

KOTA KINABALU WETLANDS TOWARDS ITS RAMSAR STATUS

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Abstract:

Kota Kinabalu Wetlands (KKW), a 24-hectare mangrove area located in the heart of Kota Kinabalu city, is managed by the Sabah Wetlands Conservation Society (SWCS), a not-for-profit organisation. KKW is governed by a Management Committee consisting of elected members and ex-officio from relevant government agencies and WWF-Malaysia. This unique collaborative partnership provides diverse expertise needed for achieving its aims. Since its official opening to the public in March 2000 until 2014, more than 150, 000 local and international visitors have visited KKW; and more than 30,000 students have participated in its Environmental Education Programme. Acting as a biodiversity reservoir, KKW supports more than 92 species of resident and migratory birds, various reptilian species, 12 species of mangrove trees and other marine life-forms. KKW was nominated as a RAMSAR site in 2013 and is currently pursuing RAMSAR Status as Wetlands of International Importance.

This paper describes the crucial timeline of KKW, the introduction of SWCS Management, efforts for biodiversity conservation, its environmental education activities and efforts in its nomination as Ramsar status as well as the achievements and challenges encountered over the past 15 years.

INTRODUCTION

Sabah Wetlands Conservation Society

Sabah Wetlands Conservation Society (SWCS) is a not-for-profit organization based in Kota Kinabalu City, which advocates environmental conservation and awareness of wetlands ecosystem found in Sabah. The vision of SWCS is “conservation and sustainable management of Sabah’s Wetlands”. Derived from the vision, the mission of SWCS is “to ensure protection and wise use of all wetlands in Sabah, through education, research and advocacy”.

Formed on 22nd August 2005, SWCS was entrusted by the Sabah Wildlife Department to manage KKW in 2006 with the aim for it to operate independently as a self-sustainable centre. SWCS has three objectives which are (i) To promote the conservation of wetlands in Sabah and the variety of plants, birds and other kinds of living organism found in them; (ii) To raise public awareness and appreciation of the wetlands and public involvement in protecting wetlands; (iii) To manage Kota Kinabalu Wetlands as a model wetland centre for the purpose of conservation, education, recreation, tourism and research.

SWCS is managed by 20 management committee members from relevant government agencies viz. Ministry of Local Government & Housing, Kota Kinabalu City (DBKK), Sabah Wildlife Department, Environment Protection Department, Sabah Education Department, Department of Irrigation and Drainage and local NGO (i.e. WWF- Malaysia).

KOTA KINABALU WETLANDS

Wetlands are an often misunderstood and underappreciated as wastelands. This resulted in most of the wetlands being destroyed to make way for buildings or landfills. In the late 1980's, a group of environmentalist from WWF discovered a mangrove swamp in Likas and lobbied for the area to be converted for protection. This area is now known as the Kota Kinabalu Wetlands (KKW), a 24 hectares of mangrove swamp located in the heart of Kota Kinabalu City. It was designated as a Bird Sanctuary in September 1996 under the custody of Sabah Wildlife Department, and was declared a State Cultural Heritage Site in 1998 towards wetlands conservation in Sabah. It was previously known as Kota Kinabalu City Bird Sanctuary (KKCBS) and went through a name change to become the Kota Kinabalu Wetlands on 1st August 2006. This change was to reflect the overall values of the place and while placing greater emphasis on the conservation of wetlands.

KKW was managed by the Likas Wetlands Sanctuary Management Committee (LWSMC) before it was officially taken over by SWCS on July 1, 2006. KKW is managed by 6 full time staff, who are responsible for managing daily activities at the wetlands - they consist of the Manager, Conservation & Science Officer, Environmental Education Officer, Conservation & Education Assistant, Administrative & Account Assistant and Gardener. KKW is opened from 8.00am to 6.00pm from Tuesday until Saturday and is closed on Mondays, except for public holidays.

BIODIVERSITY CONSERVATION

Fauna Diversity

KKW supports an abundance of aquatic and other wildlife. More than 90 species of resident and migratory birds, 21 species of fish, 19 crustacean species, 13 mollusc species, 44 insects' species and 6 reptiles' species, 2 chelicerates species and 1 species of cnidaria have been recorded in KKW. Egrets, Kingfishers and little herons' are commonly seen throughout the day whilst the iconic Purple Heron and Rufus Night heron are known to make quite frequent appearances. KKW also serves as resting and feeding habitats for migratory birds, which are usually sighted from September to April. These wetlands have recorded 2 protected species of birds which are the Lesser adjutant stork (*Leptoptilos javanicus*) and the Chinese egret (*Egretta eulophotes*). Both species are listed in the 2010 IUCN red List as Vulnerable.

Research and development (R&D) is part of the conservation efforts in KKW. Besides studies on the mangrove fauna and flora at KKW, a recent study on bees, wasps and

hoverflies recorded an additional 44 new insect species (28 bees, 15 wasps and 1 hoverfly) from a total of 88 insect species identified (Dirk, 2014). Continuous water quality monitoring is conducted to ensure that the wetlands sustainably support the survival of aquatic species.

KKW has seen the disappearance of particular animal species due to the presence of illegal settlements within the mangrove swamp. For example otters, long-tailed macaques (*Macaca fascicularis*), some birds such as Black-shouldered Kite (*Elanus axillaris*) and Straw headed bulbul (*Pycnonotus zeylanicus*) which used to inhabit the mangrove swamp are no longer sighted since the development of a golf course in the vicinity of the wetlands (2011, Lee).

Flora Diversity

There are more than 12 species of mangrove trees out of a total of 32 mangrove species found in Sabah recorded in KKW, viz the genus *Rhizophora*, *Bruguiera*, *Avicennia* and *Sonneratia*. Of these, the most dominant species in KKW is *Rhizophora apiculata*. Since the early days of KKW, mangrove tree planting is the priority in order to restore the badly degraded area due to encroachment by illegal settlers in KKW. More than 10,000 seedlings have been planted in KKW since year 2000 until 2012 (Lee and Zainie, 2012).

The total area of mangrove vegetation within forest reserves in Sabah is approximately 338,000 ha or 60% of the country's total (Tangah *et al.*, 2015). Based on the latest assessment of forest cover of Sabah, about 3,300 ha of mangrove forest have been illegally encroach and exploited which lead to ecological devastations such as flash floods, waste disposal problem and low water quality. Therefore, in collaboration with Sabah Forestry Department in the year 2010, approximately 25,000 trees have been planted at Sulaman Lake Forest Reserve (SLFR) to conserve the degraded mangrove area.

SWCS in collaboration with Sabah Parks has embarked on efforts to conserve and protect an endangered mangrove species known as Berus mata buaya (*Bruguiera hainessii*). This species is listed as "critical endangered" by the IUCN. It has very low propagation and a slow growth rate (Yang *et. al.*) The propagules were obtained from the only 2 matured trees left in Pulau Manukan, Taman Tunku Abdul Rahman, Sabah. Currently, 56 propagules have been planted in KKW nursery, and studies are currently conducted to monitor its propagation and growth rate.

ENVIRONMENTAL EDUCATION PROGRAMME

Since its official launching to the public in March 2000 until 2014, more than 150,000 local and international visitors have visited KKW; of these more than 30,000 students have participated in the Environmental Education Programme. A number of Environmental Education Programmes in line with SWCS objectives were developed, mainly to raise public awareness and appreciation of the importance of wetlands as well as to promote public involvement in protecting the wetlands. These include international participation from Japan, Sweden, Singapore and many more through our existing Environmental Education Programme.

Among the programmes carried out in KKW are (i) Mangrove Experiences programme: main activity is to introduce wetlands through interpretative walks into the mangroves, where participants can appreciate the various types of flora and fauna. (ii) Mangrove Conservation Programme: where participants contribute back to the wetlands - after guided walks in the mangroves, they will experience the mangrove tree replanting activity. This has proven to be an excellent opportunity for those interested in getting closer to the mangroves. (iii) Mangrove voluntary work: this programme offers the community an opportunity to play a role in supporting the conservation of KKW in mangrove clean up or nursery work. (iv) Handcrafting from Mangrove programme: this program is in support of efforts to recycle, where participants learn how to recycle used paper and produce creative handmade products, i.e photo frame, greetings card and others.

KKW also has a programme with local schools and communities through the outreach program; via this activity, KKW is able to spread public awareness and appreciation of the wetlands through talks and motivational camps. This is one of the programmes conducted by KKW to share the importance and crucial facts about wetlands to the public. On an annual basis, KKW celebrates World Wetlands day, World Environment Day and Malaysia Environment Week, as part of our effort to increase awareness among the community.

ACHIEVEMENT OF KOTA KINABALU WETLANDS

KKW is heading towards its goal as a model wetland centre involved in the conservation, education, tourism and research activities. Currently, it is considered as a well-managed wetlands reserve that serves as a model for mangrove conservation in an urban environment.

From the environmental conservation perspective, KKW has achieved remarkable success in fulfilling its responsibilities. Among its achievements since it was established are:

- It is ranked by Sabah Wetlands inventory of 1986 as the top most important wetlands habitat in Sabah to "... water birds significant interest combined with accessibility making it ideal for educational tourist development".
- Received the Sabah Environmental Award 2009–2010 for Outstanding Non-Governmental Organization Award.
- Recognition by Sabah Government as "*Pejabat Tanpa Sampah*" in 2012 – 2013.
- Nomination as the second RAMSAR Site in Sabah in 2013.
- Successfully organized the 3-in-1 fundraising events; Fundraising Dinner, Fundraising Golf Tournament and International Symposium on Conservation and Management of Wetlands in 2014.

Nomination as RAMSAR Site

Malaysia presently has 6 sites designated as Wetlands of International Importance, with a surface area of 134,158 hectares, in which 4 wetlands are in Peninsular Malaysia, 1 in Sarawak and 1 in Sabah. Of these, Sabah has the largest Ramsar site located in the Ulu Segama Kinabatangan Wetlands with the area coverage of 78,803 hectares.

Sabah Wetlands Conservation Society has initiated the proposal to attain RAMSAR status for KKW. The Sabah Tourism, Culture and Environment Minister, Datuk Seri Panglima Haji Masidi Haji Manjun, expressed his utmost support towards the proposal during World Wetlands Day celebration on 2009. This was then coordinated by SWCS in collaboration with the Sabah Biodiversity Centre (SaBC) and now Sabah Natural Resources Office (NRO) as the new focal point for RAMSAR at the State level. The nomination has been facilitated by the Ministry of Natural Resources and Environment (NRE) as the administrative authority (National Focal Point) and communicates with the Ramsar Secretariat for any inquiries or requirement regarding the nomination.

Due to its importance as wetlands ecosystem with significant conservation and socioeconomic value, the KKW was submitted for recognition as the second Ramsar Site in Sabah as it fulfils 4 listed criteria out of the 9 criteria as follows: stipulated under the Convention on Wetlands of International Importance, called the Ramsar Convention.

Criteria 1: Wetlands of international importance due to representative, rare or unique examples of a near-natural wetland type found within the appropriate biogeographic region.

KKW is a particularly good example of a natural coastal mangrove system, characteristic of the Borneo biogeographical region (Udvardy, 1975) and critical in maintaining local biodiversity due to the extensive loss of mangrove forests that once existed in the coastal Kota Kinabalu.

Criteria 2: Wetlands of international importance supporting vulnerable, endangered, or critically endangered species or threatened ecological communities.

KKW recorded 2 protected species of birds:

- i. Lesser Adjutant Stork (*Leptoptilos javanicus*), listed in the 2010 IUCH red List as “Vulnerable”
- ii. Chinese Egret (*Egretta eulophotes*), listed in the 2010 IUCN Red List as “vulnerable” and Appendix 1 of the CMS.

Criteria 3: Wetlands of international importance supports populations of plant and/or animal species important the biological diversity of a particular biogeographic region.

KKW supports more than 12 species of mangroves plants and a large diversity of animals including more than 92 species of resident and migratory birds, various reptilian species like monitor lizards and mangroves skinks, piscine species including mud skippers, archerfish, catfish and halfbeak, many crustacean species such as mud lobster and fiddler crab.

Criteria 8: Wetlands international importance due to its role of as a source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetlands or elsewhere, depend.

KKW is an important spawning and nursery ground for fish, prawn and crab. It is also an important feeding ground for water birds as well as canopy birds. Migratory birds such as sandpipers, red shanks and snipes use the site as a rest place in their migration path.

THE CHALLENGES

Wetlands have been internationally recognised as a valuable ecosystem for wildlife and utilisation by human. It has become a major source of interest to the professional and the public, but at times has often been regarded as wastelands, with some of the biggest abuses put on it observed.

Over the years, it has been very challenging year for SWCS, particularly in the conservation efforts to restore the degraded mangroves areas or to raise awareness among the public. Other key challenges faced by SWCS are as follows;

1. Insufficient and discontinuous sources of funding required to manage these urban wetlands as well as to carryout research upon which conservation and protection strategies are based upon.
2. Manpower shortage is one of the most serious problems that tend to affect the daily operation adversely besides delaying even the disposal of urgent cases. What is also a matter of concern is that it seriously restricts the scope for taking up new activities, which is not only inevitable at times, but it could also be critical requirement to fulfil growing information needs. KKW is currently operating with a minimum of 6 staffs that required to do multi-task, such as publicity, technician, security guard, maintenance, account, daily cleaning, CSR and funding etc. It is, however, important to note that it is not just the mere manpower shortage that is responsible for inadequate output or inefficient service delivery process but the quality of personnel as well as the working environment is also important to improve the output.
3. KKW experiencing rapid growth and encroachment from land developers. Many of these communities are confronted with the tough issue of preserving the quality of the environment, while at the same time allowing development to occur. SWCS supports sustainable development with the intention to protect KKW from any form of activities/projects which are detrimental the wetland's ecosystem and home to various species of mangrove trees, birds and aquatic organism.
4. KKW is faced with a number of issues that threaten the mangrove ecosystem. Some of the threats that are periodically faced is the illegal harvesting of resources within the wetlands. Poaching of aquatic resources activity by local villagers occurs which

causes decimation of the aquatic resources which serves as food for the resident and migratory birds.

WAY FORWARD

Sabah Wetlands Conservation Society (SWCS) has been vigorously working through collaboration with Sabah Natural Resources Office (NRO) as the State focal point for Ramsar and Ministry of Natural Resources & Environment Malaysia towards achieving Ramsar recognition status for KKW as wetland of international importance. To support this process, the Sabah Biodiversity Centre (SaBC) commissioned the development and preparation of a management plan as a tool for the conservation and sustainable management of the KKW. In addition, SWCS is seeking for funds to conduct more research and development (R&D) at KKW in order to obtain new and fundamental knowledge towards the conservation of an urban wetlands ecosystems, in line with SWCS's objective to manage KKW as a model wetland centre for the purpose of conservation, education, recreation, tourism and research.

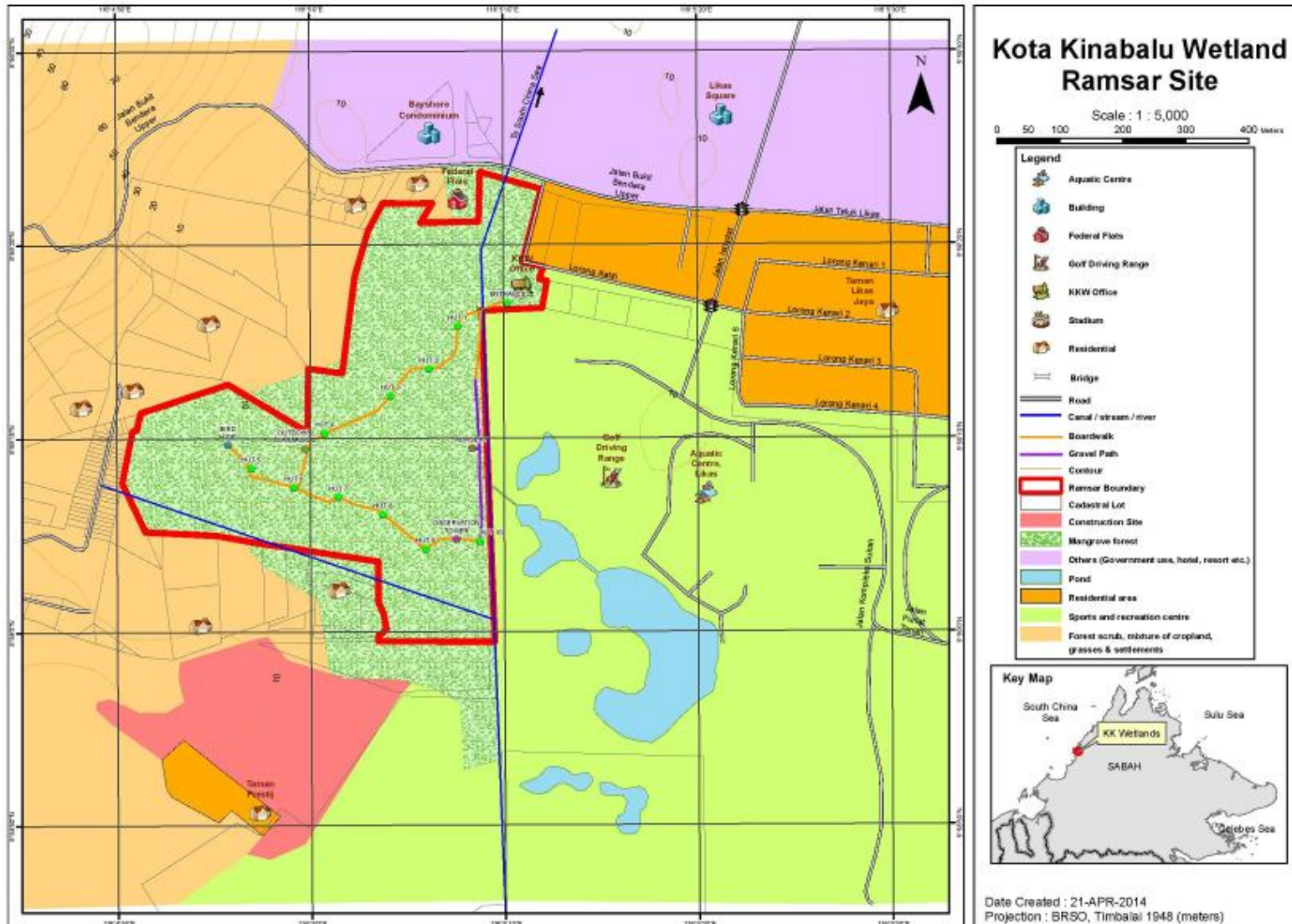


Figure 1: GIS map of KKW

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