ANNUAL REPORT

2001 - 2002

BAT CONSERVATION INTERNATIONAL

Dear BCI Members,

This year, BCI celebrates 20 years of helping people understand and appreciate bats and their immense contributions to the planet's biodiversity. This would have been impossible without our members, donors, and partners, and we thank all of you for your continued support. Together, we have provided safe refuges for millions of bats and are proud to announce major progress in restoring populations of several threatened and endangered species. We have demonstrated the values of bats as controllers of insects, pollinators, and seed dispersers and have educated communities worldwide.

In a special Summer \ Fall issue of *BATS* magazine, we celebrated the accomplishments of two decades. In this Annual Report, we highlight the past year's education, conservation, and research activities. But our celebrations are tempered by the realization that the challenges facing bats will continue for many years to come. We know that the power of partnership can make bat conservation a reality. With your continued generosity, we can look forward to even greater successes in the years ahead.

Wilhelmina E. Robertson,
Chairperson of the Board

Merlin D. Tuttle, President

Cover:
BCI is working to protect migratory bats (see page 7).
PHOTO: ©MERLIN D. TUTTLE, BCI \ 000-4311

Inside Front:
The gray bat shows signs of recovery (see page 10).
PHOTO: ©MERLIN D. TUTTLE, BCI \ 855-3101

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BCI's Mission

Bat Conservation International's mission is to protect and restore bats and their habitats worldwide, through:

education—teaching people to understand and value bats as essential allies,

conservation—protecting critical bat habitats and encouraging others to join in our efforts,

research—advancing scientific knowledge about bats, their conservation needs, and the ecosystems that rely on them, and

win-win solutions—relying on non-confrontational approaches that help both bats and people.

We understand that the needs of wildlife must be balanced with the needs of humans. We also believe that conservation of bats is an essential element in safeguarding human economies, healthy environments, and the benefits of our planet's rich biodiversity for future generations.

There is no single "right" way to teach children and adults, biologists and gardeners, industry officials and private landowners about bats. These audiences are as diverse and complex as bat species themselves. Only by providing exciting teaching materials, media outreach, special programs, and field workshops can we truly make a difference for bat conservation.

BCI has conducted 75 Bat Conservation and Management Workshops since 1990, training 1,362 people from 17 countries.

Field Workshops

In June, BCI hosted 34 participants from 12 U.S. states and one Canadian province for our tenth year of Bat Conservation and Management Workshops in Arizona. Representatives of eight federal, state, and local agencies, museums, and universities, along with private teachers and conservationists, learned to identify western bat species and to conduct educational activities in their home regions. In addition, participants assisted colleague Paul Cryan in his research of *Lasiurus* migrations.

"For me, this was a five-day immersion in another world where one can put aside one's own daily struggle and learn to appreciate the threats to the survival of entire species," wrote participant Glen Gilbert.

In Barree, Pennsylvania, in August, 21 workshop participants included individual conservationists, as well as representatives of environmental agencies and biological consulting firms. BCI and the Pennsylvania Department of Conservation and Natural Resources also hosted 29 of the state's leading environmental decision-makers and offered a two-day program on bat conservation initiatives that can have direct, local impacts. Many participants gained insight into conflict resolution between environmental protection agencies and private industry using BCI's non-confrontational approaches; others learned more about incorporating artificial habitats for bats into management plans.

Cullen Geiselman, BCI's Education Programs Assistant, and Amy Gotliffe, an educator with the Coevolution Institute, presented a one-hour, hands-on session entitled "Bees, Birds, and Bats Do It!" at the National Conference of the North American Association for Environmental Education in Little Rock, Arkansas, on October 13, 2001. BCI distributed materials to more than 500 environmental educators. Thirty participants attended two sessions of the mini-workshop, learning details of pollination and exploring a variety of fun activities designed to make the process of pollination via animal pollinators more accessible to children. The group wrapped up the workshop with a discussion on the value of our forgotten pollinators and things that people can do to support these unsung heroes. During the presentation, Geiselman and Gotliffe promoted the "Exploring Pollinators" curriculum being designed by BCI staff and the

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Education Programs Assistant Cullen Geiselman teaches children in Texas's Rio Grande Valley about the values of bats.

North American Pollinator Protection Campaign (NAPPC) with an upcoming grant from the National Science Foundation.

At the North American Symposium on Bat Research in October, participants from Canada and the U.S. attended a half-day Educator Workshop sponsored by BCI. David Nagorsen, a leading bat researcher from British Columbia, opened the session, while Florida Bat Center's Denise Tomlinson taught echolocation. BCI staff presented models for community outreach.

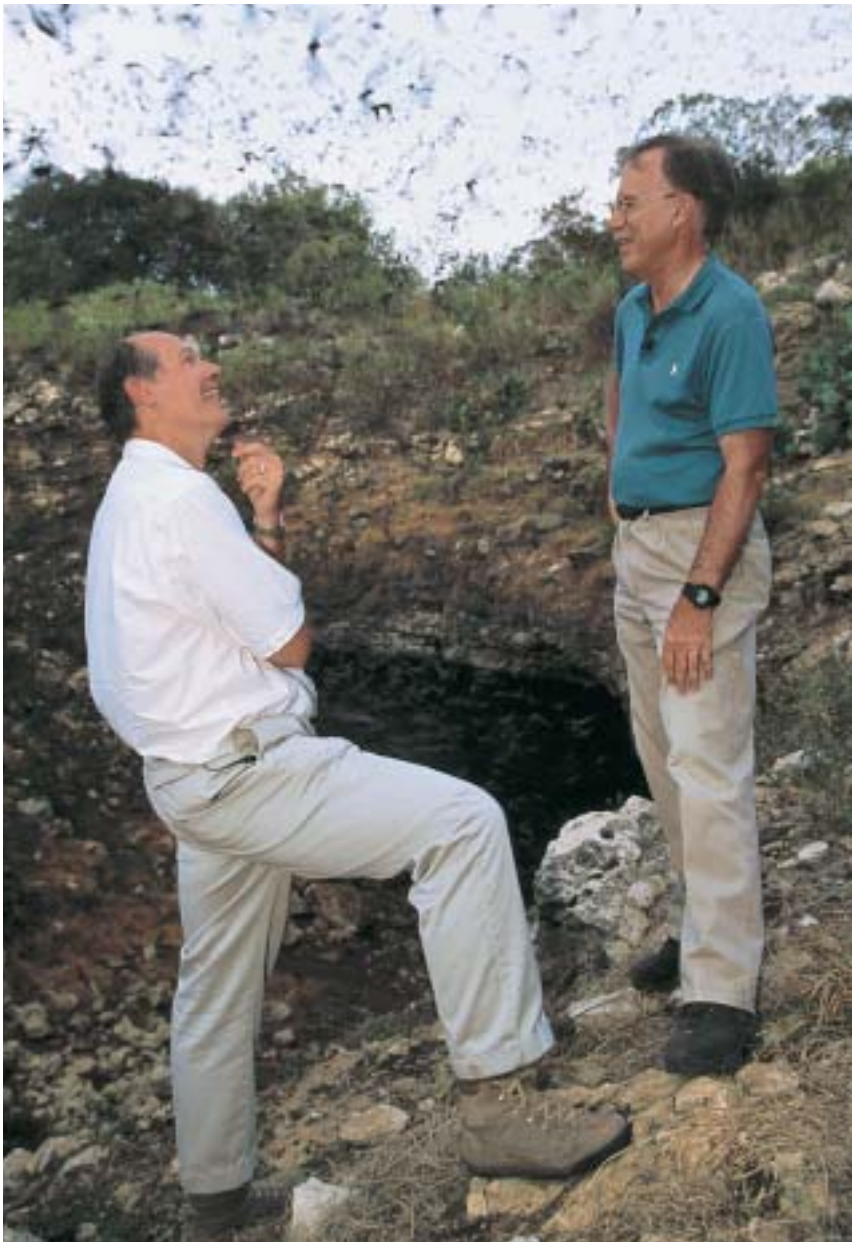
The largest educational event of the year was the Echolocation Symposium held in Austin, Texas, April 15-17, 2002. Leading bat echolocation experts from around the world shared their knowledge of ultrasound equipment, field techniques, analysis software, and reporting methods. The 115 participants gathered from eight countries and 24 U.S. states to learn from such noted scientists as Don Griffin, Lars Pettersson, Brock Fenton, and many others.

Paul McKenzie, with the U.S. Fish and Wildlife Service, attended the workshop and pronounced it "one of the best symposiums I have ever attended. I was impressed with the quality of speakers and the incredible international and national representation, and very much impressed with the advances that have been made in the development of new and sophisticated computer software."

BCI continues to cosponsor a wide range of workshops each year, including programs on bat-friendly cave and mine gating, bat surveys, mine safety, and more. For information on this year's forums and workshops, see the North American Bat Conservation Partnership (page 10) and the Bats and Mines Project (page 13).

Rio Grande Valley Initiative

BCI's education programs in Texas's Rio Grande Valley teach people along the Texas-Mexico border about the importance of bats, their habitats, and the need for conservation. Quality bilingual materials, which increase both literacy and general environmental awareness, are at the heart of this program. Distributed to libraries and elementary schools, these materials explain the importance of bats to agriculture and help end the cycle of misinformation. Educational packets have now been distributed to 317 libraries, schools, nature centers, and radio stations and are being incorporated into classrooms and educational programs from El Paso to Brownsville.



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Harry Smith (left) visited Bracken Cave and interviewed Dr. Merlin Tuttle (right) for an upcoming A&E television program entitled, *Travels with Harry Smith.*

Bats in the Media

During the past year, BCI reached an estimated 174 million readers, television viewers, and radio listeners. Public Information Manager Bob Benson gave interviews to 46 newspapers, 34 magazines, 23 television programs, 14 radio sta-

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BCI intern Tim Russert hosts kids from Sea World's summer camp at the Congress Avenue Bridge. Sea World visits the bridge each year as it incorporates environmental education into its summer programs.

tions, and 27 Web sites. Prestigious publications including *National Geographic*, *National Parks, Family Fun*, *Martha Stewart Living*, *Reader's Digest*, *Philadelphia Inquirer*, *Boston Globe*, and *Detroit News* featured bats. Photo essays appeared in such key children's publications and Web sites as *National Geographic World*, *Scholastic News*, and *Ranger Rick*.

The BBC documentary *Top Bat*, which highlighted bat conservation, was seen by millions of international viewers, and the popular new show, *Keeping it Wild with Jason Raize*, featured Benson and was broadcast on 197 WB (Warner Bros.) stations across the U.S., reaching approximately 20 million viewers. Millions more saw bats in a positive light via *National Geographic Today*, *The Travel Channel*, and the *Texas Parks & Wildlife* PBS series.

Watch for the upcoming A&E Special, *Travels with Harry Smith*, which airs on November 30, 2002, featuring Dr. Tuttle at Bracken Cave.

Radio interviews aired on *NPR*, *Earth & Sky*, and *Texas Parks & Wildlife's Passport Series*. Web stories included a promotional Web link between *National Geographic* and BCI in conjunction with the "Bat Patrol" article that appeared in April. *National Geographic* also featured Dr. Tuttle's famous frog-eating bat photo in its 100 *Best Pictures* issue this fall.

BCI staff and supervised volunteers presented 15 public programs and attended a variety of special events throughout the year. They reached at least 70,000 people at such venues as the Orlando Science Center in Florida; the Mystic Aquarium in Connecticut; the Pacific Grove Museum of Natural History in California; and the Association of Zoo & Aquarium Docents Conference in Illinois.

In Austin, Texas, BCI's fall and spring interns visited 62 schools, educating nearly 6,000 children. They empowered teachers to continue using bats in lesson plans throughout the year by providing complimentary copies of our videos, *Kids Discover Bats* and *Building Homes for Bats*. Similarly, our summer interns hosted tens of thousands of bat-watchers at the Congress Avenue Bridge, and garnered dozens of new members at the fifth annual "Free-tail Free-For-All" community event.

We were recognized for educational outreach efforts this year when the National Wildlife Federation (NWF) presented BCI with its 2001 *National Conservation Achievement Award* (in the Organization category). "BCI was chosen for this prestigious national award by NWF's Board of

Directors after being identified as an exceptional modern-day conservation hero," said Doug Inkley, NWF spokesperson. "The award seeks to spotlight the conservation accomplishments and commitment that can serve as an example to us all."

BAT MAGIC COFFEE

This year, in partnership with Wildlife Trust International and Thanksgiving Coffee Co., BCI introduced Bat Magic coffee. While bats do not pollinate or disperse the seeds of coffee plants, they do help disperse other seeds, pollinate flowers, control insects, and fertilize the soil, which helps to regenerate rain forests where traditional shade-grown coffee is cultivated.

Because the coffee is organic and shade grown, the forest tracts remain intact, providing healthy habitats for bats and other wildlife. Bat Magic is a great way for coffee lovers to support BCI's conservation programs in the Neotropics. The coffee is sold online at www.batcon.org/catalog/catp7.html. BCI and Wildlife Trust will receive $1 per bag from online sales, and proceeds will be used for joint bat conservation and education projects. Retail distributors include Whole Foods markets throughout California and many Wild Birds Unlimited stores nationwide.

BATS AND PUBLIC HEALTH

Last September alone, BCI responded to seven news articles that prompted rabies scares in cities from Los Angeles to New York. In addition, Conservation Science Officer Barbara French contacted two drug companies whose advertisements promoted fear of bats through potentially misleading and damaging information.

The Bayer Co., in promoting Kiltix, a product intended for use on dogs and cats as tick control, featured "attacking" flying foxes in ads comparing bats to parasitic ticks. When the company declined to withdraw the campaign, BCI informed biologists, bat rehabilitators, and other conservationists of the problem via email. Many contacted The Bayer Co. on behalf of bats, including BCI member and veterinarian Deborah Kemmerer, whose clinic uses many Bayer products. After receiving a large number of complaints, the company, while defending its marketing approach, indicated it would discontinue the ad.

The Chiron Corporation, which manufactures the vaccine RabAvert, was more cooperative when approached about a postcard ad featuring a vicious bat. After receiving educational materials from BCI, Chiron's National Sales Manager David Dwight, wrote: "You may rest assured that the content in this mailing won't be distributed again. Chiron Corporation greatly appreciates the valuable service that BCI performs and hopes you will accept [our] donation to the organization." A check for $1,000 was enclosed. BCI appreciates Chiron's willingness to learn the facts about bats and rabies and their support of bat conservation.

NEARLY 14 PERCENT OF ALL BCI INQUIRIES INVOLVE CORRECTION OF PUBLIC HEALTH MISINFORMATION ABOUT BATS.

COURTESY NATIONAL WILDLIFE FEDERATION

Dr. Merlin D. Tuttle, Founder and President of Bat Conservation International (center) accepted the National Wildlife Federation's 2001 *National Conservation Achievement Award* in the Organization Category at the Evergreen Conference Resort, in Stone Mountain, Georgia, on Saturday, March 9, 2002. The award was presented to BCI by NWF's President and CEO, Mark Van Putten (right), and Chairman, Bryan Pritchett (left).

Education Outreach and Workshops are funded in part by:
Austin American-Statesman, Bass Foundation, Brown Foundation, Chapman Foundation, Robert and Peggy Gerrie, Houston Endowment, Island Foundation, Helen Johnson, Magnolia Trust, Motorola Austin, Schuetz Family Trust, Turner Foundation, Inc.

LATIN AMERICAN INITIATIVES

Explosive population growth and development characterize many Latin American countries, seriously jeopardizing bats and the ecosystems that depend on them. Latin America is home to the richest and most diverse bat fauna in the world—more than 290 species—making conservation of bats in this region one of BCI's highest priorities.

PROGRAM FOR THE CONSERVATION OF MEXICAN BATS

In 1994, BCI established the Program for the Conservation of Migratory Bats (*Programa para la Conservación de los Murciélagos Migratorios*, PCMM), which quickly grew to encompass all 140 Mexican species.

BCI and the PCMM are working in 14 states of Mexico: Sonora, Chihuahua, Nuevo León, Tamaulipas, Sinaloa, Zacatecas, Jalisco, Michoacán, the State of Mexico, Morelos, Guerrero, Hidalgo, Puebla, and Chiapas. Twenty-two caves are being monitored, with two to four more added annually. The caves that have been monitored the longest, up to six years, are Cueva de la Boca in Nuevo León, Cueva de Quintero in Tamaulipas, and Cueva la Gruta in Michoacán. Bat populations at these sites are now stable or increasing, largely because of local awareness and stewardship.

Education in communities near these caves is an important component of conservation, and this year PCMM educators visited 12 schools and institutions from Chiapas to Jalisco, educating 1,596 children and approximately 60 teachers and directors. The educators used the storybook on pollination, *Flores para Lucía, la Murcielaga* (*Flowers for Lucia, the Bat*) and educational materials produced last year, as well as other titles in the bilingual storybook series.

The National Museum of Tequila helped share a positive bat conservation message last spring with a permanent exhibit entitled, *Bats, a Myth in our Culture*, which attracted some 2,000 visitors in the first three months.

Also last year, BCI and PCMM educators collaborated to write, edit, and design the fifth children's storybook, *Semillas de Barbarita, la Murciélaga* (*Seeds from Little Barbara, the Bat*). It explores the natural history and ecological values of fruit-eating bats that disperse seeds in sub-tropical and tropical forest ecosystems. The book, now at press, joins previous storybooks as cornerstones of educational kits that include workbooks for students and teachers, along with such classroom activities as mobile cut-outs and seed-dispersal games.

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Activities and games help schoolchildren learn how bats transfer pollen from one flower to another. Other games help students identify seeds that come from bat-dispersed fruits and understand the crucial role bats play in forest regeneration.

ELSEWHERE IN LATIN AMERICA

In June, BCI Executive Director Steve Walker and Cave Resources Specialist Jim Kennedy visited four important maternity caves on the Paraguaná Peninsula in Falcón, **Venezuela**, which are home to an estimated 200,000 lesser long-nosed bats (*Leptonycteris curasoae*). They assessed current and

potential threats to the caves, including human disturbance and resort development. They also began working with the Venezuelan Association for the Conservation of Natural Areas (*Asociación Venezolana para la Conservación de Areas Naturales,* ACOANA), led by BCI Scientific Advisor Dr. José Ochoa, to develop education programs in nearby communities and prepare management plans to protect each site.

In October, BCI and its Venezuelan partners conducted bat-education workshops for representatives of 16 indigenous tribes. Participants learned to identify and control the impact of vampire bats in five communities of the lowland rain forests in the Caura Watershed. The course also promoted educational activities for children, emphasizing the importance of Neotropical bats in the rain forest ecosystem. The course was conducted by ACOANA, BCI, the U.S. Fish and Wildlife Service, the Wildlife Conservation Society, and the Indigenous Association from the Caura River. Instructors included Steve Walker, Dr. José Ochoa, Dr. Luis Caballero, Dr. Mariapia Bevilacqua, and Sr. Asdrubal Saarmiento.

Sponsored by BCI, The Nature Conservancy, and the Venezuelan Association of Postgraduate Schools, a second workshop was held in Merida in conjunction with the fourth Venezuelan Congress of Ecology. Participants included 22 students and professionals from Venezuela, Colombia, Mexico, and Bolivia, who learned about conservation priorities in Latin America, relationships among bats and plants, and how to study bats as indicators of overall environmental quality. BCI scholarships made it possible for several participants from outside Venezuela to attend. Instructors included Dr. Pascual Soriano, Dr. José Ochoa, and Dr. Adriana Ruiz.

In **Bolivia**, BCI Scientific Advisor Dr. Luis Aguirre leads the Program for the Conservation of Bolivian Bats (*Programa para la Conservación de Murciélagos de Bolivia*, PCMB). Since its inception in 1998, PCMB volunteers have worked in Bolivia's three largest cities to promote conservation of bats and their ecosystems through classroom presentations and museum exhibits. During the past year, their programs reached 2,500 students in 49 different classrooms, changing attitudes about bats. Through tests designed to measure the enhancement of knowledge following workshops and lectures, the PCMB documented that overall knowledge of bats had increased by more than 40 percent, and that all participants changed their negative attitudes regarding bats.

The latest permanent bat exhibit in the country opened this year at the Museum of Natural History in Santa Cruz, reaching about 10,000 visitors. Dr. Tuttle's photographs illustrate bat biology, ecology, and the need for conservation, while BCI videos *Los Murciélagos de América Latina* and a translated version of the award-winning *Secret World of Bats* are shown continuously. At the National Museum of Natural History in La Paz, the exhibit *Aliados Nocturnos* entered its second year, successfully educating more than 17,000 people this year alone.

Other conferences hosted by PCMB members

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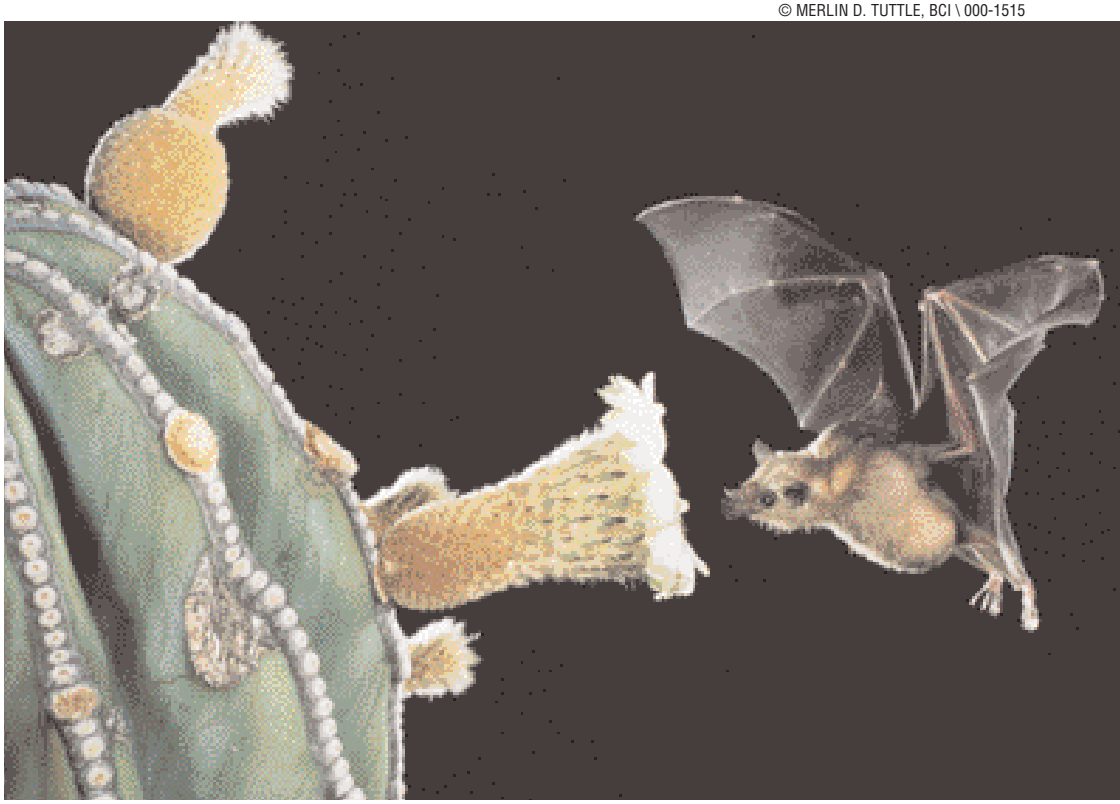

A lesser long-nosed bat pollinates a cardon cactus flower in Arizona. These bats migrate, following flowering and fruiting seasons of their food resources. They are major pollinators of giant cacti and many agave plants in deserts of Mexico and the southwestern United States.

© JIM KENNEDY, BCI

Local community leaders accompanied BCI staff on surveys of four maternity caves on Venezuela's Paraguaná Peninsula. Bats are important pollinators and seed dispersers of the columnar cacti seen in the background. By working with local conservation groups and the Venezuelan federal government, BCI hopes to develop education programs in communities surrounding the caves and have several sites designated national sanctuaries.

included, "Vampire Bat Rabies and Conservation in Bolivia," which educated 225 biologists, landowners, animal care specialists, and public health officials in vampire bat management techniques and increased their understanding of the ecological values of other bat species.

This past season's fieldwork included conservation efforts in Las Cuevas de San Pedro, some of the most popular tourist caves in the country. In cooperation with tour guides at the caves, the PCMB worked to produce a campaign to protect bats while developing the site for ecotourism and educating visitors about bats. Research is being conducted at this site, as well as caves in Carrasco National Park, to determine exactly what species are present, and what conservation steps are required to protect them.

Through BCI-PCMB initiatives, more than 25,000 people have been educated about bats during the past four years, and the program is expected to expand in coming years.

Under the direction of Bernal Rodriguez and Dr. Richard LaVal, the Program for the Conservation of Bats of **Costa Rica** (*Programa para la Conservación de Murciélagos de Costa Rica*, PCMCR) has completed its second year. With at least 110 species of bats occurring in a territory of only 20,000 square miles (52,000 square kilometers, smaller than West Virginia), Costa Rica may have more species of bats per unit area than any other country in the world.

Unfortunately, Costa Rica has not been immune to the practice of wholesale deforestation common worldwide in tropical forests, which has significantly diminished bat habitat. A century ago 80 percent of the country was covered by primary forest. Today, that has been reduced to just 20 percent. Fear of vampire bats also results in destruction of beneficial species, including insect-eating bats, fruit-eating bats, and pollinators. Effective conservation and education measures are essential.

During the past year, PCMCR staff educated 530 children using BCI and PCMM bilingual storybooks and teacher curricula. In addition to elementary schools, programs at the Tirimbina Biological Reserve in Sarapiquí educated 1,500 students. The reserve is the centerpiece of biology education in Costa Rica, coordinating a permanent program for 10 schools. Students enter the

© RENZO VARGAS

Children in Cochabamba formed a bat club and hung a PCMB poster in their school to teach other children about bats. Education in classrooms is essential to future bat conservation.

program in the fourth grade and continue through junior high. When visiting the reserve, students conduct fieldwork and simple experiments, and are guided toward concepts of tropical forest ecology. There are also workshops for educators, offering tools for teaching biology and conservation. Because Sarapiquí has been subjected to deforestation, and there are many misconceptions about bats and their roles in the environment, the reserve offers a valuable opportunity for lasting education and bat conservation.

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In May, at the National Museum of Costa Rica, BCI, the PCMCR, and the PCMM co-hosted two Bat Conservation Workshops, one for approximately 15 educators teaching in communities near national parks and other key conservation areas, and the other for 20 regional biologists. PCMM staff presented educational materials and a curriculum, worked with BCI and PCMCR staff to establish the goals and objectives of the Costa Rica program, and enlisted the support and involvement of biologists and conservationists in attendance in achieving those goals.

Latin American Initiatives funded in part by:
Beneficia Foundation, Fondo Mexicano para la Conservación de la Naturaleza, National Fish and Wildlife Foundation, The David & Lucile Packard Foundation, U.S. Fish and Wildlife Service

MIGRATORY POLLINATORS

BCI continues to support conservation of pollinators, specifically focusing on endangered lesser long-nosed bats (*Leptonycteris curasoae*) and Mexican long-nosed bats (*Leptonycteris nivalis*). Priorities for recovery include protecting roost sites and food plants, monitoring major roosts in Mexico, New Mexico, Texas, and Arizona, educating the public, and further researching the species' needs.

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Bernal Rodriguez, PCMCR director (right), and Mariamalia Araya, PCMCR education director (left), give fourth graders from Heredia elementary school their first look at Honduran tent-making bats (*Ectophylla alba*) roosting underneath a heliconia leaf (inset) in Costa Rica's Tirimbina Biological Preserve.

This year, BCI and the Arizona Sonora Desert Museum (ASDM) co-hosted a meeting of federal and state biologists, private consultants, and BCI and ASDM staff, all of whom are dedicated to the recovery of lesser long-nosed bats. The group met at the museum in Tucson to discuss survey methods, share data, and coordinate fieldwork. Following the meeting, PCMM Director Dr. Rodrigo Medellín led a survey team to Cueva del Pinacate in northern Mexico. Using infrared-video technology, Medellín documented the colony's emergence and surveyed bat pups inside the cave. Preliminary results indicate that the cave's population is stable at about 150,000, and approximately 20,000 new pups were observed inside the cave.

Elsewhere in western Mexico, about 15 additional caves were surveyed, with researchers noting cave temperatures, conditions, and bat species present. One additional cave with approximately 4,000 lesser long-nosed bats was discovered near Techaluta, Jalisco, and BCI and the PCMM are now working with local environmental agencies on management plans to protect the colony. For more information on Mexican long-nosed bat research, see page 23.

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BCI Scientific Advisor and leader of the PCMM, Dr. Rodrigo Medellín, observes a newborn lesser long-nosed bat at Cueva del Pinacate, Sonora, Mexico.

A Seed Atlas for French Guiana

To provide the tools needed for studying the impact of bat seed dispersal, BCI is partially funding development of the *Atlas of Seeds Dispersed by Bats in French Guiana*. Researched and written by Dr. Scott A. Mori, curator of botany at the New York Botanical Garden, the atlas will include detailed descriptions and images of the seeds dispersed by bats, as well as keys for their identification. It will be the first published guide for identifying bat-dispersed seeds for any part of the world. French Guiana was chosen because of its rich diversity of flowering plants and because nearly 95 percent of its tropical forests remain intact. The information will help forest managers better understand the roles of bats in New World tropical forests.

The North American Bat Conservation Partnership

The North American Bat Conservation Partnership (NABCP), established in 1997, provides a forum for bat conservationists to share critical information and establish conservation priorities. The collaboration includes researchers, corporations, private organizations, and foundations, as well as government agencies from the U.S., Canada, and Mexico. In its strategic plan, the partners agreed upon several immediate actions, including:

- *Identification of essential roosts in caves, mines, and forests*
- *Documentation of preferred feeding habitats*
- *Location of important water sources*
- *Examination of the effects of land management practices on bat species*

BCI is working to meet these priorities on many levels and this year made excellent progress in implementing conservation initiatives for endangered cave-dwelling species, as well as forest species that face dwindling habitat.

"People management" at caves and abandoned mines often requires gates to protect both the resources and humans. To help land managers better understand how to protect bat habitats in caves, BCI co-sponsored its fifth Cave Gating Workshop, held June 4-8, with the U.S. Fish and Wildlife Service, the American Cave Conservation Association, and the U.S. Forest Service. The 14 participants included representatives from six state and federal agencies and cavers from West Virginia, South Dakota, Tennessee, and Missouri. In hands-on training sessions, the group installed a "fly-over" style gate at the entrance to McDowell Cave in Lake

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Scott Mori (right) and Tatyana Labova (left), with the New York Botanical Garden, collect and press plant specimens in French Guiana.

© Bob Currie, U.S. Fish and Wildlife Service

(above) Instructors and participants lend a hand to move a 290-pound (130 kg) horizontal bar into place at the cave entrance. Left to right: Larry Webb, Bill Elliott (face hidden), Jim Nieland, Kenny Sherrill, Eugene Vale, Cindy Hall, Candy Loving, Jim Kennedy, Matt Marciano, Jim Kaufmann, Ben Groner, Ben Miller.

(below) In hands-on training sessions, Cave Gating Workshop participants installed a "fly-over" style gate at the entrance to McDowell Cave in Lake of the Ozarks State Park, Missouri. Instructors Bob Currie (U.S. Fish and Wildlife Service) and Jim Nieland (U.S. Forest Service) watch as Heather Garland (The Nature Conservancy of Tennessee) welds a horizontal bar. Other participants work at the mouth of the cave.

© Jim Kennedy, BCI

of the Ozarks State Park in Missouri. The cave houses a maternity colony of endangered gray myotis (*Myotis grisescens*). By August, following gating and the birth of pups, the population had increased from 5,042 to 9,421 bats.

While cave gates can be extremely beneficial in protecting bat colonies, poorly designed or improperly located gates can be detrimental, and BCI recognized the need for a compilation of the current state of knowledge about gates and other protective options. In March, BCI, the U.S. Fish and Wildlife Service, and the U.S. Office of Surface Mining co-sponsored the nation's leading gating experts for a three-day conference entitled, *Bat Gate Design: A Technical Interactive Forum.* Hosted by BCI Cave Resources Specialist Jim Kennedy, the symposium drew 100 participants: 38 from five federal agencies (U.S. Bureau of Land Management, U.S. Fish and Wildlife Service, U.S. National Park Service, U.S. Forest Service, and U.S. Office of Surface Mining), 23 from 18 state agencies, 14 from 7 conservation organizations, and others from private companies, universities, and local government agencies. Sessions included: "Why do we protect caves and mines?," "Project planning," "Closure Design," "Construction Management," and "Monitoring and Maintenance."

After the symposium, the Texas Cave Management Association, with help from the Texas Cave Conservancy, hosted a day-long field trip to caves in the Austin area to show a variety of protection methods. Proceedings of the symposium are being published by the U.S. Office of Surface Mining, and this publication will provide the best summary of cave and mine protection methods available. It will be an invaluable "gating handbook" for biologists, landowners, and resource managers. Other supporting sponsors for the conference were the U.S. National Parks Service, U.S. Natural Resources Conservation Service, Texas Parks and Wildlife, the National Speleological Society, the National Cave and Karst Management Symposium, the Lower Colorado River Authority, and the Indiana Karst Conservancy.

Bat-friendly gates have been especially important in the conservation of gray myotis, and in January 2002, Dr. Merlin Tuttle and Cave Resources Specialist Jim Kennedy conducted surveys to assess the current population status of this species in Bellamy, Hubbards, and Pearson Caves in Tennessee. Other survey participants included Heather Garland of The Nature Conservancy and Bob Currie of the U.S. Fish and Wildlife Service. At their lowest points, these three gray myotis populations totaled 288,115, compared to this year's total of

Since 1998, BCI has disbursed $290,595 in conservation grants, matched by $2,630,385 in outside contributions, a 9-to-1 match, bringing the total value of these projects to $2,921,918.

© DOUG KEINATH

Grant recipient Doug Keinath uses an Anabat bat detector to survey bat species near Bighorn Canyon National Recreation Area.

613,667. This proved to be an historic survey, documenting a pattern of recovery that will likely lead to a letter of recommendation from Dr. Tuttle and the recovery team that the gray myotis be downlisted from "endangered" to "threatened." [For more on gray myotis and this year's survey, see *BATS* magazine, Summer \ Fall 2002.]

Another endangered species, the Hawaiian hoary bat (*Lasiurus cinereus semotus*), is Hawaii's only native land mammal. Almost nothing is known about the bat's roosting ecology and habitat needs, yet its endangered status has become a point of contention between the environmental community and timber industry in Hawaii. Using the successful Northwest Bat Cooperative as a model [see BCI's *2000-2001 Annual Report*], BCI's Dan Taylor, director of the Bats and Forests Initiative, recruited partners from the U.S. Fish and Wildlife Service, Hawaii's Division of Forestry and Wildlife, the U.S. Geological Survey Biological Resources Division, and the Hawaii Forest Industry Association, for a meeting to discuss opportunities for cooperative research that balances the bat's recovery with sustainable forestry practices.

In January, in Hilo, Hawaii, BCI facilitated a critical first meeting of approximately 40 landowners and forest managers who formed the Hawaii Bat Research Cooperative. All are now working together to prioritize and fund conservation-oriented research. To date, the group has cooperatively agreed on research priorities and raised more than $300,000 in private funding and in-kind resources that will be used to initiate the much-needed studies. [For more information on other Bats and Forests Initiative accomplishments, see page 15.]

Other essential research, conservation, and education efforts are being funded through NABCP Conservation Fund grants. In Spring 2002, BCI awarded $56,562 to this year's top 17 projects. This amount has been matched nearly 7-to-1 in partner funding, bringing the total value of the projects to $453,838. Upcoming projects include ecotourism development at Devil's Sinkhole in Central Texas, population monitoring in a newly created Biosphere in Morelos, Mexico, and radio-telemetry studies of summer Indiana myotis habitat in Illinois.

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© ELAINE ACKER, BCI \ 917-3111

Bob Currie, with the U.S. Fish and Wildlife Service, takes temperature readings in Pearson Cave in Tennessee. Conservation of hibernation caves is essential to the survival of endangered gray myotis (*Myotis grisescens*).

During the last year, past grant recipients have reported on the accomplishments made possible by BCI funding.

• *IN WISCONSIN*, Rebecca Cristoffel created nine educational bat trunks full of books, activities, and posters for use in elementary and middle school classrooms around the state. An accompanying teacher's guide, *Hangin' Around with Bats*, helps educators incorporate bats into classroom curriculum. The trunks are loaned to teachers through Bat Conservation of Wisconsin, Inc.

• *IN WYOMING,* Doug Keinath worked to identify potentially important bat habitat in Bighorn Canyon National Recreation Area to help develop an effective survey, monitoring, and management strategy. Keinath also received funding to inventory bat species in Yellowstone and Grand Teton National Parks, two of the United States' most heavily visited yet ecologically significant parks. The information will be used to direct management practices for bats, and because of their high public visitation, to raise awareness and promote bat conservation among visitors.

• *IN NEW ENGLAND,* Scott Reynolds built roosting structures for little brown myotis (*Myotis lucifugus*) and began educating pest-control operators about bat-friendly methods for excluding bats from buildings, saving thousands of bats from extermination each year.

• *IN CALIFORNIA,* in Klamath National Forest, Karen Raftery completed gating of Sand Cave, a 992-foot (302 meter) lava tube that serves as a maternity roost for Townsend's big-eared bats (*Corynorhinus townsendii*). The colony will now be monitored for future growth.

North American Bat Conservation Partnership funded in part by:

Bass Foundation, National Fish and Wildlife Foundation, U.S. Bureau of Land Management, U.S. Environmental Protection Agency, U.S. Forest Service, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management, National Forest Foundation

BATS AND MINES PROJECT

As homes in natural caves have been lost to development and tourism, mines have become critical refuges of last resort for thousands of American bats. BCI has worked with the mining industry since 1993 to survey abandoned mines and protect colonies that might otherwise have been destroyed during mine closures.

Magazine Mine, owned by Unimin Minerals Corporation, is one such protected site that houses approximately 9,000 hibernating, endangered Indiana myotis (*Myotis sodalis*) — Illinois' largest known Indiana myotis colony. It also houses colonies of little brown (*Myotis lucifugus*) and big brown bats (*Eptesicus fuscus*), eastern pipistrelles (*Pipistrellus subflavus*), and northern long-eared bats (*Myotis septentrionalis*). In 1996, BCI and its partners installed the first bat-friendly gate across the main entrance of the abandoned mine. A second entrance to the fragile silica sand mine had already begun collapsing and required stabilization prior to gating. Joe Kath, endangered-species project manager with the Illinois Department of Natural Resources, worked with engineers who designed solid steel arches, such as those used in coal mines, to reinforce the entrance. In May 2001, debris was removed from the entrance and 57 steel arches were installed to support the opening and passageway. With BCI assistance, a new bat-compatible gate was installed at the entrance in July.

Also in July, BCI's Sheryl Ducummon conducted the Idaho Mine Assessment for Bats Workshop, training 35 students in survey techniques, mine safety, and bat-friendly gating methods. Co-sponsored by the U.S. Bureau of Land Management and the U.S. Forest Service,

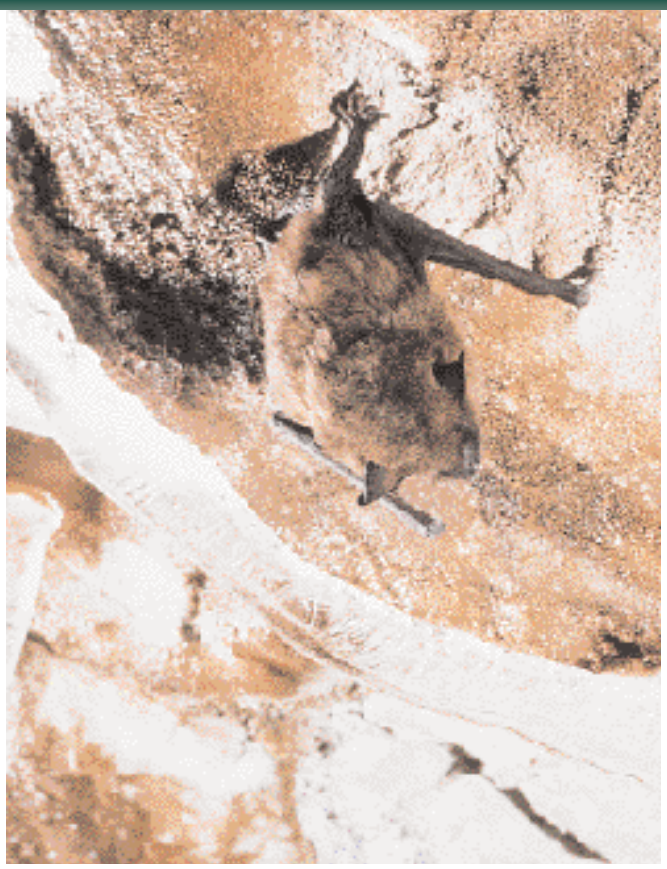
© SCOTT REYNOLDS

Grant recipient Scott Reynolds constructs an extra-large bat house at St. Paul's School in Concord, New Hampshire.

the workshop taught participants from federal and state agencies about the ecological and economic value of bats and how to protect abandoned mine habitat.

Progress also continues in the Great Lakes region. Gating was completed at Minnesota's largest mine, Tower Soudan, in August. This is a state-owned recreation mine where guides use old shaft cars and conduct underground tours to the 27th level. The shaft had been the only open entrance, and bats' needs were conflicting with recreational use. Now, however, an alternate shaft has been reopened, stabilized, and gated to accommodate bats. Tens of thousands of little brown and big brown bats hibernate in the mine, and the state plans to initiate educational programs and to market the mine as a Watchable Wildlife site during fall swarming.

All but four mines initially scheduled for protection through the Great Lakes Initiative have now been fitted with bat-friendly gates. These are some of the most complex mines in the region, offering hundreds of miles of passages for hibernating bats.



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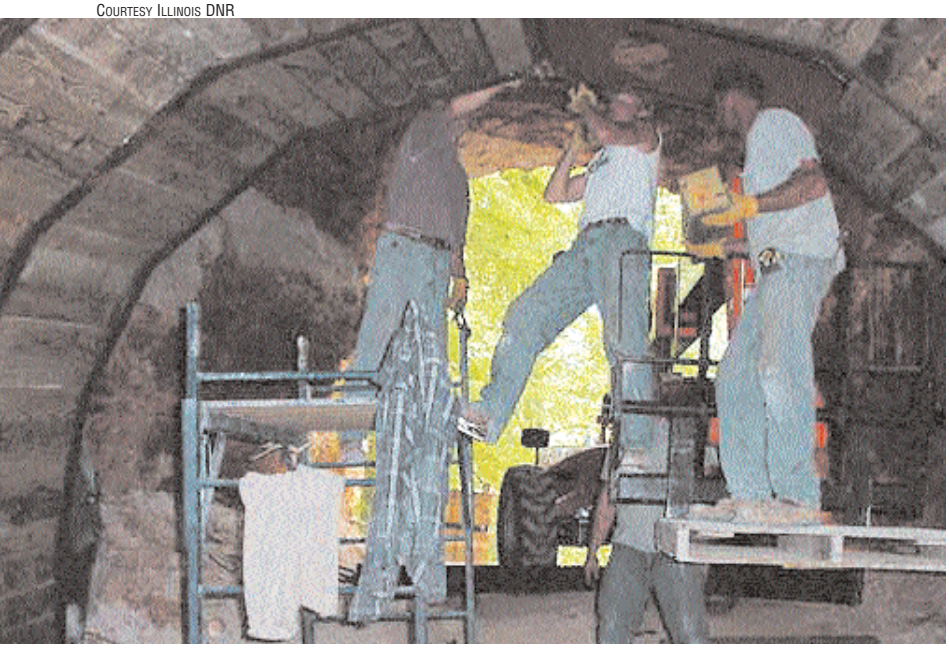
Bats seek cool, stable temperatures for winter hibernation. Mines such as those in the Great Lakes region provide constant, ideal temperatures for hibernation, ranging from 29 to 50 degrees F (-2 to 10 C).

In Nevada, BCI staff conducted a follow-up survey of Rose Guano Cave with Pete Bradley of the Nevada Department of Wildlife. A small guano-mining shaft (not used by bats) was first gated in 1996, when approximately 50,000 Mexican free-tailed bats were present. During the September 2001 survey, an estimated 75,500 emerged. And in California, BCI completed the fourth year of surveys of abandoned mines in Joshua Tree National Park. Some 32 mines (160 shafts and adits) have now been surveyed, and 27 have been recommended for closure with bat-friendly gates, protecting miles of critical bat habitat. Four of these sites have already been gated, and BCI and U.S. National Park Service staff will continue to monitor the populations in coming years.

Faith Watkins assumed leadership of the Bats and Mines Project this past year. She attended the New Mexico and Arizona chapter Wildlife Society meeting in February 2002, helping coordinate plans to protect Eagle Creek Cave, an historically important Mexican free-tailed bat (*Tadarida brasiliensis*) roost that may once have housed the world's largest colony. As research begins at the site and biologists learn more about this species' needs, the 30,000 remaining bats may soon be protected with a gate across the

COURTESY ILLINOIS DNR



Steel arches were installed to support the opening and passageway at Unimin's Magazine Mine in Illinois prior to building a second bat-friendly gate at the site.

lower portion of the enormous cave entrance that will accommodate bat flight needs, but restrict human disturbance. The site is located on property owned by BCI partners, the U.S. Bureau of Land Management and Phelps Dodge Mining Company.

In May, BCI hosted the Nevada Mine Assessment for Bats Workshop. This was the 20th workshop in eight years, and was designed to further assist federal agencies, primarily staff from the U.S. Bureau of Land Management, the U.S. Forest Service, and the U.S. National Park Service in developing plans to systematically survey abandoned mines for bats and close the most important mines with bat-friendly gates. Led by Faith Watkins, a record 80 participants studied mine safety and assessment and for the first time received actual underground training. Other workshop collaborators included the U.S. National Park Service, the U.S. Bureau of Land Management, the U.S. Natural Resources Conservation Service, and the U.S. Office of Surface Mining.

Proceedings of the November 2000 Bat Conservation and Mining Forum, held in Colorado, are now available to the public through the U.S. Office of Surface Mining Web site: www.mcrcc.osmre.gov/pdf/bat/proceedings/batcover.pdf.

Bats and Mines Project funded in part by:
Bass Foundation, Brown-Berry Consulting, National Fish and Wildlife Foundation, U.S. Bureau of Land Management, Winslow Foundation, Michigan Department of Natural Resources, Phelps Dodge Corporation, U.S. Natural Resources Conservation Service, George Gund Fund, Verne and Marion Read (Merrill Foundation)

BATS AND FORESTS INITIATIVE

Nearly all of North America's 45 bat species rely on forests for survival, and BCI is working to implement programs that address important forest bat conservation issues. Education, research, and specialized training programs can offer forest resource managers much-needed tools to better understand and address bat needs.

Dan Taylor, director of the Bats and Forests Initiative, co-chaired the first-ever, full-day forest symposium, *Conservation of Bats and Their Habitats*, at The Wildlife Society's national meeting September 29, in Reno, Nevada.

Presentations focused on the conservation and management of forest bats. Joining the National Forest Foundation and BCI as co-sponsors were the California Region of the U.S. Forest Service, the U.S. Bureau of Land Management's Nevada State Office, and the North American Bat Conservation Partnership. More than 200 resource managers from across North America attended, and proceedings of the symposium have been submitted to the *Wildlife Society Bulletin* for publication.

© SHERYL DUCUMMON, BCI \ 916-5404

Hassan Basagic and John Burghardt with the U.S. National Park Service take entrance measurements at Lucky Turkey Mine in Joshua Tree National Park, preparing to build a bat-friendly gate.

On October 14, 2001, Taylor also spoke on forest management and bat conservation to the Private Lands/Forest Wildlife Committee of the Southeastern Association of Fish and Wildlife Agencies in Louisville, Kentucky. The presentation was attended by representatives of North America's largest private forest management companies.

BCI supports industry conservation efforts, participating in the Northwest Bat Cooperative (NBC), a partnership of public and private forest and wildlife managers formed to prioritize and fund management-oriented bat research in the Pacific Northwest. Partners include: Plum Creek Timber, International Paper, the Willamette National Forest, Potlatch Corporation, Port Blakely Tree Farms, Boise Cascade Corporation, Weyerhaeuser Corporation, the U.S. Bureau of Land Management and Fish and Wildlife Service, the Washington Departments of Fish and Wildlife and Natural Resources, and the National Council for Air and Stream Improvement. Together with the support of BCI and the National Forest Foundation, the partners have raised more than $150,000 in matching funds for

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Through the Bats and Forests Initiative, researchers are testing "bat bark" in Georgia's longleaf pine forests. The replica bark mimics exfoliating bark essential for most forest-roosting bats.

the first two years of NBC-sponsored research: an investigation of upland versus riparian roost selection by forest bats in Oregon and Washington's east-side forests. Drs. Michael Lacki and Michael Baker from the University of Kentucky led a crew of five field technicians through a successful first season of research, with more than 30 of the target species tracked to approximately 50 roost trees. The second season of this four-year study is already underway. The gathered data will be used to create habitat models that public and private forest managers can use to incorporate bat conservation measures into their forest management programs.

BCI worked closely with the timber industry's Sustainable Forestry Initiative to incorporate forest bat conservation and management guidelines into a new handbook, *Enhancing Wildlife Habitat Through Sustainable Forest Management*, which is now being distributed to every major timber company in North America.

For bat populations to remain viable, suitable roosts must be available in natural and managed forests. Artificial roost structures for forest bats are a growing area of research and experimentation in bat conservation because they may provide immediate relief in areas where bats have lost natural roosts under exfoliating bark, in woodpecker holes, and in cavities of dead standing trees. BCI began two forest-bat artificial roost experiments in 2001 on managed forest lands in the Southern Oregon Cascades with the U.S. Bureau of Land Management, the U.S. Forest Service, Boise-Cascade Corporation, the U.S. National Park Service, Northwest Youth Corps, and Golden Coyote Wetlands citizens association; and in Minnesota with the Potlatch Corporation, the Fond du Lac Band of the Chippewa Tribe, the 1854 Authority, and the Minnesota Department of Natural Resources

Initial results from the 2001 pilot projects in Minnesota and Oregon were extremely encouraging, with bats using almost all of the experimental structures. The Oregon site added additional partners and has reached its goal of 15 roost stations. The Boise Woodlands Corporation, the Boy Scouts of America, and the Minnesota Conservation Corps joined the Minnesota project, with a total of 11 stations committed so far for the 2002 field season. A third site was added in South Carolina in spring 2002, with 15 stations to be installed and monitored by the state Department of Natural Resources, the Francis Marion and Sumpter National Forests, the Clemson Experimental Forest, the Harbinson State Forest,

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In summer, endangered Indiana myotis are just one of several species that can be found roosting beneath exfoliating bark.

and the Mead-Westvaco Corporation. At all three sites, BCI will implement educational programs with project partners and local community groups. Occupancy rates will be compared within and among regions and the results shared with project partners and submitted to the *Wildlife Society Bulletin* for publication.

Other roost experiments include creation of artificial bark, made of fiberglass that can be installed on healthy, green trees. The replica mimics exfoliating bark that provides essential roosts for most forest bats. These artificial bark roosts are screwed and caulked to living tree trunks and monitored to determine their effectiveness in attracting bats. Artificial bark was developed by BCI and U.S. Forest Service biologists from the Kaibab National Forest in 1995. Since that time, the Kaibab National Forest has modified the original design to include internal roosting chambers, and has used mesh guano catchers to monitor more than 60 sites, recording occupancy rates as high as 80 percent. BCI is producing and testing artificial bark at longleaf pine sites in Georgia, with monitoring begun in late spring 2002.

Bats and Forests Initiative funded in part by:
Bass Foundation, National Fish and Wildlife Foundation, National Forest Foundation, U.S. Forest Service, U.S. Bureau of Land Management

Bats in Buildings Project

BCI's Bats in Buildings Project began in 2000 in response to a growing need for information on how to safely exclude bats from buildings while protecting both bats and humans. For professional pest control companies that use safe, humane, and effective exclusion methods, BCI provides certification, as well as phone and Web referrals. Companies often distribute BCI's educational materials to their clients, and many install bat houses to provide alternative roosts for excluded bats. There are now 54 certified companies in 26 U.S. states. Companies in three new states — Idaho, Illinois, and Massachusetts — were added last year.

"The program has been a tremendous support to our bat removal work," said Tom Scollins, owner of TS Wildlife Control in Baltimore, Maryland. "Every time we do an exclusion, we educate our clients about bats and send them straight to the BCI Web site. Next year, we will also be involved with bat house research with our local extension service office."

Bats in Buildings Program funded by:
BCI Members

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Tom Finn, with Fly by Night, Inc., a professional exclusion service serving the southeastern U.S., prepares to exclude bats from a condominium complex in Key Colony Beach, Florida.

Global Grassroots Bat Conservation Fund

The Global Grassroots Bat Conservation Fund allows BCI to dramatically increase its impact on bat conservation, research, and education worldwide. Through small, low-risk grants to individuals and nonprofit groups, BCI provides training, supplies, equipment, and educational materials to further global bat conservation initiatives.

Last year, BCI funded eight projects in eight countries, totaling $17,000. In the Cayman Islands, Annie Band studied the impact of resort development on bat diversity and density on the islands. During her research, Band discovered a white-shouldered, or fig-eating bat (*Phyllops falcatus*) that was thought to be extinct in the Caymans. The last record of this bat on Grand Cayman was in 1906, and it was only known to remain in Haiti and Cuba. This year through mist-netting and radio-tracking surveys, she identified two separate populations, one in the National Botanic Park and another, which included pregnant and lactating females, in a remnant

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© COURTNEY PLATT

Grant recipient Annie Band discovered the white-shouldered bat (right), once thought to be extinct in the Cayman Islands, while studying the impact of tourism and development.

forest of fig trees near an area zoned for major development. Based on Bands studies, the Department of Environment and the National Trust for the Cayman Islands are now pursuing a land purchase to permanently protect the bats and their habitat.

In addition to public lectures and media appearances in support of bat conservation, Band launched a mentoring program for 18 high school and college women. Students worked in the field with Band about three times per week, helping with mist-netting, bat detector surveys, roost surveys, and public education. Several are now considering careers in science.

Other grants were awarded in:

• *CAMBODIA* — Joe Walston, a two-time recipient, was awarded $4,900 to continue research and radio tracking of flying foxes. The three species of flying foxes in Cambodia are all threatened by hunting. The project will help identify priority conservation areas by locating the most important feeding and breeding sites for these bats.

• *CUBA* — Abel Cruz Perez received bilingual, Spanish-English language educational materials.

• *HONDURAS* — Jaime Bustillo, a two-time recipient, received $5,000 to continue his educational efforts, this time creating programs for adults.

• *SLOVAKIA* — Miroslav Fulin received $425 to train cavers and others in bat surveying techniques and use of bat detectors.

• *INDIA* — The Chiroptera Conservation and Information Network of South Asia received $5,000 to conduct Conservation Assessment and Management Workshops at the Madurai Kamaraj University in Madurai, Tamil Nadu, for 50 bat specialists. Sally Walker and BCI Scientific Advisor Dr. G. Marimuthu formed the network in 1999.

• *SENEGAL* — John Leary, Peace Corps volunteer and bat project coordinator received $1,750 to launch the first bat house initiative in West Africa. Leary and volunteers will eventually build and install 57 bat houses in five locations. The group is also conducting educational programs to teach Senegalese schoolchildren and farmers about the benefits of conserving the country's insect-eating bats.

GLOBAL BIODIVERSITY INITIATIVES

Biodiversity loss is one of the world's most pressing crises. Over half of the more than 1,000 species of bats on our planet are classified as threatened, or near threatened, with extinction. Through the Global Bat Biodiversity Initiative, BCI is forming collaborations with large conservation organizations to work toward consensus on global priorities. Through the initiative, partners plan to create a database of all bats' geographic ranges around the globe, develop conservation priorities, and provide a forum for fund-raising alliances to address those priorities.

In March, BCI and the University of Virginia organized a meeting funded and hosted by Conservation International's Center for Applied Biodiversity Science (CABS-CI) in Washington, D.C. The meeting brought together for the first time a powerful combination of individuals and organizations to assess the ecology and life history, geographic distribution, taxonomy and phylogeny, and threat status of bat species worldwide, and to implement on-the-ground conservation action. The dialogue and collaboration that began with this meeting will help establish future partnerships for bat conservation.

Global Grassroots Bat Conservation Fund funded in part by:
Jeff and Helen Acopian, Charlie and Lael Chester, Joan and Herb Kelleher, John and Beth Mitchell, Potts & Sibley Foundation, Warren Skaaren Charitable Trust, and BCI Members

© STEVE WALKER, BCI \ 917-3301

Key leaders from Conservation International included (kneeling in front): Tom Brooks, Director of Biodiversity, CI-CABS; Gustavo Fonseca, Executive Director, CI-CABS; Russell Mittermeier, Director, CI (not pictured). Other participating organizations included: IUCN, World Wildlife Fund, Fauna & Flora International, Wildlife Conservation Society; Bat Conservation Trust; American Museum of Natural History; Smithsonian Institution-National Museum of Natural History.

INDIANA MYOTIS RESEARCH

BCI began focusing on the hibernation requirements of federally endangered Indiana myotis (*Myotis sodalis*) in 1998, monitoring caves and mines in Illinois, Indiana, Kentucky, Missouri, Tennessee, and Virginia. Once numbering in the tens of millions, only about 350,000 Indiana myotis remain today, making it the most rapidly declining bat in North America.

In collaboration with the U.S. Fish and Wildlife Service and other biologists, BCI continues to document temperatures and restore airflow at key sites. The study now includes 25 sites in 10 states, including Arkansas, Pennsylvania, Vermont, and New York. The following are highlights from this year's conservation efforts:

© COLIN GATLAND

U.S. National Park Service Ecologist Rick Olson enters Wilson Cave in Mammoth Cave National Park. Wilson Cave is one of five sites in the Park being studied as part of the Indiana Myotis Hibernation Research Project.

• *WYANDOTTE CAVE, INDIANA* — Long-time BCI member Gordon Smith, a professional concessionaire, assumed management of Wyandotte Cave. At BCI's urging, he and state officials announced they would help protect Indiana myotis hibernating in the cave by canceling tours from just after Labor Day through April 30th. To protect the bats during fall swarming, they will restrict flash photography and lights shined on the bats and limit use of ceiling lights within the cave. Smith is also sharing historic photos to help in restoring the entrance contours and re-establishing the natural "air dam" that had kept cave temperatures at cooler levels preferred by bats.

• *AEOLUS BAT CAVE, VERMONT* — BCI, the Vermont Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, and The Nature Conservancy installed temperature dataloggers in Aeolus Bat Cave, probably the largest cave hibernation site in New England. The bats are reported to be in decline, and temperature data are needed to evaluate the possible causes and remedies.

• *BARTON HILL AND OTHER ABANDONED MINES, NEW YORK* — The New York Department of Conservation is monitoring several Indiana myotis roosts in abandoned mines in New York state to evaluate their suitability for protection. The Barton Hill Mine has an exceptionally large and growing population of Indiana myotis, making temperature data there relevant to understanding the species' needs. This work is partially funded by two NABCP grants.

• *CANOE CREEK MINE, PENNSYLVANIA* — With BCI, Cal Butchkoski of the Pennsylvania Game Commission collected a year of preliminary data, which is critical for deciding whether to partly close at least one of the mine's three gated entrances to help stabilize or slightly raise roost temperatures. Currently, the lower passages are too cold—an unusual problem.

• *ROCKY HOLLOW CAVE, VIRGINIA* — Volunteer cavers are working to complete a new, detailed map to help researchers in future surveys and ensure that all passages are evaluated for bat use. The volunteers have also ridge-walked above the cave and located a number of sinkholes, collapses, blowing crevices, and other small holes that

probably connect to the cave and are critical for airflow and temperature. Locations have been noted on the cave map and the staff of George Washington-Jefferson National Forest has been alerted. BCI helped gate the cave entrance in 2000, but the protection of these surface features is equally important.

• *SALTPETRE CAVE AT CARTER CAVES STATE RESORT PARK, KENTUCKY* — This cave has been the focus of a BCI-funded $10,000 microclimate study by Dr. Neville Michie. A draft version of his report has been released, and plans are underway to begin modifying the cave to restore the microclimate that Indiana myotis require. It has long been altered as a result of saltpeter mining and tourism. Included in this first phase are replacement of the entry gate with a more bat-friendly version; modification of a building at the main entrance; enlargement of plugged passages and openings near the main entrance; construction of a temporary wooden wall and door in one section of tour passages; and excavation of a former surface opening in a remote part of the cave.

• *COACH CAVE, KENTUCKY* — Workers installed a temporary wooden closure on a manmade tunnel into the cave to help restore temperature and humidity conditions required by hibernating Indiana myotis.

• *MAMMOTH CAVE NATIONAL PARK, KENTUCKY* — BCI partially funded a bat-friendly gate at the entrance of Wilson Cave, a formerly important hibernation site for Indiana myotis. Dataloggers were installed in 2001, with biologists planning to analyze the pre- and post-gate data to gauge the gate's effect on roost temperatures. At Long Cave, BCI helped fund removal of a large concrete restriction at the entrance, a remnant of commercial modifications. This should help lower cave temperatures to historic levels required by hibernating bats. Dataloggers are also being used in Bat Cave, Dixon Cave, and the historic section of Mammoth Cave itself, which at one time supported as many as 20 million hibernating Indiana myotis. Data obtained will contribute to long-term recovery efforts.

© MARK AND SELENA KISER, BCI | 916-6204

Bat house experiments in organic orchards are helping growers attract bats that eat crop pests.

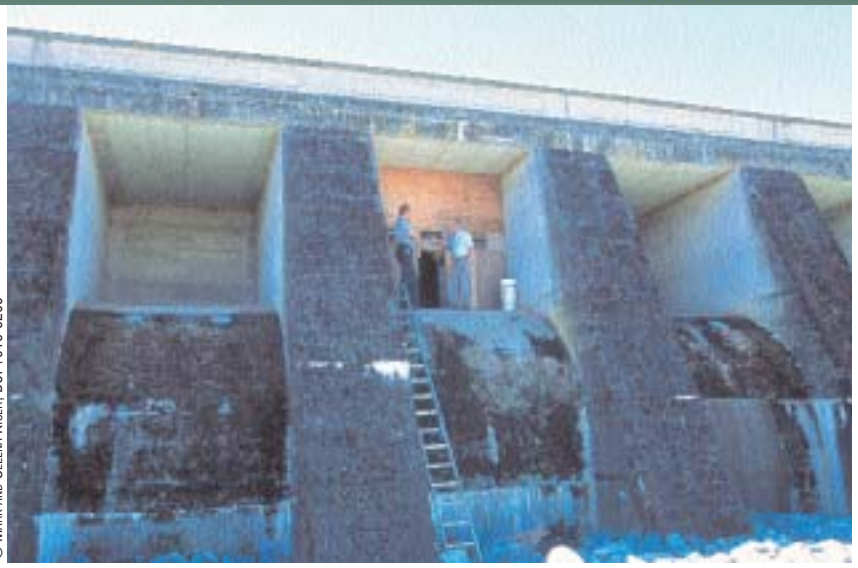
BAT HOUSE RESEARCH PROJECT AND OTHER ARTIFICIAL HABITATS

As bats lose natural roosts in caves and forests, bat houses and other artificial roosts are becoming increasingly important alternative habitats. To address this issue, BCI established the Bat House Research Project in 1993. Led by Mark and Selena Kiser, the project is a collaboration of biologists, landowners, industry, and homeowners who serve as Research Associates, extensively testing bat house designs and refining placement recommendations.

This year, BCI and Research Associates began monitoring 546 new bat houses in 34 U.S. states, two Canadian provinces, and the Cayman Islands. Many of those were installed thanks to a grant to BCI from the Organic Farming Research Foundation to investigate the role of bats in integrated pest management on organic farms. Forty-five bat houses were installed in 10 orchards in California's Central Valley. When bats are well established on a number of farms, research will be conducted to determine the impact bats may have on crop pests. BCI also delivered 50 copies of the *Building Homes for Bats* video to the

SINCE ITS INCEPTION, BCI HAS WORKED WITH 6,600 RESEARCH ASSOCIATES IN ALL 50 U.S. STATES, 10 CANADIAN PROVINCES, AND 23 FOREIGN COUNTRIES.

Indiana Myotis Research funded in part by:
National Fish and Wildlife Foundation, U.S. Bureau of Land Management



© MARK AND SELENA KISER, BCI \ 916-6209

This dam on Pardee Reservoir, near Sacramento, California, is home to an unusual bat roost. Bob Wisecarver and the East Bay Municipal Utility District converted one of the 16 spillway tunnels into an artificial bat cave with wooden roosting partitions inside. It was used by 2,500 bats last year.

University of California at Davis Cooperative Extension for distribution to organic farmers in an effort to stimulate further experimentation.

With a grant from Enron, BCI also installed a total of 80 conventional and experimental bat houses at 10 sites along natural gas pipelines in Arizona, Louisiana, New Mexico, Kansas, Iowa, Minnesota, and Florida. BCI staff filmed installation in conjunction with Enron and the Wildlife Habitat Council at the first site in Port Barre, Louisiana, to produce a training video for use at the remaining sites. The data collected at these sites will become part of the project's database and help BCI determine the best ways to provide alternative housing for bats.

Through the Arizona Sonora Desert Museum, BCI will now receive valuable new information on bat preferences in lowland desert habitats. Thirty-four new bat houses have been installed on the museum grounds and already one house is occupied and receiving heavy use. Another house, installed along the trail through the cactus garden, helps educate visitors about the importance of bats in desert ecosystems.

In Buda, Texas, BCI and the Texas Department of Transportation installed an experimental "Bridge Lodge" bat house that will provide roosting space for 3,000 to 5,000 bats beneath an interstate highway bridge. Designed by Marvin Maberry of Maberry Centre Bat Homes, the lodge is a cost-effective design for bridges, and transportation departments in Pennsylvania and Florida are also planning to install and test the new design.

Schoolyard Bats is a new component of the Bat House Research Project that helps schools provide roosts for bats in backyard habitats. "We are delighted to now be an active participant in the Bat House Research Project," said biology teacher Katherine Leathem. "The project actively engages students in observations that can provide vital information necessary to make decisions concerning the how and why of conserving bats internationally. We are grateful for all you have done to make us more ecologically aware."

Outside the U.S., one of the most successful bat house efforts has been Research Associate Lois Blumenthal's work in the Cayman Islands. There are now 20 occupied bat houses on Grand Cayman, and Blumenthal works with numerous volunteers, including the local utility company, students, veterinarians, and prison inmates to build, install, and monitor the houses. She especially advises using bat houses in conjunction with exclusions from homes and buildings.

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Volunteers from Enron assemble bat houses for field experiments near Port Barre, Louisiana.

Experimental roosts such as concrete culverts are showing great potential for conservation of Rafinesque's big-eared bats (*Corynorhinus rafinesquii*) in the southeastern U.S. The culverts mimic natural roosts in hollow tupelo gum trees, and seven roosts are now in place at South Mountains State Park and Lumber River State Park in North Carolina and at Walter Sedgwick's Bar M Plantation in Georgia. Early results are encouraging. Five culverts have already attracted big-eared bats.

North American Bat House Research Project funded in part by:
Chiroptera Cabin Company, Bill and Carole Haber, Jacob and Terese Hershey Foundation, Island Foundation, Magnolia Trust, Maberry Centre Bat Homes, Turner Foundation, Inc., and 1,200 Research Associates worldwide

MEXICAN LONG-NOSED BAT RESEARCH

Along with Texas Parks and Wildlife, BCI is participating in recovery efforts for the endangered Mexican long-nosed bat (*Leptonycteris nivalis*). The 1994 U.S. Fish and Wildlife Service Recovery Plan identified West Texas as one of six key areas for habitat enhancement, and in 2001, BCI staff began mapping agave corridors in the region. Flowering agave plants provide essential food sources for migrating bats. The team also surveyed Emory Cave in the Chisos Mountains of Big Bend National Park—the only documented roost for Mexican long-nosed bats in Texas, with a nursery colony of 3,000 to 4,000 adults. Researchers Brian Keeley, Arnulfo Moreno, and Angela England suspect that additional roosts exist in the region, and this could be the focus of future fieldwork.

In Mexico last December, the survey team conducted aerial surveys for agaves over major mountain ranges in northern Coahuila, Mexico. The location of each plot was established using a global positioning unit. A similar system was used while driving along the highway in Tamaulipas to locate clusters of agaves and columnar cactus. The resulting map is providing insight into possible migratory corridors used by Mexican long-nosed bats and suggesting key areas for habitat restoration.

© BRIAN KEELEY, BCI \ 917-2211

(top) Brian Keeley mist nets for Mexican long-nosed bats near flowering agave plants in the Davis Mountains of West Texas.

© BRIAN KEELEY, BCI \ 917-2113

(right) Mexican long-nosed bats are essential pollinators of agave plants from which tequila is derived.

Mexican Long-nosed Bat Research funded in part by:
National Fish and Wildlife Foundation, Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, BCI Members

BATS AND AGRICULTURE

Bats consume insects that cause enormous crop losses each year. BCI Scientific Advisor Dr. Gary McCracken and his associates Drs. John Westbrook and Paul Schleider have developed and tested a "Complex Bat Simulator for agricultural pest control." Also known as the Virtual Bat, this is an ultrasonic pulse simulator that realistically mimics the range and variation of echolocation pulses that bats produce while hunting for insects. In response to the ultrasonic calls of bats, many insects, including important agricultural pests, avoid the areas where such sounds are heard. Ultrasonic pulses also inhibit mating and reproductive behavior of insects. The device may ultimately be programmed with a variety of bat calls to combat insect pests around the world.

National Geographic featured McCracken's work in its April 2002 issue. More information on the Virtual Bat can be found in the Spring 2002 issue of *BATS* magazine.

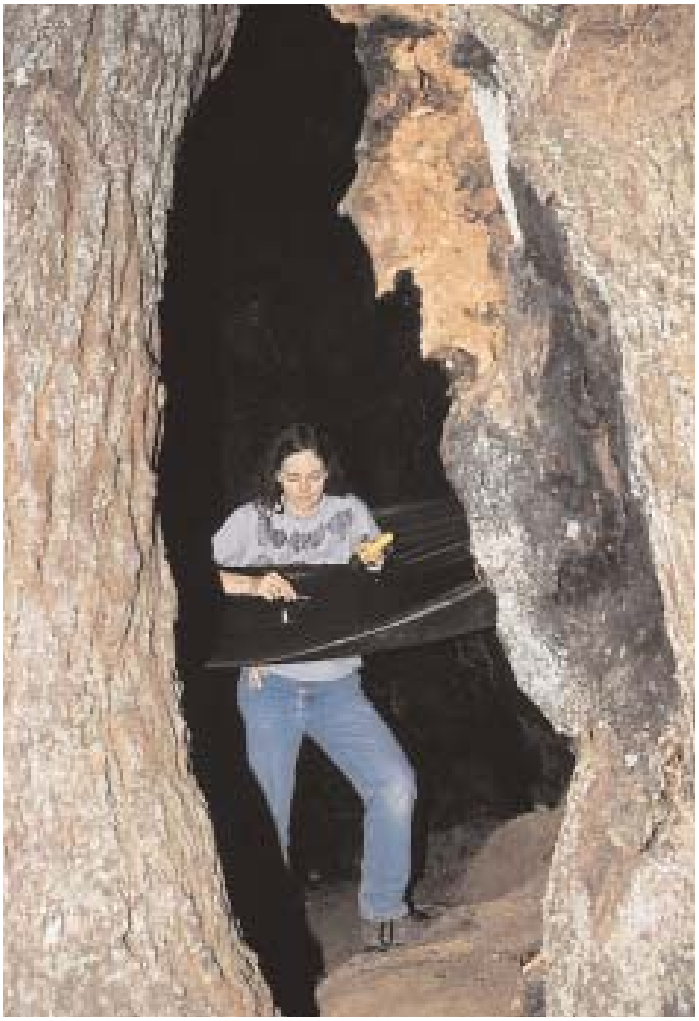
Bats and Agriculture funded in part by:
Brown Foundation, Houston Endowment, and BCI Members

STUDENT SCHOLARSHIPS

Since the scholarship program began in 1990, BCI has awarded 158 scholarships totaling $344,560 to support critical research in 44 countries. During the past six years alone, these scholarships have been matched 11-to-1 by outside funding partners, bringing the total value of the projects during that period to $2,293,193.

This year, a record 65 proposals were reviewed. Funding was awarded to 20 student researchers for projects in 16 countries, from Alejandro Antonio Castro-Luna's studies of the habitat requirements of bats in tropical forests near Veracruz, Mexico, to Anne-Jifke Haarsma's studies of pond bats and their habitat requirements in The Netherlands.

Many scholarship recipients from previous years are now completing their fieldwork and submitting reports on successful research and conservation efforts.



© ELAINE ACKER, BCI \ 916-6410

Danielle Purdy documents bat roosts in redwood trees, comparing roosting habits in contiguous forests to those in heavily logged timberland. The information can now be used by forest managers in considering the needs of bats prior to logging.

© JENNIFER CRUSE-SANDERS

Jennifer Cruse-Sanders' field team collects fruit and pollen samples, documenting how human use of plants, such as the fruit of the organ cactus, has affected movements of pollinating bats. Nectar-feeding bats are often the only effective pollinators of night-blooming, columnar cacti, and Cruse-Sanders found that, especially in landscapes that have become fragmented, bats that move pollen and seeds long distances play essential roles in preventing the loss of genetic diversity.

Student Scholarships funded in part by:
Bass Foundation, Oracle, Verne and Marion Read

© BRIAN KEELEY, BCI \ 749-1510

Heather Peckham identifies bats and collects fecal samples for analysis. Peckham studied bats and their role as seed dispersers in clear-cut tropical forests in French Guiana. Bats were captured with mist nets in forest fragments and in clearings, and fecal samples were collected in cloth bags for analysis, documenting the plants whose seeds were most frequently dispersed. Peckham received a second scholarship in 2002 to continue her studies of the relationship between bats and plants.

© BCI \ 917-3512

Bob Benson (right) presents a poster featuring outstanding Oracle Scholars to Ann Kato, with Oracle Corporation, at the company's headquarters in Palo Alto, California. Oracle's donations to the student scholarship program have made it possible to support critical conservation-oriented research around the world.

© MERLIN D. TUTTLE, BCI \ 000-2403

The short-tailed fruit bat (*Carollia perspicillata*) is one of the most common mammals in the New World tropics. It plays an extremely important role in forest ecosystems, feeding on the fruits and dispersing the seeds of a variety of plant species. While feeding on Piper fruit, a relative of the black pepper, this bat can carry up to 60,000 seeds in a night.

© SHERYL DUCUMMON, BCI \ 749-2313

Susan Koenig inventories bat species in Jamaica's Windsor Great Cave, helping develop a long-term plan for conservation and monitoring. This cave harbors one of the island's largest bat colonies, with up to 100,000 bats of 14 species inside. Although Jamaica has more than 1,200 documented caves, only 15 percent offer suitable bat habitat. Despite being well known in Jamaica, Windsor Great Cave remains in its natural state, making it a high priority for protection.

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FINANCIAL STATEMENTS

Combined Statement of Financial Position

BAT CONSERVATION INTERNATIONAL, INC.
As of May 31, 2002 (with summarized financial information as of May 31, 2001)

	May 31, 2002	May 31, 2001
ASSETS		
Current Assets:		
Cash and Cash Equivalents	$ 887,455	$ 1,325,191
Marketable Securities at Fair Value	508,090	430,854
Accounts and Grants Receivable	646,621	613,763
Inventory	57,912	69,321
Deferred Expenses	854	347
Total Current Assets	2,100,932	2,439,476
Note Receivable	14,208	14,208
Closely Held Stock	102,315	102,315
Property, Plant and Equipment, net of accumulated depreciation of $452,201 and $422,009	498,352	558,598
Real Property (Bat Habitat)	1,397,563	1,392,572
Permanently Restricted Assets:		
Marketable Securities at Fair Value	481,566	481,566
TOTAL ASSETS	$ 4,594,936	$ 4,988,735
LIABILITIES AND NET ASSETS		
Current Liabilities:		
Accounts Payable and Accruals	$ 148,510	$ 122,589
Deferred Revenues	44,632	42,639
Security Deposits and Prepaid Rent	2,060	21,264
Total Current Liabilities	195,202	186,492
Net Assets:		
Unrestricted	2,304,677	2,455,210
Temporarily Restricted	1,613,491	1,865,467
Permanently Restricted	481,566	481,566
Total Net Assets	4,399,734	4,802,243
TOTAL LIABILITIES AND NET ASSETS	$ 4,594,936	$ 4,988,735

Combined Statement of Activities

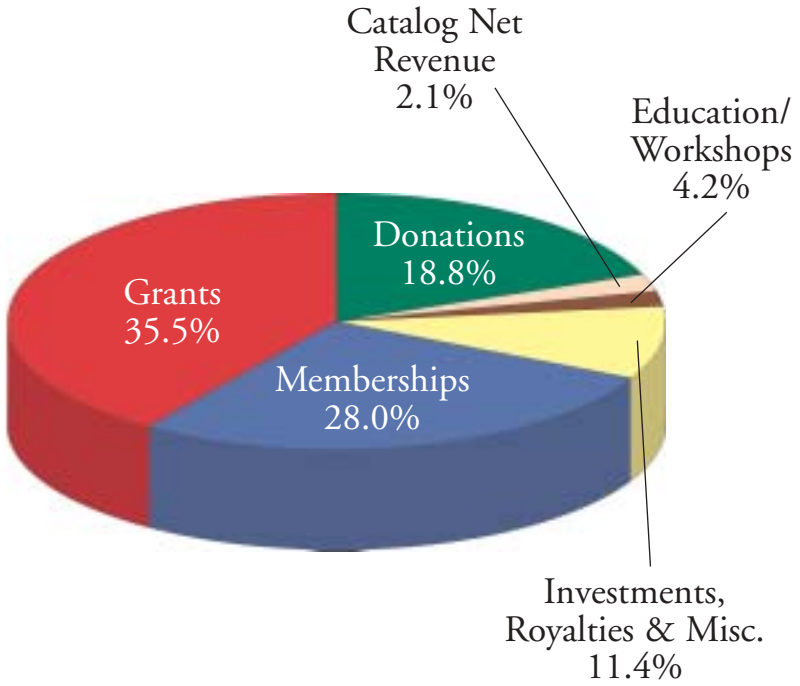
BAT CONSERVATION INTERNATIONAL, INC.
For the Year Ended May 31, 2002 (with summarized financial information for the year ended May 31, 2001)

	May 31, 2002				May 31, 2001
	Unrestricted	Temporarily Restricted	Permanently Restricted	Total	Total
PUBLIC SUPPORT AND REVENUE:					
Grants	$ 114,303	$ 727,112	$ -	$ 841,415	$ 964,691
Memberships	663,407	-	-	663,407	655,998
Donations	422,432	24,345	-	446,777	454,573
Catalog sales, net of cost of $161,864 and $181,204	50,023	-	-	50,023	52,336
Investment Income	120,144	-	-	120,144	59,847
Miscellaneous Income	45,065	16,525	-	61,590	74,868
Education/Workshops Income	57,361	41,675	-	99,036	44,525
Rental Income	51,666	-	-	51,666	62,991
Royalty Income	36,467	-	-	36,467	21,217
Net Assets Released from Restrictions					
Restrictions satisfied by payments	1,061,633	(1,061,633)		-	-
Total Public Support and Revenue	2,622,501	(251,976)	-	2,370,525	2,391,046
EXPENSES:					
Program Services:					
Education	757,112	-	-	757,112	762,911
Science and Conservation	1,645,309	-	-	1,645,309	1,468,510
Total Program Expenses	2,402,421	-	-	2,402,421	2,231,421
Supporting Services:					
Administrative	180,817	-	-	180,817	181,210
Fund Raising	189,796	-	-	189,796	176,761
Total Supporting Services	370,613	-	-	370,613	357,971
Total Expenses	2,773,034	-	-	2,773,034	2,589,392
INCREASE (DECREASE) IN NET ASSETS	(150,533)	(251,976)	-	(402,509)	(198,346)
Net Assets at Beginning of Year	2,455,210	1,865,467	481,566	4,802,243	5,000,589
Net Assets at End of Year	$ 2,304,677	$ 1,613,491	$ 481,566	$ 4,399,734	$ 4,802,243

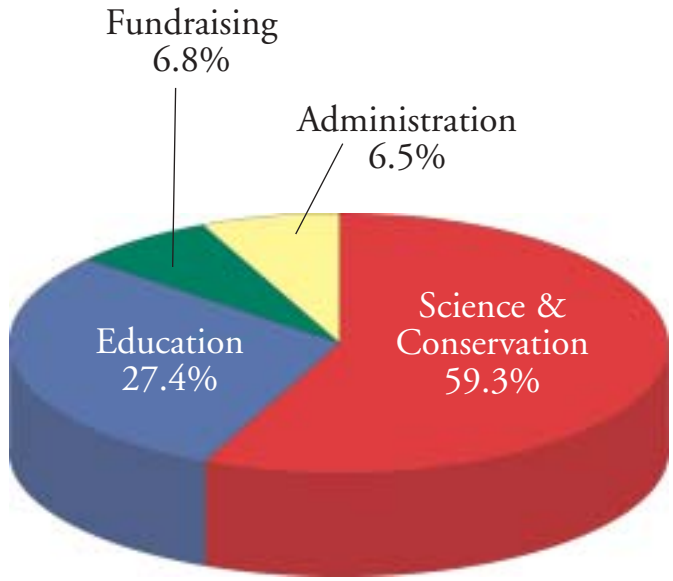
Complete, audited financials are available by writing to BCI at the address shown on the back cover.

Support and Revenue

Revenues:



Expenses:



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BAT CONSERVATION

Planned gifts to BCI help ensure that awe-inspiring emergences like this can be experienced for generations to come.

Planning often makes the difference between failure and success. Bat Conservation International's first twenty years testify to that truth. BCI's well-planned strategy of cooperative action, relying on earning the trust of vital partners, has forged two decades of remarkable progress.

With your help, we can continue that success far into the future. Planned giving — through a myriad of techniques including a bequest in your will — doesn't have to affect your lifestyle, but it will assure that you have a positive impact for years to come.

With your planned gift, you join BCI's Legacy Circle. This is a group of concerned individuals who have invested a small amount of time now to maximize future benefits for bat conservation. As a Legacy Circle member, you will receive periodic conservation updates, helpful financial planning information, and invitations to participate in extraordinary nature tours.

For information on how you can become a part of this distinguished group, please contact BCI or your financial advisor. If you decide to include BCI in your estate plans, please let us know. We look forward to welcoming you as our newest Legacy Circle Member.

Remember, the future happens whether you plan for it or not. By including conservation in your plan, you'll be making a unique contribution to healthy environments for generations yet to come.

For obligation-free information on how to use planned giving to support BCI, please contact Denise Meikel, Development Director, at dmeikel@batcon.org or (512) 327-9721, ext. 26.

BAT CONSERVATION INTERNATIONAL

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