

# Kadoorie Farm & Botanic Garden

**ANNUAL REPORT 2011**

To harmonise our relationship with the environment





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## Kadoorie Farm and Botanic Garden Annual Report 2011

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**Cover photo:** The statue of Sir Horace Kadoorie seated on a wooden bench in the Plaza at KFBG was unveiled on 21<sup>st</sup> May, 2011.

# ABOUT KFBG

Kadoorie Farm and Botanic Garden (KFBG) is situated in the rural New Territories, on the northern slopes of Tai Mo Shan, Hong Kong's highest mountain. Two steep spurs enclose its deep-set valley. Within KFBG are streams, woodlands, orchards, vegetable gardens, walking trails, live animal exhibits, floral exhibits, sustainable agriculture demonstration plots, art exhibits, a wild animal rescue centre, a native tree nursery, and, other conservation and education facilities.

In the post-war years, Hong Kong was flooded with destitute immigrants. Many had traditional knowledge of crop production and livestock farming but no stock, others had land but no experience. They required support to rebuild their lives. In 1951, in response to these pressing human needs Lawrence and Horace Kadoorie established the Kadoorie Agricultural Aid Association (KAAA), which became a key partner of the Hong Kong Government in devising and implementing a plan to help Hong Kong feed itself. The Kadoorie brothers, part of a well-established business family, saw wealth as a sacred trust to benefit mankind. With such aid, thousands of people received agricultural training; thousands of pigs, chickens and ducks were bred and given to farmers or sold to them on credit; thousands received micro-loans; and numerous wells, irrigation channels, roads, footpaths, bridges, pigsties and farm houses were built. The farm site at Pak Ngau Shek was established in 1956 as a base for livestock breeding and distribution, agricultural research, farmers training, public education and recreation. The barren slopes were terraced and planted with orchards and vegetable gardens. The development of the botanic garden began in 1963 and the plant conservation programme from 1972.

On 20<sup>th</sup> January, 1995, the Legislative Council of Hong Kong passed an Ordinance (KFBG Chapter 1156) incorporating KFBG as a non-profit corporation designated as a conservation and education centre. It is a unique public-private partnership, for while the KFBG Corporation is a public organisation, it is privately funded by the Kadoorie Foundation (some HKD 90 million per year); these funds are supplemented by small donations from the public and occasional project-related Government grants that enable us to extend our work.

Since 1995, KFBG has been conducting a wide range of nature education, nature conservation and sustainable living programmes both on-site, and, throughout Hong Kong and South China.

In a time of severe global crisis – including the inter-related issues of widespread disconnection from nature, each other and self; the ever-increasing exploitation of, and unwise over-reliance on the world's dwindling resources to support unsustainable lifestyles; climate change; shrinking of natural habitats and species loss – KFBG, as an organisation, raises awareness, undertakes rigorous science-based species conservation and ecosystem restoration, and offers new ways of thinking and living to respond to the world's problems. Hence, our work brings hope and improvement by focusing on nature conservation, sustainable living and holistic education that re-connects people with nature. By working together with the public, Governments, academia, NGOs and businesses, we can protect our common future.

# MISSION & VISION

## **MISSION**

To harmonise our relationship with the environment.

## **VISION**

A world in which people live sustainably with respect for each other and nature.

## **VALUES**

### **Sustainable Living**

Appreciating the impact of our actions with regard to current and future generations. Having awareness of our connection with the environment. Valuing simple and responsible lifestyles.

### **Justice**

Being fair and accountable. Valuing socially equitable systems that protect the health of the planet, the people and their way of life. Protect future generations.

### **Love**

Having self-awareness and understanding of the inter-relationship of all things. Having compassion and respect for all life. Recognising that outer discord is a reflection of inner discord. Striving for inner silence.

### **Participation**

Engaging mentally, physically, emotionally and spiritually; fostering respect for different viewpoints, openness, dialogue and teamwork.

### **Professionalism**

Being a role model of caring, integrity, commitment, professional standards and best practices for partners, organisations, individuals and communities.

### **Learning**

Being adaptive and flexible to changing circumstances. Having a holistic outlook. Being practical, objective, creative and insightful.

### **Happiness**

Appreciating that our happiness lies in creating and sharing happiness with others.



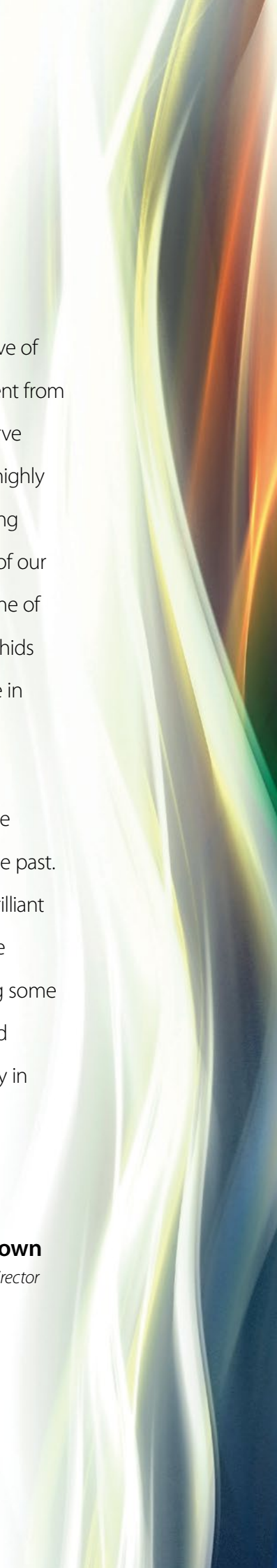


# PREFACE

Once again I thank and praise our committed staff team, our volunteers and our many partners for their energy, passion and considerable skills.

Part of our role is to help people prepare themselves for the challenges that are emerging in the climate-disrupted, resource-depleted world in which an ever-increasing population puts greater and greater pressure on biodiversity. We encourage people to join a growing movement of citizens who live simple, localised and self-sufficient lives. Our Sustainable Living and Agriculture team continues to create and deliver an innovative range of community and individual development programmes, which provide concepts and practical tools that enable participants to become more resilient and happy, whilst consuming less.

We try to help people make an emotional connection to the natural world so that they may love and appreciate its wonder and gain happiness and strength from nature. Our Education team continues to develop the 'visitor experience' and to work with many groups, especially schools. This year we again had the pleasure of hosting our great friend Dr Satish Kumar, who gave a series of public talks and a workshop under the theme Soil, Soul and Society.



Our nature conservation programmes are rooted in scientific rigour, yet have love of nature and people at their core. Our work in Nature Reserves in South China went from strength to strength in 2011, with conservation studies and actions, nature-reserve management, warden training and community livelihood programmes being highly regarded by the Mainland authorities. Our wild-animal rescue work in Hong Kong saw record numbers of animals being treated. This year saw the enhancement of our flora-related programmes with further recruitment and enhanced processes. One of the highlights of the year was the launch of the astonishing book 'The Wild Orchids of Hong Kong', which has received wide acclaim and will be a valuable resource in many conservation efforts.

As we look forward with hope and courage we have also honoured some of the people who have made special contributions to Hong Kong and the Farm in the past. We unveiled the superb statue of our co-founder Sir Horace Kadoorie, by the brilliant American sculptor Lawrence Holoferner, and it is one of my daily delights to see children sitting on Horace's knee as I walk through the Plaza, perhaps absorbing some of his spirit; we opened the lovely 'Gloria Barretto Orchid Sanctuary'; and we said goodbye to Lady Muriel Kadoorie, wife of Lawrence Kadoorie, who passed away in December.

**Andy Brown**  
*Executive Director*



# SUSTAINABLE LIVING

## Raising public awareness for sustainable living

During 2011, a wide range of exhibitions and public workshops were organised, at various locations in Hong Kong, to arouse awareness of Peak Oil and Climate Change and to facilitate community transition to low-carbon living. In KFBG's **Sustainable Living and Agriculture Department (SLA)** healthy food, local food production and the cultivation of organic food forms the core of our work. Our staff and volunteers introduced environmentally friendly ways for growing plants at home to more than 300,000 visitors to the **Hong Kong Flower Show 2011**.

Awareness-raising exhibitions organised in 2011:

Title	Period	Venue	Visitor flow (estimated)
LOWcarbonDIET@HOME	Jan - Dec 2011	Over 20 different venues in various districts	>20,000
LOHAS@2030 Exhibition	1 Dec 2011 - 15 Feb 2012	Hong Kong Gallery, Peak Galleria	>20,000

Carnivals and public events organised in 2011:

Event	Number of days	Venue	Number of participants (estimated)
LOHAS Square	14	Central Star Ferry Pier	>6,000
growFOOD@HOME	2	KFBG	1,973
Organic Festival	2	KFBG	2,988

KFBG continued to help forewarn and equip the Hong Kong community for impacts of Peak Oil and Climate Change, and promote low-carbon living, reaching out to thousands through farmers' markets, food-growing and energy-saving programmes, websites and drama. We supported innovative research to reduce methane emissions from organic rice production, spearheaded the eradication of genetically modified organism (GMO) papaya, and refined our own practices of sustainable resource use.



A demonstration of weaving on a loom at the Organic Festival.

This year, the on-going **One Tonne Challenge campaign** ([www.climatechange.hk](http://www.climatechange.hk)) website was actively used by project partners to promote energy-saving and carbon emissions reduction in the extensive community-level (**LOHAS Tai Po, LOHAS North District, LOHAS Tseung Kwan O and LOHAS Wong Tai Sin**) district campaigns. By the end of 2011 the website had a cumulative hit count of 174,144, and the number of registered users had increased by 213% to 19,930. The website received reduction pledges for a total of 71,191 tonnes of carbon dioxide by enthusiastic members of the public.

On 30<sup>th</sup> September, Dr Jeremy Leggett, a renowned expert on Peak Oil and its challenges, visited KFBG. His talk **Risks to economies arising from fossil-fuel dependency: Peak Oil and the coming energy crunch** was attended by members of staff and guests. An interview with local media was organised for Dr Leggett after the talk.



**LOHAS@2030 – Making pestos at a booth at the KFBG Exhibit at the Peak Galleria.**

## Re-skilling for sustainable living

A series of re-skilling programmes were developed in 2011 to facilitate the public's active participation in transition to low-carbon living. Growing one's own food is an important, active process in the shift from an import-based to a local and sustainable food production system.

Sustainable farming courses organised in 2011:

Course title	Date	Number of courses	Venue	Number of participants
<b>One-day Advanced Course in Sustainable Agriculture for City Farmers</b>	8 Jan, 26 Feb, 16 Apr, 7 May, 16 Jul	5	KFBG	97
<b>Two-day Introductory Course in Sustainable Agriculture for City Farmers</b>	Mar - Nov	3	KFBG	70
<b>13-day Permaculture Design Certificate Course<sup>1</sup></b>	Apr - Jun	1	O-Farm, KFBG	30
<b>3-day Sustainable Agriculture Course for City Farmers</b>	Oct - Nov	1	KFBG	20

<sup>1</sup> Co-organised with the Permaculture Institute Hong Kong.



**Participants of the Sustainable Agriculture Course for City Farmers at KFBG.**



Public **workshops** and talks organised in 2011:

Event	Date and number of workshops	Venue	Number of participants (estimated)
growFOOD@HOME workshop	27 Feb	Tuen Mun Public Library	>50
	16 Mar	Victoria Park	>200
	23 Jul	Kowloon Public Library	>50
	6 Nov	Ma On Shan Public Library	>50
Design of Local Food – Urban Permaculture Strategy & Community Food System <sup>1</sup>	8 Apr	HKU SPACE Education Centre	>100
LOWcarbonDIET@HOME workshop	May - Dec (7 workshops)	At various venues provided by participating organisations for staff training or public participation	>300
	13 & 19 Feb	Central Star Ferry Pier / Youth Square	>150
	6 Jul	Youth Square	>100
	10, 17 & 24 Sep (3 workshops)	Tai Po Public Library	>150
	16 Dec	Fung Yuen Butterfly Nature Reserve	>1,000
LOHAS Workshop	Dec 2011 - Jan 2012 (33 workshops)	Peak Galleria	>500
	Jan - Dec (12 days)	Star Ferry Central Pier	>1,200

<sup>1</sup> This talk was organised with Permaculture Institute Hong Kong and KFBG was a supporting organisation. We estimate over 55,000 people interacted with our sustainable living workshops and exhibitions this year.



In collaboration with Mandu's Shed of Creation, a team of young drama artists was engaged to develop a pilot of **Drama in Education for Sustainable Living** at KFBG for primary students. From May 2011 to February 2012, one teacher workshop and 30 student workshops were delivered to promote learning about sustainable living in an interactive, fun-filled way using a drama technique known as process theatre.



Professional drama artists leading students through themes of sustainable living through singing, dancing and other interactive fun-filled activities at KFBG.



# Facilities supporting sustainable living

The weekly **Farmers' Market @ Central** organised every Sunday at Star Ferry Central Pier has become one of the most long-running and popular farmers' markets in Hong Kong. It serves as demonstration model for local and Mainland community workers to learn how to bridge and maintain mutual support and interaction between consumers and local farmers. A total of 51 market days was organised in 2011. The average income from sales of farm produce on each market day was about HK\$1,900 for each farmer. An exhibition on **The Wonders of Gourds and Melons** on 17<sup>th</sup> July displayed nearly 20 squash varieties, to celebrate the 4<sup>th</sup> anniversary of this successful farmers' market.



Farmers celebrating the 4<sup>th</sup> Anniversary of the Farmers' Market at the Star Ferry Central Pier.

Coinciding with the peak period of local farmers' vegetable production, a weekly **Winter Farmers' Market** was organised every Saturday from January to April at KFBG, to offer a market place to local farmers who wished to sell organic produce directly to customers. A total of 23 market days were organised in 2011. In view of its success the Winter Farmers' Market was re-launched in December 2011 until April 2012.



A variety of organic vegetables and fruits for sale at the Winter Farmers' Market@KFBG.



Handicrafts for sale at the Winter Farmers' Market@KFBG.

We continued our collaboration with the **Tai Po Environmental Association** (TPEA) to organise **LOHAS@Youth Square** at Chai Wan, to promote energy-savings. This school-based approach delivered over 200 student workshops in 2011.



LOHAS@Youth Square.



The Fruit Forest at KFBG is an important field classroom for farmers training on agro-forestry.



## Mobilising the community

Considerable effort was devoted to building the capacity of community organisations and partnership for sustainable living, as indicated by the extensive activities in Appendix 1. Working with funds provided by the Environmental Protection Department, a **LOWcarbonDIET@HOME** project was co-organised with the **Hong Kong Federation of Women** (HKFW), from December 2010 to April 2011. In all, 14 community organisations were engaged as community partners to promote low-carbon living. Altogether 27 workshop sessions were organised, and 368 low-carbon-living ambassadors were trained to serve as multipliers, in turn organising an additional 11 community workshops and exhibitions all over Hong Kong for over 6,000 participants. A booklet illustrating how to implement low-carbon living, step-by-step in the home, and a set of display materials for a travelling road show were produced. The collaboration with HKFW successfully extended the reach of KFBG's community programme to a new group of people – over half (58%) of the participants had never been involved in activities related to environmental protection before joining the programme.



The art of low carbon cooking – savoury food delighting the senses.



LOWcarbonDIET@HOME project – exhibition and workshop on low carbon cooking to demonstrate transition to sustainable living.



An enjoyable day of cooking together and sharing food.



A media event to promote a low carbon diet on Valentine's Day.



# The Green Hub

Much preparation work is needed before restoration work can be carried out to convert the Old Tai Po Police Station into a **Green Hub for Sustainable Living**. Over the year we have made detailed site investigations and designs to prepare a consolidated renovation plan and submissions required by the ordinances governing buildings and construction work. Formal consultations with the Tai Po District Council and the Legislative Council's Development Panel were conducted to gain their support for the project. A Heritage Impact Assessment Report was also submitted, and accepted by the Antiquities Advisory Board in November. Consultations with the Legislative Council's Public Services and Works Committee and Finance Committee were scheduled for February and April 2012, respectively. An 18-month period of renovation and restoration work is scheduled to start in late 2012, and the Green Hub is expected to open by mid-2014.



The Green Hub will provide a range of residential, transformative workshops and retreats to help individuals and organisations in Hong Kong and mainland China understand the low carbon living alternatives to unsustainable consumption that is causing climate change and rapid resource depletion.



## Working demonstrations of sustainability

In 2011, the following agricultural products were produced at KFBG:

Type of produce	Eggs	Fruit (kg)	Vegetables (kg)	Honey (litres)	Green tea (kg)	Chrysanthemum (kg)	Roselle (kg)	Coffee (kg)	Fruit tree seedlings	Potted plants	Compost (kg)
<b>Yield</b>	176,256	10,467	36,887	186	26	22	5	16	266	2,357	56,232

We constantly strive to recycle our natural resources. From the introduction of the **bio-charcoal-making kiln** at KFBG in late 2010 to the end of 2011, a total of 3.4 tonnes of wood waste had been converted, into 610 kg of biochar. Field trials in our agricultural fields and orchards, using the biochar for soil enrichment and the byproduct wood-vinegar for pest control, were carried out in 2011 and we considered their performance satisfactory. In view of the high potential for promoting this technology for use in local gardens and urban parks as an environmentally friendly way of organic resource recovery and waste reduction, a media tour was organised on 1<sup>st</sup> December. Guided tours were also organised for other interested parties, such as groups from the City University of Hong Kong and the Mass Transit and Railways Corporation.



The Bio-charcoal kiln at KFBG.



Students learning how to bury bio-charcoal in vegetable fields for enriching fertility of the soil.





The deep-litter bedding system for raising healthy, stress-free and robust chickens at KFBG.



Improvements in husbandry practices has increased the hatching rate of chicks for the White Wai-chow heritage breed at KFBG.



An essential skill in the tradition of bee-keeping is collecting swarming bees.



Potted plants and herbs for sale in the Farm Shop.

To address the issue of GMO-contaminated crops, SLA initiated a collaborative project with **TPEA, Produce Green Foundation** and **O-Farm** to conduct a three-year **GMO-free Papaya Growing Zone** project, exploring the feasibility of setting up a GMO-free agricultural area in Hong Kong. Three rural locations at Hok Tau and Fung Yuen were identified as pilot zones. The local community in each of the pilot zones (which include farmers and residents) will be actively engaged in the project by replacing papaya trees from unknown sources which bear the risk of GMO-contamination with 'clean stock' of GMO-free papaya seedlings. A baseline survey of papaya trees in the pilot zones was carried out in the autumn, prior to the project being launched in December. This project has also received support from the Heung Yee Kuk.



The GMO-free Papaya Growing Zone project explores the feasibility of setting up a GMO-free agricultural area in Hong Kong.



Methane is the second most important greenhouse gas after carbon dioxide, and flooded rice fields are a major source of methane, which is why the first theme of our Mainland **Sustainable Agriculture Pioneers (SAP)** scheme was **rice and climate change**. The initial findings from five innovative investigations of organic rice-duck, rice-fish, upland rice, and rice-plastic mulch systems suggest they can indeed reduce methane emissions from rice cultivation. The results will be published in respected scientific journals.

Scientific projects receiving funding support (granted in 2010 and 2011) on the theme of Rice and Climate Change:

Name of scientist	Affiliation	Research topic	Project timeframe
<b>Wang Huaqi</b>	China Agricultural University, Beijing	Methane emissions in improved upland rice	Jun 2010 – Jan 2013
<b>Luo Qunchang</b>	Rice Research Institute, Guangxi Academy of Agricultural Science	Methane emissions from rice-fish organic farming systems in South China	Jan 2011 – Dec 2012
<b>Zhao Benliang</b>	South China Agricultural University	Reduction of methane emissions in rice-duck cultivation systems	Mar 2010 – Dec 2011
<b>Fang Yuan</b>	College of Agriculture, Guangxi University	Promotion and greenhouse gas emissions of rice-duck	May 2010 – Dec 2011
<b>Lu Shihua</b>	Soil and Fertilizer Institute, Sichuan Academy of Agricultural Science	Rice-plastic mulch technology and methane emissions	Mar 2010 – Dec 2011



All the 72 farmers in Shuanghe Village in Sichuan have converted to organic rice production using the rice plastic mulch technology. The rice yield, astonishingly, reached an average 720 kg/mu without using any chemical fertilizers.



Organic rice from Shuanghe Village is now commercially available for cooking a healthy broth for children.

Besides the research, the **rice-duck** cultivation methods have already been promoted and adopted, by small-scale farmers in Guangxi. Four large organic rice production companies (one in Sichuan and three in Guangdong) have adopted the rice-duck techniques, in co-operation with our SAP partners, to cultivate more than 10,000 mu (670 hectares) of rice paddy. Meanwhile, the methods of producing **rice with plastic mulch in raised beds** have been adopted by a whole village of 72 farmers in Sichuan, with 300 mu (20 hectares) of land under cultivation. They are marketing their own rice under the brand name Xin Tian Fu, and it is proving popular with their city consumers in a Community Supported Agriculture (CSA) scheme. The technique has produced a remarkable average yield of 720 kg/mu of dry paddy rice, a level never attained before under organic rice cultivation and almost twice the normal organic yield. For chemically fertilized rice farming it is 500 kg/mu, without plastic mulch. The **rice-fish** integration method is now also being promoted, in Guangxi. The farmers are combining it with **frog culture**, and they can get a higher income selling frogs than fish. In one village near Guilin where there is 1,000 mu of land under organic rice cultivation, a resurgence in the native frog population has significantly improved pest control as well as reviving a traditional food source for the village.



The farmers at Shuanghe Village sell their rice co-operatively under the brand name "Xin Tian Fu" organic rice.



After the rice harvest, the farmers practice crop rotation by putting the rice straw back into the rice fields and planting for rapeseed as a source of cooking oil.



A training workshop conducted by Kadoorie Conservation China (KCC) staff on how to adapt pig pens to a deep litter bed system for raising pigs and to make the compost for the cultivation of organic rice fields at Shuanghe Village, Sichuan.



To upgrade the quality of the research work on methane emissions in rice cultivation, the participating scientists gathered in Chengdu (December 2010) to review the first-year results and standardize the methodology.



# HOLISTIC EDUCATION

## Themed Programmes

During 2011 the KFBG Education Department worked in partnership with schools to offer them curriculum-based programmes. We promoted and ran courses on the **Woodland Ecology** of KFBG for secondary school students, who compared and experienced native and exotic woodlands, interacted with trees, collected data and listened to presentations. This programme was conducted between January and April for senior secondary biology and geography students, who had an opportunity to practice field techniques to study the distribution and abundance of organisms, the main elements of a woodland ecosystem, and the relationships between soil, flora and fauna.

A summer camp – **In Touch with Nature** – was held during the summer holidays. About 20 vocational-institute students participated in various activities including field studies, art, group sharing and games, sustainable lifestyles and self-reflection. The participants also had an opportunity to attend **Keeper Talks** on raptors and mules. On the last evening of the camp, the interns explored the KFBG hillside during a night walk, guided by education officers. An additional group of ten students of the Institute of Vocational Education (IVE), Sha Tin, joined a week-long summer training workshop (10<sup>th</sup> - 17<sup>th</sup> August). They carried out practical fieldwork, acquired fundamental knowledge on the ecology of local wildlife, and learned gardening and plant-propagation techniques.

Our educational programme continued to offer connection with nature in various dimensions, including introduction to forest ecology and conservation, experiential encounters with animals and plants, and activities encouraging both creativity and silence. Besides our own direct activities we sought to strengthen the ability of teachers to facilitate life-enhancing interactions with nature for their students. New exhibits on the site included the statue of Sir Horace Kadoorie and The Gloria Barretto Orchid Sanctuary. We continued to expand our public profile through conventional and social media.



Students listening to a Raptor Keeper Talk at KFBG.



Being a botanic garden enables us to conduct and organise many programmes related to plants. From January to March eight sessions of horticulture activity were organised by the Flora Conservation Department for secondary school students. A new **Happy Hours with Plants** programme was initiated in June. About 136 school children learned about the wonder of plants through hands-on activities, including making paper from plant fibres, making bookmarks and cards using recycled paper embedded with seeds, gardening and plant propagation, as well as exploring the Woodland Trail. A special session was also organised in June, as an outdoor experience for members of the Youth and Volunteer Team of the Hong Kong Red Cross.



Horticulture activity for secondary school students (February 2011).



Utilising the renovated Gurkha Garden to demonstrate plant propagation to the Youth and Volunteer Team of the Hong Kong Red Cross.

We often receive special requests for **tailor-made programmes**. In May the Fauna Conservation Department hosted The University of Hong Kong's **herpetology (reptile and amphibian) course**, introducing participants to critical conservation work in Hong Kong, and, later hosting the group during a night search for reptiles on the KFBG hillside. In another case our Education Department organised a one-day **Sensory Walk** workshop, with the Peninsula Hotel and Home of Love, to let 50 primary students from under-privileged homes enjoy a guided walk, gardening, and arts-and-crafts activities at KFBG. A tailor-made programme on nature education for 168 Grade 2 students from Renaissance College (Ma On Shan) was organised over three days from 13<sup>th</sup> to 15<sup>th</sup> December. The students learned about nocturnal animals, how to grow vegetables from seedlings and seeds, characteristics and life cycles of different crops, and how to harvest them.



Our volunteers conducting a planting activity for young children.



Students from Renaissance College learning the benefits brought by earthworms to soil.

As part of our education work we provide training workshops for school teachers. In March we conducted a **Lepidoptera (moths and butterflies)** workshop for 32 primary school teachers and students (from nine schools). This consisted of a general introduction to moths and butterflies, and a moth night-trapping exercise. In October, together with the Chinese University of Hong Kong (CUHK), we organised a special two-day, one-night workshop, **Animal Encounters with Heart**, for 13 secondary-school teachers. The activities included a Night Walk, exploring the Woodland Trail, animal encounters with the mules and a python, an Eco-Garden talk and a presentation on **Food Ecology** – an introduction to how our daily choices of food relate to human well-being, the health of the Earth and the wider economy and society.



Teachers harvesting vegetables at the Eco-garden for making salads and herbal tea (October 2011).



Demonstration of a moth trap at the Lepidoptera Workshop for teachers and students on 19<sup>th</sup> March, 2011.





A group photo of KFBG staff, friends and family of Gloria Barretto at the official opening ceremony of the Gloria Barretto Orchid Sanctuary in Orchid Haven on 24<sup>th</sup> February, 2011.



A general view of the Gloria Barretto Orchid Sanctuary.



Teachers at a sharing session for "A Day of Mindfulness in Nature" programme.



Encouraging students to smell different herbs in "A Day of Mindfulness in Nature for Secondary School Students" (June 2011).

A new initiative for 2011 was the launch of the **Mindfulness in Nature** programme for schools. Developed as a one-day or half-day session for teachers or students, this offered participants an opportunity to practise mindfulness (being very present, using your five senses to experience nature) in the natural and tranquil environment of KFBG, to connect with plants and Nature through their five senses and heart, and to contemplate this relationship. The first event was co-organised with CUHK on 15<sup>th</sup> and 18<sup>th</sup> April, with 62 teachers from 12 secondary schools taking part. Students and teachers from two secondary schools (Shung Tak Catholic English College and Sai Kung Sung Tsun Catholic School) participated in the programme on 25<sup>th</sup> - 27<sup>th</sup> May and 28<sup>th</sup> June (a total of 146 students with five teachers). We also worked with CUHK to run a one-day mindfulness in nature programme for 29 teachers from Pui Shing Catholic Secondary School, for their school teacher development workshop on 28<sup>th</sup> October.

## Changes in the exhibits

Following extensive re-modeling over the last three years, two of the terraces in Orchid Haven were re-opened to our visitors on 1<sup>st</sup> February as a new theme garden – **The Gloria Barretto Orchid Sanctuary**. This memorial garden houses our living collection of native Hong Kong orchids. The garden has been extensively landscaped so that the orchids can grow and thrive in a semi-natural environment, similar to their natural habitats. A formal opening ceremony of the garden took place on 24<sup>th</sup> February to coincide with the anniversary of Gloria Barretto's passing. Mrs Barretto was a key figure in KFBG's development, whose dedication and knowledge of plants laid the groundwork for our conservation programmes today.





Displays and exhibits continue to be improved throughout KFBG to enhance the visitor experience, and 2011 saw a flurry of creative design work. At the beginning of the year we set up an exhibition in the Reception Area about the transformation of The Old Tai Po Police Station into a **Green Hub for Sustainable Living**. In March we created a much-appreciated exhibit on environmentally-friendly gardening for the **Flower Show** at Victoria Park, and our creative design staff were soon busy again with the signage for the opening of the **Sun Garden Café** on 15<sup>th</sup> April. The adjacent **Sun Garden Animal Exhibit** was also opened to the public in April, and its main theme is the illegal wildlife trade; it showcases different reptile habitats, and houses reptiles confiscated by the Authorities in Hong Kong. New designs were installed at the Amphibian and Reptile House, Reptile Lookout, Wildlife Walkthrough and Insect House, and information boards on bats were erected throughout KFBG to highlight the **Year of the Bat**. Another exhibition, **In Praise of Wild Orchids**, featuring images of native Hong Kong species and drawing on images from the new book *The Wild Orchids of Hong Kong*, was opened in the Kwun Yum Garden Gallery in November.



**白理桃女士**  
GLORIA D'ALMA BARRETTO

白理桃女士出版三本：《臺灣植物志》（主編）  
《台灣圖志》（主編）《香港圖志》（1979年11月）。  
*Gloria Barretto with Sir Horace Kadoorie on her left and Lord Lawrence Kadoorie on her right © KTRC (November 1978)*

白理桃女士出版兩本：《臺灣植物志》李濟主編於1973年的本國植物志有合著。  
《臺灣植物志》及《香港植物志》，並於1974年至1980年間擔任新加坡植物園總監。  
李濟博士曾任美國康乃斯大學的教授。  
*Gloria Barretto with Professor Eric Hultine and Dr. Sandy Lee at Oxford House, KTRC, in 1973.  
Professor Hultine was a English botanist who served as Director of the Singapore Botanic Gardens from 1958 to 1983. Dr. Lee was a former President of the Hong Kong Orchid Society.*

總編輯劉烈臣白理桃女士於1974年的香港中文大學畢業。  
《香港植物志》是植物學史。多年來在臺灣協助白理桃女士研究園藝。  
*Professor Ho Ming-yue and Gloria Barretto, at the Chinese University of Hong Kong in 1974.  
Professor Ho was a prehistorical historian who studied Chinese in the study of the ethnology of living Hong Kong over many years.*

白理桃女士於1997年獲美國亞利桑那大學頒授榮譽學士。  
以表彰她在促進及改善西園藝科學和園藝上的貢獻。  
*Gloria Barretto was awarded the First National Merit Award Medal by the Royal Horticultural Society in 1997 for her contributions to the advancement and improvement of the science and practices of horticulture.*

這本書為紀念白理桃女士而出版，是透過她對園藝的熱心而寫。白理桃女士是美國著名園藝家，曾擔任美國、中國植物志，現在香港的《香港植物志》。

This commemorative book is the result of meticulous observation and study by Gloria Barretto with various authors for scientific and dramatic of a book on the plants that she loved so much have been fulfilled.

**THE WILD GARDENS OF HONG KONG**  
白理桃女士著





A group photo of KFBG staff, friends and family at the unveiling of the statue of Sir Horace Kadoorie at the Plaza on 21<sup>st</sup> May, 2011.



Leaping Fish Mosaic set in the Cascade Garden.

Numerous displays and creative design elements were also added to various locations around KFBG to enhance the visitor experience. These include an exhibition of watercolour paintings of Hong Kong's native orchids by local botanical artist, Mark Isaac-Williams at the Kwun Yum Garden Gallery; a Leaping Fish Mosaic for the Cascade Garden, and, the reproduction of the words written by the great Indian poet Rabindranath Tagore in the guestbook when he stayed at the Kadoorie Family home in Shanghai in 1924 – on the Green Wall in the upper part of KFBG. The words that he wrote were adapted from classical Sanskrit poetry (Brihadaranyaka Upanishad). The words, in his own handwriting, are:

*"What shall I do with that  
which does not give me immortality?"*

*From the unreal lead me to Reality,  
From the darkness lead me to Light,  
From death lead me to the Immortal!"*

Please see inside back cover.

#### 韋孟麟植物寫生展覽 An exhibition of botanical drawings at KFBG by Mark Isaac Williams



A display panel of the exhibition of botanical drawings by Mark Isaac-Williams at the Kwun Yum Garden Building.

On 21<sup>st</sup> May we held a ceremony to unveil the statue of Sir Horace Kadoorie in the Plaza. The statue was created by the acclaimed sculptor Lawrence Holofcener, with input from members of the Kadoorie Family. The ceremony was an emotional affair attended by members of the Kadoorie family, friends of Horace and members of staff. Lawrence Holofcener was unable to attend and a letter from him was read out that included the following message:

*"...after I saw the video of Sir Horace's long career of helping others, I was not just honoured but emotionally smitten. He was that rare, extraordinary human: one who devotes his every moment of life seeking to help others. There are certainly thousands if not millions who are indebted to this man. And I am one of them, privileged to be a small part of his great legacy..."*



Lawrence Holofcener, the sculptor who created the statue of Sir Horace Kadoorie.

Some of the animals who have been the centre-piece of our educational talks have been with us for a very long time. Katie the Black Kite reached the venerable age of 24 in 2011, and was believed to be one of the oldest Black Kites living in captivity anywhere. Due to her age she was moved to our Rescue Centre for closer care and attention, after more than 15 years on display at the Raptor Sanctuary. Meanwhile the last of our aging Sika Deer died during the year, marking the end of an era.



Katie, at the age of 24, is believed to be one of the world's oldest Black Kites living in captivity.





A Mule Keeper giving a talk during a Nature Fun Day event at KFBG.



Visitors to KFBG experience close contact with a python during the Animal Discovery Day in December 2011.



A volunteer introducing animal specimens to our visitors at the Discovery Table on weekends.

## Visitor activities

Guided tours are a popular feature for visitors to KFBG. During 2011, 147 guided tours were organised, for 4,715 people to increase their appreciation of the educational displays and nature conservation work undertaken by KFBG. Our visitors enjoyed interacting with the staff, and the **Animal Keeper Talks** were especially popular again this year, with over 90 talks requested by school groups and visitors alike. These talks focused on nature conservation and sustainable-living topics and were held next to the Raptor, Barking Deer, Macaque and Mule enclosures. On the first Sunday of every month, our staff and volunteers ran the fun-filled **Animal Encounters** event which included Keeper Talks, a close encounter with animals and a discovery table full of interesting animal artifacts. To celebrate the **Year of the Bat** we gave a presentation on 'bats and people' at Hong Kong Wetland Park in May, as part of a joint programme with the Hong Kong Agriculture, Fisheries and Conservation Department (AFCD). A special bat-themed Night Safari was also conducted at KFBG.

Every year we organise a variety of art programmes. Over several days in January, 17 art students from a number of tertiary education institutions (Hong Kong Art School, Hong Kong Visual Arts Centre and The Hong Kong Institute of Vocational Education) joined our **Winter Art Camp** and post-camp **Sculpture Workshop**. The latter was led by local artist Ho Yuen Leung, and the art students created 12 pieces of sculpture from wood collected at KFBG. These were placed on display in the Sun Garden for our visitors to enjoy. On two weekends in March and April we assisted the John Lee Frame Drum Studio to run a **Music in Nature** programme for 21 members of the public.



Working on a wood sculpture.



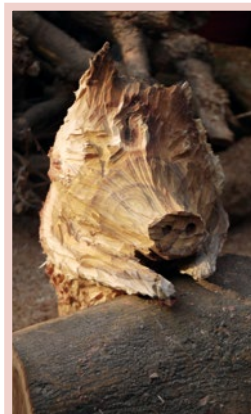
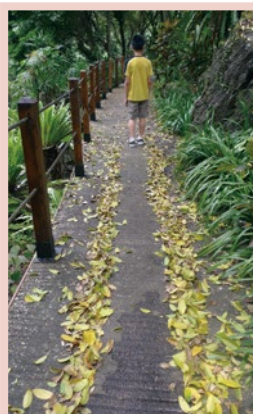
Students collecting natural materials to create outdoor art installations.



Musician, John Lee, used an old pot and water for making melodies in "Between Walks Workshop" (April 2011).

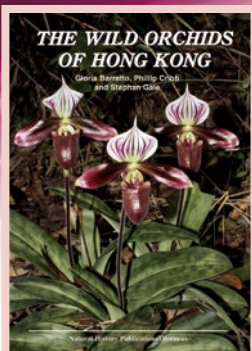


An outdoor installation artwork – the "Brilliant Road".



Pieces of wood sculpture created by art students.





The book cover of 'The Wild Orchids of Hong Kong'.



Ruy Barretto (centre) and Karen Barretto (left) unveiled 'The Wild Orchids of Hong Kong' book to a specially invited gathering of friends and family of Gloria Barretto, orchid specialists, local naturalists and the press at an outdoor book launch ceremony on 23<sup>rd</sup> November, 2011.

A special and memorable occasion was the book launch to celebrate the landmark publication of ***The Wild Orchids of Hong Kong*** on 23<sup>rd</sup> November. Over 50 guests, including publisher Datuk Chan Chew Lun from Natural History Publications (Borneo) and close friends and relatives of Mrs Gloria Barretto, attended the event at Kwun Yum Garden in KFBG. Guest-of-honour Mr Lam Chiu Ying delivered a perceptive speech on the 'honesty of nature', and how the natural world informs conscientious observers about changes in natural phenomena in response to gradual and directional changes in local weather systems as a consequence of global warming. Book co-authors Dr Phillip Cribb (formerly of the Royal Botanic Gardens, Kew) and Dr Stephan Gale (Flora Conservation Department) also delivered commemorative speeches as did major contributor Ruy Barretto, Mrs Barretto's son. Ruy and Karen Barretto had spent many months organising Mrs Barretto's extensive papers. This book launch was extensively covered by the local media including six newspapers. In the month after the launch over 400 copies of the book were sold or given to friends and colleagues, institutions and enthusiasts worldwide.

In 2011 the popular and challenging **Kadoorie Brothers' Memorial Race** had 275 applicants, of whom a selected 159 (112 men and 47 women) joined the race on a fine day on 18<sup>th</sup> December. The winning times for men and women champions (Mr Ben Blain and Ms Larissa Tong) running all the way uphill for 5.3 km were 29 minutes 42 seconds, and, 33 minutes 33 seconds, respectively. The event raised HK\$3,540 in donations for conservation programmes.

## KFBG in the public eye

During 2011 there were 145 local newspaper and 12 magazine reports about KFBG, and 15 television and radio interviews of our staff. The widest local coverage was for a Barking Deer sent to KFBG and a Low Carbon Diet project. Coverage of our work in the Mainland included articles on the Hainan Gibbon project, including a report by Xinhua News on 23<sup>rd</sup> September of the formation of a new family group of gibbons and two in-depth articles on 3<sup>rd</sup> and 8<sup>th</sup> December in *The People's Daily* on Yinggeling Nature Reserve, Hainan.



The book launch ceremony was attended by the publisher Datuk Chan Chew Lun (third from left) and his wife, Datin Connie (second from left), and son, Chan Hin Ching (left), by co-authors Dr Stephan Gale (third from right) and Dr Phillip Cribb (second from right), and by the Head of Flora Conservation Department, Dr Gunter Fischer (right).

Alongside many specialist publications (see Nature Conservation), we are glad to support some more general publications that celebrate South China's natural heritage. To showcase the beauty and magnificence of the natural landscapes we have been helping to protect in Hainan, a photographic book ***Tropical Rainforest of Hainan Island***, by well-known Xinhua News Agency editor Jiang Enyu, was published in late 2011, with sponsorship and editorial input from Kadoorie Conservation China (KCC) of KFBG.



The book cover of 'Tropical Rainforest of Hainan Island'.  
Photo credit: Jiang Enyu



This photographic book showcases the beauty and magnificence of the natural landscapes we have been helping to protect in Hainan.  
Photo credit: Jiang Enyu



News report (*Student Standard*) on the Recycled Wood Sculpture Exhibition in KFBG (June 2011).



In June we reached out to a wider audience via the popular social media network **Facebook**. As of December over 46,000 views of our page had been clocked up, and 726 people had signed up for regular updates. The Facebook page has thus been helpful in connecting members of the public to some of our programmes; at the Community Transition workshops organised by our Sustainable Living and Agriculture Department around half the participants had come to know of the course through Facebook.

On a day-to-day basis, numerous wildlife-related enquiries from members of the public, the Society for the Prevention of Cruelty to Animals (SPCA) and the Hong Kong Hospital Authority were received and handled in 2011. Enquiries included requests for assistance with snake identification in medical cases of snake bites, what to do with baby animals displaced from their nesting sites, follow-up enquiries on animal cases passed to the Rescue Centre, and requests for re-homing stray animals and unwanted pets.

## Transformative programme

Our programme to help people connect with nature at a deeper level came into being in 2011. On 1<sup>st</sup> and 18<sup>th</sup> February we held two pilots of the **Little Fish Workshop – A half-day of silence and transformation in nature**. This programme was developed together with artist Mandu, based on the story “The Little Fish.” Participants had a precious opportunity to open their hearts to nature, through a still mind. The day included mindful walking, sitting silently in nature, listening to the story, doing stretching exercises, sharing and giving thanks to nature. After the pilots nine public workshops were held, between March and December, with more than 100 people taking part. Word soon spread, and the workshops were booked well into 2012.

Dr Satish Kumar, the co-founder of Schumacher College in Devon, UK, visited KFBG again in November for a series of activities under the theme **Soil, Soul and Society**. The KFBG Holistic Education team organised two public talks by Satish at The University of Hong Kong. The first, on 8<sup>th</sup> November, was on **Holistic Education** and the second, the following night, was on **The Future of Food**. The talks were popular, entertaining and very inspiring for those present.

After these Satish led a three-day workshop on **Soil, Soul and Society** from the 10<sup>th</sup> to 12<sup>th</sup> November, incorporating our **Dragon Workshop** pilot. The latter, a follow-up to The Little Fish workshop, is seen as an intermediate level of the mindfulness series. Participants had an opportunity to closely interact with Satish, and learn from a wealth of life experience and wisdom gleaned in a lifetime of service to humanity for individual and societal transformation; at the same time they explored the holistic relationship between Earth, self and community through our unique facilities and functions and through a silent pilgrimage to Kwun Yum Shan. Twenty-four participants, from Hong Kong, Mainland China and Taiwan, attended the workshop, held at KFBG and the Kadoorie Institute Shek Kong. After their feedback the Dragon Workshop programme was refined, for launch in February 2012.



Doing stretching exercises in the Little Fish Workshop (April 2011).



Dr Satish Kumar (of Schumacher College) giving a public talk entitled “Holistic Education – Learning With Your Whole Being” at The University of Hong Kong in November 2011.



Satish Kumar leads a transformative three-day retreat on ‘Soil, Soul and Society’ at KFBG in November 2011.



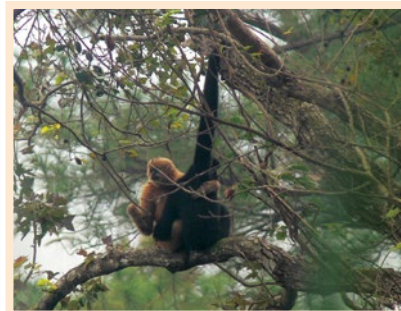
A Collared Scops Owl being released by Satish Kumar during a retreat at KFBG on 10<sup>th</sup> November, 2011.



# NATURE CONSERVATION

## Managing species and populations

At Bawangling National Nature Reserve, Hainan in 2011, our **Hainan Gibbon conservation project** has focused on a survey and monitoring programme to elucidate the population size and group changes. With the Reserve staff Kadoorie Conservation China (KCC: KFBG's China Programme) conducted comprehensive surveys, covering the whole potential distribution range, at quarterly intervals. Early in the year we also began recruiting and training community wardens from adjoining communities, and these former hunters and loggers have become devoted gibbon guardians. The most exciting development was the confirmation of a newly-formed gibbon family group, during the first quarterly survey in May; the new community wardens were the first to confirm the group's establishment and to record its first birth. This is the first time scientists have confirmed the existence of three Hainan Gibbon family groups since the 1980s. The known global population of Hainan Gibbons has increased from 13 individuals in 2002 to 24-25 animals in the nine years since we launched the project.



This newly-bonded pair is the first family group of Hainan Gibbons formed since the 1980s. After intensive efforts by community wardens in raising awareness and outreach work amongst local villagers, the pair finally settled in harmony and was accepted by the people living in Qingsong Township next to Bawangling National Nature Reserve.

Photo credit: Zhou Zhengchong  
(Bawangling NNR Warden)

2011 saw milestones in the management of some of the world's most endangered animals, including formation of a new (third) group of Hainan Gibbons, the captive breeding of two Critically Endangered box turtles, and the repatriation and relocation of other threatened turtles. *The Wild Orchids of Hong Kong* was published, and we paid increased attention to conservation evaluation and science, reviving orchid micro-propagation, launching Hong Kong's Global Forestry Observatory, and contributing to conservation genetics. Our efforts on behalf of Hong Kong's and South China's important habitats continued, and our contribution to Nature Reserve-management in Mainland China drew increasing recognition. We also helped boost the scientific capacity of various conservation officials, including those responsible for controlling the wildlife trade.



Over 100 key stakeholders participated in the two-day 'Hainan Gibbon socio-conservation' annual assembly in 2011. The six Qingsong community wardens were awarded 'meritorious banners' in recognition of their immense efforts in community outreach work and monitoring the newly-formed family group of Hainan Gibbons that made their territory in the forests next to the Qingsong community.

Photo credit: Jiang Enyu





A Papuan boy in Bupul Village holding a juvenile Pig-nosed Turtle just before release into the Maro River.



A Google map showing the route taken by the 609 Pig-nosed Turtles repatriated from Hong Kong to Bupul Village, Merauke, Indonesian Papua in October 2011.

In January 2011 the Hong Kong Authorities intercepted the illegal import of a protected species, the **Pig-nosed Turtle** (*Carettochelys insculpta*), from Indonesia. The consignment of juvenile turtles was hidden in a shipment of live cargo declared as seafood. The animals were transferred to KFBG and nine months later, in October, a rare and heart-warming mission took place when 609 Pig-nosed Turtles were successfully repatriated to Indonesia and released in the Maro River, in Indonesian Papua, where the species had last been seen 30 years before. Hopefully these juvenile turtles will now seed a recovery of the species in the region. The release involved a successful and fulfilling working partnership with International Animal Rescue Indonesia, and the enthusiastic participation of the villagers of Bupul Village. The village school was closed on the day of release so that each child in the village could hold and then release a baby turtle into the river.

Another highly significant action of the Fauna Conservation Department was the transfer of eight individuals of the world's rarest tortoise – **Angonoka** or **Ploughshare Tortoises** (*Astrochelys yniphora*) – to the Behler Chelonian Conservation Center in California. A large mature female, in particular, may play a critical role in helping to bring this species back from the brink of extinction. Other animal re-locations included a Pygmy Slow Loris and a pair of Bengal Slow Loris going to the UK in April; 89 turtles of various species to the Turtle Survival Alliance Europe in September, and a Red-and-white Giant Flying Squirrel sent to Singapore Zoo in December.

Our efforts to conserve Critically Endangered **box turtles** have progressed substantially. In August KCC began a new project in Anhui Province and met relevant authorities in Beijing to discuss turtle conservation; we are planning new capacity-building programmes and partnerships. In October, with our Mainland partner, we visited the turtle study sites of Prof. Chen Tien-Hsi (National Pingtung University of Science & Technology: NPUST) and Prof. Wu Sheng Hai (National Chung Hsing University), and also met Prof. Lin Si-Min (National Taiwan Normal University) in Taiwan. We discussed turtle conservation, and gave a talk on our conservation work in China to postgraduate students at NPUST. We invested much effort in a conservation breeding programme for the **Yunnan Box Turtle** (*Cuora yunnanensis*), considered extinct by the International Union for the Conservation of Nature (IUCN) until our recent discovery of a wild population. The breeding programme was established at a secure location,



An adult Female Ploughshare Tortoise is packed for shipment to the USA where she will join a breeding programme to save this critically endangered species from extinction.

in partnership with a respected herpetologist based in Kunming. We visited our partner in July and October to improve the security, husbandry and over-wintering conditions for the programme. After sponsoring and training a new full-time keeper we recorded an encouraging hatching success of 40% in 2011. With a handful of captive specimens globally, and a tiny wild population, our breeding success in two consecutive years brings new hope for one of the world's rarest chelonian (turtle or tortoise) species.



A juvenile Yunnan Box Turtle produced from our conservation breeding programme.



Prof. Chen of NPUST (Taiwan) holding a wild turtle during a field trip with KCC's study tour.





Chinese Golden-coin Turtle eggs.



One of the artificial nest boxes installed in the forests of Xidamingshan; the first ever attempt in China to provide man-made nesting places for the Oriental Pied Hornbill.



Prof. Poonswad from Thailand sharing her experience of hornbill conservation at Xidamingshan Nature Reserve.

There was also much excitement connected with our conservation breeding programme for the **Chinese Golden-coin Turtle** (*Cuora trifasciata*) at KFBG. As a result of changes to their diet and the creation of new mating pairs of turtles, a record number of turtle eggs (83) were laid during the breeding season, almost twice the number in any previous year. Sadly only 14 live hatchlings emerged, but these will join the assurance population for the species. Meanwhile an agreement was reached between KFBG, the Agriculture, Fisheries and Conservation Department of the Hong Kong Government (AFCD) and Allwetter Zoo in Munster, Germany, to place a group of **Vietnamese Golden-coin Turtles** (*Cuora cyclornata*) into an existing European programme for the species. The turtles will be placed on breeding loan and shipped from KFBG in April 2012.



A Long-tailed Broadbill, one of the many spectacular bird species that live in the forests of Xidamingshan.

Due to our persistent efforts Guangxi Forestry Department (GXFD) now views **hornbill conservation** as a priority issue, and will re-organise the management of Xidamingshan Nature Reserve specifically for hornbill conservation. At over 600 km<sup>2</sup> Xidamingshan is a crucial refuge for both China's last hornbill population and other biodiversity. KCC and the Association of Wildlife Protection of Guangxi, with enthusiastic support from GXFD, co-organised a landmark workshop on the **conservation and study of hornbills in China** in March. More than 30 delegates took part, including renowned expert Prof. Pilai Poonswad from Thailand and staff from the National Parks Board of Singapore. Our staff gave presentations on various aspects of our hornbill project, and facilitated the discussion for a draft action plan. Our efforts at Xidamingshan have saved many hectares of mature natural forest originally earmarked for logging, and a more ecologically-friendly management plan for the whole forestry scheme is being implemented. We also had input to the zoning plan in preparation for upgrading the reserve's management. In May we visited Xidamingshan again with volunteers from Nanning to collect information on the breeding biology of hornbills. With our guidance and training four artificial hornbill nest boxes were installed in the forest trees in December, the first attempt in China to augment hornbill nesting sites.



The **micro-propagation of orchids** has re-commenced in the newly-refurbished propagation laboratory at KFBG. Seedlings of 17 species were sub-cultured, from a total of 254 flasks. A total of 245 micro-propagated plants, of 18 species, were deflasked and are being 'hardened' in the KFBG Moth-orchid Shed. Meanwhile efforts to gather seeds of native Hong Kong wild plants continued throughout

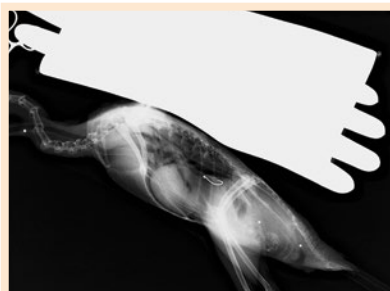


Seedlings of a Jewel Orchid (*Anoectochilus roxburghii*) being sub-cultured in our Micropropagation Laboratory.

2011. More than 40 field trips were organised throughout the year leading to the collection of over 180,800 seeds, representing 132 native tree and shrub species. These have been used to enrich our stock of seedlings raised in the Native Tree Nursery. Orchid seed collection and storage continued, as plants in our living collections and in the wild came into fruit; the rare orchid *Bulbophyllum tigridum* from Hong Kong and Guangdong was rediscovered among our living collections. Fifty-eight capsules, from 15 species and hybrids, were harvested. The seeds were processed and stored according to protocols of Orchid Seed Stores for Sustainable Use (<http://osssu.org/>), organised by the Millennium Seed Bank in the UK, to place seeds of endangered orchid species into secure storage as an insurance against extinction.



Two-year-old plantlets of the orchid *Doritis pulcherrima* undergoing "hardening" in KFBG.



An X-ray of a Great Cormorant showing an ingested fish hook and three lead pellets from gunshots in the body.



A Great Cormorant released at Mai Po on 1<sup>st</sup> December, 2011 after veterinary treatment and recovery at our Wild Animal Rescue Centre.

2011 was a momentous year for wildlife rescue work at KFBG, not only for headline cases like the Pig-nosed Turtles. The number of **injured wild birds** (300) received was more than twice that in any previous year; most were young birds learning to fly (fledglings) and birds suffering from shock and trauma. Injuries ranged from concussion and minor fractures from the impact of hitting windows and buildings (thrushes and doves) to more severe fractures from suspected vehicular impact (buzzards and owls). We saw a ten-fold increase in the number of water birds with fish-hook injuries. Despite successful surgical removal of the hooks, only half of these birds fully recovered and were finally released. These cases included Chinese Pond Herons, Black-crowned Night Herons, Grey Herons, Great Cormorants and a Streaked Shearwater. Another notable survival story involved a stunning Fairy Pitta, a colourful forest bird, rescued in late September – the first time we had received this species. Fortunately it recovered from its dehydrated condition, and was released in woodland a few days later.



A Short-nosed Fruit Bat being cut free from a mist-net at the Rescue Centre.

The beginning of the year brought a string of **mammal admissions**. Two Red Muntjac (Barking Deer) cases were received on a single day in January, and two more individuals later in the year. In March we also received our largest single group-delivery of Dog-faced Fruit Bats. Seven bats were rescued from an illegal mist-net by staff from the Society for the Prevention of Cruelty to Animals (SPCA) and, after a few days of rehabilitation, six were successfully released. The unusually high



intake of mammals continued during the year and included six Masked Palm Civets, of which five were unweaned juveniles that required hand-rearing, four Pallas's Squirrels and an orphaned juvenile Rhesus Macaque that will eventually be placed in our macaque exhibit area (Monkey Haven) as it would not survive in the wild. A Chinese Pangolin found beside a road in Tai Po was received from the Hong Kong Police in May and, following a health check, successfully released on Kwun Yum Shan, where a population of this rare species exists.

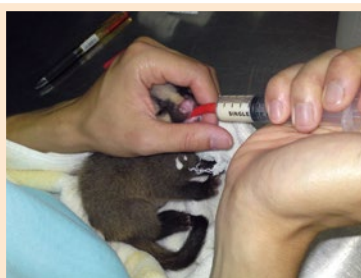
Since the establishment of the Wild Animal Rescue Centre in 1994, over 27,000 animals have been received. Of these nearly 5,000 were snakes received from the Hong Kong Police since the setting up of the **Stray Snake Rescue Project** in 1999. In 2011 we received 561 snakes.



A Barking Deer under observation at the Wild Animal Rescue Centre.



A Chinese Pangolin rescued by the Hong Kong Police receiving a health check.



A young Masked Palm Civet receiving its first hand-feeding of milk in our Wild Animal Rescue Centre.



A Chinese Pangolin (arrowed) released at KFBG.

#### The status of animals received by the Wild Animal Rescue Centre, 1<sup>st</sup> January to 31<sup>st</sup> December, 2011.

	Total in collection at 1 Jan 2011	Received/ captive-bred	Released/ relocated	Died/ euthanised	Total in collection at 31 Dec 2011
<b>Birds</b>	79	316	145	157	93
<b>Mammals</b>	79	67	26	32	88
<b>Reptiles*</b>	430	1,260**	847	479	364
<b>Amphibians</b>	6	10	0	9	7
<b>Fish</b>	234	0	0	0	234
<b>Total</b>	<b>828</b>	<b>1,653</b>	<b>1,018</b>	<b>677</b>	<b>786</b>

\*Excluding 'stray snakes' received from the HKSAR Police. \*\*Including eggs laid in captivity.

## Managing ecosystems

Besides managing our own Estate (see Holistic Estate Management), KFBG's ecosystem management activity is conducted in close collaboration with partner agencies, whose capacity we seek to enhance (see below). Not all ecosystems can be formally protected as nature reserves; efforts to gazette Hainan's Exianling Limestone Forest have not succeeded to date, but Hainan officials have given support to the joint management of the forest. Activity ranges from basic steps, such as erecting permanent warning signs around Exianling to reduce illegal activities, to more creative interventions.

A key focus of the Flora Conservation Department involves the recovery and enrichment of disturbed habitats through ecological restoration. To this end, our **Native Tree Nursery** supplied seedlings and saplings to non-government organisations and private companies for tree planting activities, as indicated below.

Organisation type	No. of seedlings donated	No. of seedlings sold
<b>NGOs/Community groups</b>	602	25,176
<b>Commercial companies</b>	---	116
<b>Total</b>	<b>602</b>	<b>25,292</b>





Andy Brown, Executive Director of KFBG (second left), Prof. Peter Hills (fourth left) of the Kadoorie Institute Shek Kong (KISK), Teresa Au (fourth right) of the Hong Kong Bank Foundation, Dr Stuart Davies (second right) of the Centre for Tropical Forest Science, at the launching ceremony for the Global Forestry Observatory Project at KISK on 25<sup>th</sup> June, 2011.

Our future aim is to strengthen the efficacy and scientific basis for such restoration work. A significant long-term collaborative project, the **Global Forestry Observatory**, was launched by KFBG and the Kadoorie Institute Shek Kong (KISK) of The University of Hong Kong in June. The project involves the establishment of a 20-hectare plot within the semi-natural forest at Tai Po Kau and a one-

hectare plot within the grounds of KFBG. These will serve as permanent monitoring plots for long-term ecological and climate change studies as well as analysis of forest dynamics. All trees in the plots over a certain minimum size are labelled, and their growth rates will be measured over many years. By correlating these data with such environmental parameters as temperature, rainfall and humidity, the response of individual trees, species and plant communities to natural succession, climate change and other ecosystem processes can be inferred, which will help guide effective ecological restoration. The first baseline study of forest composition at the KFBG plot was launched in December.

## Influencing policy and site development

Hong Kong's natural habitats and ecosystems face the constant threat of damage or destruction through inappropriate development. Our watchful efforts through the **Ecological Advisory Programme (EAP)** play an important role in raising awareness and concern regarding activities that affect our local biodiversity. Among objections we lodged during the year was one to the latest Environmental Impact Assessment (EIA) for a proposed columbarium development at **Sha Lo Tung**, one of Hong Kong's top 12 ecological hotspots. We urged more proactive steps by the Authorities, such as land resumption or a land swap/exchange scheme, as a permanent sustainable solution. We submitted written comments on seven project profiles, four EIA reports and 37 planning or re-zoning applications. Another 20 letters of concern highlighted unauthorised site excavation and illegal dumping in various parts of Hong Kong.

The Programme had a busy year participating in public consultations, including the **To Kwa Peng and Pak Tam Au** Development Permission Area (DPA) draft plans, in which we recommended stronger protection of the forest, vegetation and coastal habitats. We objected to an apparently inadequate EIA for the development of the **Integrated Waste Management Facilities**, and urged the Government to adopt a more holistic and proactive waste policy, to tackle the problem through reduction, reuse and recycling.

EAP expressed concerns regarding the **Baroque on Lamma** development proposal, which would destroy 69 hectares of coastal, agricultural and wetland habitats if approved, and called for a professional and accurate EIA report – the proposal was subsequently rejected. We objected to the proposed Comprehensive Development with Wetland Enhancement (CDWE) at **Nam Sang Wai and Lut Chau**, which would result in habitat fragmentation and net loss of important wetland habitats in the Inner Deep Bay area; the proposal gave insufficient details of future management plans. EAP does not support development on the fragile lowland wetlands, and we urged the Government to draw up a comprehensive and visionary plan to safeguard the Inner Deep Bay wetlands. Our Executive Director wrote to the Secretary for Development about controversial decisions by the Lands Department and Planning Department on **small-house applications in Country Park enclaves**, citing the example of illegal bridge construction at Mui Tsz Lam as a case study. We also presented concerns to the Environmental Protection Department (EPD) regarding the scale and plan design for the development of the **Lok Ma Chau Loop** in the sensitive Deep Bay area, and urged a comprehensive EIA and sustainable Master Layout Plan for the area. EAP reported a suspected site formation and excavation case at **Lo Lau Uk**, Tai Po, within the 'Green Belt' zone where the planning intention is to limit urban and sub-urban development; early indications are that it was illegal. We look forward to new opportunities arising from Hong Kong's ratification of the **Convention on Biological Diversity in 2011**, and have taken part in some initial discussions with government and non-government partners.



An illegal bridge built within the "Green Belt" zone at Mui Tsz Lam near Ma On Shan, Hong Kong.





A family of the “Five Feet Pig” at Qingsong Township adjoining Bawangling National Nature Reserve. The deep litter bed allows composting in the pig pen, reduces smells and makes the pigs more comfortable.



Bitter Cardamon planted as an understorey crop in rubber Plantations adds income and prevents the use of herbicides, Qingsong Township adjoining Bawangling National Nature Reserve.



Wardens camping in a limestone cave during the annual patrol exercise in Exianling Nature Reserve, Hainan (January 2011).

## Engaging communities in conservation

In 2011 we supported initiatives in local communities to implement projects that contribute to a more sustainable way of living in and around Nature Reserves, and reduce pressures on important habitats. Almost all villages around the nature reserves in Yinggeling and Bawanling live near rivers. **Fish sanctuaries** (no fishing zones) are a cost-effective way to engage villagers in wider concepts of conservation and sustainability, introducing sustainable harvesting and the benefits of protecting biodiversity. There are now 15 fish sanctuaries around Yinggeling. Some are more effective than others, and the KCC team, together with Yinggeling staff, conducted a project review to understand the factors for success or failure. In October a Daoyin villager and a member of staff from Yinggeling shared the results of Daoyin Fish Sanctuary in a community-based conservation workshop in Yunnan run by our sister organisation Partnerships for Community Development (PCD). They shared that with the Fish Sanctuary, they get more fish with less fishing time and thus, the campaign “More with Less”. At the invitation of the RARE China Programme KCC gave a talk on our fish sanctuary experience to a group of over 20 wetland management officials from across China, on 18<sup>th</sup> April in Wenchang County, Hainan. The occasion was a ‘conservation barrier removal workshop’ aimed at restoring the freshwater fish stocks of the Yangtze river.

In Hainan, KCC conducted a Waste Management workshop, held in May at Yinggeling Nature Reserve, for staff and teachers from surrounding schools, to encourage waste separation and avoid dumping waste near banks of rivers. A demonstration waste recycling and earthworm compost-pit was built at Yinggeling.

A community work plan for better protection of the Hainan Gibbon was approved by Bawangling National Nature Reserve, and two pilot demonstration projects on sustainable agriculture were set up in August in Qingsong Township. The nutrition of the local ‘Five Feet’ breed of pig was improved by adding a feed concentrate based from a leaf meal of a local tree species. The pigs were also raised in deep litter beds that conforms

to the International Animal-welfare-friendly Pig Production Standards and are sold as eco-pigs. The township government was keen to expand this eco-friendly project together with the local community. A pilot **agroforestry trial** of planting medicinal plants as cash crops under rubber trees was also set up in Qingsong. Having crops under rubber deters the use of herbicides.



A community outreach event taking place at a village in Hainan to explain the benefits and garner the support of the local community at a site proposed for the setting-up of a fish sanctuary.



## Building conservation capacity

In 2011 KCC continued its efforts to build the capacity of nature reserve staff for more effective management of nature reserves in Hainan. The annual five-day **forest patrol and field training expedition** took place in Yinggeling Nature Reserve before Chinese New Year, a period when hunting activity is most rampant. A similar major annual patrol exercise was organised at Exianling. In general the hunting pressure was found to have decreased and there were more signs of animal activity, though some new traps and hunters' huts were found. We sponsored three young Yinggeling management staff to attend a comprehensive international training course on conservation and ecology organised by the Institute of Zoology, Chinese Academy of Sciences and International Society of Zoological Sciences, at which we also gave a lecture on **camera trapping techniques**. We also arranged a study trip for our partners at Yinggeling to Xishuangbanna National Nature Reserve and Xishuangbanna Tropical Botanical Garden (XTBG), Yunnan, in November, to exchange ideas and experiences with counterparts about the **long-term management strategy of tropical rainforests in China**. At XTBG we gave guest lectures on developing conservation projects and camera trapping on an **advanced field course in ecology and conservation** organised by The Program for Field Studies in Tropical Asia, to 25 young conservationists, mostly from developing countries in Asia. On 13<sup>th</sup> December in London KCC's Dr Bosco Chan was a guest panellist at a public event of the Zoological Society of London. The audience of about 100 heard about the many challenges of **conservation in China**, and KFBG's work attracted great interest; another panellist hailed the importance of our rapid biodiversity survey reports in improving understanding of South China's nature reserves.



KCC-Yinggeling study tour to Xishuangbanna, Yunnan.

Our long-term support for Yinggeling was recognised when Bosco Chan was invited by the Director-General of Hainan Forestry Department to represent the reserve in sharing experiences of **effective reserve management** to top officials from all Hainan's reserves, forestry bureaus and forest farms during the Provincial Forestry Assembly on 25<sup>th</sup> August. Over the years much time and effort has been devoted to job competence training for wardens at Yinggeling, and their professionalism, knowledge and motivation have been remarked upon by visitors, including Ms Feng

Biyan, Director in charge of conservation in Guangxi Forestry Department (GXFD). On 27<sup>th</sup> September, GXFD invited KCC to a conservation strategy consultation on **Weizhou Island Nature Reserve**, where we gave comments to enhance the management of the reserve.

In 2011 staff of the Fauna and Flora Conservation Departments delivered training to Mainland customs officials and forestry police in three workshops organised by the Wildlife Conservation Society (WCS) China on **capacity-building for anti-wildlife smuggling**. The workshops took place in Guangzhou in May, in Kunming in July and in Conghua in August. Training covered the triage and placement of confiscated wildlife and the operation of an animal rescue centre, the identification of reptiles, birds and orchids and the wildlife trade in China. This work deepens KFBG's partnership with WCS-China to address the escalating problem of the illegal trade. The workshops are to be extended to other cities in 2012.



Dr Stephan Gale (right) training mainland Chinese Customs Officials and Forestry Police on orchid identification at a series of workshops entitled Capacity-Building for Anti-Wildlife Smuggling organised by the Wildlife Conservation Society (China) in Guangzhou, Kunming and Conghua.

Much depends on strengthened international collaboration in response to the wildlife trade and other threats. Fauna Conservation Department staff attended the Third Conference on **Wildlife Rescue in East and South-east Asia** in Thailand in November. An important development was the formalisation of a **Wild Animal Rescue Network for South East Asia**. Malaysian government officials, comprising the Deputy Permanent Secretary for the Department of Environment and officers from the Malaysian Wildlife Department, visited our centre on 29<sup>th</sup> November, to gather ideas and information related to the development of a new **wildlife rescue facility in Malaysia**.



Protecting native wildlife of conservation importance in Hong Kong is given great priority by KFBG, and the Fauna Conservation Department continued to provide support to the AFCD team with their efforts to **search for illegal turtle traps**. Bi-weekly searches of the streams and watercourses discovered a continued low level of trapping pressure in Hong Kong. The enforcement efforts seem to be making a difference, with significantly reduced trapping activity detected at the hot spots, but further enforcement action will be necessary before the sites are considered as future release locations.



An illegal trap targeting the Chinese Golden-coin Turtle (*Cuora trifasciata*) discovered in a stream in Hong Kong.



Philip Lo, Conservation Officer of Kadoorie Conservation China, giving a lecture to wardens on survey methods and butterfly identification at the *Danaid* butterfly winter monitoring workshop in Yinggeling Nature Reserve, Hainan.



A pair of leaf insects – a perfect example of camouflage – found in Daoyin during a stick insect survey conducted in June 2011 at Yinggeling Nature Reserve.

Photo credit: Zhang Zhihua (Exianling Warden)

Fauna Conservation staff provided training to veterinary practitioners, veterinary assistants, nurses and inspectors at the Society for the Prevention of Cruelty to Animals (SPCA) on **wildlife rehabilitation, animal health, identification, handling, transportation and safety**; to AFCD staff in **reptile husbandry, identification and handling**; to the Hong Kong Police Force Special Duties Unit on **snake identification and handling encounters with snakes**; and to Environmental Protection Department (EPD) staff on **handling wildlife encounters at work**. Staff from AFCD's Integrated Call Centre were briefed in November about the **management of wildlife rescue cases**, so they could better field enquiries from the public. Staff from Taipei Zoo visited on 26<sup>th</sup> October to observe our **behavioural and environmental enrichment** methods.

To help boost the **scientific capacity of Hainan's reserves**, KCC conducted a workshop for wardens on **monitoring overwintering danaid butterflies**, and a four-page identification guide and survey procedures were produced for the 30 staff who attended. Both KCC staff and Yinggeling wardens will be studying and monitoring the activities of the butterflies, which congregate in large numbers. This interesting and spectacular behaviour has never been scientifically studied in China. An **insect survey and identification** workshop for the wardens of two nature reserves in Hainan was conducted between 14<sup>th</sup> and 19<sup>th</sup> April on butterflies and stick insects. Participants subsequently carried out fieldwork at six nature reserves throughout Hainan, and many rare montane butterfly species were recorded and photographed. KCC also designed and distributed a set of laminated pamphlets with photos of rare Hainan butterflies to the wardens; these proved effective in mobilising wardens to learn about, identify and report sightings of rare butterflies encountered as they went about their daily work in the reserves.



Sometimes KFBG can provide learning opportunities for students from Hong Kong universities; an example this summer was an intern from Hong Kong Baptist University who worked in our Herbarium and Native Tree Nursery. From 31<sup>st</sup> May to 6<sup>th</sup> June KCC organised an exposure trip for a group of ecology students and graduates from The University of Hong Kong to the forests of Exianling and Yinggeling in Hainan; at Yinggeling's Nankai Substation they created a wall-painting to raise public awareness about protecting nature.



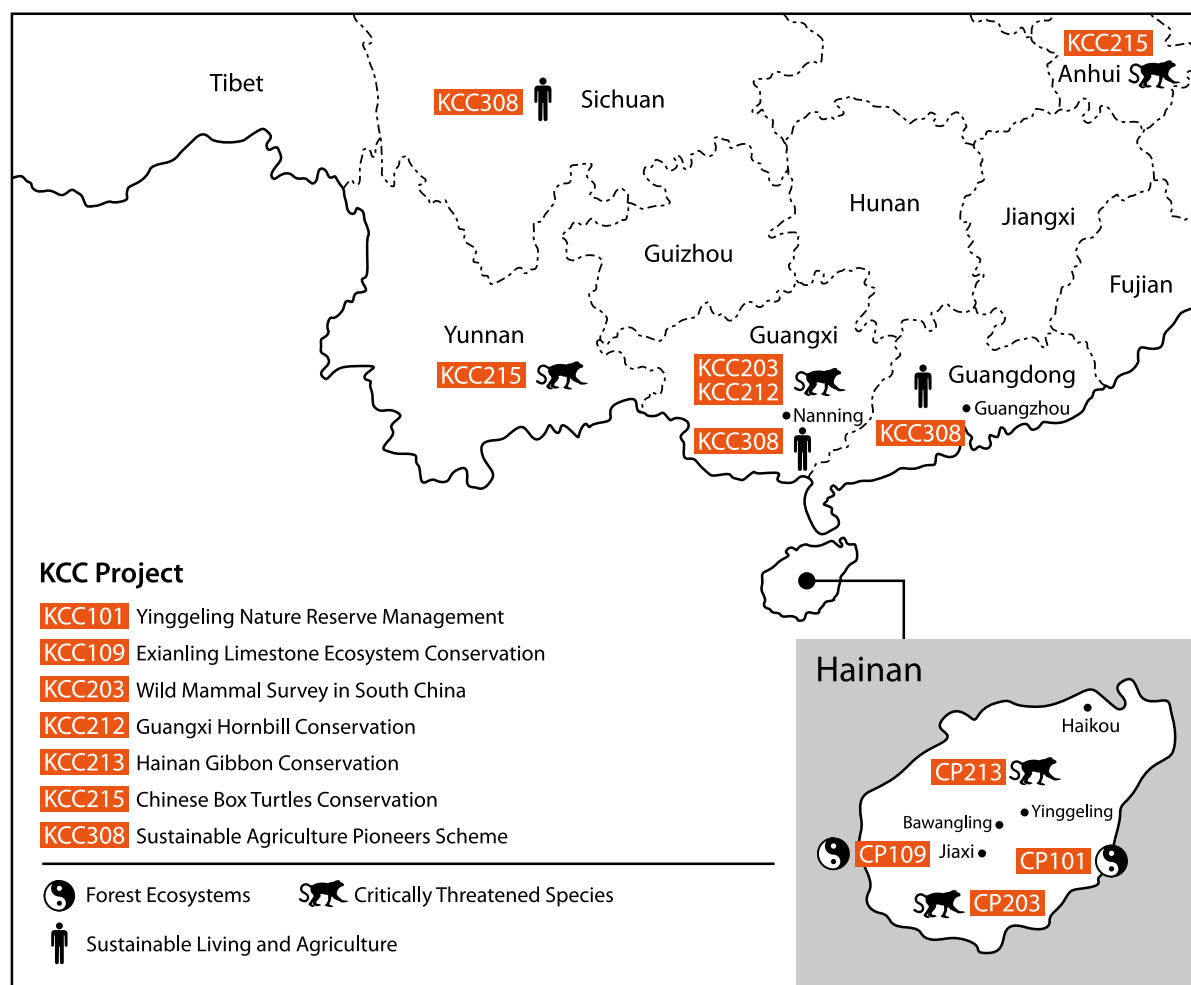
Volunteers from The University of Hong Kong beside their masterpiece – a mural depicting the iconic coconut trees, Hainan's rare Red-breasted Parakeet, Sambar Deer and Orangutan Giant Barb painted on a wall to raise public awareness about nature conservation at Nankai Sub-station in Yinggeling Nature Reserve.

A new initiative by KCC to engage university students in voluntary conservation work in Hainan was launched on 24<sup>th</sup> September, and named the **Rainforest Ambassador** programme. Two recruitment sessions, with talks on our work and conservation issues in China, were organised at Hainan University and Hainan Normal University. Over 93 applications were received, and regular bird-watching and other wildlife identification trips in Hainan were arranged for the first group of volunteers.



Students from local universities in Hainan conducting bird-watching organised by the Rainforest Ambassador programme, Haikou.

#### Map of Southern China showing the locations of Kadoorie Conservation China Projects







A group photo of the biodiversity experts at the workshop organised by the Critical Ecosystem Partnership Fund (CEPF) and KFBG in Shenzhen (October 2011).



*Bulbophyllum bicolor*, one of the orchid species on which KFBG is conducting various scientific studies.



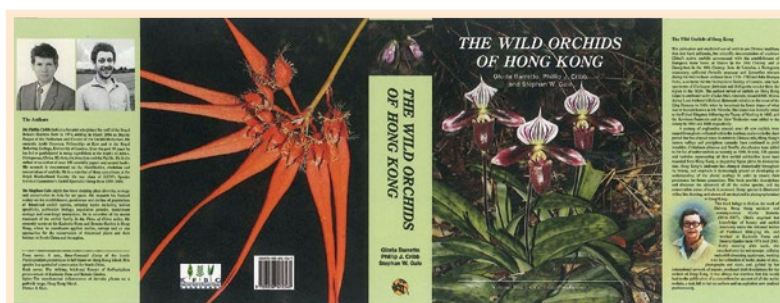
*Acanthephippium gougahensis* in flower. This orchid species is found in Malaysia, Thailand, Vietnam and some parts of China including Hong Kong.

## Channelling knowledge into conservation planning

In past years KFBG has provided important information to the Critical Ecosystem Partnership Fund (CEPF), a consortium of six government bodies and private organisations with a shared vision for the involvement of civil society in biodiversity conservation. Following further KFBG advice to CEPF this year, in Cambridge, UK and Vientiane, Laos, in October the Flora Conservation Department co-ordinated a stakeholder consultation workshop in Shenzhen, entitled **Updating the Ecosystem Profile for the Indo-Burma Biodiversity Hotspot (Southern China)**. Twenty-three experts, including zoologists, botanists and ecologists active in South China, took part, in one of a series of workshops held in countries of the Indo-Burma region throughout 2011. The results will influence funding streams for biodiversity conservation in the region over the coming five to ten years – the workshop endorsed the Hainan Mountains, in particular, as a priority area meriting international conservation support.

KFBG attended and supported the IUCN **Snakes of China and Southeast Asia Red List Workshop**, which assessed the extinction risk of some 500 snake species. KFBG were also strongly represented at a workshop on **conservation of Asian tortoises and freshwater turtles** in Singapore from 21<sup>st</sup> to 24<sup>th</sup> February. The meeting updated the IUCN Red List Assessment and set priority actions for the coming decade. The second Turtle Survival Alliance/IUCN **Cuora (box turtle)** workshop was held in Gankou, China in May, when participants gave updates on conservation programmes and status for Asian box turtles. An alliance of conservation organisations had declared 2011 the Year of the Turtle, and we also worked with Mainland researchers on the **China Report for the Conservation of Asian Tortoises and Freshwater Turtles**.

In parallel with the landmark publication of *The Wild Orchids of Hong Kong* (see below) Dr Stephan Gale of the Flora Conservation Department completed an analysis of the **extinction risk** faced by each of the 126 **orchid species** native to Hong Kong. The assessment, making use of three different approaches including IUCN Red List Criteria, was presented at the World Orchid Conference in Singapore in November 2011. Here Dr Gunter Fischer



The design of the jacket for 'The Wild Orchids of Hong Kong' book features the iconic Hong Kong Lady's Slipper Orchid on the front cover and the exceptionally stunning Ibis Orchid on the back cover.



and Stephan participated in the **IUCN Orchid Specialist Group** meetings, and assisted in overseeing the merger of the East Asia and Southeast Asia branches into a single Asia Branch. They also proposed a concerted Red Listing initiative for orchid species that occur within member countries. Locally our analysis has led to the prioritisation of ten at-risk orchid species for conservation action in Hong Kong.



*Bulbophyllum kwangtungense* in flower. This orchid species is found exclusively in some parts of China including Hong Kong.

Of these, the two-coloured *Bulbophyllum* (*Bulbophyllum bicolor*) has been selected for detailed study to address threats to population viability and to better understand the ecology of the species in its natural habitat. In 2012 all ten priority species will be targeted for seed collection and storage as an insurance against extirpation in the wild.

2011 was the first year we recorded Red Imported Fire Ants (*Solenopsis invicta*), one of the world's most invasive species, at KFBG. In view of its rapid expansion in Hong Kong and China, and the threat it poses to the vulnerable biodiversity of Southeast Asia, we are exploring a more proactive international role to counter its spread.

Dr Ng Sai Chit's expertise in the flora of China was acknowledged in March when he was appointed to the Pteridophyte (Fern) Conservation Committee of the Chinese Wild Plant Conservation Association. Dr Bosco Chan and Philip Lo were invited to join the IUCN Species Survival Commission's Otter and Butterfly Specialist Groups, respectively.

During the year our staff contributed to a wide range of international meetings, in China and overseas, on themes including climate change and conservation (Beijing), habitat mapping (Shenzhen), biochar (Japan), permaculture (Jordan), sustainable waste management (Hong Kong), community-supported agriculture (Beijing), orchid conservation (Singapore) and conservation agriculture (Cambodia).



Dr Phillip Cribb, world renowned orchid expert (left) joined Dr Gunter Fischer, Head of the Flora Conservation Department (centre) and Dr Pankaj Kumar, Conservation Officer (right) on a field trip to study the Hong Kong Lady's Slipper Orchid (*Paphiopedilum purpuratum*) in November 2011.



*Arachnoides grossa* is a species of fern newly discovered in Hong Kong in 2011.

## Research for conservation

Staff of the Flora Conservation Department conducted over thirty field surveys in Hong Kong related to projects on orchids, ferns, forest plots, *feng shui* woods and ecologically sensitive sites. Preliminary ecological studies were also conducted on rare and threatened native Hong Kong orchids including *Bulbophyllum bicolor* and the Hong Kong Lady's-slipper Orchid (*Paphiopedilum purpuratum*). One of our long-term projects – a **study on diversity and a conservation strategy for pteridophytes (ferns) in Hong Kong** – neared completion. Fieldwork for this project has led to the discovery of one genus and 20 species of ferns not previously recorded in Hong Kong.

In the course of our field surveys, many specimens of a range of plant groups have been collected and deposited in the KFBG Herbarium. These include over 3,000 specimens of **bryophytes (or mosses)**. In 2011 moss expert Dr Li Zhang of Fairy Lake Botanic Garden, Shenzhen, visited our herbarium on two occasions to study this important collection. Through this collaboration, nearly all of our moss specimens have now been identified.

In December a team of lichen experts led by internationally renowned lichen specialist Prof. Jiangchun Wei from the Institute of Microbiology, Chinese Academy of Sciences, conducted eight field surveys in Hong Kong in collaboration with staff of the Flora Conservation Department. All the lichen specimens collected during these surveys will be deposited in the KFBG herbarium once they have been formally identified.





Dr Peter Yang (left) and Dr Zhang Huarong (right) working on the molecular identification of orchids using DNA sequence methods in the newly renovated Conservation Genetics Laboratory at KFBG.

**DNA studies** are continually throwing new light on the identification and evolutionary relationships of species. Thanks to new expertise in the Flora Conservation Department, the refurbished **Conservation Genetics Laboratory** became fully operational during the summer of 2011. Protocols and work flows were established, and work has since commenced on analysing the genes of priority plant species for conservation. DNA is extracted from small leaf samples and the sequence of nucleotides within certain regions of the genome is read, to generate so-called **DNA barcodes**. These barcodes are often unique to a single species, or sometimes even to a single population within a species, making them of great use in distinguishing between plants of obscure identity or provenance. This is a powerful tool because plants encountered in the field often lack the flowers needed for positive identification, and because plant parts contained in herbal preparations, for example, are usually beyond visual recognition. The opening of the new laboratory is therefore a significant step forward in our efforts to identify hotspots of plant diversity and endemism in the region, assess the level of genetic variation within threatened species, and to trace the source of wildlife products used in Traditional Chinese Medicine.



*Tainia ruybarrettoi* in flower. This orchid species is found exclusively in Vietnam and some parts of China including Hong Kong.

In the second half of 2011 the Orchid Conservation Section began collecting leaf samples from all the orchids in our living collection, to be processed in the laboratory. The DNA barcode data generated are being stored in a database that will serve as a permanent reference library against which future accessions can be screened. We hope to determine the origin of the plants in our collections and, in time, to compare the DNA barcodes of plants on sale in markets to pinpoint their likely source – whether wild-collected or from sustainable nursery production. We have also begun to quantify the level of genetic variation found within native populations of *Bulbophyllum bicolor* to ensure as much variety as possible is protected in the wild. In 2012, our conservation genetic work will be extended to other plant groups including tree species.

The genetics work is equally relevant to animals. In November the Flora and Fauna Conservation Departments commenced a pilot project that seeks to utilise the extensive **Lepidoptera (moth and butterfly) collection** at KFBG. DNA barcodes are being generated for a selection of native Hong Kong moth specimens in collaboration with the Barcode of Life Project, co-ordinated by the University of Guelph in Canada. Legs from positively identified moth specimens have been barcoded, and the resulting data will be used as a reference library to identify moth specimens in future. This is important because moths are notoriously difficult to identify using their morphology alone.

A request from the Agriculture, Fisheries and Conservation Department (AFCD) to help secure a specimen of the rare **Mountain Pit Viper** for DNA sampling was met on 11<sup>th</sup> February when two wild specimens were discovered during field survey work at KFBG. Samples from the specimens will assist research in determining the taxonomic status of the Hong Kong species.



Mountain Pit Viper (*Ovophis monticola makazayazaya*).





The orchid, *Habenaria lindleyana* flowering in secondary forests in Luang Prabang Province, Laos.



Infra-red camera trap systems are a useful tool for the study of ground-dwelling birds. A group of Silver Pheasants captured by digital camera at the Nonggang National Nature Reserve, Guangxi.

KCC continues to gather information on the current status of **wild mammals** in South China. Some rare species, such as the Yellow-throated Marten (*Martes flavigula*) and Asiatic Black Bear (*Ursus thibetanus*), were reported from our study sites at Yinggeling Nature Reserve, Hainan and Nonggang National Nature Reserve, Guangxi. More concentrated effort will be invested to obtain unambiguous evidence by camera trapping. KCC is also collaborating with Dr Zhang Rongjing of South China Agricultural University to study the flora of Hainan's **Exianling limestone forest ecosystem**. It is hoped his work can stimulate wider support and interest in the conservation of this unique ecosystem.

With the support of newly recruited volunteers of KCC's Rainforest Ambassador programme and local bird-watching enthusiasts we launched a regular **waterbird monitoring programme** at some important bird habitats in Haikou, Hainan: over 100 species had been recorded by the end of the year. It is hoped our survey data will contribute to the preservation of wildlife habitats in the rapidly-urbanising Haikou suburbs.

In recognition of the strong biological associations between Hong Kong, South China and neighbouring countries of the **Indo-Burma Biodiversity Hotspot**, Flora Conservation staff undertook an exposure and fact-finding visit to the Lao People's Democratic Republic in August. The aim was to assess the state of conservation within patches of remnant primary forest in northern Laos and to gauge the extent to which trade pressures from China are depleting natural populations of wild orchids. Fieldwork was conducted in collaboration with the Luang Prabang Forest Department.

Underpinning much of our survey work, the Ecological and Environmental Statistics Section of the Flora Conservation Department continued to prepare **maps and other Geographic Information System (GIS) outputs** to assist in planning expeditions and analysing geographical parameters at study sites. We have produced maps illustrating annual precipitation and temperature in South China and Indochina to help assess distribution patterns of rare plants in the region. Similarly, maps of Shiwandashan in southern Guangxi and Yinggeling Nature Reserve in central Hainan were prepared, to help the planning of field expeditions and identify potential study sites.



Thirteen permanent warning signs have been erected at the main access points and along the boundary of the Exianling Limestone Forest in Hainan to remind local residents and villagers that the forest is a restricted area.



A group photo of the volunteers of the Kadoorie Conservation China Volunteer Programme (Rainforest Ambassadors) at a bird-watching activity in the wetlands off Haikou, Hainan.

KCC offered to help in cataloguing the important Weizhou bird specimen collection at the Guangxi Forestry Survey and Design Institute. We also visited the Research Institute of Tropical Forestry, Chinese Academy of Forestry in Guangzhou in October, to examine the **Hainan butterfly collection** and discuss collaborative work on taxonomic and status revision of Hainan butterfly fauna.

**Scientific publications** of KFBG staff and partners during 2011 are listed in Appendix 2; a highlight was *The Wild Orchids of Hong Kong*, the completion of Gloria Barretto's great opus. Our expertise was also sought for peer reviews of scientific articles by many international scientific journals, including *Annales Botanici Fennici*, *Biological Conservation*, *Checklist*, *Herpetologica*, *International Journal of Biodiversity and Conservation*, *International Journal of Medicinal Plant Research*, *Journal of Bombay Natural History Society*, *Journal of Threatened Taxa*, *Kew Bulletin*, *Malesian Orchid Journal*, *Molecular Phylogenetics and Evolution*, *Nordic Journal of Botany*, *Plant Ecology & Evolution* and *Zoological Studies*. We are occasionally asked to examine academic theses; an example this year was for a PhD on conservation biology of a Critically Endangered Vietnamese primate species, for the Australian National University.

# HOLISTIC ESTATE MANAGEMENT & MINIMAL ECO-FOOTPRINT


## Land Management Plan

**Geographic Information System (GIS)** technology is being employed to co-ordinate information on the different **functions and attributes** of the Estate, which can then be displayed as a map. An example is shown here. The zoning assigned to each parcel of land, or compartment, will reflect our core objectives of nature conservation, sustainable production, education, and spiritual and aesthetic functions. Some specific features or areas of land earmarked for a particular management objective have been identified. These include sites for tree enrichment planting. Further fine-tuning is necessary to incorporate all core functions into the multiple layers of GIS maps that have been produced for this project.

A Chinese version of the **KFBG base map** has been completed. The accuracy of our global positioning system (GPS) data was also improved by integrating the Hong Kong Government's Lands Department real-time GPS data correction service and data post-processing application into our system.

In parallel to the GIS work, a Land Management Plan is taking shape as a text document. Within this, prescriptions for land management will be outlined for the compartments, based on the zoning applied in the map. Because of the long time required to realise land management goals, our vision for the site is structured into five-year and longer-term horizons. In so doing, we make specific reference to the likely effects of climate change, and we take into account international standards for the protection and management of biodiversity, such as the Convention on Biological Diversity's Aichi targets (<https://www.cbd.int/sp/targets/>). Most importantly, we take a holistic standpoint in addressing the management needs of each compartment, to optimise the ecological value of the site as a whole.

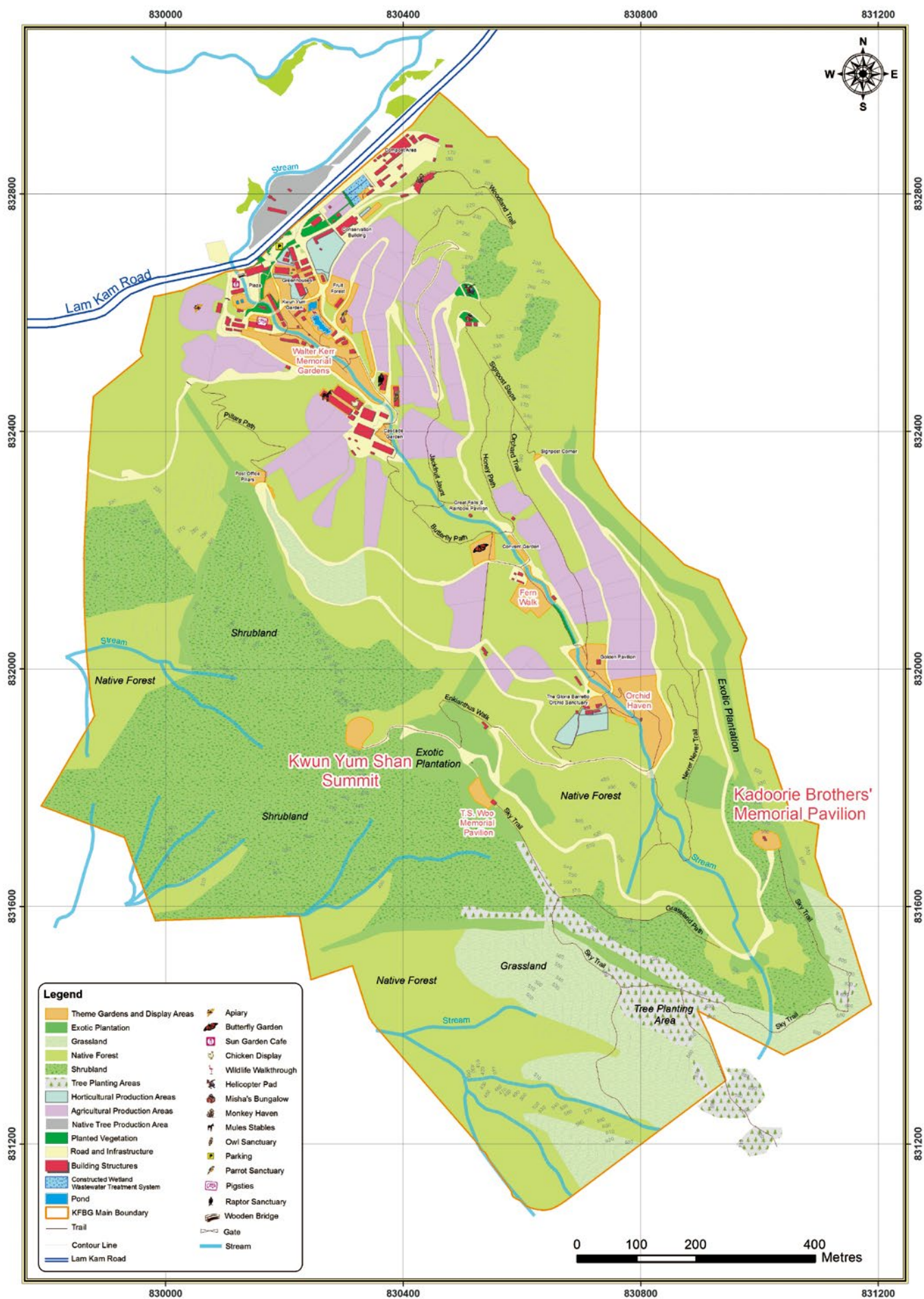
A standardised work-flow chart was also drafted to ensure that construction projects carried out within KFBG conform to best ecological practice and are aesthetically in harmony with the surrounding landscape features.



We continue efforts to improve Estate management with the help of function-oriented land use planning and mapping, and more complete species inventories. Management will address threats such as invasive species, damage to trees by animals and incense-tree poachers, and tree health. The Orchid Greenhouse and Sun Garden Café have opened, various buildings and trails have been renovated and slopes stabilised, and recent aesthetic improvements include a green roof on the café as well as extensive re-planting with Orchids. KFBG continued to improve its energy efficiency through improvements in insulation, lighting and equipment, and reduce its water demands by more effective use of natural water.



# Kadoorie Farm & Botanic Garden Basemap







Criminal activity targeting Incense Trees is a problem at KFBG. Trees were felled or damaged to promote fungal infection, resulting in the formation of a distinctive, fragrant heartwood (agarwood). This large Incense Tree was found freshly cut down by illegal loggers in December 2011.



The trunk of this old and mature Incense Tree in KFBG was cut down and severed at the base of the trunk by illegal loggers.



Visitors enjoying vegetarian food at the Sun Garden Café.

## Ecological integrity of the KFBG Estate

A survey of invasive plant species at the KFBG site highlighted some plants that need to be controlled, notably Walking Iris (*Neomarica gracilis*), Mile-a-minute Weed (*Mikania micrantha*) and Wallich's Begonia (*Begonia wallichiana*). The highly-invasive Red Imported Fire Ant (*Solenopsis invicta*) was found for the first time on our premises. This has prompted a review of our invasive-species protocol, as such species pose a significant threat to native species and their ecological relationships.

In the second half of 2011 our staff discovered an increasing number of cases of criminal damage to, and felling of, **Incense Trees** (*Aquilaria sinensis*) within the KFBG Estate. Staff of the Flora Conservation Department carried out surveys to determine the distribution and current status of the species at KFBG. We have taken a range of steps to prevent further vandalism.

In 2011 an inventory of the **living collection of ferns** on the upper hillside (Fern Walk) was carried out, with the assistance of Dr Yan Yue Hong, a fern expert from the Shanghai Chenshan Botanic Garden. The list of ferns in the entire collection was revised and updated, and the records stored in our computerised database system (BG-BASE).

Recent **pest management** problems include damage caused by monkeys to the fruit tree orchards. In 2011 macaques spent quite a lot of time in several parts of the Lower Farm including the new Sun Garden Café, and staff from the Fauna Conservation Department were successful in developing methods to deter them from causing a nuisance.

## A visitor-friendly Estate

To enhance our visitor services the long-awaited **Sun Garden Café**, serving vegetarian food, snacks and refreshments, was finally opened for business on 15<sup>th</sup> April, 2011. Reflecting our commitment to community responsibility, the café is operated by our long-term partners, the New Life Psychiatric Rehabilitation Association.



Vegetarian food served at the Sun Garden Café.



We believe the KFBG facilities should combine beauty with multi-functionality. A **green roof** was designed and planted on top of the newly opened Sun Garden Café in April. Visitors can observe the rooftop garden from the Plaza. In May the planters along the eastern side of the Plaza were renovated and re-planted to enhance the backdrop to the Sir Horace Kadoorie statue. A rich variety of bedding plants, shrubs and over 40 orchid species were planted on the sloping bank and in the terraced beds, to beautify and greatly improve the overall aesthetics of the area for the enjoyment of our visitors. A number of picnic tables were also placed along the sides of the Plaza – a place where many of our visitors often spend a lot of time and eat food from the Sun Garden Café and have picnics.

**Orchids** have become a feature of many plantings in the Lower Farm. Many individuals of the large-caned Musky Dendrobium (*Dendrobium moschatum*), were planted on the rock wall behind the new café. These plants were raised from seed in our micropropagation laboratories. We anticipate a glorious display when they flower in May and June 2012. Newly-planted native orchids can also be seen on the walls that line the stream in the garden in front of the café. Several of the larger trees in the Plaza area are now also adorned with orchids. Not only will the stunning flowers please our visitors, but the experience of planting them has been a memorable exercise in team-building for our ground staff.

The KFBG Estate is covered by a spectacular mix of natural vegetation interspersed with cultivated land and abandoned orchards dotted across the hill slope. Trees are a very prominent feature of the landscape. However, the risk to visitors of falling branches and trees is a perennial concern. In areas accessible to the general public, the health of trees is closely monitored by our staff. The **Tree Management Team** carried out 126 tree operations in 2011, removing 57 hazardous trees and pruning another 269 to remove potentially dangerous limbs. In view of the large number of trees on the KFBG estate and the intensive nature of tree management work, an additional four members of staff in the Flora Conservation Department received in-house training to support the work of the team.

Major **buildings and areas renovated** in 2011 included the Amphibian House, Mammal and Parrot Sanctuaries, Chicken Houses and the seedling production facilities at the Native Tree Nursery. In the interest of safety, improvements to hillside features included upgrading the standard and quality of footpaths.



A green roof was established on top of the newly-opened Sun Garden Café in April 2011.



Staff constructing a planter wall on the sloping bank beside the Plaza (May 2011).



The Tree Management Team carried out 126 tree operations, removing 57 hazardous trees and pruning another 269 trees.



Construction work to expand the capacity of the tree seedling production facilities at the Native Tree Nursery.



Before (left) and after (right) photos showing the establishment of a green roof on the top of the Amphibian House.

## Energy descent at KFBG

Preventive maintenance and engineer inspections of various **slopes and retaining walls** are on-going. Stabilisation of the slope behind the Owl Sanctuary was completed in November, in coming years it should become more vegetated; and the upgrading of the slope to the south of Misha's Bungalow is in progress. For the second phase of our slope upgrade plan, Halcrow China Limited was appointed to assess the stability of another batch of 16 slope features within the Farm. These features were selected on the basis that in the event of failure, there would be significant disruption of the KFBG operations. We work very hard in the planning and implementation to make this essential safety work as ecologically friendly and aesthetically pleasing as possible.



A general view of the stabilized slope behind the Owl Sanctuary.

With regard to **road safety**, sections of the badly deteriorated main road next to the General Administration Department (GAD) offices and the back road leading to Kadoorie Institute Shek Kong were re-constructed and upgraded to conform to existing road standards.

In addition to managing the large capital-works projects, the Facilities Department completed a total of 1,915 repair-and-maintenance requests and 176 small-scale capital-works during the year.

KFBG is committed to **reducing the energy and resource demands** of its Hong Kong site facilities. Whenever it is time to renovate our old buildings, we seek opportunities to incorporate environmentally-friendly features. For example new **thermal insulation** coatings were applied to the roofs of the Piggery Building and Farm Shop, to reduce solar heat absorption and thus save energy. The GAD's office block was another example. In addition to an insulated roof system and double-glazed windows, natural granite blocks were laid onto the façade of the buildings, substantially enhancing their overall insulation efficiency. Meanwhile tubular skylights were installed to bring more **natural daylight** into the offices, while **energy-efficient** fluorescent lighting and inverter-type air-conditioners were installed. The green roof greatly reduces the need for cooling in summer and heating in winter. In addition a **water re-cycling** system will collect grey water for re-use in flushing toilets.



A garden was created on the roof during the renovation of the General Administration Department office block.

In 2011 we carried out a comprehensive **energy audit**, to understand our site's electricity use. Based on the recommendations, we have changed all our fluorescent lighting to T-5 **fluorescent tubes**, and lighting for exit signs now uses energy-efficient **LED**. We are assessing the feasibility of installing mat-type **photovoltaic panels** on the glass roof of the Reception Plaza, as part of our switch to low-carbon electricity. We are also considering a Farm-wide **wireless energy monitoring system** that obtains power consumption data from the various sub-meters electronically, freeing up staff time for other activities.

Our Facilities Department is collaborating with the Government-funded Hong Kong Applied Science and Technology Research Institute, to assess the feasibility of installing a **wind turbine charger** on the KFBG site. We are currently gathering wind data using an anemoscope and data logger, to guide the design of the possible system.



In 2011 our Information Technology section implemented a **green office solutions** project, whereby most of our old fax machines, photocopying and printing equipment have been replaced with more energy-efficient 'all-in-one' office machines. The project will reduce electricity consumption and maintenance costs.

During 2011 our **mules**, Dennie and Duffy, made 159 trips up the mountain, moving over 22 tonnes of cargo (compost and other items) that would otherwise need petrol-power. In April, due to a seasonal water shortage, the mules began delivering water from our spring water supply up to Kwun Yum Shan for irrigation purposes. This year we introduced a monitoring system to record the distance travelled by the mules, using a Garmin GPS satellite navigator unit: they covered over 640 km (roughly the distance from Hong Kong to Vietnam!). Apart from logging distance and route, the equipment also logs trip velocity, trip time, time on the move and time stopped. This data is immensely useful in planning the logistics and workflow for our mules. To date the mules' carbon saving is compromised by the need to import high-quality feed; we are looking into more sustainable ways of 'powering' them.



Mules transporting materials around the farm.

## Water and resource use

The Facilities Department installed an industrial-capacity sedimentation filter in the Chicken House area, to supplement those installed in 2010 to pre-treat the stream water. New pipelines were installed to collect and re-use the back-washed grey water from the water filtration process.

All waste plant materials are gathered and re-used within the KFBG site. In 2011 about five tonnes of leaves were gathered for use in animal husbandry and mulch.



An industrial capacity sedimentation filter in KFBG to filter stream water.



All cut plant materials from the flower beds in KFBG are collected for making compost.

# AN EVOLVING ORGANISATION

## Dynamic structure

We continue to apply the latest KFBG Strategy, to help direct priorities and improve understanding of the organisation's extensive roles and functions. A series of forums are now in place to oversee the key strategic goals, of Sustainable Living, Holistic Education, Nature Conservation, Holistic Estate Management, Minimum Eco-Footprint, Nature Conservation and Vibrant Culture. These forums facilitate and integrate inter-departmental co-operation, and recommend actions to the Management Team who implement them, through working groups or operational line management.

In January 2011, the name of our (Mainland) China Programme was changed to Kadoorie Conservation China (KCC), to better reflect the focus of its projects across the South China region. Meanwhile, the scientific foundations of the flora conservation work in KFBG were greatly strengthened during the year with the recruitment of several knowledgeable and experienced specialists to expand the Flora Conservation Department's capacity.

For management reasons the KFBG Reception Section, which had been under the supervision of the General Administration Department, was transferred to the Education Department in May.

## Vibrant culture

KFBG works to create stimulating and meaningful working environment for staff. We try to maintain a sense of belonging to a positive movement with shared core values, mission and vision. We also seek to develop strength through adaptive learning, diversity, teamwork, commitment and having staff take ownership. We have introduced a number of initiatives in the past year. These include asking new staff to undertake our Treasure Hunt, which takes them all over the Farm and asks them to contemplate questions and undertake thoughtful tasks; we also encourage staff to join our Little Fish programme which opens up to participants the joy and peace that comes from a silent experience in nature. Where possible we have designed offices to maximise sharing and interaction, and we encourage people to work as teams.



**Sitting-in-silence during the Little Fish Workshop.**

Changes included the renaming of our China Programme to Kadoorie Conservation China, and the recruitment of many new staff, including those with specialist scientific expertise to strengthen the work of the Flora Conservation Department. A range of training courses, seminars and sharing sessions were provided to deepen the staff's understanding of environmental challenges, and we took advantage of many opportunities for international exchange and collaboration. Meanwhile our staff and volunteers continued to extend our impact through their dedication and creativity.



## Great people

During 2011, 41 new staff joined the organisation, bringing great new dedication and expertise. Two members of staff retired: Leung Lin Tai, a worker in the Flora Conservation Department for 16 years, and Herman Tang, a security guard with 12 years of service to KFBG. Another 35 staff

moved on from the organisation. Among them were Dr Michael Lau, an important member of the senior staff for 13 years who helped shape, and for several years lead, our work in China – he moved on to WWF; Ruthie Lau, also with us for 13 years since the first months of the China Programme; Dr Roger Kendrick (11 years) a part-time member of the Fauna Conservation Department, who made a great contribution through his moth and butterfly conservation work, he will expand his consulting work; and Kevin Lee (7 years) of the General Administration Department who brought our I.T. systems into the 21<sup>st</sup> Century. We thank all these cherished ex-colleagues for their passionate contributions to KFBG, and wish them well in the future.



**Dr Michael Lau, who left KFBG after 13 years service, helped to establish our work on the Mainland.**

Our staff are encouraged to continuously pursue training opportunities to improve their skills, knowledge and abilities. During the year various members of staff attended professional training workshops and seminars, both locally and overseas. In January Kennis Yau of the Flora Conservation Department attended a course on **Seed Conservation Techniques for Wild Plants** at the Royal Botanic Gardens, Kew, UK. In March a number of Sustainable Living & Agriculture Department and Education Department staff and volunteers joined a two-day **Drama-in-Education** workshop, to learn interactive educational approaches. An internal capacity-building programme for the fauna animal keeper staff was launched in April, covering enrichment and basic animal needs and requirements in captivity. In June several Flora staff attended a **Centre for Tropical Forest Science Forest Dynamics Plot Training Workshop** as part of the training for our **Global Forestry Observatory** project at Kadoorie Institute Shek Kong. Leo Ko attended an **Endangered Species Recovery** course at the Durrell Wildlife Conservation Trust, Jersey in July. During the year various Sustainable Living & Agriculture staff attended food safety training, while Eric So and other staff were trained in tree management. Tam Yip Shing joined PCD's study trip to Japan on **Building Community Resilience** in September. In 2011 the Flora Conservation Department selected BG-BASE as an electronic database system to manage all the flora-related collections in KFBG, including the living plants, specimens and DNA samples, and officers were trained on the use of the system in December. Eric Lee was awarded a diploma in Conservation after completing and passing an online course supported by the Fauna Conservation Department.



**Acting out relationships and interactions between people during training sessions for a Drama-in-Education Workshop.**

In January a weekly Journal Club was established, for officers to share knowledge and opinions related to publications. In 2011 our diverse programme of sharing sessions encompassed community-based conservation of butterflies and moths by Roger Kendrick, conservation of the Rufous-rumped Grassbird by Paul Leader, Orangutan conservation and palm oil by Dr Kar mele Sanchez, PCD's work in Yunnan and Sichuan by Christine Chau, KFBG's crop production strategy by Yip Tsz Lam, carbon sequestration in no-till farming systems by Hil Padilla, conservation of horseshoe crabs by Kevin Laurie, Red Listing of Hong Kong orchids by Dr Stephan Gale, bridging science and communication by Dr John Liu, and environmental rehabilitation in India by Dr Claire Elouard.

## Good governance

We are governed by the laws and regulations in Hong Kong and the People's Republic of China, not least the Kadoorie Farm and Botanic Garden Ordinance (CAP. 1156), and periodically update our internal policies to ensure compliance and best practice.

After the long and complex process of obtaining official approval from various Government Departments, our official Food Factory License was eventually issued for the operation of the Sun Garden Café, on 1<sup>st</sup> September, 2011.

The audit for the year ending 31<sup>st</sup> March, 2011 was carried out in August by Pricewaterhouse Coopers. The annual budgeting exercise for the Financial Year 2012-2013 and the revised Five-Year Plan was carried out in November and December. We thank the Trustees of the Kadoorie Foundation for their trust and continued support of the work of KFBG. We also thank our public donors and the Government for their grants and other contributions to our programmes.



KFBG staff attend a conservation talk on orangutans and palm oil presented by Dr Kar mele Sanchez from International Animal Rescue.

Number of Visitors to KFBG over the past 5 years:

	2007	2008	2009	2010	2011
<b>School Groups</b>	42,410	44,322	38,475	42,543	48,430
<b>NGO Groups</b>	21,070	23,976	19,809	19,321	22,283
<b>Commercial Groups</b>	10,787	15,804	14,032	12,875	19,373
<b>Individuals</b>	43,007	46,541	57,531	55,078	66,281
<b>Total</b>	<b>117,274</b>	<b>130,643</b>	<b>129,847</b>	<b>129,817</b>	<b>156,367</b>

Financial Figures (excluding depreciation):

Expenditure (HK\$)	Year ended 31.3.11 (audited)	Year ended 31.3.12 (unaudited)
<b>Capital</b>	20,831,268	15,871,000
<b>Operating</b>	60,492,979	65,452,000
<b>Total</b>	<b>80,324,247</b>	<b>81,323,000</b>

Income (HK\$)	Year ended 31.3.11	Year ended 31.3.12
<b>Kadoorie Foundation donation</b>	75,500,000	81,400,000
<b>Shop Sales</b>	1,541,891	1,868,879
<b>Government Funding</b>	498,637	1,554,309
<b>Entrance Fees</b>	478,390	651,220
<b>Workshop Fees</b>	273,143	295,298
<b>Public Donations</b>	46,341	69,449



# KFBG Organisation



Note: \*As at 31<sup>st</sup> December, 2011 we also have three long-term consultants.

# Members of the Board

## of the Kadoorie Farm and Botanic Garden Corporation

***Andrew McAulay*** (Chairperson)

***Ian D. Boyce***

***Dr. Lawrence Lee***

***Ruy Barretto, S.C.***

***Ho Wai Chi***

***Deborah Whittle***

***Daniel R. Bradshaw***

# Senior Management

## of the Kadoorie Farm and Botanic Garden Corporation

### Executive Director

***Andy Brown***

### Heads of Department

Education Department

***Dr. Chiu Sein Tuck***

Facilities Department

***Denis Ng***

Fauna Conservation Department

***Dr. Gary Ades***

Flora Conservation Department

***Dr. Gunter Fischer***

General Administration Department

***Florence Au***

Kadoorie Conservation China

***Dr. Bosco Chan***

Sustainable Living & Agriculture Department

***Idy Wong***



# Appendix 1

Considerable effort was devoted to building the capacity of community organisations and partnership for Sustainable Living as indicated by the extensive activities in the following table:

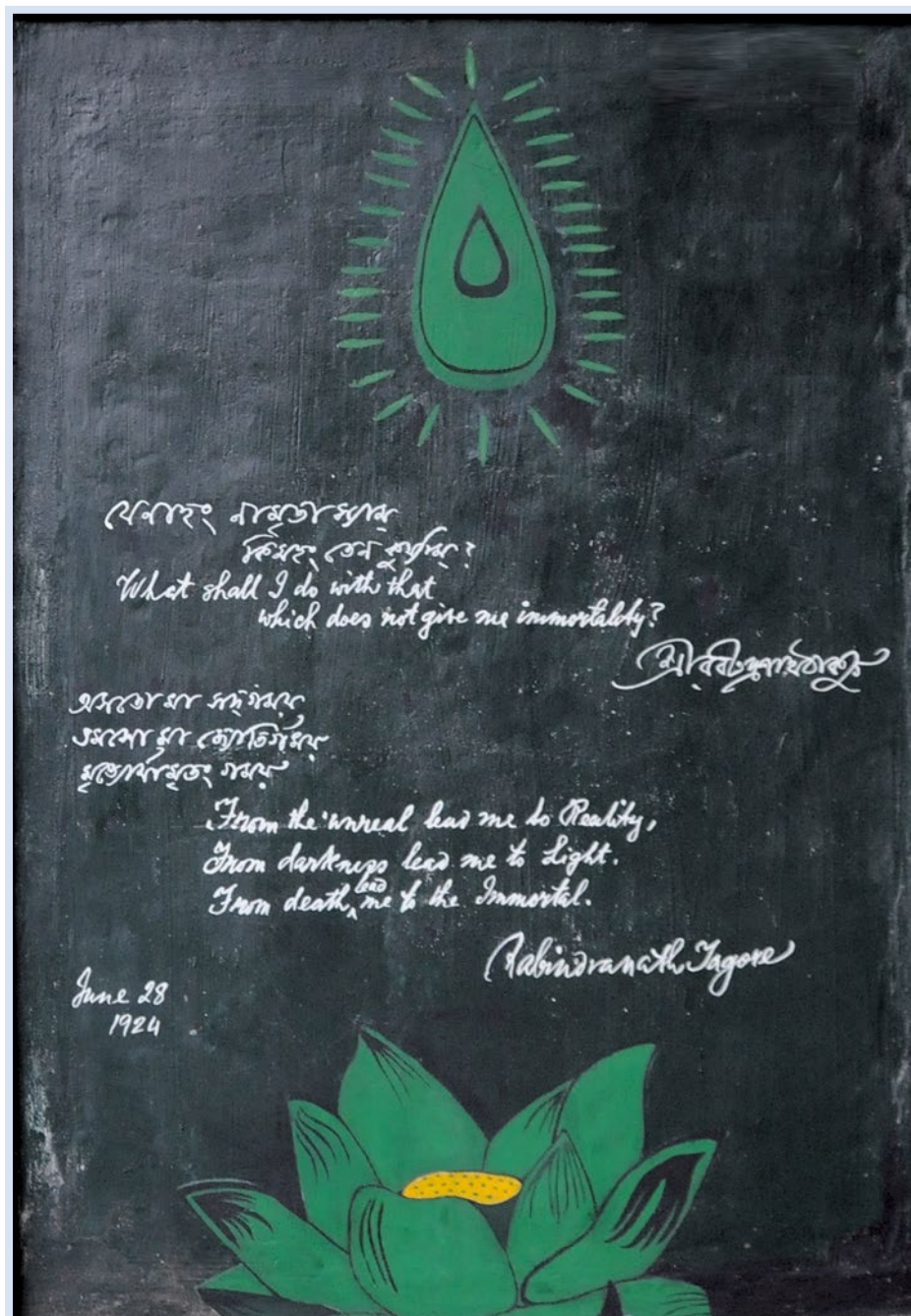
Partner Organisation	Date	Programme Title	Location
Taiwan Hao Ran Foundation	12 <sup>th</sup> January, 2011	Tea Production on a Sustainable Farm	KFBG
Bridge to China	18 <sup>th</sup> February, 2011	Organic Resource Recovery in Rural Areas	Sai Kung
	30 <sup>th</sup> October, 2011	Sustainable Agriculture	KFBG
Volunteers of Hong Kong Flower Show	27 <sup>th</sup> February, 2011	Home-gardening	KFBG
Hong Kong Gardening Society	4 <sup>th</sup> March, 2011	Bee-keeping and Sustainable Agriculture	KFBG
Life Jungle	14 <sup>th</sup> March, 2011	Community Farming (Agroforestry and Vegetable Production)	KFBG
Partnerships for Community Development (PCD)	15 <sup>th</sup> March, 1st June, 21 <sup>st</sup> & 27 <sup>th</sup> September, 15 <sup>th</sup> November	Training for Interns (City Farming, Eco-farming and Sustainable Living)	KFBG
Catholic Messengers of Green Consciousness	9 <sup>th</sup> April, 2011	City Farming	KFBG
The Living Land	14 <sup>th</sup> – 15 <sup>th</sup> April, 2011	Field training for sustainable farm operations	KFBG
Guandu Wetland Park, Taiwan; Taiwan Environmental Association and other NGOs from Taiwan	10 <sup>th</sup> May, 2011	Programme Design for Community Transition to Sustainable Living	KFBG
Volunteers of the Sustainable Living and Agriculture Department	5 <sup>th</sup> – 6 <sup>th</sup> June, 2011	Team Building for Community Transition to Sustainable Living	Cheung Chau
Huiling, Guangzhou	24 <sup>th</sup> June, 2011	Training on Organic Farming	KFBG
Alice Ho Miu Ling Nethersole Nursing Home	25 <sup>th</sup> June, 2011	Provided advice on farm design and staff training to assist the development of a community farm	KFBG/Tai Po
Agriculture, Fisheries & Conservation Department	2 <sup>nd</sup> August, 2011	Use of Solar Fence for Pest Management	Tai Lung Experimental Station, AFCD
St James's Settlement	10 <sup>th</sup> August, 2011	One-day staff training on sustainable living programme planning and community farm design	KFBG
Hong Chi Association	11 <sup>th</sup> August & 1 <sup>st</sup> September, 2011	Provided advice on pest control and organic farm design and delivered one-day staff training on organic farming	Hong Chi North District Support Centre/KFBG
Life in Harmony	16 <sup>th</sup> August, 2011	Environmental Crisis and Sustainable Living	KFBG
Society of Registered Financial Planners	26 <sup>th</sup> August, 2011	Transition to Low Carbon Living	Central
World Wide Fund for Nature (Hong Kong)	17 <sup>th</sup> September & 15 <sup>th</sup> October, 2011	Two 1-day workshops for Low Carbon Guru Project	KFBG
Sustainable Ecological, Ethical Development Foundation (SEED)	8 <sup>th</sup> October, 2011	Farming Course	Kam Tin
Tai Po Environmental Association	27 <sup>th</sup> October, 2011	Fisherman Training Programme featuring 'Fishermen, Fisheries and Low Carbon Living'	Yim Tin Tsai
E-farm	20 <sup>th</sup> November, 2011	Grey water treatment workshop	E-farm
Castello Community Farm	26 <sup>th</sup> November, 2011	Kitchen waste recovery and community farming	KFBG
MTR, City University, Cheung Chau Rural Committee	December 2011	Organic Waste Recovery	KFBG

# Appendix 2

Specialist scientific publications from KFBG staff and consultants (#) or collaborators/ project executants/Studentship holders (\*) for 2011 are listed as follows:

Title	Authors	Journal / Publication
Composition of mixed-species flocks and shifts in foraging location of flocking species on Hainan Island, China.	*Zou Fasheng, Chen Guizhu, Yang Qiongfang & John R Fellowes#	<i>Ibis</i> 153: 269–278.
Descriptions of <i>Boyeria karubei</i> Yokoi and <i>Periaeschna f. Flintii</i> Asahina larvae from China (Anisoptera: Aeshnidae).	*Zhang Haomiao, *XL Tong	<i>Odonatologica</i> 40(1): 57-65
Revision of the diagnostic characters of <i>Opisthotropis maculosa</i> Stuart and Chuaynkern, 2007 with notes on its distribution and variation and a key to the genus <i>Opisthotropis</i> (Squamata: Natricidae).	Yang Jian-huan, Wang Ying-yong, Zhang Bing, Michael Wai-Neng Lau# & Chou Wen-hao	<i>Zootaxa</i> 2785: 61-68
The status of the Hainan gibbon <i>Nomascus hainanus</i> and the Eastern black gibbon <i>Nomascus nasutus</i> .	A.R. Mootnick, BPL Chan#, P Moisson & T Nadler	<i>International Zoo Yearbook</i> (2012) 46: 1-6
Can native species crucian carp <i>Carassius auratus</i> recognize the introduced red swamp crayfish <i>Procambarus clarkii</i> ?	*Cai Fengjin, Wu Zhengjun, He Nan, Wang Zhenxing & Huang Chengming	<i>Current Zoology</i> 57(3): 330-339
A synopsis of the genus <i>Philosina</i> with descriptions of the larvae of <i>P. alba</i> and <i>P. buchi</i> (Odonata: Megapodagrionidae).	*Zhang Haomiao, Vincent J Kalkman and *Tong, Xiaoli	<i>International Journal of Odonatology</i> 14: 55-68
Building an Assurance Colony for One Of The World's Rarest Turtles, the Yunnan Box Turtle ( <i>Cuora yunnanensis</i> ).	Cris Hagen, Rick Hudson, and Michael Lau#	<i>TSA magazine Turtle Survival</i> : 8-10
Community characteristics of tropical montane evergreen forest and tropical montane dwarf forest in Bawangling National Nature Reserve on Hainan Island, South China.	*Wenxing Long, Runguo Zang, Yi Ding	<i>Biodiversity Science</i> : 19 (5): 558–566
The Wild Orchids of Hong Kong.	Gloria Barretto, Philip J Cribb, Stephan W Gale	Natural History Publications (Borneo), Kota Kinabalu and Kadoorie Farm & Botanic Garden, Hong Kong, 697 pages.
Phylogenetic and conservation status of the terrestrial orchid <i>Nervilia nipponica</i> in Korea.	Eum SM, Stephan W Gale, Yukawa T, Lee CS, Lee NS	<i>Biochemical Systematics and Ecology</i> 39: 635–642.
Assisted pollination and seed formation for conservation of <i>Eulophia flava</i> (Orchidaceae): a case study from Himalayan Foothills, India.	Pankaj Kumar P, Tewari R, Rawat GS	<i>Richardiana</i> 12: 25–38.
Molecular phylogeny of the Neotropical sections of <i>Bulbophyllum</i> (Orchidaceae) using nuclear and plastid spacers.	Smidt EC, Borba EL, Gravendeel B, Gunter A Fischer GA, Van den Berg C	<i>Taxon</i> 60: 1050–1064.
<i>Carex</i> L.	Ng Sai Chit, Hu Q-M, Wu D-L (editors.)	In: <i>Flora of Hong Kong Volume 4</i> . pp 58–71. Agriculture, Fisheries and Conservation Department, Government of Hong Kong Special Administrative Region.





A reproduction of Rabindranath Tagore's words written in the visitor book of the Kadoorie family residence in Shanghai in 1924.

Rabindranath Tagore was a great Indian poet and a voice for India's spiritual heritage. He stayed with the Kadoorie family for four days in Shanghai while on his way to Japan. As a result of this visit, Sir Elly Kadoorie donated the funds to build an artesian well at Santiniketan where Tagore founded a school based on his Upanishadic ideals of education.

Tagore's life and ideals inspired Dorothy and Leonard Elmhirst (who was Tagore's Secretary) to set-up Dartington Hall in the mid-1920s that later became the home of Schumacher College (established in 1991), an international centre for the study of ecological and spiritual values.



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