

Out of the Mists Comes Knowledge of Little-Known Endemics, as Researchers Band Together to Predict a No-analog Future

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In the morning mist, high in the mountains at one of Central America's premier birding sites, three biologists clad in typical field garb chat quietly in Spanglish, as they squish along a muddy trail, stopping occasionally to carefully remove birds from mist nets. This scene is increasingly being played out across Costa Rica at the burgeoning bird monitoring stations of the Costa Rica Bird Observatories.

The concept of a bird observatory in Costa Rica began in 1994, as a bird monitoring project using seven bird banding sites around the picturesque coastal Caribbean village of Tortuguero, long considered a focal area for migrant birds. Banding sites in Tortuguero now encompass a variety of habitats, thereby providing insight into the natural history of a wide variety of migrant and resident birds. Linked by canals, the stations are accessed by field crews in the pre-dawn darkness during most months of the year.



One of the most colorful birds in Costa Rica, Golden-hooded Tanager (with fruit in its beak) is restricted to Central and Northern South America. / Pablo Elizondo

Mornings at Tortuguero banding sites are enthralling: Bicolored Antbirds announce their arrival at ant-swarms, while Western Slaty-Antshrikes solicit neighboring birds to join their foraging flock. Afternoons are spent counting migrating swallows, dipping toes in the Caribbean Sea, and eating coconut-infused rice at the spacious comedor of the field station. Field work around Tortuguero provides banders with an abundance of beauty and always a hint of real danger. Eyelash Pit Vipers are routinely encountered on palm leaves. Although small, this snake has highly toxic venom, so banders are taught to tie flagging near any vipers they see to prevent their comrades from stumbling into resting snakes during pre-dawn hours.

At Tortuguero, we have trained over 200 biologists in advanced bird monitoring techniques and have banded nearly 70,000 landbirds, operating in all months of the year. Our operation represents the longest constant-effort bird monitoring program in Latin America and has served as a model for other countries. A diverse array of organizations have supported the growth and development of the Tortuguero station, the first of several Costa Rica Bird Observatory (CRBO) stations. We gained critical support from the U.S. Forest Service's International Programs—Wings Across The Americas, Costa Rica National Parks, the Sea Turtle Conservancy (formerly Caribbean Conservation Corporation), Costa Rica Expeditions, and the Canadian Organization for Tropical Education and Rainforest Conservation. Given the many threats facing tropical bird populations, bird monitoring was a powerful incentive for broad collaboration.

Most people know that many bird populations are declining at alarming rates. Migrant birds must contend with a host of unknowns, including changing climate, invasive species, and habitat alterations on their temperate breeding, tropical wintering grounds, and migration areas. Because migrants routinely cross political boundaries, they make our global avian community a truly shared commodity. Establishing conservation and monitoring partnerships is thus a key strategy in the sometimes fractious battle between resource extraction and bird conservation.

Due to the number of species and their high rate of endemism, tropical resident species are severely impacted by rampant deforestation and an increasingly heterogeneous landscape. Compared to migrants, we know paltry amounts about the natural history of many resident tropical birds. Understanding more about resident ecology

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would help to identify factors that limit population growth and guide conservation action. The subtle interplay of climate cycles, such as the El Niño Southern Oscillation, as well as long-term climate change, perturbs temperature and rainfall regimes, which in turn can potentially negatively affect bird populations. We believe it is necessary to study how species cope with a changing world as we venture without control into a non-analog future: communities of birds and environments that are compositionally unlike any found today.

Given the acute threats of climate change and habitat loss, biologists from North, Central, and South America must transcend political and cultural barriers to promote sustainable bird populations for future generations. To further our shared interests in protecting global bird communities, we have established an interactive cooperative of ground-breaking initiatives that include the Costa Rica Bird Observatories, the Costa Rica Bird Banding Network, the Landbird Monitoring Network of the Americas (LaMNA), and the Western Hemisphere Bird Banding Network. These efforts have partnered to generate an impressive ground swell of data, plus the management and analytical tools necessary for scientists and managers to delve into the mysteries and subtleties of both migrant and resident bird ecology.



Jorge Leiton, a Costa Rica Bird Observatory intern, talking about bird conservation with children from the local school as part of the outreach program. / Pablo Elizonda

In 2008, the CRBO entered a new, ground-breaking phase when the National Institute of Biodiversity (INBio) agreed to host us. INBio is one of the leading non-governmental research organizations in the Americas—describing on average a new species to science every three days. Joining the U.S. Forest Service and the Klamath Bird Observatory as partners, CRBO opened its central office at INBio's headquarters in Santo Domingo de Heredia, adjacent to our newly established bird observatory field site on the outskirts of San José, the country's capitol. Given INBio's administrative expertise, logistic capacity, and international reputation, it has quickly become an important partner in bird science and management in Costa Rica and will ensure the long-term continuance of CRBO. Recently joining the Network are several stations such as those operated by the San Vito Bird Club, that conducts monitoring in and around the Organization for Tropical Studies (OTS) station at the Wilson Botanical Garden in the southern highlands of the country.

Enthusiastic and very moderately compensated bird banders are based out of our home office and bird observatory located at INBio's headquarters. The Observatories' bird banders hail from North, Central and South America, thereby creating an eclectic group of people united in their passion for studying and conserving birds. One or two of these crews travel among three or four sites, spending several days at each collecting information for a wide variety of species captured in nets and counted in censuses.

In a typical week, after collecting monitoring data from our urban forest bird observatory at INBio, banders travel to the misty highlands of Cerro de la Muerte to capture and count the birds at our "Madre Selva" station, recently established with support from the Elizondo family in a well-equipped four-bedroom house with bunks for a dozen or more. The gnarled limbs of trees at Madre Selva are laden with moss, creating a primordial landscape favored by a dizzying array of endemics and several bird species highly sought after by bird enthusiasts such as the Resplendent Quetzal. After acclimatizing to cold montane winds, the crew will go by bus to Tortuguero for a week's capturing in the humid lowlands. Traveling and working together for bird conservation creates strong bonds between banders, transcending cultural differences.

Motivated by the successful creation of bird observatories in the Caribbean, the Central Valley, and the Highlands, we began laying the foundation for a national partnership of bird banders in Costa Rica. In 2009, we

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The North American Bird Conservation Initiative (NABCI) is a coalition of organizations and initiatives dedicated to advancing integrated bird conservation in North America.

The vision of NABCI is to see populations and habitats of North America's birds protected, restored, and enhanced through coordinated efforts at international, national, regional, state, and local levels, guided by sound science and effective management.

The goal of NABCI is to deliver the full spectrum of bird conservation through regionally based, biologically driven, landscape-oriented partnerships.

The All-Bird Bulletin is a news and information-sharing publication for participants of NABCI.

For subscription or submission inquiries, contact the Editor, Roxanne Bogart, U.S. Fish and Wildlife Service, 802-872-0629 ext. 25 or Roxanne_Bogart@fws.gov. To download back issues, visit <http://www.nabci-us.org/news.html>.

The All-Bird Bulletin publishes news updates and information on infrastructure, planning, science, funding, and other advancements in the field of integrated bird conservation and management. Include author's name, organization, address, telephone and fax numbers, and e-mail address. Pictures are welcome but not necessary.

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One likely enhancement is additional Western Bluebird translocations to Salt Springs Island, British Columbia in 2012. Only 30 miles as the bluebird flies from the established population on San Juan Island, continued translocations to Salt Spring Island should result in a larger regional population, with the potential for movement between islands, thereby increasing the sustainability of the San Juan Islands population into the future.

Primary project partners include American Bird Conservancy, the Department of Defense, Joint Base Lewis McChord, Ecostudies Institute, Washington Department of Fish and Wildlife, The Nature Conservancy of Washington, San Juan Preservation Trust, and the San Juan Audubon Society, with support from the Pacific Coast Joint Venture. Most uniquely, project funding has been entirely private, including Disney Wildlife Conservation Fund, Horizons Foundation, Norcliffe Foundation, Seebe Trust, Wildlife Forever Fund, Zoo Boise Conservation Fund, San Juan Preservation Trust, and numerous private individuals.

For more information on the San Juan Islands Western Bluebird Reintroduction Project contact Bob Altman, American Bird Conservancy at baltman@abcbirds.org.

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hosted a meeting attended by the majority of Costa Rican bird banders, resulting in the creation of the Costa Rica Bird Banding Network. The Network serves as the national banding program for Costa Rica that now receives support from the Costa Rican government, Ministerio de Ambiente Energía y Telecomunicaciones (MINAET), to assist in integrating the banding community with official governmental conservation initiatives. With support from the U.K.-based organization, Porzana, we can now offer free bird bands for resident birds as well as protocols, databases, and full integration with the Landbird Monitoring Network of the Americas.

Typical of bird observatories throughout the world, data goes much deeper than just the names of the species and the number of each bird detected on a census. It also includes critical assays of the health of both the Neotropical migrants and the little-known resident birds, each with their own suite of adaptations to our ever-changing environments. Such measurements of health include how well and often they are breeding and if they are getting sufficient food for migration and molting.

The information generated is fully accessible to government agencies, academics, and citizen organizations interested in the demography and status of bird populations in Costa Rica, and is available through the Costa Rica Bird Banding Network and LaMNA at a global level. We look forward to continuing our dedicated search for knowledge of avian communities through sustained monitoring in Central America—and using this knowledge to conserve these remarkable species. For more information regarding Costa Rica Bird Observatories, please visit us online at: <http://costaricabird.org/>