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Conserving Costa Rica's Bats

A New Program Takes 110 Bat Species Under its Wing

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The tropical forest rang with the laughter of delighted youngsters. Four schoolchildren, their faces scrunched in concentration, maneuvered gingerly across the clearing, each with a marble riding precariously in a spoon held by clenched teeth. They were the bats and the marbles were pollen. When they reached the baskets masquerading as flowers, they dumped the marbles, "pollinated" the plants, and kept the forest healthy and growing. Then another crew of "bats" took off, amid the cheers of classmates. And, at least for these kids, Costa Rica's bats were starting to become familiar friends.

The "pollination race" at La Tirimbina Biological Reserve last spring was part of the initial educational efforts of a vigorous new program in Costa Rica -*Programa para la Conservacion de los Murcielagos de Costa Rica* (the *Program for the Conservation of Costa Rican Bats*) -PCMCR.

Costa Rica, with at least 110 different bat species living within its 20,000 square miles (52,000 square kilometers), probably has a greater variety of bats for its size than any other nation in the world. These bats include what may well be the cutest bat: the tiny Honduran white bat (*Ectophylla alba*); the largest New World bat - the carnivorous false vampire bat (*Vampyrus spectrum*); and the peculiar sucker-footed bats (of the genus *Thyroptera*). One species, the fruit-eating Talamancan yellow-shouldered bat (*Sturnira mordax*), is found only in the mountains of Costa Rica and small areas of adjacent Panama and Colombia.


But, as is true in much of the world, Costa Rican bat habitats are disappearing in the face of spreading agricultural and urban development, and harmless bats that are essential to forest regeneration are indiscriminately killed in misinformed efforts to control vampire bats.

In response, bat biologist Bernal Rodriguez-Herrera of the National Museum of Costa Rica and longtime BCI member Richard K. LaVal launched the *Programa para la Conservacion de los Murcielagos de Costa Rica* in May 2001, with the support of Bat Conservation International and Mexico-U.S. *Programa para la Conservacion de Murcielagos Migratorios* (*Program for the Conservation of Migratory Bats*). Results of our initial public-education efforts are encouraging, and future plans are ambitious.

The need for PCMCR is clear. Costa Rica has not been immune to the wholesale deforestation that is denuding tropical forest regions worldwide. A century ago, 80 percent of Costa Rica was covered by primary forest. Today, that has been reduced to just 20 percent. Fortunately, about a fourth of the country, most of it forested, is now protected by a national system of conservation areas - and these protected areas are gradually increasing.

Costa Ricans in general are poorly informed about bats. As throughout much of Central and South America, the most critical danger for beneficial bats is the widespread misconception that all bats are vampires. And vampire bats are, indeed, a problem in Costa Rica. At least two outbreaks of paralytic bovine rabies occur each year as a result of vampires, with a loss of at least 30 animals annually and a cost to the cattle industry of more than \$600,000



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during the last 15 years.

The Costa Rican government maintains a very successful vampire-elimination program that moves into affected areas whenever a rabies outbreak is reported. Yet people often take the situation into their own hands, with or without an outbreak, and kill bats randomly in caves and other roost sites. Bananas and other fruits are sometimes laced with poison to kill fruit-eating bats. Harmless, beneficial species are the victims of these attacks. In a country where forest regeneration and pollination are heavily dependent on bats, effective conservation and education measures are critical.

Meanwhile, even though Costa Rica has the most carefully studied bat fauna of any Central American country and a few species have been studied extensively, we know relatively little of the basic biology of most bat species. Specific conservation plans simply cannot be developed at this time for most species, some of which may be endangered. The smoky bat (*Furipterus horrens*), for example, is known from a single Costa Rican colony that has not been seen since 1973, despite concerted efforts to find it.

In March 2000, Rodriguez took a critical step in building public enthusiasm for bat conservation. With the support of BCI, he designed an interactive bat exhibit featuring live bats in a "bat cave" at the National Museum (See "Nocturnal Navigators," Page 8). The exhibit proved so popular that museum visitation jumped threefold, with huge increases among schoolchildren.

Encouraged by that success, Rodriguez, with the assistance of LaVal, began developing a conservation program for Costa Rican bats. From the very beginning, help and advice were provided by BCI and Mexico's *Programa para la Conservacion de Murcielagos Migratorios* (PCMM).

The idea became reality with an organizational workshop at the National Museum in May 2001, when Laura Navarro and Joaquin Arroyo-Cabrales of PCMM described their program's eight years of very successful work in Mexico. And to get *Programa para la Conservacion de los Murcielagos de Costa Rica* off to a strong start, PCMM, in conjunction with BCI, provided a supply of teaching materials. These include the wonderful series of bilingual children's books (such as *Marcelo the Bat*) by Laura Navarro, PCMM's environmental education coordinator. The goal of PCMMCR is to adapt the education and conservation techniques developed in Mexico for use in Costa Rica.

The program is focusing initially on elementary schoolchildren, primarily in the tropical dry-forest region - the most threatened ecosystem in Central America. We decided to concentrate on areas near national parks and other institutions where the infrastructure for environmental-education programs already exists. These included 15 schools near six national parks in the northwestern Pacific dry-forest region, one school hosted by the Simon Bolivar National Zoological Gardens in the capital of San Jose, and a school in the Caribbean lowlands hosted by the private La Tirimbina Biological Reserve. We have so far reached about 550 students with this educational program.

Rodrigo Medellin, the coordinator of PCMM, along with several members of his staff and BCI Executive Director Steve Walker, visited Costa Rica in April 2002 to review the new program with Rodriguez, LaVal, and PCMMCR Field Coordinator Marcela Fernandes. During that visit, a bat workshop was presented to 30 local schoolchildren at La Tirimbina, with participation of both Mexican and Costa Rican staff.

At the end of the visit, BCI and the PCMM announced that they would provide significant support to continue and expand the program in Costa Rica.

As PCMCR moves into the future, research is being blended into its education and conservation efforts. We continue to collect data on the distribution, abundance, and biology of Costa Rican bat species. Much of this information is included in our new bilingual book *Murcielagos de Costa Rica/Bats*. LaVal has detailed the threats to Costa Rican bats in a chapter of a book entitled *Biodiversity Conservation in Costa Rica, Learning the Lessons in the Seasonal Dry Forest*, edited by Frankie, Mata, and Vinson and due for publication by the University of California Press. We are making extensive use of bat detectors to identify and study insectivorous bats all over the country and augmenting our data with conventional mist nets and bat traps.

La Programa para la Conservacion de los Murcielagos de Costa Rica faces many challenges, but with the commitment of our staff and dedicated volunteers in Costa Rica and the continued support of BCI and our colleagues in Mexico, we will have a major impact on bat conservation.

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