



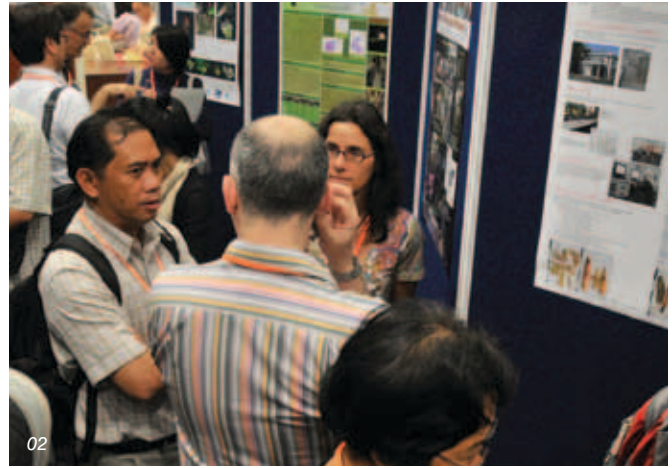


symbiotic partnerships

Biodiversity conservation is an ongoing challenge for everyone, and it is through meaningful partnerships that NParks can accomplish more than we could by ourselves. Globally and locally, we work with like-minded partners in governments, non-governmental organisations and academia to protect and enhance our biodiversity.

During 2010, which was declared the International Year of Biodiversity by the United Nations, NParks led a year-long series of initiatives and activities to celebrate our rich biodiversity, and remind the public that the conservation of our natural heritage is a shared responsibility for all.

Through guided walks in parks and gardens, NParks creates encounters for children and adults to discover, first-hand, the amazing biodiversity found in our natural environment.



Conservation on the Global Scale

NParks is deeply committed to working with the global community in championing biodiversity conservation worldwide. In October 2010, the Singapore Index on Cities' Biodiversity (Singapore Index or CBI) was formally endorsed at the 10th Conference of Parties (COP10) to the Convention on Biological Diversity in Nagoya.

NParks coordinated the development of the Singapore Index in cooperation with the Secretariat of the Convention on Biological Diversity, the Global Partnership on Cities and Biodiversity, and international experts. The Singapore Index was tested by over 30 cities globally, and is the first self-assessment tool for cities to evaluate and prioritise biodiversity conservation efforts over time.

Prior to COP10, NParks hosted two workshops on the Singapore Index. The first, in April 2010, was organised in collaboration with the ASEAN Centre for Biodiversity. It introduced the Singapore Index to government representatives from 18 ASEAN cities and trained city officials on its usage, highlighting the importance of incorporating biodiversity and ecosystem services into city planning and management. In July 2010, the Second Expert Workshop on the Development of the CBI was held to review the preliminary results from cities which had test-bedded the Singapore Index, and to prepare for COP10.

In another collaborative effort, NParks worked with Partnerships in the Environment Management of the Seas of East Asia (PEMSEA) to conduct the first Integrated Coastal Management (ICM) workshop in August 2010. Through this workshop and its case studies, participants from 10 government agencies

gained an understanding of ICM development and implementation in a highly urbanised setting with numerous competing land-use pressures.

NParks has been active in organising and hosting events that facilitate the exchange of knowledge and ideas from all over the world. During the World Cities Summit 2010, NParks organised the first international seminar on biodiversity and ecology for sustainable cities on 30 June 2010. The seminar attracted over 200 attendees from seven cities and countries who play a role in shaping the cities of the future, and provided a platform for them to share their experiences.

The Singapore Botanic Gardens hosted the 8th International Flora Malesiana Symposium in August 2010, which achieved the highest ever attendance in the Symposium's history. A total of 362 professional botanists and postgraduate students in Malesian botany from 28 countries gathered at the triennial Symposium. This event is the foremost platform for exchanges of the latest taxonomic information, ideas, and research on plant diversity and distribution in the Malesian floristic region.

As a city-state with few natural resources, Singapore has a unique perspective on the complex challenges faced by cities worldwide, in achieving sustainable development and safeguarding biodiversity.

- 01 Singapore's approach to Integrated Coastal Management supports the conservation of this island's amazing marine biodiversity, such as this pair of *Hypselodoris bullocki* nudibranchs (a species of sea slug).
- 02 Hosted by the Singapore Botanic Gardens, the 8th International Flora Malesiana Symposium saw the exchange of ideas between botanists from 28 different countries.
- 03 At the 10th Conference of Parties (COP10) to the Convention on Biological Diversity in Nagoya in October 2010, then-Minister for National Development Mr Mah Bow Tan presented the Singapore Index on Cities' Biodiversity for official endorsement. The Singapore Index is the first self-assessment tool to promote better management of resources and conservation of biodiversity in cities.





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Nature reserves cover more than 3,000 hectares or about 4.5% of Singapore's land area.



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01 BG (NS) Tan Chuan-Jin, Minister of State for National Development and Manpower (far left) reviews development plans for the Eco-Link at the groundbreaking ceremony on 30 July 2011. With him are (from left) NParks' CEO Poon Hong Yuen, Chairman Mrs Christina Ong, and Assistant Director Ms Sharon Chan.

02 The nature reserves are home to a myriad of biodiversity, including critically endangered species. The pangolin is one such species that will benefit from the upcoming Eco-Link – many have lost their lives on the roads due to their clumsy gait.

Bukit Timah and Central Catchment Nature Reserves

Given our land constraints, Singapore has to work hard to protect indigenous ecosystems. Our nature reserves, in particular, have been the focus of conservation efforts.

First announced in 2009, the Eco-Link project commenced in July 2011 with a groundbreaking ceremony, marking an important milestone in the conservation of Singapore's natural heritage. The 50-metre wide hourglass-shaped overhead bridge will span across the Bukit Timah Expressway (BKE). It will be located near Rifle Range Road, and will re-establish the link between the Bukit Timah and Central Catchment nature reserves for the first time since the two areas were separated by the BKE in 1986.

A joint project by NParks and the Land Transport Authority, the success of the Eco-Link project rests on close partnerships with nature groups, NGOs, tertiary institutions, volunteers and

government agencies. From the beginning of this project, these groups partnered with NParks to conduct feasibility studies and eco-monitoring surveys necessary for the project's planning and development.

Through long-term monitoring of the Eco-Link's effectiveness in enhancing biodiversity conservation, this project will enable better understanding of the local biodiversity, and even help in the discovery and rediscovery of new species. NParks will also work with community and school groups to conduct guided nature walks and educational activities on biodiversity conservation around the Eco-Link.

A Volunteer Leader Programme was introduced at the Bukit Timah and Central Catchment nature reserves in 2010, to engage and cultivate leaders committed to safeguarding the natural heritage of the forests. Each volunteer leader works closely with NParks staff to organise, coordinate

and execute activities with other volunteers. These include forest patrols, outreach efforts, and invasive species management.

With an increase in interest from the public towards the presence of Long-tailed Macaques in nature areas, staff from the Bukit Timah and Central Catchment nature reserves worked with the community to develop new ways of reaching out to the public on this issue. They collaborated with students from Raffles Girls' School to design educational signs, installed at Bukit Timah Nature Reserve, on how to coexist harmoniously with the Long-tailed Macaques.

Concurrently, NParks developed a monthly guided tour on Long-tailed Macaques with the Jane Goodall Institute (Singapore) and a primatologist. Tour participants learn how to read monkey behaviour and minimise conflict between people and macaques, and to appreciate the similarities between monkeys and human beings.

Biodiversity Snapshots



Common Palm Civet
Paradoxurus hermaphroditus
This cat-sized mammal is responsible for the world's most expensive coffee, kopi luwak. The Palm Civet eats coffee cherries, then defecates the beans which are collected and processed for consumption. It can be seen on Pulau Ubin and in some urban areas.



Oriental Magpie Robin
Copsychus saularis
This endangered bird is known for its ability to produce melodious songs. It can be found in parks, gardens and mangroves. Protection from poaching and provision of a suitable habitat has helped to sustain its population.



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- 01 Migratory birds such as these whimbrels are commonly seen at Sungei Buloh Wetland Reserve, which is a site along the East Asian-Australasian Flyway.
- 02 Visitors to the Reserve can learn experientially about its biodiversity through the use of interactive media, such as the ColorZip wireless trail.
- 03 When the new 38-hectare Sungei Buloh Wetland Park is completed in 2013, it will feature new facilities for students and family groups. These include observation pods that will allow visitors to get up close with the mangrove environment.

Sungei Buloh Wetland Reserve

As Singapore's first ASEAN Heritage Site, Sungei Buloh Wetland Reserve (SBWR) is a landmark in the history of nature conservation. It was one of two first new Nature Reserves to be gazetted since Singapore's independence in 1965, together with Labrador Nature Reserve.

This well-loved nature area is set to be revamped by 2013. The SBWR Master Plan Exhibition, launched in June 2010, unveiled plans to strengthen conservation of the wetland's rich biodiversity, while enhancing its outdoor nature-based recreation and educational activities.

The Master Plan, developed by NParks in collaboration with various government and non-government agencies, academia, and volunteers, will transform SBWR into a regional centre for wetland education and recreation. The Reserve will be extended with the development of a 38-hectare park, the Sungei Buloh Wetland Park, which is funded by the Singapore Tote Board. This addition to the Reserve will diversify the visitor experience, and also take on the Reserve's additional visitorship.

Students and family groups can look forward to new facilities that include observation hides, coastal boardwalks and educational play facilities, along with new programmes and activities. Educational trails will also promote family bonding out in the field while bringing people closer to the natural mangrove environment.

Conservation efforts will continue to be strengthened in the main reserve area. To enhance Sungei Buloh's biodiversity, a new Mangrove Arboretum will be set up. The first in the region, this will be a national collection of all 67 species of mangrove plants and trees found in Singapore. Improvement works will also be implemented to further protect Sungei Buloh's biodiversity and habitats, such as the building of a breakwater to mitigate the impact of waves on mangrove trees and mudflats.

The Sungei Buloh Master Plan received an Honour Award from the 2010 American Society of Landscape Architects (ASLA) Professional Awards. It was lauded as "an exciting vision that has a believable solution".

SBWR continues to engage visitors through innovative activities, especially when celebrating global 'green dates'. The Reserve

celebrated World Environment Day in June 2010, with a guided walk, talk and exhibition on local spiders for 180 students and teachers. In February 2011, the ColorZip wireless trail was launched on World Wetlands Day. Using their mobile devices, visitors – especially the young – can enjoy learning about biodiversity along the Mangrove Boardwalk through interactive media.

The Reserve's avian visitors are also well-taken care of. On 11 and 18 December 2010, SBWR conducted a Bird Census with the support of 100 visitors. Through helping with the census, children and adults learnt about the importance of protecting SBWR as a site for migratory birds along the East Asian-Australasian Flyway.

In December 2010, the Reserve hosted a two-day event for 320 students from Singapore and Japan under the Sister Wetland Affiliation Programme. This

programme allows students from the region to collaborate in studying wetland conservation and the protection of migratory shorebirds. Students from three local schools – Kuo Chuan Presbyterian Secondary School, Pei Cai Secondary School and River Valley High School – partnered with students from Mishima High School in Japan to exchange information on their respective wetlands and to conduct projects together.



To view one of the common fauna of Sungei Buloh Wetland Reserve, scan this Colorcode with your smartphone. Download the ColorZip app at www.czip.sg





Spectacular Blooms, Indoors and Out

NParks' efforts in biodiversity conservation would not be complete without the full and active support of the people. Through engaging with the private, public and people sectors – corporations, academia, conservation groups and passionate individuals – we gain invaluable support in safeguarding and promoting awareness of Singapore's biodiversity.

The Singapore Garden Festival (SGF) is a biennial show where garden and floral designers from all over the world converge in Singapore to showcase their masterpieces. The 2010 event, held at Suntec Singapore from 15 to 22 July, awed over 300,000 visitors with creations by award-winning designers, comprising 250,000 tropical and temperate plants and 65,000 cut flowers.

Visitors were inspired by the Balcony Garden Display, which demonstrated how lush greenery can be cultivated in Singapore's high-rise balconies. Southeast Asia's rich and diverse heritage was also on display at the Singapore Orchid Show, which attracted entries from 12 countries.

Two Singaporean designers, John Tan and Damian Tang, took top honours for the Best of Show Landscape Garden and Best of Show Fantasy Garden categories respectively. International participants took honours as well: Jim Fogarty of Australia, a three-time SGF gold medallist, won the SGF Horticulture Excellence Award, while Brigitte Heinrichs from Germany won the Best of Show for the Floral Windows to the World Competition.

At SGF 2010, community gardeners had their share of the spotlight at the inaugural Gardeners' Cup, where 27 gardening groups under NParks' Community In Bloom Programme (CIB) collaborated to create eight



show gardens. NParks also presented the biennial CIB awards at SGF. Twenty-seven CIB groups were presented the Platinum Award, in recognition of their excellence in gardening efforts. A record number of 279 gardening groups took part in the competition, including new entrants from hotels and manufacturing companies.

Since 2005, over 400 CIB community gardening groups have been set up in Singapore. As a collective effort by residents to cultivate gardens in neighbourhoods' green areas, as well as in schools and organisations, it has encouraged social integration, learning and community bonding. At the first international seminar on Creating Liveable Cities through Community Gardening in June 2010, the keynote speaker Nigel Colborn, former vice-chairman and current member of Britain's Royal Horticultural Society's Council, commended NParks' CIB programme as a shining example to other countries.

Many avid gardeners have contributed to the growth of Singapore's community gardening scene. NParks presented six CIB Ambassador awards in 2010, to recognise those who have fostered the love of gardening in their communities.

In 2010, the Singapore Garden Festival featured displays by award-winning garden and floral designers from 17 countries. The Festival hosted over 300,000 visitors during its eight-day run.

01 Through the Community In Bloom programme, neighbours and co-workers can set up and cultivate community gardens, like this one at Tampines Starlight.

02 At the Singapore Garden Festival, the winners of the Floral Designer Society of Singapore Cup had the opportunity to share their works with Dr Mohamad Maliki Osman, Senior Parliamentary Secretary for National Development.

03 The Singapore Garden Festival featured a five-metre giant centrepiece based on the eco-fable of The Man Who Planted Trees. The centrepiece represents the mythical shepherd who set out to reforest the ruined eco-system of a desolate and abandoned valley in the Alps, cultivating an entire forest over a period of decades.



Biodiversity Snapshots



'Cheng Tng' Tree

Scaphium macropodum

When the ripe seeds of this tree are soaked in water overnight, they exude a brown spongy jelly. This jelly is used in the dessert *Cheng Tng*. The tree can be seen along the Treetop Walk at the Central Catchment Nature Reserve.



Colugo

Cynocephalus variegatus

This mammal lives mainly in rainforests of Southeast Asia, including the Bukit Timah and Central Catchment nature reserves. It has membranes that connect its legs and tail, allowing it to glide from one tree to another.



Brown Wood Owl

Strix leptogrammica

Discovered only in 2010 on Pulau Ubin, this owl is the largest owl in Singapore. It can be found in dense forests, and feeds on small animals like rats, lizards and even birds.



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- 01 With the support of volunteers, partners and corporate sponsors, the Comprehensive Marine Biodiversity Survey will bring to light the myriad of species found in Singapore's mudflats and intertidal/subtidal areas, and even on the seabed.
- 02 The 'BiodiverCity' photo exhibition brought the city's flora and fauna into Orchard Road, where locals and visitors alike enjoyed the nature photography on display.

- 03 Tree planting is a tradition that dates back to 1963, when the inaugural Tree Planting Campaign was launched. This tradition is celebrated annually during the Clean and Green Singapore campaign, where state leaders including Prime Minister Lee Hsien Loong plant trees in parks and constituency areas.

Building and Growing the Green Community

The many members of NParks' Green Community are regularly involved in projects and initiatives that contribute to the greening of Singapore, and the conservation of its biodiversity. At the same time, regular outreach activities are held, which introduce more people to the amazing flora and fauna of this city.

For a month beginning 22 May 2010, shoppers in Orchard Road were enchanted by an unusual display of photographs highlighting Singapore as an urban haven for biodiversity. The 'BiodiverCity' nature photo competition and exhibition was organised by NParks and the Photographic Society of Singapore with the support of Banyan Tree Holdings, PICO Art, the Garden City Fund, HP, Mandarin Gallery and the Singapore Tourism Board. More than 40,000 visitors viewed the images of the city's rich flora and fauna, which were selected from 2,200 competition entries.

In September 2010, the Singapore Botanic Gardens launched the Wealth of the Rainforest exhibition, which excited visitors with amazing facts about the rainforest's ability to feed, clothe and even heal people. The interactive exhibition showcased the richness of the flora and fauna in tropical rainforests, the Earth's biggest trove of biodiversity.

Another exhibition by NParks and the Raffles Museum of Biodiversity Research celebrated a decade of Singapore's achievements in biodiversity conservation. It showcased local flora and fauna discoveries that were new to Singapore or even new to science. This exhibition, held in HortPark in April 2010, was also displayed in various shopping centres and libraries.

With the use of social media, NParks has actively engaged with the next generation of green-minded Singaporeans. The "Love Green: Just Bin It" online video competition attracted 78 entries over two months, in support of the message not to litter in parks and nature reserves. In a twist of irony, the prize money for the competition – including a top prize of \$10,000 in cash – was funded by littering fines collected by NParks.

Through the Garden City Fund, a registered charity and institute of public character established by NParks, corporations and individuals have contributed to conserving and growing the City in a Garden.

The Care-for-Nature Trust Fund sponsored \$250,000 to the Garden City Fund to finance equipment required for the three-year Comprehensive Marine Biodiversity Survey. This survey began in November 2010,

and aims to perform a comprehensive stocktake of Singapore's marine biodiversity to aid in the conservation and management of the coastal and marine environments.

NParks, experts from various tertiary institutions and non-government organisations, and over 200 volunteers are involved in this project. It is also supported by Shell Companies in Singapore, which donated \$500,000 to the National University of Singapore for conservation activities, of which \$300,000 goes towards bringing in scientific experts for this survey.

In addition, the Garden City Fund's Plant-A-Tree programme has seen more than 9,000 trees pledged and planted by 181 organisations and 432 individuals since it was launched in 2007.



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In 2010, over 250,000 visitors visited the Jacob Ballas Children's Garden – Asia's first children's garden.

The Next Generation of Environmental Stewards

You can never be too young to begin caring for our natural environment. NParks has a range of activities for children and youths, which are designed to encourage them to contribute to the conservation of our natural environment and its biodiversity. 2010 saw a number of new and enhanced programmes to engage children of all ages, and excite them about the wonders of Singapore's biodiversity and habitats.

At the Singapore Botanic Gardens, the Jacob Ballas Children's Garden saw over a quarter of a million visitors in 2010. Three hundred and thirty programmes were conducted that year, introducing more than 20,000 children to nature's wonders through entertaining and engaging activities.



In July 2010, the 'Sara Goes to the Supermarket Garden' activity book was launched. It is the fifth in the 'Sara the Botanicosaurus' series, which is designed to cultivate children's interest in plants, nature and the environment.

The Nature Keeper programme, launched in May 2010, brings primary school students through workshops on topics including the impact of the release of animals in nature reserves and the native plants and animals unique to Singapore. It is supported by Mitsubishi Corporation through the Garden City Fund.

Children with special needs can also participate in these nature activities. The Special Project to Understand Nature (SUN) Club celebrated its fifth anniversary at Sungei Buloh Wetland Reserve in September 2010. Sponsored by SPH Foundation, the SUN Club is the first and only nature appreciation programme customised for special needs children. It has touched the lives of over 3,000 children, and will provide even more hands-on activities for its young participants in future.

In celebration of the International Year of Biodiversity, over 35,000 people took part in NParks' outreach and public awareness events, most of them children and youths. At Pasir Ris Park alone, thousands of students from primary, secondary and even tertiary institutions learnt about environmental responsibility through cleaning up the mangrove forest.

2010 also saw the development of the Kids for Nature programme, in conjunction with the Ministry of Education's Programme for Active Learning (PAL), an experiential learning programme for primary school students. Kids for Nature shapes children's character and attitudes through outdoor learning, and provides basic knowledge on environmental issues. To date, over 5,000 children from 14 schools have benefitted from the Kids For Nature programme.



- 01 At the Jacob Ballas Children's Garden, budding green thumbs can explore nature and gardening through activities designed just for the young.
- 02 The Nature Keeper programme gives primary school-aged children a deeper appreciation for nature, through workshops where they learn about issues concerning Singapore's flora and fauna.
- 03 Every year, tens of thousands of children are fascinated by nature's wonders, through programmes and activities held in parks and nature reserves.