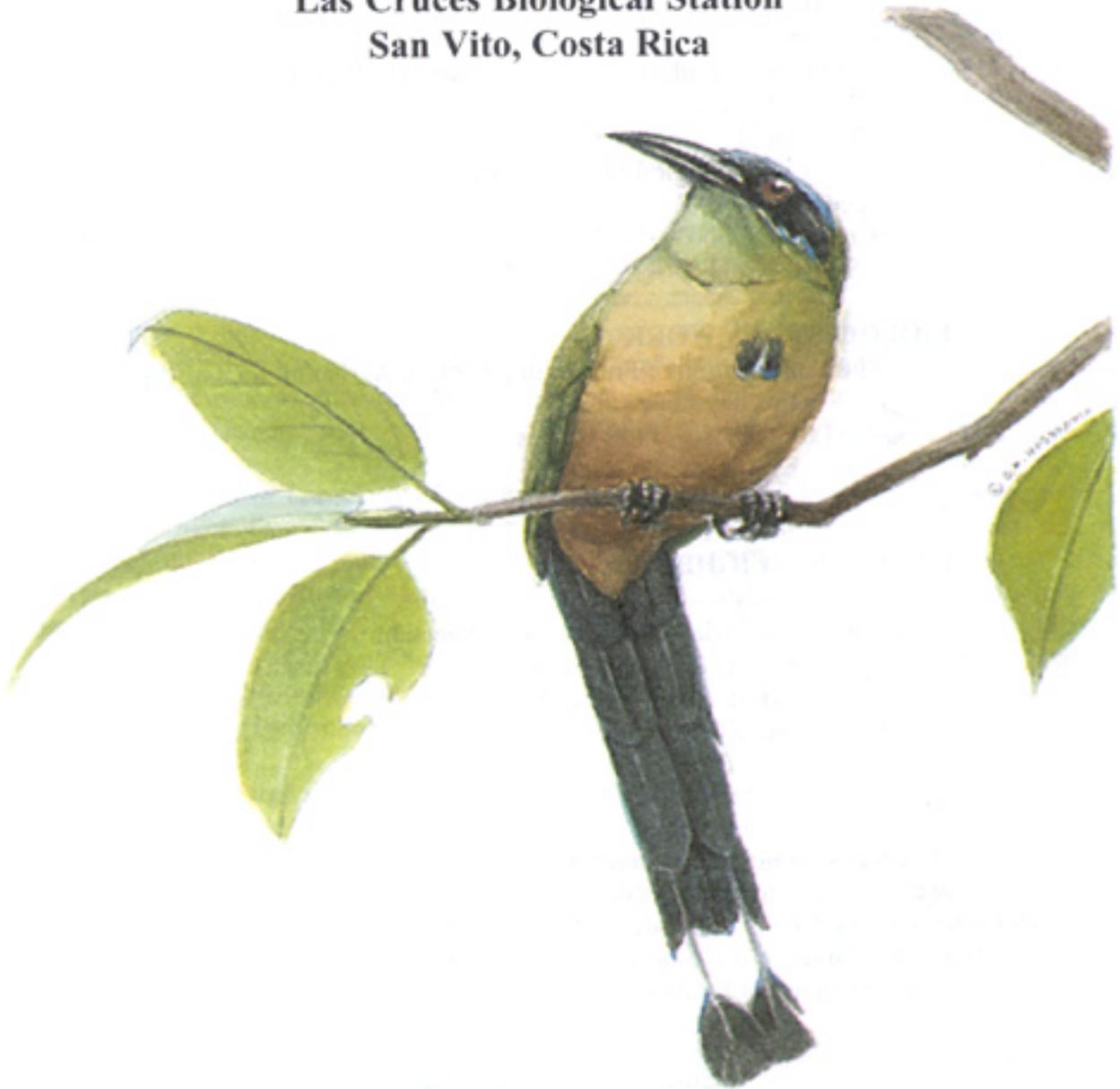


No. 56 September 2001

AMIGOS NEWSLETTER

Wilson Botanical Garden
Las Cruces Biological Station
San Vito, Costa Rica



Organization for Tropical Studies

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NO. 56, SEPTEMBER, 2001

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DIRECTOR'S KEYS AND NOTES

By Luis Diego Gómez

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THE MIRAGE OF PROGRESS

A few days ago I was talking to someone about Rodrigo Diaz del Vivar, The Cid, that mythical hero of medieval Spain when, suddenly, the images of Charlton Heston and Sophia Loren in the stellar roles of The Cid and Ximena popped into my mind. I realized that my interlocutor, a young person who had probably seen the film had those faces fixed for the personae in the story, while I, having read the saga more than once, knew that both The Cid and his Ximena were by no means as attractive as Ms. Loren and Mr. Heston.

Here at my base in Las Cruces I am a reluctant participant in an issue involving the renovated interest by the government of Costa Rica in creating the largest man-made lake in Central America: the Boruca Hydroelectric Dam. I am watching the mirage of progress behind the mask of advancement.

Development of large projects like dams is usually motivated towards the betterment of society. One might think that Costa Rica would have cheaper electricity, perhaps electric public transport, irrigation systems and that the southern region might be able to develop more industries to mitigate the local economic depression due to an economy overly dependent on low income agricultural crops. Would that not be a win-win situation, as the saying goes?

The truth is that the Boruca Dam will be used mostly to export electricity to Panama and other areas through the Central American Grid. The Government is seeking much needed dollars to pay its ever growing bureaucratic structure, and it has been said not long ago that the energy supply of the country is in excess of what is needed. So, let's look at the Boruca Dam under three lenses.

The anticipated technical, financial and economic performances of the project are first. The Boruca Dam is a multimillion dollar enterprise. Planned costs need to take into account unpredictable inflation rates, construction delays, natural disasters and other causes that will increase the actual cost of the project. The World Commission on Dams (www.dams.org) abounds with recent examples of the interplay of factors that make these types of projects very onerous. Also, it has superb data on the planned vs. actual energy yield of the dams: cost vs. benefit. If in the mid-70's, when I participated in the original environmental impact studies for this project, it was concluded that the "real life" of the dam would be some 12-14 years due to the siltation assumed then, when most of that area was still rather forested. What would the yield be 30 years later? If the plans go forward, I am afraid the people of Costa Rica will be paying for the loan plus interest for many more years than the productive life of the dam will be.

But what about the role of dams in ecosystems? Regulating the natural flow of rivers has serious effects on the bioscape, both up and down the waters. Given that the Terraba River flows to the

ocean to form the largest delta in Costa Rica and that delta is the largest extant mangrove and flooded forest area in the country, has the Government considered the immense consequences for the fishing fleet on our Pacific coast? Those mangroves are the nursery grounds for our shrimp and our fish, both commodities that we export with profit. What happens to the artisan fisherman who feeds the family and provides the local markets with sea products? What of the recently established Ballena Marine National Park, right at the mouth of the Terraba River? Turbidity, salinity, and other factors will change in unpredictable and unprecedented ways. Would the whale populations still use those waters as a nursery ground? Would those changes also affect the productivity of the river's flood plains where so many crops are established?

Another aspect of note relates to the effect dams have on human populations. Damming the Terraba will result in the relocation of at least 12 villages, some of them of indigenous peoples as the area to be flooded borders three of the Indian Reservations. Ancestral grounds, with their cultural remains, will disappear under water forever. Gone will soon be the lifestyles of those peoples who, under the present legislation, do not have the rights to decide what best to do with their soon-to-be valuable lakeside property! Could there be a link between this Boruca project and the slow process to establish the new Laws for the Autonomous Stewardship of Indigenous Peoples, by the Legislative Assembly?

Costa Rica benefits from the global carbon sequestration incentives that hope to reduce the Greenhouse Gases emissions possibly connected to global

warming. We are signatories of the Kyoto Convention. Has anyone quantified the amount of carbon dioxide to be released to the atmosphere from the immense biomass that will rot under water in this magnificent idiocy? How could that change the status of the country?

As I have been preparing my participation in the First Ecoforum of the Southern Zone, precisely on the negative aspects of this hydroelectric project, another thought or series of them have been crossing my mind: that of the scientist as activist. The Ecological Society of America's <www forum, Ecolog>, has brought this subject into discussion several times, and left me with the disquieting feeling that ecologists tend not to get involved in things they may deem as too politically charged. But I am convinced that we not only have the right but the duty to express fact-based opinions when our intervention may prevent irreversible damage to the environment.

The Organization for Tropical Studies, through Las Cruces' environmental education programs, will have to play a role in this conundrum. Personally, I will sit on the middle of the road when the bulldozers rev up their engines.♣

IN MEMORIAM

Since our last issue of AMIGOS, we have lost three people to whom biological sciences in general and OTS in particular are indebted.

**Herbert George Baker
(1920-2001)**

Herb Baker was born in Brighton, England, and received his bachelor of Science degree from the University of London in 1941 and his doctorate in 1945. He arrived in the United States in 1957, roughly ten years before the establishment of OTS where he would play an important role as faculty of many of our courses.

He was a professor of Botany and Integrative Biology at UC Berkeley for 33 years where he and his wife Irene, who preceded him in death in 1989, were adored by generations of students. Those who knew them remember the Sunday salons, during which and for many years, the Bakers opened their home to students, faculty and friends for informal discussions of scientific themes.

Herb was a Fellow of The American Association for the Advancement of Science, a member of the Association for Tropical Biology, The American Institute for Biological Science, The International Assoc. of Botanic Gardens, was former President of the Society for the Study of Evolution and of the Botanical Society of America. He was Director of the UC Berkeley Botanical Gardens (1957-1969), a recipient of the Distinguished Teaching Award, and upon his retirement in 1990, a University Citation. Dr. Baker was always very interested in Las Cruces and was instrumental in promoting its acquisition by OTS together with Mildred Mathias, as well as when Berkeley and Wilson Gardens started their sister institutions activities. Herb was 81 when he died in Piedmont Gardens, Oakland after a long illness.♣

Lincoln (Grandpa) Constance (1909-2001)

Lincoln Constance began his long and remarkable career as a graduate student of Willis L. Jepson in the 30's. He was immensely influential in shaping the modern history of the University of California, Berkeley, and of systematic botany on a worldwide level. He was the Patriarch of Things Botanical and foremost expert on the systematics of the Apiaceae. He was Curator of Seed Plants since the 40's, Chair of the Department of Botany in the 50's, Dean of the College of Letters and Science from the mid 50's to the mid 60's, Vice-Chancellor of Academic Affairs, Director of the University Herbarium and Trustee of the Jepson Herbarium from 1960 until his death.



Lincoln Constance and Luis D. Gómez at the Faculty Club, UC Berkeley, June 1996.

Despite his many positions of authority in the University system, he was always and foremost a teacher. Costa Rican botany owes him much. He was the mentor of our Rafael Lucas Rodríguez, also an expert on the carrot family, and under whose guidance Rafe obtained his

doctorate with a dissertation on the Anatomy of *Myrrhidendron*. Because of my connection with Rafael Lucas, Lincoln always called me “Grandson” and our correspondence over the years never ceased to reflect the immensely kind nature of this elegant gentleman and superb botanist, mentor and friend.♣

Richard Evans Schultes (1915-2001)

An influential Harvard University educator and preeminent authority on hallucinogenic and medicinal plants, he is often called the Father of Ethnobotany. Dick Schultes was the teacher of other friends like Timothy Plowman, Wade Davis, Mark Plotkin and Lynn Bohs. His achievements in the Amazon basin are related in Davis’ masterly book “One River”, and his many publications and explorations led the Colombian Government to name a 2.2 million acre tract of protected forest as the Sector Schultes.

I met him decades ago, in Turrialba, during the times when the Cinchona and Rubber Plantations were being established. I was then a tad more than a toddler, but the pictures in the family album include one of a group of men, one of them my father, in the house of Curtis and Marion Goode, a brother and sister who owned the Dominica farm, just northeast of town. I am the little guy in the left corner, holding Dad’s hand while looking at one of the many dogs the Goodes kept. I saw him much, much later, in the Botanical Museum at Harvard, and showed him this picture, on which he commented as if taken just the day before!

One of the fabled plant collectors in the grand style of the 19th century, Dr. Schultes explored the Amazon like no one else in recent times and more than 100 plants bear his name and honor his endeavors. His research on psychotropic plants also influenced cultural icons such as Aldous Huxley, William Burroughs and Carlos Castañeda, people who considered hallucinogens as the gateways to self-discovery, but he despised Timothy Leary, then also teaching at Harvard, for not knowing “how to spell correctly the Latin names of plants”.



At Rio Guacayá with Yukuna and Tanimuka dancers. The one on the right had a Harvard degree!

An excellent and devoted photographer, Schultes leaves behind a carefully annotated collection of images of great archival value that records the ways of now vanished peoples of the forest and make good his words to his students as told by Mark Plotkin in Shaman’s Apprentice: “That ours would be the last generation fortunate enough to be able to

live and work among these tribes, to experience their traditional way of life firsthand, and to record their vast ethnobotanical knowledge before the plant species — or the people who used them — succumbed to the march of progress.”

The students of the OTS Ethnobiology 2001 course that I have had the recent honor to lead, dedicated the results of their labor to this exceptional man.♣

THE STANLEY SMITH HORTICULTURAL TRUST / OTS' WORKSHOP



Roberto Escobar from La Laguna, El Salvador, Jorge Warner from Lankester Gardens, Costa Rica, and Julia Kornegay from Fairchild.

From the 29th of August to September 1st, the Robert & Catherine Wilson Botanic Gardens hosted a workshop for botanic garden directors under the aegis of The Stanley Smith Horticultural Trust and The Organization for Tropical Studies.

The workshop, to which were invited the directors of gardens in El Salvador, Nicaragua, Costa Rica and Panama, plus Fairchild Tropical Garden (FL) and Chantecleer (PA), was planned to provide an opportunity for those people to exchange information on the activities

of their institutions, their needs, goals and their views and projections on the effects - globalization may have on the gardens' performances.

The meetings were very productive and it was agreed that a second round of discussions will take place in a special session of the forthcoming Workshop of the Latin American Network of Botanic Gardens to be held in San José in April 2002.♣

TROPICAL MEDICINE 12th COURSE

As usual, the first Monday in the month of July every year, the faculty and students of the Tropical Medicine class arrived in Las Cruces for the first nine days of lessons.

We were honored by the presence of Dr. Guido Ulate, the new Dean of the School of Medicine at the Universidad de Costa Rica, who gave the opening speech on the importance of tropical medicine in this century's globalized traveling and presented a succinct history of Costa Rica's relevant role in the development of tropical public health studies and programs.



Drs., Pedro Morera (UCR) and Joseph Miller (LSU), John Craig (CUNY) at Las Cruces

The last two days of their stay, the students reviewed some traditional health practices such as shamanism, the use of medicinal plants and “sobada”, a local variety of acupressure. A Guaymi healer, Alejandro Palacios, and his wife, a tribe’s midwife, María Bejarano were part of the faculty.

We take this opportunity to thank Dr. Jack Craig, renowned world expert on Cholera, for his participation during the last few years. Jack will no longer be with us because he has decided to stay home and cultivate his garden in which occupation we wish him much enjoyment!♣

THE ETHNOBIOLOGY 2001 COURSE

The age of the students ranged from 19 to 29, a mottled group of diverse interests and plans for their future careers, together with me and four wonderful Teaching Assistants (one of them, Rebecca Lutz, a former student in 2000), embarked in a month-long exploration of the relationships between cultures and nature.

After seven days of introductory lectures, we were ready to go out and interview people. *Nún janámáne káne ngäbe jutáite*, first we went to the Guaymi people as they say in their highland language, visiting the communities at Abrojos and Coto Brus. Then, *Yacrá din bruncajc rójc cába*, which in Brunka means “we went to where the many Borucas are” and chose the Boruca and Rey Curré villages. On the Caribbean coast *Se’ dë’ bribriwak*

apàköl, we visited the Bribri at the Reservation of KéköLdi and lastly, at Coter Lake overlooking the Arenal Volcano, *Tijíni, maléku maráma carráco*, in spoken Maleku meaning we went to where Our People are, our people being their people, of course.



Ethnobiology 2001 student Sadiqa Edmonds (Spelman) with Mr. Alfred King, in Limón

The students had a great time at John Tresemer’s La Cusinga, where John lectured on Sustainable Development and Conservation while in the morning we had an excellent sighting of Right Whales! Two Afro-American students, Sadiqa Edmonds and Elizabeth Moyer designed and carried out a study of the Afro-Caribbean culture in Costa Rica and opened up a Sesame! for the rest of us, when they arranged for the group to be lectured to by none other than Mr. Alfred King, a cultural icon in Limón on the subject of Marcus Garvey and the African Heritage.

After 6,695 person/hours of work a stupendous course book, 574 pages, was produced. As usual, the farewell was

teary and full of feelings for each other and we are now in consuetudinary e-mailing and keeping in touch just like family. One student, Heidi Zellie, has decided to stay in Las Cruces and volunteer in the Melissa's Meadow restoration project. ♣



Sloth on road to Manuel Antonio.

BOTANY IN THE CENTRAL MARKET: El Pejibaye

What is a tree that is not a tree and produces peaches that are not peaches? Hey, you guessed it, it is the peji-baye, called in English the “peach palm” and the “palm peach” for reasons that defeat any logical process unless, with eyes wide shut and a few drinks of the local Cacique, the fruit's form vaguely resembles that of a peach. But so do guayabas, your guavas, which are not peaches either. The misnomer “peach palm” seems to have originated in Trinidad.

Pejibayes are both the palms and the fruits of the palms known as *Bactris gasipaes* that Kunth described from materials gathered in Venezuela by Alexander von Humboldt and Aimee Bonpland during the early stages of their peregrination to the equatorial region of South America. Alfred R. Wallace, of

theory of evolution fame, wrote in 1853 **Palm trees of the Amazon and their uses** and records the importance of peji-baye to the indigenous inhabitants of the river basin. More recently, Kahn & deGranville (1992) have written about **Palms in forest ecosystems in Amazonia** and they also mention the relevant role of peji-baye in that ecosystem as well as in the lives of Amazonian peoples. Pejibayes has played an important role not only as food but also as a cosmological figure for many tribes, past and present. See the work of Reichel-Dolmatoff (1989) **Biological and social aspects of the Yuriparí, Vaupés, Colombia,** and Rival's (1993) **The growth of family trees: understanding Huaorani perceptions of the forest.** All this to establish the Amazonian origin of peji-baye, possibly a selected form of another species, *Bactris macana*, the pupunha brava of Brazil, as peji-baye has not yet been found in true wild state.

It has been introduced to all wet regions of South and Central America by indigenous groups possibly long before the contact with Europeans. Until a few years ago, it was thought that Costa Rica was the northernmost range of the species until I located a couple populations “in the wild” in mid-Nicaraguan Caribbean coastal areas, later devastated by Mitch and previous hurricanes (Mora-Urpí, personal comm.) In any case, the peji-baye was here when the Spanish came and was a basic staple of the Indian populations. The name peji-baye (also spelled peji-balle) seems to originate from the South American voice pixbay (pish-BAHee) and is used only in Central America and southern Mexico. In Brazil it is called *punpunha*, *punpunha-marajá* and *pirajá-punpunha*. In

Colombia it is known as *cachipay* and *chonta*, in Venezuela as *cachipaes* or *piji guao*, in Perú as *chontaduro* and *pijuayo* as is also in Ecuador. In Surinam it is *paripoe*, in Guyana *paripie* and in French Guyana *parépou*, while in Panamá it is called *pisbae*.

Whatever it is the name you choose, pejibaye is a wonderful pig of a plant: you can use all of it. The trunk serves as timber for houses, hollowed of its pith it becomes a pipe for aqueducts or gutters, the lower part of it, which hardens to a lustrous, black “wood” of sorts, is the best for making bows, arrows, tool handles, crafts and parquet flooring for export. The leaves yield thatch and fibers for ropes and baskets. The growing tip or meristem, cleaned of the hard sheaths of older leaves turns into that delectable delicacy: heart of palm and in Costa Rica alone more than 2,0000 hectares are devoted to that crop both for the local markets as well as for export. The heart of palm or palmito or palm cabbage is also eaten in the Amazon but the usual style is to make it into fine strips that resemble fettucine. It is then served as it comes or with salad dressings.

The palmito that we eat here and everywhere else is either boiled or baked. Its potential is endless as a salad green (which is not green but white, the peach palm riddle again!), in soups à la crème, mixed with rice and dollops of sour cream, in pies with strips of ham, as a garnish for meats with béchamel sauce, etc. However, aside from being an excellent source of roughage it provides little protein and a few minerals. The richest byproduct of this marvelous palm is the fruit that feeds wildlife from tapirs to parrots and, of course, people. It is a

veritable cornucopia of minerals, protein, fiber and fats. It must be eaten cooked, though, because when raw it also contains enzymes that tamper with thyroid function. Even when fed to cattle the amount of it can not exceed 30% of the total fodder. Pigs will be piggies when fed pejibayes and so am I when their season comes.

In Costa Rica, as in many places where traditions have been lost, the pejibaye is used mainly as a snack to accompany cocktails, or “bocas”. It is then boiled and peeled and served in halves with a dollop of mayonnaise that does it a disservice. Try horseradish instead, simply delicious and it cleans the sinuses at the same time.



Bactris gasipaes in tin, jar and in the flesh.

We, the pejibaye cognoscenti, make Crème de Pejibaye that is “to kill for”, and chef Roger provides a recipe in his section. One can also mash and strain the puree to mix with corn meal to make the best ever corn breads with a distinctive aboriginal aftertaste nobody can pin down, or use the mix to make outrageously good tamales nobody else serves.

If you live in the ameritropics, you can buy the fresh fruit and prepare them by boiling in salted water with or without a bone marrow (the traditional way). If you live in London, Paris or New York where most of our readership resides (Ha!) then you can buy pejibayes in jars at specialty ethnic stores, drain them and use them. If you are in Miami maybe you could visit Fairchild Gardens and sneak a few out? The flavor is somewhat nutty, and it may take sometime to acquire a taste for it, but once in the bag of gustatory papillae, it is there to stay. Take your time, live on the edge and try it! After all, it has been cultivated at least for four thousand years, as the very hard small nut inside the fleshy fruit has been found in many archaeological sites. Dig your pejibaye! ♣

SEED AND WEED



Mrs Antoinette LaBlanc and Ms Judith Verberne, Seed & Weed, during a coffee break at Las Cruces.

Ms. Helen Bristow of our Duke University office suggested this idea: You come, you work, and we give you a super discount at Las Cruces!

We have had three takers so far. One never showed up, a Brit who is probably in Timbuktu by now. But two Dutch

visitors have been here not so much seeding, but certainly weeding and having a grand time at that. We urge our readers to take advantage of this innovative plan. ♣

MELISSA'S REPORT

As briefly noted to some of you in one of my monthly communiqués, the second planting of seedling in Melissa's Not-So-Much-A-Meadow-Now site. The seven hectares remaining from last year's effort have been planted, again with trees donated by Carlos Sandí at EARTH University, Guápiles, Costa Rica, to whom we give many thanks.

Also, we developed a number of our own seedlings of local species and have planted quite a number of "guava machete" or *Inga paterno* and *Inga spectabilis* to see if we can increase migrant fauna as well as ameliorate the soil conditions. The natural regeneration is now rampant, too.



Marina Nai measuring Cedrela seedling.

One former student from Agroecology – 01, Mariana Nai, from Argentina, has chosen the Melissa project as a postcourse research and has now gathered and entered most of the data on growth into the Melissa data base. Assistant to Mariana, Heidi Zellie, also known as The Wood Nymph by the Ethnobiology crowd. Heidi will be here several weeks to help with this and other chores in the Station. Copies of Mariana’s analysis of performance of native species in the project are available on request.♣

THE CONSERVATION OF FRUIT-EATING BIRDS IN AGRICULTURAL LANDSCAPES

By Gary Luck
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Almost one third of the land area of our planet is used for agriculture. This area is likely to increase with the growth of the human population. Conservation of much of the world’s biodiversity relies on the capacity of agricultural systems to support native species. However, our knowledge of the conservation value of most agricultural systems is very limited. This is particularly the case of Costa Rica, where large tracts of native forests have been cleared for pasture, coffee and other crops. Previous work by researchers from the Center for Conservation Biology has shown that many bird species still occur in agricultural landscapes surrounding Las Cruces. However, we know little about the resources these birds are using and

which landscape elements may be critical for their survival.

My study examined the capacity of the agroscape around Las Cruces to support frugivorous birds, the role remnant fruiting trees played on supporting bird populations, and if conservation value changed with landscape type. Avian frugivores are an important and substantial component of many tropical ecosystems, and many rainforest plants produce edible fruits to attract birds, which in turn disperse their seeds. Birds that use agricultural lands may disperse the seeds of forest plants into cleared areas, thereby facilitating the natural regeneration of forest habitat. Remnant trees in agricultural landscapes may attract fruit-eating dispersers and provide a focal point for rainforest recovery.

I studied the species richness, visitation rate and foraging behavior of avian frugivores at remnant *Miconia sp.* trees producing berry-like fruits in sites with high and low agricultural intensity, near and far from Las Cruces. High intensity sites occurred in areas dominated by pasture and or coffee plantations, and low intensity sites were mostly in areas where some native forests remained. Near sites were less than 2 km and far sites were 5-8 km from Las Cruces.

A total of 73 bird species were recorded taking fruit from *Miconia*. This is strikingly high number and indicates the importance of this plant genus to the avian frugivores living in agricultural landscapes around Las Cruces. Average species richness was highest in low intensity sites (22 species) near to Las Cruces and lowest in high intensity far sites (14 species). This suggests that the large rainforest remnant at Las Cruces

plays a critical role in supporting a high diversity of fruit-eating birds that may forage in the agricultural lands. This relationship is probably critical for the movement of seeds out into degraded areas.

Visitation rate per tree was relatively high, ranging from 27-233 visits for a 5 hr observation period. Average visits per hour did not differ between trees in the different landscape types, so trees in far or high intensity sites were visited just as frequently as those in near or low intensity sites. Also, average time spent in the tree and amount of fruit consumed by each species was highest in far sites. Therefore, the number of seeds being moved away from parent plants (where germination and seedling survival may be improved) was not adversely affected by change in type of landscape. This suggests that *Miconia* seeds are being effectively dispersed around agricultural areas.

The three most common visitors to *Miconia* were the Silver-throated Tanager, Clay-colored Robin and Scarlet-rumped Tanager, respectively. Half of the ten most common species were tanagers. Visits by the Clay-colored Robin and Blue-gray Tanager were highest in far high intensity sites, whereas the visitation rate of the Golden-hooded Tanager and Scarlet-thighed Dacnis was lowest in far sites.

The results of my study indicate that the agricultural landscapes around Las Cruces still have a substantial capacity to support avian frugivores. This capacity appears to be diminished in sites far from Las Cruces, and the conservation of relatively large tracts of rainforest should be a priority. Remnant *Miconia*

trees may attract many bird species and serve as a focal point for rainforest regeneration. The trees I studied often occurred as part of live fences used to partition agricultural plots. These live fences are an important element in those landscapes. They provide food and may facilitate the movement of birds around the area. Live fences that connect to rainforest remnants may be particularly important in encouraging forest-dependent birds into the agroscape. These species may disperse seeds of numerous forest plants and facilitate the natural recovery of Costa Rica's ever diminishing native forest.♣

THE LITTLE GHOSTS OF LAS CRUCES

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After a month of exhausting fieldwork in northern Costa Rica, I was now going south, searching for the small, black and white birds that I had come to call "little ghosts". I was in search of evidence of their courtship behavior since the beginning of the summer. The rains had just started, which meant that it was already a little late in the breeding season. However, I had been lucky so far and had found some individuals to observe. During my 6-hour bus trip from San Jose to San Vito, I dreamt of finding the birds to observe, which had been a hard task in the previous location. I was traveling alone and carrying a lot of equipment which gave me many worries but, so far, people had been helpful and I was feeling more at ease, the sense of

confidence increased with the breeze from the Pacific coast, flowing up to the hills when I arrived.

It was a cool spring night when I arrived at Las Cruces. I was very tired from the trip, and all I could think of was a nice bed. I would be completely happy to rest in any accommodation, I was used to privations as a field biologist. I quickly realized that things would turn out for better this time. After some weeks of not caring so much about the food I cooked for myself and not getting much sleep, I would greatly appreciate the “family style” dinner that was waiting for me. The nice warm shower and comfortable bed were also considered part of the new blessing I was receiving. I guessed that my dream would come true: I would find my little ghosts.

The display behavior of the “Saltarin gorgiblanco”, or White-ruffed Manakin, is not difficult to watch in Costa Rica. But I was there late in the reproductive season, because of the classes I was taking in school. I believed then that I could be hunting “invisible” ghosts. I was undoubtedly concerned, not of the ghosts, they would be very peaceful, but of not finding what I was looking for.

I was searching for males displaying in territories to attract females for copulation. I was not simply looking for the birds, but for an activity governed by natural laws, dependent on the timing of the breeding season. I was there to compare the environmental light where and when these birds would be displaying, because females might be choosing males based on characteristics of the display behavior that make it easier for them to encounter their mates, such as the brightness and contrast of

colors of dancing birds in the forest. Certainly, females find them by hearing the explosive, but not conspicuous, mechanical sounds - “pops” or “snaps”, or “flaps”, i.e. not vocal sounds - that the males produce during their dance and their jumps on a fallen log. And, certainly, I would also be able to track them if they were still displaying.

I hadn't decided to visit Las Cruces without first talking to some ornithologists. Jim Zook was so calm when he mentioned that the manakins would definitely still be displaying late in the season there. He probably did not realize how important was the information he was giving me. It meant that I would probably see the “little ghosts” dancing!

But I didn't have an idea of how many there would be. Already in the first morning, calling them ghosts was inappropriate, if not by their dance because of their numbers! The little creatures did dance, flying about their territories, looking like little ghosts! Their small black bodies, in vertical posture, covered by the expanded white feathers from their collar resemble white-sheet-covered creatures, flying peacefully in a large salon. They announce their presence with their mechanical sounds, jumping from the air on a fallen log, after flying in this undulating, ghost-like pattern all over the territory.

I would find, after three weeks at Las Cruces, 20 territories, of which I could conduct systematic observations on 12. The territories were clumped together in groups (leks) of 3 to 5 individuals, and the leks were generally 200 m apart from one another. The territories are not used

exclusively by one male, but probably by all the males in a lek, including adult and immature males. The adult males are black and white in plumage, whereas immature males are green, like the females. Their behavior, however, can be quite different, and some immature males would also perform all elements of the courtship repertoire. I observed several pre-copulatory displays and one copulation; I felt myself to be very lucky to witness the propagating beauty of nature.

Bird watchers can easily notice that these little ghosts are fairly abundant along the Rio Java trail, one of the most popular trails in the reserve. Manakins adapt easily to fragmented landscapes, as is the region of San Vito. Forest edges and secondary growth provide food resources much appreciated by these birds, which feed on small berries and less frequently on insects. Although the territories were evenly distributed along the secondary and primary parts of the forest around the Rio Java, the regional condition of the forest may have contributed for the considerable high density of manakins at Las Cruces. I found them displaying in the forest interior or close to the trail, on fallen logs with varying degrees of moss coverage and from 3 to several meters long. In one instance I found them even on a mossy, flat, small rock in the middle of the trail! Are the little ghosts so abundant at Las Cruces that they are a little confused about how, or where, they should “behave”? It seems that they have some behavioral flexibility.

The Pacific form of the White-ruffed Manakin is slightly different from the Caribbean form in plumage and apparently in behavior, as I was able to

perceive during my stay in Las Cruces. Video recording the little ghosts, sometimes hovering in the air for the females as hummingbirds (which I did not detect in the individuals from the Caribbean slope) was crucial to determine the slight differences between these geographical forms.

Now, I sit in my office back in Kansas and I miss the hills of Las Cruces. I miss the friendship of the soulful “amigos” I met there, the working days replete of new stories to tell about nature. Running away from snakes and, sometimes, from storms. Carrying heavy equipment to study the secrets of these nearly invisible creatures. When I am editing the videos, I transport myself back to the green environment, sometimes warmed by shining sun rays during my observations, sometimes trying to find my way through the foggy and rainy mornings, mornings that it would be surely worth to pay attention to lovely birds. It would be beautiful no matter the weather, no matter how muddy. Today, when I looked out of the video screen, however, I was forced to remember that there are other explosive, flying creatures, displaying for reasons governed by forces that I am not willing to investigate. Now, I can always recall in my mind the little and peaceful ghosts dancing in tropical Las Cruces.♣

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I have often wondered how the friendship between Roberto Burle-Marx and the Wilsons started. Ana Rosa, who visited the Gardens looking for the Burle-Marx style, solves that for us in this interview with:

LUIZ EMIGDIO DE MELHO
A lost connection

By Ana Rosa de Oliveira
Anarosa@cpovo.net

AR-How did you start your connection with Robert Wilson?

LE- In the 50's, because of my interest in Heliconias. I wrote to many growers and Bob was one of them. We exchanged materials and the rhizomes he sent me were planted in Roberto Burle-Marx's farm. That triggered a visit to Brazil by Bob and Catherine and we went on a grand tour to Bahia.

AR- What made you interested in Heliconias?

LE- Perhaps only for their beauty?

AR- Besides your botanical interest, were you into cultivation of Heliconias?

LE- When I was still a student I understood the commercial potential of Heliconias as cut flowers for export. I later abandoned that idea but remained curious to see as many kinds as possible. Then I visited Costa Rica and went to see a Heliconia farm where they boxed the flowers to send to the US in a profitable way, perhaps resulting in many thousands of dollars for the country.

AR- You mean that you actually made the Wilsons meet Roberto Burle-Marx?

LE- Yes, and curiously enough my own link to Roberto started with one species of Heliconia, *H. stricta*. I worked at the Boa Vista Botanic Garden when Roberto came to see it, and he told me he did not know that particular plant. I gave him a cutting and thus started our friendship. I started to visit his place and we talked a lot. We also ate a lot. Roberto was a great cook!

AR- Who went on that tour to Bahia?

LE- Roberto, the Wilsons and I.

AR- Do you remember the itinerary?

LE- We went from Itabuna to Caravelas in Bahia, along the coast but with some sidetrips into the forests. Roberto had arranged with owners of some coffee plantations, and we lodged at their farmhouses.

AR- Was there any particular botanical target?

LE- No, we were interested in everything! All that was beautiful and easy adaptable to gardening. We collected mostly aroids like anthuriums, philodendrons and palms. We collected *Syagrus schizophylla*, the “dune palm” for the first time, during that trip. Bob Wilson was a superb plantsman. He looked at a plant, and he already knew how to make it grow. His only problem was his lack of business senses, otherwise he would have become immensely rich with his Fantastic Gardens in Miami.

AR- So you did go to Costa Rica?

LE- Yes, I made two trips. Once for a course on monocots and “*biologia da floresta tropical*” with OTS and the second time on my way home from Mexico. Catherine Wilson was already dead and when Bob saw me he started remembering our trip in great detail. I can not remember the dates, but I was in Costa Rica for two months and visited Turrialba, the Reventazon River, and Guanacaste where I got lost...

AR- Tell me about that!

LE- A group of scientists decided to visit Volcán Tenorio. Our guide was afraid of the forest so we were left to our own devices to collect our plants. Later in the evening one of us was missing and I went to the forest to look for him. It was already too dark, and I could not find my way back to camp. I was thinking of those huge trees that could fall and crush me, the bullet ants, the tree vipers. I came to a stream and made myself comfortable on a large rock. It was

raining very hard. I tried to make a lamp with a firefly larva. There were howler monkeys who answered my calls. The next morning I approached the Rio Corobicí, where I lost my safari hat, and climbed a high rock from which I saw a road. I was eating *Reinhardtia* palm shoots, ferns and lantana fruits. I thought of catching some fish in the river but who can catch fish with bare hands? I finally reached some crop fields and soon after I heard horses. It was the Americans looking for me.

AR- Were you afraid, Luiz?

LE- Fear?, maybe a bit. But I always come out unscathed and that certainty helps.

AR- Anything else about Costa Rica?

LE- It is a good country. Here in Brazil we are pawning our future because we put money above all other things, like social things. Also, here those who know nothing are the ones who decide everything. It is a country ruled by ignorance. Not so in Costa Rica...♣



Luiz Emigdio de Melho Filho in his garden in Rio de Janeiro, 14/4/2001. Photo: A.R. Oliveira.

CHEF ROGER'S CORNER

Pejivaye Cream



Visitor Wolf-Dieter Pfistner caught a newcomer to Las Cruces fauna on June 30, 2001, an ocelot!

INGREDIENTS for 8 servings

6 medium sized, cooked, peeled and pureed pejivayes
1 tablespoon of finely chopped onion
½ clove of garlic, pressed
4 ounces of butter or margerine
4 cups of milk (or 3 cups milk and one cup of clear chicken broth)
1 sprig of parsley
1 red bell pepper
salt, white pepper to taste
4 ounces sour cream (optional)

PREPARATION

In skillet, melt butter. Add the garlic and stir, then the onion and sauté until clear. In a blender, mix milk (or milk and broth) with mashed pejivayes. Add to skillet through a strainer. Bring to boil and remove from heat.

Garnish with a thinly sliced sliver of red bell pepper, place a dollop of sour cream in the center and sprinkle with finely chopped parsley. Serve hot.

Excerpts from letters received

I am an armature gardener and would like to work at Wilson...

✍

..to be in the tropics would be one of the gaols in my life...

✍

Dear Mr. Wilson,

My name is ... and I plan to retire in Costa Rica...I wish to know if there is any interest for casket and parlor flower arrangement in that country because... (Jan.19,2001)



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