

Amigos

Newsletter

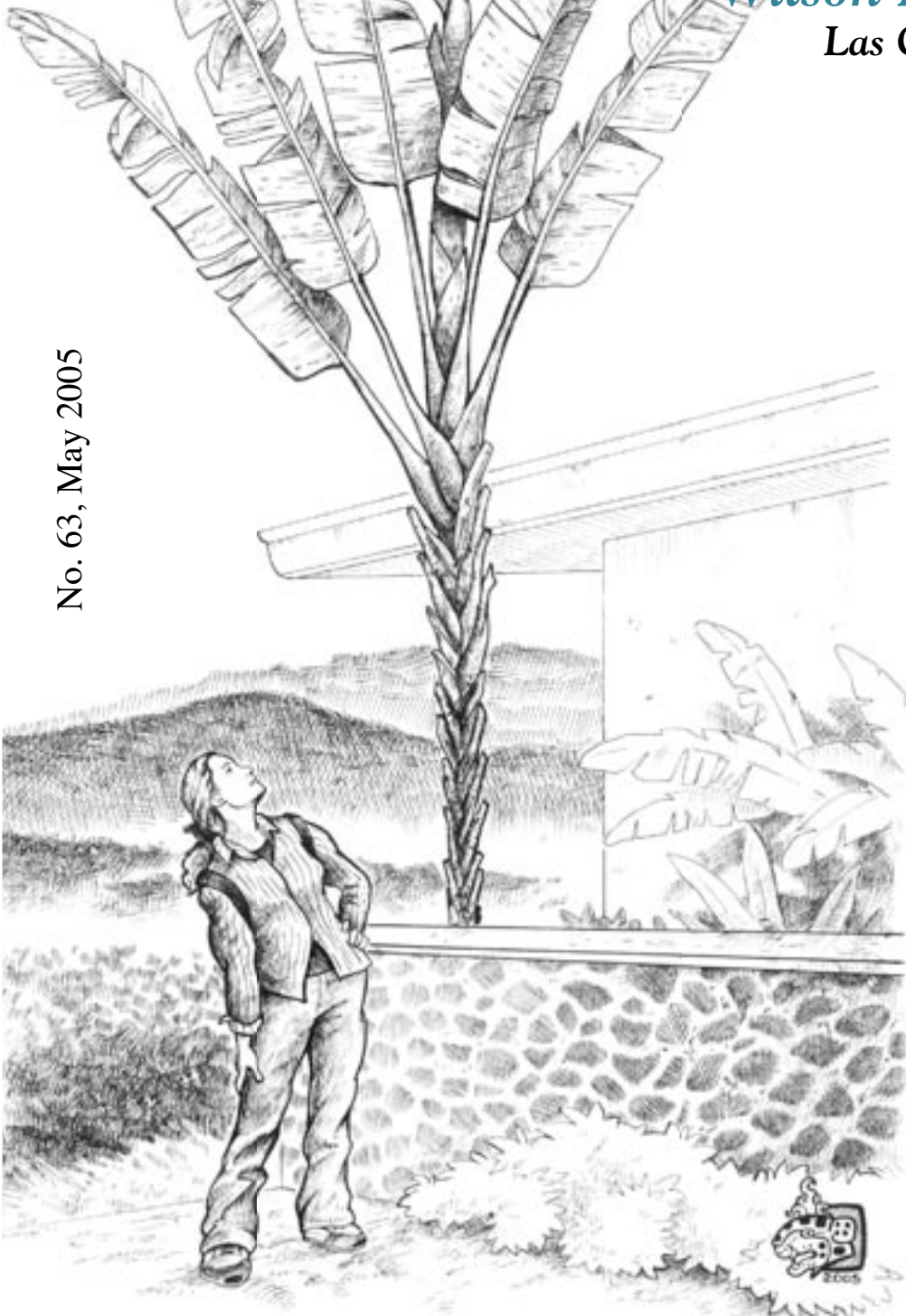
Wilson Botanical Garden

Las Cruces Biological Station

Apdo. 73-8257 San Vito, Coto Brus,

COSTA RICA

No. 63, May 2005



Organization for
Tropical Studies

What We Do

The Wilson Botanical Garden Jardín Botánico Wilson

In the enchanting and remote southern zone of Costa Rica, a Central American botanical garden, lush and serene, lies at the heart of the Organization for Tropical Studies' Las Cruces Biological Station. The Organization for Tropical Studies (OTS) acquired the Wilson Garden in 1973 as part of the Las Cruces Biological Station, one of three tropical field stations operated by OTS in Costa Rica.

Extraordinarily beautiful, the Wilson Garden is famous for its collections of tropical plants from around the world, including palms, aroids, bromeliads, gingers, marantas, heliconias and ferns. More than 5,000 species of plants can be found in the 12 hectare (approximately 30-acre) Garden property, including one of the largest collections of palms in the world.

The Wilson Garden is a "must see" stop on the itineraries of plant lovers, birders and other natural history groups. The Garden and the surrounding areas have an incredible diversity of animals. The most recently updated bird list includes 390 species. Commonly seen mammal species include agoutis, white-faced capuchin monkeys, kinkajous, olingos, tayras and nearly 40 species of bats. Reptiles and amphibians thrive in this moist, cloud-laden habitat; and the moth and butterfly populations continually astonish visitors.

The Garden is equally well known for its visitor-friendly amenities: comfortable private sleeping quarters, delicious meals, knowledgeable and enthusiastic staff, well-maintained pathways, and abundant wildlife.

Far from the noise and bustle of the country's capital city San Jose, Las Cruces lies between Corcovado National Park on Costa Rica's Osa Peninsula and the enormous La Amistad Biosphere Reserve spanning southeastern Costa Rica and western

Panama. In fact, in 1983 the Garden was declared part of that Reserve by UNESCO due to its rich plant collections and proximity to this 472,000 hectare area of parklands and buffer zones, in the formidable and wild Talamanca Mountain Range.

The Station encompasses the Wilson Garden plus a much larger area of 256 hectares (640 acres), combining native old-growth forest, established secondary forest, and a regenerating forest known as "Melissa's Forest Restoration Project." This makes Las Cruces a fitting location for the observation and study of ecosystems and biodiversity.

At approximately 1,100 meters elevation (3,300 feet), the prevailing temperatures at the Garden are cooler than an inexperienced traveler might expect in the tropics. Temperatures range from 21-26 °C (70-80 °F) during the day and 15-21 °C (low 60's °F) at night. The annual rainfall here is approximately 4,000 mm or 157 inches!

Most visitors come to enjoy Las Cruces and the Wilson Botanical Garden during Costa Rica's "summer," the dry season months of December through April. The rainy season begins in May and lasts until the end of November.

Las Cruces is located in the southeast corner of Costa Rica, near the city of San Vito, head of the Coto Brus County. San Vito was settled in the 1950's by Italian immigrants when the main road connecting

San Vito to San Isidro del General to the north and Ciudad Neily to the south, was little more than packed dirt. By comparison, today it is a bustling town with two 24-hour service stations, three supermarkets, two bakeries, a café, a famous pizzeria and the Dante Alighieri Italian-Costa Rican Community Center.

We invite you and your family and friends to join us for an afternoon, an overnight or a week to see and experience firsthand the splendid tropical diversity of The Wilson Botanical Garden.

For more information please visit the OTS website at www.ots.ac.cr or contact us directly by email: lcruces@hortus.ots.ac.cr, regular mail: Jardín Botánico Wilson, Apdo. 73-8257, San Vito de Coto Brus, Costa Rica, or by telephone (from the U.S.): 011 (506) 773 4004.

Reservations can also be made by contacting OTS San José office by email: nat-hist@ots.ac.cr; regular mail: ESINTRO/OTS, Apdo. 676-2050, San Pedro de Montes de Oca, Costa Rica, or by telephone (from the U.S.): 011 506 524 0628.

The North American office of OTS is located at Duke University, telephone: (919) 684 5774 or email: nao@duke.edu

The Organization for Tropical Studies is a nonprofit consortium of universities and research institutions in the U.S., Costa Rica, Peru, Mexico, South Africa, and Australia.

Founded in 1963, OTS is dedicated to providing leadership in education, research and the responsible use of natural resources in the tropics. To this end, OTS offers graduate, undergraduate and professional education, facilitates research, participates in conservation activities, conducts environmental education programs and maintains three field stations in Costa Rica: La Selva Biological Station in the Atlantic lowland rain forest; Palo Verde Biological Station in the Pacific deciduous dry forest; and Las Cruces Biological Station in the premontane cloud forest near the Panamanian border.

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Editorial Committee: Luis Diego Gómez, Christie Jones, Christopher Montero, Mariana Mora, Alison Olivieri, Silvia Pérez, Emilce Ramírez and Rodolfo Quirós.

Design: Laura Murillo.

Front cover: Plant and inflorescence of *Phenakospermum guyanense*, celebrating the first-time blooming at the Wilson Botanical Garden. Drawing by Christopher Montero.

Back cover: Participants of the First International Workshop on Tropical Lichens at Las Cruces, October 2004. Photo by Robert Lucking.

Director's Keys And Notes

Luis Diego Gómez / Las Cruces Director
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On June 30th 2005, I shall leave the Organization for Tropical Studies in my capacities of Scientific Director of La Selva and Director of Las Cruces and the Wilson Garden. It has been a wonderful period of my life that lasted exactly 19 years. In that time I have met hundreds of bright students, dozens of superb researchers, scores of excellent teachers and a gazillion people who were peculiar in some way or another. All of them have enriched my life to some degree and from many different perspectives.

To all of you go my sincere thanks. It has been a privilege and an honor to have shared those years with you, serving an organization devoted to the highest ideals of promoting the education of new generations, facilitating research in all branches of biology, and promoting the reasonable management of the world's resources.

Having had the opportunity to keep the collections at Wilson Garden from falling into the wrong hands (when the Government expropriated them from OTS) or from going into oblivion and decay (by imposing exile on myself and taking residence in Las Cruces) has been the highlight of my time with OTS. Even my beloved AMIGOS Newsletter is being done by very able and committed people and improving with every issue.

I hope - no, I am sure - I leave the Garden in excellent hands. The administration of the Station is also lovingly taken care of by people who do it well, not because they think the place belongs to them, but rather because they belong to the place.

In La Selva, my time was too short to effectively bring about any significant change and much remains to be done to improve an already wonderful place. But



Luis Diego Gómez teaching at Las Cruces

some change was fostered and is now yielding its fruit. The entire staff and most of the residents helped to make my two year stint there a very fruitful one. To them my thanks, too.

I will, however, not burn all my bridges. I will still teach the summer courses that I have grown so attached to; I will still herd Duke Alumni to my dear Amazonian forests; and the completion of the Digital Flora of La Selva, with excellence, will be one of my goals in the next couple of years. What lies beyond? That I do not know yet; it is too far into the future - a future that seems to me is far too long a span of time. I think to myself, "Oh my, what shall I do when I wake up and need not be sitting at my desk by 7, or toil grumpily along with Annual Reports and labyrinthine budgets?" Hey, will I actually have time to stop and smell the proverbial rose along the path? Maybe. One thing is for sure: I will miss you all.

What's New at Las Cruces?

Rodolfo Quirós / Las Cruces Resident Biologist
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Face lift for the Wilson Garden

New year... new ideas. This is our approach to making changes at the Wilson Garden in several areas. But perhaps, maybe, we should say "new people... new ideas." For what really is happening is the arrival of new faces among the Las Cruces staff who are working towards improving the Garden.

The next time you visit the Garden, you will find lovely new plantings around the cabins; mulch in the beds keeping them weed-free and moist; and a few more surprises which are yet to come. From my office I see one of the gardeners changing some of the bamboo railings; another one is carrying heavy rocks to use as bulky ornament. Yesterday there were some pieces of a fallen, epiphyte-laden tree carried to the cabins to be used on display. Already some changes in the trails - their arrangement and maintenance - have taken place. We hope that this process will bring new life to the Garden and at the same time improve the quality of your visit.

Guiding the garden face lift is Christie Jones, a young horticulturist who has worked



Christie Jones and Corina Logan giving the cabins a face lift

with us for almost 2 years while completing her Masters degree in botanic garden management from Longwood Gardens and the University of Delaware. Now Christie is full-time at the Garden, thanks to an internship financed by the Stanley Smith Horticultural Trust.

The changes we see at the Garden would not be possible without the commitment of the people who work in the garden grounds. Along with Christie, there are four gardeners who are enthusiastically learning more every

day through a formal horticulture course and by practical lessons she teaches them right in the field. (Of course, the learning is mutual. Christie may be the "professor" of horticulture, but the gardeners are obliged to be her "professors" of Spanish and Machete Wielding 101 – the "101" standing for the number of practical jobs you can accomplish with a machete.) It is our lively group of high-spirited, hard-working gardeners who deserve the credit for the beauty of our Garden. They are here every day, always with a sunny smile...just like the Garden.

Volunteer time

If you would like to get involved in the garden renovation, you are welcome to join us as a Weed and Seed volunteer. With little personnel and lots of work to do, we always need extra help.

In recent months we have had several people of all ages come to help us. They join us in the regular tasks of pulling weeds; pruning bushes, trees and palms; planting new specimens; collecting leaf litter to make mulch to put around the plants; cleaning signs and labels; helping in the design of new trails, and more. These are the activities that Phoebe Poole and her aunt Mary, Fanny Culleton, Jean



Local neighbors enjoying French night (Picture by Julie Girard).



Jean and Fred Schroeder and Phoebe Poole, recent volunteers at the Wilson Garden

and Fred Schroeder, and Corina Logan have helped us with in the Garden. We are very thankful to all of them for the energy and time they have spent in helping to give a new face to the Wilson Garden.

This is also our chance to recognize our regular, local volunteers who are always ready to lend a helping hand, no matter the task at hand: Michael and Alison Olivieri, Julie Girard and David Woolley, and Terrie Moss (who we affectionately call our “best friends” of the Garden). Thank you all. Your work is always appreciated.

If you are interested in volunteering and learning more about the Weed and Seed program, write to us at (lcruces@hortus.ots.ac.cr)

French night: Bon appétit!

Our first International Cuisine Night was a starlit evening on the terrace outside the dining hall. Our guests dined by the light of candles and the full moon, enjoying lively

conversation and listening to soft music drifting on the night breeze.

On that evening, Thursday, February 24, we had “Cuisine Française au Jardin Botanique Wilson” (French Cuisine at the Wilson Garden). Roberto Ramírez, brother of our station’s administrator Emilce, donated his talent and skills as chef of exquisite French-style cuisine. This was a delight for over 30 people attending dinner from the surrounding areas of Las Cruces and San Vito. Hosting the activity were the staff and volunteers of Las Cruces, dressed in French attire.

This was the first of a series of activities intended to raise both friends and funds for the maintenance and development of the Wilson Botanical Garden.

To coincide with the “home improvements” to the Garden, we are thinking of new ways of acquiring the much needed resources, either money or equipment, that will help us in fulfilling our mission. French Night was an

BOOK DONATIONS

Our deepest Gracias to all our friends who help us improve our technical library, and who care about the learning processes that we conduct at the Station.

- Rudi Schmidt
- George Alcock Jr.
- Betsy Dexter Dyer
- Luis Diego Gómez
- Luis Mata-García
- Julie Gibson
- Rodolfo Quirós
- Don Stone

exploration of one such idea; but even more, it was a way for us to reconnect with friends in the community. To our own amusement, success was the word for the night. The diners congratulated the staff – chef, kitchen personnel, waiters, and hostess - not only for the delicious meal, but also for the idea itself. Many of the guests asked, “When is the next one?” (We plan to have it very soon - Italian Night in June.)

Another fundraising idea soon to be released is a “wish list” of items much needed at the Garden. Gardening tools are the major interest, as well as, equipment for the kitchen, supplies for educational activities, and more. If you are interested in learning more about our wish list, contact us at (amigos@hortus.ots.ac.cr) for details and ways to contribute.

Obituaries

*Luis Diego Gómez / Las Cruces Director
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Fortunately it has been some time since I have written about friends in the obituary genre. I do not know if people think it is “unfashionable” to die these days or if most of my acquaintances of past decades have already been atomized. This is not the case for this issue of AMIGOS, and I have to say something about two very important people.

DAME MIRIAM ROTHSCHILD, simply Miriam as she preferred to be called, died at age 96 on January 20th. She was a remarkable personality in all respects and perhaps the very last example of a 19th century researcher. Like her father and uncle, gentlemen of means (of which the Rothschild family has a supernumerary supply), she went into scientific inquiry for the pleasure of it and



much farther than the simple birdwatcher or fern grower:

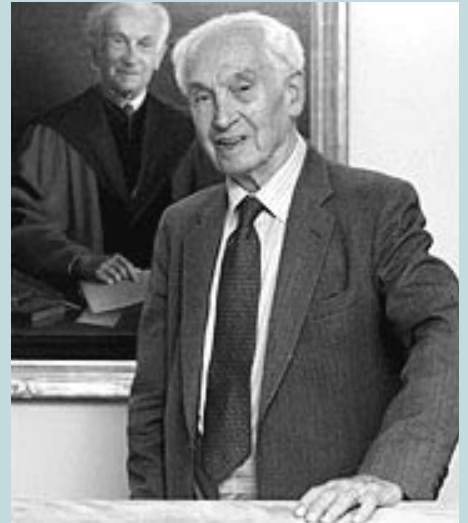
The Rothschilds were responsible for establishing the largest private collection of natural history specimens at Tring in Hertfordshire; and it was her father who lit the divine fire that set Miriam's naturalist inclinations ablaze when she was allowed to partake on his explorations of the world of fleas. But although she devoted 30 years to cataloguing senior Rothschild's collections of those insects, she was an omnivorous natural philosopher and her inquiries covered many fields of biology. Her gardens in Northamptonshire were what brought us into our friendship; and several times during my tenure as Las Cruces Director I have hosted her younger relatives (particularly a niece of hers), all of them passionate, amateurish, and generalists like Auntie, who sponsored their wonderings in the tropical realm of the New World.

A Fellow of the Royal Academy and of St. Hugh's College, Oxford, she was presented in 1998 with an honorary degree from that most excellent university. The parchment gaily modified to accommodate the character of the recipient reads: "She comes to our See, not by degrees but by one leap as of her fleas, in a chariot triumphant, drawn not by Venus' doves nor Juno's peacocks, Alexander's gryphons nor Pompey's elephants, but by her somewhat sixty species of avian parasites" (in my impeccable free translation of the Latin

on the scroll). Farewell, Miriam, may you discover a new group of fleas - those in the feathers of angels.

ERNST MAYR, age 100, rested on another Thursday, the 3rd day of February. Meeting Ernst during one of my visits to the Museum of Comparative Zoology at Harvard was, for me, like shaking Charles Darwin's hand. Dr. Mayr was the pinnacle of evolutionary biology and perhaps the greatest biologist of the 20th century. Like Darwin, he started studying Medicine but eventually switched to biology; and of that all-encompassing science, he settled into Ornithology through his acquaintance with Erwin Stremann of the Zoological Museum in Berlin. Ernst completed his doctoral studies in the record time of 15 months! By 1928 he was in the deepest parts of New Guinea and the Solomon Islands collecting and studying birds. From his South Pacific explorations came a comment that struck me as superbly interesting. He said that of 136 species of birds he trapped, the natives had 137 names. That must be, in my opinion, the first step in ethnobiology, a mix of linguistics and taxonomy that would not be formally addressed until 1966.

Mayr's name eventually became synonymous with the so-called "modern synthesis," or the modern approach and understanding of evolution. Another of those architects was George Gaylord Simpson (whom I called GG after the musical of the same name, much to his amusement).



Mayr, together with some of my professors like Herb Wagner, was one of the founders of the Society for the Study of Evolution in 1946; and he was Editor of the famous periodical *Evolution* for many years.

He published some 20 books and one of them, *The Growth of Biological Thought*, shows the breadth of Ernst's encyclopedic knowledge of the sciences, as well as, the mind of that philosopher and historian of science. The Germanic professor, a staunch Hegelian, met with the whole gamut of comments, from the highest praise to fierce attacks, even from people from the rarefied grounds of botany (like Ledyard Stebbins, another of the heroes of my youth). We shall all miss him for his incisiveness, his contributions, and his exemplary dedication to science.

Botany in the Central Market:

Some lesser known foods

When people travel they take with them their language, their customs, and their cuisine. That is one of the effects of globalization. On most occasions the transplanting of ethnic groups can enrich and diversify the culture of the area receiving the immigrants. In other instances there can be a loss or erosion of the local customs and

mores. Language is usually one aspect of culture to show early on the influence of newcomers. Cuisine is the other.

With the constant flow of immigrants from the other countries of Central America to Costa Rica, the local Spanish is being slowly modified, as well as, the eating habits and diversity of ingredients available for the



Pitahaya



Loroco

new cuisine. For example, in San Jose the vast majority of the home labor force is made up of ladies from El Salvador and Nicaragua. Someone was telling me not too long ago that many Costa Rican children are speaking with a peculiar lilt due to their Nicaraguan nannies. It may be so; but, strolling through the market aisles to quietly keep track of new products, it is evident to me that the foreign presence is having an impact on our diets. Here are some examples.

Pitahaya (pit-HA-yah). Two varieties are found in the market: the smaller, roundish, somewhat scaly, scarlet or red pitahaya and a much elongated, rough surfaced, lemon yellow or golden pitahaya. Both are the fruit of cactus plants in the genus *Hylocereus*, although throughout Latin America the word Pitahaya may refer to any cactus, edible or not.

Pitahayas were frequent in our markets in the middle of the twentieth century; then they basically vanished, but not for long, as the peoples of northern Central America relish refreshment made from the pulp of pitahayas.

You can eat the pulp with a spoon, scooping it out of the rather tic rind; or you can blend it in water with some sugar and a squeeze of lemon if you like it a bit acidic.

Another method is to scoop the pulp into a bowl, add sugar to coat generously, and let repose overnight. The next day you will

have a colorful and tasty syrup that one can bottle and dilute as needed. Mind you, drinking refreshments made with the pulp of the red pitahaya will render your urine magenta -so do not run to the urologist fearing the worse.

Nopalito (no-pa-LI-to). Another edible cactus that is making its appearance in Costa Rican cuisine is the flat stems of *Opuntia ficus-indica*. These are the Mexican nopalitos, which I find rather bland as a boiled vegetable. Their high content of mucilaginous sap suggests a taste and texture of okra, and they could probably be used in the preparation of gumbos.

Cacti are exclusive to the New World, with one singular species in western Africa. They grow in very arid conditions, as their stems are well adapted to store water and have a reduced transpiration rate. The southwestern United States, northern Mexico, and the Pacific coast of South America are the areas of highest diversity of cacti. It was probably the indigenous population of those sites that discovered and domesticated their edibility, as well as, their "magical" properties - peyote being the hallucinogenic cactus used by Indians in northwestern and central Mexico and now by the so-called Native American Church, a transplant cult from Mexico. The opuntia stems are also called "tun" and are used as a hair tonic that darkens the strands. Medicinally, they are used to alleviate severe diarrhea.

Opuntia ficus-indica was introduced in Europe by the conquistadors, possibly as a curiosity and because horses and asses like to nibble on their red, button-like fruits. The Spanish thought the fruits resembled true figs, thus the Latin name which translates to "Indian figs." Spanish herbalist Andres de Laguna wrote about their purported medicinal properties in his book *Pedacio Dioscorides Anarzabeo*, published in Salamanca in 1570. It mentions that the nopalitos were "few and rather new" to the arid lands of southern Italy. So new were they that the Italian botanist Pier Andrea Mattioli did not include such bizarre plants in his *Italian Flora* of 1548. Now they are all over the Mediterranean basin.

Loroco (lo-RO-co). A basket full of bell-shaped, white flowers turned out to be *Fernaldia pandurata* in the family Apocynaceae. The shrubby climber that produces them grows along the drier Pacific coast of Central America, south to our province of Guanacaste where it is very rare. The Salvadorans use the chopped flowers to give a peculiar flavor to soups and other dishes. They add it to corn to be ground for aromatized tortillas. I tried it on my pot-au-feu or Olla de carne and liked the result. However, care must be exerted as Apocynaceae is a family of plants well known for the numerous toxic compounds its members contain.

Research Corner

Plantas silvestres comestibles usadas por los Indígenas Gnöbe (Guaymí)

Héctor Castañeda / Universidad de Florida, Escuela de Recursos Naturales y Medio Ambiente / hectorcastaneda2@yahoo.com

Cuando en el extranjero se oye hablar de Costa Rica, a menudo las imágenes más mencionadas son de playas soleadas, hoteles de cinco estrellas, majestuosos bosques lluviosos y fauna espectacular. Muy pocas personas extranjeras, e incluso nacionales de este país, lo relaciona con culturas indígenas. Lo cierto es que Costa Rica posee varias culturas nativas de gran riqueza cultural, si bien solo el 1% de la población se caracteriza como indígena, esto es, aproximadamente unas 50.000 personas.

Durante los meses de abril a julio del 2004 tuve la magnífica oportunidad de convivir con uno de estos pueblos: los ngöbe, mejor conocidos como los guaymí. Este grupo es originario de Costa Rica y Panamá; aunque durante el tiempo de la Colonia fueron desplazados de sus territorios en Costa Rica por los españoles. Desde los años cuarentas ha existido inmigración desde Panamá hacia Costa Rica; de esta manera se tiene ya casi cuatro generaciones de guaymíes restablecidos en este país.

Mi objetivo principal era investigar, como proyecto de tesis de Maestría en Ecología en la Universidad de Florida, el valor cultural que los bosques tienen para los ngöbe, en particular como fuentes de plantas comestibles. También pretendía desarrollar una metodología práctica que permitiera a los investigadores en el futuro poder hacer lo mismo con otros grupos étnicos, así como con otros productos naturales.

Mi trabajo inicial consistió de recorrer las diferentes comunidades que se encuentran dispersas dentro de la reserva para orientarme y para que la gente me conociera y supiera qué estaba haciendo en ese lugar. La segunda fase de mi proyecto era determinar qué plantas silvestres comían los ngöbe. Para esto



Alejandro Palacios y María Bejarano, asistentes del proyecto, en el Jardín Wilson,

visité a casi 50 personas, y las entrevisté acerca de las plantas silvestres que ellos conocían. Anotaba todas en una lista y luego platicábamos sobre dónde se encontraban y cómo se preparaban. Con estos datos pude construir un modelo acerca de cuáles plantas eran las más prominentes en la cultura ngöbe y más o menos donde crecían. Durante las semanas siguientes me dediqué a recorrer la reserva. Buscaba sitios que tuvieran diferentes etapas de sucesión ecológica para hacer una evaluación del contenido de especies usadas por los ngöbe. Para medir de manera científica cuáles eran los hábitat preferidos por las plantas que usan los ngöbe, establecí cerca de 280 parcelas de muestreo, donde identifiqué todas aquellas plantas comestibles que antes la comunidad me había mencionado.

Encontré un total de 52 especies de plantas y una de hongo, que la gente consumía. Es claro que estas no son todas las plantas co-

mestibles que ellos usan; probablemente si entrevistara a más personas, encontraría más especies. Para estimar el total de plantas, usé un análisis llamado "la curva de informantes y especies". Mediante este análisis estadístico, pude estimar que, aparte de las plantas que había encontrado, era probable que el total de plantas comestibles usadas por los ngöbe sea de unas 63 especies.

Los ngöbe, como muchas culturas tradicionales, practican la agricultura rotativa. De esta manera talan una porción de bosque, la trabajan durante dos o tres años y luego la abandonan. Una vez abandonada, la parcela lentamente regresa al estado de bosque. Este proceso es largo y puede durar varias décadas. A lo largo de este tiempo las condiciones ecológicas cambian mucho: desde su inicio con exposición directa al sol, hasta sus etapas finales cuando los árboles son altos y obstruyen el sol con sus copas. Esta gradiente de sucesiones

crea una variedad de ambientes, los cuales son habitados por distintas especies de plantas y animales. Por ejemplo, en las etapas tempranas de la sucesión, las platanillas (*Heliconia spp*) son muy abundantes y los árboles altos son casi inexistentes por la tala; en cambio, en las etapas más tardías de la sucesión, las platanillas son escasas pues no toleran la sombra de los árboles; en esta etapa, árboles como el sonzapote (*Licania belioii*) son los que dominan el paisaje. De esta manera, siempre que se haga en baja escala, la agricultura tradicional guaymí crea una diversidad de hábitat para las especies de flora y fauna de la zona.

Finalmente obtuve suficientes datos para poder hacerme una idea estadísticamente significativa acerca de cuáles plantas crecían en cada etapa de sucesión. Combinando esta información sobre la población de plantas, y la información cultural obtenida de las entrevistas, fue posible calcular un "valor cultural" a cada tipo de vegetación. Este valor nos permite comparar la importancia que cada hábitat tiene para una cultura en relación con un uso en particular; en este caso, cuáles tipos de bosque son más importantes en proveer a los ngöbe de plantas alimenticias.

Los resultados fueron interesantes. Encontré que para el pueblo ngöbe, la fuente más importante de plantas comestibles silvestres son las orillas de los bosques primarios. Acá, en el borde entre los cultivos y la selva, se crean las condiciones para que, tanto plantas del bosque cerrado como plantas de espacios abiertos coexistan en un área relativamente cercana. Es así como estos bordes de agricultura rotativa permiten un hábitat que, metro por metro, es aún más rico que el bosque primario en cuanto a plantas útiles. Se podría decir más acertadamente que la cultura guaymí está más adaptada a aprovechar estos bordes de bosque que los bosques primarios en sí.

No obstante, hay que detenerse a pensar en que la diversidad de estos sitios depende de la presencia del bosque primario. Si este fuera eliminado del todo, no habría una fuente de semillas para renovar el constante ciclo de sucesión del que depende este estilo de vida. La creciente población puede ser una amenaza para este hábitat pues con ella también crece

la demanda por tierras agrícolas. Así mismo, las otras etapas, tales como el bosque secundario joven y el bosque secundario antiguo, sirven de hábitat para otras especies comestibles distintas y son fases esenciales para la maduración ecológica del bosque.

Otros resultados indican que el conocimiento sobre los usos de la flora nativa va disminuyendo de generación en generación. Los jóvenes conocen menos plantas que sus antecesores; consecuentemente, al tener menos usos para el bosque, el valor cultural de este disminuye para ellos.

Así mismo, encontré que, en general, los hombres conocían más plantas silvestres que las mujeres. La razón de esto probablemente estriba en que son ellos quienes, por lo general, tienen más contacto con el bosque, al abrir nuevas tierras agrícolas y adentrarse a recolectar sus productos. Las mujeres, en cambio, saben más de las plantas cercanas a su casa, plantas de vegetación secundaria o que se cultivan en los huertos caseros.

Las culturas indígenas, adaptadas a los ecosistemas de la región desde hace miles de años, conocen usos para una gran parte de la diversidad de los bosques de Costa Rica, en muchos casos más que los que la ciencia moderna conoce. En ellos encuentran fibras, colorantes, medicinas y alimentos que en otras culturas pasarían inadvertidos. Conocer y preservar este conocimiento tradicional podría ayudarnos a valorar y aprovechar la riqueza natural que ahora pasa sin ser notada y cada día se encuentra en mayor riesgo de desaparecer.

Editor's note

The primary goal of Héctor Castañeda's work was researching the cultural value of the forest to the Ngöbe people of the nearby Guaymí indigenous community. He concentrated particularly on wild plants as food sources. He also aimed to develop a methodology that will allow future researchers do similar research with other ethnic groups, as well as, other natural products.

Based on personal interviews, he found 52 plants and one fungus species that the Guaymí people use as food sources. The total number



Guaymí with typical dresses.

might actually be as high as 63 species.

For the Ngöbe people, the most important sources of edible plants are found at the edges of the primary forest. At the boundary between cultivated areas and the forest, the conditions are suitable for plants from both areas to develop in close proximity. Nonetheless, the diversity of these sites depends on the existence of the primary forest.

Other results indicate that knowledge of the uses of native plants is decreasing from generation to generation. The young people know fewer plants than their older relatives. As a consequence, they use the forest less and its cultural value for them is declining.

The author also discovered that, in general, men know more about wild plants than women. This is because men have more contact with the forest when opening new agricultural sites and looking for products to collect. Women, on the other hand, know more about the plants closer to their homes - plants from secondary growth areas or cultivated in their home gardens.

Primer Taller Internacional de Líquenes Tropicales en la Estación Biológica Las Cruces, Costa Rica

Robert Lücking / Curador de Líquenes / Field Museum, Chicago
rlucking@fieldmuseum.org

Una lista de casi 450 especies de líquenes fue uno de los resultados del “Primer Taller Internacional de Líquenes Tropicales” que se organizó durante el mes de octubre del 2004 en el Jardín Botánico Wilson y la Estación Biológica Las Cruces, de la Organización para Estudios Tropicales (OET). Dicho taller formó parte del proyecto TICOLICHEN, un inventario completo de la biota líquénica de Costa Rica, con la colaboración del Field Museum de Chicago, Estados Unidos, el Jardín Botánico de Berlín, Alemania, el Instituto Nacional de Biodiversidad (INBio), la Universidad de Costa Rica (UCR) y la Organización para Estudios Tropicales (OET). Los investigadores principales del proyecto, Robert Lücking (Chicago), Harrie Sipman (Berlín), Loengrin Umaña y José Luis Chaves (INBio), estiman que el número de especies de líquenes que se dan en Costa Rica oscila entre 2.500 y 3.000, de las cuales hasta ahora se ha descubierto apenas la mitad. Un 10% de todas estas especies podrían ser nuevas para la ciencia.

Además de documentar la biodiversidad líquénica de Costa Rica y formar una base para estudios ecogeográficos y de bioprospección y usar líquenes como bioindicadores, el entrenamiento de futuras generaciones de liquenólogos y micólogos es una parte importante del proyecto TICOLICHEN. Para alcanzar esa meta, se organizó el primer “Taller internacional de líquenes tropicales”, el cual incluyó 33 participantes de 12 países: 30 estudiantes y profesionales y tres instructores (véase la contraportada de este boletín). Entre los instructores, además de Robert Lücking y Harrie Sipman, también participó la liquenóloga mexicana y experta en quimiotaxonomía María de los Ángeles Herrera-Campos.

Como sitio para este evento se seleccionó la Estación Biológica Las Cruces por varias razones: la ubicación en un área de bosque pluvial

montano, la cual es ideal por contar con una gran diversidad de líquenes; las excelentes instalaciones y la amplia infraestructura que presenta la estación; la tradición de estudios líquénicos pioneros en Costa Rica por su actual director, Luis Diego Gómez; y la idea de hacer, en el futuro, un curso permanente de liquenología tropical a través de la OET en la misma estación.

Durante dos semanas, los participantes aprendieron lo básico de la liquenología tropical, incluyendo características de la simbiosis líquénica, la morfología y anatomía del talo y de los cuerpos fructíferos y la química y quimiotaxonomía. Un ejercicio particular los ayudó a apreciar las dificultades de la sistemática y la dinámica que ha desarrollado esta área en los últimos años.

El taller también incluyó aspectos de la ecología y distribución de líquenes tropicales y su aplicación como bioindicadores de la calidad de aire y de la continuidad ecológica, y estudiantes de México, Costa Rica y Colombia presentaron resúmenes de sus trabajos sobre el tema. Durante la segunda semana, el grupo se concentró en la identificación de géneros y especies, y gran parte del material se originó de una excursión para explorar el jardín botánico y la vegetación primaria y secundaria de la reserva forestal protegida por la estación.

Al final del taller, los participantes habían compilado una lista de casi 450 especies de líquenes para el área (para su pronta publicación en la revista *Brenesia*), la gran mayoría nuevos reportes para la estación. Este número de especies, el cual también incluye nuevos informes de especies para el país y algunas nuevas para la ciencia, es el más alto que hasta ahora se ha reportado para un sitio tropical.

Todos los participantes coincidimos en que este evento fue una gran experiencia, no solamente por lo que todos aprendimos, sino también por el gran número de amigos que

hicimos, por el privilegio de poder pasar un tiempo –¡demasiado corto!– en esta hermosa estación y experimentar el calor y la hospitalidad de su gente. Nuestro sueño ahora es de encontrarnos nuevamente en este lugar en un futuro próximo para organizar un taller avanzado, o simplemente reunirnos para disfrutar de las viejas y nuevas amistades.

Editor's note:

Thirty three participants from 12 countries -30 students and professionals and three instructors- generated a list of nearly 450 species of lichens as one of the results of the First International Workshop on Tropical Lichens, organized at Las Cruces in October 2004, in collaboration with the Field Museum in Chicago, the Berlin's Botanical Garden, the National Institute for Biodiversity (INBio), the University of Costa Rica (UCR), and the Organization for Tropical Studies (OTS). This workshop was part of the TICOLICHEN Project, a complete inventory of the lichen biota of Costa Rica. This number of species, which includes new species' reports for Costa Rica and several new species to science, is the highest reported so far for any tropical site.

The principal investigators of the project -Robert Lücking (Chicago), Harrie Sipman (Berlin), Loengrin Umaña and José Luis Chaves (INBio)-, estimate that the number of lichen species occurring in Costa Rica ranges from 2,500 to 3,000, of which only 50% has been discovered to date. From all these species, 10% could be new to science.

Included among the goals of the TICOLICHEN Project are the documentation of the lichen biodiversity of Costa Rica, the creation of a data base for ecogeographical and bioprospecting studies, the use of lichens as bioindicators, and the training of new generations of lichenologists and mycologists.

Flora and Fauna

A new “bird” at Las Cruces

Christie Jones / Intern at Wilson Garden / cjones@hortus.ots.ac.cr



A new species of bird took to the sky at Las Cruces this January. It is huge, green and white, and hovers motionless above the tourist cabins. From the balcony of the dining hall, we see visitors with arms stretched, fingers pointing, and their faces showing awe, saying, “Wow, look at that!”

It is a rare sight to see this bird, for the “bird” is actually the inflorescence of *Phenakospermum guyannense* (see front cover of this issue). It is commonly known as South American traveler’s palm for its resemblance to its well-known cousin from Madagascar, the traveler’s palm or *Ravenala madagascariensis* (also represented in our Garden). Neither is a palm but, rather, both are members of Strelitziaceae, the bird-of-paradise family. It is a small family (7 species) of herbaceous plants with leaves which resemble those of its close relatives in the banana and heliconia families. The South American traveler’s palm is the only species of this family found the American tropics; all other species are found in Africa and Madagascar.

The traveler’s palm, from Madagascar, is named such for the large amount of water which can be obtained from its leaf folds, flower bracts, and hollow leaf bases (which may hold up to a quart of water each). It is said that thirsty travelers visit the palm to replenish themselves before continuing on their journey. The most remarkable feature of the traveler’s palm, however, is its striking form. The large paddle-shaped leaves are arranged into a single geometric plane, giving it the appearance of a 30 foot tall fan. It is often used as a feature plant in the tropical landscape because it steals the attention of anyone who sees it.

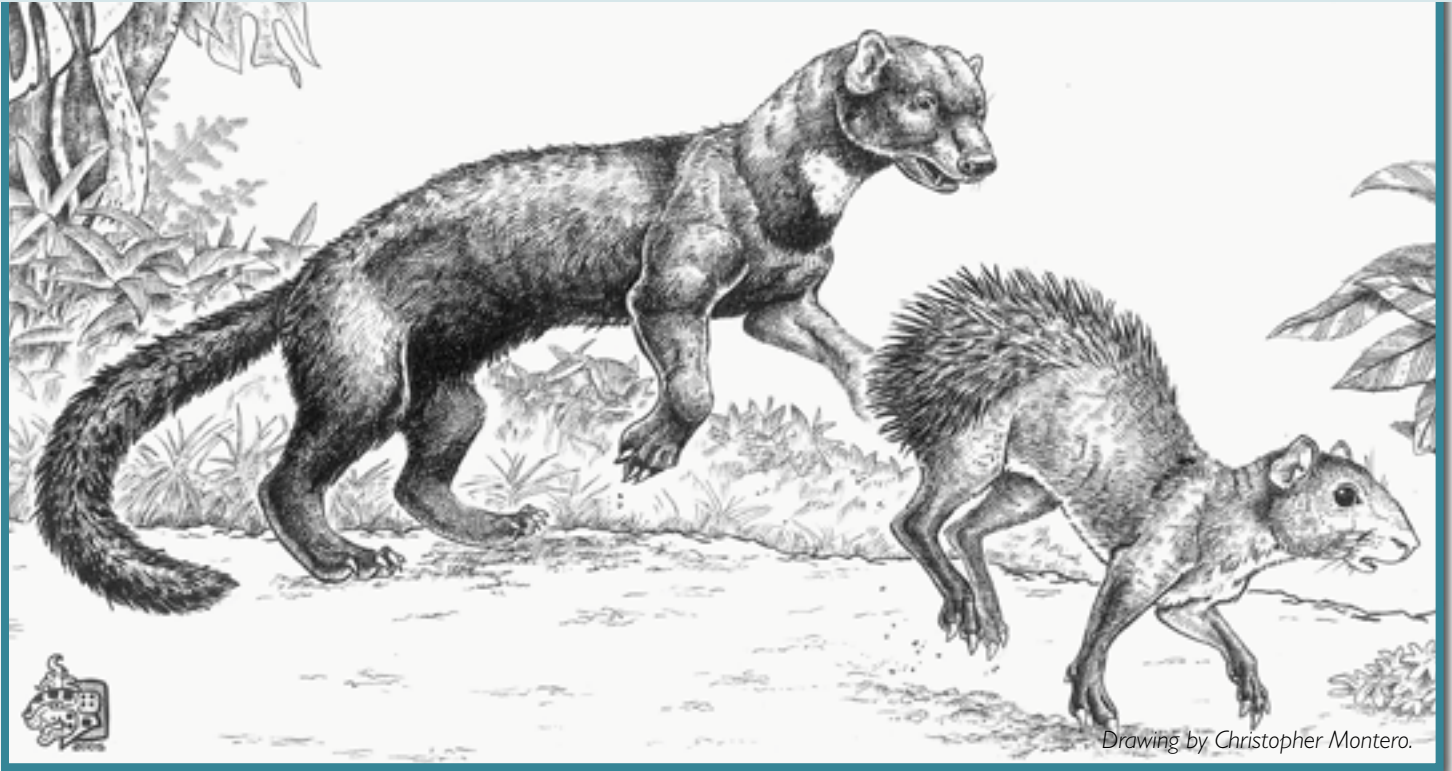
The South American traveler’s palm is similar in form to its Madagascan cousin. Though it is smaller, it too has the paddle-

shaped leaves arranged like a fan. What is most extraordinary about the South American traveler’s palm, however, is its stately inflorescence which towers above the fifteen-foot-tall fan of leaves. The large green bracts, which last for several months, have a striking resemblance to those of a heliconia inflorescence. The white flowers poke out of the bracts when they are mature, making the bract appear as a bird head with feathers on top (hence the common name of its family – bird-of-paradise). Several species of bats are known to pollinate the flowers, but they must be quick to do so, as each flower is only receptive for a single night.

Though it is not widely grown as a garden plant, *Phenakospermum guyannense* is an easy plant to cultivate (we have had no fuss with it here at the Wilson Garden). It is a fast growing ornamental which will make any neighbor jealous when viewing the curious green inflorescence towering above your roof-top. It is also an excellent potted plant when young, due to its unusual shape. Seeds of the species are reportedly easy to germinate (though you must have patience) and may be purchased online through vendors of rare seeds. More detailed cultivation information is also easily found online. For those of you who are lucky enough to live in a frost-free climate, I would say the South American traveler’s palm is so unusual that it is a must-have for the garden (yours will likely be the only one in the neighborhood). For those of you who live where it is a bit colder, I would still say give it a try, especially if you have a tall greenhouse or sunroom.

Happy Gardening!

A predator in the garden



Christopher Montero / Las Cruces Naturalist Guide
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A sunny and peaceful afternoon in the Wilson Botanical Garden was suddenly interrupted by the bark-like distress calls of a terrified agouti. We turned our heads and saw a swift black shadow chasing the scared rodent.

One of the children with me exclaimed, "A black panther!" while a girl shook her head saying, "What a weird dog." I had seen this peculiar carnivore several times before, so I explained that it was a "tolomuco," the Costa Rican name for tayra (*Eira barbara*).

Tayras are Mustelids (from the weasel family), which are found from Mexico to northern Argentina. They are characterized by a bushy tail and long-legged body covered with black fur. Just imagine a giant, sinister version of a weasel! At the north end of its geographical range, its head and neck are pale-colored like an elder; hence the common name "Viejo de Monte" (old man of the bush).

Because they are active during the day and successful in a great variety of habitats from sea level to almost 2650 meters (aprox. 8000 feet), tayras are seen frequently by people. But no matter. When someone spots one, the same question always arises: "What in the world was that?!" This is because you normally only see a fast shape jumping ahead on the forest trail or sliding down a tree with amazing agility ("Was that a king-sized squirrel?!").

As omnivores, tayras can feed on almost any kind of food including a great variety of fruits and, if the opportunity is available, honey from beehives. But when they are in "predator mode," tayras are known to attack larger and heavier prey and, like many members of their family, are famous for their ferocity.

Its temperate cousin, the robust wolverine (*Gulo gulo*), tracks and kills prey as large as a full-grown deer; whereas, the 28 lbs. honey badger (*Mellivora capensis*), a relative from Africa and Asia, has been reported to attack heavyweight prey like wildebeests and African buffalos. That tough badger even eats cobras

and other poisonous snakes - surviving their bites!

With this record of ferocity, you might be feeling a little uncomfortable knowing that tayras are in the neighborhood, but don't worry! Their menu is focused on small prey. They would never dare to attack something bigger than an agouti unless they are completely starving (something that hardly happens considering their lack of pickiness for food). In fact, in some areas of South America, indigenous people domesticate tayras and train them for rodent pest control. An exotic but handy pet!

You are probably wondering how this story ends. Well, agoutis are literally "fast food" and even the tenacious tayra is no match in an open race. As the agouti gained speed and distance, the tayra quickly understood that it was a hopeless task. It turned back and disappeared into the foliage. The agouti escaped this time, but the tayra is persistent and clever. It will patiently wait...until the next encounter.

From the Station

What do you do during spring break?

Rodolfo Quirós / Las Cruces Resident Biologist
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Four hours at the coffee cooperative of Agua Buena was enough time to show the participants of a workshop the “flip side” of fair trade of coffee. Their first morning made an impact on them that will be hard to forget.

A group of 14 participants -13 students and one supervisor - from the University of Florida took part in an interesting program called Florida Alternative Breaks (FAB). These students spent their spring break studying the issue of fair trade, with a particular focus on coffee. I asked them why they chose to do this during their break while other students were partying and so forth. The general answer was that they can have parties any weekend, but a chance to learn something different does not come along every day. These were more than concerned students; they were pioneers - the first group of FAB participants to study an issue outside of the United States.

The participants wanted to see and feel first hand the situation of the coffee producers. They were particularly interested in the existence of a concept and policy called “fair trade.” They wanted to know if fair trade is applied in this region of Costa Rica and, if so, to what extent it benefits local coffee producers.

After two days of traveling from the United States to San Vito, they began work on Monday morning. We had an enlightening discussion (translator included) with cooperative representatives. At the end of the morning the students were in awe; they found out that they are involved in only one part of fair trade - the part that is related to the consumer. In other words, they are paying the right price for the coffee in its final presentation. They also found out they did not know much about the final fate of the

money they spend on a pound of coffee. They learned that there is a large gap between the consumer and the producer, and that this gap translates into economic and social problems.

The sad news was that the local cooperative had to close its doors to last year's crop because they did not have the money to pay their associates. Fortunately, there is much interest from the associates and other people to bring the cooperative back. The cooperative is running a project called Proyecto Pueblos in which 50 associates are participating. Their farms are being converted from traditional coffee production into sustainable coffee farms. Sustainable farms are more likely to be certified for fair trade than traditional farms. Logically, the students' curiosity was piqued at hearing this information, so we set off next on an adventure to see these new sustainable farms.

The participants not only saw the farms, they actually worked in them. They learned what is involved in coffee production, as well as, the benefits of such farms. Shovels and machetes in hand, the group was divided

among three farms. All went to work under the sun, pruning shade trees and other plants; applying calcium carbonate to the soil; picking fire wood; planting taro, cassava, and plantains among the coffee shrubs; digging holes that will allow the rain water to stay longer near the plants; and fixing the plantation's drainage system and trails. The students became attached to the farmer and his family to the point that, at the end of their work, they all wanted to stay and not go back to Florida.

Afternoons were spent at the local school, doing some clean-up, painting walls, and playing with the children. The final afternoon was different. The participants had a round-table discussion with local people, including two representatives from the Agua Buena cooperative, two teachers, and two representatives of the Guaymi indigenous community. The discussion centered on social issues related to the coffee crisis, including increased poverty, family dissolution, theft, drug addiction, and the high number of children not attending school because their families can no longer support them economically.

One of the participants commented during the last dinner, “Now I will see every single cup of coffee that I drink with different eyes!” Back at the University of Florida, the students will apply what they learned during their week in Coto Brus. One of the ideas they left with is that of direct marketing of coffee, where both producer and consumer get a much better price per pound due to the absence of intermediaries.

The students had a taste of traditional Costa Rican food for their last dinner, including some of the fresh produce they found at the farms. To close the activity, a trio of local musicians appeared from the kitchen and serenaded the students, who went home with mixed feelings but certainly more knowledgeable



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Meet the Las Cruces family

Christie Jones / Intern at Wilson Garden
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I am sitting upstairs in the library of the Wilson House, across the table from Rodolfo Quirós, better known to most as Rodo. He's flipping intently through books, searching for materials for an upcoming workshop. I'm casually asking him questions which he answers easily, hardly thinking as the words flow from his mouth. The questions are not difficult to answer because they are about him. We go on like this for several minutes until he stops what he is doing and looks at me with an expression that says, "Ah-ha! I know what you are up to!" I give him a smile in response which says, "Yes, I am interviewing you for our newsletter."

Beginning with this issue of the Amigos Newsletter, we would like to introduce to you the Las Cruces family of staff – the people who are putting your generous donations to work. And what better way to begin than with our "do-it-all" man, who also happens to write and edit for the newsletter:

We are quite fortunate to have Rodo on staff as the Resident Biologist at Las Cruces. I call him our "do-it-all" man because it seems he plays a role in most functions at the station. Because we have a relatively small number of employees, each staff member must "wear several hats." Rodo's list of job responsibilities seems to stretch for a San Vito country mile, but he takes them all in stride. As I mentioned earlier, Rodo writes and edits for our Amigos Newsletter. He also is a naturalist guide at the station, resource person for courses, manager of the library, contact person for researchers, manager of the "Melissa's forest" restoration project, our IT person, and environmental educator. He has also helped out by taking on many of the daily administrative duties which our director, don Luis, cannot execute from the La Selva station.

One thing that Rodo does best is give lessons in natural history, using our Garden



Rodo moving shelves for the new library.

as his classroom (some may say that Rodo gives tours of the Garden, but, from personal experience, I can say it is much more than a tour – it is an educational experience). As he conveys information to his "pupils," the light in his eyes and the smile on his face make it impossible to hide just how much he loves biology and sharing his knowledge with others.

Rodo has an impressive resume which includes time spent working for INBio and for the Neotropica Foundation as Environmental Educator on the Osa Peninsula. But his love for biology stretches much farther back to his days as a child, before "career" was in his vocabulary.

What was it that hooked Rodo on biology? It was a mystery. A mystery which he was determined to solve. One day while working behind his parents' house,

he noticed that some jocote fruits were lying on the ground under a plant that was definitely not a jocote tree. In fact, there was no jocote tree on his parents' property at all. Apples don't fall from orange trees and jocotes don't fall from the sky. It was a genuine mystery that he was determined to solve. So, by using the scientific method (without even realizing it), he discovered that the jocotes were being brought to that area at night by bats. With that small investigation, he realized his love for the living world and the science of discovering it.

Every day Rodo brings his love of biology to work at Las Cruces, inspiring guests, students, volunteers, and staff alike. We thank Rodo for his diligence and dedication to this station and for being a member of the Las Cruces family.

Our Donors

Our thanks, too, to all of you!!

Las Cruces Donors List from October 2004 to March 2005.

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In this special year, 2005, we have new staff and volunteers with innovative ideas –large and small– to enrich each and every visitor’s

experience and to improve the condition and appearance of this unique place.

Right now, we ask for your financial contribution to our 2005 Annual Fund. Please use the enclosed donation form and self-addressed envelope to send your

tax deductible, charitable gift to help us give the Wilson Garden/Las Cruces the attention it needs. Your support is appreciated more than you can imagine!

Please help us reach our \$50,000 goal by the end of this year.



First International Workshop on Tropical Lichenology

Costa Rica, Las Cruces Biological Station, October 10-24, 2004



Back row: Marie Trest (U.S.A.), Scott Bates (U.S.A.), Rubén Carballo (San Salvador), Matthew Nelsen (U.S.A.), Harrie Sipman (Germany), Jaime Aguirre (Colombia), Noris Salazar (Panama), Roselvira Barillas (Guatemala), Lidia Ferraro (Argentina), Karla Estrada (Nicaragua), José de Gracia (Panama), Luis Mata (Venezuela), Mario Cifuentes (Guatemala), Rosa Emilia Pérez (Mexico), Iris Gonzales (Nicaragua), Thelma Orozco (Nicaragua).

Middle row: Anja Amtoft (U.S.A.), Gavriele Murillo (Costa Rica), Kristel Castillo (Costa Rica), Dalia Sanchez (Nicaragua), Rhina Esquivel (San Salvador), Marusa Herrera-Campos (Mexico), Daniela Lizano (Costa Rica), Telma Paredes (Ecuador), Alejandrina Bárcenas (Mexico), Enla Navarro (Costa Rica), Paola Colín (Mexico).

Front row: Robert Lücking (U.S.A.), Carlos Rojas (Costa Rica), José Luis Chaves (Costa Rica), Ronald Rodríguez (Costa Rica), Joel Mercado (Puerto Rico), Bibiana Mancada (Colombia).



**Organization for
Tropical Studies**

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