

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

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EAAF SITE CODE FOR OFFICE USE ONLY:

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2. Date this sheet was completed:

20 July 2014

3. Country:

Thailand

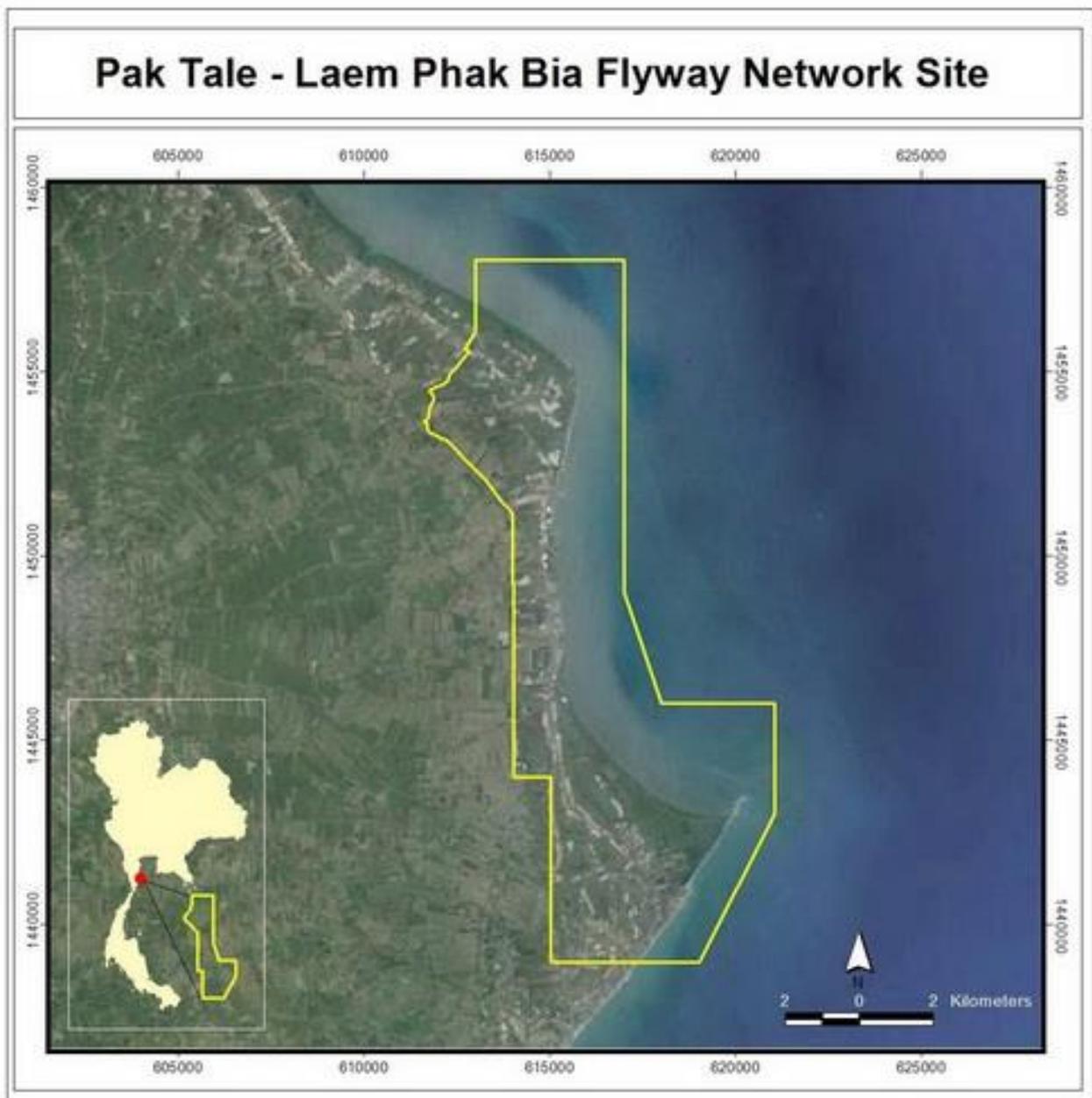
4. Name of the Flyway Network site:

Accepted English transcription of the Site's name.

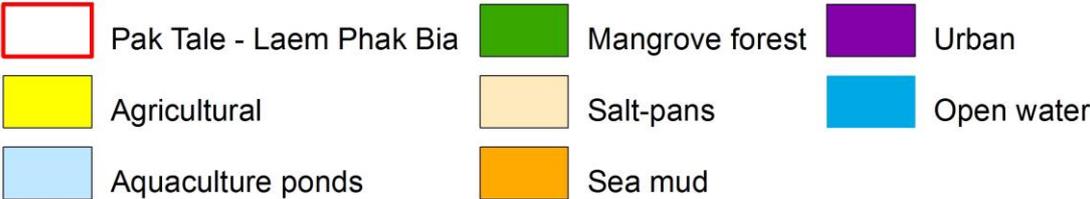
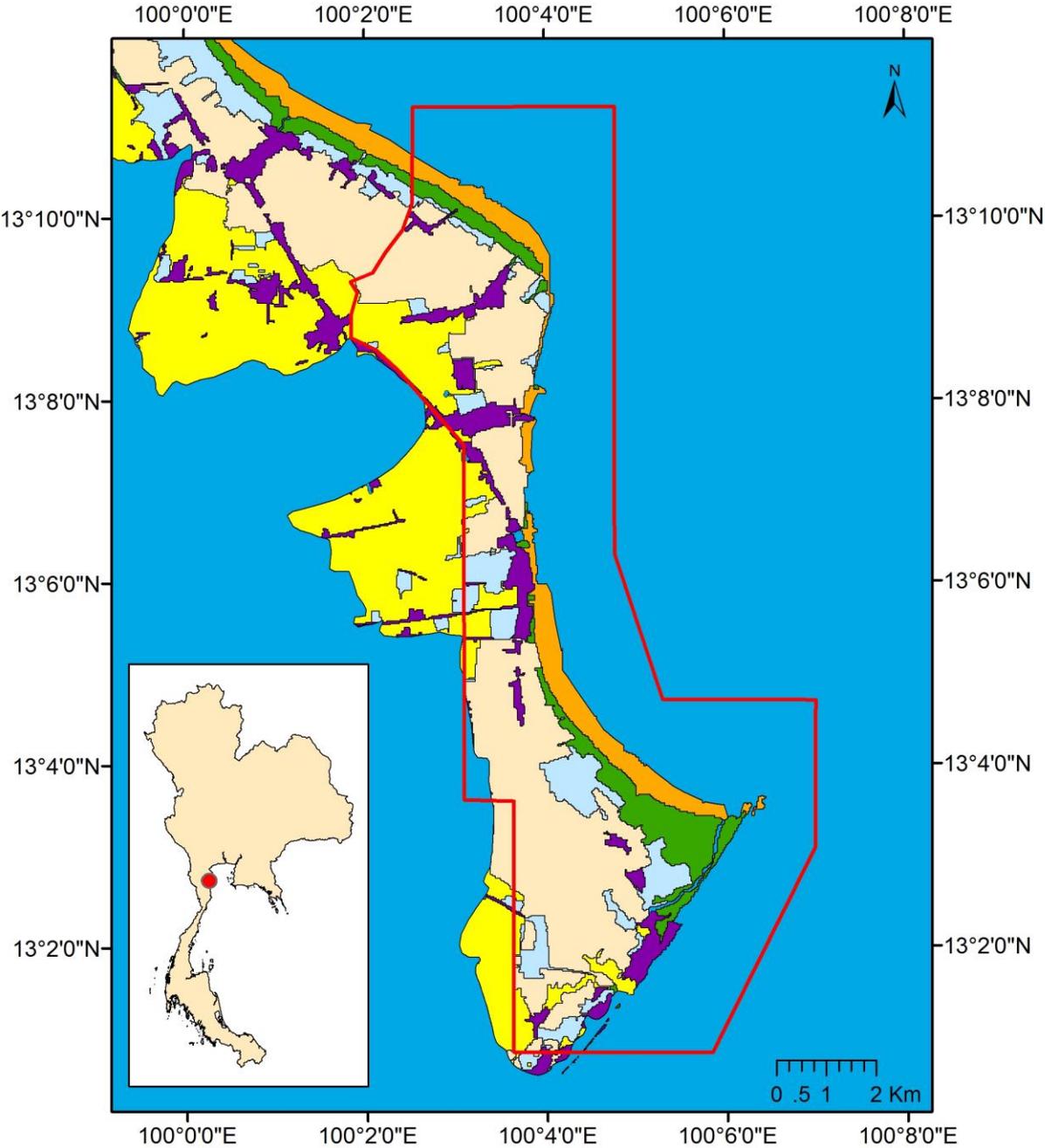
Pak Thale - Laem Phak Bia

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](#).



Pak Tale - Laem Phak Bia Flyway Network Site



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

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

610000E 1446000N 622000E 1438000N

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, in hectares. If the areas of discrete site units are known, please also list each of these together with the names (or labels) used to identify and differentiate these units.

The total area of the site is 54,163 rai (8,666 ha, calculated by GIS system), covering parts of 3 sub-districts, namely Pak Thale, Bang Kaew and Laem Phak Bia. The area is comprised of dwelling places, paddy fields, salt pans, canals, irrigation canals, aquaculture sites, mangrove forest, mudflats and the sea. The area of different land use is as follows: salt-pans 2187.12 ha, agriculture 534.8 ha, aquaculture 521.48 ha, sea mud 456.32 ha, mangrove forest 429.86 ha, urban 41.63 ha and open water 17.86 ha.

9. General overview of the site:

A brief (two sentences) summary of the site, mentioning principal physical and ecological functions, and its importance for migratory waterbirds.

The area is situated in Ban Laem District, Phetchaburi province, and about 185 south of Bangkok. The area is surrounded by the following.

- To the north, it is bordered by Bang Khunsai subdistrict, Ban Laem district, Phetchaburi province and the Gulf of Thailand.
- To the south, it is bordered by Had Chao Samran subdistrict, Ban Laem district Phetchaburi province and the Gulf of Thailand.
- To the east, it is bordered by the Gulf of Thailand.
- To the west, it is bordered by Ban Laem subdistrict, Ban Laem district, Phetchaburi province.

The site comprises floodplains and open land, most of which is used as salt pans, nature-dependent coastal aquaculture sites and irrigation-dependent paddy fields. Surrounding the coastal areas of the site are mangrove forest, mudflats and canals connecting with the sea.

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 supports roosting and feeding habitats for over 20,000 resident and migratory shorebirds and other waterbirds.
- It holds more that 1 % of the flyway population of some kinds of shorebirds.
- It is a regular wintering site for globally threatened migratory shorebird species ie. Spoon-billed Sandpiper, Spotted Greenshank, Asian Dowitcher, Far Eastern Curlew and Great Knot. Other threatened/near-threatened waterbirds include Painted Stork and Spot-billed Pelican.

English Name	Scientific Name	Current IUCN Red List Category
Spoon-billed Sandpiper	<i>Calidris pygmaea</i>	CR
Spotted Greenshank	<i>Tringa guttifer</i>	EN
Eastern Eurasian Curlew	<i>Numenius madagascariensis</i>	VU
Painted Stork	<i>Mycteria leucocephala</i>	NT
Asian Dowitcher	<i>Limnodromus semipalmatus</i>	NT
Great Knot	<i>Calidris tenuirostris</i>	VU
Spot-billed Pelican	<i>Pelecanus philippensis</i>	NT

11. Wetland Types:

List the wetland types present (see Annex 2). List the wetland types in order of their area in the Flyway Network site, starting with the wetland type with the largest area.

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

12. Jurisdiction:

Include territorial, e.g. state/region, and functional/sectoral, e.g. Ministry of Agriculture/Dept. of Environment, etc.

Under the governance of Phetchaburi Province, the site is managed by three sub-district administrative organizations namely Pak Thale Sub-District Administrative Organizations, Bang Kaew Sub-District Administrative Organization and Laem Pakbia Sub-District Administrative Organization.

13. Management authority:

Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland and the title and/or name and email address/phone number of the person or persons in this office with direct responsibility for managing the wetland.

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 Phetchaburi
- Provincial Administrative Organization and Local Administrative Organizations
- 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
- The Department of National Parks, Wildlife and Plants Conservation (DNP) is responsible for the enforcement of Wildlife Protection legislation both inside and outside protected areas.

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

- Bird Conservation Society of Thailand
- Thai Wetlands Foundation
- The Laem Phak Bia Environmental Study and Development Project.

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.

- This site is part of Inner Gulf of Thailand wetland that is promulgated as nationally important wetland by the cabinet resolution of 1 August 2000.
- This site is part of Thailand's important area for bird and biological diversity conservation (IBA) No.32, certified by Birdlife International.
- This site and the other 3 areas, namely Khok Kham, Bang Pu Nature Education Center in Commemoration of 72th Anniversary of Her Majesty Queen Sirikit, and Don Hoi Lod - Khong Khon have been designated by the National Environment Board decision of 20 July 2000 as the sites for East Asian-Australian Flyway Partnership.

15. Physical features of the site:

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

- The site is a coastal floodplain lying along the shoreline towards the southern margin of the Inner Gulf ("upper gulf"), covering some part of Laem Pak Bia and Bangkaew sub-districts, in which there is a rural road No. 2021 passing the central area of the site to facilitate community transport.
- The site is about 1-2 metres above mean sea level. The area encompasses the ecotone between the mangrove and mudflat dominated coastline of the Inner Gulf to the north and east, and the sandy coastline which stretches southwards along the east coast of the Thai-Malay peninsula. It encompasses and approximately 3 km –long cape or sand spit ("laem") from which Laem Phak Bia takes its name. 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.
- The site is situated in tropical rainy climate region and influenced by land breezes, sea breezes and south-west monsoons in summer, resulting in high humidity and moderate rain. Its average temperature is between 25 °C and 32.6 °C.

16. Physical features of the catchment area:

Describe the surface area, general geology and geomorphological features, general soil types, and climate (including climate type).

- 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 the land is suitable for building reservoirs, salt pan farming and aquaculture. Networks of canals 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 in the site is in good condition for aquaculture and salt pan farming.

17. Hydrological values:

Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

- This site is influenced by tide flow and monsoons in the Gulf of Thailand almost the year, resulting in accumulation and distribution of nutrients and sediments derived from other areas. This provides an important mudflat ecosystem from which communities can harvest aquatic animals. In addition, the mudflat is a nursery for nurturing young important economic marine life and also a feeding ground for local water birds and migratory shorebirds in winter.

- In rainy season, this site is a catchment area receiving water from rainfall, canals of Ban Laem district and paddy irrigation canals of Department of Irrigation.

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Flyway Network site, and the ecosystem services of the site and the benefits derived from them.

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Flyway Network site, and the ecosystem services of the site and the benefits derived from them.

The site includes salt pans, inland aquaculture ponds, coastal aquaculture sites, mangrove forests, mudflats and sand beaches. The fringing mangrove is > 500 m wide in places. There are 24 species of mangroves, 4 species of mammals, 250 species of birds as well as some reptile and invertebrate species. Tidal flow makes the mangrove forests and mudflats in the area flooded, making them 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 coast of the site function in collecting sediments from currents, reducing the impact of monsoons and tidal waves and preventing coastal erosion. Moreover, they are also havens for wild birds and waterbirds to sleep at night.

- During high tide, 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:

Provide additional information on particular species and why they are noteworthy indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *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)

- In this site there are at least 15 species of trees from 12 families. The three most important species are mangroves: *Avicennia marina*, *Rhizophora apiculata* and *Rhizophora mucronata*. They are habitats for wildlife and nursery areas for young sea animals that are important to mangrove forest ecosystems, as well as food and herbs for humans. Sandy beaches have good examples of a strandline flora, including *Sesuvium portuacastrum* and *Ipomoea pes-caprae*.

- 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 kinds of animals such as birds, mammals, reptiles and soil fauna.
- There are 245 species of birds comprising 102 species of local birds, 143 species of migratory birds, of which 16 are listed in The Threatened Birds of The World. (see attachment). Numbers of the critically endangered Spoon-billed Sandpiper wintering at the site have declined from 11-16 individuals (2003) to only 4-10 individuals in 2014.
- Numbers of other globally threatened or near-threatened shorebirds at the site have increased in the face of global decline. Eurasian Curlews have increased steadily from c. 300 wintering in 2003 to 1500 (in 2013); numbers of Great Knots have increased from c. 100 individuals (2000) to over 6,000 (January 2013). Peak counts of wintering Asian Dowitchers (NT) are 70 birds (2013-2014). More than 40 Nordmann's Greenshank regularly winter, with the largest reliable count of 86 (23 November 2014). Overall, this site has probably the highest species diversity of shorebirds of any site in Thailand, with at least ten species for which the flyway populations are believed to be globally important. Usage by Painted Storks (*Mycteria leucocephala*) and Spot-billed Pelicans (*Pelecanus philippensis*) have also increased concomitantly. Laem Phak Bia was the site at which the little known and globally threatened Large-billed Reed Warbler (*Acrocephalus orinus*) was rediscovered in 2006 after a hiatus of 139 years. However, the species may be an occasional visitor (two captures of the same ringed individual during March 2006 and March 2008) rather than of regular occurrence.

- The noteworthy mammals of the site are crab-eating macaques, smooth-coated otters, fishing cats and Lyle's flying foxes. Bryde's Whales and Finless Porpoises are frequent offshore.

- The water monitor is important animal for the local ecosystem, for its role as a predator and 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 some Buddhist temples, serving as places where spirits of Buddhist peoples in the communities are combined. Among those temples, Wat Pak Tale Nok temple is of historical importance to the area.

- 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.

- Along the coastline of the site, there are mangrove forest restoration activities implemented by local communities in collaboration with external people in order to provide nursery places for young marine life as well as to keep resources in balance to secure incomes for local fisheries in the communities and to create 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)

- This site is considered part of a nationally important wetland—the Gulf of Thailand as it is where valuable and important mudflat ecosystems are situated. Also, it is part of the Gulf shape that is similar to the first letter of Thai alphabet—*น* (goh gai).

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:

- Natural resources of the site are being managed for the ultimate benefits of the communities as well as local wisdom can be promoted to be sources for learning and studying coastal ecosystems for sustainable conservation.

- The Royally Initiated Laem hak Bia Environmental Research and Development Project provides a model waste-water treatment plant on 1 sq km of coastal land in Laem Phak Bia subdistrict that also acts as a de facto nature reserve.
- 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:
 - People in the communities live their lives in a simple manner. They depend on surrounding natural resources in canals, mangrove forests, mudflats and the sea for earning livings. For instance, salt farming needs good quality seawater without contaminants.
- 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 the land above the high water mark is legally owned either by people in the communities, or by outside investors or land speculators. Coastal land below the high water mark is public land or is under the control of the Ministry of Interior.

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 following.

- Human settlements
- Aquaculture ponds
- Salt pans
- The model of Marine Livestock Farm Project
- The Laem Phak Bia Environmental Study and Development Project
- Mangrove forest restoration sites
- Economic activities such as oil terminals.

b) In the surroundings/catchment:

- Fisheries in canals

- Coastal and commercial fisheries
- Transfer of oil through underwater pipelines.

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 use of private land where mangrove forests are present.
- Coastal erosion in 3 sub-districts.

Construction of boulder groynes and breakwaters to combat coastal erosion has changed the ecological character of the site. This has probably worsened erosion in adjacent unprotected areas.

Construction activities also facilitated colonization of beach areas by alien plant species.

Inappropriate construction of large concrete gazebos on the remote sand spit was carried out by Phetchaburi province in 2000-2001.

Inappropriate planting of coconut palms on the remote Laem Phak Bia sand-spit.

Opening beach access through construction of a blacktop road and car-park has caused part of the site to be deserted by nesting shorebirds (Malaysian Plovers *Charadrius peronii* and Little Terns *Sterna albifrons*).

- Salt pans changed into aquaculture ponds resulting in reduced areas for small migratory birds.
- Illegal fisheries and use of large-scale illegal fishing tools in restricted areas, resulting in ecosystem imbalance.

Over-harvesting of shellfish by non-local "cockle-pickers" entering the area from outside by boat from the north and north-east of the Thai gulf.

- Discharge of waste from industries and households into water resources, resulting in having severely adverse effect to natural resources in the area.

Encroachment of disturbed beach areas by invasive Mimosa scrub, which is presently uncontrolled.

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, outflow of freshwater into the sea was influenced by seasons. Nowadays, the flow changes, affecting coastal aquaculture and the number of coastal marine life, which is feed for birds.

Much increased tourism and the construction of hotels, resorts and restaurants to the south of the site, in Laem Phak Bia and Hat Chao Samran subdistricts are altering the character of 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 cabinet resolution of 1 August 2000, 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.

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?:

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

- 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.

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.
- Zoning and restrictions of access on the Lem hak Bia sand spit so as to prevent disturbance to nesting Malaysian Plovers.

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 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 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.
- Organization of a shorebird conservation event since 1998.
- Asian Water Bird Census Project since 2005.
- Annual meetings held to increase the communities' understanding of values and importance of resources serving as income sources.

Bird observations and ringing of birds has been carried out in and around at Laem Phak Bia Environmental research and development project since September 2000.

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.

- Leaflets on information of the site produced occasionally.
- Interpretive signs and nature trails along the coast developed.
- Coastal Aquaculture Learning Center established.
- Birds and Pak Thale Ecosystems Learning Center established.
- Laem Phak Bia Research and Development Project in Accordance with His Majesty The King's Initiatives established and a book on the birds of Laem Phak Bia in both Thai and English languages has been produced and widely distributed.

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 the followings.

- 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 salt pans (except for 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
Residential and commercial development			
housing and urban areas	<input type="checkbox"/>	<input checked="" 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 checked="" 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"/>

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flight paths	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Biological resource use			
hunting and collecting terrestrial animals	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
gathering terrestrial plants	<input type="checkbox"/>	<input checked="" 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 checked="" 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"/>
Invasive and other problematic species and genes			
invasive non-native/alien species	<input type="checkbox"/>	<input checked="" 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"/>
Pollution			
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 checked="" 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"/>
Geological events			
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"/>
Climate change and severe weather			

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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.

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

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