

MEDIA FACTSHEET

Updates on The Ubin Project initiatives (June 2015)

1) Ubin Living Lab

The Ubin Living Lab was announced in November 2014 as an integrated facility for field studies, education and research, and community outreach. Located at the former Celestial Resort site, it will provide facilities including field study labs, seminar rooms and basic accommodation amenities which incorporate sustainable design and technologies. To allow researchers, students and groups to benefit from these facilities as soon as possible, the Ubin Living Lab will be developed in phases.



Ubin Living Lab existing site layout. (Picture courtesy of NParks)

Phase One

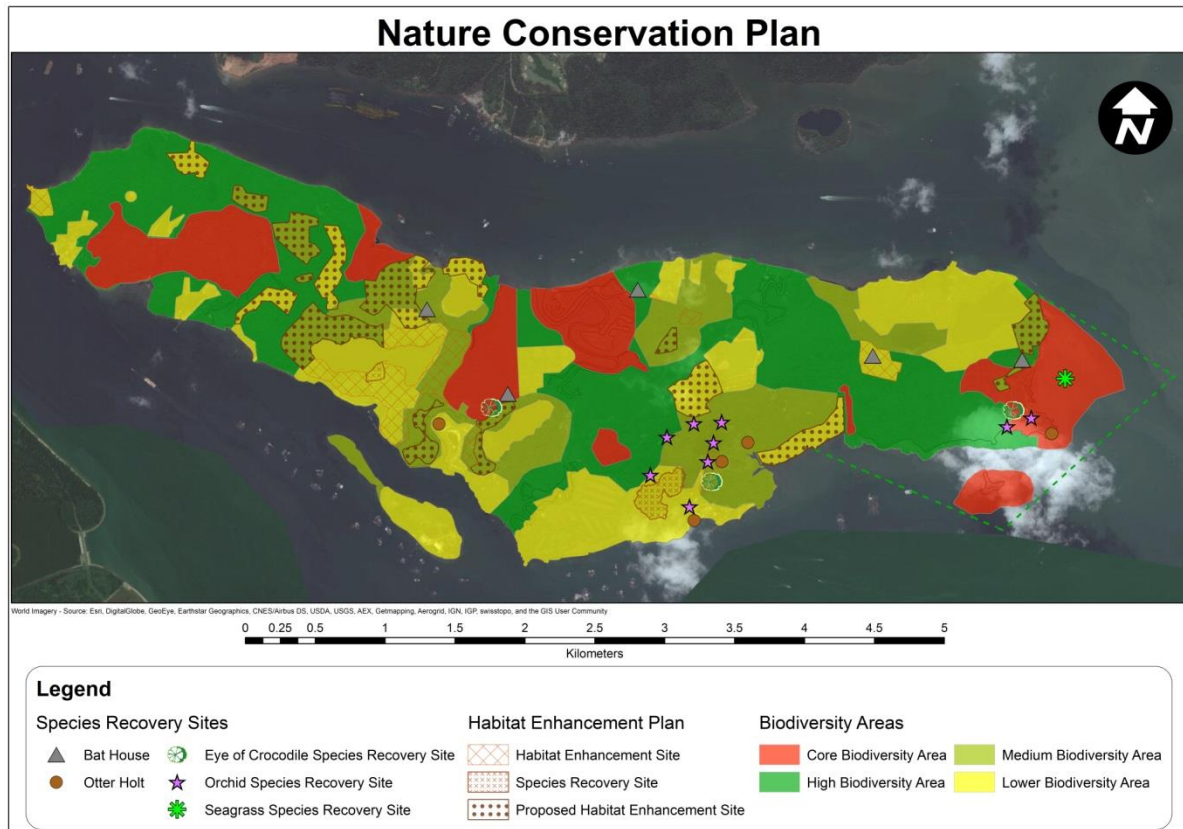
The former Celestial Resort consists of 25 buildings. Phase One of the Ubin Living Lab, which will be ready by the end of 2015, involves restoration of two buildings to create space for seminar rooms that can accommodate about 100 people, a field laboratory, and a 12-bed basic accommodation for researchers. An outdoor campsite that can accommodate up to 100 campers will also be established. An additional NParks site office will be set up at the Ubin Living Lab.

Future Plans

NParks will work with consultants to formulate a design concept for the permanent facility. This will include restoring the currently defunct jetty, and providing basic services like potable water and electricity through renewable energy sources.

Programmes at Ubin Living Lab

When ready, researchers and schools can use the available facilities when conducting field studies or educational programmes. NParks will also conduct Community-in-Nature outreach programmes meant for students and educators at the centre from early 2016.



Map of Pulau Ubin showing biodiversity areas and plans (Credit: NParks)

2) Species recovery programmes

A. *Bats*

Fruit and nectar feeding bats serve as important pollinators and seed dispersal agents thereby assisting in the regeneration of the forest habitats within the island. Insect-eating bats are also an important part of our natural ecosystem as they help to keep the insect populations in check. Despite their ecological importance, they are not well-studied or surveyed and some have become critically endangered. The aim of the bat recovery programme serves to increase the diversity of bats on Pulau Ubin, and at the same time, help to recover species that are uncommon.



Ashley Roundleaf Bat



Lesser False Vampire Bat

For example, the Ashy Roundleaf Bat (*Hipposideros cineraceus*) can only be found on Pulau Ubin and the Lesser False Vampire Bat (*Megaderma spasma*) is only present on Pulau Ubin and Pulau Tekong.

Bat houses

In an urban environment, bats are known to roost at manmade structures like in drain culverts and underneath expressways. Bat houses are permanent structures with narrow openings and designed with considerations such as insulation and waterproofing in mind. They can span 3 to 5 metres and are enclosed areas that provide roosting sites for colonies of bats. When bats pick their roosting sites and take to them, they return everyday during daylight hours to rest.

NParks has identified a few locations on Pulau Ubin where permanent bat houses will be set up. These locations are spread across the island and represent a variety of habitats, including mangroves and forests. The loss of natural habitats and dilapidation of roosting sites can lead to a loss of bat diversity and numbers. These bat houses will provide the existing bat populations with more roosting sites, and in turn conserve bat species on the island. They might possibly attract new bat species to colonise on Pulau Ubin as well. Bat houses at two locations Jalan Noordin (mangrove habitat) and Bukit Belukar (forest habitat) will be installed by end 2015.



Artist's impression of a bat house (Picture credit: NParks)

The installation of bat houses will complement NParks' collaboration with students to design and fabricate bat boxes to support smaller groups of bats.

B. Birds

Three uncommon bird species — the Red-wattled Lapwing, the Baya Weaver and the Blue-throated Bee-eater — were identified for the species recovery programme. They have specific habitats requirements that are limiting on the mainland. As each species has different nesting and feeding habits, the implementation of the recovery plans is specific to each of their needs.

Red-wattled Lapwing (<i>Vanellus indicus</i>)	- Provision of stony aggregate areas (bare areas with stones and short grass) for nesting
Baya Weaver (<i>Ploceus philippinus</i>)	- Retention of existing grassland habitat patches - Plant selected trees/palms for nesting (e.g. <i>Casuarina equisetifolia</i>)
Blue-throated Bee-eater (<i>Merops viridis</i>)	- Creation of sand mounds and installation of artificial boxes for nesting

To gather baseline information on the current use of the selected site at Ketam Mountain Bike Park by the birds, surveys have commenced in December 2014. A prototype nesting box to simulate burrows for the Blue-Throated Bee-eater has also been developed and will be set up at Ketam Quarry by end 2015.

3) Habitat enhancement

A. *Floating wetland prototype at Pekan Quarry*

Pekan Quarry is today already a habitat for herons. To enhance this further, floating wetlands, which will provide nesting and roosting sites, will be installed. Apart from herons, this will also benefit other birds like crakes, rails, kingfishers, as well as dragonflies and frogs. Basic visitor amenities like lookout points and boardwalks will be sensitively incorporated to allow visitors to better observe and enjoy the surrounding biodiversity.

A prototype of the floating wetland will be installed by end 2015. About 20 square metres in size, it consists of two layers of materials (the base layer and filter mats), and one layer of plants. It is anchored to the bottom of the quarry.

Base Layer	The base layer is a floating mat made up of decay resistant polypropylene (PP) and Polyethylene (PE). Roots are able to grow through the material.
Filter Mats	The filter mats are made of 100% natural coir fiber. They consist of hand-woven coconut fiber nettings filled with loose coconut fibers. Filter mats have moisture and nutrient retention properties, thus supporting plant growth. While they are lightweight, they do not float.
Anchor netting	The anchor netting is made of high strength and non-corrosive net of polypropylene (PP). While tough and tear-resistant, it is also flexible, allowing for 180 degree bends while maintaining its true shape. Rocks will be selected to be collected within the net to form weights.

To achieve the buoyancy for the floating wetlands, multiple layers of the base layer will be used. The top will then be covered with the filter mats to allow for plants to grow.

Examples of plants on floating wetlands

Plantings on the floating wetlands will simulate natural islands with varying layers of height.

Groundcover layer

Plants	Characteristics
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***Ipomoea aquatica* Forsk**



***Hydrocotyle verticillata* Thunb.**





Nymphoides indica



Polygonum barbatum






Medium Height Layer

Plants	Characteristics
<p><i>Colocasia esculenta</i></p>  <p>Copyright © NParks Flora&FaunaWeb</p>	<p><i>Arundina graminifolia (D.Don) Hochr</i></p> 
<p><i>Lepironia articulata</i></p>	<p><i>Cyperus haspan</i></p>



Emergent Layer

Plants	Characteristics
<p data-bbox="279 719 592 752"><i>Hanguana malayana</i></p> 	<p data-bbox="852 719 1142 752"><i>Donax canniformis</i></p> 
<p data-bbox="279 1305 564 1339"><i>Typha angustifolia</i></p> 	

B. Mangrove restoration

The mangrove forests are an important part of the coastal zone in Pulau Ubin. They protect the shoreline from erosion and serve as habitats to a wide range of biodiversity.

A former aquaculture farm at the south-eastern part of Pulau Ubin has been selected for a pilot restoration project involving the *Restore Ubin Mangroves* (RUM) group.

The *Restore Ubin Mangroves* (RUM) group is a ground-up initiative supported by NParks. RUM was founded with the aim of restoring the mangrove forests through a science-informed methods, and outreach efforts to the community. Restoration of the mangroves will follow the Ecological Mangrove Restoration (EMR) method, which assesses and leverages on the physical characteristics of a site, especially elevation and hydrology, to improve the restoration of mangroves. Different mangrove species are selected for planting, depending on the site characteristics. The EMR method has been widely adopted in many countries.

Members of the Restore Ubin Mangroves (RUM) initiative include the Marine Conservation Group of the Nature Society (Singapore), Gamefish and Aquatic Restoration Society (GARS), Eastern fish farmers at Pulau Ubin, The Mangrove Lab (Department of Geography, National University of Singapore) and founder of wildSingapore Ms Ria Tan.

4) Improved way-finding and location signs, educational displays

Way-finding and location signs



NParks has refreshed the way-finding and location signs on Pulau Ubin. An enhanced map of the island, as well as prominent signs will enable visitors to better orientate themselves and navigate around the island.

Educational display at Nature Gallery

The Nature Gallery (located near the jetty) will have refreshed educational displays by the first quarter of 2016. The current exhibition is 10 years old, and in need of updating. Visitors can learn more about Pulau Ubin, its biodiversity, historical and cultural significance from the updated exhibition. The educational displays are sponsored by HSBC, which has in total pledged a sum of \$170,000 to enhance Pulau Ubin. The sum includes the planting of trees, as well as an upcoming children's book, on Pulau Ubin.

5) Cultural mapping and heritage

NParks has commissioned a book on the cultural and natural heritage of Pulau Ubin. It will be published in early 2016.

NHB has also launched the Ubin Oral History Project that will record personal life histories and experiences about Ubin's past and present, through oral interviews with current and past residents of Pulau Ubin, to learn more about the island's local history and community heritage. A documentary will be produced from the project featuring the interviewees from the project. These efforts contribute to the Ubin Project which enables us to learn more about Pulau Ubin's heritage.

6) Design Guidelines for Restoring/Rebuilding on Pulau Ubin

To retain the rustic quality and rich heritage of Pulau Ubin, as well as to ensure the safety of existing buildings and structures, agencies are working with stakeholders on a set of design guidelines for restoring or rebuilding buildings and structures on the island.

NHB will also work with stakeholders to identify buildings on the island that are of significant heritage value, so that more sensitive design guidelines can be applied to them