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From Superstition to Understanding
Bat conservation in the Philippines
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Deep in the barangays of the Philippine archipelago, bats are reviled as crop pests and feared as witches and demonic messengers. Many are killed out of fear or hunted to become a delicacy known as bat *adobo*. Farmers insist bats gather at night to eat their coconuts and drink tuba, the native coconut wine collected in bamboo stalks. Filipino folklore warns pregnant women to place palm fronds over their bellies to thwart the *Aswang* – a much-feared evil spirit whose torso detaches from its legs at night and takes flight on bat wings to steal the unborn children of pregnant women. In the Philippines, as in many other parts of the world, generations of superstition and misinformation too often overwhelm any appreciation of bats' great environmental and economic importance. It is little wonder that bats face a precarious future here.

The Soil and Water Conservation Foundation (SWCF) in the Philippines, with a BCI Global Grassroots Conservation Fund grant and other support, is going into the *barangays* (the Philippines' smallest governmental units) to replace mythology with facts and soften attitudes toward bats. The well-publicized effort uses an integrated program of biodiversity research and public education, as well as efforts to help Filipinos improve their economic status without damaging the amazing environment of which they are a part.

Until now, biodiversity research in the nation's 7,100 islands has been anemic at best, and little is known about the state of the country's flora and fauna. It is, however, clear that an annual growth rate of more than 2 percent and a population density of 730 people per square mile (282 per square kilometer), a quarter of whom live in poverty, have cost the archipelago more than 90 percent of its original forest cover. The Philippines supports a vast array of wildlife, much of it found nowhere else on Earth. Of 1,084 terrestrial vertebrates, fully 45 percent are unique to the Philippines. And of these, 56 birds, 48 amphibians and 47 mammals are now listed as threatened to some degree.

SWCF's research team surveyed the flora and fauna, particularly bats, of Bohol province, incorporating the results into databases maintained by the Department of Environment and Natural Resources and the Bohol Environment Management Office. The main site, Rajah Sikatuna Protected Landscape in Bohol Province, is home to 29 villages and more than a third of the approximately 70 bat species identified in the Philippines.

The foundation trained local college students and farmers to capture, identify and release bats and this team documented 26 bat species, seven of which had not previously been reported on the island. They are the Philippine nectar bat (*Eonycteris robusta*), lesser dog-faced fruit bat (*Ptenochirus minor*), arcuate horseshoe bat (*Rhinolophus arcuatus*), Luzon horseshoe bat (*Rhinolophus subrufus*), yellow-faced horseshoe bat (*Rhinolophus virgo*), Philippine pygmy roundleaf bat (*Hipposideros pygmaeus*), and wrinkle-lipped bat (*Chaerephon plicata*).

The research results were incorporated into a bat-conservation education campaign used throughout Bohol province. We – and bats – also received considerable favorable attention

in Philippine newspapers and radio stations. Students and farmers were trained to conduct the sessions using PowerPoint presentations and entertaining activities designed to be more like camp than class. The sessions include BCI's popular video, *The Secret World of Bats*, dubbed in Visayan, the local dialect, with English subtitles (for high school students practicing English). Working with local officials, teams of two or three people visited high schools and villages in 36 municipalities, distributing the video, a poster and pamphlets, all in the local dialect.

SWCF and a U.S. Peace Corps volunteer, in cooperation with the Department of Education, developed six bat-conservation modules, complete with activities, worksheets and lesson plans, which were distributed to the roughly 100 high schools in the participating municipalities. Teachers were trained to introduce the modules to their schools and prepare other teachers to integrate them into science, English and math classes.

To encourage cross-curricular study of bats without the need for team teaching, the schools are integrating the bat modules in all three subjects in the same time frame, thus reinforcing bat conservation without adding more topics to a curriculum that is already overloaded.

To reach city dwellers who weren't touched by the rural campaign, a team went to the provincial capital of Tagbilaran City to present a weeklong exhibit about bats, biodiversity and cave systems. An especially powerful aspect of the program was the opportunity for residents to meet Filipino researchers, a rare opportunity given the lack of local scientists in the Philippines.

The project, funded by BCI and the Foundation for the Philippine Environment, culminated with a biodiversity drama staged at a local shopping mall. The skit, written and performed by students trained as outreach speakers, attracted more than 400 students and shoppers. A measure of its positive impact is that several university students were inspired to do their senior theses on bat ecology and to organize a symposium on bats, biodiversity and caves.

These educational programs proved popular and effective. The now-trained teachers and speakers – and others we hope they will train in turn – will keep bat conservation alive on Bohol Island for years to come. But in an impoverished region where fresh meat is an expensive luxury and bats, especially large, slow-flying fruit bats, are free for the hunting, more help will be important.

Alternatives that tap the direct economic value of bats are also needed. The Soil and Water Conservation Foundation is testing income-generating projects in selected communities. These include organic vegetable farms, flower nurseries, livestock dispersal, micro-lending and cooperatives built around such environmentally sound income-generating projects as ecotourism, guano collection for farm fertilizer and the general stores known as sari-saris that serve villages far from the marketplace.

By increasing incomes while also educating residents about the vital roles bats play in pest control, seed dispersal and as pollinators of the valuable durian fruit trees, SWCF hopes to nurture a new feeling of stewardship for nature among the people of Bohol.

The project continues, but successes already are occurring. Some communities and schools are developing cave-management policies and barangay ordinances to regulate guano mining and encourage ecotourism. Many are conducting their own bat-conservation programs and designing cave-education modules for their own classes.

Perhaps the future for the bats of Bohol is not so gloomy after all.

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