

Amigos

Newsletter

No. 73, May 2010



Wilson Botanical Garden
Las Cruces Biological Station
Apdo. 73-8257 San Vito, Coto Brus, COSTA RICA



**Organization for
Tropical Studies**

Who We Are

The Las Cruces Biological Station is one of three tropical field stations owned and operated by the Organization for Tropical Studies (OTS) in Costa Rica. Along with the Wilson Botanical Garden, Las Cruces was acquired in 1973 and is a hidden jewel that offers natural history visitors and researchers alike an extraordinary place to visit and conduct research.

Far from the noise and bustle of the country's capital city San José, Las Cruces is located in the remote southwestern corner of the country between Corcovado National Park on the Osa Peninsula, and the enormous La Amistad Biosphere Reserve (472,000 hectares) that spans south-central Costa Rica and western Panama. In 1983, UNESCO declared Las Cruces and the Wilson Botanical Garden part of the Reserve due to its incredible diversity and proximity to La Amistad.

The Wilson Botanical Garden, founded in 1962 by Catherine and Robert Wilson, is arguably the most important botanical garden in Central America and a "must see" stop on the itineraries of plant lovers, birders, and other natural history groups. It is famous for its worldwide collection of tropical plants which include palms, aroids, bromeliads, ginger, marantas, heliconias, and ferns. More than 3,000 exotic species of plants can be found in the 12-hectare (~30-acre) garden, including one of the largest collections of palms in the world.

There is an incredible diversity of animals at Las Cruces, and in the immediate area surrounding the station. The most recently updated bird list includes 410 species; close to half the number of birds found in all of Costa Rica. There are also over 100 species of mammals, of which 61 are bats. Some of the more commonly sighted mammals include agoutis, white-faced capuchin monkeys, kinkajous, olingos, and tayras. Reptiles and amphibians also thrive in this moist, cloud-laden habitat and there is an impressive diversity of insects, and in particular moths and butterflies.

Las Cruces protects over 200 hectares

of primary forest (home to over 2,000 native plant species) and several smaller adjacent areas that are in various stages of forest recovery. The forest is surrounded by a mosaic of mixed-use agricultural fields and forest patches, and it is this fragmented setting that makes Las Cruces an ideal place to study the effects of forest fragmentation and isolation on animal and plant communities. The landscape surrounding Las Cruces is also ideally suited for research on biological corridors and restoration ecology; key fields of research that are of ever increasing importance. Part of our mission at Las Cruces is to continue to purchase land for reforestation and, in doing so, expand our protected areas and connect some of the isolated forest fragments around the station. For further information on this campaign please visit our website.

At approximately 1,200 meters elevation (3,900 feet), the prevailing temperatures at Las Cruces are cooler than one might expect. Temperatures range from 21-26 °C (70-80 °F) during the day and 15-21 °C (low 60's) at night. Mean annual rainfall is ~4,000 mm (157 inches)! The dry season runs from January – March, and the rainy season from May – November. Most visitors and researchers come during the dry season.

The station is well known for its visitor-friendly amenities: comfortable private sleeping quarters, delicious meals, knowledgeable and enthusiastic staff, and a well-maintained network of paths and trails. We also provide internet access to overnight visitors who bring a laptop computer.

The nearest town is San Vito, the capital of Coto Brus County. It was settled in the 1950's by Italian immigrants and to this day there is a strong Italian presence. There is an excellent pizzeria, and the Dante Alighieri Italian-Costa Rican Community Center provides language instruction. Indeed, Coto Brus is the only county in Costa Rica where Italian forms part of the elementary curriculum!

We invite you and your family and friends to come visit us for an afternoon, an overnight stay or a week to see and experience firsthand the splendid tropical diversity of the Las Cruces Biological Station and Wilson Botanical Garden.

For more information please visit the OTS website at <http://www.ots.ac.cr/> or contact us directly by email: lcruces@ots.ac.cr. Postal mail can be sent to: Estación Biológica Las Cruces/Jardín Botánico Wilson, Apdo. 73-8257, San Vito de Coto Brus, Costa Rica. Telephone (from the U.S.): 011 (506) 2773-4004.

Reservations can also be made by contacting the OTS office in San José by email: edu.travel@ots.ac.cr, postal mail: ESINTRO/OTS, Apdo. 676-2050, San Pedro de Montes de Oca, Costa Rica, or by telephone (from the U.S.): 011 (506) 2524-0607.

The North American OTS office 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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Seventeen Years of
Development at Las Cruces

Front Cover: Luis Diego in a reflective moment on the Las Cruces library balcony. Next to him is Jorge Jiménez, former Director General for OTS in Costa Rica. Photo Ariadna Sánchez, 2005.

Back Cover: Luis Diego teaching the Fall 2003 Undergraduate Semester Abroad Program when they visited Las Cruces. Photo Mauricio García.

Editorial Committee: Alison Olivieri, Rodolfo Quirós, Emilce Ramírez, Ariadna Sánchez, Zak Zahawi.



Luis Diego enjoys a restive moment on a downed log in the forest.

Zak Zahawi \zak.zahawi@ots.ac.cr

This has not been one of the easier issues of the *Amigos* newsletter to put together. As most of you know by now, Luis Diego Gómez, my predecessor and mentor for far too short a time, passed away on the 13th of November after a long battle with leukemia. He has left behind a legion of friends, alums, and former co-workers in Costa Rica and many other parts of the world – and his absence has been sorely felt by many. He left an indelible mark on the Las Cruces Biological Station and associated Wilson Botanical Garden and as a salute to his many and varied contributions, we have chosen to dedicate the entire issue of this *Amigos* newsletter to his honor.

In this issue we have tried to touch on the many different aspects of his life and grouped them under the typical sections of the newsletter – one of his favorite publications that he diligently assembled every six months. In so doing, we hope to have produced an issue that will serve as a testament to his contributions in so many different disciplines of biology and the

social sciences. As a caveat, it is, needless to say, impossible to capture his life in a small publication such as *Amigos*, but I hope that we have provided a snapshot touching on some of his more accomplished feats.

Writing a preface to this edition is a bit daunting. Being part eulogy and part preamble, it is not easy to find a balance between the emotional feelings one has and expresses in a sometimes clichéd form, to what one would like to address to the reader. What is it that we will miss most about Luis Diego – or is that really an apt question to ask? Clearly its a question that would be answered differently by the many people he knew – depending on who I think about, I can imagine a myriad of responses. But perhaps a universally appreciated trademark of his personality to which we can all relate, was his sense of humor. Perhaps best described as wry, or maybe a bit dark, but always with an angle that poked a little fun at the circumstances of some particular event he experienced or was witness to... and/or of those present. Indeed, he was always inventing

What's New at Las Cruces?

Zak Zahawi / zak.zahawi@ots.ac.cr

Symposium in Honor of Luis Diego Gómez

an affectionate name for his closer friends and co-workers that would more often than not reflect some peculiar aspect of their personality. And, like many of us, he was also a moody person and had his ups and downs. But that lent itself to a sense of mystery which was reinforced by his vast knowledge and experiences in so many different disciplines in science – and even fields outside of science. He also delved into culinary escapades and was an excellent cook. Indeed his many Schnauzers over the years – Strudel, Tiramisu, and Paprika – all had food-related names as a testament to the importance good food had in his life. I'm sure many of us who were lucky enough to try the 'cuchara' of Luis Diego bemoan the loss of his contribution to our palates.

He left a strong mark on the place he loved the most in Costa Rica and, indeed, one might argue the world. A place he repeatedly referred to as paradise still harbors his presence and one can easily visualize him meandering through the paths of the botanical garden in his trademark sandals with his glasses hanging around his neck. I feel like I scarcely got to know 'Luigi' – as he often signed off in emails – but those few interactions (or were they lessons?) at the station before he fell ill are still very vivid in my memory and I am singularly disappointed that there will not be more of them.

As with the loss of anyone so close, it is hard to know where to begin to process all those feelings – but with such losses one inevitably comes back to the basics of the human condition -- what we will all miss most of Luis Diego is our friend. Those memories will remain among those of us at the station and many of you, and we will certainly be relating his stories and anecdotes as they come up in conversation. Indeed, as a great storyteller himself, it would be an injustice to not carry on his tradition of quirky telling of tales that would often mix fact and fiction and enliven a minor event and turn it into an epic, more convoluted than anyone could have possibly imagined! We will miss this wonderful man and I, for one, am thankful to have at least been privileged to have known him for the few years that I did.

I hope you will all enjoy this very special edition in his honor and take many moments to reflect on the great contributions he left behind.

Zak

We recently held the annual OTS Board of Directors, Board of Visitors, and Assembly of Delegates meeting at Las Cruces. This meeting was held here three years ago and was hailed as a big success so, after rotating around to the other two field stations, it was once again our turn to host the event. For those who came to both events, a particular emphasis was placed on the accomplishments of the last three years, including the two land purchases, the new infrastructure (such as the Visitor's Center, and the new research cabins), and of course the improvements in resources available to researchers in particular, but really to all visiting parties.

In addition to the typical meetings and discussions held at this annual event, we added a half-day symposium this year entitled "Las Cruces Discovered: A Sampling of Botanical, Ecological, and Ethnomedicinal Research" in honor of Luis Diego to recognize his contributions to science. The half-day event was attended by all the Board members present at the Station as well as a number of other visitors who came specifically for the symposium. A number of speakers gave lively and interesting talks including Kifah Sasa, Global Coordinator of the Green Commodities Facility; Héctor Castañeda, OTS Professor for the Global Health Semester Abroad Program; and Eugenio González, Director of the Texas A&M Research and Academic Center in Costa Rica. The keynote address was delivered by John Kress, Research

Botanist and Curator at the Smithsonian Institution in Washington D.C. A long-time friend of Luis Diego, John conducted research at Las Cruces in the past, including work that led to his Ph.D. dissertation. A reception followed the symposium, an event that was well attended by the various boards of OTS and the general public.

Organization for Tropical Studies

LAS CRUCES DISCOVERED: A SAMPLING OF BOTANICAL, ECOLOGICAL, AND ETHNOMEDICINAL RESEARCH

A SYMPOSIUM HELD IN HONOR OF DR. LUIS DIEGO GÓMEZ PIGNATARO (1944 - 2009)

Keynote Address
Dr. John Kress
Research Botanist and Curator
Smithsonian Institution
A Coevolutionary Mosaic of Heliconia-Hummingbird Pollination Systems

Speakers
Dr. Kifah Sasa
Global Coordinator, Green Commodities Facility, UNDP
Dr. Pablo Ortiz
Director General, Area de Salud Coto Brus
Dr. Héctor Castañeda
Professor, Global Health Semester Abroad Program, OTS
Dr. Eugenio González
Director, Research and Academic Center in Costa Rica at Texas A&M

Contact Information
(506) 2773-4004 ext. 3000
reception.lc@ots.ac.cr

Saturday, February 27, 2010
3:00 pm - 7:45 pm
Reception to follow
Las Cruces Biological Station
San Vito, Costa Rica

The official poster for the Luis Diego Gómez symposium.

Memorial Dinner in Honor of Luis Diego Gómez



Freycinetia sp. (Pandanaceae), part of the floral arrangements for the memorial dinner. Photo Zak Zahawi.

In addition to the *Amigos* newsletter we have put together in honor of Luis Diego, in January we celebrated a dinner in his name at Las Cruces. More than 40 people came to the event – both family and friends -- and the event was highly successful and enjoyable, albeit at times rather emotional. A reception was followed by a short video put together by the Station that chronicled his life in photographs. Immediately following, several people stood up to share a few words and memories of Luis Diego and that was followed by a dinner he would have surely enjoyed had he attended!



Minor Porras from the main office shares a few words with other guests at the Luis Diego Gómez memorial dinner. Photo Zak Zahawi.

Digital Herbarium Update II

Progress continues on the Luis Diego Gómez Herbarium project with additional specimens having been added to the database [we now have over 1700 registered collections and more than 900 scanned uploaded images (www.ots.ac.cr/herbarium)]. Much of the database processing work was done by Laura Busby, a fantastic intern who stayed at Las Cruces for months and greatly helped advance the herbarium project – Thank You, Laura!

More recently, the Herbarium was added to the Index Herbariorum registry in November 2009 with the official acronym of HLDG. The Index (<http://sweetgum.nybg.org/ih/>) is managed by the New York Botanical Garden and is the official database for the ~4,000 officially registered herbaria worldwide. It would make Luis happy (I hope) to know that his name has now been officially incorporated into this database!

Research at Las Cruces

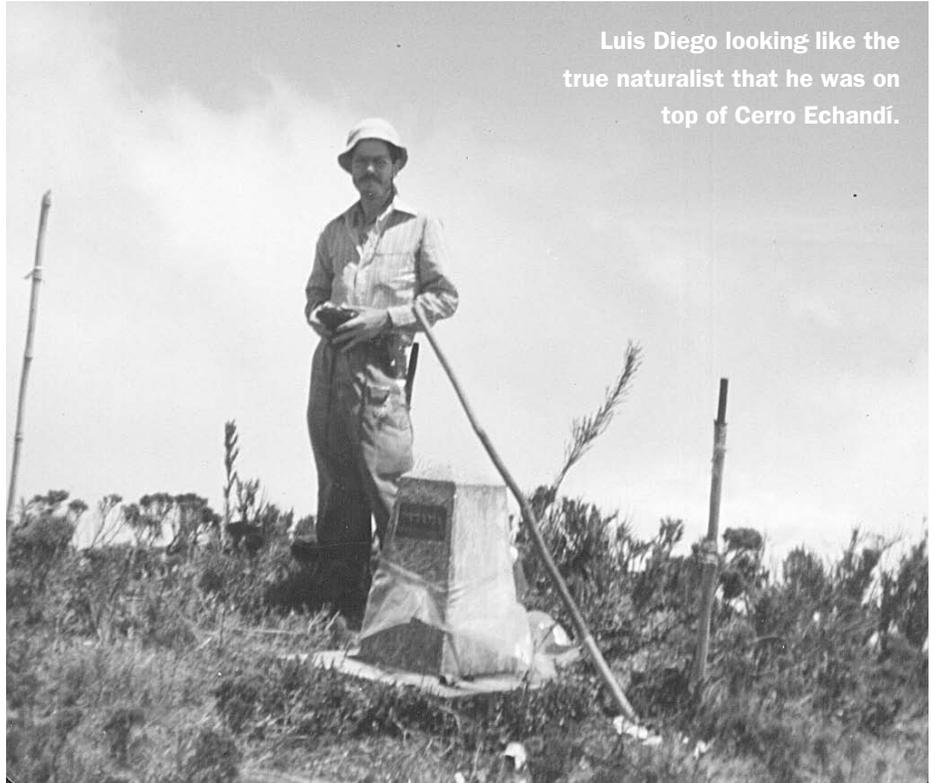
A True Naturalist

Jorge Arturo Jiménez/ Jorge.Jimenez@marviva.net
Director General Fundación Marviva, Costa Rica

Luis Diego was one of the few true naturalists remaining in Costa Rica. A walk through the forest or a drive through the countryside with him was a learning experience. His extensive knowledge on climate, biogeography, geology, paleontology, history and ethnobotany was remarkable. Equally enjoyable was to spend a night chatting about history or explorations, while he exhibited his sophisticated culinary skills in the kitchen. On a few rare occasions after dinner, he played classic music on his piano and then quietly disappeared into his room while the night was still young,

His curiosity for the world surrounding him was inexhaustible. He needed to understand the natural world around him and dedicated his life to this task. While widely known for his extensive work in botany, he produced important contributions in many other areas. In the 1970s he started to gather fossils, especially of plants, algae and mollusks in the calcareous and siliceous deposits of Patarrá, Río Banano, Turrúcares and Bagaces. During the following decade he wrote over 10 articles on this subject, including an unpublished article on fish fossils¹, thus describing new genera and species that increased the paleontological record in Costa Rica.

His pioneer work in paleontology was easily complemented by his interest in the geology of the sites. He started reading avidly on these subjects and by 1975 had produced an extensive bibliographical review on geology and paleontology of Central America and the Caribbean. Later on in 2003 he was told of an important deposit of vertebrate fossils in San Vito



Luis Diego looking like the true naturalist that he was on top of Cerro Echandi.

and his inclination for paleontology was reborn -- he became very active, bringing staff from the National Museum, spending days in the field, gathering funds for this task, and hosting the Museum staff at Las Cruces.

He had also a keen interest in biogeography, natural landscapes and climate. This interest started early in his career when he was a young member of the recently created Mountain Club of Costa Rica and started climbing peaks and mountains throughout the country. In January 1965, Luis Diego led an expedition to the Chirripo and Urán peaks, without guides or porters. Despite this, his group made the difficult trip in less than 12 hours! On his way back he decided not to follow the trail (he was reluctant to follow marked trails all of his life) and instead decided to follow the Urán river canyon, getting lost and hungry

and having to retrace his steps 24 hours later.² His love for Talamanca led him to crisscross those highlands for the next twenty years while consolidating a clear understanding of floristic and faunistic communities in that region.

His expeditionary spirit was unlimited and it took him to all natural areas of the country, working on a diverse number of subjects in addition to botany. Back in 1970 he made the first of over 13 trips to the Cocos Island. In many of these trips he spent months doing botanical collections that resulted in extensive inventories of the plants and fungi of the island, but in many instances he was easily distracted towards other themes. In a trip he made with the Cousteau Society in 1976, we found him at Iglesias Bay sampling land crab populations and discovering a commensalistic relationship between a fly (*Sphaerocidae*) and the crab *Cardisoma crassum*.³

1 Ana Lucía Valerio, Natural History Dep. National Museum of Costa Rica . Electronic Boletín Vol. 3 /Nº 1/ January 2010

2 Kohkemper, M. 1968. Historia de las ascensiones al macizo de Chirripo. Instituto Geográfico Nacional, San Jose. 120 p.

He was able to move easily from an organismic perspective to an ecosystemic one. Later on, he started developing ecological observations on climate and vegetation. In places like Las Cruces and Las Alturas, he used personal funds to establish meteorological stations, from which, through the years, he built valuable databases. This work led him to the production in the early eighties of his book, Vegetation and Climate of Costa Rica, produced jointly with Wilberth Herrera, a dedicated climatologist. Out of the information he gathered in the development of this book he made an additional effort to synthesize information and produced his map on the "Biotic Units" of Costa Rica. This line of work was later expanded to the whole Central American region and was the basis of the World Bank/CCAD project that, with his help, produced the Map (1:250.000) on the Ecosystems of Central America.

Many of his lines of research were rather peculiar, as when he decided to investigate what types of yeast were used in the production of "chicha" the traditional alcoholic beverage at the countryside. He not only identified the yeast species used, but described the fermentation process and -- no doubt -- enjoyed the final product.

A true son of the Humboldtian science, he readily linked his botanical knowledge to classic history. Thanks to his mastery of Latin (together with Greek and five other languages) he translated the classic text *Naturalis Historia* by Gaius Plinius Secundus (Pliny the Elder) and concluded that Pliny established a negative view about fungi in general which was transmitted to Spain through latin herbolaria and agricultural treaties and has been the basis for an Iberian (and subsequent Latin American) dislike of fungi. Interestingly, while going through the Latin text he found what are probably the first references to antibiotic

properties of fungi and the existence of mycorrhizal fungi.⁴

His interest in history led him to study the pre-hispanic cultures and the historical basis of the Costa Rican and Latin American culture. He visited indigenous communities both in Costa Rica and the Amazonas, a good opportunity to combine botanical and ethnological observations. During his late years he even bought a piece of land in the Peruvian Amazonas, where he built a rustic "rancho" and hired a caretaker, with the sole purpose of protecting a piece of forest and having a place "to hang my hammock".

He reconstructed the historical development of biological sciences in Costa Rica, reading the old texts (in French, German, and English) from European

and later Costa Ricans who made the first descriptions of the natural environments of the country. This was one of his favorite themes in talks and lectures at different academic fora. Much of this work was summarized in the 1983 chapter written with Jay Savage on "Searchers of That Rich Coast: Costa Rican Field Biology 1400-1980".

Quite naturally his love for botany, history and cultural themes lead him into ethno-botany, the last course he taught for OTS after his retirement. For him it was a natural combination of his many passions. It was touching to see his tender interactions with the Brunka, Maleku, Bribri and Ngöbe (Guaymí) indigenous communities. And woe to those who visited those small towns with him and did not buy some of the handicrafts sold by the Guaymies!!.

A man with such a wide perspective on the living world and an immense curiosity for the next mountain, was sadly confined in his last months to a hospital room. With his voice growing weaker every week, he complained about his small window through which only a little piece of sky could be seen. Little was he aware of the vast horizons that his life's work had opened to hundreds of students and researchers all over the world.



Embracing a giant liana at the 1998 Amazon workshop.

3 Gómez, L.D. 1977. La mosca del cangrejo terrestre *Cardisoma crassum* Smith (Crustacea:Gecarcinidae) en la Isla del Coco, Costa Rica. *Revista de Biología Tropical* 25, no. 1: 59-63.

4 Gómez, L.D. 1983. De Fungi: una selección de Plinio el Viejo. *Brenesia* 21: 437-47

c. *Laurus Nobilis*, ave:
Quid est planta? Ad
montium vulcanum irazu
MMMCC m.s.m. sub *Chusqueae*
corollae albae; *Caryophyllaceae*?
Ludovicus

Uno de las notitas que escribió Luis Diego a Laurito (*Laurus Nobilis*), practicando su latín.

Remembranza

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Escuela de Biología, Universidad de Costa Rica

«*Sit tibi terra laevis et molliter ossa quiescant*»

Ludovicus

A sí firmaba Luis, con su nombre latinizado, los recados que frecuentemente dejaba sobre mi mesa de trabajo, escritos en latín y con su elegante caligrafía. Para esto cualquier trozo de papel era bueno. De estas notitas logré conservar unas pocas.

Aunque ya tenía alguna relación académica con mi primo hermano y colega Luis Diego Gómez Pignataro, ésta se vio acrecentada a mediados de 1980, cuando comencé a laborar tiempo parcial como curador del herbario en el Departamento de Historia Natural del Museo Nacional, del cual Luis Diego era director, guía y fuerza impulsora de actividades y proyectos, exploraciones y recolectas botánicas, con las cuales se aumentaba el acervo científico de esa institución.

Tengo infinidad de memorias de esos años felices. Unos meses después de mi llegada al Museo, recibí en mi oficina en la Escuela de Biología de la Universidad

de Costa Rica, donde también laboraba -y todavía lo hago-, la visita de un asistente de laboratorio de la Facultad de Agronomía con unos fragmentos de algo que podría ser un hongo o una planta completamente desconocidos para mí y que crecían cerca de las plantas de cacao. La muestra había sido enviada por el encargado de la Estación Experimental La Lola, Batán, Limón. Ese mismo día, por la tarde, me llevé los fragmentos al Museo y se los enseñé a Luis, quien se mostró sorprendido por el hallazgo. Pensamos que se trataba de una planta parásita y comenzamos a revisar cuidadosamente en los muchos libros que poseía Luis. Descartamos las familias que nos eran más familiares, como *Balanophoraceae* y *Rafflesiaceae*, y poco a poco nos fuimos adentrando en otras completamente insospechadas, ¡hasta llegar a *Hydnoraceae*!, una familia con dos géneros: *Hydnora* del sur de África y *Prosopanche* de Sudamérica. En efecto,

los fragmentos parecían pertenecer a una especie del género *Prosopanche*, en aquel momento, desconocido en esta parte de América. Al día siguiente, Luis y yo nos dirigimos temprano hacia La Lola, por el viejo camino a Turrialba, donde nos detuvimos brevemente para saludar a mi señora madre. Luego reanudamos la marcha, queríamos ver con nuestros propios ojos y recolectar, medir y fotografiar lo que sería una nueva especie de *Prosopanche*. Por la tarde estábamos de regreso en el Museo, cansados pero satisfechos. Luis trabajaba muy rápido. Yo medía las partes de la planta, anotaba su morfología y Luis hacía la descripción en latín e inglés al mismo tiempo. Después revisamos el borrador y finalmente Luis se sentó y se concentró ante su máquina de escribir, una IBM eléctrica de bolita con la que mecanografiaba los manuscritos a gran velocidad y con solamente dos dedos. Esta manera de escribir de Luis siempre me

pareció divertida; cuando algún visitante pasaba cerca de su oficina y escuchaba la máquina a ese ritmo frenético se imaginaba a una secretaria escribiendo con refinado estilo, pero si se hubiera asomado al interior de la oficina hubiera encontrado a Luis completamente absorto e inclinado sobre la máquina escribiendo con sus dedos índices. Por esta época, estábamos trabajando también con una inusual *Passiflora* arborescente que Luis, J. Poveda y luego Luis Diego habían recolectado cerca de Chitaría de Turrialba. Posteriormente yo mismo recolecté buen material de esta rara especie en la Reserva Alberto M. Brenes de San Ramón, de tal manera que decidimos enviar por correo aéreo un sobre con los dos manuscritos a Harold N. Moldenke editor de Phytologia. Así, en Phytologia 49(1): 53-55 y 56-57 de 1981 aparecen nuestras dos primeras publicaciones: “A new species of *Prosopanche* (Hynoraceae) from Costa Rica” y “A new species of arborescent *Passiflora* (Astrophea) from Costa Rica”, en las que describimos *Prosopanche costaricensis* L. D. Gómez & Gómez-Laur, y *Passiflora tica* Gómez-Laur. & L. D. Gómez.

Ese mismo año comenzamos a publicar una serie de artículos con el nombre *Plantae Mesoamericanae Novae*, en los cuales dábamos a conocer nuevos registros, en especial de nuestra flora y nuevas especies para la ciencia. Publicamos 14 artículos de esta serie, el primero de ellos apareció en diciembre de 1981 y el número 12 en mayo de 1986, todos en la revista Phytologia. El último artículo, el número 14 apareció en Brenesia 25/26 de 1986. Aquí debo confesar algo importante que solamente Luis y yo sabíamos: ¡No existe contribución número trece! Cuando estábamos redactando la publicación que llevaría este número con mirada picaresca él me dijo: “Jorge publicuémosla como número catorce”. Sorprendido le pregunté: “¿Por qué?” Y de seguido agregué: “¿Scaramanzia?” “Exacto”, me dijo, y agregó con tono jocoso: “Además dentro

de unos años nuestros biógrafos se van a volver locos buscando la contribución número trece”. Los dos reímos.

Durante su estadía en Washington DC lo visité en el verano de 1985. Revisamos juntos algunas colecciones en el Herbario de la Institución Smithsonian (US) y por las tardes caminamos y departimos por diversos sitios de esa capital.

Nos reuniríamos nuevamente en 1988, esta vez en su casa de Barrio Dent para describir lo que sería una nueva especie, un nuevo género y una nueva familia de las plantas floríferas: *Ticodendron incognitum*, Ticodendraceae. Pero, esta es otra historia.

Luego, Luis establecería una larga relación laboral con OTS y se trasladaría a la Estación y Jardín Botánico Las Cruces en Coto Brus. Allá lo visité en varias ocasiones. Luis se veía feliz. Allí pude descubrir otra faceta interesante de Luis: su buena cuchara. Tenía predilección por los platos italianos. En una ocasión me invitó a probar un prosciutto que él mismo había preparado y curado durante largas semanas, acompañado de berenjena, tomates y chiles morrones en aceite de oliva. ¡Excelente! Sin embargo, habíamos cesado de publicar juntos ya que Luis se había dedicado casi exclusivamente a trabajar con varios grupos de hongos. Me sorprendió, cuando a finales de 1998 me envió con un mensajero un sobre con un borrador de un trabajo sobre una especie de *Drosera* que había descubierto recientemente en el Parque Nacional La Amistad. “Revisalo y lo publicamos. Hace tiempo que no publicamos nada juntos” decía una nota dentro del mismo sobre. En efecto, en 1999 publicamos en la Revista de Biología Tropical “Historia natural y presencia de la ‘planta insectívora’ *Drosera capillaris* (Droseraceae) en Costa Rica”. Esta sería, en definitiva, nuestra última publicación.

Además de visitar La Lola, viajamos juntos a diferentes partes del país. La mayoría de las veces eran giras agotadoras de un día; salíamos temprano en la mañana y regresábamos por la tarde a trabajar en

el Museo con el material aún fresco. Una vez llegamos hasta el poblado de La Cruz, frontera norte, buscando una especie de *Isoëtes*, que poco tiempo después sería publicada como *Isoëtes savanarum*. Ese día visitamos varias charcas al norte del Parque Nacional Santa Rosa y recolectamos varias cosas interesantes, entre ellas una rara especie de *Eryngium* a la que dedicamos mucho tiempo, al final la determinamos como *Eryngium ebracteatum*.

El correo electrónico sería luego el medio por el cual nos mantendríamos en contacto, siempre con la firma de *Ludovicus*. A finales de febrero de 2009 lo saludé personalmente por última vez. Pasé con mi esposa por su casa a entregarle un libro y salió muy contento a saludarnos. Se había dejado crecer la barba, se veía bien, siempre optimista. Nos dijo que tenía que realizarse unos exámenes clínicos y pronto nos llamaría por teléfono para invitarnos a su casa a cenar. Lamentablemente, esta invitación nunca se concretaría: los exámenes no salieron bien y tuvo que someterse de nuevo al duro tratamiento médico. En uno de sus últimos correos me decía que se encontraba “desnutrido, anémico y hecho polvo”. Fue muy triste leer eso.

Podría escribir mucho más sobre esos años de interacción con ese científico y humanista extraordinario que fue Luis. Sin embargo, quiero terminar esta remembranza con una última anécdota y un brindis: Ocasionalmente, al caer la tarde, Luis me llamaba a su oficina donde platicábamos un rato sobre diversos temas. Sobre plantas, viajes, botánicos de antaño, nuestros antepasados Gómez, etc. Eran charlas muy amenas y relajadas. Siempre he pensado que Luis me tenía mucha confianza, porque me contaba cosas que, estoy seguro no comentaba con nadie más. En más de una ocasión, para matizar la conversación, Luis sacaba de alguna gaveta de su escritorio una botella de J&B, un par de vasos y nos bebíamos un trago puro de whisky... Hoy, así como ayer, sólo me resta decir: ¡*Prosit Ludovicus!*

Flora and Fauna

Reflections on Ethnobiology with Luis Diego

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The Ethnobiology course created by Luis Diego Gómez was the most interesting and unique course in which I have ever had a part. To call it interdisciplinary would stretch the meaning of the word as most people use it. What other science course have you seen that travelled with its own dance master?

I met Luis Diego and visited Las Cruces in 2003 when I brought a student group to study medicinal plants and indigenous cultures. This led to an invitation to join the Ethnobiology course in July 2004 to teach about the chemistry of medicinal plants, and I was fortunate to participate three additional years. The course typically began with a broad range of activities designed to provide a strong background in ethnobiology. Students studied Spanish intensively, and in some years Luis brought several staff members of the Costa Rican Language Academy to Las Cruces to work with the students daily. There were talks from local experts on linguistics, mythology, conservation and rural development (and I added about a week on medicinal plants and pharmacology, along with lab work). In the evenings, dance master Henry Lou would talk about dance and its cultural importance, and then teach the students a variety of Latin American dances. This was an important part of the syllabus, but Luis was no fool: it also helped control the youthful energy! During these first few weeks at Las Cruces, students developed a research idea, which was really the centerpiece of the course. The students then set out as a group to visit various indigenous groups and carry out their projects over several weeks. The projects typically involved interviewing people (in Spanish) about some aspect of their interaction with the biological world:

the making of textiles, their use of medicinal plants for specific purposes, the level of dental care and so forth. Students then returned to Las Cruces for a few final days to conduct any needed lab work and prepare their reports.

The course was really a reflection of the mind of Luis Diego: his professional interests were very broad. He could speak extemporaneously and with authority on many topics. When the group was on the move, we would stop in various places so that Luis could tell a story. On the drive to Las Cruces, there would be a stop at a farmer's market to discuss tropical agriculture and taste exotic fruit, then a stop in the Cerro de la Muerte area to discuss the unique aspects of the *páramo* habitat. While heading to visit the Brunca, a stop on the ridge at the north end of the Coto Brus was an opportunity to discuss not only the unique dry tropical forest found there, but also to discuss rural development and indigenous peoples, as we looked over the valley that would have been flooded had the development of a dam not been stopped (in part due to Luis' actions many years earlier). One thing I have learned, in large part from Luis' example, is the importance of storytelling in teaching science. The course also reflected Luis' personality and passions. He believed in doing things the right way, in rigorous science, in the value of understanding nature broadly and preserving it, in the contributions and importance of Costa Rica's indigenous peoples. He passed on these and many other values to the course participants.

Luis Diego's Ethnobiology course had



Luis Diego inspects fruit at the Cartago farmer's market along with students of the 2005 ethnobiology course. Photo by Bryan Hanson.

a huge and lasting impact on the students' personal and professional development. Luis became both their mentor and friend, as he did for all of us. His unique ability to bring people together, not only the students but also the assistants and visiting scholars, has led to many new friendships and collaborations. Many alumni of the course kept in touch with Luis, and with each other. I know of several who affirmed or adjusted their career plans because of their experiences in the course.

With Luis' passing, many people have written of his unique qualities and important contributions, both personal and professional. He shared his knowledge so readily. His passion for science, his concern and advocacy for indigenous peoples, and his love for Costa Rica were obvious and infectious. I don't think it is too strong to say that the Ethnobiology course was Luis' way of sharing a small slice of himself with the next generation of scientists. All of us miss him greatly.

De la Comunidad

Pedagogy of Field Studies: Lessons from Luis Diego Gómez Pignataro

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Global Coordinator, Green Commodities Facility

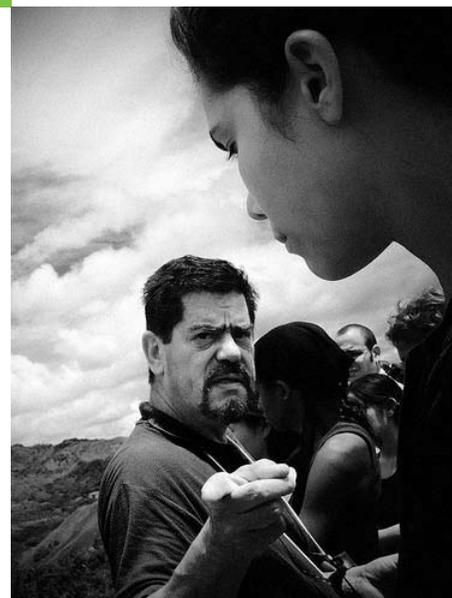
Luis Diego Gómez Pignataro (LDG) was world renowned for his studies in Pteridofita and many other subjects, but not so much –if at all– for his theory of learning. So I can imagine readers wondering why choose ‘pedagogy of field studies’ for an edition honoring his life. I justify this selection on the fact that his interest in specific topics was exceeded by his general thirst for knowledge, and more importantly, for learning. For twenty years he served OTS as director of Las Cruces and a coordinator of field courses. During this period, he led foreign and national students, scientists and professors throughout Costa Rica on different quests of scientific inquiry; however, regardless of the subject, the characteristic method behind these efforts was to learn about nature in culturally diverse settings. By analyzing Luis Diego’s teaching style, I attempt to find pedagogical traits that can inform the processes of continuous improvement of OTS’s main business: scientific education through field studies.

LDG’s field courses employed diverse pedagogical perspectives to learning. From my experience, working for almost a decade as an invited lecturer on several of his field courses, I have identified three perspectives to learning that influenced his methods: cognitive, situative and dialectic. According to the cognitive view, learning takes place through efforts of students as they organize, store and find relationships between information, linking old and new knowledge, so the emphasis is on how information is processed. In this sense LDG’s predilection for Rapid Ethnobiological Assessments (REA), followed by classroom discussions of related topics is a good example of cognitive design. Students were asked to collect medicinal plants in the field, thereby gathering information about the world through actions or objects, and then, in the classroom they discussed these collections,

and other medicinal plants through photographic representations, in more detail. Finally, students were stimulated to think in abstract terms by moving from iconic representations of the subject matter, to symbolic representations. For example, if a sample of *Psilocybe cubensis* was collected or shown to the class in a picture, the discussion would then shift to the conceptual difference between entheogens and hallucinogens. Therefore, following Jerome Bruner’s stages of intellectual development.

The situative perspective, shifts away from analyses of components of subtasks and onto patterns of successful –socially inserted– practice, can also be found in LDG’s style of managing field studies. He was always concerned about moving beyond merely training students the required skills (taxonomical sampling, interviewing of informants, etc), to stimulating their sense of belonging to a community of practice.

Finally, LDG’s dialectic approach to learning was evident from his insistence that students learned through reflections over practice rather than solely from ‘theory’ or ‘contents’. For example, it was very common for him to send students into rural settings with little preliminary explanation and ask them to find out about ‘local issues’; accordingly they would have to critically assess how best to conduct interviews in rural settings. Students would come back from these initial ‘exposures’ to rural settings with very well articulated arguments on the importance of improving their language skills, or on the need to have preliminary background information before a field visit, or on how to plan initial visits. This was fertile ground to then really deepen students’ knowledge and sensitivity about working in rural settings. Overall, LDG was not only hoping to educate about contents (through cognitive methods), or to make students feel part of a community of practice (through pursuing a situative sense of belonging of the students to the biological disciplines); but instead, he aimed to form responsible and committed



Luis Diego teaching in the field.

scientists who possessed common sense and a sense of duty.

LDG’s pedagogical influences show how field studies may be informed from diverse pedagogical perspectives. Additionally, OTS could also inform the design and management of field studies from the following five characteristics of LDG’s teaching style:

Challenging preconceptions. In the preface to the very first Ethnobiology reader LDG wrote “I relish the idea of having people observe things in a different light. It is also a pleasure to show them that “otherness” has no meaning whatsoever because we are what the environment tells us to be as we curb the environment to our needs since the cave age.” (LDG Las Cruces, 25th August 2001). Thus, from the very first moment, a student is exposed to formal thinking about ethnobiology, a discipline based on the notion of ‘other’ peoples’ taxonomies and classification systems, LDG was expecting students to contest the very foundational assumption of that whole discipline. The lecturer is inviting students to approach learning from a critical standpoint from day one, and to avoid the blind acceptance of underlying assumptions.

To be as scientific in teaching practice as one is in the choice of subjects. To illustrate

this I use again the example of Rapid Ethnobiological Assessments. Through such an exercise students gained discipline-specific skills. But LDG was not satisfied with this. Students were also expected to come back from the field and contrast data on medicinal plants provided by local informants during transect walks, with literature on local botany. The pedagogical objective was to challenge the preliminary notions that students may have had about traditional Ethnobiological Knowledge Systems. For example, by finding plants reported by informants to be medicinal but were widely reported in the literature as poisonous, thereby proving wrong assumptions of infallible local ethnobotanical knowledge. Thus, by going the extra mile, LDG was able to ‘do’ science with students rather than just speak about it to them.

Don't be afraid to have a position. LDG, having written the very first environmental impact assessment of the Boruca Dam, was a firm objector of this project. This hydroelectric initiative was an integral part of the Costa Rican government's energy provision plans but would have resulted in heavy damage to the Terraba-Sierpe wetlands, and would have displaced the entire indigenous community of Rey-Curré and parts of Boruca. Field courses conducted in southern Costa Rica allowed students to meet stakeholders and learn about their positions on such a central issue (the dam). This fostered an understanding about the complexity of natural resource management. The honestly-exposed position of the lecturer (LDG) in such a conflict setting, only served to stimulate debate about complex socio-ecological landscapes. Students were also provided with the position of other stakeholders, and were able to analyze and come up with their own conclusions. Are we giving ourselves the liberty to expose our positions to common concerns, and therefore maintain open and stimulated debate in learning settings?

Field Courses as an ideal setting for a truly transdisciplinary experience. A typical ethnobiological one month course

managed by LDG consisted of lectures, group work and field work on botany, sociology, linguistics, Spanish, introduction to indigenous languages, development studies, lab research, entomology, herpetology, ethnobiology, quantitative and qualitative research methods, ethno-dance, interviewing techniques, among many other topics. The aim was not to cover many subjects but to connect many at the same time. LDG could interrupt ethnic dance lessons at the end of the day, to give a lecture on the ritualistic uses of tree bark among indigenous groups. This would happen before telling students that they would have to make the costumes out of the same bark for an end-of-term ethno-dance performance.

An opportunity for transensory education. As students are away from home and exposed for a whole term to a novel learning environment, every experience, even sensorial, can be systematized for educational purposes. LDG always insisted on visiting markets to smell, to have fruit-tasting labs, to drive up to viewpoints to see, and to shut up students in the forest so that they listen. He was also fond of exposure, of not being afraid to visit a hospital or a clinic, of purchasing a lunch from a local restaurant, or even organize a herpetological walk in the middle of the night. In short, he was responsible when it came to the management of risk, but avoided risk managing the learning of students.

This brief overview of LDG's treatment of field studies has shown us that diverse pedagogical perspectives can be employed to our learning in and through the field, as well as several other insights of how to foster good learning. Finally, a continuous process of open, critical reflection about how and what OTS teaches has been suggested here in order to strengthen this organization's educational mission; and as a way of taking seriously the underlying – even existential – concerns Luis Diego had about learning, and about how to help others learn about nature. A good way to honor this brilliant mind!

A mi Amigo Luis Diego

Henry Lou/ loumoves@yahoo.com

Recuerdo en el año 2000 que viajé a Costa Rica a visitar una gran amiga bióloga argentina, Gabriela Demergasso. Me sorprendí muchísimo al llegar porque era como estar en Colombia: increíble, ¡como si no hubiera salido del país!. La similitud era increíble, y lo amable de su gente me recordó nuestras raíces comunes y de cómo esta hermandad se manifiesta frente a mis ojos.

La primera vez que oí hablar de Luis Diego fue al tomar el bus del aeropuerto en compañía de mi amiga. Ella me comentaba que estaba por iniciar como profesora en el curso de etnobiología, el cual lo dirigía el Dr. Luis Diego Gómez—amablemente ella se había adelantado a hablarle a su jefe de mi trabajo sobre Biología y la Cultura Étnica Suramericana, de tal manera que al conocer posteriormente a Luis Diego sentimos como que el camino que transitábamos era compartido.

Luis Diego me propuso trabajar con el curso de Etnobiología, como profesor de movimiento y danza étnica. Acepté la propuesta, la cual a la vez me brindaba tiempo libre para conocer Costa Rica. Al taller, que llamábamos “Movimiento Étnico Suramericano”, asistieron los estudiantes del curso con los cuales trabajé cultura y movimiento y, por supuesto, biología. Con frecuencia teníamos estudiantes de otros cursos participando del taller.

Luis Diego era una persona seria, con perspectivas muy interesantes sobre el arte y la cultura; calificado como científico en su país, con una intuición sorprendente, él sabía que el arte nunca debe desligarse de la intelectualidad y la ciencia. El dedicó con entusiasmo su tiempo para acompañarme en algunas clases y compartir la euforia de los estudiantes. Con humildad recibí sus agradecimientos por los resultados exitosos de esas clases donde me dijo: “Me gusta tu método que combina el arte y la ciencia”, y realmente esa era mi alianza, justo la columna vertebral de mi propuesta.

Este fue el inicio de una de mis grandes aventuras hacía el conocimiento, ciencia y arte, al lado de un hombre maravilloso del cual aprendí más de lo que me enseñó la universidad. Trabajé con este curso por 8 años, un proceso que llevó a los estudiantes a afianzar y desarrollar propuestas muy elaboradas con el movimiento étnico y fusiones con matices propios de los lugares de procedencia de los participantes

Ahora, desde el sur, abrazo la imagen de Luis Diego, pues la relación de trabajo y como amigos fue maravillosa. Le agradezco la oportunidad de esta experiencia y la conexión con Costa Rica y el mundo tico, país hermoso y lleno de sensaciones en todas las áreas del conocimiento científico.

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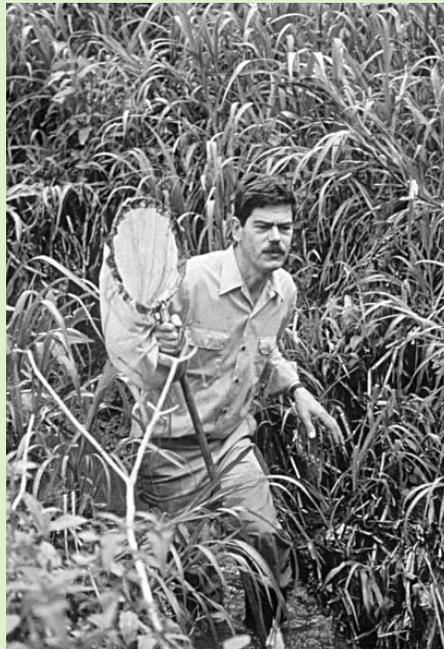
Seventeen Years of Development at Las Cruces

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Finca Cántaros, Linda Vista de San Vito

In a location as remote as OTS' Las Cruces Biological Station, there are many ways to define "development," and the years of Luis Diego Gomez' tenure (1986-2003) were witness to tremendous change. Development is always a human story.

When Robert ("Bob") Wilson and his wife Catherine could no longer financially manage Finca Las Cruces (as they called the garden and forest), OTS came forward in 1973 to purchase it, stipulating that the Wilsons could freely live out their years on site. Due to its other substantial commitments at La Selva, OTS could provide only minimal support for Bob's management of the grounds. This hands-off approach opened the door for certain interested parties to call for an expropriation attempt by the government. OTS' ownership did ultimately save this botanical jewel. This "saving" would certainly not have happened, had not Mr. Wilson recommended with such vigor the 41-year old San José botanist Luis Diego Gómez to assume directorship of Las Cruces in July, 1986. Soon afterward, a legislative decree moving toward takeover was issued.

Accepting the challenge to work with his long-time friend (the now infirm widower, Bob), and a crew of five, Luis identified his first priority as developing relationships with local leaders. He organized community support to oppose expropriation, and his networking skills both locally and nationally kept Las Cruces in OTS hands. In 1988 at a special ceremony, in the presence of Robert, the ten-hectare garden area of the Las Cruces property became officially known as the Robert and Catherine Wilson Garden. Funding was needed, and there was much to do.



Hunting for insects in an abandoned pasture of *Pennisetum* sp.

The resourceful new director proved to be undaunted by the alarming deterioration of the buildings and grounds. Known primarily for his taxonomic brilliance and his decade-long management of the National Museum of Costa Rica and its Herbarium, Luis took the helm at Las Cruces not only to develop a master plan, resuscitate weedy collections, renovate greenhouses, initiate computerized accessions records, develop new trails and other sundry projects associated with botanical gardens, but much, much more. He was the ultimate "hands-on" person.

Monthly letters from Luis Diego to the OTS directors in his first year describe the degree of decrepitude of the Stanley Smith Science Center building, completed in 1963. A consummate handyman, Luis enumerated work in progress on matters from safety issues to rewiring, and his reports reveal a deep appreciation of humor as an alternative to hand-wringing:

PIPES: "Whoever designed the pipe and drain distribution here was definitely a student of Mr. Escher. Better results would have been obtained with fewer miles of pipes and bends. [It is] a truly baroque drainage system that we have been slowly putting into straight lines."

WOODWORK: "Lack of proper maintenance has worn out the Station. Woodwork under restrooms is in very bad shape and invaded by wood rot fungi. I will waterproof tiles which should retard, together with applications of chlorophenol to wood, the collapse of these baths, which were, for certain, not built by the Romans."

Those projects were at least straightforward. Others involved interpersonal, multi-lingual, international communication skills, long before the days of the Internet. Luis developed, with part-time staff from San José and local community leaders, the first environmental education program in the county. He sought new international members for Bob's fledging Amigos support group of plant professionals and gardeners; developed a sister-garden relationship with the UC Berkeley Botanical Garden and, later, ties to Fairchild, Longwood and Chanticleer Gardens which brought volunteers and dedicated research associates. Luis helped organize bi-national meetings on the Amistad Park, developed ties to the Minister of Tourism and the U.S. Ambassador; met frequently with government officials in the Ministry of Education and encouraged the teaching of horticulture in the local agropecuary curriculum. He collaborated with local landowner Roig Mora and Stanford

University's Center for Conservation Biology to oversee the building of the Las Alturas Field Station, giving OTS courses opportunities to work in the Amistad Biosphere Reserve.

Meanwhile, Luis published his own research papers, alone and with colleagues, on ferns and fungi, and collaborated with researchers in such areas as entomology, herpetology, and mammalogy to name a few. Multi-tasking was Luis' real specialty.

Development of students' knowledge and skills mattered greatly to Luis, and he invested tremendous energy in supervising interns and working with OTS students in the field to be sure they took full advantage of Las Cruces' botanical and biological resources. In the early 90s he developed with Costa Rican and North American medical doctors a new course in Tropical Medicine, and learned in passable fashion the language of the Boruca and Ngöbe Buglé (Guaymí) people so he could involve them in his special courses on Ethnobotany. These courses have evolved with new names and funding to include talented high school students.

As Associate Director of Development and Visitor Administration at Las Cruces from 1988 to 1998, I worked with Luis and the OTS directors, board members, and advisory committee to help establish fundraising priorities for the field station. Acquiring support for research and education is always challenging, but the National Science Foundation, the Andrew W. Mellon Foundation, the Stanley Smith Horticultural Trust, numerous family foundations and generous individuals recognized the excellence of the OTS mission, Las Cruces' special biological assets, and the exceptional progress made under Luis' leadership. Funds were secured in 1990 to renovate the Wilson House, and in 1991, the Stanley Smith Science Center. Operations and special project support (such as long-term researcher cabins) came from individual visitors, researchers and, since its debut in

1989, from far-flung recipients of the *Amigos* Newsletter.

Major development successes continued with constant support from OTS' Durham, North Carolina Development Office. These included the building of a new and greatly expanded field Station after a devastating electrical fire destroyed the Stanley Smith Science building and lab in 1994. Special development events were planned in Costa Rica and the United States, and gifts from around the world permitted improved architectural design and safety features so that Las Cruces could become a top-tier research facility.

In late 1991 an opportunity arose to double the size of Las Cruces Forest Reserve, and in March of 1993, after a successful fundraising campaign, 91 hectares were purchased from the Gamboa family. Later, in 1998, another land acquisition campaign was successfully completed with the help of many donors, including one major gift from a family with a daughter named Melissa. That former pastureland of the Rojas family is now a thriving research area called Melissa's Forest. Before Luis' departure to La Selva in 2003, several more building projects were completed, from greenhouse expansion to a long-desired Garden maintenance workshop and tool facility. Luis was particularly pleased about that for the sake of his crew.

Luis worked tirelessly during his tenure at Las Cruces, years he considered the most productive and satisfying of his career. And though he was not especially fond of asking people for gifts, he excelled at envisioning and articulating what Las Cruces needed, and through his wit and erudition, stimulated people to be generous.



Luis Diego learns the intricacies of how to cut a ceremonial ribbon for the fountain, built in honor of his lifetime contribution to the tropics.

For those interested in making a donation in honor of Luis Diego please consider contributing to the Las Cruces Endowment Fund – one of Luis Diego's primary goals was to make the botanical garden self-sustaining.

As always a big THANK YOU to you all!

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