

SINGAPORE: AN URBAN HUB OF INNOVATIVE ZOOS

Words by Ken Kawata. Photos by Konstantin Yordanov

SINGAPORE IS LOCATED just north of the Equator and characterised by a tropical climate, temperatures range from 23°C to 32°C (73°F to 90°F) and the annual rainfall is around 2,110mm (83 inches). Its land area is 734 km² (c. 283 m²) which is slightly smaller than that of another famous zoo city, Hamburg in Germany. Streets are spotless and safe here. In March 2024 I had an opportunity to visit this economically prosperous place for the first time and review its zoological institutions. Luckily every day was sun-splashed during my visit. I've used the present tense rather than the past tense here to transmit my vivid experiences in this community.

S.E.A. AQUARIUM

The Island of Sentosa, a large entertainment complex of attractions such as Universal Studios, is home to this aquarium. Previous aquariums have existed in Singapore, going back more than half a century. Sally Walker wrote in 2022: "It was 1955 before the Ministry of National Development opened the Van Kleef Aquarium in Central Park. This aquarium remained open until about 1993. Currently, the only aquarium is Underwater World, opened in 1991 on Sentosa Island, which houses a collection of primarily local tropical marine animals". Underwater World was noteworthy for holding a female Dugong, 'Gracie', and I had hoped the species might be represented in the new aquarium – but alas this sirenian is nowhere to be found. Underwater World closed in 2016, after operating for a few years alongside the S.E.A. Aquarium (which opened in November 2012). As Nayer Youakim authored a full report on this aquarium (see references, Youakim, 2016–2017), this account concerns my personal impressions...

Admission for adults is \$44 Singapore with no senior discount (one Singapore dollar equals 0.74 \$US). My first step here is to question the aquarium attendants: a map, brochure, postcards or guidebook? Unfortunately the answer is "no" – it turns out that all of the places I was visiting had discontinued printed material a couple of years ago so visitors now rely on

internet access on their portable devices. (There is one exception, but more on that shortly.)

Into the building, where unlike the surrounding operations, not much commercialism is noticeable in the aquarium. The visiting public, as in other institutions here, is cosmopolitan, representing a wide variety of humanity in terms of race, religion and ethnicity (although Africans stand out by their absence). Within a few minutes you hear several languages. Labels and signs are bilingual, English and Chinese (presumably Mandarin). As for exhibits, in a large marine tank two manta rays and a hammerhead make an introduction. Universally popular jellyfish, along with a couple of moray eels, attract a crowd, not to mention a large shark tank with a walk-through tunnel. Yet the overall impression is that the exhibit design is more of a traditional one commonly seen worldwide and, in that sense, there appears to be little that is unique.

[Editor's Note: In July 2025 this aquarium changed its name to *The Singapore Oceanarium*]

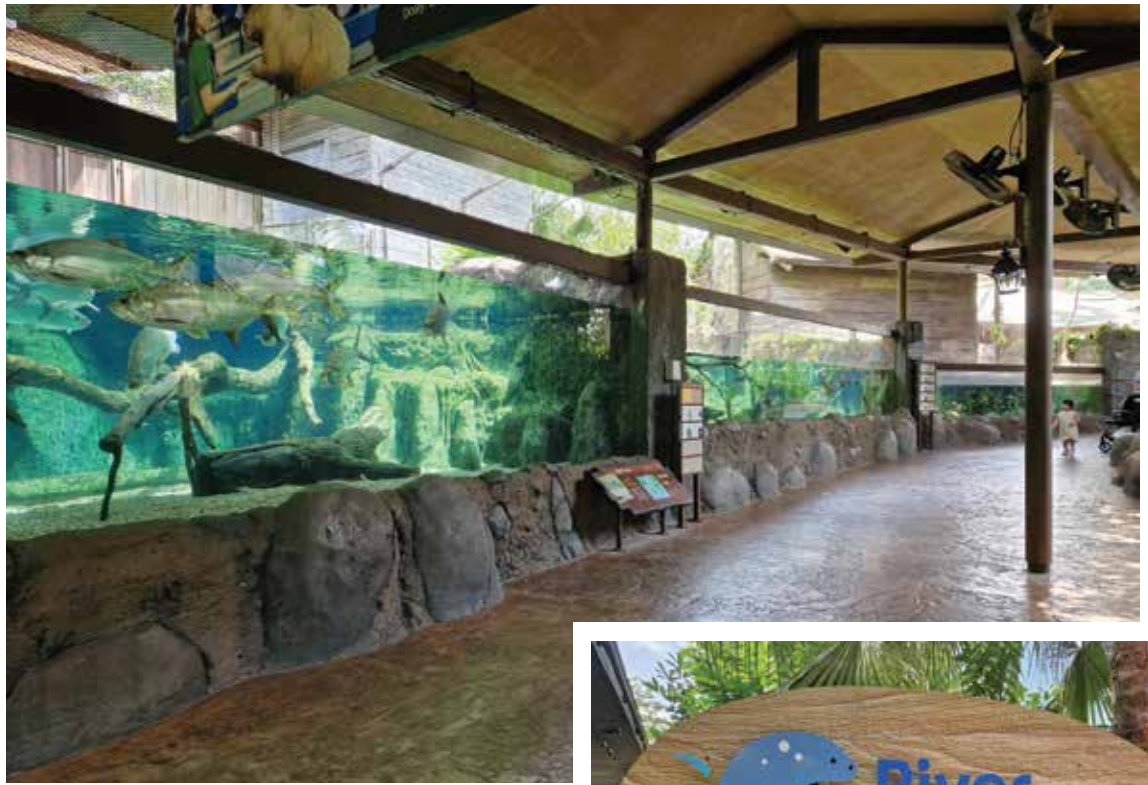
RIVER WONDERS

A long, covered boardwalk to keep visitors from sun and rain sets the tone for the exhibit design for the walk-through area, and additionally a 10-minute boat ride is offered. Before reviewing the permanent residents, however, there are two visiting specimens that require special notice. A large, air-conditioned indoor enclosure, a temporary set-up, exhibits – what else? – two visiting Giant Pandas, but first there is an introductory Red Panda enclosure. In a well-landscaped area the giants are quite active, pacing the whole space and munching on bamboo. Popular as they may be their presence does not seem to cause 'panda-monium' as seen in America and Japan some decades ago. Following them, a gift shop awaits visitors.

Back to the permanent exhibits: signage is now predominantly in English with a few exceptional multi-lingual considerations. Some areas have themes such as the Mekong River. Some memorable animals: Mekong Giant Catfish (*Pangasianodon gigas*); sturgeon



White Alligator Gar
at The Singapore
Oceanarium



River Wonders interior and entrance sign

(*Acipenser* sp.) and at least six Yellow-billed Storks (*Mycteria ibis*), not to mention two Giant Otters. Moving on to more aquatic tanks, large and small, they hold a familiar lineup, including electric eels, pacus, arapaimas, and four manatees with no species label. They are presumably *Trichechus manatus*.

To avoid a walk in the tropical sun and the high humidity, a 10-minute boat ride provides convenient viewing, although some species must be behind lush vegetation, a hide-and-seek game, so to speak. Some are in clear view: Collared Peccary, Black Howler, Common Squirrel Monkey, Cotton-top Tamarin, Giant Anteater and Brazilian Tapir, among others.

SINGAPORE ZOO

In 2000 Sally Walker and Kees Rookmaaker gave us a historic perspective of zoos in this city (see references): “The city of Singapore is often remembered by natural historians for its founder Stamford Raffles (1781-1826), a dynamic administrator and naturalist, who was also one of the founders of The Zoological Society of London... Bernard Harrison, Director of Singapore Zoo, points out that although a number of the older zoos and menageries in Asia were established by European influence, they were not model zoos either in design or operation. They were designed during the colonial period by Europeans for Europeans, without taking into consideration the myriad tropical factors, or that local people would be the primary users for years to come”. At its roots, “Singapore’s original menagerie began as part of a botanical garden that the Agri-Horticultural Society maintained. The Society was formed in 1859, but soon lacked sufficient funds and public support to maintain its botanical garden. In 1874, the society turned its property over to the government”. As of 1876 it had a zoological section with large mammals such as a rhino, a Sloth Bear and kangaroos as well as many birds. The government closed the menagerie in 1903. Yet “the idea of founding a proper zoo never really died. However, it was 1968 before a successful



effort was made to establish a new zoo” (Walker, 2022). For its birth, “...a great deal of planning and innovation went into the now famous Singapore Zoo, which was opened to the public in 1973. Harrison points out that the zoo was set up by interested citizens of the city as a new non-profit company, and was not passed down from an earlier colonial government. The zoo specialised in mammals and reptiles, with birds and fish getting lesser priority because of the birdpark and aquarium already established in Singapore” (Walker, 2000). It might be noted at this point that independence of the Republic of Singapore took place on 9 August 1965.

Yet there was another zoo in Singapore, Puggol Zoo, which became quite popular. Its 1920s inventory showed such animals as orangutans, anoas, a Tiger and Sumatran Elephants. After the Japanese invasion of 1942 the British forces occupied the land, and the zoo was never restored; the land was sold off in 1948. (Rookmaaker, 2012).

Now let’s turn to an early Monday morning in March 2024. During my visit the grounds are spotlessly clean with no rubbish anywhere. Exhibits are arranged along a meandering paved trail through a lush tropical forest. There are very few ‘hard’ barriers that confine animals, as narrow moats containing vegetation are used. Animal areas are rectangular or oblong, in other words shallow and long, so the inhabitants are not too far away from viewers. Mammals are in the front-line assemblage, particularly of the ‘ABC’ or basic stock types. This is because the avifauna is represented in another facility in town (to be discussed later). That aside, the most popular avian group of all, the penguin,



Orangutan enclosure
at Singapore Zoo

does not miss the boat. Nine or so African Penguins let you know their presence.

Concerning the zoo's mammals, larger ungulates are well represented by Rothschild's Giraffe, Grevy's Zebra and White Rhino. Pygmy Hippos are so common now, unlike the old days, but it's still nice to see them. And a welcome surprise awaits around the corner, in the shape of Babirusa.

Another popular group, the primates, makes an appearance. Here an adult male Chimpanzee is doing the usual vocalising, running around in a large space and throwing a projectile – but not at the visitors. I also hear a White-handed Gibbon. Quieter are a group of at least seven Celebes Crested Macaques (*Macaca nigra*), and Emperor Tamarins. Regarding rarity, Tim Brown, in his 2007 account, enthusiastically wrote

Proboscis Monkey at Singapore Zoo



about Proboscis Monkeys. It is a joy to see such a rarity, even from a distance.

In terms of another group, the cats, the most powerful predator of Asia, with a close tie with Asian history and culture is the Tiger. By good fortune I watch one wading into a pond; it's not every day that you see that in a zoo and I'm aware that only a small number of Felidae species don't mind dipping into water, yet how many zoos give them access to a pool, or even a bathtub? Meanwhile the other member of the ABC big cats – the 'king of the beasts' in western myth – is doing what he does best, a lion is napping. In contrast, a pack of African Painted Dogs is running around their enclosure as if competing in a race.

The zoo grounds are level, but high humidity, not just high temperature, can be relentless. So why not take a free train ride which has four stations? The narrative is informative. In a gentle female voice it uses the term "human care" instead of "captive" and mentions international wildlife conservation programmes and the zoo's participation in them in plain language with no hint of lecturing or preaching.

With tall and short trees in abundance in the forest, the dividing line between large animal enclosures and their surroundings is often blurred. Yet the zoo forest is not natural *per se*, it has been totally restructured by removing some vegetation and adding more. But how large is large enough for captivity (or 'confinement' if you so choose)? The subject of enclosure size can become rather philosophical. Becca Rothfeld writes about minimalism versus excess (see references). She once saw a man in a restaurant who ordered pasta again and again *because his plate wasn't big enough*. She elaborates – everything in this world is, in fact, too small. (Rothfeld, 2024; italics by KK).

In zoos we cannot provide wild animals the same amount space they have *in situ*. That fact raises the age-old question about the size of enclosures and the topic of the animals biological requirements surfaces every

now and then. I recall the thoughts of Heini Hediger (see references), and the essence of this issue being about the *quality* of the space provided as opposed to the *quantity*. Speaking of enclosure sizes let's compare Singapore Zoo with its temperate zone counterparts. Here there is no need to shelter crowd-pleasing animals, that are mostly from warm climates, in climate-controlled houses that are expensive to build and maintain. In addition, expenditure increases if you add interior viewing for visitors. I do not notice any such structures here except 'Reptepia' which exhibits reptiles and amphibians in an air-conditioned (thankfully) structure. It is habitat-themed, and residents include familiar faces such as poison-dart frogs, Rhinoceros Iguana, Mexican Beaded Lizard and Shingleback Skink. A label on a vacant enclosure says 'Komodo Dragon' (on a lunch break maybe?).

At this juncture an issue pops into my mind. Nearly all mainstream players in the world's zoos are in Europe and North America, Eurocentric to be exact, something that we unconsciously take for granted. But while taking a taxi into town from the airport, the variety of lush tropical plants that rapidly passes by outside, and the unmistakably high humidity, combined with equally high temperature strikes me. Yet Singapore *is* home to a first-rate zoo. These contradictory elements sit in the same arena, so to speak, and that is a good part of the charm of this zoo.

Now, back to the Eurocentric zoos, in this case those in the United States. Some other old-timers may recall that an exhibit system, the so-called 'immersion landscape', dominated American zoos not too many decades ago. When this system debuted, nearly all zoos embraced this new wave. In actuality this was a commercial endeavour, epitomising make-believe, and perhaps zoos should not have tried to get cute with this make-believe in a man-made, pseudo-intellectual domain. But America worships youth and something new. In 2007 Tim Brown wrote: "No visitor is ever truly immersed in a zoo – glass windows and metal railings protect, concrete and stone help the pushchairs to move along steadily". Like Tim, some of us had issues about this new system. Tim continued, "...but Singapore goes a long way towards being a zoo without bars". Also, during the design process of this system, how much attention was given to the animals that were going to live in it day and night? Are 'immersive' designers aware that zoos can never *replace* the original, yet what happens outside of zoos is somehow tied to what happens inside of zoos? So the challenge is how to bring the natural and the man-made compatibly into our zoos? If the challenge is met, even halfway, I'll give the shirt off my back! Anyhow, back in Singapore it does appear that the two elements have been brought together as well as they could be, without calling it 'immersion'.

Whenever I visit zoos, especially overseas, opportunities to spend time with front-line zoo keepers are limited. But luckily, for a brief moment, I enjoy behind-the-scenes shop talk with the keepers on the elephant section. Singapore Zoo has two separate animal collections adjacent to one another, one for the day and another for the Night Safari. They tell me there are 11 Asian females there in total, five for the Night Safari and six (Sri Lankan, Sumatran and Malayan) at the zoo (that aside, a surprise awaits me at the Night Safari;



more on that shortly). While we are chatting three adult elephants are introduced to me (through the pipe gate, not in a free contact style, of course). Automatically my eyes are on their feet, especially their toenails, as captive elephants' health problems often begin with the feet. Happily, and to my relief, not only are their feet in good shape but also their skin condition and overall behaviour passes my inspection.



THE NIGHT SAFARI

In 1995 Bernard Harrison, then Singapore Zoo director, explained how he came up with the night safari idea (see references), "Many of the world's more progressive and affluent zoos are located in the temperate climates of Europe and North America; for the public to visit at



Asian Elephants at Singapore Zoo

night, the evening climate must be pleasant, both for people and animals... In the European summer, when the evenings are pleasant, it only becomes dark at 9:30 pm or later, conversely, in Singapore, the evenings are always pleasantly cool and darkness falls consistently throughout the year at about 7:30pm". Indeed, the majority of a zoos' crowd pleasers, except most primates, consist of large mammals that are either crepuscular (active during twilight) or nocturnal. They are inactive (thus, for instance, the impression of *lazy* lions) during peak visiting hours. To compensate for this, some zoos build nocturnal houses that reverse the day-night cycle, but these buildings don't have large mammals such as hippos and elephants. Some zoos also run special evening events, but these are not always about viewing animals. In short, zoos are basically daylight attractions. In that sense the Night Safari marks a Copernican revolution, a pioneering attempt. As Tim Brown put it in 2007, "Certainly the Night Safari has pushed the boundaries of zoo exhibitory into new areas since its inception in 1998 and it would be almost impossible to replicate in colder climes with their varying lengths of night. A few other Asian zoos have jumped on this bandwagon without any particular worthiness and only Taiping Zoo in Malaysia has approached the concept with the imagination of using the same area for both diurnal and nocturnal species (as has been done with

Lions and Spotted Hyenas at Berlin for years). It would seem that Night Safari is both the original and by far the best, though I might add that here in the West we do almost nothing zoo-wise during our long summer evenings".

On my visit the waiting area is crowded with groups of all ages, nearly all of them families. At 6:30pm they number in the hundreds; there is a festive mood in the still-warm evening air and they are patient. This is March. The peak tourist season here is said to be December so I wonder how they handle a larger crowd? A tram pulling three cars arrives at 6:55pm and begins loading passengers. Soon a second tram parks and I get on it. This tram takes off for a 24-minute tour at 7:06pm. Even in the increasing darkness some mammals still stand out, such as Indian Rhino, Water Buffalo and Spotted Hyena, but you really have to be on the lookout. There is no additional lighting, spotlight or even moonlight. I'm certain I've spotted Gaur and Banteng, or has my rich imagination finally taken over? Anyway, the tram makes a brief stop to show us animals such as Lions. But I cannot make out all the other species mentioned in the taped narrative, including Dhole, Small-clawed Otter, Sloth Bear, Hippopotamus... the list goes on. There is also a pleasant surprise: a handsome, full-grown Asian tusker. The tram keeps moving, and around the corner, there is yet another



Right: The entrance to Bird Paradise. **Below:** Shoebill in the 'Heart of Africa' aviary



good-looking tusker! Could the same bull elephant quickly turn around to fool my eyes? Who knows?

Night Safari opens a new approach, a new dimension to the visiting crowd. Whether they can see *all* the species may matter little. Judging from their emotional responses the experience seems to enhance family togetherness. Is mother the first to spot deer in the fading light or is it her daughter who will? And perhaps, maybe for a second, some visitors forget they are in a zoo, but are in the natural world instead, having a rough ride in a pickup on an evening of game viewing. No wonder the Night Safari is so popular.

A 2004 press release reveals continuous efforts by the staff behind the scenes, "to create the impression that the animals just appeared from the jungle, displayed a behaviour and disappeared back into the forest... The trainers had to be very creative and come up with various ideas to encourage the animals to display the required action. This also meant there were endless late-night meetings with the training and production crew, as animals decided to go a different way, which meant that the animal action plan had to be rewritten".

After the tram ride, customers are led to a restaurant and gift shop (but the merchandise is mostly for children). There are even walking 'trails' such as 'Fishing Cat Trail', so visitors can stay long into the night. It has been a good learning experience for me, so it's time for a taxi (easily available), and back to the hotel.

[Editor's Note: In July 2025 Singapore Zoo opened a new gift shop]

BIRD PARADISE

Jurong Bird Park was inaugurated in 1971 and soon became a well-established operation. For instance Rosemary Low noted in 1999, "In my estimation, Jurong ranks among the world's top four bird parks. It would be difficult to place them in order, but this park in Singapore has long been a favourite" listing, among others, Paradise Tanager (*Tangara chilensis*), Pompadour Cotinga (*Xipholena punicea*) and Bare-throated Bellbird (*Procnias nudicollis*) among the most impressive. Then, in 2023, the rebirth of this park as Bird Paradise took place in a new location and it rapidly attracted the attention of zoo aviculturists.

I pass through the entrance early one morning and soon find 'Penguin Cove', a large air-conditioned building, it's a good start. It provides viewing on three levels of King, Gentoo and Northern Rockhopper Penguins.

After this indoor facility I head for the outdoor exhibits. Tim Brown has recently written an article about this collection in the Spring 2024 issue of *ZG&IZN* so I will offer only some brief comments.

It's obvious that quite a bit has been invested in horticulture here, as witnessed by a rich variety of plants. From a bird husbandry viewpoint, however, that makes it no easy task to keep track of each specimen, even with an individual identification device. That, however, is a zoo insider's thought. Just as in Singapore Zoo, hard barriers between animals and visitors are less visible than in other zoos. As an example, in the Caribbean Flamingo exhibit, there is *no* barrier – the cattail grass is low enough to not block the view and simply does the same job. And without hard barriers in a spacious atmosphere, visitors may develop the view, albeit subconsciously, that we share this world; thus it is again a successful immersive approach without declaring it as immersive.

For children, there is 'Egg Splash', a playground to disperse their abundant energy. Unrelated to the animal collection also, I finally find a gift shop! When visiting a zoo I look for postcards and other items for my collection and to share with colleagues and friends. Frustratingly thus far I had found no such thing anywhere during this trip. An exception is Bird Paradise for this happy shopper.

BOTANICAL GARDENS

To continue an interest in natural history in general, the stage now moves to the botanical field: **Gardens by the Bay** stands out in a well-manicured neighborhood. A huge dome (air-conditioned of course) houses tall trees and shrubs, with music and frog croaks piped-in. In this uncrowded, multi-level structure 'Cloud Forest' and 'Secret Garden' ("relicts of the past world", it says) are a delight for botanists and horticulturists and enjoyed by everyone else as well. Unfortunately 'Flower Dome' is closed on my visit. Outside a long walk leads to a topiary garden and a meadow.

Not to be outdone, the 'National Orchid Garden', a part of the **Singapore Botanic Gardens**, apparently attracts enthusiasts for this group of plants from a wide geographic range. Signage is English, by the way. In the air-conditioned 'Sembcorp Cool House' it is possible to escape from the heat, as the name implies. The Botanic Gardens are also popular with birdwatchers, and over 180 species have been recorded. ■