

CONSERVATION ON THE COAST: FROM THE MOUNTAINS TO THE SEA

The Ceiba Foundation has always been a strong supporter of projects that forge connections. Education programs connect rural people to the ecosystems that surround them. Conservation projects connect isolated forest patches into continuous habitat for plants and animals. Ecotourism programs connect nature lovers in the US and beyond to locally-operated reserves in the tropics. On the coast of Ecuador, we continue to make connections that foster long-term conservation of remaining habitat. We have embarked on an ambitious program to establish the Manabí Conservation Corridor (see page 2), combining private and federal land-protection contracts with targeted reforestation projects to link mountaintop forests into a biological corridor spanning some 50 miles. Ceiba continues to lead community-based research assessing the effects of upland forests on water quality (see page 2), a citizen science approach that encourages residents to appreciate the scarcity of clean water and the benefits of habitat conservation. We have galvanized support for protection of coastal mangroves (see below), an important bird breeding area where river and ocean waters meet. Above all, we hope to have built a connection between Ceiba's network of donors and successful habitat conservation projects that ensure tropical forests will be safe for the next generation to enjoy. We appreciate the financial and emotional support we have received over the past 16 years, and are excited to begin a new year of education, research and conservation in Ecuador.



MANGROVES: HABITAT FOR MIGRATORY & BREEDING BIRDS

Bird surveys conducted by Ceiba staff and students in 2013 yielded 49 species of birds utilizing a 50-acre remnant of mangrove forest on the Jama River. The findings lend urgency to the protection of the last patches of this habitat on Ecuador's central coast. One survey found a roost of over 500 hundred Magnificent Frigatebirds (famous for their red, inflated throat pouches), a nesting area for Snowy Egrets, dozens of Green Iguanas, and several important migratory bird species including the American White Ibis and Wood Stork. At least four types of mangrove trees (Red, White, Black and Buttonwood) live in the brackish waters of this estuary, where they stabilize banks and provide important habitat for birds, reptiles, crabs, and even fish.

We're making progress in rallying support for protecting these mangroves: in public meetings we have engaged the Jama community, highlighted the ecotourism opportunities the mangroves can provide, and have gained critical support from the local government. Ceiba recently created tree and bird identification cards (see page 3) and trained sharp-eyed fishermen to lead birdwatching tours and point out rare species to visitors. We continue to work with shrimp-farmers who own adjoining land, urging them to safeguard existing mangroves and to reforest degraded areas. Our goal for the coming year is to catalyze the legal designation of the mangroves as a protected area, and to promote more visits to the estuary by local residents, ecotourists, and school groups.

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Corridor map: Lalo Loor Reserve (red), forest patches (yellow), and reforestation targets (blue)

Manabí Conservation Corridor: A Major Goal for 2014

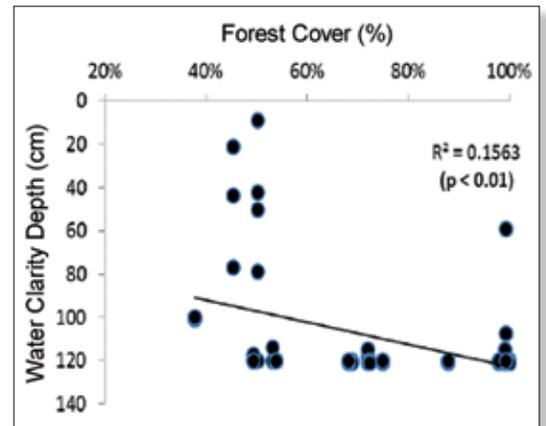
Catherine Woodward

Ceiba's friends and supporters know that conserving threatened tropical dry forest on Ecuador's coast has been a major focus of our work for years. In the heavily deforested region of northern Manabí, one of the key challenges to sustaining viable tropical dry forest ecosystems is restoring connections between isolated habitat patches. Without connectivity, animal populations become separated from each other and can face difficulty locating mates. Impeded movement also can make it hard to find sufficient food and water, especially in the dry season. Our goal is to reforest key areas to reconnect forest habitat patches. It sounds simple, but in fact planting trees on private land can be a real challenge unless the opportunity cost of doing so is addressed. We have reached a preliminary agreement with CORFAM, a regional government agency that supports reforestation by providing free timber and fruit trees to local landowners. With the help of grants and donations, we will engage stakeholders in planning a reforestation effort that will satisfy both Ceiba's conservation goals and the economic needs of rural communities.

Community Water Quality Data Prioritizes Riverside Reforestation

Catherine Woodward

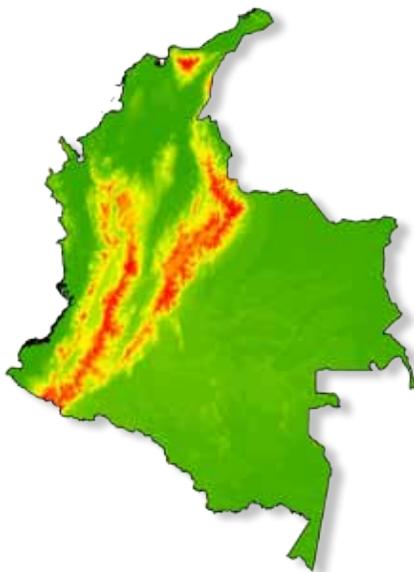
Widespread deforestation in coastal Ecuador has negatively affected land productivity and water quality. To better understand these concerns, teams of local community members throughout the past year have donned their rubber boots and followed local streams from source to sea, measuring water quality along the way. In 2011 I led a workshop to train the teams to assess water clarity, temperature, dissolved oxygen, macroinvertebrate diversity, and habitat quality. Four rivers were monitored every two months by the sampling teams. The data were used by Duke Ph.D. student and former Ceiba volunteer Jeremiah Jolley in his research to assess the condition of riparian areas (see *Science Speak*) to prioritize sites for reforestation. Jolley found that forest cover in the four watersheds ranged from 25-50%, and that streams in more forested areas had higher water quality and better overall aquatic habitat. The maps that Jeremiah produced are of great value in Ceiba's reforestation initiative (see above) because they identify areas where reforestation can have the greatest beneficial impact on water quality. Read his full report on [Ceiba's website](#).



Streams in more forested watersheds have greater water clarity (chart: J. Jolley)

Mapping Orchid Diversity in Ecuador and Colombia

Joe Meisel



Elevation map depicting Colombia's three Andes ranges

Last year we reported on an orchid diversity mapping project to prioritize sites in Ecuador for future conservation. The results, which identified 40 key sites for orchid habitat protection, were presented at the Scientific Conference on Andean Orchids in Guayaquil, Ecuador, at several US orchid society meetings, and at the University of Wisconsin for broadcast on Wisconsin Public Television. Experts in Ecuador also have provided first-hand assessments of numerous sites with which they are personally familiar. The final list will be published in 2014, to support conservationists seeking to establish new reserves in Ecuador and to help leverage funding for their protection.

We are making plans to extend the orchid mapping research to Colombia, likely South America's richest country in terms of orchid diversity. If grant-based funding can be obtained, the project will be mounted in collaboration with Dr. Tupac Otero of the National University of Colombia, and Dr. Julio Betancur of National University and Colombia's National Herbarium. Seminars and training sessions are planned, to encourage Colombian students and resource management professionals to conduct complementary research that will build on the orchid geographic databases our collaborators will amass. If we are successful, Ceiba will have taken the lead on conservation mapping of orchids for the two most biodiverse countries in the Americas.



Brassia villosa is found in warm, low-altitude forests in Ecuador

New Orchid Guide Book to be Released in 2014

If you are a fan of orchids and would like to learn more about their fascinating lives, then we have a book recommendation for you. *Orchids of Tropical America: An Introduction and Guide* highlights over 120 of the most prominent and picturesque groups of orchids found from Mexico to Brazil. This unique book – part field guide, part natural history volume – was written by Ceiba Vice-President Joe Meisel, with Ron Kaufmann of the University of San Diego and Franco Pupulin of Lankester Gardens. Illustrated with more than 480 color photographs, the text introduces readers to the intricacies of orchid ecology, the history of their discovery, and the future of their conservation. The guide provides a directory of orchid reserves, including Ceiba’s El Pahuma, in over 30 countries; for those not planning tropical travels, the book provides an entertaining and fact-filled introduction to this amazingly diverse of plant families. Dr. Meisel has been invited to speak to numerous orchid societies (this year, Minneapolis and Kansas City) to promote the book, and more importantly, raise awareness of Ceiba’s habitat protection and orchid conservation work (see page 2). *Orchids of Tropical America* will be published by Cornell University Press and available from major booksellers in the Fall of 2014. Visit www.orchidsoftropicalamerica.com for excerpts or to pre-order your copy.

Bird Identification Cards for Ecuador’s Central Coast

Joe Meisel

Ceiba’s approach to conservation has always focused on raising public appreciation of the beauty and value of nature. With grants from the Crowder-Messersmith Fund of the Audubon Naturalist Society we recently produced the Birds of Northern Manabí identification card, featuring 32 of the most prominent birds from Ecuador’s central coast. Spanish, English, and scientific names of each species are given, with a brief description of its ecology, making the card useful to residents and foreign visitors alike. The grant sponsored a month of fieldwork that included five students in the 2012 Tropical Conservation Semester program. Together, the team surveyed birds, took photographs, and interviewed local residents about the natural history of each species. The identification card is available for free from Ceiba’s website, and the grant supported production of 300 copies distributed to local schools, libraries, and tourism operators. The Northern Manabí card complements the Mangrove Bird identification card created as an instructional aid for locals training to be mangrove tour guides (see page 1).



Coast and forest birds, from Pelicans to Cuckoos



Paulina Lima at El Pahuma, 2011 (photo: Eric Melzer)

In Memoriam: Paulina Lima

Paulina Lima, matriarch of the family that owns and operates the El Pahuma Orchid Reserve, passed away in early 2013. She was a wonderful lady, gracious and loving, and her presence at El Pahuma will be sorely missed. When the Ceiba Foundation first met Paulina and her husband Efrain in 1997, we were captivated by their devotion to the amazing cloud forest that later became the core of the reserve. Her children Rene, Ruth and Marixa have been enthusiastic supporters of forest conservation, and have worked tirelessly and selflessly to promote ecotourism and education at El Pahuma. Several of Paulina’s charming grandchildren now work at the reserve, including Giovanni Lima who, at just 25, was elected by the family to manage the site. Thanks to the incredible dedication of the Lima family, El Pahuma continues to serve as an example of a successful and sustainable conservation project. Paulina Lima’s smiling face, warm embraces, and sweet character will long be remembered by those of us fortunate to have known her.

Science Speak:

Riparian (ri·pə·rē·ən) *n.* = Of, on, or relating to the banks of a river. Riparian areas are ecologically diverse habitats subject to varying degrees of flooding. Vegetated riparian zones provide habitat for wildlife, help filter pollutants, and control erosion.



Women's Microenterprise Cooperatives Thrive

Catherine Woodward

Women's cooperatives near the Lalo Loor Dry Forest reserve saw booms in productivity and participation in 2013, thanks to a University of Wisconsin service-learning course run by Ceiba board member Susan Webster. UW students specializing in small-scale, cooperative businesses worked with the "bag ladies," a group of women that create reusable shopping bags, and another group that produces environmentally-friendly soap. The students facilitated sharing of experiences and training between the soap and bag projects and an advanced group of women jewelry makers from Otavalo, in the highlands. This year the bag cooperative learned solar screen printing techniques that reduce their costs and production waste. A local artisan created an eye-catching stamp for the soap bars based on symbols from pre-Colombian coastal cultures, and the first bars of soap were sold this Fall in the US. Colorful shopping bags with custom logos are now on offer at the Lalo Loor reserve, and local supermarkets. In 2014, both cooperatives plan to expand their capacity, and improve packaging and marketing, key steps towards creating truly sustainable businesses.



Cooperative members show off new, colorful bag designs



Paola teaches soil sampling to local students visiting Lalo Loor

Paola Durango Steers Coastal Conservation Projects

Jamie Hogberg

We are excited to introduce our new coastal projects manager, Paola Durango! Paola joined us in the spring 2013, and is a dedicated and inspiring addition to the Ceiba team. She is a native of Quito, has studied at the University of Arizona, and recently completed an M.Sc. at the Universidad San Francisco de Quito studying the sustainability of fish markets among indigenous groups of the Ecuadorian Amazon. Paola's work on the coast includes environmental education among local schools, supervision of the Lalo Loor reserve, promotion of women's microenterprises, conservation of the Jama River mangroves, implementation of our forest corridor project, and supporting Ceiba volunteers and interns. That's quite a list, and we are grateful that such a talented, versatile, and energetic person is joining our team!

GET INVOLVED -- IT'S A GOOD FEELING

Reach Out: Join us at www.ceiba.org or www.facebook.com/CeibaFoundation for updated information about our projects, or to connect with students, staff, volunteers and visitors. Be part of our growing and active online community, stay informed, and make a difference.

Volunteer: Why not take a break from the ice and snow, and come lend a hand to our projects in Ecuador? Our projects thrive thanks to the dedication and energy of our volunteers. Whether you are surveying monkey troops, building trails, leading school tours, or planting trees, every bit of help counts. Visit www.ceiba.org/volunteer.htm for more information.

Donate: Ceiba has shown that small organizations can achieve great things with the support of a community of loyal donors. We keep our administrative costs extremely low, enabling us to send virtually every penny raised to our programs in Ecuador. All contributions are tax deductible, and donations of any amount make an enormous difference. You can donate securely online, or send us an old-fashioned check. Please consider supporting our projects by visiting www.ceiba.org/donate.htm, and thank you!



Volunteers Naomi and Ananya in the Lalo Loor dry forest

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