NECTANDRA INSTITUTE

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JOIN US ON OUR RIDE !

Our Nectandra cloud forest project has just crossed its 20th anniversary. My heart aches that I cannot see into its future, while my mind is optimistically working to plan for one. Caring for it has been a continuous wellspring for me — of discovery, inspiration, hope and despair in equal parts.

My three co-founders and I shared a vision at its inception (photo). We would work for the protection of biodiversity posthaste, with personal resources initially to get off the ground. As an organization, we hoped to be lean, agile, focused, open-minded and opportunistic in the good sense. We wanted to talk less and do more. Most of all, we hoped to recruit local partners at the grass root level, lots of them, to help us regenerate more cloud forest. Like four busy ants, we foraged for help from wherever and whomever we could. We put forth as much time and labor as each could afford. Like a starting train, Nectandra Garden and its nonprofit sister organization Nectandra Institute struggled at first to pull away from the station. Gradually, it started to move and to accelerate. Along the way, we were joined by a handful of like-minded individuals to stoke the engine, to add ideas, to help us think and plan. We slowed a little with the loss of Alvaro Ugalde (far right in photo) but soldiered on. Today, the train is chugging away at a steady rate, smoothly and on track. All we need now are more riders. By sharing some of my recollections and thoughts, I am hoping to convince you to join us on our journey.

My first introduction to a Costa Rican tropical cloud forest was a half-day hike as a tourist. I was prepared for physical exertion, sweat and bites. It was none of those. The first surprise was the effect of the clouds. The cool mist and refreshing air was pleasant, invigorating, but my vista appeared in 2-D layers, without depth. Veiled, the forest looked flat. I had the sensation of stepping into a life size TV screen. The exuberant canopy above felt protective. Closer to the ground, the understory was impenetrable, wild, yet almost friendly. The thick carpet of the mossy plants everywhere had a softening effect and my fingers were itching to touch everything. The cool temperature meant fewer mosquitos and biting insects. Melodious birdsongs and dripping mist were the only sounds in the background jungle. As my eyes slowly adjusted to the lower light level, I became aware of the monochromic green. My brain started to sort out the different green shades behind the mist. I began to see the many shapes of foliage, distinct textures, and finally each individual plant. Every square millimeter of surface was covered by plants, some so small that a hand-lens was required to see them. By now my brain had reset. I began to spot the flowers in the sea of green. A tiny, dainty orchid here, an isolated blossom hanging in mid air there. No large burst of blossoms, just dots of exquisite flowers. Every cubic inch of the cloud forest appeared to be valuable real estate. Plants everywhere, on rocks or hanging in mid-air, but mostly on each other. This stunning biodiversity left me speechless. I knew little about cloud forest ecology at the time, but even so, I recognized that this forest was different from all the forests I have visited, including a tropical forest just kilometers away at lower elevation. Unexpectedly, this brief experience touched a deep, emotional core in me. Perhaps it was the serenity of the ethereal mist, perhaps it was the beauty of the embracing canopy, but it left me with a overwhelming desire to learn all about cloud forests and a gnawing sadness that future generations may never have a chance to experience it.

I wondered at the time what precisely made it a cloud forest? Twenty years ago, scientific information on cloud forests was not easy to come by. This very question was debated among tropical biologists for the first time only in 1993. They agreed that the hallmark of a cloud forest is the persistent immersion of the forest in clouds. But other than that, they could not agree on a list of variables (altitude, climate, ecology, geography, how much cloud exposure, etc.) that would delineate a cloud forest from other types of forests. But without a workable definition, how to estimate their distribution and coverage? Since 2000's, using cloud monitoring by satellites, coupled with digital mapping and ground confirmation, geographers estimated the world's total cloud forests to be about 215,000 km^2 or only 1.4% of the world's total tropical forest. The aggregate would fit in an area the size of England, edge-to-edge. In the meantime, humans are clearing what is left of it from the face of the earth at a rate of 1% annually due to land use conversion. It is the most endangered of ecosystems. We had little of it to start, now precious little remains. The four of us wanted to do something, anything, to reverse this trend.

My knowledge of cloud forest ecology has since advanced slightly, enough to know that the cloud forests' uniqueness is more than the persisting clouds, but its extraordinary biodiversity and the delicate balance among species. Measured in floral and faunal species richness, cloud forest biodiversity and endemism are exceedingly high compared to non-cloud forests. Packed into a small country, the high density of species per unit area turns Costa Rica cloud forests into one of the world biodiversity hot spots. Nectandra, by luck, is located smack in the middle of the hottest part of the hot spot.

For the casual visitor what does hyper-biodiversity mean? How to understand the extent of it in a few hours? Intellectually, it is easy to understand that high biodiversity density means many, many kinds of organisms per unit space. But when surrounded by an unbroken mass of green, it is not easy for the average person to

appreciate the degree of diversity even when confronted with it. One effective way, I have found, is to get him/her to focus on a space small enough to visualize. For example, I had asked one enthusiastic visitor to mentally mark out a cubic meter of forest directly in front of her, and to point out how many orchids she could find. She easily counted six and missed two (not so obvious ones). Some minutes later on the path, she was struck by the enormity of what she was passing by. She stopped and cried "But I am missing so much just by moving!" She realized she was counting individual grains of sand on a beach.

For a permanent resident like me, who is untrained in field biology, high biodiversity means sightings of new (to me) fauna and flora with every walk for two decades. A good indicator of how much I have seen over the span of two decades without effort is the growing number (many thousands) of floral and faunal portraits photographed on the trails at Nectandra. The caterpillars on the left are just a few of my grains of sand on the beach.

As nice as the photos are as records, they are dismal at capturing some of the memorable natural events I chanced on, like the headless ants marching and keeping up with fellow leaf cutter ants in the column. Yes, headless ants! They were the victims of fly parasitism whereby eggs laid on the ants hatched, then digested the ants' heads from inside out, until the heads eventually fell off. Amazingly, the decapitated ants could still move about for days. Or, like the tree with the squirming bark, which turned out to be thousands of beautiful blue and yellow caterpillars (bottom photo), completely covering the trunk of a large tree, from the ground up to the canopy. Two days later, there were only a few survivors from wasp parasitism. Or, like the time I witnessed a large wasp paralyzing a larger (several times in size) tarantula with its venom, then dragging its victim toward a burrow. The tarantula body would eventually become a baby wasp incubator. Or, like the praying mantis staggering under a tangle of moss. I helpfully tugged to remove the moss only to discover that the "moss" was part of its thorax. The mimicry and camouflage were nearly perfect for the mantis' protection.

The hardest lesson to sink in, however, is that hyper-diversity means also rareness — a counterintuitive effect. With so many different organisms packed into a finite space, there is not enough room for many copies, so each organism is by default rare. Rareness, in turn, translates into large distances or long intervals in time between sightings and repeats. I now realize those glimpses may be my only chance to see them because of their scarcity. The truth is, I had seen each of the caterpillars in the photos only once, or perhaps twice, in two decades.

My perspective of the biodiversity of our cloud forest has slowly evolved and expanded. I appreciate its rareness and uniqueness. Above all, I have come to realize that it is our most valuable classroom and library. Its information is stored, not in bits or bytes, nor in printed words, but in an infinite array of living organisms, readable by human brains for the foreseeable future if we care for it. To save the ecosystem is to save ourselves.

Our Game Plan

Nectandra Institute (NI) was incorporated as a California 501(c)(3) public charity in 1998, but for several years, a clever strategy to recruit local partners for our cloud forest regeneration goal dogged us. Then in walked our first job interviewee, Randall Varela, a newly minted geographer (who is, by the way, still on our team). He told us about the existence of some 1500 ASADAs in Costa Rica. These are semi-autonomous water management associations, formed and staffed by local volunteers in each rural community to service potable water to fellow residents. The associations receive no assistance from the government. They are democratic grass root organizations. Each water meter represents a vote in each communal decision. We also learned that the ASADAs do not own the land on which their supplying springs are located and therefore are at the mercy of the private land owner, who may or may not feel obligated to keep down contamination (mainly cattle and agricultural run-off).

We connected the two dots — water and threat of contamination — and added a third, ownership of land, to complete the cycle for our scheme to work. The idea was simple. NI helps the communities buy the land vital to their water supply with a loan. Loans are very well understood as legal contracts between two private parties, so they are simple to execute. We do not charge monetary loan interest, but negotiate a list of eco-interests, consisting of whatever (labor, time and other resources) the community is able and willing to put on the negotiating table that would help NI's conservation causes (native plant reforestation, watershed management, tree and stream monitoring, mapping etc.). NI, in turn, promises to provide technical help, education and information on topics associated with water. NI keeps the whole process simple and reduced paperwork, just enough to keep things legal and accountable. The Ecoloan Program was launched in 2006 within the federally designated Biological Corridor of the Clouds (Paso de las Nubes), an area of about 40,000 ha upslope from and including Nectandra. The first loan was signed within just weeks. Today the program is alive and well and growing steadily.

Our policies for issuing the loans are pretty straightforward. NI is not involved in the price negotiation, to avoid land speculation. It funds up to 70-80% of the purchase price. The buyers assume all responsibility for land assessment and legal fees. We respect the price the communities negotiated and their decision to buy. Once the price has been settled between buyer and seller, NI does its

evaluation. NI bases its decision on its available capital fund, proper legal titles, the location of the property, the buyers' capacity to help us achieve our mission and ability to make the payments. If everything passes NI's due diligence, the loan contract and the property closing can take place without delay.

What have we learned from our ecoloans during their 12 years of existence? First of all, they are a very good inducement for the communities to sign up, especially those whose water supply is under threat of contamination. The associations all charge water user fees, providing an income stream to pay for the loans, at least in part. Some groups can draw on their own funds set aside for land acquisition. Others use other means to supplement their monthly users' fees. With the growing collaboration between NI and the ASADAs, no advertisement, just word of mouth, gets NI all the publicity it needs.

The communities see NI as a partner in the true sense. After the loan signing, no additional contracts for services are exchanged between the two parties. NI supports the administrative costs, field studies, workshops, etc., using its own staff and funds. The communities contribute their labor, time and co-ordination to do the reforestation (see photo, left) and other conserv-ation work. Our partners understand that water does not come directly from the springs, but from precipitation collected by plant roots and foliage, filtered through the soil and slowly released via the springs. Without a forest to act as a big sponge to retain and slow the runoff, uncaptured rainwater ends up in the ocean. The motivation to regenerate the native forest so prized by NI is totally the community's own. No arm-twisting or pressure is needed to get the reforestation work done. We are plainly equal partners, sharing mutual goals and gains.

Many of the community leaders value the social and cultural benefits of the program equally with, if not more than, the land acquisition. "Land," the president of one association said, "we can buy with money. Effective opportunities to instill civic responsibility in our youths, we cannot". The ecoloans turned out to be an excellent mechanism and platform." NI, from its inception, wanted to promote its mission to the very people who will benefit from its goals. Field trips, workshops or cultural events in the September Water Month are designed to cross gender and age gaps. Education and stewardship are important in NI's multi-prong strategy. Without these educational and social engagements, chances are slim that NI's influence will be long lasting. It is gratifying that the community leaders recognize and value the intangible benefits of the program. Our message has indeed gotten through.

Are NI's donors getting their money's worth? The answer is an unqualified, resounding yes. Every dollar (minus local currency depreciation) ever donated to NI for ecoloans is still out there working for conservation and recruiting more partners. Many of those dollars have been recycled for the second time, with the capacity to be recycled many more times. Mother Nature willing, the donors' investment will outlast all of us.

The ecoloans touch the lives of 15,000 residents in more than a dozen communities and affect their vital water supply. Every one of those residents, in effect, is an individual partner. They are paying through water user fees to buy land in the Biological Corridor of the Clouds. They are laboring to reforest their property, and they have promised to care for it for perpetuity as communal assets. The communities are making every single payment on time without fail. Their members are uncomplainingly and even enthusiastically paying the eco-interest. For NI, the loan program has been problem-free, efficient to execute and administer. Our staff has not grown in size. By all measures, the ecoloan program has been a resounding success. It's difficult to imagine a better conservation strategy.

By now, our readers may have detected a fly in the ointment, for NI's success *has* become the fly. Up to now, the loan program is supported by a small number of grants and a small band of loyal donors plus a handful of bigger contributors. Unfortunately, the increase in loan demand has come at the same time the larger donors have hit the contribution glass ceiling and therein lies our dilemma. Please read on.

Tipping Point

As a public charitable organization under IRS Section 501(c)(3), NI has tax-exempt status. This exemption extends to its donors' contributions as well, in the form of federal tax deduction on their income. To stay qualified, NI must operate exclusively for the public good and none of its income may be for the benefit of private interests. To prevent abuse, we must comply with a number of regulations designed to deter excessively large private donations.

Congress requires proof that we maintain our tax-exempt status every year in our IRS information return. We must declare our total annual contributions (total support). We must track the individual donations in the most recent five years. We must show that **at least one-third** of the total support comes from the general public, or risk losing our public charity status. So, who is the general public?

By definition of the 501(c)(3) ruling, a member of the public is any individual donor (a person, a non-governmental or private granting agency) whose cumulative five years donations, when averaged, does not exceed 2% of the current year's total. Any excess above the 2% threshold is disqualified as public support. Only contributions from the government and other public charities are not subjected to the 2% rule. The point whereby the organization fails the one-third public ratio test is known as the tipping point.

In the last few years, our "fly" is slowly but inexorably heading toward the tipping point. The handful of NI large donors has reached its effective limit. Any additional contributions from them will drive the public support ratio downward. NI is not in imminent danger of losing its charity status, but while there is still time, we need to take stock and take steps to reverse the

downward trend. The options are fairly obvious: we seek additional grants from public foundations, or increase the number and size of private contributions, or initiate alternative fundraising activities. We are trying all three approaches.

Our recent attempts to do the former have been unsuccessful. The reasons given varied. One was that NI is not charging monetary interest, thereby failing the criterion of being a fiscally sustainable organization (even though our mission is conservation through philanthropy). Or, we work on too small a scale, *i.e.*, in hundreds of hectares *vs*. thousands, to qualify as a conservation land acquisition organization. We seem to be falling between the cracks, not quite a social entrepreneur, not quite a land buyer, not big or small enough — the middle child syndrome. We will, of course, not let it get to us. We will continue our search for opportunities, but grant seeking is inherently a slow process. In the meantime, we are working on the second option.

Many of our readers have supported us for years, a gratifying number since NI's inception. We could not have come this far without all of them. Their unwavering faith has sustained our spirit, our energy and our motivation to forge ahead. They have our deep gratitude.

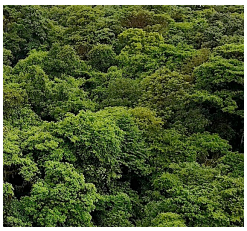
It is therefore with reluctance that we appeal for more support. We need all the help you can give, small or big. Help spread the word about our work, get friends to browse our website (www.nectandra.org) and Facebook page. Come visit our cloud forest. Give us an opportunity to show off Nectandra Cloud Forest Garden and to chat. Send your friends and acquaintances. Most of all we want to hear from you.

If you haven't already done so, please donate. If you have, please consider increasing your donation. Old fashioned checks are still the most economical for us or, if you are short on time, please go to our website to make an on-line donation, or a recurring monthly donation, via PayPal.

We thank you in advance. ¡Muchísima Gracias!

—— *Evelyne T. Lennette* ——

What your dollars will be supporting

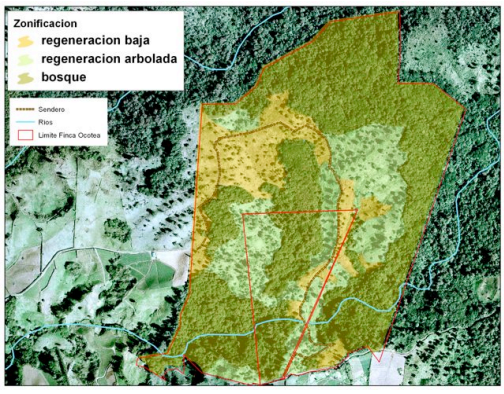


loans to regenerate cloud forest (drone shot of an ELF property purchased in 2009)

seed collection, germination and eventual transplantation to eco-loan properties

activities for recruiting and training future native plant forester such as the young man at left with the oversize shovel and cloud forest tree seedling.

scientific inventories of the cloud forest flora and fauna



analyses of forest growth by GIS (Geographic Information System) as part of the reforestation monitoring, as shown in left photo