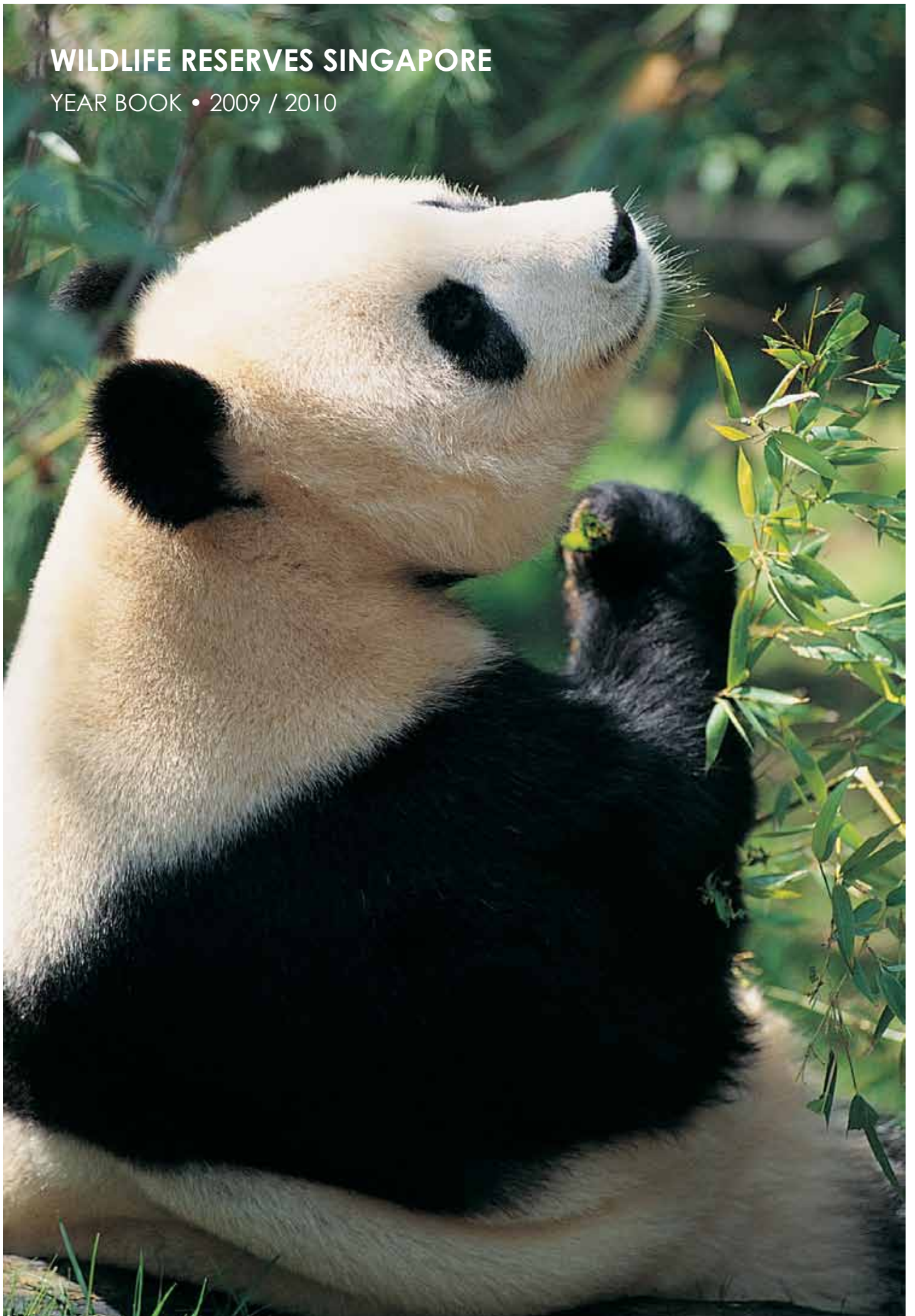


WILDLIFE RESERVES SINGAPORE

YEAR BOOK • 2009 / 2010



YEAR IN REVIEW

The reporting year was one of carefully considered expansion. While the many new exhibits, attractions and inaugural events which characterised the previous year settled into their second year of operations, WRS focused on laying the groundwork this reporting year for exciting things to come in the future.

HIGHLIGHTS OF THE YEAR

- Wildlife Reserves Singapore Conservation Fund (WRSCF) was launched on 10 July 2009. The Fund is an independent conservation fund dedicated primarily to native wildlife conservation and education.
- WRS and WRSCF signed a memorandum of understanding to formalise collaboration with the world-renowned conservation establishment, Wildlife Conservation Society (WCS), New York, on field conservation and public education to protect biodiversity.
- WRS announced that it will receive a pair of giant pandas from China Wildlife Conservation Association (CWCA) as part of the collaboration to promote giant panda conservation, raise public awareness of China wildlife conservation and to implement giant panda breeding programme. The giant pandas will be housed in River Safari.
- Construction of River Safari, the fourth attraction of WRS and Asia's first freshwater-themed wildlife attraction got underway.
- Night Safari won the Best Visitor Attraction Award, adding to a total of 19 for WRS, out of 21 awards given out by STB for the best in the leisure attraction category.
- A tour agency named 'Wildlife Travel & Tours' was set up in September 09 to provide one-stop leisure attraction offerings to tourists.
- Hollywood Dinos, a travelling exhibition that employs animatronics to showcase life-size dinosaurs, was held at Jurong Bird Park from 12 December 2009 to 18 February 2010.
- Hawk Café at Jurong Bird Park entrance courtyard opened to offer popular local fare to visitors.
- Night Safari welcomed the first birth of a Sunda pangolin. This is also the first captive-born Sunda pangolin in the world. The Sunda pangolin is one of the last few mammalian species still found in Singapore and is highly endangered.
- The first Komodo dragon was hatched in Singapore Zoo, after many attempts to breed the endangered reptile in the last 34 years.



WILDLIFE RESERVES SINGAPORE CONSERVATION FUND (WRSCF)

The Wildlife Reserves Singapore Conservation Fund (WRSCF) was registered in 2009 as a charity and an institution of public character with the primary purpose of conserving endangered native wildlife. The launch of WRSCF marked a significant milestone for WRS as one of the world's foremost zoological institutions. By committing material resources towards supporting native wildlife, WRS can now play a more prominent role as the guardian of wildlife in Singapore.

Momentous steps were taken in sealing the position of WRS as one of the world's top conservation and nature-based attraction groups. On 10 July 2009, President SR Nathan did WRS the honour of launching the Wildlife Reserves Singapore Conservation Fund (WRSCF), an independent conservation fund dedicated primarily to native wildlife conservation and education.

PHOTO: BJORN OLESEN



Additionally, WRSCF supports the NUS Ah Meng Memorial Conservation Fund, set up in conjunction with the National University of Singapore (NUS). WRSCF has committed \$500,000 over five years to the Ah Meng Memorial Conservation Fund to support the academic research and study of endangered native wildlife undertaken by students and faculty members of NUS. The first project to receive funding from the NUS Ah Meng Memorial Conservation Fund is a study on the banded langur, one of Singapore's native endangered species.

In support of the noble cause of protecting Singapore's natural heritage, WRS has on top of its traditional conservation and research spending further made a pledge to contribute 20 cents from every paying admission ticket sold in its three parks to WRSCF. For the year, the contribution made towards this fund was approximately S\$ 560,000.

An independent Specialist Panel comprising professionals from various organizations was set up to review grant applications. The Specialist Panel comprises eight members:

- **Dr Geoffrey Davison**, Asst Director, NParks (Chairman of Specialist Panel)
- **Dr Astrid Yeo**, Director, Agri-food and Veterinary Authority of Singapore
- **Dr Shawn Lum**, Lecturer, National Institute of Education
- **Professor Richard Corlett**, National University of Singapore
- **Associate Professor Diong Cheong Hoong**, National Institute of Education
- **Associate Professor Lim Tit Meng**, CEO, Singapore Science Centre
- **Professor Peter Ng**, Director, Raffles Museum of Biodiversity Research
- **Mr Biswajit Guha**, Director Zoology, WRS

WRSCF welcomes individuals and organizations to submit their proposal in the area of native wildlife conservation and education efforts. Details on application procedures and guidelines can be viewed at www.wrscf.org.sg



Below (from left):
Dr John G. Robinson,
Executive Vice President,
Conservation & Science,
WCS, Mrs Daisy Ling,
Hon MD WRSCF,
Dr Steven Sanderson,
President & CEO, WCS,
President S R Nathan,
Ms Claire Chiang,
Chairperson, WRS &
WRSCF, Mr Ward Woods,
Chair, WCS, and Ms
Fanny Lai, Group CEO,
WRS.

Landmark Partnership With Wildlife Conservation Society (WCS)

On 29 January 2010, WRS and WRSCF signed a memorandum of understanding to formalise collaboration with the world-renowned conservation establishment, the Wildlife Conservation Society (WCS), New York. The area of focus is on field conservation and public education to protect biodiversity in the face of climate change and human encroachment into wild places.

WCS is one of the oldest names in the arena of wildlife conservation. Established in 1895, it is involved in over 500 conservation projects in more than 60 countries. In New York City, it manages the Bronx Zoo, New York Aquarium, Central Park Zoo, Prospect Park Zoo and Queens Zoo. WRS is the first major zoological institution in the region to partner with the world-renowned WCS.



President Nathan presided over the MOU signing. In inking the partnership, a commitment to protecting biodiversity in Singapore, Asia and around the world was signified. The parties will collaborate to undertake field conservation projects, coordinate efforts on research methodologies and technical expertise in protecting biodiversity. Another focus will be to promote public education on wildlife conservation issues.

Below: Celebrity WRSCF Ambassadors Gurmit Singh and Kym Ng graced the inaugural WRSCF Charity Bazaar with their presence and made donations to the Fund.

Fund Raising And Outreach

CHARITY BAZAAR

A charity bazaar was held on 3 and 4 October at Jurong Bird Park and Singapore Zoo respectively to raise funds for WRSCF. The event at Singapore Zoo was graced by the presence of celebrity WRSCF Ambassadors, Gurmit Singh and Kym Ng, who auctioned off personal items and donated the proceeds to WRSCF. Face painting and school band performances upped the ante on the fun while a 'recycle your phones' activity saw Nokia donating US\$2 towards WRSCF for every phone brought in.



DONATION BOXES

A total of 44 donation boxes were placed around Jurong Bird Park, Night Safari, Singapore Zoo, shopping centres and tourist touch points to raise funds for WRSCF. These donation boxes provide a channel for organizations and individuals to help and take action in the conservation of endangered Singapore wildlife.



ISTANA OPEN HOUSE

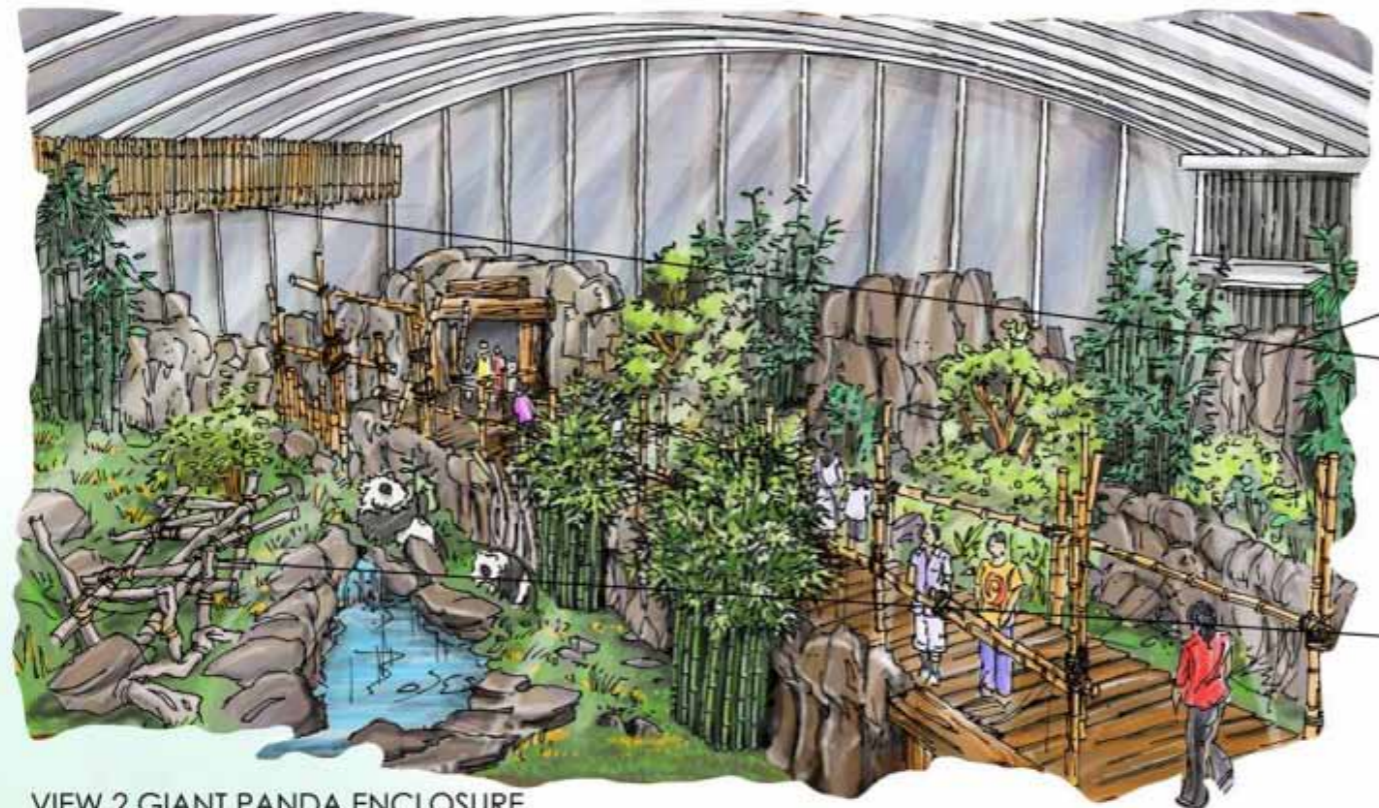
WRS was invited by President SR Nathan to participate in the Open House events at Istana. These events were excellent platforms for WRS to generate conservation awareness and to raise funds for WRSCF. Apart from enjoying the Meet and Greet sessions with birds and falabella horses, visitors to Istana also had the chance to learn about endangered wildlife at the Conservation Corner set up by WRS.

Right: President SR Nathan and Mrs Nathan being greeted by celebrity bird, Amigo during an open house event at Istana.



RIVER SAFARI

River Safari will be Asia's first freshwater-themed wildlife attraction. Its key focus is to bring visitors up close to freshwater ecosystems and the related life forms. It is hoped that the close encounters will inspire them to care and take positive actions in the preservation of these threatened habitats, on which our survival depends.



Above: The giant pandas being a crowd favourite will present opportunities for WRS to spread the conservation message to the masses.

Construction of Asia's first freshwater-themed wildlife attraction got underway as the reporting year drew to a close. Named River Safari, the fourth attraction of WRS is scheduled to open in 2012.

River Safari will be a thrilling close-up multi-sensory experience for the young and old. It is located between Singapore Zoo and Night Safari, and when completed, will offer boat rides, displays of freshwater habitats of the famous rivers of the world like the Mississippi, Congo, Nile, Ganges, Mekong and Yangtze.

The 12-hectare attraction will house one of the world's largest collections of freshwater animals and many critically endangered species such as the giant pandas. It is to showcase some 5,000 animal specimens representing 500 species. Apart from the giant pandas, visitors can look forward to viewing the giants of the freshwater ecosystems such as the giant catfish, giant stingray, giant river otters and the anaconda, the world's

heaviest snake. River Safari will also play an important role in the global captive breeding programme, ensuring the long-term survival of endangered and threatened species such as the manatee and the giant river otter.

For the well-being of the animals and to create an immersive learning journey for visitors, more than 30,000 new plants representing 300 species will be used to create naturalistic habitats and landscapes that duplicate, as accurately as possible, the various bioclimatic zones.

A survey was conducted to identify the trees growing in the area earmarked for River Safari development. Great efforts have been taken to plan construction such that endangered and mature trees can be saved. In cases where such efforts are not possible, the valuable trees will be transplanted to other suitable locations.

Below: A multi-sensory boat ride on the Amazon River to admire a myriad of South America's wildlife, many of which are threatened with extinction.

River Safari has a strong environmental mission, with the key focus of creating greater awareness of freshwater habitat conservation. The biodiversity of freshwater ecosystems is disappearing at a faster rate than the forest and marine biomes, with a reported 50% decline in the freshwater species population index since 1970. It is hoped that by bringing visitors up close to freshwater ecosystems and the related life forms, we can inspire them to care and take positive actions in the preservation of these important habitats, on which our survival depends.



PANDA-MONIUM

WRS has the latest technology in veterinary equipment and a strong animal management team with extensive field experience to care for the giant pandas. Through close collaboration with the China Wildlife Conservation Association (CWCA), WRS is well positioned to achieve the objectives of promoting giant panda conservation and raising public awareness of wildlife conservation.

In a year when the opening of integrated resorts, celebrity restaurants and famous theme parks made waves on the Singapore tourism scene, WRS stole the thunder when it announced on November 11, 2009 that it would be receiving two giant pandas from China.

WRS has signed a Memorandum of Understanding with the China Wildlife Conservation Association (CWCA) to collaborate on giant panda conservation and research. It will receive a pair of male and female giant pandas, currently two-years old and one-year old respectively from CWCA, as part of this joint collaboration to promote giant panda conservation, raise public awareness of conservation and implement a giant panda breeding research programme.



The pandas are symbolic of the close relationship between Singapore and China as we celebrate the 20th Anniversary of friendly Sino-Singapore relations. Chinese President, Hu Jintao, made the announcement regarding the pandas following a meeting with Singapore President S R Nathan. The partnership was sealed at a signing ceremony on November 12 in the presence of President Hu Jintao and Prime Minister Lee Hsien Loong, signaling high-level support from both governments.

This fabulous development was made possible through CapitaLand Ltd. One of Asia's largest real estate companies with a strong presence in China for 15 years, it has pledged a conservation donation to support the 10-year collaborative programme.

The two pandas, which are scheduled to arrive in Singapore in the second half of 2011, will be housed in River Safari, which is slated to open in 2012. Interactive interpretives, educational programmes and behind-the-scenes experience on panda care will help to enhance visitor experience and generate awareness of the conservation issues on China wildlife.

In line with the needs of the pandas, their new home is being designed and constructed to meet the World Association of Zoos and Aquariums (WAZA) standards. The giant pandas will be housed in a 1600m² climate-controlled habitat with air-conditioning and low humidity. The temperature of the habitat will be set between 18 and 22°C and humidity controlled at 50 to 60% all year round. The ambient conditions will be adjusted to simulate the four seasons similar to their natural habitat. The habitat will also boast an off-exhibit holding area, exercise yard and a cubbing den.

The giant panda's diet consists mainly of bamboo, vegetables and special foliovore biscuits. It is estimated that a panda needs about 20kg of bamboo browse per day. In preparation for the pandas' arrival, WRS plans to cultivate six different bamboo species in its parks.

WRS has identified a team of four zookeepers, veterinarians and a researcher to focus on the husbandry needs and veterinary care of the pandas. During the next two years, the team will refine its skills in the husbandry, nutrition, housing and reproduction of pandas. In addition, four staff from China's panda team will be in Singapore - two staff at a time for six months to train the panda team in WRS and see to the establishment of the ideal habitat for the pandas in their new home.

Caring for pandas is not entirely new to WRS. In 1990, the Singapore Zoo cared for two giant pandas, An-An and Xin-Xing, for 100 days, and we look forward to welcoming our two new giant pandas in 2011!

THE BIRDS AND THE BEASTS

While the world outside was in financial turmoil during the first half of the reporting year, the animal kingdom in WRS carried on delightfully and thrived with new births. New arrivals from zoos around the world happily settled into their new homes and some had started to breed. Enrichment activities, good animal husbandry and veterinary care continued to keep the animal collection in WRS in a great state of health.

Barely three months after the arrival of a pair of Asian lions in Night Safari, they started to breed and produced six cubs.



PHOTO: WILLIAM NAI

BABY BOOM

WRS continued to enjoy sweet success in breeding rare and endangered species, adding to its already valuable animal collection. Jurong Bird Park hatched 367 chicks from 60 species, Night Safari saw 134 births and Singapore Zoo welcomed 269 babies to the family. Of these, the two most significant breeding successes were that of a Sunda pangolin and a Komodo dragon.



PHOTO: HEATH HOLDEN

Above: Nita's keeper and the vet conducting an ultrasound scan of Nita, the Sunda pangolin.

The World's First Captive-Bred Sunda Pangolin

An ultrasound scan done on Nita, the Sunda pangolin at Night Safari on 17 December revealed that she was pregnant, carrying a well-formed foetus. On the night of 14 February 2010, Night Safari made history and welcomed the world's first captive-bred Sunda pangolin. Nita, a first-time mother was inexperienced and sadly, the baby pangolin survived only for three days. Nonetheless, this successful breeding effort will pave the way for Night Safari to future successes not only in breeding Sunda pangolin but also in raising them to adulthood.

The Making of the Dragon

15 November 2009 was a day of great significance to WRS. That day, Singapore Zoo welcomed the arrival of the first Komodo dragon hatchling in 34 years. Komodo dragons, the largest living lizards, are endangered with fewer than 5,000 of them left in the rugged terrain of the Indonesian islands of Komodo, Rinca and Flores. Komodo dragons are particularly difficult to breed in zoos and Singapore Zoo is proud to be the first zoo in Asia, outside their native home of Indonesia, to have successfully bred the giant lizard.

In late 2008, Yoko, a female Komodo dragon on loan from Ueno Zoo, Japan, mated with Bima, a male on loan from Lisbon Zoo, Portugal. She laid a clutch of 14 eggs, which were left in the underground nest and removed four months later to check for embryonic development. Of all the eggs, only one showed positive signs of development. To enhance hatching success, the egg was incubated artificially and it hatched on 15 November. The scaly bundle of joy is testimony to Singapore Zoo's good reptile husbandry and the keepers' unwavering commitment to the conservation of the endangered Komodo dragon, despite numerous failed attempts to breed the lizard in the past.



Cheers for Cubs

Night Safari bred six Asian lion cubs, barely three months after their parents arrived from Sakkarbaug Zoo, India. The Asian lion is a critically endangered species with only 350 individuals left in the Gir forest of India. The birth of the six cubs signified Night Safari's milestone contribution to the global captive breeding of the Asian lion.



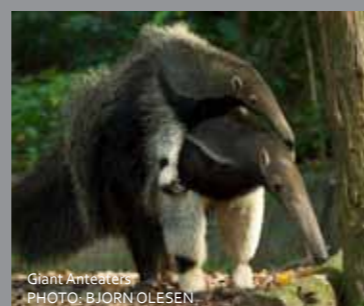
Happy Hatchings

Jurong Bird Park saw happy hatchings yet again, with first-time breeding success for the bar-pouched hornbill, the red-tailed black cockatoo and blue-breasted kingfisher. The black hornbill produced a chick for the second consecutive year running. After a long hiatus of nine years, the rare twelve-wired bird of paradise produced one chick, expanding the precious collection to nine birds.



During the reporting year, WRS welcomed many significant hatchings and births, in addition to those already highlighted.

They included eight pelican chicks, one golden conure, one palm cockatoo, five scarlet macaws, two hyacinth macaws, four blue-bellied rollers, one chimpanzee, one white rhinoceros, two Caribbean manatees, one Malayan sun bear, one Malayan tapir, two ring-tailed lemurs, one siamang, one giant anteater, one Indian gaur, three Himalayan tahrs, and eight babirusa.



Sam, Senior Curator (Zoology) has been with Singapore Zoo for 38 years. He has immense experience in primate husbandry and has contributed tremendously to the successful breeding of orang utans and other primates. The reporting year saw two orang utan births, adding to a total of 25 for Singapore Zoo, and an impressive record for captive breeding of endangered primates worldwide.



Raja, General Curator looks on while Elden, Avian Management Officer feeds a hyacinth macaw, which is being hand-raised at the Breeding and Research Centre. Long hours of dedicated work and lots of passion from committed staff ensure that Jurong Bird Park always produces impressive breeding records, year after year.



NEW ARRIVALS

WRS worked closely with zoological institutions worldwide on animal exchange programmes to leverage on shared expertise and resources. Through these exchanges, genetic diversity of animal collections and captive-bred offspring can be enhanced without the need to deplete wild populations. Noteworthy arrivals to WRS resulting from such exchanges were one Indian rhinoceros, one male Sumatran orang utan, three red river hogs and two clouded leopards.



Above: Mary, the female Indian rhinoceros arriving from Oklahoma Zoo on an exchange programme.

Sumatran Orang Utan

The much-awaited arrival of a male Sumatran orang utan from Frankfurt Zoo took place on 2 February 2010. Sumatran orang utans are rarely available for exchange amongst zoos worldwide and this is an important addition to Singapore Zoo's orang utan collection. It represents a new genetic bloodline and promises the hope for WRS to resume the breeding of this critically endangered ape.

Right: The male Sumatran orang utan from Frankfurt Zoo arrived here on a mission to increase the number of the critically endangered ape in Singapore Zoo's collection.



PHOTO: HEATH HOLDEN

Greater One-Horned Rhinoceros

Night Safari has not had any luck with breeding the greater one-horned or Indian rhinoceros. Through an exchange programme with Oklahoma Zoo, a female Indian rhinoceros, named Mary, was flown in and hopefully, it will be able to accomplish the mission. Habitat loss and poaching have reduced the number of Indian rhinoceroses to about 2,000 in the protected areas of India and Nepal. Captive breeding of this vulnerable animal is one way to conserve the species, apart from strict protection measures in the wild.

REVITALISE AND INNOVATE

It is the good fortune of WRS to have a very experienced and passionate team to care for one of the world's most valuable animal collections. The enviable breeding records, world-class veterinary care, innovative exhibit designs and the naturalistic landscaping are the result of deep thoughts, careful planning and great teamwork. They represent the fruits of labour of a group of like-minded people working together to embrace WRS's green ethos.

Slow Loris Exhibit

A new exhibit was added to Night Safari to display the slow loris, a small primate that still exists in the forest reserves of Singapore. This new exhibit supports the strategic direction taken by WRS to display native species in order to generate public awareness of Singapore wildlife. The Slow Loris Exhibit is the second such exhibit, the first being the Sunda pangolin. In the pipeline is the Common Palm Civet Exhibit, slated for opening in September 2010.

Kumar Pillai, Director (Night Safari) discussing the finishing touches needed for the new Slow Loris Exhibit with his team of Curator and Keepers. Kumar joined the Zoo in 1972 and later went on to lead the Night Safari Zoology team.



PHOTO: HEATH HOLDEN

Red River Hog Exhibit

To improve the variety of animals visitors can enjoy along the walking trail of Night Safari, a new exhibit displaying three red river hogs from San Diego Zoo was added. The red river hog is a handsome wild pig with a striking red coat, white eye rings and mane. It is found in the dense rainforests of Africa.



Bigger Home For The Giraffes

To expand the space for the giraffes in Singapore Zoo, a section of the dry moat was filled with earth. In place of the moat, artificial timber posts were erected to demarcate the exhibit area. A fresh layer of sand was added and more trees planted to provide shade for the animals. A new restraint chute was installed in the yard and this allows for a more controlled environment for medical procedures to be carried out by the vets.



PHOTO: HEATH HOLDEN

The Big Move

The animals in the Nepalese River Valley had to be re-housed from the East Loop of Night Safari to the West Loop so that the site could be released for construction of River Safari. The affected animals were Indian rhinoceroses, hog and axis deer, sambar, banteng and water buffalo.

Night Safari's team was kept busy conditioning the animals for the 'big move'. Crates were placed in the yards, and food was put inside the crates to condition the animals to move into them. The crate conditioning facilitated a smooth transfer of the animals, despite the large number. For the animals, the 'big move' meant bigger exercise yards and better holding facilities. Months of hard work were involved and the outcome, immensely rewarding.

Keeping Boredom At Bay

Animals in captivity do not have to hunt for food, escape from predators or look for potential mates. Many suffer from problems associated with boredom such as overgrooming and feather plucking. Apart from behavioural problems, captive animals often have to deal with overgrown beaks and teeth.

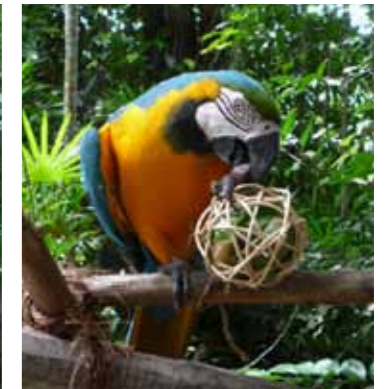
The Zoology and Avian teams work hard to keep boredom at bay for their charges with enrichment activities designed to hone the natural instinct of the animals and to challenge their physical and mental capabilities. Many of the activities focus on food well-hidden to ensure that the animals get to work before they can enjoy their rewards. Toys and enrichment devices made from recycled materials are also used.



A warthog feeding from a suspended bamboo feeder filled with peanut butter.



Favourite treats suspended from a recycled container for our elephants to browse.



Enrichment toys are given to parrots to chew and wear down their bill.

PHOTO: HEATH HOLDEN



Dragon Undergoes Treatment Meant For Humans

During the process of excavating the nest to lay her eggs, Yoko, the female Komodo dragon sustained a wound on the back and this soon became a large wound, exposing four vertebrae. Her wound was initially treated with Manuka honey but was slow to heal.

Specialists from the Plastic and Surgical Unit of the National University Hospital were consulted and it was decided that Vacuum Assisted Closure (VAC) treatment be used on Yoko. This treatment is applied on humans to hasten healing of chronic, open wounds and has never been used on animals. Yoko underwent the treatment regime for five months and the wound has almost healed completely. Soon, Yoko will be released into the Komodo dragon exhibit and reunited with her mate.