

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 of the Conference of the Contracting Parties.

1. Date this sheet was completed/updated :

18 June 2001

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Designation date

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Site Reference Number

2. Country :

Thailand

3. Name of wetland :

Don Hoi Lot

4. Geographical coordinates :

13 degrees 17-25 minutes North, 99 degrees 55 minutes to 100 degrees 4 minutes East

5. Elevation :

- 0.15 to 1.23 m MSL.

6. Area :

87,500 ha

7. Overview

A rare and unique type of natural wetland of Thailand. Sand-bars at the Mouth of the Mae Klong River with vast area of mudflats appearing during low tide. The site is the only major productive area of Hoi Lot *Solen regularis*, an economic endemic mollusc, unique to this locality. The site derived its name after this species.

8. Wetland Type

Marine-coastal : A B C D E F G H I J K Zk(a)

Inland : L M N O P Q R Sp Ss Tp Ts U
Va Vt W Xf Xp Y Zg Zk(b)

Human-made : 1 2 3 4 5 6 7 8 9 Zk(c)

Please now rank these wetland types by listing them from the most to the least dominant : G F E I B

9. Ramsar Criteria :

1 2 3 4 5 6 7 8

Please specify the most significant criterion applicable to the site : 2

10. **Map of site included ?** Yes No

11. **Name and address of the compiler of this form :**

Natural Resources and Environmental Management Division
Office of Environmental Policy and Planning
60/1 Soi Phibun Wattana 7 Rama VI Road, Bangkok 10400
THAILAND
Tel. 662-2713251 Fax. 662-2798088
E-mail: sirikul@oepp.go.th

12. **Justification of the criteria selected under point 9, on previous page.**

Criteria 1 : This site contains a representative, rare, and unique example of a natural wetland type such as sand-bars at the mouth of Mae Klong River with vast area of mudflats appearing during low tide, found within the appropriate biogeographic region. (Chulalongkorn University, 1996)

Criteria 2 : This site is the only one major productive area of Hoi Lot (*Solen regularis*) an economic endemic specie, unique to Thailand and to the region. (Choowaew,S, April 1999)

13. **General location :**

Mudflats between channels and bars on the eastern shoreline of the Mouth of the Mae Klong River, in Bang Cha Kreng, Bang Kaew, Laem Yai and Klong Kone Sub-District, Muang District, Samut Songkhram Province on the Gulf of Thailand. It is approximately 120 Km. from Bangkok.

14. **Physical features :**

Dynamic coastal wetland which is part of the Gulf of Thailand, formed by the accumulation of river and marine sediments at the mouth of the Mae Klong River, extends for approximately 8 km from the shoreline into the sea. The mudflat is smoothly plain with less than 1% slope, comprising sand and mud sediments. At low tide, soft mudflat and sand-bars of over 4 km wide, appears. In mudflat, there are 3 major channels, creating 5 sand-bars, having a total area of 2,409 ha (15,056.25 rai or 24.09 sqkm.). The site is highly fertile with nutrients. Tidal pattern is double tide, with the average highest tide at +1.23 m msl and the average lowest tide at -0.15 m msl. The difference between the highest and the lowest tide is about 1.38 m. Tidal change in each month is due to the influence of the moon, wind direction, air pressure, and currents. At high tide, the current flows up north. At low tide, the current flows down south. Wind currents affect seawater currents. Tidal movement is about 2.78-3.70 km/hr. In-shore waves are 0.24 high on average. Climate can be divided into 3 seasons : rainy season (May-October) with influence of the southwest monsoon, winter (November-January) and summer (February-April) with influence of the northeast monsoon. Water quality at Don Hoi Lot during June 1994 to May 1995, was at acceptable level: water temperature was 25-35 degrees Celcius; pH values ranged from 6.4-8.3; dissolved oxygen was 3.4-17.0 mg/l; and total suspended solid 21.5-509.5 mg/l. From the survey in March 1996, water temperature was 28 degrees Celcius; conductivity 10.35 MS/cm.; transparency 18 cm.; alkalinity 134 mg/l; hardness over 500 mg/l; salinity 23 ppt.; dissolved oxygen 5.6 mg/l; CO₂ 4 mg/l; pH 7.8; total suspended solid 0.03 mg/l; total dissolved solid 23.44 mg/l; BOD 7 mg/l; NO₂-N 0.07 mg/l; NO₃-N 0.14 mg/l; ammonia-N 0.18 mg/l; PO₄-P (orthophosphate)

0.01 mg/l; chlorophyll a 14.67 mg/cu.m.; and silicate 0.38 mg/l. The overall water quality of Don Hoi Lot was considered acceptable for coastal water quality.

15. Hydrological values :

The site is of great importance for its hydrological functions, including groundwater recharge, flood control and shoreline stabilization. Especially for sediment trapping, the site can be considered as ecotone, buffer zone or the last frontier, protecting marine/coastal habitats by receiving a significant amount of sediments from inland and upper watersheds each year.

16. Ecological features :

Mudflats at the mouth of the Mae Klong River and its tributaries, with mangroves along the shoreline at the east side. Mangroves dominated by *Rhizophora mucronata* and *Rhizophora apiculata*. Among other species commonly found include *Thespesia populnea*, *Avicennia officinalis*, *Avicennia alba*, and *Bruguiera spp.* . Red algae can be found on stems and roots of mangrove species and blue-green algae found on mud floor.

17. Noteworthy flora :

none

18. Noteworthy fauna :

At least 42 aquatic species were recorded for the site. At least 10 mollusk species can be found including *Natica maculosa*, *Territella terebra*, *Musculus senhouseni*, *Anadara sp.*, *Solen vitreus*, *Donax faba*, *Tarpes tergicus*, *Lingula unguis* and *Solen regularis*. They are all economic important spp. especially *Solen regularis* is uniquely economic species to this locality, not generally found along Thailand's seacoast but has wide distribution at this site. Among other species found are crustaceans and fish.

At least 18 bird species observed on the mudflats and nearby mangroves, including *Ardea cinerea* (nationally near threatened), *Haliastur indus*, *Sterna albifrons*, *Aerodramus fuciphagus*, *Ardeola speciosa*, and *Chlidonias hybridus*. Mangroves are also home to an impressive number of *Macaca irus*. (Office of Environmental Policy and Planning, 1999)

19. Social and cultural values :

Apart from being natural wetland of local identity, the site is important source of fisheries production, occupation and income. *Solen regularis* which is the most valuable species, is harvested and sold at 20-40 Baht/kg; fresh flesh sold at 80-100 Baht/kg; sun-dried flesh sold at 200-300 Baht/kg, and crispy fried flesh sold at 400-500 Baht/kg. *Anadara sp.* which is another economic species, is captured from the site at 596 tonnes in 1990 and 1,246 tonnes were cultured, making a total of 6.7 million Baht of local income. The site is famous and well known as an attractive tourism spot. Attractions include natural environment, local identity, traditional fisheries and fishing technologies, seafoods and fishery products.

20. Land tenure / ownership :

Mudflats are state-owned. Parts of mangroves have been encroached, claimed and used as private holdings. Surrounded areas are privately owned.

21. Current land use :

During June-July, the longest period of day-time low tide (approximately for 7 hours), there are 200-300 mollusk harvestors (both locals and outsiders) harvesting *Solen regularis* at 1 kg/hr/person on average or altogether 1,360-3,025 kg/day. During October-December, the period of nighttime low tide, harvestors spread lime solution over mudflats to collect mollusks, which can not be considered as a wise use technique. Apart from capture of *Solen regularis*, capture and culture of *Anadara sp.* and *Pema viridis* are also key land use activities. Surrounded areas are agricultural and residential areas.

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

Development projects potentially affect the site include construction projects e.g. saltwater intrusion protection system and coastal roads in Bang Cha Kreng and Bang Kaew Sub-Districts. Water pollution in the Mae Klong River from industries, tourism activities, urban areas and agriculture is a major problem, having great impacts on noteworthy fauna of mudflats at the River Mouth. Encroachment of mangroves for aquaculture development and construction of food shops, restaurants, roads and parking lots; as well as construction of earth dams along riverbanks to prevent sediments flowing into mudflats can have long-term impacts on the site. Overharvesting of *Solen regularis* and spreading lime solution on mudflats caused depletion of mollusks. Unless there is effective management of habitats of *Solen regularis*, this species may soon become extinct in the wild. Marine pollution affecting coastal zones and mudflats include oil pollution from oil carriers, cargo ships and fishing boats. Wastewater from shrimp farms and garbage from tourists are also problems.

23. Conservation measures taken :

Nature and Environment Conservation Plan for Don Hoi Lot, Samut Songkhram Province was done by Chulalongkorn University, completed and submitted to the Office of Environmental Policy and Planning in August 1996. Three conservation management zones were proposed: Preservation Zone (including mangroves, newly born land and mudflats, and 5 areas of mudflats); Conservation Zone; and Development Zone. At least 560 ha (5.6 sqkm. or 3,500 rai) was declared as *Anadara sp.* Conservation Area. In 1993, the Samut Songkhram Provincial Forest Office declared an area of 48 ha (300 rai) of newly born mudflat in Bang Cha Kreng, Bang Bo and Bang Kaew Sub-Districts as Restricted Preservation Area.

24. Conservation measures proposed but not yet implemented :

The Conservation and sustainable use of Don Hoi Lort Action plan was drafted by many concerned agencies both government and non-government and in Samut Songkram Province. This action plan was comprised in the provincial action plan was already approved by the National Environment Board since May 2000. Because of economic crisis in Thailand, the budget was not committed by the Budget of Bureau.

25. Current scientific research and facilities :

Department of Fisheries and Chulalongkorn University researched on *Solen regularis* breeding, both in laboratory and on-site. Pollution Control Department has a

number of stations for water quality monitoring along the seacoast and in the Gulf of Thailand.

26. Current conservation education :

Department of Fisheries is monitoring and analysing *Solen regularis* population dynamics. The site is perfect for nature education and wetland ecological studies. A number of schools and academic institutions use the site as natural laboratories for teaching and research. There is no education center over there.

27. Current recreation and tourism :

The site attracts an impressive number of tourists each year and is being promoted by Samut Songkhram Province for ecotourism development.

28. Jurisdiction :

Samut Songkhram Province; Muang District; Bang Cha Kreng, Bang Kaew, Laem Yai and Klong Kone Sub-District are responsible to regulate landuse and land encroachment. Department of Fisheries is regulate fisheries.

29. Management authority :

Samut Songkhram Province; Muang District; Bang Cha Kreng, Bang Kaew, Laem Yai and Klong Kone Sub-District Administration Unit.

Samut Songkhram Administrative Office

Ekachai Road, Muang District,

Samut Songkhram Province 75000, Thailand.

Tel & Fax: 66-34-711997

30. Bibliographical references :

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