

# Revisit and Discover Sungei Buloh Wetland Reserve

Text by Sharon Chan and Edwin Lee

Images courtesy of National Parks Board, Singapore

## Introduction

The Sungei Buloh Wetland Reserve has come a long way since its early inception in 1989, when it was discovered by a group of avid birdwatchers. Open on 6 December 1993, located at the North-West part of Singapore facing the Johor Straits and along the Sungei Buloh Besar River, it is now a tranquil and rich natural environment and sanctuary set amidst a 130-hectare wetland of mangroves, mudflats, ponds and supporting secondary forest.

## An Ecological Jewel

The Sungei Buloh Wetland Reserve is a natural oasis in Singapore. Its thriving ecosystem offering abundant nourishment for re-fuelling is now an essential stopover and wintering ground along the route for numerous species of migratory birds travelling from the Northern Hemisphere, from as far as cold Siberia to Australia. Through the years, the mangroves and mudflats, with the surrounding remnants of coconut groves and other remaining agricultural land, have become a rich food source to more than 100 species of birds, making the Reserve probably the single largest bird watching site in Singapore.

## Rich Biodiversity

Recent inhabitants include Estuarine Crocodiles and Smooth Otters, joining the numerous birds, monitor lizards and the marine life that have adopted this site as their home. These new and existing denizens form an interesting backdrop of fauna and flora that reside in the numerous niches of the ecosystem, ranging from the mudflats, to the mangroves, freshwater ponds and secondary forests. This rich biodiversity can be enjoyed throughout the year by taking different walking routes that spread across the sprawling Wetland Reserve.

## Master Plan

The vision for Sungei Buloh Wetland Reserve is to be a premier Wetland Hub and Nature Learning Centre serving Singapore and the region. It also provides an opportunity to bring together local and foreign schools, communities and experts to create a vibrant culture of learning and cooperation, and to create an environment of experiential learning, life-long learning and community bonding at Sungei Buloh, while retaining its beautiful native and natural wildlife and rustic charm.

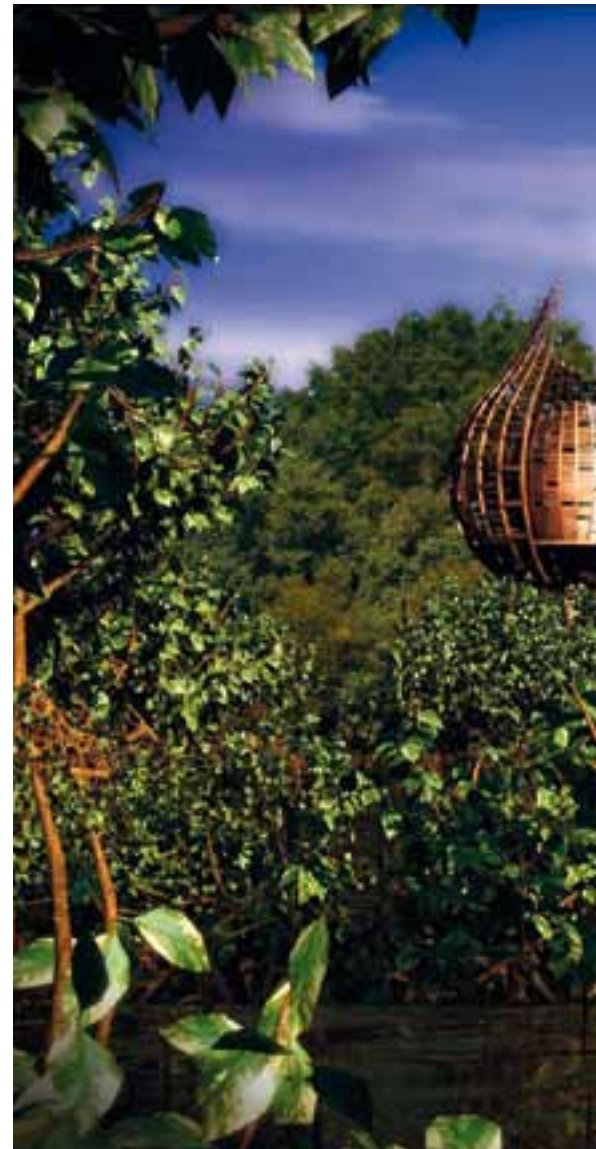
More than 75 percent of Singapore's mangrove flora and more than 60 percent of Singapore's bird species are found in Sungei Buloh. Many of the flora and fauna are rare or endangered. It is therefore a delicate balance between the needs for conservation and recreation, and achieving the goal of making this place a destination with a difference. Through surveys and studies, areas with rich flora or fauna have to be protected to ensure that the living wetland continues to thrive while fringe areas are developed to house supporting amenities and facilities.

To meet these many competing needs, the Sungei Buloh Wetland Reserve will be kept in its natural state, whilst the area closer to the Kranji Dam will be developed as the Sungei Buloh Wetland Park, with new amenities and facilities to better optimise land use and visitor experience.

## Destination with a Difference

### Visitor Centre

Set amidst a backdrop of existing lush secondary forests, fronted by a lowland swamp, the new Visitor Centre next to the Kranji Reservoir Park along Kranji Way was specially selected to bring



ABOVE Canopy Walk.

Experiential learning begins as soon as one arrives at the entrance to the Sungei Buloh Wetland Park. Visitors will learn that plants can help to remove sediment, nutrients and pollutants from the water.



Sungei Buloh wetlands closer to the people. It serves as the formal gateway to the Sungei Buloh Wetland Park. Symbolically, as a gateway between Man and Nature, visitors to the park can learn about the transition of water from the river to the sea and the types of plants and animals that can be found in this unique environment.

Experiential learning begins as soon as one arrives at the entrance to the Sungei Buloh Wetland Park. Visitors will learn that plants can help to remove sediment, nutrients and pollutants from the water. This is being demonstrated in the specially designed natural drains or bioswales and rain-gardens, which will capture surface run-off from the carpark and the surrounding areas. The use of plants to remove sediments and pollutants upstream in the bioswales before flowing into the lowland freshwater swamp demonstrates how nature helps to maintain a clean and green environment for man and animals. What can be seen is a living wetland in which man and nature can live together in harmony. With the carefully laid out landscape, the swamp habitat will be home to marsh birds, such as the red-legged crane, waterhen, bitterns, rails and garden birds.

As a show-piece for conservation, the importance of designing an efficient, functional and aesthetically pleasing building is not to be taken for granted. To meet the daily energy requirements for the day, solar panels are incorporated as part of the roof design.

The single-storey building takes the form of a bird in flight and has an interpretative gallery and basic amenities, including a modern cafeteria. As a Wetland Learning Hub, four workrooms are included to encourage schools to conduct their lessons outdoors and understand the complexity of the food web in relation to our changing environment. These spaces and gallery are laid out in circular form. They are separated and yet connected by a sheltered walkway. The porous layout encourages natural light and ventilation, thus cutting down the need for commercial and fossil energy in the day and consequently helping to dissipate noise that is very apparent in an enclosed environment.

Studies have shown that kids learn most through play and we hope to incorporate interactive exhibits and teaching models to stimulate learning through all five senses – sight, touch, sound, smell and taste. At the Visitor Centre, visitors will find

learn and play environment(s), which simulate the various niche ecosystems found at the Wetlands, including mangrove swamps, sandbars, tidal coastal edges, etc. Here too, visitors and especially school children can play and learn about stilt roots, knee roots and buttress roots. Happily, they will be able to learn how little fish fry take refuge amongst the mangrove roots to escape from their predators.

The Visitor Centre aims to be a lifestyle hub for the appreciation of the beauty of the infinite wonders of our marvellous Wetlands. The Visitor Centre, along with other development works within the Master Plan, is due for completion by 2014.

#### The Research & Education Centre

The existing Visitor Centre will be enhanced and transformed into a Research & Education Centre. As the name indicates, it will be a place for learning as well as research—a place where people will learn about our conservation efforts and participate in our programmes, and more importantly, learn what they can do to help protect our natural heritage.

With the increased demand for choices of outdoor learning, this centre will be the Learning Hub for Wetlands in Singapore. To support this nature initiative, the current building will be retrofitted to provide open areas for gathering and briefing, as well as rooms for lessons, meetings and research. Simple quarters and workrooms are also available for researchers who need to carry out research beyond regular hours. It will have a Resource Library, which will incorporate a comprehensive collection of reference materials and a resource room for students, researchers and visitors who want to learn a little more about wetlands and related research.

#### Trail Network

The redevelopment of the Sungei Buloh Wetland Reserves and Park has offered planners the opportunity to construct distinctive trails that lead visitors to the many diverse and interesting parts of the Wetland Park, exposing them to the different kinds of natural environment fast disappearing from urban Singapore.

The network of trails and routes complement the static and theoretical information at the Visitor Centre and the Research & Education Centre. These trails are laid out sensitively to introduce to the visitor the biodiversity of the Wetlands.





ABOVE Overview of Visitor Centre.  
LEFT Recreation & Education Centre.



ABOVE Observation Hide.

Thematic guided walks and interpretive signs provide opportunities for visitors to be taught and informed about various aspects of wetland life, for example, the importance of dragonflies and their impact on the control of mosquitoes...



Supported with vantage look-out points, the elevated Hides and Observation Decks, a network of specially designed hides allow visitors to have first hand experience in observing the natural behaviours of animals and birds. Thematic guided walks and interpretive signs provide opportunities for visitors to be taught and informed about various aspects of wetland life, for example, the importance of dragonflies and their impact on the control of mosquitoes; why prawn/fish farms are associated with mangroves; how mangroves adapt in the daily tidal fluctuations; and the different types of plants that adapt and thrive in this tidal environment.

To embrace new technology and the world of digital connectivity, the latest 3G or 4G formats will be integrated to enhance visitor knowledge and information gathering processes. Especially for the young and internet savvy, these technologies will enable and present the opportunity to include audio and video representations of birds and animals for those who want to understand more about the ethology of wetland faunal behaviour. Nature Interpretation in the form of traditional signs along the trails and hides will still be available for those who prefer the rustic ways of the slower-paced past.

#### Nature Galleries

The interpretive galleries give an introduction to our natural heritage – our Living Wetlands is an important focal area where visitors learn and understand the uniqueness of the wetlands and its importance to our living environment. It is a place for passive and active learning, making use of tools to stimulate our senses through the use of visuals, sounds, videos and specimens.

The gallery at the main Visitor Centre focuses on the Life in the Wetlands - the rich diversity of unique inhabitants occupying the various strata of the mangrove forest, as well as the freshwa-

ter swamp—and Man and Mangrove—the uses of mangrove for food, medicine and shelter. It is a showcase of how plants and animals have adapted to live in a freshwater or seawater environment and of tidal zones, where the natural rhythm of high and low tides and wet and dry conditions repeat infinitely.

Such knowledge will be reinforced physically through the experience of a 1.5-kilometre walk along the Sungei Buloh Wetland Park, where visitors, armed with the knowledge gained from the exhibition, shall be able to identify and understand the fauna they encounter and the flora that they see, smell and touch, whilst walking from the secondary forests and mangroves to freshwater ponds. Upon reaching the Research & Education Centre, the message in the Gallery will be of a more introspective nature, generally about challenges faced in the protection and conservation of diminishing mangrove habitats in a fast-paced urban city.

#### Conservation

We are living in an increasingly mature and sophisticated society, whose many citizens travel abroad and are more exposed, educated and environmentally conscious and responsible. The redevelopment of Sungei Buloh Wetland Reserve & Wetland Park will help to bestow a renewed sense of wonder for visitors and perhaps a sense of nostalgia for those old enough to remember that mangroves were a part of Singapore natural heritage.

What is more important is that all individuals, after this journey through the wetlands, be imbued with a sense of care for the Wetland Reserve appreciate Sungei Buloh for its importance as a natural resource and develop an attitude of affinity and empathy for the flora and fauna of the Reserves. The protection of the Reserves must become second nature to the people of Singapore. 