



# NECTANDRA INSTITUTE

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## All Together Now

In May, Luis Guillermo Solis, was sworn in as Costa Rica's new president. His surprising come-from-behind third political party victory over the ruling party candidates is a reflection of the citizenry's desire for something new. His relative inexperience in politics (Solis comes from academia) perhaps gave him an advantage in his bid to become Costa Rica's new leader.

About a week or so after president-elect Solis became President Solis, the phone rang in Nectandra Institute's office in San Ramon, Costa Rica. I answered and a woman on the other end introduced herself as Yamileth Astorga. She asked for our staff biologist, Manrique Esquivel. Manrique was out in the field that day so I offered my assistance. "I'm calling to get some more details on a site visit I am coordinating with Manrique to Nectandra Institute's partner communities and their forest restoration properties," she said. While speaking with Ms. Astorga on the phone, I recalled Manrique telling me that he had met her a year earlier during a conference in Nicaragua on community-based management of potable water resources. Ms. Astorga, a professor with the University of Costa Rica and coordinator of the school's Comprehensive Environmental Management Program, was planning a field trip to the upper Balsa River watershed, Nectandra's primary service area, together with some of her students. What I did not know at the time was that I was speaking to the soon-to-be head of the Instituto Costarricense de Acueductos y Alcantarillados, Costa Rica's state-run water utility. President Solis appointed Ms. Astorga to the position a few days after she and I spoke on the phone. It seemed Ms. Astorga's interest in visiting us in the upper Balsa stemmed not only from her then position as a university professor, but likely also from her desire to prepare for her upcoming post by getting a firsthand look at a working model of community-based management of water resources that emphasizes forest conservation and restoration.

Since 2006, Nectandra Institute has been one of the primary driving forces behind this model. Through our

Eco-Loan Financing (ELF) Program, we've helped communities bolster protection for their sources of drinking water by making it possible for them to buy, restore and protect important pieces of watershed land. The principal on these loans is repaid along with "ecological interest", which consists of all the time and resources that the communities put into being effective stewards of the properties they acquire, along with their participation in the many activities co-organized with Nectandra for the purpose of educating the general public on the important relationship between clean water and healthy forests.

When we started making eco-loans a few years ago, we didn't know what to expect. Would the loans be repaid if we did not charge conventional interest? Would our community partners follow through with their commitments to protect and restore the lands purchased with ELF assistance? How would we measure the return on these "ecological" investments? What changes in public attitude would arise as a result of the ELF program?

Today, seven years after making the first eco-loan to help one of our community partners purchase and protect 27 acres of land, a total of 540 acres have been acquired, resulting in improved protection for the water resources of 12,000 people. More than just land acquisition for general conservation, these modest sized properties contain critical springs, the only source of potable water — the lifeline for each of the communities. Eco-loans totaling \$830,000 to date have been leveraged by \$350,000 in borrower equity and complementary financing. However, the leverage has come in other forms, as well. Eco-loan beneficiaries have dedicated 36,000 person-hours towards efforts that count as the "eco-interest payments" on the loans. Paying ecological interest means planting trees, monitoring their annual growth, taking semi-annual photos from fixed points within the properties as visual records of the restoration, measuring regularly the flow and water quality of the springs and streams to monitor any potential changes induced by the regenerating forest cover, documenting any floral and faunal changes, and participating in various educational activities to raise awareness for forest conservation and watershed protection.

And are borrowers repaying the eco-loans? Before making our first eco-loan a few years ago, I remember being quite leery about lending money for "free". What motivation would borrowers have to pay the money back? Well, not only are they all making their payments on time, but some have even paid ahead of time. I believe one of the biggest reasons for this responsible behavior by our community partners is because they know that Nectandra Institute

reutilizes repaid loan principal to make new eco-loans. We encourage them to view the capital used for making ELF loans as an asset shared by the communities of the watershed, one that can benefit them all for the long-term if properly maintained. Meanwhile, donors to Nectandra Institute's ELF Program get the added benefit of knowing that every dollar they contribute is used multiple times to help save and restore tropical highland forests.

But there are also positive results less obvious than, say, more protected land or a 100% on-time repayment rate. An increased atmosphere of solidarity and cooperation amongst the communities of the upper Balsa River watershed is one. Prior to our partnership with them, these communities managed their potable water systems individually, as isolated ventures, not making much of a coordinated effort with their neighboring communities. This perhaps is because springs, the primary source of rural clean water, are not visibly interconnected. They did not see the potential in coming together for the purpose of conserving the area's montane forests and engaging in sound watershed stewardship. Nectandra Institute's ELF program and educational outreach changed this. Today, our partner communities are fully aware of the connection they all share on account of sourcing their water from the same watershed. As a result, they formed a consortium in order to take joint action to conserve and restore forests, protect water resources, and improve management of water delivery services. They call themselves the Liga CUENCA, an acronym that spells out the word for watershed in Spanish and stands for League of Communities United for the Conservation of Water. One priority of the Liga CUENCA is the creation of its own ELF Program, which will complement Nectandra Institute's, increasing the financial resources available for conservation and restoration efforts. Furthermore, Liga CUENCA has engaged a consulting firm to complete a hydro-geological study that will map out the areas of the watershed that should be protected and restored on a priority basis.

Then there are the individuals behind all these actions and accomplishments. One such person is Francisco "Chico" Solano, who was a newly elected board member of his tiny community's water management association around the time Nectandra Institute began its partnership with Chico's and other watershed localities. Today, Chico is at the forefront of this conservation work as president of the Liga CUENCA. There is Alejandro Salas, who worked as the administrator of his community's water management association and participated in a 9-month long watershed protection course provided by Nectandra Institute a few years ago. Alejandro is now the mayor of the Municipality of Zarcerro, which makes up nearly the entire area of the

upper Balsa River watershed. Having a local government leader who is sympathetic to conservation is undoubtedly advantageous. Not surprisingly, the Municipality recently chipped in a significant proportion of the funds needed to pay for the aforementioned hydro-geological study. Many young members of watershed communities are also actively involved. Daniel Villalobos is one example. In 2007, Daniel's community purchased land with the very first eco-loan from Nectandra Institute. Since the restoration process began on that property, when he was pre-teen, Daniel has volunteered countless hours helping to plant trees, measure their growth, monitor changes in the diversity of bird species present as the forest grows back, and track freshwater spring flow variations on the property.



Daniel (right) as a 14-year old in 2009, recording the height of a recently planted seedling.



Nineteen year-old Daniel (left) in 2014, measuring the height of a tree planted a few years earlier.

This cooperation and solidarity in protecting forests and water resources is not going unnoticed. It has attracted the



attention of university professors, students and researchers, local and international businesses, and even high ranking members of Costa Rica’s new government such as Ms. Astorga, all of whom want to learn more, help or do both. But the most important consequence of Nectandra Institute’s Eco-Loan Program and outreach efforts is the culture of conservation that has taken root and grown in the hearts and minds of watershed residents like Chico, Alejandro, Daniel and many others. And it will require nothing less than this flourishing mindset of environmental stewardship and shared responsibility to ensure the long-term sustainability of this indispensable work.

-Luis Villa, staff contributor

### Kiwi Cousins

Of all the birds in Costa Rica, the Resplendent quetzal must be the most sought after bird, by visitors with only a passing avian interest to avid birders. With moderate preplanning, thousands of tourists annually get to see the birds’ spectacular plumage on the visitors’ pilgrimage to the few easily accessible cloud forests. Quetzals may not be widely distributed nationwide, but finding them (especially for local naturalists) is not a problem. Follow their favorite wild avocado trees during fruiting season and ye shall find. Turns out a well-fed quetzal is a sedentary quetzal. It perches on horizontal branches for hours regurgitating the seeds and digesting their food—in absolute perfect poses for observers and photographers.



Great Tinamou roosting at Nectandra Garden. March 2014  
Photo by Freddy Castillo

Not so for the elusive tinamou. They may not be rare and may be widely distributed, yet few visitors get a glimpse of these ratites in spite of good planning.

Principally terrestrial, these large, solitary, omnivorous, forest-litter foraging birds have the distinction of belonging to the oldest avian lineage, which includes all the largest and flightless birds — emus, cassowaries, ostriches and the extinct rheas. The tinamous will fly but

prefer to scurry on the ground even when chased. Always wary and silently moving through the dark, dense forest floor, their gray-brownish plumage makes them difficult to spot, and devilishly hard to photograph. The Nectandra Garden staff has stalked for many years the Great tinamou (*Tinamus major*) in the dense forest understory without success. We could hear the males’ loud resonant, mating calls but could never get close enough to see them until these last two years. For whatever reasons, they have become less secretive, less shy and started to forage and nest closer to our buildings. Interestingly, the tinamous are polygynous. A single male may have a harem of 3-4 females. The intensely turquoise blue eggs are laid on the ground by multiple females in succession in the same clutch. While the females go from nest to nest to lay her eggs, the male tinamous defend their nests, incubate their eggs and babysit the hatchings.

- Evelynne T. Lennette

### E. Ann Gallie (1949-2014)

It is with profound sadness that we report the death of a long time board member and supporter of Nectandra Institute. Ann not only guided our organization through thick and thin since 2003, but mentored each of us at NI with her sharp intellect, knowledge and patience. She prodded us with inimitable firmness, gentleness, and shored our work with quiet enthusiasm.



Ann rejoicing her reunion with a red-eyed Leaf frog on one of her many visits to Osa.



Ann showing off her Nectandra uniform in 2012.

Over the years, Ann and her spouse Dougal McCreath (professor of mining engineer at Laurentian University) have introduced us to many of their students in their environmental sciences class visit to Nectandra. Ann was the lead scientist in our benthic invertebrate project and chief advisor on our watershed programs. More than her support for our work, her enthusiasm and joyful outlook

for her causes were like irresistible whirlpools, pulling all that came near the vortex to join forces.

Ann completed a BSc in biology from Queen's University, Ontario, Canada, and a PhD in Remote Sensing from the University of British Columbia. Her knowledge and love of the natural world lead to her careers in consulting and then in teaching as Professor and Director of Environmental Earth Sciences at Laurentian University, Sudbury, Ontario. Ann's scientific curiosity and fascination with the world were matched by the soul and heart of an artist and lover, all projected outwards by the most beautiful smile in the world.

Ann was a true naturalist – birds, insects, plants, stars, mountains, lakes, rivers and rocks – and her love of the world has been instilled in generations of students, friends and family, and captured in her art and poetry. She placed profound value in her many friendships, and was herself a true and good friend. Ann was mentor to many, in life, with courage and calmness. Her beauty lives on in all who knew her.

## Other News Highlights 2014

*Reported by Luis Villa \*\*\**

**Jan 2014** For six consecutive years now, [LightHawk](#) has given Nectandra Institute's staff and community partners a bird's eye view and a chance to collect more aerial data of the area in which we do our forest and water resources protection work. This year was no exception, as we took to the air in a single-engine Cessna with LightHawk volunteer pilot Stephanie Wells, flying over Costa Rica's upper Balsa River watershed to obtain aerial images of several properties purchased with [eco-loan](#) financing for conservation and restoration purposes.

**Feb 2014** Nectandra Institute's [eco-loan](#) driven conservation efforts caught the attention of Kate Hamilton, a consultant and writer for Forest Trends' Ecosystem Marketplace online initiative and its sister site in Spanish, [Valorando Naturaleza](#), and Andrea Johnson, a staff member at Costa Rica's Tropical Agricultural Research and Higher Education Center. Both Kate and Andrea [paid us a visit](#) in order to get a firsthand look at some of the community-owned properties that are undergoing restoration and meet some of the local people with whom we have partnered in order to improve protection for Costa Rica's cloud forests and watersheds.

The best way to understand the importance of a tropical cloud forest is to see it in person. The members of the

Action 4 Nature, a group of women from our partner communities that we helped organize, did just that during an [educational visit to the Nectandra Cloud Forest Garden and Preserve](#), where they learned about local efforts to protect these and other kinds of highland tropical rain forests and the role these ecosystems play in protecting water resources for the benefit of human and non-human communities, alike.

**Mar 2014** Schoolchildren from Laguna, one of Nectandra Institute's partner communities in the upper [Balsa River watershed](#), each adopted one small tree. The kids and their parents will care for the trees at home for several weeks before planting them when the rainy season begins. They will be planted higher up in the local watershed inside an area designated as a protection zone for Laguna's sources of potable water. [Nectandra staff provided information on how to care for the seedlings](#).

Students and a professor visiting from Brigham Young University working on a case study on Nectandra Institute and our community partners helped distribute the young trees to the young caregivers.

**Apr 2014** Nectandra's staff biologist trained new volunteers from the upper Balsa River watershed community of San Antonio de Barranca for participation in the ongoing citizen science bird monitoring project. The purpose of this project is to track bird species in the watershed and particularly in [eco-loan financed](#) restoration properties to document possible changes in avian species as [forests are restored](#) on lands previously used for agriculture or cattle grazing. Through a series of workshops, participants learned about the proper use of binoculars and sighting techniques, avian morphology, local species, feeding and mating habits, and migration patterns. Classroom learning is then followed by bird watching sessions in the field. Birding results are entered into [eBird](#), a real time, online checklist program launched in 2002 by the Cornell Lab of Ornithology and National Audubon Society. eBird provides a network of standardized, current, continuous, global data on bird abundance and distribution. All the registrants on the site share raw data and other basic avian information, with additional analytic capability from the hosting institution.

**May 2014** Liga CUENCA (League of Communities United for the Protection of Water) in collaboration with Nectandra Institute and AFAMAAR launched the Adopt-a-Tree project during the ["Zarcero en San José" expo](#). Members of the public were invited to sponsor at US \$1.80 per tree to help support tropical forest restoration. Sponsored seedlings will be cared for in nurseries operated by some of Nectandra Institute's partner communities until

they reach a sufficient size for transplanting to a restoration property. Nearly 600 young trees were adopted during the two-day expo.

Nectandra Institute launched the new “Have You Seen Me?” citizen science project for tracking amphibians in our watershed. Residents of our partner communities are invited to [take a picture of any amphibian they come across and post it to Nectandra Institute’s Facebook page](#) indicating where and when it was taken. With this information, maps can be created showing the distribution of species of amphibians in the area. Over time as more amphibian reports are received, the maps can be updated to show changes in the presence of these animals. The information could prove quite useful as an indicator of climate change in light of the fact that amphibians are very susceptible to the effects of this global environmental challenge, with some species becoming extinct altogether.

**Jun 2014** Tree planting season kicked off with Laguna and Palmira, two of Nectandra Institute’s partner communities, organizing an [awareness-building and restoration event](#) on land they purchased jointly last year with eco-loan financing from Nectandra Institute. Prior to being purchased for protection and restoration purposes, the property was used for cattle grazing. An old barn is in the process of being renovated for use as a small visitor center and tree nursery. [Saplings that were planted one year](#) ago are growing in healthy fashion, some with blooming flowers that attract pollinators such as bees and wasps.

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