

Sungei Buloh Wetland Reserve, Singapore: An Example of a Wetland managed for Birds and Education

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Every year 2nd February marks the “World Wetland Day” which celebrates adoption of the Ramsar Convention. This is an intergovernmental treaty providing a framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. “Healthy Wetlands, Healthy People,” was the theme of the year 2008 wetland day, a slogan that emphasizes the strong relationship between healthy functioning wetland ecosystems and human health. It identifies the value of green spaces in improving the mental and physical health of urban populations and is gaining increasing recognition, as current studies indicate measurable physical and psychological benefits from regular contact with urban green spaces.

I was fortunate to spend this year’s wetland day at the Sungei Buloh Wetland Reserve (SBWR) of Singapore, the only wetland gazetted as a protected area under the National Parks Act of the Country. The reserve harbours the largest extent of remaining mangrove forest (totaling more than 100ha) in this small island state. To date, SBWR has recorded an impressive 212 species of birds, which account for 60 percent¹ of the country’s bird life. Based on absolute numbers for the diversity of bird life, it is the richest site for birds in Singapore. The diversity of habitats in SBWR such as mudflats, freshwater marshes, lowland forests, mangroves and grasslands attract a variety of birds to the reserve.

The SBWR was established under unusual circumstances. In the mid-1980s, most of the mangroves had been cleared for prawn farming and the area was on the verge of being demarcated for intensive agro-tech farming. This would have dealt a fatal blow to what little was left of its mangrove habitats. As fate would have it, a group of bird watchers from the Malaysian Nature Society (Singapore Branch) stumbled upon the site and witnessed the extraordinary diversity of bird life in the area. With the Society’s report on the site, senior government officials became interested in the area. With their support Sungei



Buloh was lifted out of oblivion and into the annals of Singapore’s modern history. After an US \$8.5 million transformation and with the involvement of various experts from institutions such as the Malaysian Nature Society, the Wildfowl Trust’s Wetland Advisory Service, Asian Wetland Bureau and World Wildlife Fund for Nature, Sungei Buloh made its debut as Singapore’s first wetland Nature Park on 6th December 1993. In January 2002 it was officially gazetted as a Nature Reserve in recognition of its valuable biodiversity. Significantly, this gazettement of a nature reserve was the first in post-independence Singapore. In recognition of its protected status, the 130 ha. wetland was renamed the Sungei Buloh Wetland Reserve.

In addition to its local endorsement, the SBWR was recognized as a site of international importance for migratory shorebirds by Wetlands International. The SBWR is situated along a major migratory route - the East Asian Australian Flyway and it was accepted as a member of the East Asian Australian Shorebird site Network in 2002. During the migratory season from September to March each year, migrants stop over at the reserve for feeding and resting before continuing on their way, whereas others spend the entire winter in the wetland. The unique mangroves, mudflats and freshwater habitats provide suitable feeding and roosting conditions for waders as well as passerines and other birds.

On 18th December 2003 the SBWR joined 26 other

protected areas of high conservation value across the ASEAN region to become Singapore's first ASEAN Heritage Park². The reserve is presently managed by the National Parks Board (NParks), which is committed to the conservation of this wetland through prudent management, research and education. NParks is devoted to enhance the quality of life through creating memorable recreational experiences and lifestyles and manages some 300 parks, the park connector network and the lush roadside greenery in Singapore.

The SBWR's Scientific Department regularly monitors bird species and bird populations in the area. A study of shorebird data for the years 2000 to 2006 shows that 23 species have been recorded. Furthermore the data has shown that, in general, over 1,000 shorebirds can occur in the SBWR at high tide during the period February to March. Preliminary data obtained through counts and observations suggest that the wetland is favoured by perhaps more than 80 percent of the Singapore population of Whimbrel, Mongolian Plover and Pacific Golden Plover.

Bird ringing has been conducted since 1990 and in February 1995 the Park set up its own ringing station and uses rings embossed with the Park's address. The most commonly ringed bird species are Pacific Golden Plover, Yellow vented Bulbul, Scaly breasted Munia, Common Red Shank and Collared Kingfisher. In 2006, a total of 658 birds of 66 species were ringed and there were 62 recoveries from 21 species that had been ringed in previous years. The data obtained from ringed birds enables longevity records to be compiled and also determination of the active survival of bird species. A Common Redshank ringed on 1st November 1990 was recaptured on 12th September 2006 indicating an age of at least 15 years. Four new species of birds were ringed for the first time at SBWR in 2006. They were the Dollarbird, Greater Coucal, Lanceolated Warbler and Oriental White-eye.

Previously a volunteer network involving Jurong Bird Park, the National University of Singapore, the Nature Society of Singapore, teachers and other nature enthusi-

asts have assisted in this activity. Now volunteers are managed directly by Sungei Buloh's own group without affiliation to other institutions. At present there are around 100 volunteers incorporated into the programme as part of the effort to educate the public in conservation and ornithology.

At the wetland, the water levels are regulated to attract larger number of migratory shorebirds. Around Singapore at high tide the water is more than 3m above mean sea level. This results in a reduction of exposed dry areas for the birds to feed and roost. The management of the SBWR has come up with an innovative solution to attract these birds. Due to the existing network of bunds (dykes), sluice gates placed at strategic points can control the tide-borne water movements into three ponds in the mangrove forest. At high tide, at least one of three ponds in the Reserve will have a low water level so that birds can feed and roost on the exposed mudflats. This scenario has provided visitors to the wetland with the opportunity to view migratory birds in their thousands in the drained shallow ponds. For example, it seems that during high tide about half the population of common Greenshanks in Singapore use the wetland as a roost.

As these ponds cannot be left unattended for a extended periods, a strict water control schedule is followed to allow the organic nutrients, crustaceans, different species of fish and molluscs to procreate within the ponds. Water levels within the wetland are currently managed on a fortnightly cycle operated generally between the shore-bird migratory months. In addition to the three regulated ponds there are five more brackish water ponds in the wetland, the water levels of which are only subjected to natural tidal influence.

Sungei Buloh also serves as a "Living Classroom" creating thousands of young nature lovers each year. Designed to draw budding young naturalists to experience the reserve, the Young Naturalists Programme is a journey of discovery into the wonders of nature. The challenge is for children to learn more about wetlands and earn their passport which can be stamped to earn four



types of badges Following activities can be completed to earn Young Naturalist badges: Nature Ramble (Mangrove walk or bird watching); Nature Activity (Nest building) and composing of poems or essays on nature Thematic Trail and Natural Artist; Special Mission (eg. participating in any of the special events, such as the wetland day organized to support the wetlands). The reserve has constructed outdoor classrooms surrounded by five different habitats, namely, the mangroves, back mangroves, secondary forest, herbs and spice gardens, and freshwater pond. It is a popular gathering place for students to conduct activities such as water sampling and encourage learning outdoors.

The Reserve has built up a close relationship with several corporate sponsors, such as HSBC, which has assisted in setting up the Sungei Buloh Education fund to support the nature education programmes. Some schools have also actively joined in taking care of the wetland through the "adopt a park scheme."

In one of the many sign boards erected within the reserve is a statement made by Hugh H. Iltis, which says "If we love our children, we must love the earth with tender care and pass it on, diverse and beautiful, so that on a warm spring day 10,000 years hence they can feel peace in a sea of grass, can watch a bee visit a flower, can hear a sandpiper call in the sky, and can find joy in being alive". This statement is highly relevant to the SBWR, as the reserve is a fine example of man working in harmony with nature within highly urbanized Singapore. So when you visit Singapore next time, do take a break at the SBWR to watch the collared kingfisher flying along the riverbanks and to listen to the sandpipers call and be happy that you are alive!

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- 1 The Republic of Singapore consists of one main island and more than 50 smaller offshore islands. The total land area is 660 km². Despite the rapid urbanization and high population density, around 350 species of birds have been recorded in Singapore of which 165 are residents and 152 are winter visitors.
- 2 ASEAN Heritage Parks are protected areas of high conservation importance that together, preserve a complete spectrum of ecosystems representative of the ASEAN Region. Each site is nominated by its government and evaluated by other member countries and experts.