



Of Quetzals & Nectandras

I remember my reaction to first sighting a quetzal—the adrenalin rush, the intense concentration to find it on its tree perch, the missing heartbeat when I did see its supremely beautiful plumage, the hush and awe among my fellow hikers—it is all still very fresh in my mind today. The resplendent quetzal is undoubtedly the most famous of the more-than 850 avian species in Costa Rica. It is the quest for some 50,000 visitors annually when visiting Monteverde Cloud Forest Preserve. To leave the country without seeing one is tantamount to an ungratifying journey for many bird-loving ecotourists.

Nor can I forget the first time I heard the loud, haunting call of the three-wattled bellbirds in our Nectandra Cloud Forest, April, two years ago. The three-wattled bellbird, perhaps not as sought after by the tourists, is just as spectacular in its call as the quetzal in its plumage. A large bird with chestnut-brown breast, pure white head and neck, with three black wattles hanging off its beak to give it a Fu-Manchu-like appearance, the bellbird is easily visible on broken-off branches in tall trees, from which it bellows its call. Its persistent, loud *bonk-bonk* can be heard from half a kilometer away, sometimes for hours.

Both the resplendent quetzal and the three-wattled bellbird are examples of the many fruit-eating birds of the cloud forest. From the results of recent radio-tagging investigations, we are now just beginning to learn of their complex migration patterns. After the mating season in June, both species migrate downslope from Monteverde, away from the inclement rain in search of their favorite wild avocado fruits. Whereas the quetzals move downward on both the Pacific and Atlantic foothills and go no further, the bellbirds follow a much more

complex migration path. They first descend from the Continental Divide to the lower Pacific slope where they congregate for several months, then fly back across the continental divide, descending to the Atlantic coast, gathering in Nicaragua, just over the Costa Rican border, from where they retrace their flights toward the Pacific lowlands, gathering there for another two months and finally return to the Monteverde Preserve to breed again.

The birds' complex altitudinal migration patterns are dictated by the distribution of their favorite foods, which ripen at different altitudes at different times. While the highlands are protected by the various conservation-minded national programs, the remaining tract of lowland forests, the vital feeding and refueling spots in the lower montane forests, are now within an agri-cultural belt and are rapidly disappearing. The birds' dependence on the lowlands for food have thus put both species on the endangered list. The shrinking forest is being replaced with coffee plantations, with monoculture ornamental farms, and with houses. There is little of the lower montane forest left; what little that is remaining is not protected.

Visitors are drawn as by magnets to view the birds. Yet, how many know the fruits they eat or have seen the vital plants that sustain the shrinking population of quetzals and three-wattled birds? More importantly, do our scientists know? What information do they have?

Nearly all the fruits favored by both the quetzals and bellbirds are in the *Lauraceae* family. It is a large pantropic family of about 50 genera, including wild avocados such as the 300-500 species of *Ocotea* and 114 of *Nectandra*, our namesake. The large number of species makes it almost impossible for comprehensive study. Identification within the genera is also difficult because the sheer large number of species. Our information on their distribution is incomplete and sketchy. The most important reference source for the *Lauraceae* family was *Lauraceae Americanae* by C. Mez published in 1889. The only other completed treatise on the *Nectandra* was published in 1993 by author Jens G. Rohwer. None exists for the *Ocotea*. With the increasing realization of the trees' importance for the endangered birds, botanists are frustrated by the lack of information on the plants themselves. Some of the *Lauraceae* are said to flower, not annually, but once

every two to three years. For most, we know little of either the duration or fruiting intervals. Our knowledge is inaccurate and dismally thin at best. In the meantime, the very forests that contain these trees are being destroyed and removed faster than they can be studied.

This was the situation confronting the founders of Nectandra Institute when they first met in January, 1998.

Organization

Our first order of business then was to organize a scouting party to search for properties on the Atlantic slope of the Tilaran mountains. We had an unexpected stroke of luck when one of the founders was getting a haircut. He learned from his long-time barber that 104 hectares of cloud forest in the vicinity of San Ramon was for sale. A quick visit to the property confirmed that it was indeed 85% primary cloud forest, with 15% secondary forest. The rectangular-shaped, virtually undeveloped property was surrounded on the north by pasture, on the south by dracena plantation and on the east by a busy highway. Access to the property was across a deep ravine; it was problematic but feasible. The west boundary is contiguous with primary forest upslope that eventually ends with the Monteverde Preserve. And yes, there were a large number of Nectandra trees, perfectly visible from within meters of the entrance.

Two private donors came forth to purchase the land; they wished to dedicate 100 hectares of the pristine forest for preservation and research; they also agreed to develop the remaining 4 hectares as a horticultural garden, with a visitor complex and scientific exhibit areas, a small conference/classroom facility and a network of trails. The non-profit Nectandra Institute was set up to devote all of its effort and energy to educational activities and biological research. Nectandra Institute was granted free and full use of the preserve and facilities under exclusive arrangements with the owners. To free the organization from routine, day-to-day operation of the facilities, a separate for-profit corporation was set up to manage, administer and operate the property and facilities for low impact, day-use ecotourism.

The mission of the Nectandra Institute is to educate the public on the beauty and uniqueness of the cloud forest, to promote awareness of its faunal and floral richness, and to advocate preservation of its biological diversity.

Progress

Any resident or visitor to Costa Rica can clearly see the direct benefits of land conservation under the much heralded national park system. Most of the major parks are located within 1-5 hours drive from the capital city of San Jose. Tourists cannot help but marvel at the accessibility to the wealth and diversity of the country's biozones. Yet, how many understand the significance of the governmental infrastructure required to support such a system and what it means for the average Tico resident? I certainly didn't at first.

After more than a year of dealings with the Ministry of Environment and Energy (MINAE) and its representatives, I am both impressed and grateful for their mission and their presence in the community near our Nectandra Garden.

Our preserve was registered and sought protection under the national program Pagos de Servicios Ambientales, whereby the owners agreed to preserve and protect the forest according to strict national guidelines, and to work out a plan with a certified and approved environmental biologist who will make annual reports to MINAE on progress (and plan violations) by the owners. In exchange, the owners receive partial compensation for their loss of income from not using the forest commercially. But more importantly for our cloud forest, the government provides us assistance and legal support against poaching and illegal plant collecting.

As our application was being considered, we had numerous meetings with the MINAE representative, Eladio Chavez, who was assigned to our case; he patiently explained the legal documentation required for the application. (We needed the owners' identification papers and power of attorney, a legal survey map for the property, a recent survey map of the portion of the property under protection, a mini-environmental impact statement for the project, a description of the site, permit to cut specific trees that might be sacrificed for the project, legal

agreements and leasehold arrangements with the property owners, mitigation report, proof of payment of taxes, etc. etc.). Eladio has a gentle demeanor, and a soft voice, but an unrelenting, unforgiving thoroughness in getting the documents required “by the book.” By the time we received word of our application’s approval, our patient administrator Arturo Jarquin had worn a rut in the sidewalk from the untold number of trips on foot from our own office to the local MINAE office in San Ramon. In between all the frustration of trying to meet the necessary requirements, we received helpful advice from Eladio on how to proceed with the paperwork, suggestions on how to clarify legal issues, recommendations on how to handle skirmishes with aggressive neighbors, where to go for help with our poachers, illegal hunters and plant rustlers, etc., etc. All this within a friendly phone call and short walk from our office in the small town of San Ramon. By now, Eladio is more than a government agent, he is a neighbor, our environmental advisor and legal protector of our cloud forest. This is a real and lasting legacy of the enlightened Costa Rican environmentally friendly national programs.

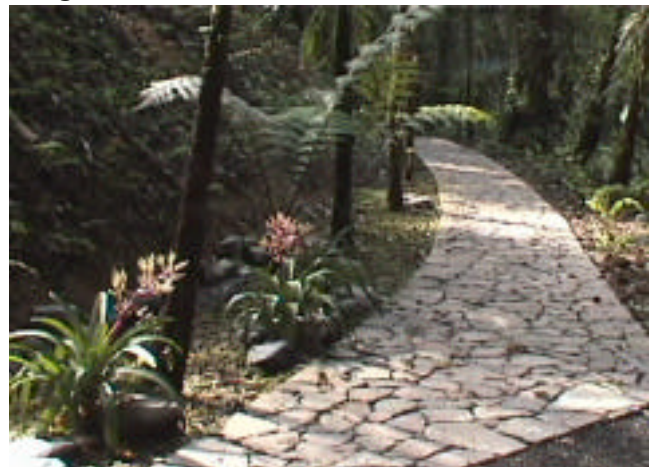
Garden Concept

One of our principal goals is to heighten public awareness of the natural beauty of the cloud forest. By instilling our visitors with an appreciation for its existence, spiked with a dose of scientific information, we hope to educate. Through education, we hope to change attitudes. Through changes in attitudes, we may save what is important for life on our planet.

Ambitious and lofty goals, but how do we do it? We all agreed that we must first attract the visitors to see the preserve, then we must find a way to keep them interested.

One of the most direct way we know is simply to make our cloud forest accessible to visitors. First, we will attract them with the promise of an unusual garden, then we will guide them through our beautiful eden via a network of trails. If they are still hungry for more scientific information, we offer our exhibits.

With help from our garden designer, Sigifredo Altamirano, the basic concept of the garden took shape over many months. The area of the old coffee and banana plantation was the logical site for the garden. Arturo Jarquin, who has a background in horticulture, is overseeing the landscaping and planting, as well as the design of our trail system. There were many old trails still visible from the plantation era of fifty years ago. He tries to incorporate them into our trail system as much as possible to minimize the disturbance to the terrain and plants. The photograph below shows an example of the wheelchair-accessible trail that will cut through the heart of our garden. While not all trails can be built with wheel chair accessibility, because of the steep terrain, the trails are planned to show off the botanical richness of the preserve. Arturo is using mainly plants indigenous to our cloud forest to landscape the trails. No plants are allowed to die during the trail construction; they are simply transplanted and integrated into the garden design.



To create the least disturbance during construction, only human muscle power is used, unassisted by large equipment. After a year of backbreaking labor for our crew, the trail system is growing day by day, eventually it will wind through 5 kilometers of pristine forest. We hope to have it ready for visitors this coming year.

Botanical & Avifauna Inventory

Nectandra Institute’s first official activity will be to do a preliminary inventory of flora and fauna in our

reserve. We have engaged our first botanist to start with the new year. His initial responsibilities will be to do a rapid survey of the preserve to evaluate the extent of the botanical diversity. After his report and recommendations, we will be able to organize a systematic, more detailed survey coupled to specimen documentation and identification.



Our preserve is located at the junction of several biozones. Except for the 4 hectares nearest the public highway, which was a failed coffee and banana plantation, it has largely remained untouched. Based on information gleaned from our neighbors at the Alberto Brenes Biological Reserve (a research station affiliated with the University of Costa Rica), we have reasons to believe that the Nectandra forest is also unusually rich in flora and fauna.

In parallel to the botanical inventory, Arturo Jarquin, who is also a birder *par excellence*, is recording his sighting and observations of the avifauna in our preserve during the last 18 months. By his count, over 100 bird species have been sighted, including the elusive quetzal.

Editor's Corner

For the four founders, Alvaro Ugalde, Arturo Jarquin, David Lennette, and myself, the first order of business was to decide how to persuade our visitors that it is in their interest to save the cloud forest.

The most common selling point for preservation of our forests is the commercial value of the derived goods and information. Most discussions on this topic center on the yet-to-be-discovered botanical source materials for drugs and other products, the scientific research information on its fauna and flora, the economic gains through sustainable developments, etc. This form of persuasion impresses principally the affluent. It works on people who can afford to wait and who are willing to bet on future benefits. It is not effective, understandably, on the individuals who live near these forests, whose first priority in their daily struggles is to make a living. It is not effective for those that derive their income from the forest lumber, from hunting of the fauna and from collecting of the flora for commercial purposes. Their benefit from the forest is immediate and real, and not an abstract concept.

Let us ask what are the motivations for anyone to preserve something—artwork, books, dolls, cars, baseball cards, etc? True, some people do collect objects for their future commercial value. Preservers, however, come in all ages, from all walks of life, and their interest crosses all social and educational backgrounds. We all know of individuals who would forgo food for new acquisitions. These individuals save and preserve something because they love their subjects inherent properties—whatever they may be. Their affection is unconditional, avid, and lasting for their objects of interest.

We wish to act as matchmakers between this type of preservationist and the cloud forest. We are a small cadre of four. We wish to recruit more. Collectively and together, we may succeed in saving more of our Costa Rican forests.

I was the beneficiary of such a matchmaking two short years ago on my first visit to the Nectandra cloud forest.

—Evelyne T. Lennette, Editor.
