

# Information Sheet on EAA Flyway Network Sites (SIS) – 2013 version

Available for download from <http://www.eaaflyway.net/the-flyway/flyway-site-network/>

*Categories approved by Second Meeting of the Partners of the East Asian-Australasian Flyway Partnership in Beijing, China 13-14 November 2007 - Report (Minutes) Agenda Item 3.13*

## Notes for compilers:

1. The management body intending to nominate a site for inclusion in the East Asian - Australasian Flyway Site Network is requested to complete a Site Information Sheet. The Site Information Sheet will provide the basic information of the site and detail how the site meets the criteria for inclusion in the Flyway Site Network.
  2. The Site Information Sheet is based on the Ramsar Information Sheet. If the site proposed for the Flyway Site Network is an existing Ramsar site then the documentation process can be simplified.
  3. Once completed, the Site Information Sheet (and accompanying map(s)) should be submitted to the Flyway Partnership Secretariat. Compilers should provide an electronic (MS Word) copy of the Information Sheet and, where possible, digital versions (e.g. shapefile) of all maps.
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## 1. Name and contact details of the compiler of this form:

Full name: Mr. Wicha Narungsri

EAAF SITE CODE FOR OFFICE USE ONLY:

Institution/agency: Thai Wetlands Foundation

Address : 79/233 M.3 Samet sub-district, Muang district, Chon Buri province, 20000

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## 2. Date this sheet was completed:

20 July 2014

**3. Country:**

Thailand

**4. Name of the Flyway Network site:**

Khok Kham

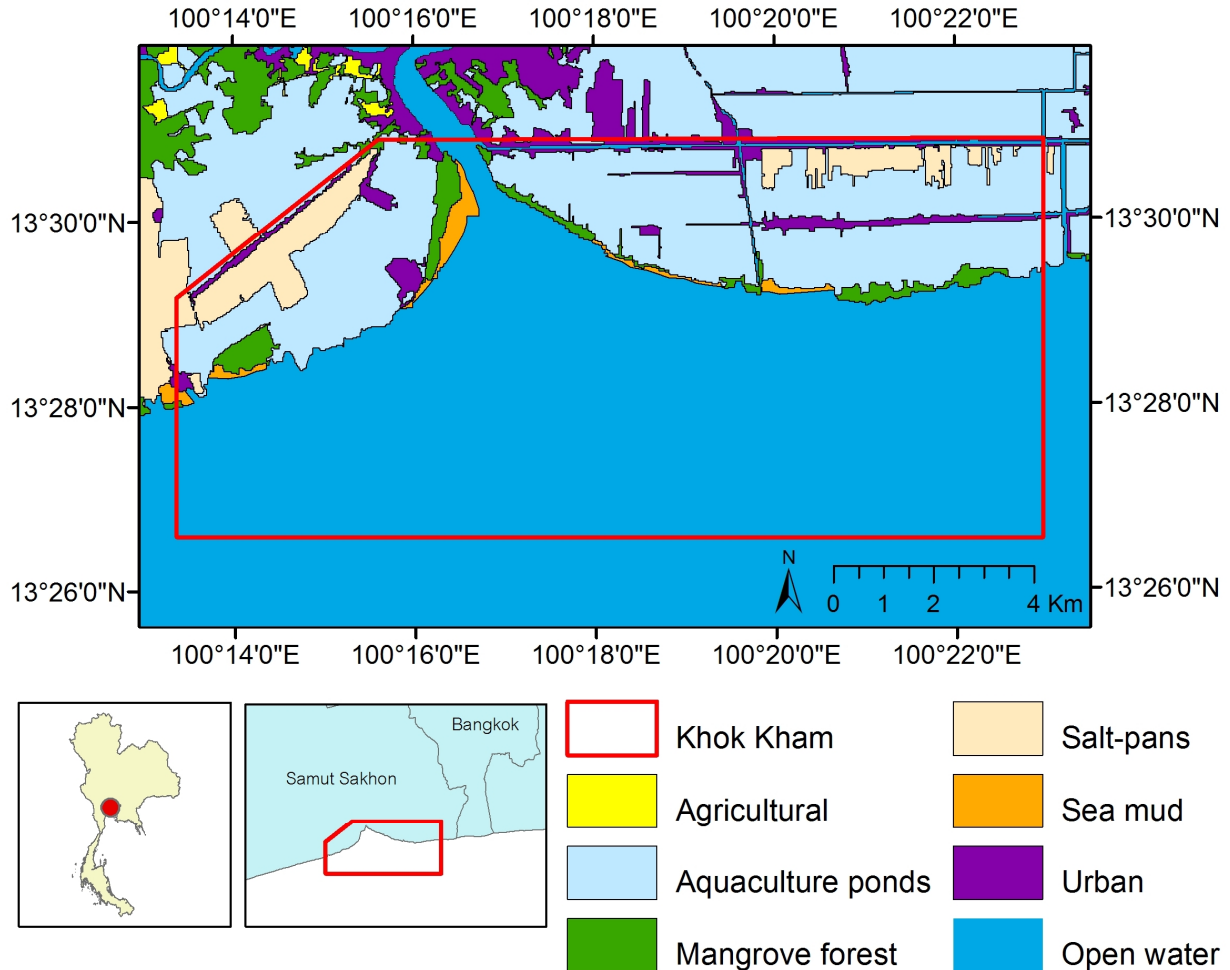
**5. Map of site:**

The most up-to-date available and suitable map of the wetland should be appended to the SIS (only in digital format and shape file). The map must clearly show the boundary of the site. Please refer to the “Digitising Site Boundaries in Google Earth” file linked [here](#).



Habitat map courtesy of BCST and Dr Naruemon Tantipisanuh (Conservation Ecology Unity, King Mongkut's University of Technology, Thonburi).

## Khok Kham Flyway Network Site



### 6. Geographical coordinates (latitude/longitude, in decimal degrees):

Latitude 13.487974, Longitude 100.335168

### 7. Elevation: (in metres: average and/or maximum & minimum)

1 to 2 meters above mean sea level

### 8. Area:

The total area of the site is 7,561.44 ha. (calculated by GIS system), covering some of 2 sub-districts and 1 municipality, namely Khok Kham and Phantai Norasingh sub-districts and Bang Ya Praek municipality, Samut Sakhon Province. The area is comprised of dwelling places, industrial areas, salt pans, aquaculture sites, mangrove forests, canals, rivers, mudflats and the sea.

### **9. General overview of the site:**

The site is adjacent to Tachin River and the coastline of Muang Samut Sakhon district, Samut Sakhon province. It is about 45 kilometers from Bangkok and is surrounded by the following.

To the north, it is bordered by Muang Samut Sakhon district, Samut Sakhon province.

To the south, it is bordered by the Gulf of Thailand.

To the east, it is bordered by Bang Khun Thian district, Bangkok.

To the west, it is bordered by three further sub-districts of Samut Sakhon Province (Ban Bo, Kalong and Na Khok) and further abuts Samut Songkhram province.

- The terrestrial part of the site is used in a various manner such as dwelling places, industrial zones, and market places. Open space parcels of the site are used for agriculture and fisheries such as salt pan farming and aquaculture ponds, which serve as important habitats and feeding grounds for local water birds and migratory shorebirds. Areas of habitat area as follows: aquaculture 3150.07 ha, mangrove forest 299.14 ha, salt-pans 561.08 ha, sea mud 134.06 ha, urban 41.391 ha and open water 13.432 ha.

- The coastal areas of the site comprises mangrove forests and mudflats which are used for cockle and Asian green mussel culture. They are also feeding grounds for local water birds and migratory shorebirds when tide is out.

### **10. Justification of Flyway Site Network criteria:**

Please provide waterbird count information (with year of latest count) that demonstrates that the site meets the criteria of the Flyway Site Network (Annex 1). That is:

- it regularly supports > 20 000 migratory waterbirds; or,
- it regularly supports > 1 % of the individuals in a population of one species or subspecies of migratory waterbird; or,
- it supports appreciable numbers of an endangered or vulnerable population of migratory waterbird
- it is a “staging site” supporting > 5 000 waterbirds, or > 0.25% of a population stage at the site.

A listing of the populations of migratory waterbirds covered by the East Asian – Australasian Flyway Partnership and the 1% thresholds is attached (Annex 3).

The “staging site” criterion is particularly difficult to apply and application of this should be discussed with the Secretariat. Also note that some species have several populations that are very difficult to distinguish in the field.

- The site serves as habitats and feeding grounds for at least 20,000 resident and migratory shorebirds and other waterbirds.

- There are several species of shorebirds for which the site regularly holds more than 1 % of the flyway population.

- It is a site of habitats and feeding grounds for many migratory shorebird species that are threatened and endangered such as Spoon-billed Sandpiper (maximum 7; more usually 3-4 winter.

Sightings have included one leg flagged adult (female 05) in two successive winters. One head-started juvenile. A first-year bird over-summered), Spotted Greenshank (irregular; possibly some of same birds that occur in Pak Thale=Laem Phak Bia), Asian Dowitcher (~150 winter and over-summering), Eurasian Curlew, Far Eastern Curlew (one or two records, midwinter), Black-tailed Godwit (possibly over 4000, up to 10,000? wintering population apparently increasing), Great Knot and Painted Stork (regular visitor). Data from Mr Suchart Daengphayon, local observer on behalf of BCST via Phil Round.

English Name	Scientific Name	Current IUCN Red List Category	Max count
Spoon-billed Sandpiper	<i>Calidris pygmaea</i>	CR	7
Spotted Greenshank	<i>Tringa guttifer</i>	EN	70
Great Knot	<i>Calidris tenuirostris</i>	VU	~1000
Far Eastern Curlew	<i>Numenius madagascariensis</i>	VU	1
Painted Stork	<i>Mycteria leucocephala</i>	NT	60
Asian Dowitcher	<i>Limnodromus semipalmatus</i>	NT	~400
Black-tailed Godwit	<i>Limosa limosa</i>	NT	~4000
Eurasian Curlew	<i>Numenius arquata</i>	NT	40
Bar-tailed Godwit	<i>Limosa lapponica</i>	LC	275

### 11. Wetland Types:

- Marine/coastal Wetlands: A, E, F, G, H, I,
- Inland Wetlands: Sp, Ss
- Human-made Wetlands: 1, 2, 5, 9

### 12. Jurisdiction:

Under the governance of Samut Sakhon Province, the site is mainly managed by three sub-district administrative organizations namely Phantai Norasingh, Khok Kham, and Bang Ya Praek Sub-Districts.

### 13. Management authority:

The government agencies that are responsible for natural resources and environmental management for this site are the followings.

- Provincial Office for Natural Resources and Environment Samut Sakhon
- Provincial Administrative Organization and Local Administrative Organizations
- Regional Environmental Office 5, Office of the Permanent Secretary for Natural Resource and Environment
- Office of Natural Resources and Environmental Policy and Planning (ONEP)

-Marine and Coastal Conservation Center 2 (Samut Sakhon province), Department of Marine and Coastal Resources (DMCR)

-Marine Department

-Pantai Norasingh Non-hunting Area, Department of National Parks, Wildlife and Plants Conservation (DNP)

The independent organizations that are involved in the environmental management for this site are the following.

-Thai Wetlands Foundation

-Bird Conservation Society of Thailand

-Khok Kham Conservation Club (contact persons: Mr Sakchai Netlomwong and Mr Suchart Daengphayon)

-Erosion Prevention Learning and Operation Center (contact person: Mr Worapon Duanglomchan)

#### **14. Bibliographical references:**

A list of key technical references relevant to the wetland, including management plans, major scientific reports, and bibliographies, if such exist. Please list Web site addresses dedicated to the site or which prominently feature the site, and include the date that the Web site was most recently updated. When a large body of published material is available about the site, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies.

Boonyavejchevin, S., Buasalee, R. (2011). Mangrove forest: Ecology and flora. Bangkok: Rabbit in the Moon Foundation.

Chan, S., Benstead, P. & Davies, J., (Eds.) (2001). Wetland management handbook for South East Asia. Tokyo: Ministry of the Environment, Japan.

Lekagul, B. & Round, P. D., (1991). A guide to the birds of Thailand. Bangkok: Saha Karn Bhaet. Mangrove conservation office, Department of marine and coastal resources. (2012). Mangrove in Samut Sakorn, Thailand. Bangkok : DMCR.

Nabhitabhata, J., Lekagul, K. & Sanguansombat, W.(n.d.). Thai birds. n.p.

Round, P, D. & Kongthong, W. (2009). Birds of Laem Phak Bia. Bangkok : Chai Pattana Foundation.

Round, P.D., Wichian Kongtong, Wicha Narungsri and Smith Sutibut. 2009. Birds of Laem Phak Bia. Laem Phak Bia Environmental Research and Development Project, Bangkok. 288 pp.

Round, P.D. and Gardner, D. 2008. The birds of the Bangkok area. White Lotus, Bangkok. xlvii + 226 pp.

Erftemeijer, P. L. A., and R. Jukmongkol. 1999. Migratory shorebirds and their habitats in the Inner Gulf of Thailand. Wetlands International Thailand Programme Publication 13. Wetlands International and Bird Conservation Society of Thailand, Bangkok and Hat Yai.

**15. Physical features of the site:**

This site is a coastal floodplain and is about 1-2 metres above mean sea level. The Ta Chin River, a deltaic branch of the Chao Phraya River, runs through the central area of site and flows into the Gulf of Thailand in Muang Samut Sakhon sub-district. At the heart of the site, there are networks of canals that flow into the sea. Along the coastline there are mangrove forests, mudflats and sandy beaches, influenced by tide flow and seasonal monsoons, causing change of the sandy beaches and mudflats throughout the year. In this area, the water level of high tide is 3.3 metres and of low one is 0.5 metre above mean sea level, and the tidal period is 1 hour, which means that there is one tidal cycle per day and cycle is changing by about one hour, for example if on day 1 high tide is at 6:00 am on day 2 it's at about 6:50 am.

- The site is situated in tropical rainy climate region and influenced by land breezes, sea breezes and south-west monsoons in summer, resulting high humidity and moderate rain. Its relative humidity is between 60%-90% and average temperature is between 25 °C and 32.6 °C. Its annual precipitation was 1120.8 mm. in 2006.

**16. Physical features of the catchment area:**

The site is a coastal floodplain and most of its soil is clay with high salt as it can be flooded by seawater. The groundwater level is high and nearly land surface, which is suitable for building reservoirs, salt pan farming and aquaculture. At the heart of the site, networks of canals connecting with the Tachin River. They help facilitate drainage of fresh water into the Gulf of Thailand in rainy season, which can affect marine life if excessive fresh water is released. Seawater of the site is in good condition for aquaculture and salt pan farming.

**17. Hydrological values:**

Tachin River and other rivers which drain into the Gulf (The Mae Klong to the west, and the Chao Phraya to the east) winds their way through Thailand's Lower Central Plain, resulting in accumulation of sediments and nutrients in the gulf. The accumulation leads to formation of mudflats which are important to local communities' way of life and function as nursery places for young economic marine life as well as feeding grounds for local water birds and migratory shorebirds in winter.

**18. General ecological features:**

The site includes salt pans, inland aquaculture ponds, coastal aquaculture sites, mangrove forests, mudflats and sandy beaches. It was found that there are 24 species of mangroves, 4 species of mammals, 189 species of birds and some of reptiles and mudflat faunas.

The discharge of Tachin River into the sea and tidal flow have created mudflat ecosystems around the estuary and coastal areas that merge into mangrove forests, resulting in a centre of biological diversity that is essential for nurturing young marine life, and is a source of incomes for coastal fishery, and a feeding ground for many kinds of birds when tide is out.

The mangrove forests in the estuary and along the coastal areas of the site function in collecting sediments from currents, reducing impact of monsoons and tidal waves and preventing coastal erosion. Moreover, they are also havens for wild birds and waterbirds to sleep at night.

When tide comes in, salt pans, inland aquaculture areas and coastal aquaculture sites are important safe places for local waterbirds and migratory shorebirds to stay in winter.

### **19. Noteworthy flora:**

- In this site there are at least 24 species of plants from 16 families. Three species of noteworthy local flora are *Avicennia marina*, *Avicennia alba*, *Rhizophora apiculata*, *Rhizophora mucronata*, *Xylocarpus granatum*, *Thespesia populnea* and *Sonneratia caseolaris*. They provide habitat for wildlife and nursery areas for young sea animals that are important to mangrove forest ecosystems, as well as food and herbs for humans.
- Density of mangrove forest helps in holding soils and filtering rubbish from water flow to the sea as well as reducing wave energy and coastal erosion caused by monsoons (see attachment).

### **20. Noteworthy fauna:**

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 10. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the SIS.*

(Please add here the species which do not come under sec no 14)

This site provides habitats and feeding areas for many species of animals such as birds, mammals, reptiles and soil fauna.

There are 189 species of birds comprising 85 local bird species, 84 migratory birds species, of which 12 are listed in The Threatened Birds of The World. (see attachment). Other threatened species include Brown-chested Jungle Flycatcher *Rhinomyias brunneatus* VU and Great Thick-knee *Burhinus recurvirostris* NT.

The noteworthy mammals of the site include crab-eating macaque *Macaca fascicularis*, smooth-coated otter *Lutrogale perspicillata*, fishing cat *Prionailurus viverrinus* and Lyle's flying fox *Pteropus lylei*. Offshore coastal waters support Bryde's Whales *Balaenoptera edeni* and Irrawaddy Dolphins *Orcaella brevirostris*.

The water monitor *Varanus salvator* is an important animal for ecosystems in the site, helping in controlling population of some kinds of animals in the area as well as being a scavenger.

### **21. Social, economic and cultural values:**



**a)** Describe if the site has any general social, economic and/or cultural values e.g., fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values:

In the site there are two Buddhist temples, namely Wat Sahakon and Wat BangYa Praek, which serve as places where spirits of Buddhist peoples in the communities are combined. Most of the people are Buddhists and the rest are Muslims.

The Pantai Norasingh Shrine is of historical and cultural importance recalling the early days of the (present) Chakri Dynasty, and is widely venerated and worshipped.

The site is an origin of culture and wisdom in traditional salt farming, traditional fishing tools development, utilization of fishing tools in compliance with marine resources conservation, and seafood products development from traditional local fishery.

It also offers a unique demonstration site in which sustainable anti-erosion measures are being implemented to restore a previously eroding coastline (Erosion Prevention Learning and Operation Center) developed by local authorities in collaboration with the Department of Marine and Coastal Resources.

Along the coastline of the site, mangrove forests serve as nursery places for young marine life and maintain balance condition for seawater creatures, resulting in generating incomes for local fisheries and in creating high economic values for commercial fisheries in terms of fresh seafood consumption and seafood processing for domestic consumption and export.

**b)** Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? (Double-click the checkbox to check and choose "Checked" under "Default Value" from "Check Box Form Field Options" window)

If yes, tick the box  and describe this importance under one or more of the following categories:

- I. Sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- II. Sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- III. Sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- IV. Sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

## **22. Land tenure/ownership:**

a) Within the Flyway Network site:

- Most of mangrove forests along the coastline are reserved forests and are protected by Royal Forest Department and Department of Marine and Coastal Resources.

b) In the surrounding area:

- Most of mangrove forests along the coastline are reserved forests and are protected by Royal Forest Department and Department of Marine and Coastal Resources.
- Canals in the area are under the responsibility of Marine Department.
- Mudflats and the sea are under the responsibility of Department of Marine and Coastal Resources and Department of Fisheries.

### **23. Current land (including water) use:**

a) Within the Flyway Network site:

This flyway site is comprised of the followings.

- Human settlements
- Aquaculture ponds
- Salt pans
- Cockle and mussel farms along the coast
- Erosion protection and Mangrove forest restoration
- Other economic activities

b) In the surroundings/catchment:

- Fisheries in canals
- Coastal and commercial fisheries
- Cargo ship navigation through Tachine River estuary

### **24. Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:**

a) Within the Flyway Network site:

- Trespassing on mangrove forests for aquaculture in the past, resulting in coastal erosion, and current use of private land where mangrove forests are present.
- Removing surface soil from coastal areas to build aquaculture ponds in the past. Currently this action prohibited by law as a result of severe coastal erosion.
- Salt pans changed into aquaculture ponds resulting in reduced areas for small migratory birds.
- In the absence of clear land-zoning legislation, the rapid development of large scale residential property projects and industrial premises which is likely to affect the sustainability of habitats in the future.
- Discharge of waste from industries and households into water resources, resulting in having severely adverse effect to natural resources in the area.

b) In the surrounding area:

- In the past, there had been illegal fishing in marine conservation areas by fishing vessels. Currently, there are monitoring and protection measures undertaken by relevant government agencies and local conservation groups, including the measure on annual fishing closure for the Gulf of Thailand during June to July.

- In the past, abundant outflow of freshwater and accompanying sediments into the sea occurred according to the seasons. However, flow rates and sediment deposition have been reduced by the construction of irrigation and hydro-power dams on rivers feeding into the gulf. This has both worsened erosion and altered flow patterns and (probably) increased salinity to the detriment of the ecosystem and the populations of birds and other aquatic animals

Ad hoc anti erosion measures (e.g, construction of concrete sea walls east and west of the site) may alter coastal flow patterns and worsen coastal erosion in adjacent areas within the site.

**25. Conservation measures taken:**

**a)** List national and/or international category and legal status of protected areas, including boundary relationships with the Flyway Network site:

In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

- The site is part of Inner Gulf of Thailand wetland, considered a nationally important wetland by the Thai government cabinet resolution of 1 August 2000 (and an internationally important wetland by most national and national (non-governmental) conservation bodies and one of its mudflats merges into “Don Hoi Lod”, which was designated as Wetland of International Importance (Ramsar Site) No.1099 by the cabinet resolution of 5 July 2001.

- The site was designated as a site for East Asian-Australian Flyway Partnership (EAAFP) by the cabinet resolution of 20 July 2010.

- The site is part of Thailand’s important area for bird and biological diversity conservation (IBA) No.32, certified by Birdlife International.

Part of the site lies within Pantai Norasingh Non-hunting Area administered by the department of National parks, Wildlife and Plants Conservation

**b)** If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate, see Annex 3):

Ia ; Ib ; II ; III ; IV ; V ; VI ; N/A

**c)** Does an officially approved management plan exist; and is it being implemented?:

- There are no official national management plans but there are some coastal conservation and restoration plans of government agencies such as Department of Marine and Coastal Resources and Marine Department.

- Local conservation groups in the coastline areas of the site have established conservation strategies such as protection of marine animal resources, coastal erosion protection, mangrove forest restoration, bird population and species surveys, and meeting organization for communities on awareness of values and importance of natural resources. These strategies are undertaken by local government agencies in collaboration with private sectors and NGOs.

If yes, is it being implemented?: If no, is one being planned?

**d)** Describe any other current management practices:

- Workshops to strengthen local conservation groups, continuously supported by Marine and Coastal Conservation Center 2 (Samut Sakhon province)
- Development of Strategic plans by local conservation groups.
- Surveys and monitoring of globally threatened bird species covering all seasons.
- Promotion and conservation of vocations important to bird feeding grounds, which are part of the strategy development.

## **26. Conservation measures proposed but not yet implemented:**

e.g. management plan in preparation; official proposal as a legally protected area, etc.

- Identification of appropriate routes and areas for bird watching to prevent threats from related activities such as bird watching, photographing and tourism.
- Promotion of community capacity building on knowledge regarding birds and ecosystems in the area.
- Annual conservation activity plan development and incorporation into local authority work plans.
- Designation of areas for protection of environment-related international conventions.

## **27. Current scientific research and facilities:**

e.g., details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

- Behavior survey and data collection of Spoon-billed Sandpiper was collected during 2010-2011 by Bird Conservation Society of Thailand in collaboration with Department of Marine and Coastal Resources.
- Studies and surveys regarding diversity of soil fauna and other organisms have been conducted by many universities and relevant agencies such as Department of Fisheries and Department of Marine and Coastal Resources, Pollution Control Department and Water Resources Department.
- The Asian Midwinter Waterfowl Census (AWC) has been conducted at the site annually since 2005, and data are also available for some previous years back to 1999.

Offshore boat surveys for seabirds and cetacea are conducted monthly by the Department of Marine and Coastal Resources

-Data on numbers of shorebirds in the eastern sector of the site is being collected monthly by BCST

**28. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:**

e.g. visitors' centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

- Organization of a shorebird conservation event since 1998.
- Leaflets on information of the site produced occasionally.
- Interpretive signs and nature trails along the coast developed.
- Coastal Aquaculture Learning Center established.
- Learning and Demonstration site for salt farming.
- Erosion Prevention Learning and Operation Center.
- Marine and Coastal Conservation Center 2 (Samut Sakhon province).
- Lectures on Ecosystems and the environment in the area by experts.
- Public consultation meetings held to communicate with the local communities on preparing this site for Ramsar Site designation
- Annual meetings held to increase the communities' understanding of values and importance of resources serving as income sources.

**29. Current recreation and tourism:**

State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

The site can be developed to be an ecotourism site which helps increase understanding of importance of local water birds and migratory birds in the area. Recreation and tourism activities can be undertaken as follows.

- Bird watching and photographing (for some seasons)
- Learning about migratory birds (for some seasons)
- Reforestation activities and learning local wisdom on coastal erosion prevention (for all seasons)
- Visiting working salt pans (except during the rainy season)
- Learning about coastal fisheries (for all seasons)
- Learning about mangrove forest ecosystems (for all seasons)
- Whales and dolphins spotting (for some seasons)

**30. Threats**

Which of the following threats is present historically – when the threat stopped but the effects are still there (H), currently (C) or potentially (P)?

	Historically	Currently	Potentially
<b>Residential and commercial development</b>			

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housing and urban areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
commercial and industrial areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
tourism and recreation areas	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Agriculture and aquaculture**

annual and perennial non-timber crops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
wood and pulp plantations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
livestock farming and ranching	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
marine and freshwater aquaculture	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Energy production and mining**

oil and gas drilling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
mining and quarrying	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
renewable energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Transportation and service corridors**

roads and railroads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
utility and service lines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
shipping lanes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
flight paths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Biological resource use**

hunting and collecting terrestrial animals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
gathering terrestrial plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
logging and wood harvesting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
fishing and harvesting aquatic resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Human intrusions and disturbance**

recreational activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
war, civil unrest and military exercises	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
work and other activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Natural system modifications**

fire and fire suppression	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
dams and water management/use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
other ecosystem modifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<b>Invasive and other problematic species and genes</b>			
invasive non-native/alien species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
problematic native species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
introduced genetic material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Pollution</b>			
household sewage and urban waste water	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
industrial and military effluents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
agricultural and forestry effluents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
garbage and solid waste	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
air-borne pollutants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
excess energy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Geological events</b>			
volcanoes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
earthquakes/tsunamis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
avalanches/landslides	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Climate change and severe weather</b>			
habitat shifting and alteration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
droughts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
temperature extremes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
storms and flooding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please write here any additional threats and comments/queries you have on the threats.

#### Appendix 1: Bird species list

Common Name	Scientific Name	Status		Global Threat Status	Max. no.	Comment
Lesser Whistling-duck	<i>Dendrocygna javanica</i>	R	**	-		
Little Grebe	<i>Tachybaptus ruficollis</i>	R	***	-		
Streaked Shearwater	<i>Calonectris leucomelas</i>	N			1	one record
Wedge-tailed Shearwater	<i>Puffinus pacificus</i>	N			1	one record, April 2000
Short-tailed Shearwater	<i>Puffinus tenuirostris</i>	N			1	one record
Painted Stork	<i>Mycteria leucocephala</i>	R	**	NT	60	regular visitor

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Asian Openbill	<i>Anastomus oscitans</i>	R	**	-		regular; population booming, leading to occurrence of some feeding on mudflats
Lesser Adjutant	<i>Leptoptilos dubius</i>	N		VU	1	vagrant? One flying over 14 August 1994
Eurasian Bittern	<i>Botaurus stellaris</i>	R	*	-		
Yellow Bittern	<i>Ixobrychus sinensis</i>	R	*	-		
Cinnamon Bittern	<i>Ixobrychus cinnamomeus</i>	R	*	-		
Black Bittern	<i>Dupetor flavicollis</i>	B	*	-		
Black-crowned Night Heron	<i>Nycticorax nycticorax</i>	R	***	-		
Little Heron	<i>Butorides striata</i>	R	***	-		
Indian Pond Heron	<i>Ardeola grayii</i>	N	*	-		
Chinese Pond Heron	<i>Ardeola bacchus</i>	N	***	-		
Javan Pond Heron	<i>Ardeola speciosa</i>	R	***	-		
Eastern Cattle Egret	<i>Bubulcus ibis</i>	R				
Grey Heron	<i>Ardea cinerea</i>	N	***	-		
Purple Heron	<i>Ardea purpurea</i>	R	**	-		
Eastern Great Egret	<i>Ardea modesta</i>	R	***	-	400	
Intermediate Egret	<i>Egretta intermedia</i>	N	***	-		
Little Egret	<i>Egretta garzetta</i>	R	***	-	1000	breeds
Spot-billed Pelican	<i>Pelecanus philippensis</i>	R	**	NT		
Christmas Island Frigatebird	<i>Fregata andrewsi</i>	R	*	CR	1	occasional
Little Cormorant	<i>Microcarbo niger</i>	R	***	-		breeds
Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	R	***	-		breeds
Great Cormorant	<i>Phalacrocorax carbo</i>	N	*	-		
Oriental Darter	<i>Anhinga melanogaster</i>	R	*	NT	21	breeding not confirmed
Western Osprey	<i>Pandion haliaetus</i>	N	*	-		
Black Baza	<i>Aviceda leuphotes</i>	N	*	-		passage migrant
Oriental Honey-buzzard	<i>Pernis ptilorhynchus</i>	N	*	-		passage migrant
Black Kite	<i>Milvus migrans</i>	N	*	-		winters
Brahminy Kite	<i>Haliastur indus</i>	R	***	-		breeds
Japanese Sparrowhawk	<i>Accipiter gularis</i>	N				autumn passage
Shikra	<i>Accipiter badius</i>	R	*	-		passage/wintering
Common Kestrel	<i>Falco tinnunculus</i>	N	*	-		wintering
Peregrine Falcon	<i>Falco peregrinus</i>	N	*	-		wintering
Slaty-breasted Rail	<i>Gallirallus striatus</i>	R	**	-		
White-breasted Waterhen	<i>Amauornis phoenicurus</i>	R	***	-		
Ruddy-breasted Crake	<i>Porzana fusca</i>	R	**	-		
Small Buttonquail	<i>Turnix sylvaticus</i>	R	*	-		
Great Thick-knee	<i>Esacus recurvirostris</i>	N	*	-	1	occasional
Black-winged Stilt	<i>Himantopus himantopus</i>	R,N	***	-	est 1000	Breeds commonly
Pied Avocet	<i>Recurvirostra avosetta</i>	N	*	-		
Grey-headed Lapwing	<i>Vanellus cinereus</i>	N	*	-	4	small numbers
Red-wattled	<i>Vanellus indicus</i>	R	***	-		breeds



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Lapwing						
Pacific Golden Plover	<i>Pluvialis fulva</i>	N	***	-		
Grey Plover	<i>Pluvialis squatarola</i>	N	***	-		
Common Ringed Plover	<i>Charadrius hiaticula</i>	N	*	-	1	one record
Little Ringed Plover	<i>Charadrius dubius</i>	N	***	-		
Kentish Plover	<i>Charadrius alexandrinus</i>	N	***	-		
Lesser Sand Plover	<i>Charadrius mongolus</i>	N	***	-	6700	counted during AWC, 19 January 2014
Greater Sand Plover	<i>Charadrius leschenaultii</i>	N	***	-	??	62 counted during AWC, 19 Jan 2014, together with another 559 sandclobber spp.
Pintail Snipe	<i>Gallinago stenura</i>	N	*	-		
Common Snipe	<i>Gallinago gallinago</i>	N	**	-		
Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>	N	*	-	1	occasional
Asian Dowitcher	<i>Limnodromus semipalmatus</i>	N	**	NT	c.400	c. 150 winter and oversummer
Eastern Black-tailed Godwit	<i>Limosa melanuroides</i>	N	***	-	est 4000	(possibly many more- up to 10,000?; wintering population apparently increasing)
Bar-tailed Godwit	<i>Limosa lapponica</i>	N	**	-		
Whimbrel	<i>Numenius phaeopus</i>	N	***	-		
Eurasian Curlew	<i>Numenius arquata</i>	N	***	NT	40	
Far Eastern Curlew	<i>Numenius madagascariensis</i>	N	*	VU	1	one or two records, midwinter
Spotted Redshank	<i>Tringa erythropus</i>	N	***	-	70	regular wintering
Common Redshank	<i>Tringa totanus</i>	N	***	-	1000	abundant, wintering and passage
Marsh Sandpiper	<i>Tringa stagnatilis</i>	N	***	-	1000	
Common Greenshank	<i>Tringa nebularia</i>	N	***	-		
Spotted Greenshank	<i>Tringa guttifer</i>	N	*	EN	70	irregular; possibly some of same birds that occur in Pak Thale=Laem Phak Bia
Wood Sandpiper	<i>Tringa glareola</i>	N	***	-		
Terek Sandpiper	<i>Xenus cinereus</i>	N	**	-		
Common Sandpiper	<i>Actitis hypoleucos</i>	N	***	-		
Ruddy Turnstone	<i>Arenaria interpres</i>	N	**	-		
Great Knot	<i>Calidris tenuirostris</i>	N	***	VU	c. 1000	
Red Knot	<i>Calidris canutus</i>	N	***	-	450	17 January 2008. (usually 100 plus)
Sanderling	<i>Calidris alba</i>	N	*	-		
Red-necked Stint	<i>Calidris ruficollis</i>	N	***	-	2000	
Little Stint	<i>Calidris minuta</i>	N	*	-	2	probably regular in small numbers among <i>Calidris ruficollis</i>
Temminck's Stint	<i>Calidris temminckii</i>	N	**	-		
Long-toed Stint	<i>Calidris subminuta</i>	N	***	-		
Sharp-tailed Sandpiper	<i>Calidris acuminata</i>	N	*	-	1	irregular/infrequent, wintering and on

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						passage
Curlew Sandpiper	<i>Calidris ferruginea</i>	N	***	-	min. 850	(passage > 2800)
Dunlin	<i>Calidris alpina</i>	N	*	-		
Spoon-billed Sandpiper	<i>Eurynorhynchus pygmeus</i>	N	*	CR	max 7	more usually 3-4 winter. Sightings have included one leg flagged adult (female 05) in two successive winters. And one head-started juvenile. A first-year bird overwintered
Broad-billed Sandpiper	<i>Limicola falcinellus</i>	N	***	-	500	
Ruff	<i>Philomachus pugnax</i>	N	**	-		
Red-necked Phalarope	<i>Phalaropus lobatus</i>	N	*	-		
Oriental Pratincole	<i>Glareola maldivarum</i>	N	*	-	1	irregular
Indian Skimmer	<i>Rynchops albicollis</i>	N	*	VU	1	recorded in 2002
Slender-billed Gull	<i>Chroicocephalus genei</i>	N			1	rare; possibly only a single record
Brown-headed Gull	<i>Chroicocephalus brunnicephalus</i>	N	***	-	est 3000	regular wintering flock
Black-headed Gull	<i>Chroicocephalus ridibundus</i>	N	*	-		
Slender-billed Gull	<i>Chroicocephalus genei</i>	N			1	rare; possibly only a single record
Pallas's Gull	<i>Ichthyaetus ichthyaetus</i>	N	*	-		
Black-tailed Gull	<i>Larus crassirostris</i>	N	*	-	1	occasional
Heuglin's Gull	<i>Larus heuglini</i>	N	**	-		
Gull-billed Tern	<i>Gelochelidon nilotica</i>	N	***	-		
Caspian Tern	<i>Hydroprogne caspia</i>	N	*	-		
Common Tern	<i>Sterna hirundo</i>	N	***	-		
Whiskered Tern	<i>Chlidonias hybrida</i>	N	***	-	est 5000	
White-winged Black Tern	<i>Chlidonias leucopterus</i>	N	***	-		
Pomarine Jaeger	<i>Stercorarius pomarinus</i>	N	*	-		
Long-tailed Jaeger	<i>Stercorarius longicaudus</i>	N			1	at least one record
Rock Pigeon	<i>Columba livia</i>	R	***	-		
Red Collared Dove	<i>Streptopelia tranquebarica</i>	R	***	-		
Spotted Dove	<i>Spilopelia chinensis</i>	R	***	-		
Zebra Dove	<i>Geopelia striata</i>	R	***	-		
Pink-necked Green Pigeon	<i>Treron vernans</i>	R	*	-		breeds in mangroves
Thick-billed Green Pigeon	<i>Treron curvirostra</i>	R	*	-		vagrant
Greater Coucal	<i>Centropus sinensis</i>	R	***	-		
Green-billed Malkoha	<i>Phaenicophaeus tristis</i>	R	***	-		
Chestnut-winged Cuckoo	<i>Clamator coromandus</i>	N	*	-		
Asian Koel	<i>Eudynamis scolopaceus</i>	R	***	-		
Plaintive Cuckoo	<i>Cacomantis merulinus</i>	R	**	-		
Eurasian Barn Owl	<i>Tyto alba</i>	R	*	-		
Collared Scops Owl	<i>Otus lettia</i>	R	*	-		
Asian Barred Owlet	<i>Glaucidium cuculoides</i>	R	**	-		

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Indian Nightjar	<i>Caprimulgus asiaticus</i>	R	**	-		
Pale-rumped Swiftlet	<i>Aerodramus germani</i>	R	**	-		
Asian Palm Swift	<i>Cypsiurus balasiensis</i>	R	***	-		
Pacific Swift	<i>Apus pacificus</i>	R	**	-		
House Swift	<i>Apus nipalensis</i>	R	***	-		
Indian Roller	<i>Coracias benghalensis</i>	R	**	-		
White-throated Kingfisher	<i>Halcyon smyrnensis</i>	R	***	-		
Black-capped Kingfisher	<i>Halcyon pileata</i>	N	***	-		
Collared Kingfisher	<i>Todiramphus chloris</i>	R	***	-		
Common Kingfisher	<i>Alcedo atthis</i>	N	***	-		
Green Bee-eater	<i>Merops orientalis</i>	R	**	-		
Blue-tailed Bee-eater	<i>Merops philippinus</i>	R	**	-		
Eurasian Hoopoe	<i>Upupa epops</i>	R	***	-		
Coppersmith Barbet	<i>Megalaima haemacephala</i>	R	**	-		
Laced Woodpecker	<i>Picus vittatus</i>	R	**	-		
Blue-winged Pitta	<i>Pitta moluccensis</i>	B	*	-		occasional spring passage migrant
Golden-bellied Gerygone	<i>Gerygone sulphurea</i>	R	***	-		
Ashy Woodswallow	<i>Artamus fuscus</i>	R	***	-		
Common Iora	<i>Aegithina tiphia</i>	R	***	-		
Ashy Minivet	<i>Pericrocotus divaricatus</i>	N	**	-		
Mangrove Whistler	<i>Pachycephala cinerea</i>	R	*	-		
Brown Shrike	<i>Lanius cristatus</i>	N	**	-		
Black-naped Oriole	<i>Oriolus chinensis</i>	N	**	-		
Crow-billed Drongo	<i>Dicrurus annectans</i>	N			1	regular on at least autumn passage
Black Drongo	<i>Dicrurus macrocercus</i>	N	***	-	>1000	wintering flocks roost in mangroves
Ashy Drongo	<i>Dicrurus leucophaeus</i>	N	**	-		mainly passage migrant
Pied Fantail	<i>Rhipidurajavanica</i>	R	***	-		
Asian Paradise-flycatcher	<i>Terpsiphone paradisi</i>	N	*	-		
Racket-tailed Treepie	<i>Crypsirina temia</i>	R	***	-		
Large-billed Crow	<i>Corvus macrorhynchos</i>	R	***	-		
Sooty-headed Bulbul	<i>Pycnonotus aurigaster</i>	R	***	-		
Yellow-vented Bulbul	<i>Pycnonotus goiavier</i>	R	***	-		
Streak-eared Bulbul	<i>Pycnonotus blanfordi</i>	R	***	-		
Barn Swallow	<i>Hirundo rustica</i>	N	***	-		
Dusky Warbler	<i>Phylloscopus fuscatus</i>	N	***	-		abundant winterer
Radde's Warbler	<i>Phylloscopus schwarzi</i>	N	*	-		
Yellow-browed Leaf Warbler	<i>Phylloscopus inornatus</i>	N	*	-		
Arctic Warbler	<i>Phylloscopus borealis</i>	N	*	-		regular on passage; a few may winter
Two-barred Warbler	<i>Phylloscopus plumbeitarsus</i>	N	**	-		
Pale-legged Leaf	<i>Phylloscopus tenellipes</i>	N	**	-		

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Warbler						
Sakhalin Leaf Warbler	<i>Phylloscopus borealoides</i>	N				probably regular autumn passage
Eastern Crowned Leaf Warbler	<i>Phylloscopus coronatus</i>	N				regular spring and autumn passage
Claudia's Leaf Warbler	<i>Phylloscopus claudiae</i>	N				occasional, passage/wintering
Martens's Warbler	<i>Seicercus omeiensis</i>	N				occasional, passage/wintering
Alstrom's Warbler	<i>Seicercus soror</i>	N				regular passage/wintering
Oriental Reed Warbler	<i>Acrocephalus orientalis</i>	N	***	-		
Thick-billed Warbler	<i>Phragmaticola aedon</i>	N	**	-		
Lanceolated Warbler	<i>Locustella lanceolata</i>	N	*	-		
Pallas's Grasshopper Warbler	<i>Locustella certhiola</i>	N	*	-		
Zitting Cisticola	<i>Cisticola juncidis</i>	R	***	-		
Yellow-bellied Prinia	<i>Prinia flaviventris</i>	R	**	-		
Plain Prinia	<i>Prinia inornata</i>	R	***	-		
Common Tailorbird	<i>Orthotomus sutorius</i>	R	***	-		
Dark-necked Tailorbird	<i>Orthotomus atrogularis</i>	R	***	-		
White-vented Myna	<i>Acridotheres grandis</i>	R	***	-		
Common Myna	<i>Acridotheres tristis</i>	R	***	-		
Asian Pied Myna	<i>Gracupica contra</i>	R	***	-		
Purple-backed Starling	<i>Agropsar sturninus</i>	N	**	-		
White-shouldered Starling	<i>Sturnia sinensis</i>	N	**	-		
Chestnut-tailed Starling	<i>Sturnia malabarica</i>	N	*	-		
Oriental Magpie Robin	<i>Copsychus saularis</i>	R	***	-		
Siberian Blue Robin	<i>Luscinia cyane</i>	N	*	-		probably regular spring and autumn passage
Asian Brown Flycatcher	<i>Muscicapa dauurica</i>	N	***	-		
Yellow-rumped Flycatcher	<i>Ficedula zanthopygia</i>	N				common spring and autumn passage migrant
Brown-chested Jungle Flycatcher	<i>Rhinomyias brunneatus</i>	N		VU		rare passage migrant, autumn
Hainan Blue Flycatcher	<i>Cyornis hainanus</i>	N				
Hill Blue Flycatcher	<i>Cyornis banyumas</i>	N	**	-		passage/winter viitor
Blue-throated Flycatcher	<i>Cyornis rubeculoides</i>	N			1	autumn passage
Eastern Stonechat	<i>Saxicola stejnegeri</i>	N	**	-		
Golden-fronted Leafbird	<i>Chloropsis aurifrons</i>	R	**	-		vagrant/escaped cagebird
Scarlet-backed Flowerpecker	<i>Dicaeum cruentatum</i>	R	***	-		
Brown-throated	<i>Anthreptes malacensis</i>	R	***	-		

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Sunbird						
Olive-backed Sunbird	<i>Cinnyris jugularis</i>	R	***	-		
House Sparrow	<i>Passer domesticus</i>	R	**	-		
Plain-backed Sparrow	<i>Passer flaveolus</i>	R	**	-		
Eurasian Tree Sparrow	<i>Passer montanus</i>	R	***	-		
Baya Weaver	<i>Ploceus philippinus</i>	R	**	-		
Scaly-breasted Munia	<i>Lonchurapunctulata</i>	R	***	-		
Forest Wagtail	<i>Dendronanthus indicus</i>	N	**	-		
Eastern Yellow Wagtail	<i>Motacilla tschutschensis</i>	N	***	-		
White Wagtail	<i>Motacilla alba</i>	N	**	-		
Richard's Pipit	<i>Anthus richardi</i>	N	*	-		
Paddyfield Pipit	<i>Anthus rufulus</i>	R	***	-		
Oriental White-eye	<i>Zosterops palpebrosus</i>	R	***	-		

## **Annex 1: Criteria for the inclusion of sites in the Flyway Site Network**

(From the Partnership Text)

To be considered for inclusion in the Flyway Site Network, this Partnership adopts the following criteria:

- a. Convention on Wetlands (Ramsar, Iran, 1971) criteria for internationally important sites for migratory waterbirds. That is:

Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.

Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.

Criterion 6: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

- b. The staging criteria as applied under the Asia - Pacific Migratory Waterbird Conservation Strategy. That is:

i. A staging site should be considered internationally important if it regularly supports 0.25% of individuals in a population of one species or subspecies of waterbirds on migration.

ii. A staging site should be considered internationally important if it regularly supports 5,000 or more waterbirds at one time during migration.

- c. Under exceptional circumstances a site can be nominated if it supports migratory waterbirds at a level or stage of their life cycle important to the maintenance of flyway populations. Justification of such nominations will be considered by the Partnership on a case by case basis.

## Annex 2: Ramsar Classification System for Wetland Type

The codes are based upon the Ramsar Classification System for Wetland Type as approved by Recommendation 4.7 and amended by Resolutions VI.5 and VII.11 of the Conference of the Contracting Parties. The categories listed herein are intended to provide only a very broad framework to aid rapid identification of the main wetland habitats represented at each site.

To assist in identification of the correct Wetland Types to list in section 19 of the RIS, the Secretariat has provided below tabulations for Marine/Coastal Wetlands and Inland Wetlands of some of the characteristics of each Wetland Type.

### Marine/Coastal Wetlands

- A -- **Permanent shallow marine waters** in most cases less than six metres deep at low tide; includes sea bays and straits.
- B -- **Marine subtidal aquatic beds**; includes kelp beds, sea-grass beds, tropical marine meadows.
- C -- **Coral reefs**.
- D -- **Rocky marine shores**; includes rocky offshore islands, sea cliffs.
- E -- **Sand, shingle or pebble shores**; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.
- F -- **Estuarine waters**; permanent water of estuaries and estuarine systems of deltas.
- G -- **Intertidal mud, sand or salt flats**.
- H -- **Intertidal marshes**; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.
- I -- **Intertidal forested wetlands**; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.
- J -- **Coastal brackish/saline lagoons**; brackish to saline lagoons with at least one relatively narrow connection to the sea.
- K -- **Coastal freshwater lagoons**; includes freshwater delta lagoons.
- Zk(a) – **Karst and other subterranean hydrological systems**, marine/coastal

### Inland Wetlands

- L -- **Permanent inland deltas**.
- M -- **Permanent rivers/streams/creeks**; includes waterfalls.
- N -- **Seasonal/intermittent/irregular rivers/streams/creeks**.
- O -- **Permanent freshwater lakes** (over 8 ha); includes large oxbow lakes.
- P -- **Seasonal/intermittent freshwater lakes** (over 8 ha); includes floodplain lakes.
- Q -- **Permanent saline/brackish/alkaline lakes**.
- R -- **Seasonal/intermittent saline/brackish/alkaline lakes and flats**.

- Sp -- **Permanent saline/brackish/alkaline marshes/pools.**
- Ss -- **Seasonal/intermittent saline/brackish/alkaline marshes/pools.**
- Tp -- **Permanent freshwater marshes/pools;** ponds (below 8 ha), marshes and swamps on inorganic soils; with emergent vegetation water-logged for at least most of the growing season.
- Ts -- **Seasonal/intermittent freshwater marshes/pools on inorganic soils;** includes sloughs, potholes, seasonally flooded meadows, sedge marshes.
- U -- **Non-forested peatlands;** includes shrub or open bogs, swamps, fens.
- Va -- **Alpine wetlands;** includes alpine meadows, temporary waters from snowmelt.
- Vt -- **Tundra wetlands;** includes tundra pools, temporary waters from snowmelt.
- W -- **Shrub-dominated wetlands;** shrub swamps, shrub-dominated freshwater marshes, shrub carr, alder thicket on inorganic soils.
- Xf -- **Freshwater, tree-dominated wetlands;** includes freshwater swamp forests, seasonally flooded forests, wooded swamps on inorganic soils.
- Xp -- **Forested peatlands;** peatswamp forests.
- Y -- **Freshwater springs; oases.**
- Zg -- **Geothermal wetlands**
- Zk(b) -- **Karst and other subterranean hydrological systems, inland**

Note: “**floodplain**” is a broad term used to refer to one or more wetland types, which may include examples from the R, Ss, Ts, W, Xf, Xp, or other wetland types. Some examples of floodplain wetlands are seasonally inundated grassland (including natural wet meadows), shrublands, woodlands and forests. Floodplain wetlands are not listed as a specific wetland type herein.

#### **Human-made wetlands**

- 1 -- **Aquaculture** (e.g., fish/shrimp) **ponds**
- 2 -- **Ponds;** includes farm ponds, stock ponds, small tanks; (generally below 8 ha).
- 3 -- **Irrigated land;** includes irrigation channels and rice fields.
- 4 -- **Seasonally flooded agricultural land** (including intensively managed or grazed wet meadow or pasture).
- 5 -- **Salt exploitation sites;** salt pans, salines, etc.
- 6 -- **Water storage areas;** reservoirs/barrages/dams/impoundments (generally over 8 ha).
- 7 -- **Excavations;** gravel/brick/clay pits; borrow pits, mining pools.
- 8 -- **Wastewater treatment areas;** sewage farms, settling ponds, oxidation basins, etc.
- 9 -- **Canals and drainage channels, ditches.**
- Zk(c) -- **Karst and other subterranean hydrological systems, human-made**



## **Annex 3: IUCN Protected Areas Categories System**

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation.

### **Ia Strict Nature Reserve**

Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

### **Ib Wilderness Area**

Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

### **II National Park**

Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

### **III Natural Monument or Feature**

Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

### **IV Habitat/Species Management Area**

Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

### **V Protected Landscape/ Seascape**

A protected area where the interaction of people and nature over time has produced an area of distinct character with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

### **VI Protected area with sustainable use of natural resources**

Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems.