East Asian-Australasian Flyway Partnership 9th Meeting of Partners

13 January 2017

Singapore

FIELD TRIP INFORMATION

Sign-ups for the field trips will be available at the MOP9 desk during registration.

Time	Group 1	Group 2
0800h	Depart from *Copthorne King's Hotel Singapore*	Depart from *Copthorne King's Hotel Singapore*
0845h	Arrival at *Sungei Buloh Wetland Reserve* Guided tour of location	Arrival at *Changi Point Ferry Terminal* Ferry ride to *Pulau Ubin* Guided tour of location
1130h	Lunch at *Sungei Buloh Wetland Reserve* [EAAF073]	Lunch at *Pulau Ubin*

1300h	Depart for *Gardens by the Bay*	Return ferry to *Changi Point Ferry Terminal,* depart for *Gardens by the Bay*
1400h	Arrival at *Gardens by the Bay* for both groups, then free and easy	
1700h	Return to *Copthorne King's Hotel Singapore* Alternatively, delegates may opt to stay, and return themselves later	

Excursion Information

Date:	13 January 2017
Time:	0800h to 1800h
Pick-up Point:	Copthorne King's Hotel Singapore Lobby
Destination:	Group 1 – Sungei Buloh Wetland Reserve and Gardens by the Bay Group 2 – Pulau Ubin and Gardens by the Bay

What to Prepare

- Singapore weather is hot and humid (afternoon temperatures can reach 34°c), with the possibility of rain, and so delegates are recommended to bring equipment to protect them from the elements
- Guided walks are mostly conducted along maintained trails, so please wear appropriate footwear
- Insect repellent is highly recommended
- Refreshments may not be easily available (especially at Sungei Buloh Wetland Reserve and Pulau Ubin), so snacks and refreshments, especially water, should be prepared
- Binoculars are highly recommended

Things to Note

- Lunch would be catered, and delegates should inform the MOP9 secretariat about food restrictions, if any

Sungei Buloh Wetland Reserve

1/5 Visitor Centre

Discover the beauty and wonders of nature at Singapore’s first ASEAN Heritage Park. Uncover a world filled with rich biodiversity as you wander through the wetlands with an extensive mangrove forest of Sungei Buloh Wetland Reserve.

Sungei Buloh was first opened as a Nature Park in 1993. In 2002, 130 hectares were officially gazetted as a Nature Reserve and renamed Sungei Buloh Wetland Reserve to better reflect its status. In the same year, it was recognised as a site of international importance for migratory birds and awarded a certificate by Wetlands International, marking the reserve's formal entry into the East Asian Australasian Shorebird Site Network, which includes Australia's Kakadu National Park, China's Mai Po – Inner Deep Bay and Japan's Yatsu Tidal Flats. And in 2003, Sungei Buloh Wetland Reserve became Singapore's first ASEAN Heritage Park.

Since then Sungei Buloh has expanded to include 202ha of mangroves, mudflats, ponds and forests, providing an even larger sanctuary for the flora and fauna that call it home. This includes the newest extension that houses a brand new Visitor Centre and new trails for visitors to explore and enjoy. This new extension is situated along Kranji Way, and is easily accessible by public transport, bringing Sungei Buloh even closer to the public.

Throughout the year: Trek through this ecological jewel's many trails and discover its native inhabitants such as mudskippers, crabs, shellfish, water snakes, birds, spiders, monitor lizards and otters. Admire the beauty of resident birds such as herons, kingfishers and sunbirds.

Seasonal from September to March: During the migratory season, catch sight of the diverse flocks of shorebirds or waders including plovers and sandpipers.

Map of walking trails

(/~/media/walking-route-map-small/walking-route-map.jpg?la=en)

Live animal cams

- View live scenes of Sungei Buloh here (http://sbwr.reachfield-it.com).
- Catch a glimpse of the wildlife found in Sungei Buloh through these videos (/learning/teaching-and-learning-resources/animal-cam).

Location

Visitor Centre:
60 Kranji Way, #01-00
Singapore 739453

Wetland Centre:
301 Neo Tiew Crescent
Singapore 718925

GET DIRECTIONS ◻ (#)

Park Information

Opening hours:
7 am to 7 pm daily

Tel: 67941401
Fax: 67937271
Email: nparks_sbwr@nparks.gov.sg (mailto:nparks_sbwr@nparks.gov.sg)

Park Size: 202 hectares

Accessibility: Wheelchair accessible

Smoke-free park

How to get there

Public Transport

By bus:

Mondays to Saturdays

Board SMRT Bus 925 from Kranji MRT Station. Alight at Kranji Reservoir Carpark B. Walk across the road to the Visitor Centre.

Sundays and Public Holidays

Board SMRT Bus 925 from Kranji MRT Station. The bus stops at the Wetland Centre entrance. Please note that SMRT Bus 925 operates **only** from Woodlands Interchange on Sundays and Public Holidays.

Kranji Express:

Kranji Express operates daily starting from 8.30 am and ending at 5.45 pm from Kranji MRT Station (Details (/~/media/nparks-real-content/gardens-parks-and-nature/parks-and-nature-reserve/sungei-buloh/kranji-countryside-express-_7-apr-16.pdf?la=en))

Parking lots are available near both entrances.

Last updated on 28 June 2016

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Wetland Centre at Sungei Buloh Wetland Reserve

Main Bridge at Sungei Buloh Wetland Reserve

Pulau Ubin and Chek Jawa

3/5 Chek Jawa Wetlands

Life on Ubin

Be transported back in time to 1960s Singapore as you embark on a trip to nearby Pulau Ubin. Home to Singapore's last villages or kampongs, the island still retains the rustic beauty and simplicity of a bygone era.

Wander along the many trails and see how the local residents live. With no access to the modern and efficient public utilities on mainland Singapore, the villagers rely on wells for water and noisy diesel generators for electricity, and depend on traditional farming and fishing for subsistence.

Adrenaline junkies and thrill seekers can rent mountain bikes from the many rental shops at the main village, near the jetty, and embark on a thrilling and exhilarating ride across the island's rugged terrain. Don't forget to stop by the quarry to enjoy the mesmerising beauty of the undulating granite hills and stunning views of the aqua-coloured lake.

A trip to Pulau Ubin is not complete without a visit to Chek Jawa Wetlands, one of Singapore's richest ecosystems, which was officially launched on 7 July 2007. Visitors can either walk, cycle or hire a vehicle to get to Chek Jawa Wetlands. Click here (/gardens-parks-and-nature/parks-and-nature-reserves/pulau-ubin-and-chek-jawa/what-to-see/about-chek-jawa)for more information on Chek Jawa.

Before you head back to mainland Singapore, stop by the provision stores and eateries and tuck into some scrumptious kampong cuisine.

About the island

Shaped like a boomerang, Pulau Ubin (Granite Island) is situated just off the north-eastern corner of mainland Singapore. Once a cluster of five smaller islets separated by tidal rivers, it has since been united by the building of bunds for prawn farming to become a single 1,020-hectare island. Two other islets, Pulau Ketam (Crab Island) and Pulau Sekudu (Frog Island), lie to its south.

In the early days, granite mining supported a few thousand settlers. Much of the original vegetation was cleared for the cultivation of rubber and crops like coffee, pineapple, coconut and jasmine. Today, abandoned granite quarries remain as picturesque relics of Ubin's history, while forests and grasslands have regenerated to cover up the ravages of the past.

Ubin Living Lab

Ubin Living Lab (ULL) is an integrated facility for field studies, education and research, and community outreach. Located at the south-western tip of Ubin; two buildings have been refurbished, with facilities to support activities, research and programmes. When completed, the total area of the ULL will span 5.4 hectares.

Future phases of the ULL will include the planning and implementation of pilot projects for sustainable design and practices in potable water supply, waste management, electrical power supply, as well as green buildings.

We encourage organised groups to use the ULL facilities.

To book the ULL facilities, please read and fill in the form (/~/media/nparks-real-content/gardens-parks-and-nature/parks-and-nature-reserve/pulau-ubin/documents/website_application-form-for-ull-v2.pdf?la=en) and submit a proposal of your educational activities to nparks_pulau_ubin@nparks.gov.sg (mailto:nparks_pulau_ubin@nparks.gov.sg). For general enquiries, please call 6542 4108 (Mondays to Sundays, including public holidays, from 9am to 5pm).

Ubin Project

The Ubin Project seeks ideas from members of the public on how the island's rustic charm, natural environment, biodiversity and heritage can continue to be enjoyed by Singaporeans for generations to come. The Friends of Ubin Network (FUN) was formed in 2014 and comprises young people, residents, volunteers, researchers and members from heritage and nature communities.

Some of them have even banded together to develop a code of conduct for environmentally and socially responsible behaviour on Pulau Ubin. Also known as "The Ubin Way", it was inspired by the kampong spirit that Pulau Ubin residents embody. More information on the Ubin Project can be found here (http://ubin.mnd.gov.sg/MS/PulauUbin.aspx).

Last updated on 23 August 2016

ABOUT THE GARDENS

GARDENS BY THE BAY – FOR EVERYONE TO OWN, ENJOY AND CHERISH

Learn about the history, development, sustainability efforts of Gardens by the Bay, and the vision and mission that we are rooted in.

HISTORY & DEVELOPMENT (/EN/THE-GARDENS/ABOUT-US/HISTORY-AND-DEVELOPMENT.HTML)

HOW WE CREATED A CITY IN A GARDEN

Gardens by the Bay brings to life the National Parks Board Singapore's vision of creating a City in a Garden. The Gardens captures the essence of Singapore as the premier tropical Garden City with the perfect environment in which to live and work - making Singapore a leading global city of the 21st century.

In January 2006, an international master plan design competition was launched to seek world-class design ideas for Gardens by the Bay. It drew more than 70 entries submitted by 170 firms, from over 24 countries, including 35 from Singapore.

An 11-member Jury comprising local and international experts shortlisted eight teams and two winners were announced in September 2006; namely Grant Associates for Bay South and Gustafson Porter for Bay East, both from the UK. A decision was made to develop Bay Central later.

A public exhibition of the master plan concepts and models of the winning teams was held in September 2006 at the Singapore Botanic Gardens. Over 10,000 people visited the exhibition and over 700 gave their feedback. An overwhelming majority 85% of those surveyed liked the features in the master plans and over 97% said they would visit the gardens.

Gardens by the Bay broke ground in November 2007, signalling the commencement of the Gardens' development. Subsequently, development of Bay East Garden also commenced. It was developed as an interim garden to be used as a staging site for some of the rowing and canoeing events of the Youth Olympic Games (YOG) in August 2010. Following the YOG, Bay East underwent reinstatement works and was open to the public in October 2011.

A special preview of Flower Dome was held in November 2011 in conjunction with the World Orchid Conference (WOC). Some 300,000 members of the public visited both WOC and Bay South Garden.

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SUSTAINABILITY IN THE GARDENS

Underlying the concept of Gardens by the Bay are the principles of environmental sustainability. Much effort was made to plan and design for sustainable cycles in energy and water throughout Bay South Garden.

Click here (/content/dam/gbb/the-gardens/about-us/DP01-1-2-grand-associate-program-1500x800-v2.jpg)to view enlarged image

LAKE SYSTEM: DRAGONFLY & KINGFISHER LAKES

The Gardens lake system incorporates key ecological processes and functions as a living system. It acts as a natural filtration system for water from the Gardens catchment and provides aquatic habitats for biodiversity such as fishes and dragonflies.

Encompassing two main lakes – Dragonfly Lake and Kingfisher Lake, the lake system is designed to be an extension of the Marina Reservoir. Water run-off from within the Gardens is captured by the lake system and cleansed by aquatic plants before being discharged into the reservoir. Naturally treated water from the lake system is also used in the built-in irrigation system for the Gardens.
The lake system depicts the role and importance of plants in the healthy functioning of our ecosystem. It raises awareness of the value that aquatic plants play in nature, and highlights the significance of clean water in sustaining biodiversity.

Filtering of water run-off
Filter beds, comprising of aquatic reeds, and wetlands are located where water enters and discharges from the lake system. Water flow is reduced and sediments are filtered out.

Reducing nutrient load
Islands of aquatic plants and reed beds are incorporated to absorb nutrients such as nitrogen and phosphorus in the water. A reduction of nitrogen levels is critica to minimising alga bloom and ensures better water quality.

Maintaining an aquatic ecosystem
Habitats for fish and dragonfly are created within the lake system by maintaining a diversity of aquatic plants, good water circulation and aeration. This keeps in check potential problems such as mosquito breeding.

Click here (/content/dam/gbb/the-gardens/about-us/DP01-1-2-lake-system-extract.jpg) to view enlarged image

ENERGETICS OF THE CONSERVATORIES

Comprising two glass biomes, the Conservatories replicate the cool-dry climate of the Mediterranean and semi-arid sub-tropical regions and the cool-moist climate of the Tropical Montane region. They house a diverse collection of plants that are not commonly seen in this part of the world and are of high conservation value.

The conservatories are a statement in sustainable engineering and apply a suite of cutting-edge technologies for energy-efficient solutions in cooling. This suite of technologies can help to achieve at least 30% savings in energy consumption, compared to conventional cooling technologies.

1) Minimising Solar Heat Gain
The two conservatories are fitted with specially selected glass that allows optimal light in for plants, but reduces a substantial amount of heat. The roof is fitted with a sensor-operated retractable sails that opens automatically to provide shade to the plants when it gets too hot.

2) Cooling only the occupied zones
The Conservatories apply the strategy of cooling only the lower levels, thus reducing the volume of air to be cooled. This is achieved through thermal stratification – ground cooling by chilled water pipes cast within the floor slabs enabling cool air to settle at the lower occupied zone while the warm air rises and is vented out at high levels.

3) De-humidifying the air before cooling
To reduce the amount of energy required in the cooling process, the air in Flower Dome is de-humidified by liquid desiccant (drying agent) before it is cooled. This desiccant is recycled using the waste heat from the burning of the biomass.

4) Generating energy and harnessing waste heat
Electricity is generated on-site to run the chillers that cool the Conservatories. At the same time, waste heat is captured in the process to regenerate the liquid desiccant. This co-generation of energy is achieved by the use of a Combined Heat Power (CHP) steam turbine that is fed by horticultural waste from the Gardens and other parks around Singapore. This reduces dependency on the electrical grid.

ENVIRONMENTALLY SUSTAINABLE FUNCTIONS OF THE SUPERTREES

Eleven of the Supertrees are embedded with environmentally sustainable functions. Some have photovoltaic cells on their canopies to harvest solar energy for lighting up the Supertrees., while others are integrated with the Conservatories and serve as air exhaust receptacles.

VISIT THE GARDENS

18 Marina Gardens Drive
Singapore 018953

GET DIRECTIONS (/EN/PLAN-YOUR-VISIT/GETTING-HERE-AND-PARKING.HTML)

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