



## *Why Save a Patch of Cloud Forest?*

Evelyne T. Lennette

This question entered my awareness only a few years ago, the outcome of a chance meeting with a few tiny cloud forest inhabitants. They came in the form of a dozen or so species of live tree frogs on display in a small Oregon museum, a traveling collection of Neotropical Frogs. The sign in front of the terraria indicated that they were among a shrinking population from The Monteverde Cloud Forest of Costa Rica. I was too captivated at first by their small size, vivid colors and serene demeanor to appreciate the irony of the circumstances. Here are sacrificial frogs, each pair representing their endangered species, a long way from home encaged in glass, captured to spread the message to mankind that their kin may have only limited future on earth. Given their short life span, it was unlikely for the tiny frogs to make it home - these adults and their descendants were lost forever to the cloud forests.

I didn't know it then, but the intended messages struck home. One message tugged at my heartstrings and eventually nudged me toward Costa Rica, where I am learning to become a worthy cloud forest denizen myself. The other lodged in my brain; it compelled me to open my eyes and mind, and to seize the opportunities to act. It is the force behind many of my daily thoughts, hopes and activities centering on the title question.

I grew up in the tropics only miles from the nearest rain forests. It pains me now to realize that I spent my childhood oblivious to the natural wealth around me. Forests and wild things, I knew only as sources of timber and as creatures to be feared. By the time I met my frogs from Costa Rica, the world's tropical forests had shrunk by a fifth of what they were two decades ago. With increasing use of more advanced logging technology, the remaining forests fall at a more accelerated rate, possibly all within my lifetime.

In more recent years, tropical rain forests, typified by the Amazonian lowland rain forests, are belatedly receiving attention from the public and from international conservation-minded organizations. On paper, at least, governments of many countries have protection programs to slow the trend of deforestation. In practice, lax enforcement and contradictory policies among public agencies often interfere with many of the environmental objectives. Forest protection programs have not kept up with the destruction.

It is not the intent of this short article, dear readers, to discuss the merits of saving tropical forests, nor to give a long list of scientific and economic approaches. I take comfort in assuming that you think it is a worthy task and that you agree there is strength in using diverse approaches. The emphasis of the question, then, is not why save tropical forests in general, but why save cloud forests in particular?

The general term tropical forests encompasses many types of forests, each biologically diverse and complex. While there is some disagreement among experts about what can be included under the category of cloud forest, most cloud forests are readily recognized by the long periods during the year in which they are misted by daily fog and clouds blowing through. The fog and clouds are the result of prevailing winds pushing moist air up cool mountain slopes, cooling further as it rises, until the cooling air reaches the local dew point, and the moisture turns into droplets, producing clouds.

Clouds formation alone, however, is necessary but insufficient to create cloud forests. It is the regularity of the misting cycles and the long periods (8-10 months per year) of consistent cloud cover and rain that allow the formation of a distinctive type of forests. The combination of unchanging day length in the tropics, combined with prevailing trade winds, high humidity, and mountain slopes, explains why cloud forests exist only in the tropics, in coastal areas with mountains above certain altitudes. This combination of conditions occurs only in a few places on the surface of the globe, in small patches of Indonesia, West Africa, Pacific Islands, Caribbean, Central America and South America. At this late date, accurate information of total cloud forest coverage is not yet available; but it is estimated to constitute 10% of total tropical forest. Cloud forests, in short, are rare.

The combination of high, cool elevation and constant immersion in clouds creates distinctive ecosystems. Every

object in these forests, whether live or dead, is a garden unto itself, laden with epiphytes, fungi, lichens, mosses, bromeliads, orchids. Monteverde, the best studied of cloud forests, has at least 878 species of epiphytes, including 450 orchids. Our Nectandra Garden is located at the intersection of several biozones, across from Monteverde on the Atlantic slopes of the Cordillera Tilaran. Alberto Brenes, known for his collection of endemic plants around San Ramon in the early 1900's, devoted his lifetime to the region's flora. His work and collections constitute most of our current knowledge of this area. We know it is immensely rich in botanical diversity.

Like any concerned world citizen, I have followed experts' arguments for saving tropical forests based on economical, scientific and social grounds. I find many of them thought provoking and convincing, but none have the forcefulness of my experience with the frogs. One tiny glimpse, one growing thought, that's all it took to convert me. With a forest full of treasures, we should be able to accomplish much, much more.

Best of all, Nectandra's frogs will not have to worry about coming home.



*Unidentified Nectandra tree frog*

## *Progress Report on Plant Survey of 2001*

Gerardo Rivera, parataxonomist for the last 17 years and a Costa Rican national park ranger for many years before that, started a preliminary plant survey in our Garden the past summer. He had just finished plant collecting for the Cleveland Botanical Garden Tropical Forest Collection when we contacted him for assistance.

Between July and September, Gerardo identified and tagged the flora along our main trail, measuring slightly less than a kilometer. We also took advantage of his ethnobotanical interest to assist us in identifying plants of medicinal and cultural interest to native Costa Rican indios.

For uncommon and rare plants, Gerardo also prepared herbarium specimens in triplicate, one for INBIO, one for the National University of Costa Rica and the third for our reference collection. For specimens that could not be speciated, he contacted specialists at INBIO and elsewhere for assistance.

This preliminary work was completed smoothly and expeditiously. Gerardo identified and tagged more than 200 species of trees and shrubs. This initial plant survey will help us compile information to be used by interpretive guides for future Garden visitors. We will build on the knowledge gained from this very preliminary and limited survey to plan for more extensive exploration in the future.



*Herbarium specimen #191 collected by Gerardo Rivera, January 2002, awaiting final identification and desiccation for herbarium collection. Each square grid is 5cm x 5cm.*

*Top view: intact fruit. Bottom view: fruit split in half.*

The next phase of our botanical inventory has begun in earnest this January. We now have an operating herbarium in San Ramon, where the climate is much drier. While

Gerardo and his assistant are busy collecting fertile specimens in the field, we are recording his collection photographically with a digital camera and setting up a suitable database for our collection (see illustrations above).

More details on our results will be reported in the next Newsletter.

## Thoughts and stories from our President Alvaro Ugalde

Throughout my life I have adopted the conviction of my parents and elders, that there is always something good about everything, especially moments or events we perceive as crisis or unwanted changes. We just have to look for the good and the opportunities in everything, they are always there. Although the events of September 11 2001 brought moments when some of my assumptions were shaken, I concluded that this crisis too shall pass, that life must go on and that the environment must be protected in times of peace and, much more so, in times of war.

Actually, I think that the real challenge ahead in spite of this strange new war, is how humanity will maintain and redouble its efforts to avoid environmental catastrophic events, probably of much greater and lasting consequences. But my faith in humanity and in the resilience of nature keeps me going. Also, in moments of anguish, I think of people like you, our readers and supporters, and I simply keep going...If you didn't know it, you are and have always been my sustainable sources of energy.

I have been thinking on how to approach my series of stories in this Newsletter, so they can also be useful to a broader audience within the conservation and development community. My problem is that I can go many ways, both in approach and in the time-frame I use. I can speak of independent anecdotes as I did in the previous issue, I can divide our history of conservation in decades or years; I can talk about financing or bio-diplomacy, I can be very personal or very institutional and so on.

For the moment, under pressure of deadline, I have decided simply not to decide. So here we go again.

## FOUR

1969. The year was relatively calm with respect to tangible conservation actions, at least for me. It was basically a year of preparation and learning. Our Congress discussed and finally approved legislation to regulate forestry activities and to initiate conservation. A few articles in the law mandated that a system of national parks and biological reserves be established, gave the President the authority to create parks via executive decree, denying his authority to nullify them, and gave the government the power of eminent domain when creating protected areas.

And that's all Costa Rica needed to get going.

While our Congress was legislating, I was in my last year of my Bachelor degree in Biology at the University of Costa Rica. Early in the year Mario Boza, my colleague, asked me if he could look for funding to send me to an International Seminar on National Parks and Equivalent Reserves, a course that was then offered yearly by the US and Canadian Park Services and the University of Michigan. At first I was reluctant, thinking that finishing a degree was my most pressing personal priority.

But when Mario came back in May with funding, the pressure from him and my friends was insurmountable. Finally I dropped out of school for the year. In August 1969, together with 25 others from many nations, I went to Jasper National Park in Alberta on an one month journey through Canadian and US national parks – a journey that would change my life, the history of my country and the life and history of many, many others.

The Seminar started at Jasper and Banf, where we discussed with rangers and superintendents, the Canadian side of the art, the management systems, the problems and the challenges, the beauty of it all. From there we flew into Yellowstone, canoed through the Snake River with the Grand Teton on our right, visited Indian Nation monuments and visitor centers, Petrified Forests and many other wonders and ended at the Grand Canyon. The group melded together like a flock of pelicans, and our motivation and sense of global mission grew as we became better friends.

Near the end of the trip, while at the Albright Training Center of the USPS located in the Grand Canyon, I was offered the opportunity to stay, right at the edge of the biggest crack in the planet, for two more months, to attend

a US Parks Operation Course. I considered the cost of it, including not going to school that semester. I counted my pennies and decided to stay. And I really mean pennies. For two months I had to pay around ten dollars per month for the apartment and to feed myself.

Or so I thought. I figured I could do it with one bowl of soup a day, until one day I dropped to the ground while jogging with Bill Wendt, the toughest of our instructors and at the same time the most motivating one. He must have felt good about saving from starvation this naive fetus of a conservationist from Costa Rica. Bill later jumped into the international arena, working with the International Program of the USPS. His discovery of my hunger predicament came toward the end, but in time to feed me more than well, to the end of the course. Others also helped, the family of my friend Bien from the Virgin Islands and Rose from the national parks of Hawaii.

I was lucky and able to walk twice to the edge of the Colorado River, down and up the Canyon all in one day. By the end of both of these hikes, I hated the burros on the trail and envied their riders, and of course, gulped two beers at the end..

Not so skinny, I arrived in San Jose in December 1969 to discover that one week earlier our Congress had finally put out some white smoke. We had a mandate for conservation. More than that, our Costa Rican dry season was on, along with school vacations and Christmas just around the corner. What an optimist...I was 23 then and I guess I didn't know better.

Sometimes, more frequently as I grow older, I refer to 1970 as the year when History begins. That is, the history of conservation in Costa Rica, the history that threw me and many into making history, the history without which I wouldn't be writing to you.

But as you see, the only thing I did in 1969 was to travel and to faint at Grand Canyon, and then return to Costa Rica in early December. So, just between you and me, history does not begin in 1970 in spite of what don Alvaro thinks. History of conservation in Costa Rica begins closer to the time of my birth in 1946. History begins to be made in 1940 with the Washington Convention, when Costa Rican delegates signed the Western Hemisphere Convention for the Protection of the Flora, the Fauna and the Scenic Beauty of the Americas.

Costa Rican Conservation History went dormant during World War II, and reappeared in 1966 when our Congress

ratified this Convention as a law of the land. And history kind of went dormant again until our Congress past the 1969 Forest Law, the one I mentioned before.

But true history, a la Ugalde and a la Boza, really started around 1963, when two beautiful persons I call "Our Messengers from the Future" succeeded in convincing the Costa Rican government and a few donors from England and Philadelphia to create the "Cabo Blanco Absolute Biological Reserve". It is the only wildlife protected area, created before the existence of the Costa Rican Park Service, to survive properly managed. Olof Wessberg from Sweden and his wife Karen Mogensen from Denmark were our messengers from the future; they were also our mentors and a constant pain in the lower back. There was no way to calm them in matters dealing with problems in Cabo Blanco. Painful, yes, but we learned from them. At the same time, we were able to apply their lessons in building the rest of the then baby park system.

But the story of Karen's and Nicholas' life and legacy requires a lot more than the allotted space. It will have to wait until another issue of the Nectandra Institute Newsletter, as part of my tales series.

*Nectandra Institute*

*Our mission is to promote, through public education, the conservation, restoration, and sustainable use of the montane cloud forests of Costa Rica*

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