

VOLUME 25, NO. 2 Summer 2007

Protecting Bats of the Borderlands

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Bats by the millions travel casually between Mexico and the United States. After wintering in Mexico's milder climate, many bats, like the Mexican freetail, migrate northward to hunt plentiful insects, give birth and rear young. Others, such as the nectar-eating lesser long-nosed bats, follow the flowering of agave and other desert plants into the American Southwest. They return to Mexico in the fall.

Protecting border-crossing bats is especially challenging. A failure on either end of the journey can have disastrous effects, with severe ecological and economic impacts on both countries. Only cooperative, binational efforts will succeed.

BCI's Borderlands Program is aiming a potent mix of research, education and targeted conservation projects at northern Mexico, while capitalizing on Mexico's growing scientific expertise and conservation awareness. Lead sponsors and partners of this vital, continuing effort include the Disney Wildlife Conservation Fund, The Offield Family Foundation, FONDO Mexicana, Pronatura Noreste, Instituto Tecnológico de Cd. Victoria, BCI Trustee Eugenio Clariond Reyes, David Garza Laguera and Don Virgilio Garza.

Two years into the project, much of the foundation has been laid and initial successes point to great promise for the future. Borderlands Coordinators Arnulfo Moreno and Cat Garcia-Kennedy have begun a new, proactive phase that blends rigorous conservation with economic development at the local level. We are building alliances across the region to make community involvement a major part of this effort.

A potential showcase is the protection of Cueva del Consuelo, a cave that is home to about 1.5 million Mexican free-tailed bats (*Tadarida brasiliensis*) and likely sheltered several times that number in the past. Mayor Roberto Tijerina of the nearby municipality of Candela, in cooperation with officials of the state of Coahuila, recently signed an agreement with BCI to work together to manage this important roost, protect the bats and benefit the community.

The partnership is designed to demonstrate to other Borderland communities the direct economic value of restoring and protecting major bat caves and to show them how to achieve those benefits.

La Cueva del Consuelo is located alongside the Candela River Recreation Area, where camping, swimming and picnicking facilities were built in hopes of attracting much-needed tourist money. Now the community, in conjunction with Spa Ojo Caliente, is setting up a viewing area where visitors can watch the Consuelo bats' dramatic evening emergences. With plans to promote the area as an ecotourism site, BCI will offer management advice and provide educational materials.

Moreno also helped develop the concept for a "Guano Garden" at a primary school in Candela, where teachers will help children design, plant and care for a garden that demonstrates the benefits of using bat guano—a plentiful resource at Cueva del Consuelo—to grow fruits, vegetables and flowers.

Guano mining for fertilizer, for both local and commercial use, is common at major bat caves throughout northern Mexico. Its obvious economic value can greatly increase local appreciation of bats. But guano mining without regard for roosting bats can force colonies to abandon cave roosts and end the flow of guano.

BCI's survey of Borderlands bat populations found that inappropriate guano mining was a major cause of declining populations. Borderlands staff educate miners and

communities about sustainable guano harvesting through such simple tactics as limiting underground work to months when bats are not in residence. The response has been uniformly positive.

During the initial fieldwork, crews worked with landowners, residents and cavers to identify more than 250 possible bat roosts in caves, mines and tunnels in northern Mexico. They followed up promising leads with site visits and have now confirmed at least 144 previously undocumented roosts that, in the past, may have sheltered tens of millions of bats, most of them in a handful of major sites.

BCI is documenting the exact locations of each site, its ownership and approximate past and present bat populations, species diversity and current or potential threats. And at every stop, program leaders educate owners, managers and neighbors about the values and needs of bats. BCI's Spanish-language publication, *Murciélagos Cavernícolas del Norte de México* (*Cave Dwelling Bats of Northern Mexico*), proved to be an invaluable educational tool. Some 600 copies have been distributed to key people throughout the Borderlands.

The largest identified colonies were mostly Mexican freetails, Peters's ghost-faced bats (*Mormoops megalophylla*), Parnell's mustached bat (*Pteronotus parnellii*) and cave myotis (*Myotis velifer*). Important colonies of endangered nectar-feeding Mexican long-nosed bats (*Leptonycteris nivalis*) and Mexican long-tongued bats (*Choeronycteris mexicana*) were also discovered.

Our results suggest that most colonial cave bats of the region are severely threatened, largely because of disturbance or damage to their roosts. The most likely culprits, in addition to careless guano and mineral mining, are fires, heavy visitation by humans, overgrown vegetation at cave entrances and misguided attempts to control vampire bats. In some cases, simply removing vegetation or downed trees that block cave access can allow bats to return to an abandoned roost. While visiting important bat caves, field crews cleared the entrances to more than two dozen caves and mines, ensuring safe flight zones for emergences and re-entry. This small effort alone will often allow colonies to reestablish themselves.

Last summer, Borderlands field crews discovered what may once have been one of the world's largest bat roosts, Cueva del Porvenir in Coahuila. Moreno, with BCI Founder Merlin Tuttle and BCI Programs Director David Waldien, explored the cave, discovering immense interior chambers and passages with roost stains that extend more than half a mile (one kilometer) into the cave.

Although many millions of bats clearly used this cave in the past (and approximately 2 million still do), reliable estimates are not yet available. The roost stains "50 to 80 feet (15 to 25 meters) above the cave floor" are extremely difficult to measure, and past heavy guano and phosphate mining further complicate analysis. BCI hopes to send a speleological survey team into this cave to produce a detailed map and collect baseline data to help develop long-term monitoring and conservation plans.

Moreno and Garcia-Kennedy, meanwhile, have identified 11 critical roosts for special conservation assistance. Individual conservation and management plans are being developed, with implementation of at least three to begin before the end of the year.

Consistent protection of even a few of the most significant roosts identified by the Borderlands Program could have a dramatic impact on the bats of northern Mexico.

A new Borderlands front is opening through a partnership with the U.S. National Park Service. BCI scientists are trying to better understand a potential migratory route that takes Mexican long-nosed bats from Mexico into Emory Cave at Big Bend National Park in West Texas.

Field crews will conduct extensive cave surveys in northern Mexico, south of Big Bend, to identify seasonal and migratory stopover roosts of this endangered species. This project

will complement the work of Biologist Loren Ammerman of Angelo State University in San Angelo, Texas, who has been monitoring the approximately 2,500 Mexican long-nosed bats that spend summers in Emory Cave.

Education is fundamental to long-term conservation success, and BCI's Borderlands Program has varied initiatives under way. BCI recently signed an education and conservation agreement with Juan Carlos Montoto Villareal, General Director of TAMux (Natural History Museum of Tamaulipas). This partnership will give schoolchildren easy access to bat-education materials and also allow BCI to reach a broad audience through cooperative programs at the museum.

Moreno has been a frequent speaker at both scientific and lay gatherings. He has presented bat-education lectures to more than 2,000 schoolchildren and educators through formal and informal lectures and also appears on radio programs and at other public events.

Bat-education workshops held in Ensenada, Baja California, and Victoria, Tamaulipas, drew more than 70 primary, secondary and college students and educators for hands-on conservation activities.

An educational exhibit with incredible reach opened last October outside Monterrey, Mexico. *Misterios de la Noche (Mysteries of the Night)* at the Bioparque Estrella environmental-education park allows visitors to watch a captive colony of Mexican long-nosed bats as they forage at artificial cactus plants.

The exhibit, which has attracted more than 155,000 visitors, was created by Bioparque owner Don Virgilio Garza, BCI Trustee Clariond, Nelly Correa, Diana Garza and BCI's Tuttle, Moreno and Science Officer Barbara French.

The cave-like display includes an interactive educational film that dispels myths about bats and explains their many benefits for humans. It demonstrates vividly the importance of these endangered animals in pollinating desert plants and gives visitors a rare, up-close look at real bats. *Misterios de la Noche* recently won the Mexican Horticulture Confederation's Ecology and Environmental Award.

This unique exhibit, one of the finest of its kind, will be an important bat-education and conservation facility for Northern Mexico for years to come, a centerpiece of the broad activities that the Borderlands Program is undertaking to conserve bats and their habitats throughout this diverse region.

ROBERT LOCKE is BCI's Director of Publications. Your support can help make BCI's Borderlands Project a more powerful tool for protecting international bats along the U.S./Mexico border. Please contact development@batcon.org.

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