



**WILDLIFE
RESERVES
SINGAPORE**

YEARBOOK 2013-14

ABOUT WILDLIFE RESERVES SINGAPORE

Wildlife Reserves Singapore (WRS) is the holding company of the award-winning attractions Jurong Bird Park, Night Safari, Singapore Zoo and the newly-opened River Safari. WRS is dedicated to the management of world-class leisure attractions that foster conservation and research, while educating visitors about animals and their habitats.

A self-funded organisation, WRS also collaborates with various partners, organisations and institutions aimed at protecting local and global biodiversity. Each year, Jurong Bird Park welcomes over 900,000 visitors, Night Safari 1.1 million, Singapore Zoo 1.7 million and River Safari 1 million.



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CHAIRMAN'S MESSAGE



2013-14 was another year overflowing with abundance, in a manner of speaking. Our "integrated reserves" concept at Wildlife Reserves Singapore became even fuller, and more complete, this year, with the eagerly-awaited official opening of River Safari. We were very happy to have Prime Minister Lee Hsien Loong officiate at the opening on 28 February 2014, to mark a new era of extending our showcasing of the wild to embrace the freshwater habitats of our world.

Once again – just as we did with the paradigm shift to nocturnal visitorship when we opened the Night Safari more than 20 years ago – we have managed to be a game-changer among wildlife parks, to break new ground and open up even greater fresh frontiers in wildlife attractions, with Asia's first and only river-themed wildlife park. Once again, we have brought into our highly-urbanised Singapore new dimensions recreated from far-flung corners of this diverse life on Earth. We have enabled our visitors to explore this vast globe in the form of – literally immersive – experiences of the freshwater habitats of some of the world's most iconic rivers – the Nile, Amazon, Congo, Mississippi, Mekong, Yangtze and Ganges. Our guests can also enjoy in this 12-ha park close encounters with 6,000 animal specimens representing over 200 species, including three never seen before in Singapore, and of which 40 are threatened, such as our beloved giant pandas Kai Kai and Jia Jia.

The Singapore Zoo celebrated its 40th birthday with a big bash to top-off a year full of festivities. It was a fitting tribute to our flagship attraction. It was also a time of nostalgia, of fond memories of significant moments of heritage, such as the first orang utan birth in 1975. It has been a year of warm recollection, and also of renewed commitment to continue to keep Singapore Zoo at the cutting-edge of wildlife presentation, conservation and research. Among the highlights this year was the opening of Frozen Tundra for our star polar bear Inuka, as well as other species such as the rarely-seen raccoon and wolverine.

Just as Inuka is the first polar bear born in the tropics, this year we celebrated more exciting new births, including some already at the River Safari, in less than a year, such as the

giant river otter, the first seen here in Asia. We had a total of 698 successful births, of which 128 are as threatened, including the orang utan, manatee, hyacinth macaw and Malayan tapir.

Right here at home, we also contributed to enhancing the wildlife on this island in the wild, despite its small size and increasing population density. In March, Jurong Bird Park became the first institution globally to incubate artificially and hatch three Oriental pied hornbill eggs that had been rescued from Pulau Ubin. Later in July, three other older birds were released on Pulau Ubin, to add to the population there and enhance the hornbill biodiversity in the wild. It was a bitter-sweet moment for us, letting them leave our collection. But as they say, if you love them, you have to let them go.

At the same time, our small contribution towards fostering national pride has a new springboard with the inaugural Native Birds' Day on 23 November 2013. We are excited to nurture more awareness and affection for the more than 100 species of birds native to Singapore, including the white-rumped shama, emerald dove, Oriental magpie robin, green pigeon and Oriental white-eye.

What's more, we worked with the National Parks Board to take native bird conservation right into the community in the heartlands. A pair of black-naped orioles and a pair of pink-necked green pigeons brought in by a member of the public were placed in a purpose-built aviary in And Mo Kio Town West for seven days so that they could get used to their surroundings before they were released into the wild of Singapore.

Our breeding efforts of endangered birds have even gone regional. After nursing them successfully for two years, ten Luzon bleeding heart pigeons were flown "back home" to the Philippines and released to the wild on the Polillo Islands. This project is part of Jurong Bird Park's first off-site conservation programme involving an endemic species from the Philippines in the ASEAN region. Who knows, in future, we might all look back on 2013-14 as the year our special breed of "avian diplomacy" took off – literally.

In the arena of international thought leadership, we broke new ground in gathering experts, interest groups and stakeholders in roundtables and conferences to assemble a stronger voice to advocate for wildlife and nature. A particular highlight was the Combined Veterinary Conference in October 2013 – which we co-organised with the Singapore Veterinary Association – also brought together the Asian Society Zoo and Wildlife Medicine, Unusual Pets and Avian Veterinarians, and the Association of Avian Veterinarians Australasian Committee. Through the year, the global spotlight was enhanced on species of particular interest, including the Sumatran rhino, the ploughshare tortoise, the river terrapins, the pangolin and our very own endemic Singaporean freshwater crab that is among the 100 most threatened species in the world. With our giant pandas Kai Kai and Jia Jia with us for 10 years, and celebrating in September their first year of stay in Singapore, we took the opportunity to share best practices in panda care and conservation. We also continued to support many research projects in Singapore and the region, including those on the slow loris and proboscis monkey in Southeast Asia, and the common palm civet at home.

Building awareness for conservation has a strong youth element, and here, we strengthened our unique offering as a "living classroom". School attendance for our four parks totaled 192,560, the highest in 10 years, partly due to the opening of River Safari. With the expansion of our "integrated reserves" concept at WRS, we might have to reset our expected visitorship levels for the future. It is most gratifying to us that we are able to reach out to even more people, and to touch more lives with the endless marvels of nature.

Improvements at our other parks continued to enhance our visitor's experience. At the Night Safari, the Indo-Malayan Relocation project came to fruition with the completion of the new exhibit for the Malayan tiger, Asiatic black bear and thamin. At Jurong Bird Park, the Waterfall Aviary was relaunched, to refresh a much-loved spot since the 1970s.

These efforts have earned even more appreciation from the public and industry players this year. Singapore Zoo was the 2013 Medallion Recipient for Organisations, a pinnacle honour presented by agencies of the national GEMS (Go the Extra Mile for Service) Up movement to inspire a transformation in good service in Singapore. At the Singapore Experience Awards 2013, presented by the Singapore Tourism Board, WRS went one better than the year before by earning three major accolades: Night Safari earned its 11th honour for providing the 'Best Visitor Attraction Experience'; Singapore Zoo's Wild Discoverer Tour was a joint winner for Best Travel Experience; and WRS won the Most Innovative Marketing Initiative with 'Pandamonium Hits Singapore'. Singapore Zoo was a finalist for the 'Best Visitor Attraction Experience' category. For individual awards, Ms Ernieatay from Jurong Bird Park and Haniman Boniran from Singapore Zoo were finalists for the Best Customer Service in Visitor Attraction category.

It has been yet another wonderful year for WRS, with outstanding attainment all-round, thanks to the dedication of our passionate and professional team. I would also like to thank our Board Members, shareholders, members of various committees, honorary consultants, sponsors, donors, volunteers and friends, whose strong support has brought us into this new phase of our "integrated reserves" concept, and look forward to achieving and contributing much more together with all of you, in a brand new future.

Chairman
Wildlife Reserves Singapore



CLAIRE CHIANG,
Chairman
Wildlife Reserves Singapore,
Wildlife Reserves Singapore
Conservation Fund

Ms. Claire Chiang, Senior Vice President, Banyan Tree Holdings, is a co-founder of Banyan Tree Hotels & Resorts, and also pioneered the group's retail business in 1996 which has since grown to 60 over retail outlets worldwide.

She serves also as the Chairperson for China Business Development, where she primarily focuses on the acquisition of new management contracts, and an Advisor to the group on Human Capital Development, where she guides key strategic issues in organisational and human capital capability.

Ms. Chiang is also the Chairperson of Banyan Tree Global Foundation, an associate of Banyan Tree Holdings that was established in March 2009 as the sustainability arm of the group. Her role involves directing and guiding the evolving process of the group's commitment to corporate social responsibility and its

mission to "Embrace the Environment, Empower the People".

In April 2009, Ms. Chiang, together with Mr. Ho Kwon Ping, was a joint recipient of the Hospitality Lifetime Achievement Award at the annual China Hotel Investment Summit. The award was presented to honour outstanding individuals for a lifetime of extraordinary leadership, accomplishments and contributions to the hospitality industry.

Ms Chiang serves on numerous public and private Boards and has won national and international awards for her advocacy in social and community issues. She is a member of the Tripartite Committee on Work-Life Strategy led by the Ministry of Manpower, the Chairperson of Employer Alliance and Board member of The Tripartite Alliance for Fair and Progressive Employment Practices (TAFEP) which is a network committed to creating an

enabling work environment to empower work flexibility and engagement.

In July 2014, she was elected as the Chairperson of Executive Committee, National Book Development Council of Singapore. She is a member of advisory board for Crib Pte. Ltd. She serves as the community advisor for Honour Singapore and was appointed by Ministry of Defence (MINDEF) as a member in main ACCORD and the co-chairperson of the ACCORD (Family & Community Council). Most recently in Aug 2014, she was awarded the Public Service Star BBM for her contribution in implementing work-life integration, as part of Singapore's commitment to create fair, responsible and progressive work environment. Meanwhile Ms. Chiang was elected as a Pioneering Member for the Diversity Action Committee to build up the representation of women directors on boards of companies.

BOARD OF DIRECTORS



MR PHILIP TAN

Mr Tan was in the commerce and industry sector for 11 years prior to joining the banking and finance sector. He joined the Overseas Union Bank in 1979, holding various senior positions prior to his retirement in 2002 as Executive Vice President.

He holds a Bachelor of Accountancy from the University of Singapore and a Bachelor of Laws from the University of Wolverhampton, UK. He also holds a post-graduate diploma in Business Administration from the Manchester Business School, UK. He is a Fellow of the Institute of Singapore Chartered Accountants, CPA (Australia), the Association of Chartered Certified Accountants, UK and an Associate of the Chartered Institute of Management, Accountants, UK.

Mr Tan is currently a director of Union (2009) Limited, Alliance Financial Group Berhad and Alliance Bank Malaysia Berhad.

Mr Tan retired from the Board of Wildlife Reserves Singapore, Singapore Zoological Gardens and Jurong Bird Park on 25th August 2014.



MR CHIA NGIANG HONG

Mr Chia Ngiang Hong has over 30 years of experience in the real estate industry. He first graduated from the University of Singapore with an Honours Degree in Bachelor of Science (Estate Management) and later obtained his Master in Business Administration with Distinction from the University of Hull, UK.

Mr Chia was with the DBS Group before joining City Developments Limited (CDL) in 1981 where he is currently its Group General Manager.

He has been serving as the Vice President of the Real Estate Developers' Association of Singapore (REDAS) for many terms. He is also a fellow in the Singapore Institute of Surveyors & Valuers (SISV).

Mr Chia has also served as a former Board Member and subsequently as Deputy Chairman of Building and Construction Authority (BCA). He is currently the First Vice President of the Singapore Green Building Council (SGBC). He is a member of the Charity Council, Ministry of Culture, Community and Youth (MCCY) and also a member of the Panel of Assessors for National Council on Problem Gambling (NCPG).

He chairs the Consultative Committee to the Department of Real Estate at National University of Singapore (NUS). He serves as a member of the NUS SDE School Advisory Committee (SAC) as well as a member of the Advisory Panel of the BCA Academy.



MR KAVIRATNE NIHAL VIJAYA DEVADAS CBE

Mr. Kaviratne's career with Unilever spanned 40 years in Asia, Europe and Latin America. He now serves as an independent, non-executive Chairman/Director in various companies in India, Singapore and Indonesia. These include StarHub, SATS, DBS Bank, Olam, Akzo Nobel, GSK and TVS.

Half his time is spent on societal work as a Governing Board Member of The Bombay Mothers & Children Welfare Society, and Founder of St. Jude India ChildCare Centres to provide holistic care for needy children suffering from serious diseases. He was the Founder President of the International Wine & Food Society, Bombay Branch, and is a Chevalier du Tastevin.

An Economics graduate from Bombay University, he attended the AMP at Harvard and the AEP at North Western. Cited in the Queen's 2004 New Year Honours List in the UK he was awarded the CBE for services to UK business interests and to sustainable development.

Mr. Kaviratne retired from the Board of Wildlife Reserves Singapore on 10th November 2014.



MR RAYMUNDO A YU JR

Mr Yu has 30 years of experience in the financial industry. He is currently Chairman of Asia Pacific at Threadneedle Investments. Before this, he spent 27 years in Merrill Lynch & Co and was the Chairman of the Merrill Lynch group in Asia Pacific. He is the founding chairman of Abilities Beyond Limitations and Expectations (ABLE), a charity aligned to the physically challenged community in Singapore.

He also serves on the Board of Rickmers (RMT), is a member of the Asia Pacific Advisory Committee of Australian Super and a member of the Global Advisory Committee of Bank Julius Baer & Co Ltd.

Mr Yu is also a Board of fellows at the Thunderbird School of Global Management in Glendale, Arizona, U.S.A.

He obtained his degree in Business Administration from Ateneo De Devao University and has an MBA in International Management from the American Graduate School of International Management (Thunderbird).

BOARD OF DIRECTORS



MR LEE KIM SHIN

Mr Lee holds a Bachelor of Laws, LLB (National University of Singapore) and was called to the Singapore Bar in 1986.

Mr Lee had been a Partner of the law firm of Allen & Gledhill LLP since 1991 and the Managing Partner of the firm from August 2012 to 31 December 2013.

He retired from the Board of Wildlife Reserves Singapore on 31 December 2013 to take up appointment as a Judicial Commissioner of the Supreme Court on 2 January 2014.



MR LIONEL YEO

Mr Lionel Yeo is the Chief Executive of the Singapore Tourism Board. He was formerly the Dean & CEO of Singapore's Civil Service College, and Deputy Secretary (Development) in the Public Service Division of the Prime Minister's Office.

Lionel has been an officer of the Singapore Administrative Service since 1996. He has previously served in the Ministry of Trade & Industry, the Ministry of Finance, the Ministry of Information and The Arts, and the Ministry of Community Development. Lionel also serves on the boards of the Urban Redevelopment Authority, Sentosa Development Corporation, National Healthcare Group Pte Ltd, Wildlife Reserves Singapore Pte Ltd and on the Board of Governors of Raffles Institution.

He has a BSc in Economics from the London School of Economics and an MBA from the Massachusetts Institute of Technology's Sloan Fellows Program.



MR LEE MENG TAT

Mr. Lee Meng Tat is the CEO of Wildlife Reserves Singapore (WRS). Prior to joining WRS, he was the Chief Corporate Development Officer, Food & Beverages of Fraser and Neave Group (F&N) and he sat on the boards of a number of F&N's F&B subsidiaries.

Before returning to F&N (Singapore) in 2009, Mr Lee was on secondment to Asia Pacific Breweries Ltd (APB) where he was APB's Regional Director in China and concurrently held the position of Chief Executive Officer of Heineken-APB (China) Management Services Co., Ltd.

Mr. Lee had held various positions with Singapore Tourism Board, Singapore Economic Development Board, Sembawang Leisure Pte Ltd, and DBS Bank Ltd.

Mr. Lee holds a Bachelor's degree in Mechanical Engineering (National University of Singapore), and an MBA from Imperial College (London), and had completed the Advanced Management Programme at Harvard Business School.



MR KEE TECK KOON

Mr Kee is currently the Non-Executive Chairman of Changi Airports International Pte. Ltd., and Alexandra Health Fund Ltd. He is also engaged as a Corporate Advisor at Temasek International Advisors Pte Ltd., and holds directorship positions in NTUC Enterprise Co-operative Ltd., NTUC Income insurance Cooperative Ltd., Ascendas Pte Ltd., CapitaLand Ltd., and Raffles Medical Group Ltd.

Prior to Mr Kee's retirement as the Chief Investment Officer of CapitaLand Limited ("CapitaLand") on 1 July 2009, Mr Kee held several senior appointments within the CapitaLand Group.

Between April 2003 and January 2007, he was responsible for overseeing the CapitaLand group's Financial, Commercial and Retail businesses. Prior to that, he was the Managing Director and Chief Executive Officer of The Ascott Limited from November 2000 to April 2003.

Between 1996 and 2000, he was the Managing Director and Chief Executive Officer of Somerset Holdings Limited, and was also an Executive Vice President at Pidemco Land Limited. Prior to that, Mr Kee held senior management appointments with several other organisations. He started his career in 1979 with the Singapore Armed Forces and the Ministry of Defence where he remained until 1991.

Mr Kee holds a Master of Arts in Engineering Science from Oxford University, United Kingdom.

Mr Kee Joined the Board of Wildlife Reserves Singapore on 1 May 2015.



MR SIM HWEE CHER

Mr Sim Hwee Cher is PwC Singapore's Vice Chairman of Operations and the Head of Audit. He is also a member of the PwC Executive Board for Singapore, China, Hong Kong and Taiwan. He has over 30 years of audit experience and has been actively involved in planning, executing and managing audits of large companies in the manufacturing, real estate, construction, health care, insurance companies and trading industries.

Hwee Cher sits on the council of the Institute of Singapore Chartered Accountants (ISCA), which sets the direction for the Institute's development and oversees its operations as a whole. He is also a Fellow of the Chartered Public Accountants of Australia and the Association of Chartered Certified Accountants of United Kingdom.

Amongst other positions, he also is currently the Secretary General of National Council of Social Service and Community Chest, and member of the NUS School of Accounting Advisory Council.



MS NEO GIM HUAY

Ms Neo Gim Huay is the Managing Director of the Enterprise Development Group in Temasek International Pte Ltd. The Enterprise Development Group builds businesses, seeding, growing and nurturing promising enterprises in partnership with the Temasek portfolio of companies and other stakeholders.

Prior to Temasek, Gim Huay was an international management consultant with McKinsey & Co in the United States and Africa. She has also served in the Administrative Service of the Singapore Public Sector, with a focus on scenario planning, finance and international trade.

Gim Huay holds a MBA from Stanford University and a Masters of Mechanical Engineering and Bachelor of Arts from Cambridge University.

She currently sits on the Board of the Singapore National Library.

COMMITTEE MEMBERS & HONORARY CONSULTANTS

Expert Committee on Zoonoses

Chairman : Dr Leong Hon Keong
Secretary : Dr Charlene Fernandez
Members : Dr Ooi Eng Eong
Dr Chan Kwai Peng
Dr Koh Tse Hsien
Mr Lee Meng Tat
Dr Cheng Wen-Haur
Dr Serena Oh
Mr Kumar Pillai

Animal Welfare and Ethics Committee

Chairman : Prof Leo Tan
Secretary : Dr Cheng Wen-Haur
Members : Dr Chew Siang Thai
Dr Leslie Retnam
Dr Tan Hwa Luck
Mr Wong Tuan Wah
Dr Chris R Shepherd
Ms Grace Chua
Dr Stephanie Ho
Mr Lee Meng Tat

Honorary Consultants

Dr Tan Hwa Luck
Dr Myra Elliott
Prof Soon-Chye Ng
Dr Koos van den Berg
Dr Curry Keoughan
Dr Anjulia Thomas
Dr Frederic Chua
Dr Hsu Li Chieh
Dr Chew Huck Chin

WRSCF Specialist Panel

Dr Shawn Lum (Chairman)
Dr Geoffrey Davison
Dr Astrid Yeo
Dr David Bickford
Dr Sonja Luza
Dr Leong Tzi Ming
Dr Cheng Wen-Haur

SENIOR MANAGEMENT

Mr Lee Meng Tat
Dr Cheng Wen Haur
Ms Isabel Cheng
Mr Tan Choong Kiak
Mr Melvin Tan
Mr Andrew De Silva
Mr Barry Choong
Mr Cham Tud Yinn
Mrs Daisy Ling

Ms Jean Tan
Ms Julie Yeong
Mr Kumar Pillai
Mr Lee Chin Peng
Ms May Lok
Mr Raja Segan
Dr Sonja Luz
Mr Steven Tan
Mr Steven Wong
Ms Linda Tan
Dr Luis Carlos Neves
Dr Serena Oh
Mr David Lim

Chief Executive Officer
Chief Life Sciences Officer
Chief Marketing Officer
Chief Financial Officer
Acting Chief Operating Officer
Director Parks Operations
Director Estate Management
Director Exhibit Design
Director Corporate Services/Health, Safety,
Security & The Environment
Director Human Resources
Director Sales
Director Zoology
Director IT
Director Education
Director Animal Presentation
Director Conservation & Research
Director Food & Beverage
Director Finance
Assistant Director Retail
Assistant Director Avian
Assistant Director Veterinary
Head Marketing

ADOPTERS & DONORS

PARK	ADOPTER	ADOPTION
JURONG BIRD PARK	Adept Learning Pte Ltd	Kingfisher Exhibit
	American Express International, Inc	King of the Skies Show
	Borden Company Pte Ltd	American Bald Eagle, Sue Allen & Eagle Statue
	Cheng Kim Loke Foundation	Bali Mynah
	Coca-Cola Singapore Beverages Pte Ltd	Malayan Fish Owl, Belang
	Coca-Cola Singapore Beverages Pte Ltd	Pair of Scarlett Macaws from the High Flyers Show, Vega & Petina
	Digiphotography Entertainment Imaging Pte Ltd	Macaw Island
	Goodwood Park Hotel Limited	Brahminy Kite, Ronnie II
	SMRT Corporation Ltd	Great Pied Hornbill Exhibit
	Hong Leong Foundation	24 Flamingoes from the High Flyers Show
	Lee Foundation Singapore	Penguin Coast
	M1 Limited	Malayan Fish Owl, Tupa
	Protek Chemicals & Engineering Pte Ltd	White-collared Kingfisher
	Puro Coffee Singapore Pte Ltd	Toco Toucan, Miko
	SPH Foundation Ltd	High Flyers Show
	Starhub Mobile Pte Ltd	Scarlet Ibis Exhibit
	State Bank Of India (Singapore)	Flamingo Lake
	Sutera Harbour Resort	Lesser Bird of Paradise Exhibit
	Thai Airways International Public Co. Ltd	Trams at Jurong Bird Park
	The Shaw Foundation Pte	Fly Pass Macaws from the High Flyers Show
	Unilever Singapore Pte Ltd	Harris Hawk, Angel

NIGHT SAFARI	American Express International, Inc	Creatures of the Night Show
	Apple South Asia Pte Ltd	Leopard Exhibit
	Chemical Industries (Far East) Ltd	Malayan Tiger Viewing Shelter
	Coca-Cola Singapore Beverages Pte Ltd	Asian Golden Cat Exhibit
	Goodwood Park Hotel Limited	Fishing Cat Trail
	Haw Par Healthcare Limited	Malayan Tiger Exhibit
	JTB Pte Ltd	Sambar Deer & Elephant Exhibit
	Khoo Teck Puat Foundation	Fishing Cat Trail
	M1 Limited	Giraffe Exhibit
	Mr Martin Storey	Babirusa Exhibit
	Mitsubishi Pencil Co Pte Ltd	Hippopotamus Exhibit
	Mr & Mrs Lim Soo Peng	Red Crowned Cranes
	Singapore Management University	Clouded Leopard Exhibit
	Singapore Refining Company Pte Ltd	Marsh Bird Exhibit
	Singtel Mobile Singapore Pte Ltd	Ankole Exhibit
	Standard Chartered Bank	Greater Asian Rhinoceros Exhibit
	Starhub Mobile Pte Ltd	Serval Segment-Creatures of the Night Show
	Thai Beverage PLC	Asian Elephant, Chawang
	The Shaw Foundation Pte	Slow Loris Exhibit
	Unilever Singapore Pte Ltd	Tarsier Exhibit

PARK	ADOPTER	ADOPTION
RIVER SAFARI	American Express International, Inc	Mississippi River Exhibit
	CapitaLand Limited	Presenting Sponsor & Conservation Donor of Kai Kai & Jia Jia
	Coca-Cola Singapore Beverages Pte Ltd	Scarlet Ibis
	JTB Pte Ltd	Red Panda Exhibit
	M1 Limited	Jewel Tank
	Mitsubishi Corporation	Jaguar Cave
	OCBC Limited	Emperor Tamarins
	Singapore Airlines Ltd	Official Airline of the Giant Panda Programme
	Singtel Mobile Singapore Pte Ltd	Congo Beauties
	SPH Foundation Ltd	Amazon Flooded Forest
	The Shaw Foundation Pte	Manatee Feeding Program
	Unionpay International Co. Ltd	Squirrel Monkey Forest
	United Overseas Bank Limited	Golden Pheasant Exhibit

SINGAPORE ZOO	Abbott Laboratories (S) Pte Ltd	Giraffe, Growie
	Adept Learning Pte Ltd	Spotted Mousedeer Exhibit
	Akzonobel Paints (Asia Pacific) Pte Ltd	Orang Utan, Merlin
	American Express International, Inc	Splash Safari Show
	Asia Pacific Breweries (Singapore) Pte Ltd	White Tiger Exhibit
	Australia And New Zealand Banking Group Limited	Australian Outback
	Australian International School Singapore	Orang Utan, Banjo
	Borneo Motors (Singapore) Pte Ltd	Cheetah Exhibit
	Cheng Kim Loke Foundation	Malayan Tapir Exhibit
	Coca-Cola Singapore Beverages Pte Ltd	White Tiger, Omar
	ED & F Man Asia Pte Ltd	Sugar Cane Plant at Tropical Crops
	Future Electronics Inc (Dist) Pte Ltd	Chimpanzee, Zanter
	Galborg Pte Ltd	Chimpanzee, Nkosi
	General Motors Overseas Dist. Corp. Of Singapore	Agile Gibbon, Gangsa
	Haw Par Corporation Ltd	Leopard Exhibit
	Henkel Singapore Pte Ltd	Chimpanzee, Gangga
	Hong Leong Foundation	Fragile Forest Exhibit
	Interbev (Singapore) Limited	Wildlife Healthcare & Research Centre
	Ms Kay Kuok	Asian Elephant, Aprila
	Kentucky Fried Chicken Management Pte Ltd	Zebra Exhibit
	Lee Foundation Singapore	Orang Utan, Chomel
	Lee Foundation Singapore	Tropical Crops
	M1 Limited	Amhara Stone Village Exhibit
	Malayan Banking Berhad	Chimpanzee, Natty
	Mitsui & Co. (Asia Pacific) Pte Ltd	Penguin Exhibit
	Mitsui & Co. (Asia Pacific) Pte Ltd	Elephants at Work & Play Show
	MP & Silva Pte Ltd	Joko, Orang Utan
	Mrs Christina Ong	Orang Utans, Binte & Saloma
	Ms Isabella Loh	Orang Utan, Ishta
	Ms Serene Law	Chimpanzee, Akinyi
	Nicola Barrett	Memorial Bench
	OCBC Limited	Wild Animal Carousel
	Pink Apple Pte Ltd	Orang Utan, Ah Meng Jr
	Protek Chemicals & Engineering Pte Ltd	Chimpanzee, Susie
	Renesas Semiconductor Singapore Pte Ltd	Pelican Exhibit
	SMRT Corporation Ltd	Cotton-top Tamarin Exhibit
	SPH Foundation Ltd	Polar Bear, Inuka
	Starhub Cable Vision Ltd	Proboscis Monkey Exhibit at SPH Conservation Centre
	Starhub Cable Vision Ltd	Rainforest Fights Back Show
	Starhub Mobile Pte Ltd	Red Langur Exhibit
	State Bank Of India (Singapore)	Asian Elephant, Gambir
	Thai Airways International Public Co. Ltd	Intan, Asian Elephant
	The Shaw Foundation Pte	The Shaw Foundation Amphitheatre
	True Heritage Brew (Singapore) Pte Ltd	Chimpanzee, Togo
	Unilever Singapore Pte Ltd	Squirrel Monkey Exhibit
	Unionpay International Co. Ltd	Animal Friends Show
	United Overseas Bank Limited	Singapore Zoo Trams
	Walter AG Singapore Pte Ltd	White Tiger, Winnie
	Wearnes Automotive Pte Ltd	Jaguar Exhibit
	Wuthelam Holdings Pte Ltd	Rabbit Exhibit

A polar bear is shown walking across a snowy, icy landscape. The bear is the central focus, moving from left to right. The background consists of dark, jagged rock formations under a blue sky. The ground is covered in snow and ice, with some water visible in the foreground.

YEAR IN REVIEW

- River Safari officially opens on 28 February 2014.
- Singapore Zoo marks 40th birthday on 27 June 2013.
- Opening of Amazon River Quest at River Safari.
- Opening of Frozen Tundra at Singapore Zoo.
- Indo-Malayan relocation project completed at Night Safari.
- 10 Luzon bleeding heart pigeons bred at Jurong Bird Park “flown back” to their native Philippines, to boost the wild population on the Polillo Islands.
- Three Oriental pied hornbills bred at Jurong Bird Park released on Pulau Ubin, to increase the wild population in Singapore.
- Waterfall Aviary relaunched at Jurong Bird Park.
- Singapore Zoo is the 2013 Medallion Recipient for Organisations from the multi-agency GEMS Up movement for service excellence.
- Night Safari wins 11th honour as Best Visitor Attraction Experience at the STB Singapore Experience awards.
- Singapore Zoo’s ‘Wild Discoverer Tour’ is the joint winner for Best Travel Experience at the STB Singapore Experience Awards.
- ‘Pandamonium Hits Singapore’ wins Most Innovative Marketing Initiative award Experience at the STB Singapore Experience awards.

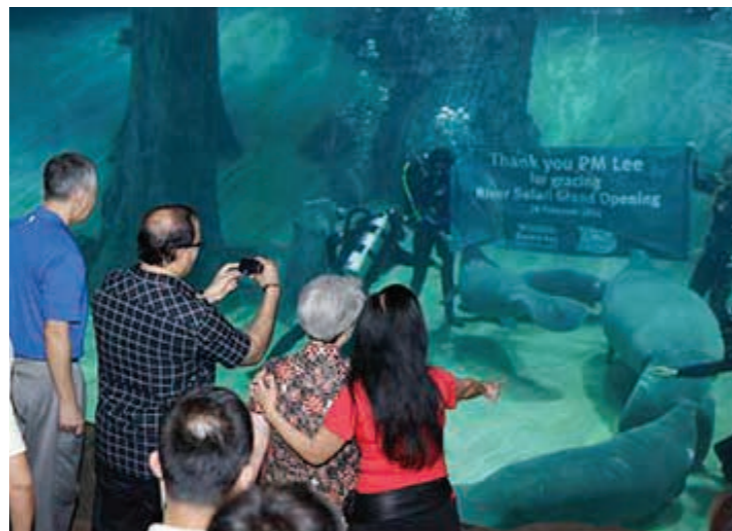
RIVER SAFARI IN FULL FLOW



With a symbolic row of the oars, Prime Minister Lee Hsien Loong and Ms Claire Chang, Chairman, WRS, declared River Safari opened on 28 February 2014.

River Safari was officially opened by Prime Minister Lee Hsien Loong on 28 February 2014. It has opened up fresh tributaries – literally and figuratively – into new worlds of wildlife. Asia’s first and only river-themed wildlife park brings into Singapore the freshwater habitats of some of the world’s most iconic rivers, including the Mississippi, Nile, Ganges, Mekong, Yangtze and Amazon.

Freshwater habitats are an aspect that very few wildlife attractions showcase. But they are vital to all life forms, and are especially fragile, with freshwater species disappearing up to six times faster than land and marine species. River Safari also hopes to inspire more people to do their part to help preserve the supporting environment for freshwater organisms to flourish and for continued supply of fresh water to human civilisations.



Manatees and River Safari’s team of aquarists at the world’s largest freshwater aquarium in Amazon Flooded Forest, thanking Prime Minister Lee Hsien Loong for gracing River Safari’s official opening.



The Amazon River Quest takes visitors on adventure boat ride to explore the amazingly rich Amazon forest and admire some of its inhabitants including the world’s largest anteater, the largest rodent and the largest wild cat of the Americas.



The Mekong River is home to some of the world’s largest freshwater fish such as the Mekong giant catfish, which can be admired at River Safari.

River Safari’s soft opening day on 3 April 2013 welcomed close to 1,500 visitors. By the end of the first year, one million visitors (including close to 42,000 school children) had experienced the 12-ha park, the newest addition to WRS’ portfolio of award-winning attractions, built at a cost of \$160 million. The rare animals on show include freshwater giants such as the river giant otter, giant salamander, Mekong catfish and freshwater giant stingray. Visitors can enjoy encounters with up to 6,000 animal specimens from over 200 species, including three never seen before in Singapore, and of which 40 are threatened. The Amazon River Quest boat ride allows for a thematic exploration into this mysterious rainforest region, with visitors coming face-to-face with many animal species living on the edges of the Amazon River. For the first time in Singapore, visitors can see the red-backed bearded saki monkey, collared peccary, and red howler monkey. Other animals along the

ride include the capybara (world’s biggest rodent), giant anteater (world’s largest anteater), and jaguar (South America’s biggest wild cat). The Amazon River Quest is part of the park’s Wild Amazonia zone which showcases the rich biodiversity in the Amazon basin. The two other habitats

in this zone are the Squirrel Monkey Forest, a walk-through exhibit that houses over 40 free-ranging squirrel monkeys, and the Amazon Flooded Forest which simulates the annual flooding of the Amazon rainforest with manatees and arapaimas swimming amongst giant trees.



The Squirrel Monkey Forest provides visitors with an immersive experience of walking through the home of some 40 free-ranging squirrel monkeys and viewing them at close quarters.

Learning Journeys @ River Safari

River Safari also opened up new streams of knowledge, through learning journeys catering to different segments of visitors. These include interactive hands-on sessions such as the "Be A Panda Researcher", "Water Wanderers", "Otterly Amazing Amazon" and iPad Maths trails and guided tours around the Park. These activities were conducted not only for school visitors but also members of the public. River Safari is also strategically positioned as a Living Classroom for learning the Chinese language. Training workshops for educators and resource materials for different age groups are being developed progressively.

For pre-schoolers, WRS worked closely with educators to design Learning Journeys @ River Safari covering the six key learning areas in the Ministry of Education's revised kindergarten curriculum framework. Following the positive response to the book A New Home For Kai Kai And Jia Jia, another book The River Adventure Of Kai Kai And Jia Jia was released. Through the adventures of the endearing black and white conservation ambassadors, the book promotes values such as respect for diversity and caring for others.



'Be A Panda Researcher' programme allows participants to gain insights into the work of a researcher. Participants seen here investigating what Kai Kai and Jia Jia had for breakfast by examining their poo. In the field, researchers gain much understanding of an animal's diet and prey population through examining its scat.



An awesome encounter with the giant river otter. Animal ambassadors help to create the emotive connection in visitors, motivating them to act for wildlife.



Giant panda-themed story books, available in both English and Chinese, provide great teaching resources for pre-school teachers and parents.

ZOO'S 40TH BIRTHDAY PARTY



Mr S R Nathan being greeted by Gambir, the Asian elephant at the Zoo's 40th birthday party.



Mr SR Nathan Sixth President of Singapore and Ms Claire Chang, Chairman, WRS, did the honour at the cake-cutting ceremony.

Singapore Zoo's year-long birthday celebrations culminated in a big birthday bash on 27 June 2013, the date of its 40th birthday. Partying had gone on all year round, and Singaporeans joined in the celebrations with 40 percent off admission prices in July 2013.

Mr S R Nathan, Sixth President of Singapore, was the special guest for the day, alongside those who have helped in the Zoo's growth as a world-renowned attraction, including popular animal stars such as the orang utans.

Singapore Zoo first opened its doors to visitors on 27 June 1973 with a collection of 272 animals representing 72 species. This was after five years of development work which began in 1968 when Dr Ong Swee Law, then Chairman of Singapore's Public Utilities Board, conceived the idea of locating



The highlight of the birthday party was the surprise appearance of the orang utans, the Zoo's popular animal stars and flagship species.

the zoo in the catchment forests around the Upper Seletar Reservoir. Since then, the Zoo has established herself as one of the world's finest, not only for her unique collection of animals and immersive exhibits, but also for her leadership in service excellence, conservation, education and recreation.

Some of the Zoo's fondest memories include the first orang utan birth in 1975, the opening of the Children's Zoo and Adventureland in

1980, and the release of the first free-ranging animals in the zoo in 1992 – the squirrel monkeys, cotton-top tamarins and cotton-eared marmosets. Today, she has a collection of over 2,800 animals of over 300 species, a quarter of which are threatened.

The festivities for 2013 ended with a slew of fun activities including token feeding surprises, games, mascot appearances and magic shows during the year-end school holidays.

INUKA'S NEW PLAYGROUND



Inuka moved into Frozen Tundra in late May 2013. His new home is four times larger than his previous and offers the creature comforts of a deep pool, a shaded outdoor area and an ice cave.

The first polar bear born in the tropics, the Singapore Zoo's very own Inuka, moved into his new Frozen Tundra home in May 2013 during a grand 'housecooling' party. The 2,700 sq m exhibit features climate-controlled resting areas, an expanded pool for Inuka to swim in, and two new sections for Inuka's new neighbours, the raccoon dogs and wolverines.

The polar bear exhibit had been closed since 2010 and the new enclosure is four times larger than the previous one. Some of the innovative features of Frozen Tundra that help enrich the new environment for Inuka are giant ice blocks for him to play with and relax on, and an ice cave where he can enjoy a polar siesta. Natural

substrates have also been incorporated to provide him with a varied home. To make Inuka's life as interesting as possible, his keepers also provide him with an enrichment programme which includes 'toys' and activities such as scatter feeding and irregular feeding times.

The launch of Frozen Tundra also showcases Inuka's new neighbours, the raccoon dogs and wolverines. Raccoon dogs, also known as tanuki, are native to East Asia. Frozen Tundra's raccoon dogs, Pom and Poko came from Japan's Asahiyama Zoo. Wolverines are the largest land-dwelling species of the weasel family. Native across the Northern Hemisphere, wolverines have adapted to a wide range of habitats. Frozen Tundra's

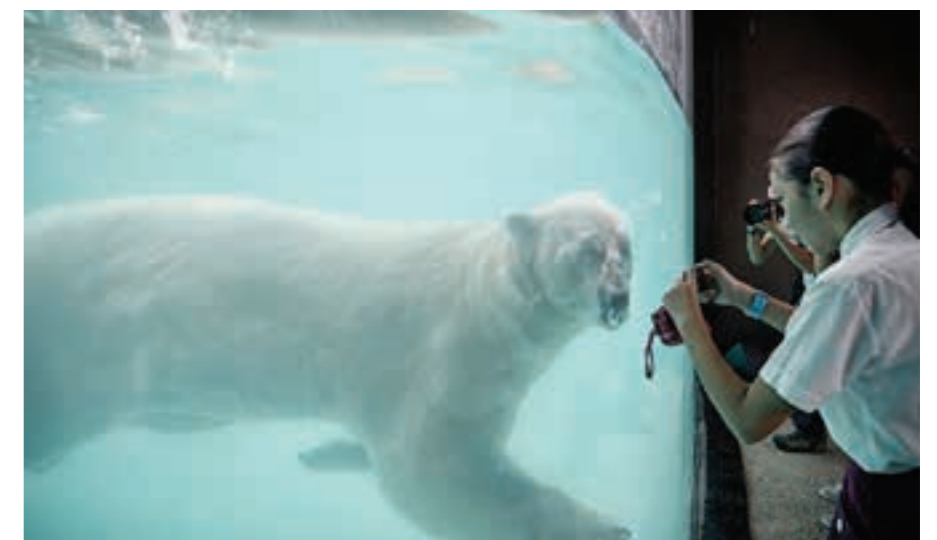
wolverines are a brother and sister pair named Boris and Ivana from Russia's Novosibirsk Zoo.

The idea of creating a new habitat for Inuka was conceptualised in 2006, and Frozen Tundra was designed to not only give Inuka a bigger space but also to raise awareness on global warming. Classified as vulnerable by the IUCN (International Union for Conservation of Nature), the bear occupies a narrow ecological niche and preys almost exclusively on seals in the wild. Polar bears hunt mostly on ice floes in winter months, and retreating sea ice due to global warming has resulted in the diminishing of their hunting grounds and food sources. If global temperatures continue to

rise, polar bears may become extinct across most of their range within a hundred years.

As part of the publicity campaign to promote the Frozen Tundra exhibit, WRS worked with Kiss 92FM radio and Oreo on a contest which rewarded winners with the "coolest wildlife experience ever". 16 winners were treated to a sleepover with Inuka, during which they had the rare opportunity to meet Inuka's keeper and help prepare meals for Inuka and his neighbours the raccoon dogs. They also created an enrichment device for Inuka's other neighbours, the wolverines.

On Boxing Day 2013, Inuka turned 23 years old, and celebrated with a three-tiered ice cake embedded with his favourite food: salmon, herring, blueberries, apples and strawberries; and topped with a frozen watermelon, whipped cream and a salad of mulberry leaves. Inuka devoured his birthday treat within half an hour, before diving into his pool for a swim in the rain.



1 Dr Lee Boon Yang, Chairman of SPH and SPH Foundation, officiated the launch ceremony of Frozen Tundra on 29 May 2013. SPH Foundation is the long-time adopter of Inuka.

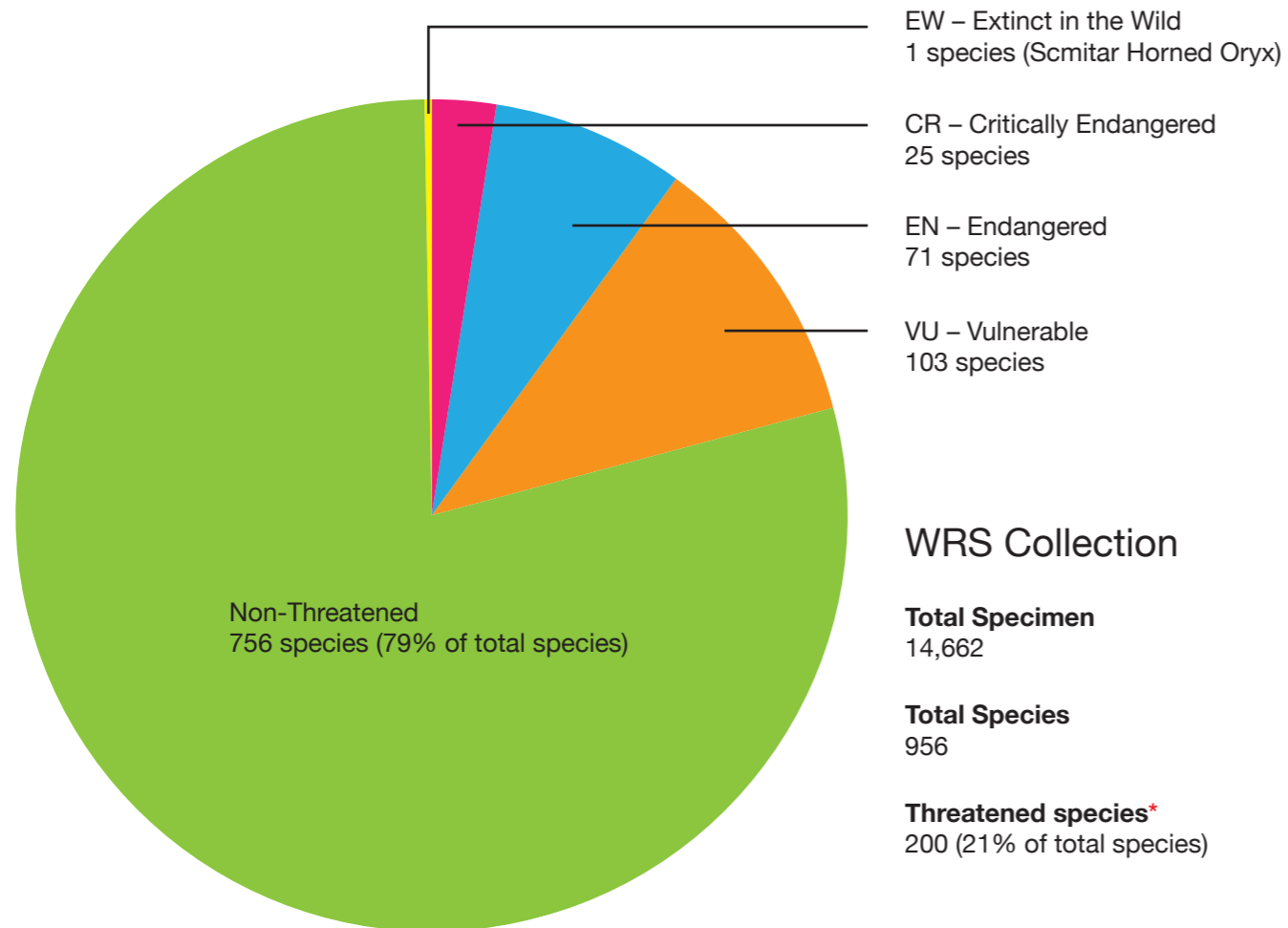
2 The raccoon dogs at Frozen Tundra came from Japan's Asahiyama Zoo as part of the animal exchange programme.

A 'bearly' close encounter with Inuka never fails to thrill the visitors. But more importantly, such profound experiences are essential in creating the emotive link to inspire visitors to rethink how they can do their part for wildlife and the environment.

OUR LIVING COLLECTION

Our living collection continues to expand to a total of 956 species, including 200 (21%) threatened species*. The number of specimens stands at 14,662, making WRS' living collection one of the largest among wildlife institutions globally. The increase in the number of threatened species under our care, from 194 in the previous year to 200 strengthens our ex-situ conservation efforts as it presents greater opportunities for us to breed the species and participate in animal exchange with other wildlife institutions to enhance species genetic diversity globally.

**threatened species include animals that are extinct in the wild, critically endangered, endangered and vulnerable, classification is based on IUCN Red List of Threatened Species.*



WRS Collection

Total Specimen
14,662

Total Species
956

Threatened species*
200 (21% of total species)

Preparing River Safari to go on show



Fish out of water, but the mammoth task was completed finally! Transferring aquatic animals presents great challenges and requires careful planning and speed.

It was an absorbing and fulfilling experience working to get the species and exhibits ready at the River Safari. In July, a careful operation was conducted by 20 staff to move a giant freshwater stingray, believed to be the largest and heaviest freshwater fish in the world, into the waters of the River Safari. This gargantuan species can weigh up to 600 kg and grow up to 5 m in length. Currently, it is only 2.4 m long and weighs 62.5 kg. It is known for its venomous barb on the base of its tail

that can grow to an incredible length of 38 cm, and for its mighty ability to pull boats down into the Mekong River. The array of Mekong giants is thus complete, alongside two other rare megafishes at the park's Mekong River zone – the giant Siamese carp and the critically endangered Mekong giant catfish.

Found in river systems in Thailand, Cambodia and Vietnam, the giant freshwater stingray is under threat due to overfishing and degradation of riverine habitats as a

result of pollution and dam-building. In Thailand, where the sub-population has dropped dramatically, the giant stingray is listed as critically endangered by the IUCN (International Union for Conservation of Nature) Red List of Threatened Species. By bringing visitors up close to fascinating underwater animals such as the giant freshwater stingray, River Safari aims to highlight the importance of freshwater ecosystems and inspire positive actions for conserving them.

New arrivals

Babies always bring great joy to our parks. Among the year's most exciting births at WRS is that of Asia's first giant river otter baby at River Safari. Born on 10 August 2013, the unnamed male pup weighed 1.6kg and measured 60cm. Giant otters can grow to an incredible length of 1.8m and weigh up to 34kg.

River Safari is the first zoological institution in Asia to feature the endangered giant river otter, the largest of the world's 13 otter species. Found only in South American river systems, giant otters are ferocious predators that hunt piranhas, anacondas and even caimans, earning them the title "river wolves". Often hunted extensively for their fur and threatened by habitat loss, these river giants are now amongst the world's rarest otters.

This year, WRS had a total of 698 successful births, of which 182 represent threatened species, such as the orang utan, manatee, hyacinth macaw and Malayan tapir. Births of interesting species rarely seen in zoological collections were of the red howler monkey, bearded saki monkey and the wild cat jaguarundi, all from Central and South America.

Breeding at the Jurong Bird Park improved further, with over 400 chicks hatching, representing an increase by 31% over last year. Several species that had stopped



Asia's first giant river otter baby



Red howler monkeys



Flamingo chicks

breeding for a long period went into breeding mode, including the greater flamingo, with over 50 chicks reared this season. For the first time in seven years, WRS also bred the great argus pheasant, mountain peacock-pheasant, Vietnamese pheasant, Cape parrot, yellow-naped Amazon and greater hill mynah. Among critically endangered species, successful hatchings included the Bali mynah, black-winged



Bali mynah chicks



King bird of paradise chicks

starling and king bird of paradise. Also noteworthy is the breeding of some of the smallest birds, such as the oriental white-eye, orange-cheeked waxbill, dusky munia and Gouldian finch.

At Night Safari, significant births included that of a spectral tarsier for the first time, and a Malayan tapir. The Singapore Zoo improved on its breeding successes with a number of significant births



Malayan tapir baby

including three proboscis monkeys, a white rhinoceros, a buffed cheeked gibbon, three African penguins and a red-shanked douc langur.

For animal transactions, the new acquisitions included four Amur sturgeons from Malaysia for the Yangtze River zone at River Safari, a Malayan tapir from Xiang Jiang Safari Park, China, and a bongo from Taronga Zoo, Australia, for Night Safari; and a sloth bear from Mysore Zoo, India, for Singapore Zoo.

Other new arrivals included a pair of gila monsters from Malaysia, a black-handed spider monkey from Switzerland and 12 rock hyraxes from South Africa. Two red-handed tamarins and a black tufted marmoset arrived as donations from Hong Kong.

Jurong Bird Park received a Bali mynah from Durrell Conservation Trust, UK; a Raggiana bird of paradise, Mindanao bleeding-heart doves, Mount Goliath lorikeet, a Chinese Hwamei and two Iris lorikeets from San Diego Zoo; and two pairs of golden heart doves (endemic to Papua New Guinea) from Germany for breeding and conservation.

Animal exchange programme

Animal exchanges with our partner zoos around the world continued to help us manage our collection and breeding programmes, and also to enhance the well-being of the animals under our care, as well as to advance species biodiversity internationally.

Two proboscis monkeys moved to Appenheul Primate Park, Netherlands, on loan. The Singapore Zoo holds the largest number of proboscis monkeys outside the natural range of the species in the wild. Proboscis monkeys are

extremely difficult to keep in zoos because of their special diet of mangrove leaves. Singapore Zoo has been able to meet the dietary needs of the proboscis monkeys by offering them a variety of leaves collected from over 11 plant species, including the mulberry which is grown at a farm in Lim Chu Kang and managed by Singapore Zoo

Other departures included two chimpanzees moving to Mysore Zoo, India, in exchange for a lion-tailed macaque



Preparing a proboscis monkey for its journey to Appenheul Primate Park, Netherlands. Two proboscis monkeys were sent to the zoological institution as part of our efforts to help enhance the genetic diversity of this endangered monkey.

Hornbills head back to the wild



10 July 2014 – three Oriental pied hornbills were taken to Pulau Ubin for release to enhance the genetic diversity of the existing wild hornbill population in Singapore.

In an effort to diversify the genetic pool of wild hornbills in Singapore, Jurong Bird Park released three Oriental pied hornbills from their collection to Pulau Ubin in July 2013.

Earlier in March, the Bird Park became the world's first

institution to successfully incubate and hatch three Oriental pied hornbill eggs, which had been rescued from Pulau Ubin by officers from the National Parks Board (NParks). These three chicks had been absorbed into the Park's collection. Retaining these three chicks enables

the Park to increase the breeding genetic pool of the existing collection. Similarly, releasing three other birds to Pulau Ubin gives the wild population of Oriental pied hornbills greater diversity in the genetic pool.

The Oriental pied hornbills selected for release included a bonded pair which is captive-bred and a male which was donated to the Park. To allow these birds to acclimatise to the wild, whole fruit that can be found on Pulau Ubin were introduced into their diet as part of the preparation. They were also tested to be free from disease before release.

Ahead of the release, the Oriental pied hornbills had undergone a physical measurement and health check. Data like the microchip number, sex, age, body length and casque length were recorded and kept for



Back to the wild finally! It is hoped that this hornbill, together with the bonded pair, would thrive and breed to help ensure the continuity of the species in wild Singapore.

conservation and research purposes. Conservationists can extrapolate from this data as a reference point and make inferences on the general overview of the population, to understand the group's dynamics, leading to better management of the population.

On 10 July, the bonded pair and one male hornbill set forth from Jurong Bird Park for Pulau Ubin to be released. They joined an estimated 60 Oriental pied hornbills on the offshore island. The release site was chosen as it is the same location from which three Oriental pied hornbill eggs were rescued in January 2013.

The Oriental pied hornbill disappeared from Singapore in the mid-1800s, possibly due to hunting and loss of suitable habitats. In 1994, a pair was sighted on Pulau Ubin. Once virtually disappeared from Singapore, the bird is today re-establishing healthy colonies here, thanks to the collective efforts of the NParks, Jurong Bird Park, and Singapore Avian Conservation Project (SACP). It has since been spotted in the wild on the mainland as well as other offshore islands such as Sentosa.

Jurong Bird Park has one of the largest collections of hornbills globally, with 17



species represented. The Park has 17 Oriental pied hornbills, some of which can be seen at the Hornbills & Toucans exhibit. During breeding season from November to March, cameras will be installed in the Oriental pied hornbill exhibit, and visitors can catch a glimpse of nesting activities through television screens placed at the exhibit.

Bleeding hearts fly to the Philippines



Having bred the Luzon bleeding heart dove well, Jurong Bird Park sent ten birds back to the Philippines to help repopulate the species in its native country.

Love was in the air – literally – as Jurong Bird Park celebrated Valentine’s Day with a difference this year. After a successful two-year breeding programme, 10 Luzon bleeding heart pigeon progenies were flown “back home” to the Philippines and released to the wild on the Polillo Islands. The Luzon bleeding heart pigeon is a threatened species, with declining numbers in the wild due to deforestation and the illegal pet trade.

The project is Jurong Bird Park’s first off-site conservation project involving an endemic species from the Philippines in the ASEAN region. Recognising Jurong Bird Park’s expertise in conservation and breeding, two pairs of Luzon bleeding heart pigeons arrived in the park two years ago as part

of an agreement signed with Ailon Zoo and the Department of Environment and Natural Resources in the Philippines. These birds started breeding from October 2012 and continued through January 2014 to produce 10 progenies.

All bleeding heart pigeons and golden heart doves are part of a group of Australasian pigeons called ground doves, known to be very faithful to their partners until death. Only when one dies will the other look for another to pair up with. Upon becoming parents, both males and females will take turns to incubate the eggs. For the first few days of a chick’s life, the chick is fed crop milk produced by both parents. Once the chick is older, both parents will forage for food for the young. These

pigeons are very caring, often preening each other and their chicks. They will also sunbathe together.

Separately, a pair of Mindanao bleeding heart pigeons arrived at Jurong Bird Park from San Diego Zoo, USA, in September 2013, as part of an exchange programme. Although this pair was not known to be prolific breeders, they adjusted well to their new home and a few weeks after their arrival, they laid one fertile egg, which hatched after an 18-day incubation period. Another fertile egg was laid just before Christmas last year, which also yielded a chick.

A two-pronged scientific approach involving husbandry and diet was taken towards the successful breeding of the Luzon and Mindanao bleeding heart pigeons. The Luzon bleeding heart pigeons were placed in an off-site aviary with minimal human contact, while a specialised diet with increased protein levels provided for added nutrients during the breeding season. Although the Mindanao bleeding heart pigeons were placed in a visible public enclosure, the aviary was properly landscaped, to provide the birds with a heightened sense of security necessary for breeding. Similarly, they were also given a protein-rich diet during breeding season.

OUR ANIMAL CARE KNOWHOW

Of utmost importance in our work is the well-being of the species under our care. Beyond the daily devotion to this by our teams, our Veterinary Department also works hard to help our staff increase their expertise and become even better at their jobs. WRS seeks to share what we know about animal care at an increasing number of important conferences and meetings, and to gain and apply new knowledge from experts from around the world.



Apart from a dental check, vets also performed a semen quality check on Kai Kai. The black and white bear passed with a clean bill of health. It is hoped that he is able to mate successfully with Jia Jia and contribute to the conservation of their species.

Combined Veterinary Conference 2013

WRS co-organised with the Singapore Veterinary Association a two-day combined veterinary conference, and a one-day rabbit and rodent dental workshop and reptile endoscopy workshop, in October. The conference also involved the Asian Society Zoo and Wildlife Medicine (ASZWM), Unusual Pets and Avian

Veterinarians (UPAV) and Association of Avian Veterinarians Australasian Committee (AAVAC). Some 400 veterinarians, veterinary students and nurses attended from countries such as Malaysia, Indonesia, Thailand, Laos, Vietnam, Cambodia, Korea, Japan, Australia, UK, USA, Iran, UAE and South Africa. Six conference streams ran concurrently with 133 different topics and 60 posters. The Singapore

Zoo was the venue for the workshops.

Acquiring panda knowhow

In October 2013, vets looking after pandas in Asia came together at WRS to discuss best practices in veterinary care and medical husbandry for giant pandas. Representatives included vets from China, Thailand, Taiwan, Hongkong, Macau and Malaysia. It was a



The lifespan of polar bears in the wild is 25 to 30 years but they can live much longer under human care. Inuka was born on 26 Dec 1990; at 25 he is generally healthy except for minor age-related conditions, which are managed by the vets.

platform for vets to exchange information based on each country's experience in looking after their own pandas. Topics include reproduction monitoring, nutrition, dental issues, enrichment and husbandry issues related to clinical matters.

From 7th to 13th November 2013, a veterinarian and a panda keeper from WRS were in Chengdu, China, to attend a Panda Conference on Reproduction and Reintroduction of the Giant Panda and on Disease Prevention and Control.

Animal health checks

The Veterinary Department's

work never ends, with our team always keeping a keen eye on the health of all the animals in our collection. Preventive veterinary care which includes vaccination, deworming and regular health checks is critical to well-being of animals. On 28th March 2014 our six-year-old giant panda, Kai Kai was anaesthetised for his annual checkup, dental treatment and electro-ejaculation to check his semen quality. Radiographs and ultrasound examinations were carried out. All the routine tests showed normal results.

In October 2013, a health check was conducted for Inuka, Singapore Zoo's 22-year-old polar bear, as he enters his senior years.

Inuka was found to be in general good health for his age. He currently measures 2.5m from nose to tail, and weighs 532kg. The hour-long medical examination included dental, aural and paw checks. Blood results show no abnormality in his kidneys and liver. There are some warty growths on the underside of his tongue, and a biopsy was done to confirm if they are benign and can be left alone. Inuka's teeth also needed some attention, which was to be expected at his age. X-rays of his lower limbs confirmed what his vets have suspected for some time that he has mild arthritis on his ankle and wrist joints. The vets prescribed medications as required.

Enhancing Breeding Success

Performing assisted reproductive technique to enhance breeding success of selected species is an important function of the Veterinary team and an integral part of WRS' ex-situ effort in conserving threatened animals. With an additional member - an Endocrine Analyst - joining the team, its expertise in assisted reproductive technique is strengthened. Deepened the expertise further, Dr Janine Brown, Reproductive Physiologist,

from Smithsonian Conservation Biology Institute and her technician, Joanna Wright, were engaged for two weeks to train the Endocrine Analyst and other Veterinary staff on endocrine testing.

Reproductive specialists Dr Thomas Hilderbrandt and Dr Robert Hermes from Leibniz Institute for Zoo and Wildlife Research were engaged to conduct reproductive ultrasound examinations on

five of our female elephants and on our two female Indian rhinoceros over a period of a day.

36 year-old female Indian rhinoceros "Gomati" was anaesthetized to conduct an ultrasound of her reproductive tract. At the same time, a radiograph of her feet was carried out. She recovered uneventfully from the anaesthesia even though there was a high risk due to her age.



Zoo vet Dr Abraham performing an ultrasound scan on one of our female elephants. Investigation of this nature provides valuable information on the health of the reproductive system of our animals.

CONSERVATION & RESEARCH

This year, WRS continued its investment in building up its international thought leadership in preserving and conserving the precious biodiversity of planet Earth. WRS hosted five workshops and conferences, over ten public events and supported many projects. The focus on species that are native to Singapore and the Asian region was intensified.

Working with Conservation Partners



The Sumatran rhino is one of the most endangered animals on Earth. There are fewer than 200 Sumatran rhinos left in the world.



Over 100 delegates from different parts of the world met at the Sumatran Rhino Crisis Summit to map out strategies to save the Sumatran rhinos.



The ploughshare tortoise at Singapore Zoo was symbolically engraved to raise awareness of the plight of the species, which has been severely threatened because of poaching for the illegal pet trade

Save the Sumatran rhino

The Sumatran Rhino Crisis Summit was held at the Singapore Zoo in April 2013. Over 100 delegates from around the world discussed the future of the Sumatran rhino and developed an emergency plan to prevent its extinction. The Land Empowerment Animals People organisation facilitated the summit, with examples from previous conservation successes (such as with African rhinos and the Californian condor). A public seminar to raise awareness of the plight of rhinos drew over 60 participants from the Agri-Food and Veterinary Authority, Wildlife Conservation Society, National Parks Board, National University of Singapore and Banyan Tree Global Foundation.

Tattoo the tortoise

Tattoos were called into play in the global campaign for preserving biodiversity, when conservation organisations fighting to save one of the world's most threatened tortoises from poachers resorted to a drastic measure – engraving identification codes onto the animals' shells to reduce their black market value. Found only in north-western Madagascar, the ploughshare tortoise is critically endangered and only an estimated 400 adults remain in the wild. Engraving a tortoise's shell makes it less desirable to traffickers and easier for enforcement agencies to trace.

Four organisations – WRS, the wildlife trade monitoring network TRAFFIC, Durrell Wildlife Conservation Trust and Turtle Conservancy – came together to hold a "Tattoo the Tortoise" event in December 2013 at the Singapore Zoo to raise awareness of the plight of the ploughshare tortoises and to build support to fight trafficking of the species. Dr Tsanta Rakotonanahary, a veterinarian from the Durrell Wildlife Conservation Trust, engraved the ploughshare tortoises,

which were confiscated from smugglers by the Agri-Food and Veterinary Authority of Singapore in 2009 and donated to Singapore Zoo. It is hoped that the pair will breed and establish an assurance colony in Singapore Zoo.

Ploughshare tortoises are prized for their beautiful high-domed shells. Although fully protected by legislation, they are being pushed closer to the brink of extinction due to illegal collection and export to meet the international demand for the pet trade, especially in Southeast Asia, where they are sold in markets particularly in Indonesia, Malaysia and Thailand.

Freshwater crab conservation roundtable



Johora singaporensis is Singapore's very own freshwater crab, found nowhere else in the world. The inaugural Conservation Roundtable took us one step closer to protecting Singapore's nature heritage for future generations.

Experts gathered in Singapore in March 2014 at the inaugural Roundtable on Freshwater Crab Conservation with special reference to *Johora singaporensis*, to work out how to save the critically endangered freshwater crab, which is among the 100 most threatened species in the world. Found only in Singapore and first discovered and described in 1986, it grows up to 3cm across the carapace (shell) and up to 5cm with legs stretched out. It performs an important role in the proper functioning of hill streams by helping in nutrient recycling, and is potentially an indicator of pollution and climate change.

The conference, attended by 40 participants, was organised in partnership with the National University of Singapore's Department of Biological Sciences, National Parks Board and the International Union for Conservation of Nature. A public seminar shared the roundtable outcomes, which include suggestions and actions for implementation of a conservation plan for *Johora singaporensis*.

First-ever pangolin conference



Pangolins are anteaters with 'scales', which are actually modified hairs. They can be found in Asia and Africa. Of the eight species of pangolins, six are threatened by the illegal trade.

There is renewed hope for the threatened pangolins, with WRS partnering the International Union for Conservation of Nature Species Survival Commission (IUCN-SSC) Pangolin Specialist Group to hold the first-ever global conference for some 50 researchers in Singapore in June 2013 on these shy, nocturnal creatures which for years have been under threat from poachers for their meat and scales. Over the years, Night Safari finetuned husbandry methods and achieved a global first: The world's first institution to breed successfully and raise the Sunda pangolin under human care. .

While they may look like walking pine-cones, pangolins, or scaly-anteaters as they are also known, are one of the most trafficked mammals in Asia, and increasingly, in Africa. Globally, they are illegally traded in the tens of thousands each year, especially to China and Vietnam where they are considered a delicacy and their scales used in traditional medicines.

Themed 'Scaling up Pangolin Conservation', the four-day conference aimed to devise an overarching conservation strategy to be a global voice in the protection and conservation of pangolins, improve conservation efforts with specific and measurable initiatives, and provide input into formal IUCN Red List assessments to reassess their status to further protect the species. The conference is part of WRS



Pangolins are heavily hunted and illegally traded mainly for their scales, which are believed to cure anything from skin diseases to impotence. Pangolin foetuses are also used to prepare tonic brews.

Conservation Fund's (WRSCF) efforts to conserve endangered native wildlife, such as the Sunda pangolin. . This conference was also supported by the Zoological Society of London, San Antonio Zoo, the Houston Zoo, TRAFFIC and Ocean Park Conservation Foundation, Hong Kong.

To further raise public awareness, a public seminar was held, a series of four talks by experts – on trade in wildlife for meat and medicines by Chris Shepherd, Acting Regional Director for TRAFFIC in Southeast Asia; on new technology for addressing illegal wildlife trade by Jonathan Baillie, Conservation Programmes Director, Zoological Society of London, and Co-Chair of the IUCN-SSC Pangolin Specialist Group; on the pangolin trade in Asia by Dan Challender, Co-Chair of the IUCN-SSC Pangolin Specialist Group; and on conservation efforts in Singapore by Razak Jaffar, Assistant Curator, Night Safari.

REGIONAL PROJECTS SUPPORTED BY WRS



River terrapins in Cambodia and Myanmar

WRS and the Wildlife Conservation Society (WCS) continued joint efforts for the conservation of endangered turtles in Southeast Asia. This year, WRS supported genetic analysis of 130 critically endangered Southern River Terrapin *Batagur affinis* in Cambodia, to identify the 20 individuals most suitable to form an assurance colony for the species at Singapore Zoo. Research also commenced on the Burmese roofed terrapin *Batagur trivittata*. A team from WRS participated in a field trip to Myanmar in May 2013 to collect tissue samples of 1,060 captive specimens.

1. Urgent conservation work is of paramount importance in saving this terrapin, which was once thought to be extinct until, in 2001, a very small population of nesting females was rediscovered.
2. Tissue samples of 130 Southern river terrapins were taken for genetic analysis for selection of 20 most suitable individuals to form an assurance colony for the species.



Photo by Fong Chee Wai

Apart from habitat destruction, slow lorises are hunted for the illegal pet trade. Being venomous animals, their teeth are often extracted before smugglers take them across borders.

Slow lorises and orang utans, Indonesia

In Indonesia, slow lorises and orang utans are at risk of extinction from habitat loss and illegal trade. WRS is supporting Yayasan IAR Indonesia (YIARI) to rescue, rehabilitate and conduct controlled and systematic reintroduction and translocation of these endangered primates back to their native habitats. IAR also works alongside the Indonesian Forestry Department to reduce wildlife trade, and conduct awareness programmes through the media to improve protection of wildlife.



For over 80 years, the exact geographical distribution of the Palawan forest turtle remained a mystery. The lack of information and the rarity of the turtle make conservation work in the wild all the more challenging supporting captive breeding is one way in which WRS helps to conserve the turtle.

Palawan forest turtle, Philippines

WRS is supporting a project by the Katala Institute for Ecology and Biodiversity Conservation in the Philippines to improve the captive breeding facilities for the Palawan forest turtle. At the Institute's only range assurance colony for the turtle, this project proposes landscaping of enclosures to enhance access to areas of shade and seclusion; research on breeding behaviour through regular, detailed observation; and continued efforts to determine an optimal diet.



To help save the Philippine cockatoo, WRS participates in field conservation work and ex-situ conservation by keeping these critically endangered birds in Jurong Bird Park for breeding, and as ambassadors to generate public awareness.

Philippine cockatoos

WRS helps to conserve the critically endangered Philippine cockatoo through supporting a project undertaken by Katala Institute for Ecology and Biodiversity Conservation in the Philippines. The project focuses on improving the rescue procedures of Philippine cockatoo and to enhance rehabilitation efforts so as to increase the number of birds suitable for release and reintroduction. The project also works to better present the Philippine cockatoos to members of the public for better understand of conservation needs and more effective conservation messaging.



WRS funds a study to gather information about the habitats of the Palawan pangolin. The study involves the local community through interviews with some 165 hunters and farmers.

Palawan pangolins, Philippines

WRS is funding a study on the Palawan pangolin, which is threatened because it is in high demand for international trade of skin, scales and meat. Some 165 hunters and farmers from 16 municipalities in Palawan, Philippines, were interviewed on observations of pangolins. They named secondary lowland forest, primary lowland forest and agricultural ecosystems as the primary habitats of pangolins. This has helped identify a methodology for the detailed survey of pangolins in this region. It is expected that this study will contribute to the evidence needed to change the Palawan pangolin's IUCN status from "near threatened" to "vulnerable".

Wild elephants, Malaysian rainforest

This project will be the first to study the social organisation of Asian elephants in the tropical rainforest. It proposes to use camera traps to identify individual animals visiting mineral licks in Belum-Temengor Forest Complex in Perak, Malaysia, to study the social organisation and stability of wild elephant groups in the forest. The results will be helpful to design the desirable composition of Asian elephant social groups under human care, to understand population trends in the wild, and to design science-driven management methods, especially in relation to translocation policies.

Combating Bali's illegal wildlife trade

WRS is supporting an inaugural assessment project by TRAFFIC, the wildlife trade monitoring network, on illegal wildlife trade in Bali. This will ensure better understanding of the issues, to assist enforcement efforts to eliminate the illegal trade of wildlife in Bali, including in ivory and dugongs. Peer-reviewed reports produced by TRAFFIC have led to increased pressure on the countries identified as not taking action to shut down illegal trade. The information gathered will be used widely to inform decision-makers and raise public awareness.

Most threatened species, Java and Sumatra

WRS is supporting the Cikananga Conservation Breeding Center on a project to expand existing captive colonies of four Javanese and one Sumatran endemic species in agreement with IUCN priorities. The effort is to reduce the very high risk of short-term extinction of the Javan warty pig, black-winged starling, Javan green magpie, rufous-fronted laughing thrush and Sumatran laughing thrush. This year saw the continuing ongoing trial reintroduction of black-winged starlings, and research on the conservation needs and options for the other four species.

Tonkin snub-nosed monkey, Vietnam

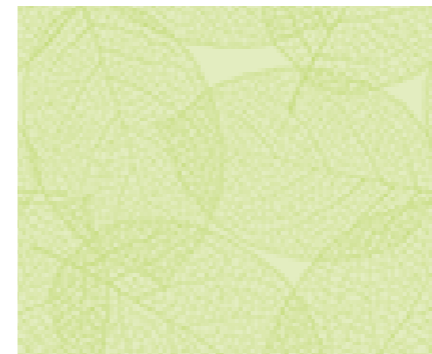
WRS continued to support Tonkin snub-nosed monkey conservation this year, an ongoing effort since 2009. This monkey is a critically endangered species, in danger of extinction due to its very small remaining population. Having established effective monitoring and protection of a sizable population in Khau Ca, Vietnam, over the past few years, the project will move towards another critical phase, to examine their population genetics to assess extinction risks due to inbreeding pressure. The project team will also maintain continued presence of park rangers to deter encroachment and poaching.

Primates and mammals, Borneo

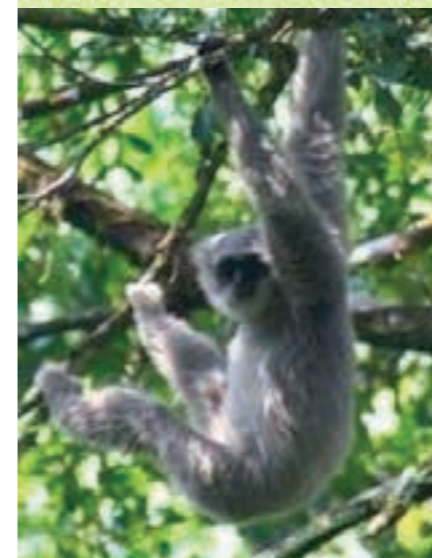
WRS is supporting a study to assess the benefits and consequences of the construction of the Bakun Hydroelectric Dam in Sarawak on primate and mammal species, as well as the socio-economic impact on the resettled indigenous people. The operation of the concrete-face rock-fill dam



The Tonkin snub-nosed monkey is one of the top 25 most endangered primates in the world. By provide funds to patrol its habitat to prevent illegal logging and poaching, WRS is helping to prevent its extinction. The good news – about 104 snub-nosed monkeys have reproduced successfully. Just in 2103 alone, there were 12 newborn.



The photos show destruction of the habitat of the proboscis monkey as a result of fire and conversion to palm oil plantations.



By supporting a project that grows coffee in the shade and therefore eliminates the need to destroy the forest for cultivation, we are helping to preserve the home of the Javan gibbon and other species. At the same time, the project benefits the locals by generating income and empowers the community in protecting their nature heritage.

from 2011 involved the flooding of primary rainforests and indigenous lands where old hilltops have now become landbridge islands. The indigenous Orang Ulu has since been resettled but much less is known about the status of native animals that once inhabited these forests. This study provides important insights into how such development initiatives affect the natural environment and help improve policy decisions regarding the tradeoffs between economic benefit and environmental conservation.

Proboscis monkeys, Borneo

This study to reassess the status and extinction risk of the endangered and endemic proboscis monkeys in Sabah, East Malaysia, and Balikpapan Bay, Kalimantan. WRS has been committed to proboscis monkey conservation since 2004, with the first comprehensive statewide survey of the species' population and conservation status conducted in Sabah, East Malaysia. Trends of habitat loss observed a decade on indicate that the species may be declining more rapidly than expected. At the XXIV International Primatological Society Congress Meeting in 2012, increasing threats to the proboscis monkey were recognized, with the species listed amongst 16 highly threatened species that fall just outside of "The World's 25 Most Endangered Primates".

Coffee and primates, Java

The "Coffee and Primate Conservation" project in Sokokembang, Central Java, Indonesia seeks to better conserve Javan gibbons and other primate species through engaging the local community to improve the production of shade coffee for economic subsistence. This method of growing coffee preserves natural forests and minimises natural habitat exploitation by local inhabitants. The local community is also empowered to participate in direct conservation activities such as participatory forest patrol and scientific research, and raising conservation awareness. This project is run by a local Javanese team dedicated to the protection of their own natural heritage.

REGIONAL PROJECTS SUPPORTED BY WRS



Many fruit-eating animals help to regenerate forests by passing out the seeds of the fruit they eat, thereby dispersing them at suitable locations for germination.

The civet and seed dispersal

The common palm civet is native to Singapore and may play an important role in seed dispersal for forest species. To better understand its feeding ecology, WRS is supporting a study to examine common palm civet gut passage time and effect on seed viability and germination success and seed dispersal processes. This effort complements a WRSCF-supported project to study the ranging patterns of the species.

Colobine monkeys' diet and physiology

Colobine monkeys are historically difficult to maintain in captivity due to their specialised diet. They have special digestive adaptations so they can survive mainly on leaf diets. WRS is supporting a study to examine the diet and physiology of Colobine monkeys at Singapore Zoo to contribute to better knowledge on the digestive patterns of these primates and to aid management of their dietary husbandry.

PROJECTS SUPPORTED BY WRS CONSERVATION FUND (WRSCF)



Photo by Wikipedia Commons/ Yathin S Krishnappa

The common rose butterfly is quite common in Singapore. Most butterflies are nectar-feeders and in the process of feeding, they help to pollinate flowers, resulting in fruit production.

Habitat enrichment for tropical butterflies by Anuj Jain

This project aims to measure the effect of habitat enrichment on butterflies by first measuring the existing resources available and their use across habitat types. Thereafter, additional resources in the form of potted larval host and nectar plants are placed at the site and the response of the butterflies are evaluated by the difference in recruitment of larval host plants, larval survivorship and adult abundance.



A common palm civet caught on camera trap installed on the island of Pulau Ubin.



Photo (a) shows a Reef Enhancement Unit (REU) on a reef at Pulau Satumu. REUs are made of fiberglass with calcium carbonate added to encourage coral development. Holes are cut in the wall to allow water to flow through.

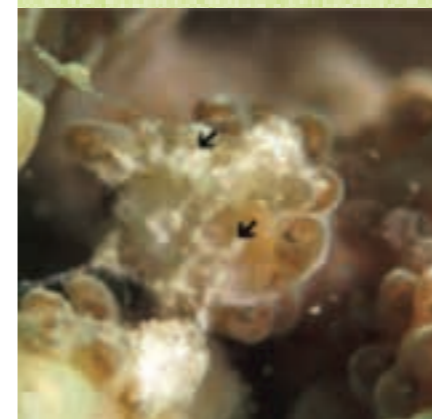


Photo (b) A colony of Acropora coral growing on the REU, an encouraging sign that the REUs are serving their purpose of enhancing coral development.

Research and Conservation of the common palm civet by Sivasothi, Fung Tze Kwan and Dr Christina Colon

This project aims to investigate the ecology of the common palm civet in urban and secondary forest environments in Singapore, including information such as home range, habitat use, feeding and seed dispersal potential.

Coral Reef Restoration by Lionel Ng Chin Soon

This project is the first to revisit the coral reef restoration efforts of the past decade so that long-term data can be obtained to assess existing approaches and support reef restoration in Singapore. This can be done by assessing the current status – growth, survivorship of naturally recruited biota on REUs (Reef Enhancement Units) as well as transplanted corals on the reefs and seawalls – to evaluate if REUs, with naturally recruited corals and transplanted corals, have established themselves onsite.

Urban ecology of bats in Singapore by Benjamin Paul Lee Yi-Hann

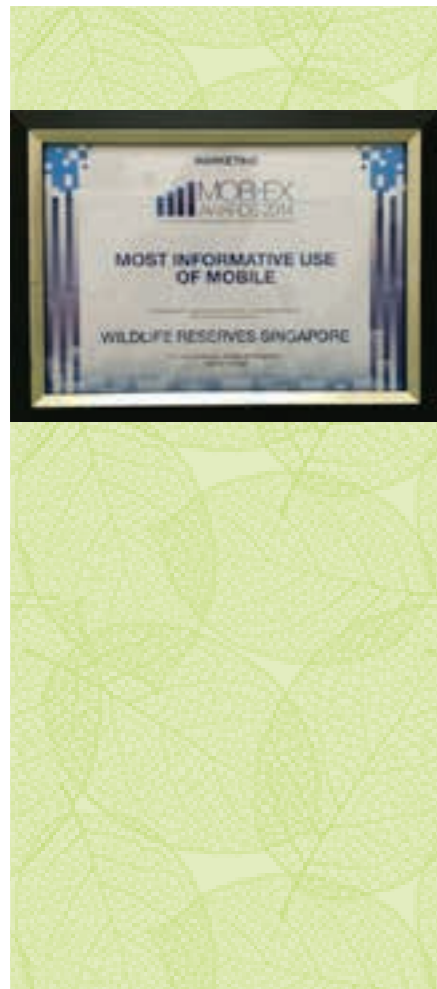
This study seeks to understand the impact of urbanisation on bat species and their interface with humans, to contribute to better urban planning that encompasses biodiversity conservation; increase awareness and build capacity for citizen science for conservation of bat species.

Spatial ecology of the reticulated python in urban Singapore by Mary Ruth Low Ern-Lyn

This study investigates the ecology of a frequently encountered large snake in a densely populated island with an urban landscape matrix (human-snake conflict). Gaining insights into the behaviour and movement patterns of translocated snakes will allow for improved wildlife management.

Long-term viability of four species of babblers of Singapore by Cros Emilie Sidonie

This research aims to analyse the genetic diversity of the Singaporean populations of four species of babblers, to determine patterns of connectivity and gene flow, and to assess the viability of the population.



“Snakes of Singapore” phone app



The ‘Snakes of Singapore’ phone app aims to encourage people to appreciate snakes as part of our ecosystem and to learn to live alongside these reptiles.

With recent trends such as more people exploring forested areas for nature walks, cycling and other recreation, there have been more reports of encounters with snakes. WRS is doing its part to help promote public awareness of snake species and of how to be comfortable with their coexistence with Singapore’s urban development. A useful awareness tool – the “Snakes of Singapore” smartphone app, funded by the WRS Conservation Fund, was launched this year. This app received the Mobex Award 2014 as the most informative use of mobile.

STUDENT PROJECTS

WRS supervised and facilitated seven student projects from Nanyang Technological University, Temasek Polytechnic and Ngee Ann Polytechnic in their final year projects in 2013, reflecting WRS’ dedication to conservation research and nurturing future science researchers.



Manatees at River Safari



Photo by Fong Chee Wai
Spectral tarsier

The projects included these topics:

- Effects of relocation on the activity pattern, social interaction and spatial use of a mixed group of manatees
- Behaviour of a pair of Asian golden cats at Night Safari
- Behaviour of spectral tarsiers at Night Safari
- Estrous cycle behaviour and reproductive pathology in an ageing female Malayan tapir in captivity at Night Safari
- Establishing the reference ranges of total and differential leukocytes and erythrocytes count for Asian elephants
- Comparative nutritional ecology of Cercopithecids (a group of old world monkeys)
- Ex-situ conservation of the rhinoceros hornbill at Jurong Bird Park

Sharing Sessions

WRS continued to generate public awareness and invest in building capacity on wildlife knowledge for WRS staff. The talks over the year included these topics:



The tokay gecko is so named because of its ‘to-kay, to-kay’ croaking calls. The demand of this reptile has skyrocketed since 2009 because of rumours that its body parts can cure Aids. To help stop the illegal trade, WRS works with TRAFFIC to generate awareness of the plight of the tokay gecko.

- The wildlife trade of tokay geckos by Dr Chris Shepherd, Deputy Regional Director for TRAFFIC (the event was funded by WRSCF and Bayan Tree Global Foundation)
- The future of the proboscis monkey and the threats they face in Kalimantan, by Dr Stanislav Lhota, Czech University of Life Science, Prague.
- The current status of giraffes in Africa and latest findings of genetic analysis regarding classification of subspecies, by Dr Julian Fennessey, one of the foremost experts on giraffes and co-chair, IUCN SSC Giraffe and Okapi Specialist Group.
- The ecology, distribution and feeding behaviour of the Yunnan snub-nosed monkey in their natural habitats, and the threats and concerns faced, by Dr Cyril Grueter.
- How palm oil plantations in Indonesia are increasing deforestation, hunting and illegal wildlife trade, by Dr Karnele Llano Sanchez, International Animal Rescue Foundation, Indonesia.

TOUCHING HEARTS, INSPIRING ACTION

This year, WRS continued to ensure that its attractions and activities connected well with the growing awareness of, affinity with, and affection for, wildlife among the parks' visitors. School attendance for the four parks totaled 192,560, the highest in 10 years, partly due to the opening of River Safari, which has further expanded the "integrated reserves" concept of WRS. Many events with strong conservation messages were held throughout the year, to cater to the many different audience segments and interest groups.

Artists go wild

Art and animals came together when Night Safari's "Art Seen & Herd!" exhibition was held in June 2013 in celebration of World Environment Day. Visitors were treated to a



'Art Seen & Herd' empowers the artists to do their part for wildlife and redefines how the conservation message can reach the community by efforts of the community.

visual bonanza as four of Singapore's street artists let their imaginations go wild with artworks inspired by threatened animals, to spread awareness about poaching and dwindling wildlife populations.

The four artists – Michael Ng ('Mindflyer'), Samantha Lo ('SKLO'), Luthfi Mustafah ('The Killer Gerbil') and Eman Jeman ('ClogTwo') – also shared the inspirations and ideas behind their works, as well as the conservation messages they hoped to convey to visitors.

Animals featured in the exhibition were species often hunted in the wild, or farmed, to feed continuing consumer demand for animal parts for use in traditional medicine, despite the presence of synthetic substitutes or there being no real evidence of that these treatments work.

National pride flies high

National pride flew high in a new way, when Jurong Bird Park paid tribute to Singapore's native birds with a two-day festival to mark the inaugural Native Birds' Day on 23 November 2013. The event was held with the support of National Parks Board (NParks) and Nature Society of Singapore (NSS).

The event aimed to raise awareness of the importance of native birds and how the public can help protect them,

through a host of engaging activities including an expert forum, a bird photography trail, a photography exhibition and fun activities for children. The more than 100 species of birds native to Singapore include the white-rumped shama, emerald dove, Oriental magpie robin, green pigeon and Oriental white-eye.

As part of Native Birds' Day, Jurong Bird Park and NParks joined hands to place a pair of pink-necked green pigeons and a pair of black-naped orioles into a purpose-built rehabilitation aviary at Ang Mo Kio Town Garden West to acclimatise them for eventual



Dr Luis, Assistant Director, Avian, releasing a black-naped oriole in Ang Mo Kio Park Town Garden West. This bird and three others, were rescued by a member of the public and brought to Jurong Bird Park. After rehabilitation, they were strong enough to fly free in the wild again.

release into the wild. These two pairs of native birds were taken to Jurong Bird Park by a member of the public. Veterinarians rehabilitated and nursed them back to health, including hand-raising them until they were old enough to eat on their own.

Ex-Situ and In-Situ Conservation Education – Making The Connection

Wildlife Reserves Singapore works with many partners to promote conservation education. The eco-trip to Balikpapan organized jointly with the Institute of Technical Education College West, was one such initiative to provide youths with an opportunity to learn about ex-situ conservation work and subsequently made the connection with in-situ conservation through working with a primatologist in the field.

The trip comprise three phases, the first was a full-day programme in Singapore Zoo, during which the students gained insights into Wildlife Reserves Singapore's ex-situ conservation work. This was followed by a 10-day eco-trip during which the students participated in surveys of proboscis monkeys, Irrawaddy dolphins, bats and mangrove vegetation. They also made field trips to a primary rainforest and sun bear education centre. To ensure that the participants appreciate the impact of conservation issues on the local community, arrangements were made for them to interact and work with the fisherman in Balikpapan for half a day.

The participating students not only gained insights into conservation field work and related issues but also were inspired to do part their part for the environment, as one student puts it :

"Despite the simplicity of their life, the villagers all seemed very happy. It makes me think about what I have and how I appreciate them now. I will not litter to have a better environment."



A great learning journey for the students as they navigated through a sea of mangrove roots to learn about the important role of mangrove forests in a coastal ecosystem.



Primatologist Stanislav Lhota sharing the ecology of the mangrove forest with the students, who came to appreciate how the health of mangrove forests is closely intertwined with the survival of wildlife and humans.



A researcher measuring the wing span of a bat during a bat population survey, which the students of ITE College had the opportunity to observe during their eco-trip.

Stories of the Zoo

WRS partnered the Singapore Centre for Chinese Language to organise the inaugural National Competition for Story Writing at the Zoo. The launch event featured talks on creative writing, sharing of anecdotes in the Zoo and guided tours around the park for the public. The objective is to encourage writers to find inspiration in Nature and wildlife and feature them prominently in their work. This is part of WRS' strategic positioning as a "living classroom" for promoting the Chinese language.

Conservation Education Through Volunteers

The volunteer community continued to strengthen with increased numbers of regular volunteers viz. docents and conservation ambassadors joining the WRS family to share the wonderment of nature with visitors and spread the conservation message.

Together, the WRS volunteer community devoted some 13,000 hours across four parks, helping to project a powerful voice for wildlife. Apart from their regular volunteer duties, many came forward to assist during the numerous in-park and outreach activities to create meaningful wildlife experiences for park visitors as well as members of the public beyond the gates of WRS parks.

In-park and Outreach Activities assisted by volunteers :

- Zoolympix 2013
- Festival of Biodiversity @ Vivocity
- Panda Party
- Coastal Clean Up
- Children's Day
- Native Birds Taking Flight
- Istana Open House
- Tattoo the Tortoise
- Penguin Party
- Year of the Horse Awareness Booth
- Pangolin Day



Regular volunteers as well as ad-hoc events volunteers help to enhance visitor experience through interaction and engagement in conservation messaging.



Apart from having the opportunity to engage visitors, volunteers also enjoy close interaction with WRS staff through exclusive events organized to ensure they gain new knowledge and deepen their sense of belonging with the organization.

A total of 1,510 volunteers served at WRS' parks during the reporting year:

VOLUNTEER GROUP	NO.	REMARKS
Docents	188	<ul style="list-style-type: none"> • Adults (21 yrs & above) • Two-month training • Mainly ranger station activities & guided tours at three Parks.
Conservation Ambassadors	309	<ul style="list-style-type: none"> • Youth (15 yrs & above) • Two-day training • Serve as guides at various exhibits in three Parks
Wildlife Buddies	830	<ul style="list-style-type: none"> • Students (organised school groups led by teachers) • One-day training • Serve as guides or station masters for fellow students, international students on exchange programme, disadvantaged kids, the elderly and physically-challenged.
Work Experience Programme	87	<ul style="list-style-type: none"> • Students, at least 15 years old • Attached to Education, C&R, Zoology, Veterinary, Avian
Zoology Volunteers	53	<ul style="list-style-type: none"> • Candidates of Corrective Work Order. • Collaboration with Ministry for Community Development, Youth and Sports
Vet Volunteers	43	
Total	1,510	

DELIVERING GREAT WILDLIFE EXPERIENCES

What motivates our staff most is ensuring that our visitors have as satisfying an experience as possible at our attractions. This year, WRS continued to stage memorable occasions and wildlife encounters. Engaging experiences enhanced favourite spots in our parks for our longtime visitors and forged connections with new audiences. Once again, the dedication and excellence of WRS staff was rewarded with significant industry recognition.

Pandas celebrate one year in Singapore

Giant pandas Kai Kai and Jia Jia continued to delight visitors to River Safari when they marked their one-year anniversary in Singapore since their arrival on 6 September 2012. It was a triple celebration as September is also the month of their birthdays, with Jia Jia turning five on 3 September and Kai Kai turning six on 14 September.

Visitors enjoyed more "Pandamonium" festivities at River Safari, and 10 lucky "Panda Party Planners" got to go behind the scenes with panda keepers to prepare a special birthday cake and toy for Kai Kai and Jia Jia.



▲ Amidst the 'pandamonium' festivities, visitors get to learn more about the giant panda and conservation issues in the Yangtze Basin where the white and black bear and many other endangered species live – all thanks to the help of many volunteers.



Malayan tigers' new home

Animal viewing at Night Safari became even more majestic, when the Indo-Malayan Relocation project finally came to fruition with the completion of the new Malayan tiger, Asiatic black bear and thamin exhibit.

The three-year-long project aims to deliver a more impactful end-of-tram ride experience for guests, culminating with an impressive view of the Malayan tigers close-up behind glass panels in a beautifully landscaped temple-ruins setting.



The new Indo-Malayan zone at Night Safari offers, among other experiences, a close-up view of the majestic Malayan tigers. Constant rejuvenation of all four WRS parks ensures that visitors will always be treated to refreshing and meaningful wildlife experiences.

Year of the Horse – indeed

Singapore Zoo made this year's Lunar New Year of the Horse one to remember with a parade of eight falabellas, exquisite miniature horses originating from Argentina. The festive parade allowed visitors to admire these unique horses close-up on a walk between Rainforest Kidzworld and the festive flower-laden Garden With A View. The falabella is known as the first and original miniature horse breed, a true purebred with a unique and historic ancestry that is now highly prized.

Waterfall Aviary relaunched

Waterfall Aviary was relaunched in January 2014 at Jurong Bird Park. The refreshed Aviary is home to the world's first man-made waterfall and teams with avian life with more than 600 birds from over 50 species. Since the 1970s, the much-loved spot has welcomed visitors including many dignitaries, such as Queen Elizabeth

II and the Duke of Edinburgh in 1972, to Jurong Bird Park for an immersive experience of marvelling at birds flying freely in one of the world's largest walk-in aviaries.

Today, the 30m-tall waterfall is still the world's highest inside an aviary. The walk-in aviary houses a dazzling variety of birds, among which include the endangered sun conures, the vulnerable common crowned pigeons, pied imperial pigeons and Von der Decken's hornbills.



Mr Desmond Lee Ti-Seng, Minister of State, Ministry of National Development released some endangered sun conures into the two-hectare Waterfall Aviary, bringing the total number of birds there to more than 600.

More appreciation for WRS

It was another good year for industry and public recognition for WRS' work in contributing to the quality of life in Singapore and to its attractiveness to visitors.

Singapore Zoo was the 2013 Medallion Recipient for Organisations, a pinnacle honour presented to the most outstanding organisation that has demonstrated the highest levels of customer satisfaction and organisational service excellence.

These awards are organised by agencies of the national GEMS (Go the Extra Mile for Service) Up movement and

aims to catalyse and inspire a transformation in service amongst organisations in Singapore and to produce worthy role models for all to emulate. GEMS Up Movement is represented by five agencies – SPRING Singapore, Singapore Tourism Board, Singapore Workforce Development Agency, National Trades Union Congress and the Institute of Service Excellence at Singapore Management University.

At the Singapore Experience Awards 2013, hosted and presented by the Singapore Tourism Board, WRS went

one better than the year before by earning three major accolades: Night Safari was again recognised for providing the 'Best Visitor Attraction Experience', making this its 11th honour in this category; Singapore Zoo's Wild Discoverer Tour was a joint winner for Best Travel Experience; and WRS won the Most Innovative Marketing Initiative with 'Pandamonium Hits Singapore'. Singapore Zoo was a finalist for the 'Best Visitor Attraction Experience' category.

For individual awards, Erniewaty Binte Rostam from Operations Department

at Jurong Bird Park and Haniman Boniran from Education Department were finalists for the STB Singapore Experience Award, Best Customer Service in Visitor Attraction category. This year saw 82 finalists vying for 27 awards. Finalists were

nominated by industry players and experts, with winners picked by a panel of judges.

A total of 104 staff members were awarded the Excellent Service Award (EXSA), with 65 receiving the silver award, 28 gold and 11 star. EXSA is a national award given by the Association of Singapore Attractions and SPRING Singapore to recognise individuals who deliver quality service in the attractions sector.

Erniewaty Bte Rostam and Haniman Boniran from Operations and Education Departments respectively did WRS proud by coming in as finalists for the STB Singapore Experience Award, Best Customer Service in Visitor Attraction.

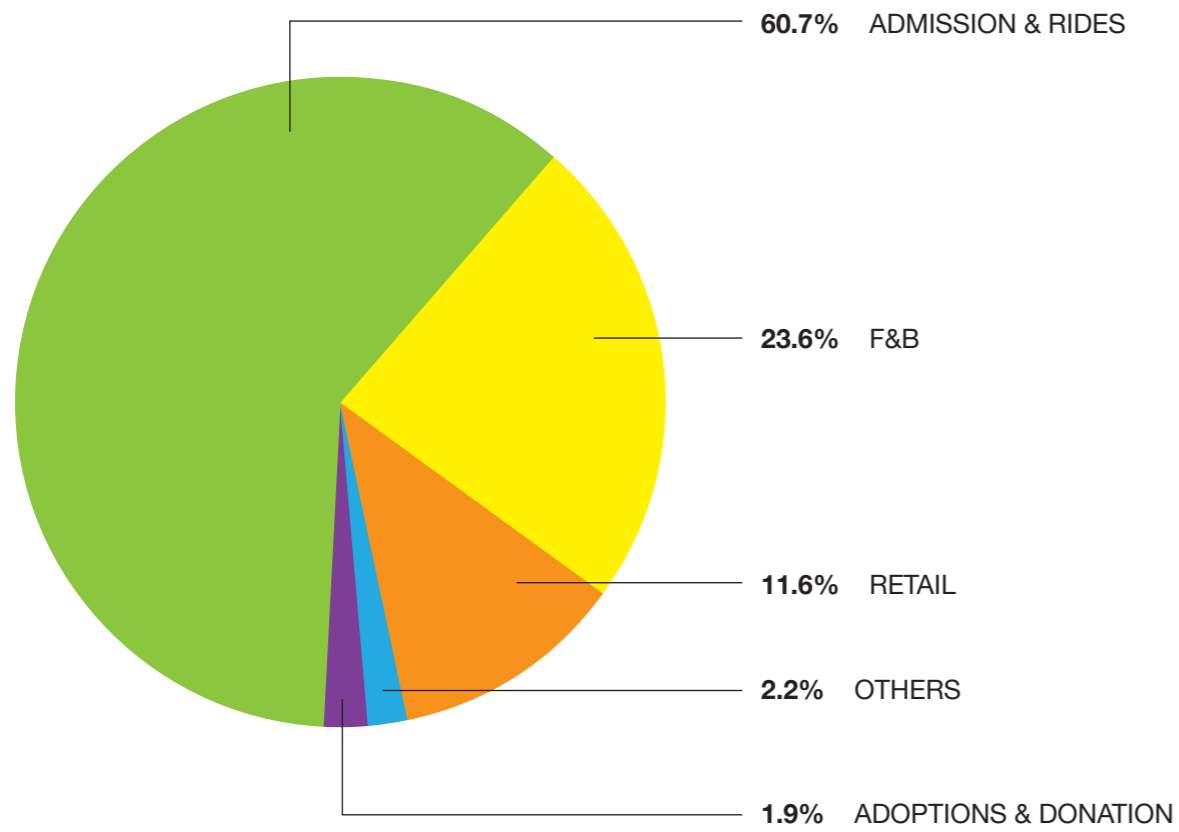


Singapore Zoo's Wild Discoverer Tour was the joint winner for Best Travel Experience, STB Singapore Experience Award

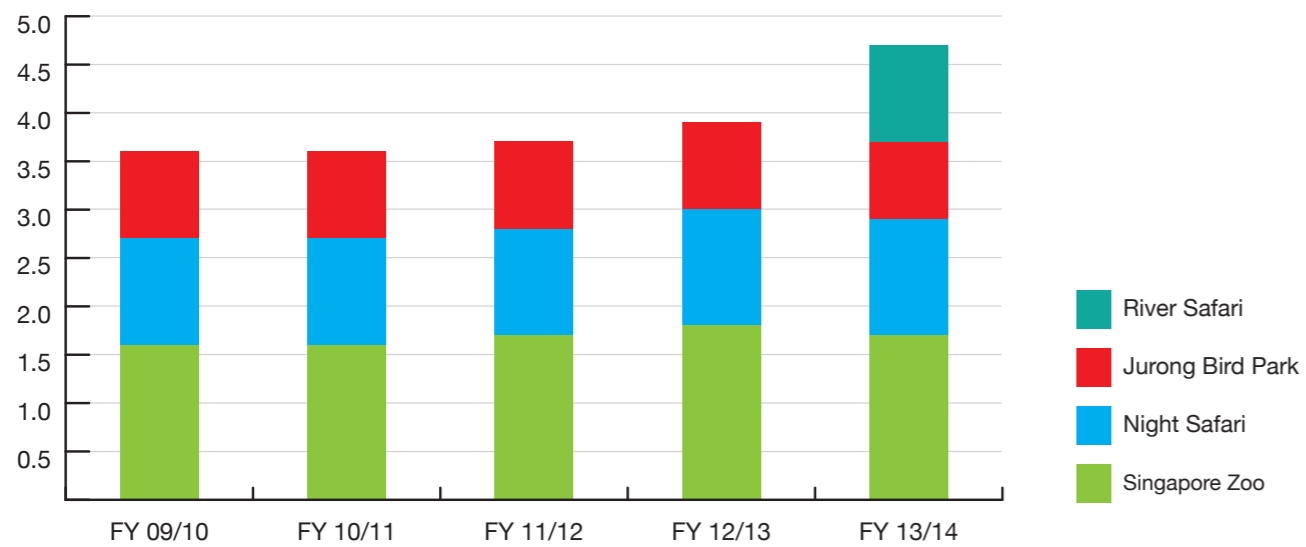


FINANCIAL & ATTENDANCE HIGHLIGHTS

TOTAL REVENUE FY 13/14 \$145M



TOTAL VISITORS (IN MILLION)





"Our task must be to free ourselves... by widening our circle of compassion to embrace all living creatures and the whole of nature and its beauty."

Albert Einstein

YEARBOOK 2013-2014

WILDLIFE RESERVES SINGAPORE

Wildlife Reserves Singapore Group



www.birdpark.com.sg

www.nightsafari.com.sg

www.riversafari.com.sg

www.zoo.com.sg