Sybert, Natural Resources Director of the Sierra Club, worked with BCI’s Barbara French and representatives from the Texas Parks and Wildlife Department to write the bill. Co-sponsored by State Senator Jeff Wentworth and Representative Edmund Kuempel, the bill passed in May and prohibits hunting or selling bats without a permit.

- Granted interviews to: 62 newspapers, 43 magazines, 18 television stations, 11 radio stations, and 14 Web sites. Print features reached more than 23 million readers of publications from Audubon to National Geographic (Spanish edition), while broadcasts included National Public Radio, and bat segments in the new IMAX film, Journey into Amazing Caves. Web features included ABCnews.com.

For more information about these programs, or to receive a copy of the BCI Annual Report, visit our Web site at www.batcon.org or call 512-327-9721.
Board Update

BCI welcomes three new trustees. Mark A. Adkins of Los Angeles, CA, is a graduate of the University of Texas and Harvard Law School. He is founder and CEO of the largest phone-based network of taxicab companies in North America. Thomas Read, of Milwaukee, WI, is an American Airlines captain, and son of BCI’s founding trustee, Verne Read. He volunteers with American’s mentorship program and also donates flying time to hospital patients in financial need. Patsy Steves, of San Antonio, TX, succeeds her late husband Marshall [BATSWinter2000] as a BCI trustee and is especially involved with the Bracken Cave committee. The couple was recently honored with the World Affairs Council International Citizens of the Year Award for their many years of involvement in numerous arts and conservation efforts.

A Fond Farewell

BCI bids farewell to Arnie Phiër, who has led BCI’s fund raising team since 1994. In June, Phiër accepted a new position as Senior Development Officer with the American Association for the Advancement of Science in Washington, D.C. During Phiër’s tenure with BCI, annual revenues grew from $1.2 million to $2.7 million and total assets increased from $1.1 million to $5.1 million (while fund raising costs were held to just 9% of total expenses). Phiër coordinated many of BCI’s Bracken Cave activities and helped establish and lead the Global Grassroots Bat Conservation Fund. Though it is bittersweet for him to leave the organization, its mission to protect bats and their habitats will remain close to his heart. He says, “I hope to take what I have learned at BCI—efficiency, integrity, and a concern for both people and wildlife—and apply these concepts to similarly valuable goals.”

Letters

In May, we held the first workshop to organize the Program for the Conservation of Bats of Costa Rica in San Jose. I’m very optimistic about its prospects for success. Laura Navarro and Joaquin Arroyo from Mexico’s Program for the Conservation of Migratory Bats (PCMM) were absolutely great resources, and the wonderful materials that they brought to share with us, funded by the PCMM, are going to make our work a lot easier. I just wanted to thank you for helping make this workshop possible and to report its success from the perspective of an old bat biologist and longtime BCI member. I should note that the person spearheading the effort in Costa Rica is Bernal Rodriguez, mammalogist with the National Museum. Without his considerable time and effort, this project would never have gotten off the ground.

— Richard and Meg Laval, Monteverde, Costa Rica

2,500 Square Foot Version

<table>
<thead>
<tr>
<th>Location</th>
<th>Dates</th>
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<tbody>
<tr>
<td>Richmond, Virginia</td>
<td>June 24 - October 1, 2001</td>
</tr>
<tr>
<td>Wilmington, Delaware</td>
<td>October 14 - January 6, 2002</td>
</tr>
<tr>
<td>Macon, Georgia</td>
<td>January 19 - May 5, 2002</td>
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Dates are subject to change. For more information, contact the venues listed, or call BBH Exhibits at 210-599-0045.
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