

BULLETIN



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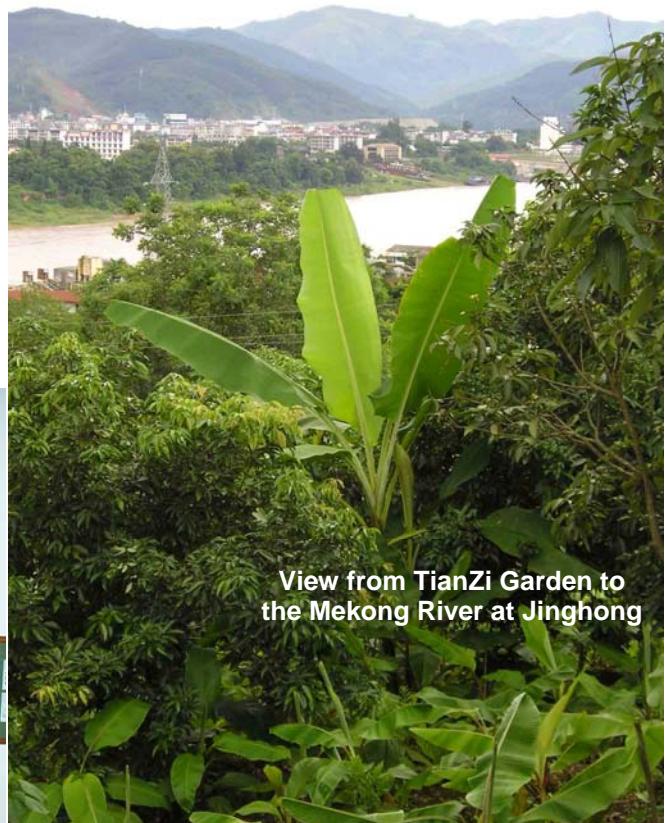
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How I became acquainted with Xishuangbanna, China

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In July 2005 I made my first trip to Xishuangbanna, China. My subsequent expeditions to China followed in 2006 and 2007. I was invited to come to China by Dr. Josef Margraf of the TianZi Biodiversity Research & Development Centre in Jinghong, Xishuangbanna. The TianZi Biodiversity Centre (<http://www.natureproducts.net/>) was founded in 2004. It is a Chinese registered organization, politically based within the Ministry of Science and Technology. Several inde-

pendent sections of the organization share the common goal of biodiversity conservation and development. Before my visit, I was already their scientific advisor for their wild bananas, as a result of my long friendship with Dr. Margraf's wife Minguo and my knowledge of wild bananas. The aims of this first trip were to evaluate their wild banana collection, conduct some field research on wild bananas, especially in some nature reserve areas, and to introduce myself to the Xishuangbanna Tropical Botanical Garden of the Chinese Academy of Sciences. In 2007, I was nominated XTBG / CAS visiting scientist scholar but that story will be published in a future Fruit Gardener article.

Xishuangbanna

The Xishuangbanna Dai Autonomous Prefecture is located in the south-western tip of Yunnan province on the northern edge of the tropical zone, in south-western China. It is situated along the upper Mekong River, contiguous to Myanmar (Burma) and Laos. The climate of Xishuangbanna is dominated by southwest monsoons with heavy rainfall from May to October and a dry season from November to April. The plains and river valleys with an elevation of less than 800 meters have a tropical monsoon climate and those places with an elevation of over 800 meters have a subtropical monsoon climate. The annual mean temperature of the whole prefecture is 21° Celsius. It is usually free of frost all year round, but records of frost indicate temperatures of – 2° Celsius occurring every 25 years at elevations below 800 m, and regular short periods of frost at altitudes above. The yearly rainfall ranges from 1200 to 1900 mm. In comparison with typical rainforest zones, Xishuangbanna is cooler in the dry season, and has lower rainfall, but there are 100 foggy days which increase air humidity and compensate for the shortage of rainfall. The tropical rainforest of Xishuangbanna provides favorable and extremely rich environments for flora and fauna.

Travel to China

I left my home on July 11th, bound to the Helsinki airport from which I flew to Shanghai, China, where I arrived the next morning at the new Pudong international airport. As my connecting flight departed from the Hong Qiao domestic airport, which is located some 70 km from the international airport, I decided to stay overnight in a

The Purpose of HSI

The purpose of HSI is to increase the enjoyment and understanding of *Heliconia* (*Heliconiaceae*) and related plants (members of the Cannaceae, Costaceae, Lowiaceae, Marantaceae, Musaceae, Strelitziaceae, and Zingiberaceae) of the order Zingerberales through education, research and communication. Interest in Zingerberales and information on the cultivation and botany of these plants is rapidly increasing. HSI will centralize this information and distribute it to members.

The **HELICONIA SOCIETY INTERNATIONAL**, a nonprofit corporation, was formed in 1985 because of rapidly developing interest around the world in these exotic plants and their close relatives. We are composed of dues-paying members. Our officers and all participants are volunteers. Everyone is welcome to join and participate. HSI conducts a Biennial Meeting and International Conference.

Membership dues are (in \$US): Individual, \$35; Family, \$40; Student, \$10; Contributing, \$50; Corporate (Company or Institution) \$100; Sustaining, \$500; Libraries, \$25. Membership fees constitute annual dues from 1 July through 30

June. All members receive the BULLETIN (usually published quarterly), the Membership Directory, and special announcements. Please send all inquiries regarding membership or Bulletin purchases to: Ray Baker, Lyon Arboretum, 3860 Manoa Road, Honolulu, HI 96822, Phone (808) 988-0455, Fax (808) 988-0462, raymondb@hawaii.edu. Back issues of the Bulletin are \$5.00 per issue.



Above, left to right:
Dr. Josef Margraf,
Minguo's father, Mrs.
Li Minguo-Margraf.
Upper right: TianZi
Biodiversity Centre
Garden.
Lower right: A TianZi
office building.



huge jungle-like tropical garden. There are some ten Thai style wooden buildings on the property, some of which are fairly large. Many of the buildings accommodate German PhD students and researchers who are conducting their studies in Yunnan. I could not ascertain the total number of people who work at TianZi, as they have so many projects going on in the

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HSI Officers for 2008-2009

President, Anders J. Lindstrom; Vice-presidents for Membership, Carla Black and Jan Hintze; Secretary, (not filled); Treasurer, David Lorence; Editors, Ray Baker and Victor Lee; Cultivar Registrar, Bryan Brunner; Archivist: Sandra Barnes. Board of Directors: Mark Friedrich, Raymond Jerome, David Orr, David Skinner, Chelsea Specht.

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countryside. However, there are some 15 assistants who work on the property, in the gardens and in the office.

The garden is close to a rubber tree plantation, and was itself formerly a rubber tree plantation so the soil is consequently poor. The plants are irrigated with water from the river. There are a number of different species of snakes, frogs, birds, and small mammals in the area.

Research

When I first evaluated TianZi's wild banana collection, I found that some specimens were very interesting to me and new to science, such as *Musa acuminata* var. *chinensis*, *Musa itinerans* var. *xishuangbannaensis*, *Musa rubinea*, *Musa yunnanensis*. Later on, I named and described all of those mentioned taxa in scientific publications which have been already published. As I was very interested in seeing those mentioned taxa in their natural habitats and in collecting the proper herbarium specimens, Dr. Margraf arranged several expeditions to natural reserve areas or the other forest areas which have not been cleared for agriculture or rubber tree plantations. The first expedition was to the forested area with Dr. Margraf and two local guides. Our goal was to locate *Musa itinerans* var. *xishuangbannaensis*. We left early in the morning and drove by car for one hour, to the place where we picked up our guides. Then we had to walk into secondary rain forest along small paths as there were not any roads. The area was very mountainous, typical to Yunnan, so the path went up and down with a lot of obstructing roots which made our hiking very difficult. We had to hike for over three hours before we found the location of the var. *xishuangbannaensis* population that we were looking for. It was located in a ravine and we had to slide down along a steep slippery slope in order to get there. The population consisted of some 50 individuals, of which some were flowering and fruiting. This variety is the second tallest known *Musa*, which grows up to 12 meters high, over a time frame of roughly 2½ years. The biggest variety is *Musa ingens* from Papua New Guinea. I managed to make all of the needed measurements and collect the necessary herbarium samples. We collected samples from this remote location rather than from the collection at TianZi because the plants at TianZi were not flowering at the time, and the inflorescence is necessary for a complete formal description. Sometimes in southern China's rural areas it is difficult to find flowering bananas as people collect the flower buds for eating. Also in this variety the flower stem inside the pseudostem is edible with good taste as a refreshment. However, the local people eat the



flower stem of only this variety, and consider the stems of other bananas as inedible. After our work in the ravine, we hiked along another path for some three hours back to the car, with our hardy guides carrying the bananas, and specimens that we had collected. We were fortunate that during our hike, we did not get rain, as this was during the rainy season and some days the rain is very heavy, as is typical in the tropics. There was

one incident worth mentioning. As I have type 1 diabetes, I have to be very careful with my blood glucose balance and therefore I always carry some sweets with me as a first aid. However, during this unexpectedly hard hike, I had to use all of my sweets and still my sugar balance went too low so I badly needed some more sweets. Our guide saw a bee's hive in a tree and climbed up and dropped the hive down. He got a lot of bee stings but we got very sweet honey which raised my glucose balance. Late that evening, we returned to TianZi.

During the next five days we made several similar hikes in the natural reserve areas and forests, and for those trips, we were also accompanied by Minguo. The landscape was very mountainous everywhere. I noticed during our hikes, a huge number of wild orchids everywhere. In addition, I saw quite a

large number of different wild fruits whose botanical names remain unknown to me as our guides knew only their Chinese names. We met many local people along the paths during our excursions, who were collecting edible material from the forests, such as mushrooms, wild fruits, edible roots, etc. They also collect banana buds for themselves or for selling in the market, which is why we had to go to the most inaccessible places in order to find the bananas that we needed. In conclusion, I managed to measure all of the previously mentioned *Musa* taxa and collected the proper herbarium specimens. I made the final analyses / descriptions from the collected specimens in my lodge at TianZi, where I had two helpful puppies that followed me everywhere.



Xishuangbanna Tropical Botanical Garden

The Xishuangbanna Tropical Botanic Garden, Chinese Academy of Sciences (<http://en.xtbg.ac.cn>) was established in 1959. The garden is located in Menglun Town of Mengla County, Xishuangbanna Dai autonomous Prefecture of Yunnan Province and it lies at 21°56' North latitude, and 101°15' East longitude, with an average elevation of 550 m, annual average temperature of 21.7°C, and rainfall of 1500 mm. The garden is surrounded by the Luosuo River, a branch of the Mekong River. During the past five decades of development, the

garden is maintained by a staff of some 200 people, who regularly fertilize and irrigate the plants, as needed. With an area of 900 ha (2,224 acres), XTBG is the largest botanical garden in China and has the richest plant collection in the country. XTBG has about 10,000 species of tropical and subtropical plants from China and from abroad flourishing in its 35 collections, such as the banana collection, with some 200 cultivars and wild species. In addition there are numerous beautiful and rare plants from tropical rain forests from all over the tropics. Most of the plants in the garden were planted after the garden was established, and most are



Musa coccinea



Musa velutina



Musa ornata



Musa balbisiana

Bananas at the
Xishuangbanna
Tropical
Botanical Garden



Musa 'Praying Hands'



Musella lasiocarpa

garden has become an integrated base for research on tropical botany, forest ecology, plant germplasm preservation, and public science education. Production techniques and problems are also studied at the garden. The

labeled. As the garden is in a tropical setting, there are no greenhouses. The garden has some 600,000 visitors annually, and most visitors are from China. Cars may be driven in the garden only from the gate to the park-

ing lot. Most of the roads and walkways in the garden are paved. Short tours are conducted on foot, but there are electric vehicles that are used for longer tours.

Travel to XTBG

On the morning of July 19th, Dr. Margraf, his wife and I headed to XTBG, which is located some 90 km

had visited TianZi during my stay there. Upon our arrival to the garden, as we were heading to XTBG's herbarium I was introduced to the curator of the herbarium, Dr. Wang Hong, who became my counterpart at XTBG. He subsequently arranged the entire missions to Yunnan in 2006 and 2007. After discharging all of my collected herbarium specimens, I was booked in the



Trevesia palmata



Baccarea sp.



Allamanda cathartica



Alocasia odora

Exotic plants at the
Xishuangbanna Tropical
Botanic Garden



Calliandra haematocephala



Ficus curtipes



Bixa orellana (green form)



Nephelium lappaceum



Ravenala madagascariensis



Borassus sp.



Archontophoenix alexandrae

from Jinghong. For about half of the way, that narrow, heavy traffic road was along the Mekong River, first going southeast towards the Laotian border and then turning northwest to XTBG. It took some three hours to drive there. There are a number of large banana and pineapple plantations in the vicinity of the gardens. I had already been introduced to some of XTBG's management, who

garden's hotel. Near the hotel, there are some aesthetically attractive ruins of structures that predated the gardens. After having a lunch together, Dr. Wang Hong and his assistant showed us the herbarium and some central parts of the huge garden. Before Dr. Margraf and his wife left, we agreed that they would pick me up and take me back to TianZi on July 22nd as I left my

main luggage at their home, and my homebound flight was from Jinghong on July 24th. The next day, Dr. Wang Hong and I arranged all of the collected herbarium samples and studied the garden's huge banana collections. Most of their landrace banana cultivars remained unclear to me but I could readily recognize their wild species. Only one, viz. *Musa aurantiaca* collected from the garden in Tibet, was unknown to them and to other Chinese botanists. I published an updated description of it, which can be found at: <http://www.plantsystematics.com/qikan/manage/wenzhang/aps07056.pdf>.

I spent most of the next day studying the garden's fruit tree collections, which included most of the known tropical and subtropical fruit tree species, but most of them were out of fruiting season. In addition there were a number of species that were unknown to me. As my focus at that time was on bananas, I did not record those fruit trees. Although visitors and staff may collect fruit, it is also sold at a market within the garden. The garden also has huge collections of gingers, palms, etc., but due to the huge area and my limited time, most of the other plants remained unstudied. XTBG has also a huge library as there are about 200 CAS students from China and

Advice from the Experts

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At the HSI conference held in Iquitos, Peru in June of 2008, I spoke to Jan Hintze, who has been growing heliconias for commercial cut flowers in Darwin, Australia, and to Anders Lindstrom, the current president of HSI. Both of these very knowledgeable individuals, with years of experience of successfully growing heliconias, gave me some “pearls of wisdom” concerning growing heliconias that I thought would be valuable information for all of our members, as well as for anyone interested in growing heliconias.

First of all, heliconias require large amounts of potassium, and small amounts of phosphoric acid to produce large amounts of inflorescences. Potassium is available from the "Potash" portion of fertilizer mixes, or in the pure form as potassium sulfate (KSO_4). The commercial "pure" potassium sulfate is actually only 50% potassium sulfate and the other 50% part the mix is potassium oxide (KO_2) – which the agronomist here in Puerto Rico says is the "active form" of potassium that is absorbed by the plants. The sulfate radical (SO_4) helps to acidify the soil. Jan applies potassium sulfate and ammonium sulfate at the rate of 50 grams each per square meter to her heliconias once a month and says she can really see the difference in the increased number of inflorescences produced when she uses the potassium. Of course, an increased number of inflorescences in heliconias mean an

abroad, studying for their PhD and Master's degrees. I had access to the library as well.

Home bound

On July 24th Dr. Margraf and his wife came to pick me up, and drove me back to Jinghong. I spent the night at TianZi and in the morning I was escorted to the airport. I flew via Kunming to Shanghai, where I spent the night at a hotel near the Pudong international airport. In the morning, my homebound journey started and I arrived back home in the evening. I unwittingly brought a lot of small ants back from China with me. They were hidden in my suitcase and remained in my apartment for several months before they disappeared. I will describe my subsequent, longer explorations in China in future issues of the *Fruit Gardener*.

Acknowledgement

I would like to give my warmest thanks to my friend Emory Walton who made this article possible by correcting numerous misspellings and providing other valuable comments during its writing.

increased production of the number of stems produced by the clump. Anders thoroughly agreed with this practice and the science behind it.

If your soil is too acid, you may raise the pH by adding "Dolomite" or "Cal" (Calcium Carbonate or "Lime"). If your soil is too alkaline, you may acidify it by adding powdered sulphur, or sulfate based fertilizers such as ammonium sulfate.

The second important part of our discussions dealt with the pH of the soil. According to the experts, heliconias prefer a "neutral pH" with a slight shift to the acid side--optimum pH of heliconia soil being between 6.0 and 7.0 pH units. Jan speculates that it is at this pH that the heliconias are able to adsorb most nutrients from the soil and that strongly acid or alkaline soils prevent the absorption of these nutrients. Perhaps this is why heliconias, and almost all plants, seem to fare better with rain water (neutral pH) than with water from other sources which may be more acid or alkaline.

Anders has found that setting his heliconia containers of moisture loving species--such as *H.reptans*, *H.xanthovillosa*, *H.magnifica*, *H.standleyi*, *H.marginata*, and several others--into outer containers *constantly containing water* greatly contributes to the well being and stamina of these plants. So far, he says, he has not experienced any "root rot" from using this procedure.

I hope that this information from the experts may be helpful to all of you in helping you to grow healthier, more beautiful, and more productive heliconias.

The Magic of Seeds—Believe in Miracles

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(Héctor Méndez-Caratini is a member of Heliconia Society International and President of Heliconia Society of Puerto Rico. His farm is one of HSI / HSPR Cooperative Conservation Centers worldwide.)

A long time ago Carla Black once asked me: "How long should I keep heliconia seeds which haven't sprouted in the germinating trays, since I need to make room for new seeds?" I responded that I keep mine at least two years (sometimes three, depending on how precious, rare and uncommon they are).

Even though this is not a scientifically carried out test, it is a real case scenario that can be verified by the accompanying photos that I took (October 6, 2008) to illustrate this story. It's a personal observation of one of my on-going experiments with seeds.

These particular specimens of *Heliconia 'Surinam Gold'* seeds were originally placed in their germinating trays in September 14, 2006. Some of them sprouted immediately, within two months, and were transferred to plastic pots, and later transplanted to the ground. Afterwards, all of the remaining seeds went "dormant". Their natural period of germination was over, until the following germinating season was to arrive.

Seeds have a natural, biological clock inside. To maintain the survival of the species, not all of the seeds germinate at the same time. Some take longer than others to germinate. This is a natural phenomenon, which acts as a defense against cyclical periods of dry spells, hurricanes, floods, etc.

I leave totally unattended for over a year or two those seeds that do not germinate within a reasonable period of time (two to four months). ("Maltratadas" in Spanish - treat them very, very badly; don't even look at them. If they have no soil on top, I leave them dry and uncovered; the opposite of baby caring for them, which could create weaklings.) Yes, that means NO water at all. This way they are led to believe they are undertaking the natural dry-spell season in the hot, tropical, jungle.

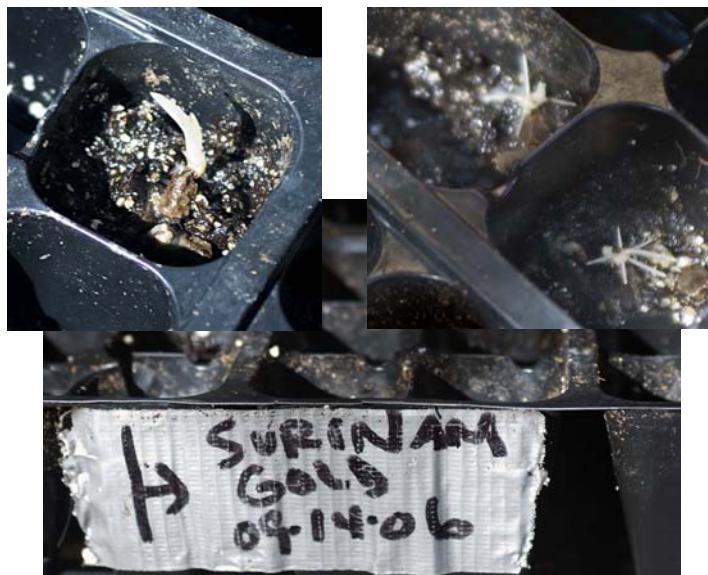
Later on, as the season of seed maturation approaches (when seeds turn blue on the original mother plants that are located at my farm), I add lots of water to the germinating tray and submerge them completely, as if they had been flooded. Then, I cover the germinating tray

with another empty one, and leave them unattended in total darkness.

After a month and a half, I uncovered the black plastic tray and, to my amazement, discovered that eight seedlings, out of twenty possible ones, had germinated – in a period of over 24 months after initially being placed in the trays. That's a 40% germination rate for seeds that I was led to believe were dead - a success rate by anyone's standards. Note that this percentage does not take into account the seeds that initially germinated, close to twenty-two months earlier.

These intentional periods of dry and wet spells, as well as light versus darkness techniques, mimics the changing of the seasons and acts a catalyst to wake up the "dormant" seeds. This strategy is the opposite of having germinating trays inside a green house with homogeneous, "perfect" climate all year round.

Perseverance, my friends, is the key to success, and remember, never ever give up, if you want to have those rare, treasured heliconias in your collection. Keep on experimenting with seeds.



Above: Seeds of *Heliconia 'Surinam Gold'* (below), germinating after over two years.



Variations in *Heliconia atropurpurea*

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On a recent trip to Costa Rica I found an unusual heliconia at the edge of the major highway connecting the capital San José with Guapiles on the Atlantic slope. The large population of plants is growing at approximately 1500 m elevation on steep embankments, mixed with *H. clinophila*.

This plant is not recorded in the herbarium of the Instituto Nacional de Biodiversidad (INBio, www.inbio.ac.cr/es/default.html), which is preparing the flora of Costa Rica, nor is it known to Dr. John Kress or Dr. Gil Daniels, the two botanists most familiar with Costa Rican *Heliconia*. Upon seeing these photos, Dr. Kress identified it as a giant form of *H. atropurpurea*, adding that he has seen gigantism in other species as well.

A similar heliconia grows at an orchid farm, Finca Dracula, close to my house in western Panama, where the farm man-

ager says he carried it back from a forested area near Boquete, Panama. I haven't seen this one in the wild yet. Photos of this plant appeared in the HSI Bulletin 14(1), January 2008, under the name *H. sp. 'Rojona'*, a label I put on it principally for my own use.

The known form of *H. atropurpurea* grows at about 1000 m elevation in the same region as both of these large heliconias – middle elevations on the Atlantic slope in Panama and Costa Rica. All three are quite similar, though each shows individual characteristics.

Overall size is the most striking difference between the two large forms and the described form. *H. atropurpurea* fruits hide inside deep bracts, while the new forms exert very large fruit above the lip of the bract. Flowers and staminodes show slight differences.

The large plants have all-green leaves; this feature is shared with Panamanian *H. atropurpurea*, while the known Costa Rican plants are tinted purple under their leaves. The two large plants differ from each other in details of the bract shape, which can be seen in the photos.

The large plants in Costa Rica were blooming a few months earlier than the known form.



***H. atropurpurea* (typical form)**



With Bruce Dunstan



***H. atropurpurea* (giant Costa Rican form)**



With Angel Rodriguez



***H. atropurpurea* (giant Panamanian form, 'Rojona')**



**HELICONIA SOCIETY INTERNATIONAL XVI
INTERNATIONAL CONFERENCE 2010
SINGAPORE
15th – 18th JULY 2010**

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The 2010 meeting will consist of a pre-conference trip to Malacca (about 250 km north of Singapore), the conference itself in Singapore, and a post-conference trip to the Malaysian state of Sarawak, on the island of Borneo. The exact dates and itinerary are still being worked out. This preliminary article is to notify members well in advance so they can start thinking about it.

Proposed Itinerary for Pre-Conference Trip to Malacca, Malaysia. 11th – 14th July 2010



Day 0

Arrive in Kuala Lumpur, capital city of Malaysia and check-in to hotel.

Day 1

After breakfast, we travel to Kepong, where the Forestry Research Institute of Malaysia is located. We will be taken on a guided tour of this 74-year old research station. FRIM offers people from all walks of life a first hand introduction to the flora, fauna and landscape of the Malaysian rainforest. Spend a day trekking on the four jungle trails and climb up the 30 meters high Canopy Walk and get a bird's eye view of what a tropical rainforest is like.

first hand introduction to the flora, fauna and landscape of the Malaysian rainforest. Spend a day trekking on the four jungle trails and climb up the 30 meters high Canopy Walk and get a bird's eye view of what a tropical rainforest is like.

Day 2

After breakfast, check-out of hotel and travel overland to Alor Gajah, Malacca where we will visit with our old friend Mushlim Musa at his Desa Paku House & Garden. Mushlim's traditional Malacca house offers an insight into the traditional Malay culture and architecture. Mushlim's garden is also world renown and has one of the largest collections of heliconia in Malaysia.

Lunch at DPHG.

After lunch, we travel into historic Malacca city and check-into hotel. Malacca, the ancient gateway to Asia has over 500 years of history. With influences from the Chi-

nese, Portuguese, Dutch and the British, Malacca is a melting pot of different cultures that gave raise to the Peranakans or Straits-born Chinese. These are descendants of Chinese sailors who married local indigenous people. Members will have some time for a brief city tour of historic Malacca followed by traditional Peranakan dinner.

Day 3

After breakfast, check-out and proceed overland to the state of Johor where we will visit a couple of plant nurseries, pottery and maybe tour a durian plantation. Lunch enroute.

Arrive in Singapore in evening and check-in to Conference hotel.



Traditional Malacca house (Mushlim Musa's) with ornately carved gable (top), tiled entry steps (bottom), batik bedspread with Zingiberales on them (above), and flower arrangement with different color variations of torch ginger, *Etlingera elatior* (right).



Singapore

If you haven't visited Singapore before you are in for a real treat. The Singapore Botanic Garden and the city streets and highways all fall under the National Parks Board. A very conscious effort is made to landscape with color and tropical lushness, and fountains and beautifully designed buildings fill the city.



Above: The **Merlion** is an imaginary creature with the head of a lion and the body of a fish. This half-lion, half-fish sculpture rests on undulating waves. The lion head alludes to the legend of Singapore's founding by Sang Nila Utama, a Palembang Prince who, on his arrival on the island, saw what he thought to be a lion and thereafter renamed Temasek, Singapura or "Lion City". The fish-tail represents Singapore's links to the ancient sea-bound island which was Temasek and its long and successful association with the sea, reflecting how our forefathers traversed the oceans to come to Singapore and our subsequent dependence upon it as a port.

During our meeting we can attend the Third Singapore Garden Festival. Two exhibits from the 2008 Fair (taken from their website) are shown below.



Left: Best in Show — Kazuyuki Ishihara (Japan)



Right: Gold Medal — John Cullen (USA)

We will also be able to get a pre-opening tour of part of the new Gardens by the Bay.

About Gardens by the Bay

Located in the Marina Bay area, Gardens by the Bay is a key project underpinning the Government's continuous strategy to realize the vision of transforming Singapore into a City in a Garden. The Gardens aims to capture the essence of Singapore as the premier tropical Garden City with the perfect environment in which to live, work and help make Singapore a leading global city of the 21st century. It will complement and complete the necklace of attractions that have been planned for around the Marina Bay.

At 101 hectares, Gardens by the Bay comprises three distinctive waterfront gardens —Gardens at Marina South, Gardens at Marina East and Gardens at Marina Centre.

The 54-hectares Gardens at Marina South will be the largest and the first to open in 2011. Interim development of the Gardens at Marina East will be completed in time for the Youth Olympic Games in 2010, while its full master plan implementation will be completed later, together with the Gardens at Marina Centre.



(Artist's renderings)

Above: Marina, South Lion Grove (daytime)
Below: Domes by the Bay



Botanical Treasures of Borneo

*an introduction to the
unique and varied flora
of Sarawak*

19-27 July, 2010
post conference trip
for the **Heliconia Society International Conference 2010**



19 July

Arrive Kuching International Airport and transfer to Harbour View Hotel located at the heart of Kuching next to the Sarawak River. After a brief orientation, participants will have time in the afternoon to stroll along the waterfront and explore the myriad of craft shops found there. We will meet and enjoy a welcoming dinner (Top Spot) at 7pm.

Lodging: Harbour View Hotel, Kuching. Meals: D.

20 July

Following an early breakfast at the hotel, we will proceed by van to **Kubah National Park** located at Mount Matang, about a half hour drive from Kuching. The densely forested slopes of this sandstone massif are exceedingly rich in understory plants, particularly palms and gingers, and the mountain has a long history of botanical exploration. After visiting one site where the famous 19th Century Italian botanist Odoardo Beccari made his jungle camp, we will hike along one of the better-known trails in the park to investigate the local flora. Our packed lunch will be enjoyed next to one of the park's cascading waterfalls. We will return to Kuching by late afternoon.

Lodging: Harbour View Hotel, Kuching. Meals: B, L (pack), D.



21 July

Our morning transport will take us to the coastal village of Bako where we will board several small boats and proceed on a short ride to the entrance of **Bako National Park**. Located at the tip of a rocky peninsula, Bako is renowned not only for its abundant wildlife (including Borneo's endemic Proboscis Monkey) but also for the unusual vegetation found on its nutrient-poor sandy plateaus. Our 4-hour walk will take us through various habitats, including mangrove forest, kerangas forest, and open scrubland where we will observe several species of unusual gingers, endemic palms, and carnivorous *Nepenthes* pitcher plants. We will depart the park by 4pm and head across the bay to Buntal Village to enjoy a seafood dinner by the wharf.

Lodging: Harbour View Hotel, Kuching. Meals: B, L (pack), D.

22 July

Departing the hotel at 8am, our van will take us to Semengoh Forest Reserve located about 15 miles south of town. With a bit of luck we will have the opportunity to witness a number of rehabilitated Bornean Orangutans emerge from the dense forest for their morning feeding. These semi-wild animals are now in their second generation after having been released in the 740-hectare reserve. Leaving Semengoh, we will continue further south to Padawan

Village where we will transfer to a shuttle and proceed up into the hills to Borneo Highlands Resort. Located at about 900m in elevation, the cool damp forests surrounding this mountain retreat are incredibly rich in herbaceous plants, including gingers. After enjoying a vegetarian lunch at the Resort, we will take a brief walk through the nearby forest, around the base of Mount Penrissen (at 1329m, Kuching's highest mountain), towards a cliff top with a spectacular view over the neighboring province of West Kalimantan (Indonesia). We will return to Kuching by early evening.

Lodging: Harbour View Hotel, Kuching. Meals: B, L, D.

23 July

We will check out of our hotel early and head to Kuching International Airport where we will board a short flight to the northerly city of Miri. Upon arrival, a van will then transport us to Borneo Tropical Rainforest Resort, located about 40 min. south of the airport, which features beautiful jungle scenery and borders **Lambir Hills National Park**. After lunch we will proceed by van to the Lambir Hills park entrance and take a 3-hour walk through the surrounding virgin rainforest, passing by several of the park's spectacular waterfalls. This national park is renowned as having the highest tree diversity in the world, with 1,175 species recorded for a 52-hectare research plot, and is also abundant in unusual endemic palms and herbaceous plants.

Lodging: Borneo Tropical Rainforest Resort, Miri. Meals: B, L, D.

24 July

Following breakfast at the Resort, we will return to Miri airport and board a brief (30 min.) flight inland to **Mulu National Park**. With over 52,000 hectares, this is Sarawak's largest and arguably most famous national park, being well known for its outstanding biodiversity, as well as its extensive limestone cave systems. It has been estimated that the park contains over 3,500 species of flowering plants alone. This is largely due to Mulu's diverse topography and range of habitats, which include the massive sandstone Gunung Mulu, and the highest limestone peak in Southeast Asia, Gunung Api.

After an early lunch at the park headquarters, we will proceed on a leisurely 3-hour walk along the Paku River through swampy alluvial rainforest. The understory here abounds in a wealth of herbaceous plants, including a large assortment of unusual gingers. By late afternoon we will reach the enormous entrance



Zingiber kelabitianum



Nepenthes ampullaria

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of Deer Cave where we will watch as huge swarms of bats spiral out for their nocturnal foraging.

Lodging: Mulu Park HQ Chalets. Meals: B, L, D.

25 July

Our full-day excursion will take us gradually up the Paku River Valley into the foothills of the Mount Mulu massif. Here we will observe some of the most impressive lowland forest of Borneo, with towering emergent trees and strangling figs. The loud wing-beats of enormous Hornbill birds can often be heard overhead. As the elevation rises we will notice a change in the understory flora of plants, with many species not seen in the alluvial forests. We will enjoy our pack lunch by a crystal clear mountain creek before heading back to park headquarters.

Lodging: Mulu Park HQ Chalets. Meals: B, L (pack), D.

26 July

After breakfast we will embark on a moderately strenuous walk along the banks of the Melinau River. The trail will take us up and down a few small limestone hills where we will get a close look at the distinctive flora found there. A guide will meet us at the entrance to Wind Cave and take us through one of the most spectacular cave chambers in the park. A short walk further along the trail will take us to Clearwater

Cave where lunch will be waiting for us. Here we will enjoy a swim in the crystal-clear cold waters emerging from under the mountain before a boat takes us back downstream to park headquarters.

In the evening we will set off on one of the nearby trails for a chance to see some of Mulu's nocturnal denizens. These include an amazing assortment of frogs, stick insects, and luminescent mushrooms.

Lodging: Mulu Park HQ Chalets. Meals: B, L (pack), D.

27 July

We will have a free morning to explore more of the forests around the park headquarters, or perhaps visit the nearby canopy walkway. By midday we will board a flight back to Miri and then transfer to Kuching, where we will enjoy a sumptuous farewell dinner.

Lodging: Harbour View Hotel, Kuching. **Meals:** B, L (pack), D.

All registered participants will receive more detailed information on suggested equipment and preparations for the trip.

Health & Fitness:

Whilst it is not necessary to be in top fitness to attend this trip, there will be several days of moderate hiking (up to 4 hours or more) and participants should be comfortable with these distances.

It is advisable to consult a doctor and obtain the proper vaccinations before coming to Malaysia. Malaria is present in Sarawak, albeit relatively scarce.

Clothing:

As the days in the lowlands of Sarawak are hot and humid, the most comfortable hiking clothes are shorts and lightweight cotton t-shirts. However, light-weight quick-drying pants (not cotton) are also useful in areas of thick underbrush. For evenings, loose-fitting cotton or quick-dry shirts and a sarong or trousers are recommended. Rain is an inevitability on any trip in Borneo, but usually a thin poncho will suffice. We will be visiting several pristine rivers and swimming is an excellent way to shake off the tropical heat. Please bring a bathing suit to respect local modesty.

The best shoes for tropical trekking are lightweight hiking shoes. They should be well-ventilated and comfortable, and ideally something you won't mind getting wet and muddy. Heavy duty leather hiking boots are not recommended. A pair of lightweight sandals will come in handy for short walks.

The tour will be led by naturalist and wildlife photographer Ch'ien Lee. With over 13 years of experience in the jungles of Borneo and veteran of over 80 tropical mountain expeditions, he has extensive knowledge of Borneo's flora and fauna.

For more information about the trip, please contact Victor Lee (hortvet@singnet.com.sg) or Ch'ien Lee (mail@wildborneo.com.my).



Licuala cf. petiolulata

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Curcuma longa: Passing on traditional Kosraean knowledge (with a note on banana soup)

Roxina Filrang

in association with James Skouge, University of Hawai'i, jskouge@hawaii.edu

Roxina Filrang is from the island of Kosrae in the Federated States of Micronesia (FSM), and has a particular interest in medical ethnobotany of Micronesia. She earned a Bachelor of Science degree in Botany from the University of Hawai'i – Manoa (U.H.) in December 2007, and is now a graduate student at U.H. She is a member of *Pacific Voices*, (a team headed by Dr. James Skouge, headquartered in the U.H. College of Education, Department of Special Education), which promotes the ethical uses of technology to "give voice" to indigenous peoples of the Pacific to honor and preserve language and culture, especially as related to health and education.

Kosrae is a relatively isolated island without many visitors or immigrants. This verdant island is 42 square miles in size, with a population of 8,000 people. Archaeologists believe that our "first people" arrived sometime around the first millennium, constructing a complex matri-lineal society that survived until Western contact. Whalers and buccaneers began arriving in the early 1800s, introducing epidemic diseases (including syphilis and tuberculosis) – diminishing our population from perhaps 10,000 to just a few hundred by the end of the 19th century. The first missionary station was built in 1852 and we were Christianized soon thereafter. We were ruled by the Japanese from 1914 to 1945; and then became a "trust territory" of the United States.

On July 12, 1978, the peoples of Truk (now Chuuk), Yap, Ponape (now Pohnpei) and Kusaie (now Kosrae) voted to form the sovereign nation of the FSM. We remain connected with the United States, however, through a "compact of free association." We are considered to be a very religious and hospitable people.



Island of the Sleeping Lady, Kosrae



Rainforest, Kosrae

I was born in 1983 in Pohnpei, FSM. My mother is Kosraean and my father Pohnpeian. When I was two weeks young, my parents sent me to Kosrae to be raised by my grandparents, which was and still is a very "island" thing to do. I experienced a joyous childhood growing up in Tafunsak village on this tiny island, blessed by the unconditional love of my grandparents, both of whom had been born and raised in Kosrae. They lived on our ancestral lands. Our plantation provided sustainable crops, and the ocean was our refrigerator. I learned indigenous values (a term I was later to learn in college) from my grandparents. These values include faith and humility, respect for elders, and sacredness of land and ocean. Kosraeans are "naturalists." They live off the land and ocean. We are skilled with our hands. We fish and farm. We depend upon natural resources for food, shelter and medicine. As a child I observed my grandmother harvesting plants and their extracts, which she would mix with oil and other ingredients and then apply to cuts or boils and other ailments. I learned from my grandparents that we should share our gifts to help anyone in need – but this sacred knowledge should be kept within the family.

These events had a great impact on me. Although I was young at the time, I did realize that they trusted me and wanted me to understand the significance of what they were teaching me. From them I experienced the traditional island ways of teaching and learning through modeling, observation and hands-on experience. The natural environment was our classroom without walls. I also experienced Western ways of learning at our village school. In the United States, education is often defined as something that is gained by reading, and I appreciated the value of books (although we didn't have many). I decided early on that I wanted one day to live in Hawai'i and attend the university. For us, though, the problem is that our history, knowledge

and cultural practices are not documented in books. So who's history and knowledge are we learning? Our history is an oral history. We learn by listening, observing and doing.

Growing up in Kosrae, I witnessed many changes, including our increasing dependence on government employment and Western goods. Our village store was stocked with canned goods imported from Asia and the United States, including mackerel, tuna, Spam and corned beef – all high in chemical additives, sodium and fat. Although traditional foods remained our mainstay (taro, breadfruit, banana, coconut, yam, reef fish) and we always prepared our traditional Kosraean soup for Sundays, our diet was changing. More foods were fried; rice, noodles and other starchy foods became abundant. Ironically, it was becoming more convenient to choose canned fish over fresh. Our health and spirit suffered. Perhaps half the adults on Kosrae are victimized by diabetes. Many families, seeking a "better life", began departing the island.

My dream is to bring together the key constituencies of our Micronesian society, including young people, elders, public servants (health officials, educators, nutritionists, agricultural specialists), and church officials to create a "synergy" in support of sustainable community projects in which we combine the best of traditional practices with Western scientific methods and technology, to develop our land and ocean in culturally and environmentally sensitive ways.

For my part, I would like to work with others to produce local medicines from the plants that grow on our island. My vision includes both the recovery and development of local medicines that are accessible and affordable to be incorporated into the public health system. It is my dream that our people will be educated and engaged in cultural revitalization.

Toward that end I interviewed my aunt, Serah Edwin, as she harvested and prepared "ahng", the Kosraean name for *Curcuma longa*, also widely known as turmeric, and as 'ōlena in Hawaiian.

The role of turmeric (*Curcuma longa*) in Kosrae

Turmeric is used for medicinal purposes. In the photos of my aunt Serah, she is harvesting the turmeric to make poultices to be used to heal skin rashes, ear infections and nose infections using a recipe that she learned from her mother. The rhizome is washed, cleaned and pounded using a "tok" (or pestle). The resulting mash is then wrapped in a sterile cloth. She follows a 3-week application regimen, which includes cutting back on high fat, high sodium, and meat (pork or fish): in the first week, she makes a poultice of gardenia and turmeric; in the second week, it is holy basil (*Ocimum tenuifolium*) with turmeric; and in the third week it is "sra fi-

hti" (*Vitex trifolia*) with turmeric. Back home she uses the natural net-like fiber that grows on the coconut palm leaf base instead of cotton cloth.

Other medicines that contain turmeric are used to



Aunt Serah choosing a rhizome of turmeric to dig up at the Lyon Arboretum's Ethnobotanic Garden. It is late January and the plants are almost completely dormant.



Cut rhizome of turmeric, showing the yellow flesh.

prevent scarring from boils, cuts and other skin abrasions. Often, these are used in combination with oils. The mash is mixed with coconut oil. The function of the oil is to act both as a medium to keep the mixture fresh and whole, and to facilitate the transport of the medicine into the body. I believe that Hawaiians pounded salt into their medicines for the same purpose.

Turmeric is valued by women because it beautifies the skin when mixed with oil, making it "glow." It also prevents and removes stretch marks associated with pregnancy.



Recipes with banana

Kosraean soup is a valued dish in our culture. It is served in special occasions such as weddings, funerals, birthdays and other community/family gatherings. It is the staple food of the sabbath - served in every Kosraean home every Sunday. There are several recipes, including one made with banana. Boiled bananas can be served as side dishes to other soup recipes. The reader is referred to my web site to watch a video in which I prepare the banana soup: http://web.me.com/jskouge/Roxina_Filrang.

Recipe for Sup Usr (Banana Soup)

Ingredients: Water, tuna fish (or reef fish), mashed green bananas, coconut milk, onions and spices, including salt, pepper, and a small amount of MSG (optional).

Steps:

1. Boil fish in a pot of water until fish is cooked.



2. Remove the fish to a cutting board and break into small pieces.



3. Add mashed green bananas into the hot water, stir and cook until it thickens.



4. Return the fish into the pot.



5. Add coconut-milk, diced onion and spices.



6. Let simmer for 10-15 minutes.



7. Serve with side dishes of oven baked or boiled breadfruit, ripe or green banana, taro and yam (potatoes are often substituted here in Hawaii).



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Correction: The photo of *Heliconia spathocircinata* on p. 16 of the last Bulletin, 15(1) was taken by Kenneth M. Nagata.



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