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Post Conference Tour to Sarawak, Malaysia Carla Black, Volcan, Panama

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Photos by author (CB) and Dave Skinner (DS)

With the meeting portion of 16th Conference of HSI successfully concluded on July 18, 2010, 20 of us boarded a plane the next morning to Kuching, Sarawak for the post-tour to Malaysian national parks on Borneo. We were met at the airport by the tour organizer and guide, Chi'en Lee, and over the next 10 days our group was the beneficiary of Chi'en's astounding knowledge of the plants and creatures of Bornean forests.

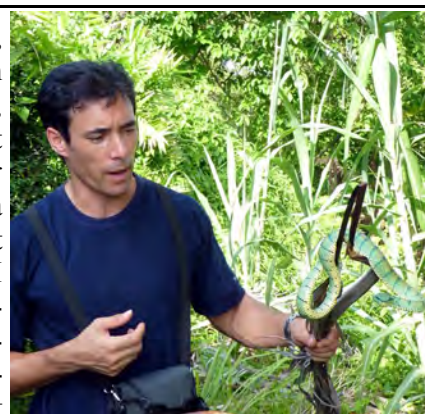


**Post-tour group in Lambir Hills National Park -
photo by Héctor Méndez Caratini**

The first part of the tour was based in Kuching, the capital of Sarawak state. Three parks are close enough to visit on three individual day trips.

Kubah National Park, less than an hour from downtown Kuching, was our first forest visit in Sarawak. I had never been to tropical Asia before, and with just one glance I could tell I was not in the Americas! Giant gingers occur only rarely in neotropical forests, but here the roadsides were full of them. Amomums, Etlingeras, Hornstedtias, and more. To my eye, the foliage of these genera is very similar, and the observer has to get down into the base of the plant to see the inflorescences and the differences between them. Another clue that I was on the other side of the globe were all the *Nepenthes* pitcher plants – they came in all sizes and tones of green, brown, and cream.

A short stop at the Semengoh Forest Reserve gave us the chance to see about six semi-wild Orangutans. Though the troop is larger and includes a second generation, a group of individuals come for food each morning, and let themselves be photographed by the fascinated crowd of tourists. In the afternoon we visited a farm specializing in Dragon Fruit. Our host Voon Boon Hoe also has a nice collection of heliconias and other Zingiberales, and a number of us bought rhizomes for our own gardens.



Chi'en Lee (CB)



**Voon Boon Hoe
Dragon Fruit farmer (CB)**



Nepenthes rafflesiana
Bako National Park (CB)

The next day our group flew to Miri, where we enjoyed a visit to Lambir Hills National Park. This park is famous for its high diversity of trees and other plants. On our two-hour hike we saw a wide range of gingers, stick insects, and birds, all along a gorgeous stream and waterfall. Chi'en Lee, our ever-vigilant guide, found a tiny flower of the endemic *Tamijia flagellaris*, tight to the ground, a distance out from the foliage. And thanks to taking the wrong trail to a dead end, Dave Skinner spotted one of the



***Tamijia flagellaris* flower (CB)**



***Tamijia flagellaris* foliage (DS)**

few Costaceae in Borneo, a species of the recently renamed genus *Paracostus*, probably *P. muluensis*. Dave was thrilled by this little jewel, no matter its name!



Orangutans
in
Semengoh
Forest
Reserve
(CB)

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 Zingiberales through education, research and communication. Interest in Zingiberales 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, \$40; Family, \$45; Student, \$10; Contributing, \$50; Corporate (Company or Institution) \$100; Sustaining, \$500; Contributing Lifetime

Member, \$1000, Libraries, \$35 and PDF, \$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: Dr. David Lorence, NTBG, 3530 Papalina Rd., Kalaheo, HI, USA 96741. Back issues of the Bulletin are \$5.00 per issue.

HSI Officers for 2010-2011

President, W. John Kress; Vice-presidents for Membership, Carla Black and Jan Hintze; Secretary, Victor Lee; Treasurer, David H. Lorence; Cultivar Registrar, Bryan Brunner; Archivist: Sandra Barnes. Board of Directors: Bruce Dunstan, Vinita Gowda, Anders J. Lindstrom, David Skinner and Chelsea Specht.

The HSI BULLETIN is the quarterly publication of the HELICONIA SOCIETY INTERNATIONAL. Inquiries: Victor Lee <admin@heliconia.org>

The second part of the tour was to Gunung Mulu National Park. A half-hour flight from Miri takes visitors to an air strip at the park entrance, dedicated just to the park. That's it - there is no town, only two other lodging options. We stayed inside the park, sleeping in comfortable bunkhouses, and feasting on the best food a captive audience could dare hope for: each dish was cooked in an instant over high heat, flames licking the knuckles of the sweltering chef.



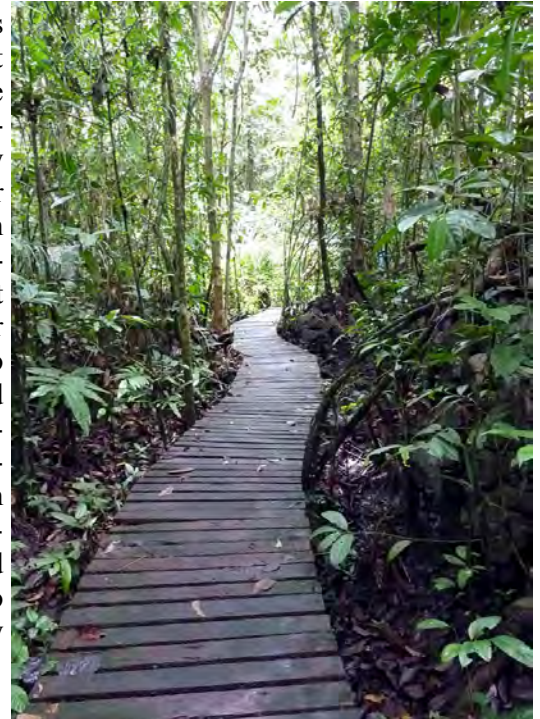
***Zingiber kelabitianum* at Mulu National Park (DS)**



Dr. David Lorence botanizing in Mulu NP (CB)

I carried my rubber boots all the way from Panama to keep me safe and comfortable in this far-away jungle. The folks at Mulu National Park have a better idea: boardwalks. Kilometers of them! On our longer hikes we went beyond the end of the planks, but most visitors never have to muddy their feet.

Our guide Chi'en Lee was in his element at Mulu. He took us on fascinating all-day hikes, and after dinner each evening a handful of us went out for another hour or so to look for and listen for nocturnal creatures. Chi'en identifies insects, birds, and amphibians to species, just by their night sounds.



Boardwalk in Gunung Mulu National Park (CB)

In the daytime, Chi'en is an expert on plants, in addition to everything else. So many naturalist guides focus on birds and animals, barely noticing the greenery. Chi'en even had botanical papers on Zingiberaceae back at camp to clarify the most arcane ginger matters.

A day hike took us to one of the largest limestone cave openings in the world. Mulu is known to spelunkers for its spectacular caves that hold many of the titles starting with "largest" or "longest". We were practically the only people on the long trail from camp to a perfect swimming hole – the other tourists had taken boats to the destination. So we had the boardwalk and the beautifully lit caves to ourselves.



***Etlingera fimbriobracteata* Kubah N.P. (CB)**

We joined the crowd for a swim, then loaded into boats for the trip back to camp. On the way, we stopped to visit a village that earns part of its living by hosting tourists and selling handicrafts. Again, we were the only ones there, as the rest of the crowd had come by in the morning, so we visited the

townspeople on the porch of their long house, instead of at the vending booths by the river. Calmly, and with pleasant mute interactions, we all supported the local economy by indulging in woven bags and mats, beaded necklaces, and blow-gun darts (supposedly without poison on the tips).

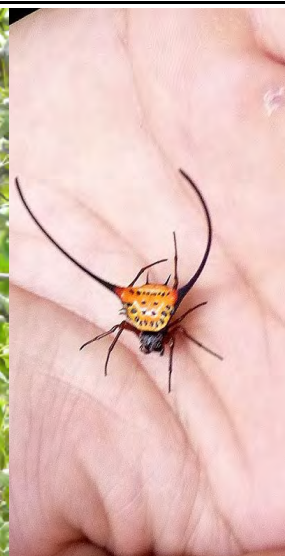


Return to camp by boat in Mulu National Park (CB)

Another afternoon walk took us, and the entire complement of park visitors, to a large amphitheater in a grassy clearing. High overhead, a cave hung in the middle of a huge limestone cliff. We milled about, checking on nearby gingers, and waited for the moment. Every evening, at just the same hour, tens of thousands of Wrinkle-lipped Bats begin to swirl out of the cave. Three million bats in all fly out in giant, corkscrewing masses to find their evening meal. The fascinating flight pattern is their defense against themselves becoming the evening meal of the waiting Bat Hawks. There's a Bat-Cam at the cave to get a good look inside, and to see the great swirls of bats flying out each evening: <http://www.muluparkbatcam.com/>



***Paracostus* sp. (CB)**



Among the many fascinating animals of Sarawak

**Proboscis monkey
Top**

Spider, upper right

Stink bug, above

***Paracostus* sp. (CB)**

Early one morning we got our chance to see the forest from the top down, from the vista of a canopy walk. At 480 meters long, park officials say it's the longest tree-based canopy walk in the world. For over an hour we swayed from tree to tree, joining pygmy squirrels and hornbills, and ferns and orchids, in a whole different forest world.

The list of Zingiberales we saw is long and varied – Maureen Simons prepared a species list which is posted, along with photos, on the HSI website:

<http://www.heliconia.org/members/gallery/main.php>

Further information on the gingers of Sarawak appeared in the HSI Bulletins Vol. 13(1-2) and Vol. 13(3-4).

Our post-conference tour in Sarawak was beautifully organized. We saw an incredible variety of natural habitats, gardens, and cultural sites. We ate what was surely some of the best food in Sarawak state. What a wonderful trip! I'd say it was a once-in-a-lifetime experience, but of course, I want to make an equal impression with the post-tour to Colombia in 2012! We'll see you there!

Gingers of Sarawak



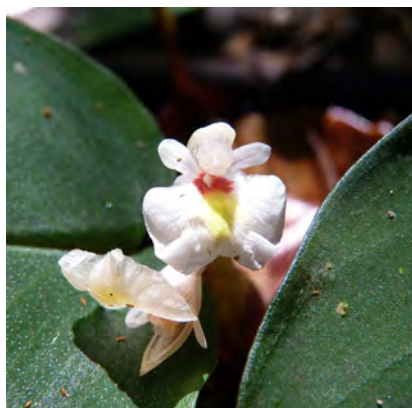
Amomun gyrolophos
Lambir Hills (CB)



Etlingera brachychila orange
form, near Kuching (CB)



Boesenbergia oligosperma
Mulu N.P. (CB)



Boesenbergia orbiculata
Mulu N.P. (CB)



Etlingera coccinea, Lambir Hills N.P. (CB)



Globba brachychila
Kubah N.P. (DS)



Etlingera brachychila yellow form
Mulu N.P. (CB)



Etlingera velutina ssp. *Longi-*
pedunculata, Kubah N.P. (CB)

Remembering –Ray Baker (1945-2010)

Our condolences and thoughts go out to Joyce Baker, Ray's wife, who contributed a bio-sketch of Ray for a memorial gathering held at the Harold L. Lyon Arboretum January 9, 2011. Portions of this celebration are from her account.



Ray Baker – Leland Miyano photo

Former editor of the Heliconia Society Bulletin, Raymond F. Baker, lost his battle with idiopathic pulmonary fibrosis (IPF) on November 29, 2010. Ray was an active member of the HSI and was responsible for the HSI repository of heliconia and ginger at the Harold Lyon Arboretum in Honolulu, Hawaii. In his 37 years with the arboretum as student help, graduate student and finally as staff, he organized sections of the arboretum and oversaw the installation and maintenance of hundreds, if not thousands, of plants, laid out pathways, developed the arboretum website, supervised volunteers even on weekends, and ran the twice a year plant sales. To many, he was Mr. Arboretum himself, with his trademark handlebar mustache and his well-worn work clothes, the shirt and pants pockets bulging with camera, tagging tape, and the ever-present plastic bags for collecting seeds. He worked in sun or pouring rain, and expected everyone else to do the same, much to their dismay.

He fought a never-ending battle of trying to maintain what had been planted, and keeping less knowledgeable volunteers from unwittingly pulling up or chopping down rare plants. He designed the landscaping, with an artist's eye for color and texture. As the Arboretum was in a conservation zone, Ray contributed much to a management plan submitted to the State of Hawaii Department of Land and Natural Resources, which ultimately approved it.

He was the go-to man for almost every plant question and was a recognized expert on palms, another of his favorite plants. He taught classes on heliconias and gingers, palms, and ficus. His palm classes were always well-subscribed, even as he manipulated two projectors bewildering palm newbies with the fine differences among the species. Botanist Dr. Clifford Smith was interested in the lichens on the palms and said that Ray was mystified why he wasn't interested in the palms themselves. He led tours – more like hikes – to the far reaches of the arboretum, sharing his knowledge both of the geology of the valley (his undergraduate degree was in geology) and its history and reeled off plant names and fascinating tidbits with ease. With his dog, Kona, he tried to keep the wild pigs at bay, a never-ending battle, as they liked to eat the rhizomes of the gingers and heliconias.

Ray was elected to the HSI Board in 1987 and stayed on in various capacities until resigning in summer 2010. With Bob Hirano, also of Lyon Arboretum, he edited the HSI Bulletin from 1990 to 1993 and became editor again in mid-2007 until his resignation in 2010. He was noted for his meticulous dissection and photography of ginger flowers that appeared in the bulletin.



Ray Baker and Kona – Karen Shigematsu photo

He also served on the Board of the International Palm Society as well as the Heliconia Society International, often making presentations at the organizations' meetings. In his younger days, Ray also enjoyed international folkdancing. That's how he met his future wife Joyce. They danced recreationally and also in two performing groups—the Karadeniz Folk Dance Ensemble and the Omega Dancers.

At the memorial held by the Arboretum to remember Ray, more than 200 friends showed up. Remarks were offered by arboretum staff and Ray's friends to the

point of almost a roast, albeit warm-hearted. The evolution of his mustache from a pointy latin handlebar style to the bushy white filter of recent years, his unorthodox hair style, his “quietly argumentative” approach to some arboretum issue, an incident with an electrical transformer, and his propensity to disregard a little rain when working in the arboretum were referenced with warm humor. David Orr, of Waimea Arboretum (another HSI repository), said that “Ray was and will be my role model, for his extensive knowledge of plants.” Bea Yamasaki, a former University of Hawaii administrator, related that Ray opened her eyes to so much of the natural world, and that he was supportive of the local Ikebana Society and their programs, supplying them with all manner of unique plant material from the Arboretum. He even got in to creating his own huge arrangements in the various ikebana styles. In a letter from HSI President, John Kress wrote that Ray’s “bad traits are so good that I can’t begin to describe the good ones!”

Fellow palm enthusiast, Don Hodel, wrote that “Ray is sorely missed. He is irreplaceable.” And Dr. Smith noted that “These plantings are Ray’s heritage, the heritage that he leaves us.” Former Interim Director, Cliff Morden, said, “How blessed are we to work in this place [of Ray’s deeds].”

Before his passing, Ray and his wife Joyce (pictured in last issue) set up two funds with the University of Hawaii Foundation to support on-going work at the Arboretum and to initiate a permanent endowment to support the mission of the Harold Lyon Arboretum. Links to these are: www.uhfoundation.org/RayBaker and www.uhfoundation.org/RayBakerEdowed. More tributes to Ray can be found on the HSI website, <http://www.heliconia.org/members/gallery/main-php>



David Orr speaks at Ray Baker memorial

Remembering –Trish Frank

Patricia Frank, a founding member of the Heliconia Society International, passed away in June 2010 in Miami, Florida. She was an ardent plant lover whose garden featured as many tropical and subtropical palms, aroids, ferns, orchids and heliconia as she could fit into the space. She and husband, Chayo Frank, developed their garden in an old rock pit not far from Fairchild Tropical Botanic Gardens where she was a long time volunteer and employee and was instrumental in running their plant shows and sales. “There are many people who love Fairchild,” said Nannette Zapata, Fairchild’s chief operation officer, “but there are only a handful of people who are Fairchild. She is one of them.” (Obit. Miami Herald) They both loved to travel, often with members of the plant societies they belonged to and ventured off to Peru, Borneo, Brazil, and Central America as well as other exotic spots where they enjoyed the plants, scuba diving and skiing, cultural, historical and social scene.



**Trish Frank—Lynda LaRocca photo
With glass recognition bowl from
the International Aroid Society**

We were tipped off to Trish Frank’s passing by an exchange between David Lloyd in Arizona and Bruce Dunstan who were reminiscing about their first heliconia sightings in Florida many years ago. Both attended the 1996 HSI Conference in Miami, where Trish gave Dave a box of Indonesian wax ginger starts, which he managed to kill.

Current HSI Board member Bruce Dunstan wrote, “I went to Trish Frank’s place for drinks when the 96 conference was in Miami. Fantastic garden. I wish I didn’t have Heliconia tunnel vision and could have appreciated more of the other stuff Trish had in her garden. I do recall big foliage Anthuriums and Philos.” Well-known in the Miami horticultural scene, Trish was a founding member of the International Aroid Society and the Coral Gables Orchid Society, and participated in activities of the local Tropical Fern and Exotic Plant Society, the International Palm Society, and the Tropical Flowering Tree Society.

HSI Lifetime Achievement Awards

At the Conference in Singapore the Board of Directors, on behalf of all the members of the Heliconia Society International, recognized two founders of HSI with Lifetime Achievement Awards. We thanked Dr. W. John Kress and Dr. Gilbert S. Daniels, and presented them with engraved crystal monoliths and honorary lifetime memberships in HSI. Both Gil and John were founding members of the Society in 1985 and both have served as its President. Their long-term engagement in the study of heliconias and other members of the Zingiberales, their publications, and – in the case of Dr. Kress – continuing research merited this recognition by the Heliconia Society International.



Willis Black presented the HSI Lifetime Achievement Award to Dr. Gilbert S. Daniels in Indianapolis after the Singapore Conference.

These words are engraved on the crystals:

In Recognition of his Dedication and Contribution to the Corpus of Knowledge of the Order Zingiberales, and his contributions to the Founding and Continuation of the Heliconia Society International, this Lifetime Achievement Award is hereby conferred on Dr. Gilbert S. Daniels (Dr. W. John Kress). 16th July 2010

**Visit the Heliconia Society
International
web site at
www.heliconia.org**



Dr. W. John Kress receives the HSI Lifetime Achievement Award from Victor Lee at the XVI HSI Conference in Singapore, July 2010.



After Collection and Identification -- then comes Cultivation

Jan Hintze, Australia

hintze@ozemail.com.au

The Conservation aim of the Heliconia Society International is increasingly becoming more important – the area of vegetation loss is increasing, and species loss is becoming critical, affecting all of the Zingiberales group. Many of the plants in the group have enormous ornamental value, which in itself is a cause for conservation, but the ginger group of plants is likely to have significant medicinal uses, as these plants have been widely used in this way by the local peoples, for many hundreds and thousands of years. I leave it to others to work out ownership of the compounds involved in this aspect, but I would emphasize that a proper understanding of cultivation outside their natural zone is essential for any purpose – be it species conservation, ornamental or medical uses.

Many of those who start in such a way need information of the environment from which the species came to enable them to successfully grow the plants in a domesticated environment. Questions such as those following can be critical. Soil – is it swampy, sandy, pH neutral? Light – full sun, shady, dense cover, intermittent? Water – Wet tropical, wet/dry cycles, cloud forests? Although nurseries, landscapers, flower growers and gardeners are only likely to use the more attractive varieties of Zingiberales, the importance of this sector in developing interests in conservation cannot be overlooked. Initially at least, many collections of the HSI Conservation Centres were based on ornamental considerations.

Temperature range can be a critical factor in determining where the plant can be grown - many species are intolerant of major changes in temperature from their natural habitat; others are more tolerant.

Light? Most heliconias and some gingers will tolerate half to full sun, but their natural environments are often very different. It should be understood that often, the lower the exposure to sunlight, the higher the humidity, so that attention should be paid to increasing protection from dryness when light conditions are made brighter.

Seed propagation

Seed is often the only way to access new species, and to prevent the possibility of the spread of disease which accompanies the movement of plants, it is considered desirable. Heliconias often only set seed where suitable hummingbirds are present, but other agents (ants, bugs,



Left: *Heliconia* x *Scarlet Torch* foliage bleached by cold (10°C). Right, *H. psittacorum* 'Sassy' is undamaged.

etc.) will occasionally do the job. Gingers are sometimes self-pollinating, sometimes insect-assisted. Heliconia seed germination can take up to 12-18 months, while ginger seed, which are sensitive to drying out, generally germinate quite quickly.



The blue-black fruit of heliconia may contain one to three seeds.

The best way to germinate these (and most other) seeds is to sow them in shallow containers with some sphagnum moss, water them moderately, and seal the whole container in a ziplock bag. There is no need to add any more water, just checking occasionally for germinated seed which needs to be transplanted out into tubes at the 2-leaf stage, and the bag sealed up again to await the next germination. A label should be sealed inside the bag identifying the seed.



Heliconia and ginger seedlings can be germinated in moist sphagnum moss.

Be aware that some species of heliconia and ginger are variable in form and colour, as well as the possibility of hybrid seed when it is sourced from a collection.

Rhizome division

Vegetative propagation is the only way to propagate an identical plant, and for heliconias and most gingers, rhizome division is the only possibility. Rhizomes should be trimmed of leaves and damaged roots, washed thoroughly, to remove all soil, rinsed in a chlorine (1%) solution to minimize bacteria and fungal spores. All rhizomes should ideally have a new shoot already emerged, since this shoot will readily carry on growing, and will establish more quickly and reliably.



Basal stem and rhizomes cleaned and ready to propagate. Note new shoots (arrows)

Stem and flower cuttings

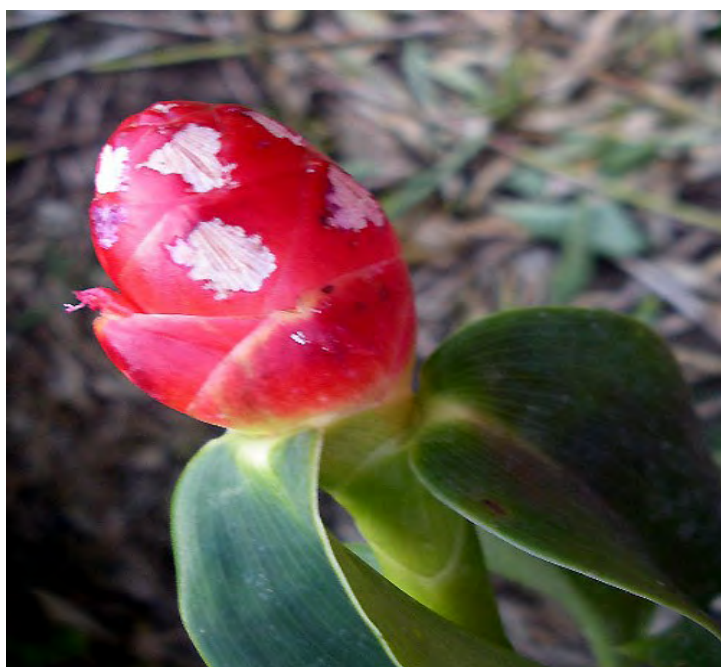
Some gingers, notably the *Costus* group and *Zingibers*, will propagate from stem cuttings, and flower bases.



Roots can emerge on axillary aerial shoots of some gingers even while attached to the mother plant

Pests

Ants and mealy bugs often go together since ants harvest sugar syrup from mealy bugs. Mealy bugs can be controlled with soap sprays or summer oil. Grasshoppers are relatively uncontrollable, since if you spray one lot, another will fly in, and cursing is also ineffective.



***Costus spicatus* damaged by Case Moth larvae**

Nematodes, (root knot nematodes) often attack roots of heliconias and gingers, and these can be controlled by building up the nitrogen and organic content of the soil, as well as a soil drench of 10% molasses and water.

Termites are very difficult to control, but baiting with an approved insecticide mixed with a suitable bait - try jam or sawdust - but these poisons are extremely toxic, so use with care. Heavy watering will discourage them, as well as cultivating the soil to break up their tunnels.

Diseases

A most serious disease in heliconias is a fusarium wilt (*Fusarium oxysporum* f. sp. *cubense*, Race 3). This has no cure, and the control measure is to dig up the affected plant and burn it. The spores can stay in the soil for many years, and are water dispersed. Fortunately only a few species of heliconia are subjects of this disease, although it is said that others carry the fungus, without showing symptoms.



Drying foliage is a result of fungal or bacterial infection and loss of root system

Bacterial disease, affecting the roots of some heliconias and gingers, is quite common and can be controlled by increased potassium fertilizer although care should be taken since excess is toxic - water-insoluble forms would be safer.

Other problems can be caused by inappropriate pH, and trace element deficiencies - these can be remedied by information about the plant's native origin, and by leaf or sap analysis. Recommended nutrient levels can be obtained by referring to work done for the commercial banana industry, and some information is available for growers of edible gingers.

HSI Director Anders J. Lindstrom Weds

Anders Lindstrom, past president of HSI, and Curator for Botanical Collections at Nong Nooch Garden in Thailand and bride Panida Rodpao, nicknamed "Bun", married on 9 January in a private ceremony at the bride's parent's home in Bangkok. Bun is a technician at a tissue culture lab where Nong Nooch contracts for propagation services.



The couple are shown above in traditional Central Thai (Siamese) wedding attire.



Photos of the newlyweds provided by Alvin Yoshinaga

An Illustrated Expedition to Vietnam

Story and images by Markku Häkkinen ©

In November and December 2008, I set out on my first exploration for the *Musa* of Vietnam. This trip followed 12 earlier expeditions to Brunei, China, Indonesia, Malaysia (Peninsular & Borneo), Singapore and Thailand, each lasting from one to three months. Before this departure I had returned home only a week earlier from Tiruchirapalli, Tamil Nadu, India, where I participated in the taxonomic advisory group meeting for a week.

Unknown *Callimusa* species in flower



A river ferry



Aerial tramway at Phan Tiet



Our van full of collections at Phan Tiet



Russian made 4WD at Pu Mat National Park



Lake transportation at Ba Be National Park

This Vietnam expedition was arranged by the National History Museum in Paris that also funded the mission in cooperation with Northern Mountainous Agriculture and Forestry Science Institute (NOMAFSI) in Pho Tho, North Vietnam and the Institute of Tropical Biology in Ho Chi Minh City (Saigon). Dr. Thomas Haevermans, Paris; Prof. Le Cong Kiet and M.Sc. Ngoc Sam Ly from Saigon also participated in the mission. In addition, M.Sc. Tien Dung Trieu from the Phu Tho Research Center participated as the mission as a guide during the northern part of the mission.



Standing on the Vietnamese-China border

The aim of this expedition during the five-week period was to conduct research on wild bananas throughout the country, especially in remote areas, beginning in the extreme north near the Chinese border and continuing to the southernmost region near the Cambodian border. Some of Vietnam's wild bananas are unknown to science and need proper description and classification.

We had considered also paying for a week-long expedition to northern Laos, but that idea was dropped because our tight schedule was already too optimistic, taking into consideration the poor roads. We planned the mission for this time of year as the monsoon rains had already ended. Thus the roads were much less prone to the landslides that occur frequently during the rainy season. The Vietnam climate differs greatly from north to south, though both regions experience monsoons. From November to April, the north is cool and dry, but hot and rainy from May through October. Conversely, the south is hot and humid all year, particularly from February to May, while the rains last from May to November. The Central Highlands climate is similar to the south, but somewhat cooler; winter temperatures can drop to freezing. The region where North Vietnam parallels China's south Yunnan and Guangxi provinces

is regarded as one of the four important centers of biodiversity, especially for the *Musa* section *Callimusa* species. The other important areas are Borneo, Peninsular Malaysia and Sumatra.

Expedition Method

In my earlier expeditions to Southeast Asia during the period from 1988 to 2007, we used the same basic method to conduct research. First my colleagues and I reviewed the areas we planned to study. Then with the help of the local authorities and citizens, we traveled to various places such as nature reserves and parks. By following a plan, we were able to cover most of the areas that we had planned to study, but our treks into remote areas were necessarily based more on visual observations as well as interviews and guidance from local people, as local authorities were so unfamiliar with wild *Musa* species. As a result, unstudied areas still remain, some of which I hope to explore during subsequent trips.

The total distances that we drove in Vietnam were 1990 Km in the first part in the north and 2360 Km on the second part in the south. We collected some 65 *Musa* specimens for herbaria; DNA analysis and suckers to be grown at Kiet's university in Saigon. In addition, Dr. Haevermans collected some Euphorbia and Pandanus samples. In conclusion I have to say that this was a very hard mission, wherein we spent 12 hours a day on the road, then in evening after dinner checking over the daily collection for some 2 hours or more. Luckily it was possible for me to take naps in the car along the way as the young men were eager to watch for bananas with their keen eyes.



Author admitted to the Linnean Society of London in May

This article is adapted by Gabriel Sachter-Smith from: Hakkinen, Markku. 2010. Fruit Gardener, California Rare Fruit Growers. 42(5):2, 25-28.

Flower of *Musa balbisiana*
var. *liukiuensis*



Musa lutea fruits



Musa acuminata flower



Musa viridis fruits



Church in Saigon



Hanoi Market



Typical house in countryside



Several banana varieties for sale at street market



Sa Pa-Lao Cay



Rural road market



Hanoi old town



Musa exotica fruits



Mantis perching on
Musa coccinea flower



Musa viridis
fruits



Musa exotica unripe
fruits



Temple in ancient city of Hue



Male buds of *Musa lutea*



On a rural road near the town of Chuc Phong



Sleeping Buddha statue in Phan Tiet



On the lake at Ba Be National Park



On the lake at Ba Be National Park



Mother and son collecting inflorescences from the wild to be sold at market for decorative purposes



Collected *Musa* specimens

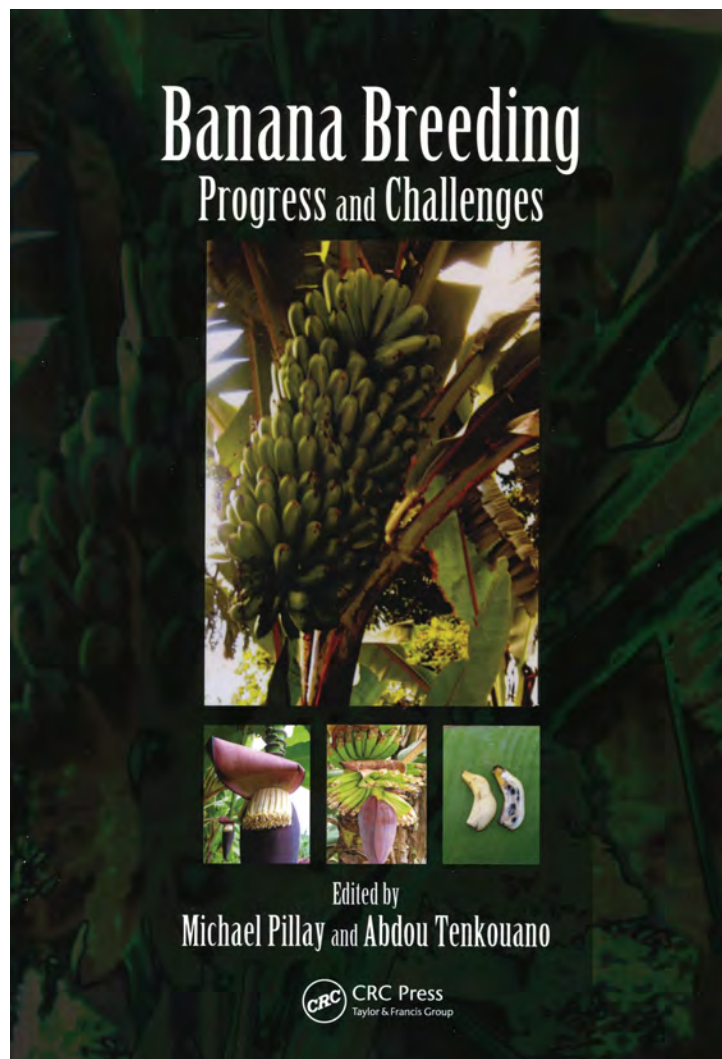
Banana Breeding: Progress and Challenges (2011)

Editors: Michael Pillay, Vaal University of Technology, Vanderbijlpark, South Africa; A-dou Tenkouano, Director of the Regional Center for Africa, AVRDC - The World Vegetable Center, Dlutu, Arusha, Tanzania

The first comprehensive compendium on bananas in recent years, **Banana Breeding: Progress and Challenges** provides in-depth coverage of all aspects of banana breeding and genetics, including biotechnology. A wide-ranging compilation of chapters by various experts, the book begins with a chapter on the general plant morphology of *Musa*, including floral biology. Other chapters cover the origin, history, and distribution of bananas, Propagation, Evolution and Genetic Relationships in Bananas and Plantains, Genetic Resources for Banana Improvement, Genomes, Cytogenetics, Flow Cytometry of *Musa*, and Genetics of Important Traits in *Musa* as well as two chapters that cover the major diseases and pests of banana.

The central focus of the book is encompassed in chapters such as Reproductive Biology, Breeding Techniques, Mutations and Cultivar Development of Banana, Biotechnology in *Musa* Improvement, and Genotype by Environment Interaction and *Musa* Improvement. The latter chapter offers tools for selecting both narrowly adapted and broadly adapted cultivars. The chapters on quality improvement of cultivated *Musa* and postharvest processed products provide researchers and teachers with information to improve quality aspects of banana along with information on how to reduce postharvest losses.

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