Feature Article:

SEYCHELLES ISLANDS
and
THAILAND

COLLABORATIONS OF THESE UNIQUE
HORTICULTURAL HOTSPOTS
Dear Readers,

Greetings and welcome to the Jan.-June 2014 issue of The Botanical Garden Organization (BGO) Newsletter. We are happy to publish this issue online and in a printed version for you to keep updated and informed on what is new in the BGO gardens and the BGO’s activities worldwide.

We hope you enjoy reading our feature article on the BGO’s latest international collaboration with the Seychelles Islands. Also in this issue are reviews of the newly constructed Banana Avenue and newly opened Limestone House at Queen Sirikit Botanic Garden. Many other interesting endeavors are covered which span the globe with horticultural activities.

The BGO continues to strive for conservation of our precious resources. This includes the native biodiversity which has been here long before us, and with our help and attention, will continue to exist for future generations.

We hope to welcome you to the nearest BGO’s botanic garden to see how local biodiversity are being saved and to enjoy the wonders of nature in its fullness.

Suyanee Vessabutr, Ph.D.
Director

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About our Cover

Fern Garden at QSBG.

About Contents page

“Morning Swamp Trees”, taken at Rayong Botanical Garden, by Ms. Siriwon Tipsawat was selected as the grand prize winner, by our team of judges, of the 2014 BGO Photography Contest and received the prize of 50,000 Baht and the Royal Trophy of Her Majesty the Queen. Congratulations to Ms. Tipsawat and a big thanks to all who participated.

Recent BGO News

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Garden Times Newsletter Editor
Queen Sirikit Botanic Garden,
P.O. Box 7 Mae Rim, Chiang Mai 50180
THAILAND
Tel: 66 53 841222
Fax: 66 53 299754

Editorial Team

Editorial Advisory Team: Dr. Suyanee Vessabutr, Dr. Ratchada Pongsatayapipat, Dr. Phyuakdet Sukatsathin, Dr. Pratchaya Sriaang, Dr. Santi Watthana
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On 9th October, 2013 Dr. Suyanee Vessabutr, the Director General of the Botanical Garden Organization (BGO) signed an agreement of cooperation with Chiang Rai Rajabhat University to develop and strengthen the academic connection and to promote the development of education, arts, culture, research, development of information technology, economy and society as well as activities and related scholarly projects. It was held at Aeung Sai Luang meeting room at Chiang Rai Rajabhat University and in the same day Chiang Rai Rajabhat University signed an agreement of cooperation with the Center for People and Forests (RECOFTC), Luang Prabang Teacher’s College and Luang Nam Tha Teacher’s College, Lao People’s Democratic Republic as well.

Mr. Silapachai Jarukasemratana, Chairman of the Botanical Garden Organization Executive Board accompanied by the Executive Board and staff, visited Shanghai Chenshan Botanical Garden and Hangzhou Botanical Garden to observe the operations of the botanical gardens with international standard in People’s Republic of China.

On 8th November, 2013 Dr. Suyanee Vessabutr, the Director General of the Botanical Garden Organization and Asst. Prof. Dr. Weerapong Malai, the director of the Biodiversity-Based Economy Development Office signed an initiative promoting the sharing of academic knowledge to improve the quality of the products developed from biological resources and to add the marketing values and to promote new products which are in the demand of the market. The executives and employees of the Botanical Garden Organization, the executives and the officials of the Biodiversity-Based Economy Development Office, the entrepreneurs of the cosmetics and spa business attended as witnesses at Queen Sirikit Botanic Garden, Mae Rim, Chiang Mai.

On 29th November, 2013 Dr. Suyanee Vessabutr, Director of The Botanical Garden Organization (BGO), co-sign the Memorandum Of Understanding (MOU) on academic collaborations with Mr. Pairoj Sattayasansakul, Director General of Wastewater Management Authority (WMA) in order to facilitate and strengthen the collaboration between the BGO and WMA by sharing the resources according to an Evaluation of the State Enterprise Policy Office. (November 17, 2013)
Myanmar expedition
19 August to 16 September 2013

Training on experimental techniques for DNA Barcoding at Molecular laboratory of Kunming Institute of Botany, Kunming, China.

Training on sample collection techniques in Lijiang Alpine Botanic Garden

On 25th October - 8th November 2013, Dr. Auntika Sawatwanich, researcher from The Sanga Sabhasri Research and Development Centre, Queen Sirikit Botanical Garden has attended the 5th International Barcode of Life Conference hosts by The Chinese Academy of Sciences (CAS), Kunming Institute of Botany and Kunming Institute of Zoology in Kunming, China. The conference had 400 participants from 43 countries including researchers working on biodiversity conservation, taxonomy, molecular biology or any other field relevant to DNA barcoding research to discuss and exchange idea on DNA barcoding researches as a way to identify species.

Botanical Expedition to Natma Taung (Mt. Victoria) National Park, Chin State, west-central Myanmar

Myanmar is located south of the Himalayan region, and considered as one of the countries having high biodiversity. The forest vegetation and flora are very diverse ranging from lowland tropical forest, deciduous, savanna, and hill evergreen to alpine vegetation. Based on the “Inventory and Research Program of the Useful Plants of Myanmar” project, under the Memorandum of Understanding (MoU) between Forest Department (FD), Ministry of Environmental Conservation and Forestry (MoECAF), Myanmar and the Kochi Prefectural Makino Botanical Garden (MBK), Japan, have jointly started since 2000. Following with these project and recent “Flora of Myanmar Institutional Consortium” since 2013, Queen Sirikit Botanic Garden (QSBG), Thailand, as a collaborative institute has been jointed for the expedition since 2007. Two Botanist, Dr.Pra-chaya Srisanga and Dr.Charun Maknoi, from QSBG, were joined by Dr.Kazumi Fujikawa from MBK and 5 Myanmar foresters in this expedition.

Myanmar expedition
19 August to 16 September 2013

Collecting plants specimens around summit of Natma Taung (Mt. Victoria) National Park, Myanmar.
Workshop on Biodiversity Conservation and Management Nov. 6 - 23, 2013. 18 participants from 6 countries attended in Guangzhou, China.

The Global Strategy for Plant Conservation (GSPC) was adopted in 2002 with ultimate goal to halt the current and continuing loss of plant diversity. This global strategy provides a useful framework to harmonize and bring together various initiatives and programs in plant conservation at national, regional and global levels. Two staff members of Queen Sirikit Botanic Garden were invited to be part of this workshop. This workshop was led with the scientific and technical cooperation of Biodiversity Conservation Management, under the Global Strategy for Plant Conservation (GSPC) and the Convention on Biological Diversity (CBD). China is one of the countries with the rich biodiversity in the world and has enforced policies to biodiversity conservation affiliated with the global strategy. As one of the most important botanical gardens in China, South China Botanical Garden (SCBG) has made great efforts for conservation and sustainable uses to preserve the rich biodiversity.

Participants, including Thitima Tharawoot and Supaporn Rodpradit from Thailand, visit the conservatory of the South China Botanical Garden.

Participants learning and enjoying in Chaing Mai at the 19th year of BGO's Botanical Training Programs

The BGO training programs continued for the 19th year in 2014 with these three trainings located on the QSBG grounds. Principles of Taxonomy - a basic training focused on naming and classifications of plants which was aimed at school teachers and university students. Advanced Taxonomy - a more advanced level of knowledge on plant classification, with hands on laboratory work. Parataxonomist - a general course aimed at anyone interested in plants or teachers who teach a related subject. These 3 programs each lasted for 5 days and had over 130 participants.
Mr. Vichet Kasemthongsri, Minister of Natural Resources and Environment along with Dr. Suyanee Vessabutr, Director General of The Botanical Garden Organization, opened the Botanic Festival 2014 in the topic of “Let’s talk about plants” at the Queen Sirikit Botanic Garden, Mae Rim, Chiang Mai, from 21st December 2013 – 5th January 2014. The Botanical Garden Organization, Ministry of Natural Resources and Environment hosted the event. There were special activities both academic and entertaining on the weekends. There was a “Let’s talk about plants: orchids, gingers, cacti, and rare plants in Thailand” with various aspects such as the wonders of plants. There was a food competition and a “cocktail” beverage competition which was prepared from Zingiberaceae plants. There were demonstrations of local food cooking, the utilizations of plants by using local knowledge, a recycled landscape contest, transferring the smallest orchid out of a bottle show, making postcards from plants, plant debate contest of Junior High Schools in Chiang Mai. There was also the distribution of plants and plant products and plenty of music in the garden and entertaining activities on stage.

The 7th International Symposium is held once every three years and is the only international event worldwide. This symposium will highlight recent developments and research related to the family of Zingiberaceae and the related groups in Zingiberales. It also will provide a venue for researchers to meet and discuss their works.

Participants:
The intended participants of 7th International Symposium include all Zingiberaceae enthusiasts, Universities, Colleges and research institutions across the country and outside the country. The Symposium also provides a platform for the groups of stakeholders to interact and mutually benefit from the deliberations.

Contact: Secretariat
GingerSymposium15@gmail.com
Dates of Event: August 17-23, 2015

This is the first ever Ginger Expo and is being held in conjunction with the 7th International Symposium on the family Zingiberaceae. This expo will highlight recent developments, research, commercial products related to the ginger family of plants.

Programs:
The Ginger Expo will cover a broad range of products, demonstrations, presentations and lectures for the general public to explore the wide range of products and uses of gingers for themselves.

Participants:
We would like to invite participants to the Ginger Expo which would include all ginger lovers, Universities, Colleges and research institutions across the country and outside the country. To receive the subsequent circulars and to participate in the Ginger Expo, please email to the below address.

Contact: Secretariat:
GingerExpo15@gmail.com
Dates of Event: August 17-23, 2015
The BGO sponsored a photo contest in 2014 for best photography taken at any one of the BGO's 6 gardens, with 191,000 baht total prize money awarded to the winners. The grand prize winner "Morning Swamp Trees" brought Ms. Siriwan Tipsawat an award of 50,000 baht and the Royal Trophy of Her Majesty the Queen. Here to the right are the three First runner ups which each won 20,000 Baht each. 81 photos also received a consolation prize of 1,000 baht each and certificates.

The team of judges included:

- Mr. Woranan Chatchawalikorn, National Artist for visual arts (photography)
- Mr. Chusak Voraphitak, Honorary Advisor of Contemporary Photography Foundation of Thailand
- Mr. Taweechai Jawsawatana, Judge from Contemporary Photography Foundation of Thailand
- Assoc. Prof. Dr. Chawan Koopipat, Head of Department of Imaging and Printing Technology, Faculty of Science, Chulalongkorn University
- Mr. Thit Sansin, Board of Directors, Office of Knowledge Management and Development (Public Organization)
- Mr. Suvicha Premjarchun, Judge from Contemporary Photography Foundation of Thailand
- Mr. Wisan Namkang, Professional Photographer
- Mr. Somkuan Sook-Tam, BGO Photographer

1. "Bromeliad" by Mr. Pakorn Chunhaswasdikul
2. "Nature Trail" by Mr. Polrit Thiti-warittinan
3. "Branched Comb Fern" by Ms. Siriwan Tipsawat

Grand Prize Winner "Morning Swamp Trees" by Ms. Siriwan Tipsawat

Our distinguished panel of judges with the selected winners.
The latest effort of world sharing was between the Seychelles Islands and Thailand located on the main island of Mahe at the Botanical Gardens in Mont Fleuri in May 2014. The Ministry of Natural Resources and Environment and Energy of the Seychelles Islands invited distinguished guest to the National Botanic Garden to attend the official opening of a Thai garden there.

The Thai Seychelles Garden comprises two projects – the garden itself and the micro-propagation and tissue culture laboratory which is the first such laboratory in Seychelles. The garden and the lab were fully funded by the government of Thailand for 4 million baht. Many Thai herbs and spice plants along with 70 different species of orchids totaling around 10,000 plants were carefully shipped to Seychelles for this garden. This bond between these two nations began in 1998 and has been in cooperation with many useful collaborations including being one of the first countries to assist Seychelles following the December 2004 tsunami by donating $30,000 to the government and people of Seychelles. This partnership continued in June 2014 at the QSBG grounds in Thailand where the BGO hosted 5 members from the Botanic Gardens in Mont Fleuri, Seychelles where they participated in all sorts of training programs to take back knowledge back to their home country. The training included plant classification, tissue culture, landscape design and more. Both the Botanic Gardens in the Seychelles and Queen Sirikit Botanic Garden share a unique trait, they are more than...
just gardens, more than just nations, they are both horticultural hotspots on the planet. Hopefully this endeavor of sharing will build and the world will have more access and knowledge about how rare of a place we live is. Here at the BGO we will continue to engage in international partnerships and invite your inquiries. As in our past significant projects with overseas interests, the BGO gains in knowledge and experience which we can than share throughout Thailand, and the world.

1. Seychelles group with arborist /lecturer John Learned
2. Walking along the nature trail at QSBG.
3. Dean Goblin and John capturing memories.
4. Sterina Julie up in the trees practicing with the pole saw.
5-7. Enjoying fern garden
This year’s BGO Founder’s Day Celebration was very festive. There was a memorable ceremony along with lots of entertainment and food outside to take part and enjoy in the fun. Everyone wore traditional Lanna attire which made for a very enjoyable event.
This extraordinary event was held to meet and discuss many aspects dealing with the collaborations of interested Asian Countries with regards to the plant family of Zingiberaceae (Gingers). It was held at QSBG and was not only colorful and fabulously decorated but very informative and worthwhile for the participants and visitors. There were presentations, exhibits, specialty tours, great meals and a fabulous gala evening celebration with traditional entertainment and delightful hospitality.
The new and improved Banana Avenue trail is amazing and well worth the travel to see the tremendous collection of over 200 different varieties of bananas, mainly from Southeast Asia. A recent donation and lots of work has made this attraction extremely informative and inspiring. The leisurely trail is a pleasure to stroll down and see all the towering stands of bananas laden with large racemes of fruit. There are lots of seating and a fabulous viewing platform to take it all in and witness why QSBG is aiming to save this natural eco-system. Looking down the hill and straight out from the platform, you will notice (with the help of binoculars) a *Dipterocarp* tree with plenty of bee hives. Here the symbiotic (mutually benefiting) relationship can be observed. The banana flowers produce pollen and nectar for different kinds of sunbirds and bees. These bees attract a special group of very colorful birds called bee-eaters who feed on these insects. I can recommend this trail with loads of enthusiasm.
The newly constructed Limestone House was opened to the public on Dec. 21, 2013. This house displays rare and unusual plants, some of which have never been viewed before by the public. It is the first conservation effort of this type for this group of plants. The greenhouse is a modern wonder with state of the art climate controls that not only calibrate the temperature but humidity and ventilation to ensure the proper replication of the plants natural habitat. These special high altitude plants demand specific abiotic factors (non-living factors in the environment, which affect ecosystems). This house is a perfect example of ex-situ (off-site) conservation conducted in botanical gardens. QSBG is excited to showcase these rare plants.

Limestone is caused by the formation of coral reefs and ancient marine sediments. We've found out that the limestone areas are areas that used to be submerged in the ancient seas. Physical characteristics of limestone are its ease of corrosion from water, especially rain water, which is often mildly acidic. This makes limestone mountains peaky with narrow stones and holes. Over time, a phenomenon is created in these limestone areas referred to as limestone stalagmites — stalactites, creating a dramatic architectural effect in the cave halls.

The highest limestone mountain in Thailand is Doi Luang, Chiang Dao, Chiang Mai. It has a height of 2,225 meters above sea level and is the third highest in the nation after Doi Inthanon and Doi Pha Hom Pok, which are granite mountain. The limestone areas in the high mountains on the ridge and summit of Doi Luang in Chiang Dao are unique and different from the others. It is a hilly limestone grove which is sometime referred to as "Semi- alpine plant communities". It is the only one of its kind in Thailand and is rich with rare tropic plants, endemic species and many herbs. Most of the plants which are adapted on the limestone are unable to get out of limestone ecology. Limestone mountains are fragmented like "islands" that both plants and animals are on together.

Although limestone plants are adapted to withstand the harsh environment of poverty on limestone, they must defeat the major enemy which is "human". We all participate in the destruction of the habitat of plants in this group as long as we are still using stone and cement in the construction of houses and streets. Current ecology of limestone in many areas are under threat from mining limestone. Other causes are forest fires and outbreaks of exotic weeds. The obvious examples are at the Doi Luang, Chiang Dao, Chiang Mai, where there are many rare limestone plants which are burned up widely by human. Subsequently degraded areas will be replaced by weeds "smelly dog" or Ageratina adenophora, which is spreading rapidly and is very dense. Hence, the local crops cannot compete with the weeds.

The Botanical Garden Organization recognizes the importance of conservation of the threatened limestone areas, and therefore, has simulated a limestone ecosystem for conservation. This greenhouse is to educate and raise awareness to the value of this group of plants. It is the world's first limestone ecosystem. The exhibits show several rare plant species such as Gesneriaceae groups, Agapetes species and Impatiens of various kinds, including rare plants such as Mok Queen Sirindra and Sirindhorn vine. We can help to conserve limestone plants by not buying plants from the forest and try to reduce the use of stone and cement. In the future, scientists may have to get involved with ideas to find substitutes for limestone. We all must preserve this special ecosystem of limestone to remain with us for a long time.
W
de QSBG’s historical role has been research, conservation and education efforts related to the Thai flora, in recent years QSBG has been developing resources and expertise in an even more diverse part of the Thai biodiversity—the insects.

Why would a botanic garden be interested in insects?

Not only are insects the most diverse part of Thai biodiversity but, of course, they are also rather important for flowering plants—being critical pollinators. Most of the beauty we see in flowers is plants trying to look good for their insect pollinators. Indeed the Blue Vanda Orchid has its beautiful color, shape and scent not for us, but for its insect partners.

QSBG Entomology (QSBGE) is not currently conducting any research on pollinators, however we are doing all sorts of other interesting things! As this is the first issue of GARDENtimes we’ll just give you a quick taste of some of the things we are up to, in future issues of GARDENtimes we’ll look at some of our activities in more detail.

Entomology (from Greek ἐντόμον, entomos, “that which is cut in pieces or engraved/segmented”, hence “insect”;) is the scientific study of insects, a branch of arthropodology, which in turn is a branch of zoology.

State-of-the-art insect cabinets in a climate-controlled room at QSBG.

Fireflies in Thailand

The scarab beetle (Pelotonotus tigrinus) a newly described species whose type is held in the QSBGE collection.

Collecting insects from a light trap as part of QSBGE’s research on the biodiversity of insects in northern Thailand.

Collecting mosquito larvae from an urn in Doi Inthanon National Park.

A fraction of the QSBGE insect collection, here are some specimens from the “Wonderland of Wasps”.

Dissecting a rotting log in search of specimens.

A Birdwing butterfly visiting a flower, the bright color and tubular flowers all there to attract insects.

The scarab beetle (Pelotonotus tigrinus) a newly described species whose type is held in the QSBGE collection.

Collecting insects from a light trap as part of QSBGE’s research on the biodiversity of insects in northern Thailand.

Fireflies are a widely recognized part of the Thai insect fauna (there are even songs about them), QSBG started its entomology work with fireflies.

Here are some of our interests and some of the things you can look forward to reading about in future issues:

1. Fireflies in Thailand
2. The biodiversity of the insects of Northern Thailand
3. The development of a butterfly house at QSBG
4. Some projects we have been involved with in collaboration with Entomologists from around the world
5. Our insect collection and especially some important holotype specimens (first specimens described for a new species)
6. Our staff will introduce themselves and let you know what they are doing on a daily basis

We hope this list, and the accompanying pictures, give you a taste for what QSBGE is up to and you will be interested to read more about QSBGE in the next issue.

Want to learn more regarding QSBGE and our activities, please visit www.qsbginsects.org

Want to learn more regarding QSBGE and our activities, please visit www.qsbginsects.org
The species called *Dracaena kaweesakii* has reached the Top 10 New Species of 2014. This tree spans an impressive 12 m in both height and crown diameter. The specific name *kaweesakii* honors Thai horticulturist and co-author of the discovery, Mr. Kaweesak Keeratikiat.

This relative of the beautiful Canary Island dragon tree, *Dracaena draco* was newly described by experts, Dr. Paul Wilkin from Kew garden and Dr. Piyakaset Suksathan from Queen Sirikit Botanic Garden. The limestone loving tree is characterized by its extensive branching and has beautiful soft sword-shaped leaves with white edges and cream flowers with bright orange filaments, all highly distinctive features. *Dracaena kaweesakii* is extracted from the wild for use in horticulture in Thailand and is one of the more popular species due to its extensive branching. The new species in general are thought by Thai people to bring luck to households that have them, hence their popularity.

Because of the limited distribution, destruction of limestone for concrete and extraction of trees for gardens, *Dracaena kaweesakii* is thought to be endangered.