

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

2. COUNTRY :

Thailand

FOR OFFICE USE ONLY.

DD MM YY

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Designation date

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Site Reference Number

3. NAME OF WETLAND :

Princess Sirindhorn Wildlife Sanctuary (Pru To Daeng Wildlife Sanctuary)

4. GEOGRAPHICAL COORDINATES :

Latitude 6° 02' – 22' N

Longitude 101° 50' – 102° 03' E

5. ELEVATION :

0 – 14 meters

6. AREA :

20,100 ha (125, 625 rai)

7. OVERVIEW :

Pru To Daeng is the largest remaining primary peat swamp forest in Thailand. The forestland is approximately 8 kilometers in width and roughly 28 kilometers in length. Pru to Daeng supports high diversity of flora and fauna. The surrounded areas of the forest are also used for rice cultivation, rubber plantation and fruit plantation

8. WETLAND TYPES :

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

Please now rank these wetland types by listing them from the most to the least dominant: W, Xp, Xf

shrub swamps, primary peat swamp forest, fresh water swamp forest and seasonally flooded forests.

9. CRITERIA :

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Please specify the most significant criterion applicable to the site: 3

10. MAP OF SITE INCLUDED :

Yes.

11. NAME AND ADDRESS OF THE COMPILER OF THIS FORM :

Wildlife Conservation Division, Royal Forest Department
 61 Phahon Yothin Road. Chatuchak, Bangkok 10900
 Tel : (662) 5614292-3 Ext. 714
 Fax : (662) 561-836

12. JUSTIFICATION OF THE CRITERIA SELECFIED UNDER POINT 9 :

Criteria 1 : Princess Sirindhorn Wildlife Sanctuary or Pru To Daeng is the largest remaining primary peat swamp forest in Thailand. The forestland is approximately 8 kilometers in width and roughly 28 kilometers in length. It is an example of a specific type of ecosystem.

Criteria 2 : At least 217 species of birds have been found. Three of them are globally vulnerable bird species and are also recorded as nationally critically endangered i.e. Lesser Adjutant Stork (*Leptoptilos javanicus*), Masked Finfoot (*Heliopais personata*), and Large Green-pegeion (*Treron capellei*). Six of them are globally near threatened species i.e. Grey-headed Fish-eagle (*Ichthyopaga ichthyaetus*), Cinnamon-headed Pigeon (*T. fulvicollis*), Reddish Scops-owl (*Otus rufescens*), Black Hornbill (*Anthracoceros malayanus*) Many-colored Barbet (*Megalaima rafflesii*), and Olive-backed Woodpecker (*Dinopium ruffesii*), while Grey-headed Fish-eagle (*Ichthyopaga ichthyaetus*) and Cinnamon-headed Pigeon (*T. fulvicollis*) are also recorded as nationally critically endangered species. Whereas, Reddish Scops Owl (*Otus rufescens*), Black Hornbill (*Anthracoceros malayanus*), Many-colored Barbet (*Megalaima rafflesii*), Olive-baccked Woodpecker (*Dinopium ruffesii*), and also Purple Heron (*Ardea purpurea*), and Rafous-tailed Shama (*Copsychus pyrrropygus*) are recorded as nationally endangered species of Thailand as well.

Found 52 reptile species in the site. One of them is a globally endangered reptile species i.e. False Gavial (*Tomistoma schlegelli*) and two of them are globally vulnerable reptile species i.e. Malayan Box Turtle (*Cuora amboinensis*) and Black Marsh Turtle (*Siebenrockiella crassicollis*). And, there are reports of the nationally threatened Salt Water Crocodile (*Crocodylus porosus*) also. Other general species are such as Water Monitor (*Varanus salvator*), Elephant Trunk Snake (*Acrochordus javanicus*) Plumbeous Water Snake (*Enhydriis plumbea*), Bocourt's Water Snake (*E. bocourti*) and Malayan Brown Snake (*Xenelaphis hexagonatus*).

There are at least 62 fish species found including the nationally vulnerable *Rasbora heteromorpha*, *R. pauciperforata*, *Indostomus paradoxus* and *Chaca bankanensis*.

(Forest Research Center 2000, Hilton-Taylor 2000).

Criteria 3 : Princess Sirindhorn Wildlife Sanctuary or Pru To Daeng supports high diversity of flora and fauna. The flora in this site is composing of 124 families, 470 species of which 109 families, 437 flowering plants and 15 families, 33 species of ferns are recorded (detailed under item 17). For fauna, there are at least 217 bird species, 62 fish species, 52 reptile species, 19 amphibian species, 106 butterfly species and 60 mammal species with 13 species of bats (detailed under item 18). (Forest Research Center, 2000)

13. GENERAL LOCATION :

The site is located approximately 1,140 km. south of Bangkok along the east coast of the peninsula near the Malaysian border, in Muang, Takbai, Sungai-kolok and Sungai-padee District, Narathiwat Province between latitude 6° 02' - 6° 22' N and longitude 101° 50' - 102° 03' E. The site encompasses the largest remaining peat swamp forest in Thailand, totaling almost 20,260 ha.

14. PHYSICAL FEATURES :

The site lies parallel to the eastern coastline of Southern Region and is located about 7 km. inland as part of coastal geological evolution, forming a shallow inland sea and became a fresh water lake. Mostly areas were swampy, 0-14 m. height at sea level. Peat soil had high organic matter (>30%) because of organic accumulated and flooding all the year. Average water level ~ 90-100 cm., rather acidity, pH water ~4.0-5.5. The climate is fundamentally a tropical rainforest type. This area has a uniformly high temperature and heavy precipitation almost throughout of the year and no distinct long dry season. The mean annual temperature of 30 years (from 1968 to 1998) is 27-26°C mean annual rainfall 2,549 mm. Mostly falling in November - December under influenced of the northeastern monsoon. The mean annual relative humidity was 81.6 % which considerably high in comparison with other regions.

15. HYDROLOGICAL VALUES

The site have ability to store water and moderate water flow and hydrochemistry. That is important in controlling water quality and hydrological process. The northern part of the swamp forest discharges into Bang Nara River and the southern part discharges into Sungai-kolok River. Water in the swamp forest reaches its peak during the period when the climate is under influenced of the northeastern monsoon.

16. ECOLOGICAL FEATURES :

The site is a unique ecosystem, many rare and uniquely adapted plant and animal species which are tolerant of waterlogged. Plant community in peat swamp was complex, homogenous and fragile, which can classify in to two groups as primary peat swamp and succession peat swamp community, that dominated by *Melaleuca cajuputi* Powell or *Macaranga* spp.

In the primary peat swamp forest (climax ecosystem), the plants have adapted themselves to survive in the detrimental environment in developing peculiar characteristics; such as short tap root, strong, widespread lateral roots and mostly having stilt root. eg.: *Blumeodendron kurzii* and *Calophyllum teysmannii* var. *inophylloide*; some species have large plank buttresses as *Parishia insignis* and *Xylopiya malayana*. Pneumatophores of various shapes are also common characters, namely : peg-like of *Eleiodoxa conferta*, *Korthalsia laciniosa* and *Stemonurus secundiflorus*; knee rooted of *Ganua motleyana*; bridge-like of *Neesia malayana*; looped of *Horsfieldia crassifolia* and *Xylopiya fusca*; and stilt-like of *Elaeocarpus macrocerus*.

The top storey (25-40 m.) of these forest dominated by *Xylopiya fusca*, *Ganua motleyana*, *Camptosperma coriaceum*, *Horsfieldia crassifolia*, *Sandoricum beccarianum* while *Garcinia cowa*, *Goniothalamus gigaleus* and *Baccaurea bracteata* found in the middle storey (5-20 m). The lower storey dominated by *Eleiodoxa conferta*, *Cyrtostachys renda* and *Licuala longecalycata*. Emergent trees, *Alstonia pneumatophora*, *A. angustiloba* and *Koompassia malaccensis*, are higher than the top storey (<40 m.) because they need more light and have more ability in competition with the others.

Climber are very sparse, except for certain places where clustering thorny rattans occur. These are *Calamus caesius*, *Daemonorops angustifolia* and *Korthalsia laciniosa*.

Others climbing species are such as *Dapania racemosa*, *Freycinetia angustifolia*, *F. javanica*.

Epiphytic plants are frequently found on trees such as *Aeschynanthus parvifolia*, *Dischidia acutifolia*, *D. minor*, *Hoya micrantha*, *H. parasitica*, *Ficus microcarpa*, *Fagraea acuminatissima*, *F. tubulosa*, *Cymbidium finlaysonianum*, *Dendrobium concinnum* and *D. pensile*.

Azolla pinnata, *Blyxa japonica*, *Najas graminea* and *Hydrilla verticillata* can be found in the open water bodies of the forests. Aquatic plants which can be found on the edges of the water bodies include *Monochoria vaginalis*, *Centella asiatica* and *Lilium crustacea*, while *Lygodium circiutum*, *Stenochlaena palustris* and *Acrostichum aureum* have often been found mixed with other vegetation.

In the area that peat soil was disturbed by drained, the original forest were cleared and the area were left idle and soil still has peat or organic matter, pioneer species, *Macaranga pruinosa*, invaded to substitute growth on this area, and ground cover are fern. While, the area is repeatedly razed by fire, strongly acidity soil, as in the peripheral sites of the swamp, the fire-resistant species *Melaleuca cajuputi* developed almost pure stands.

17. NOTEWORTHY FLORA :

None

18. NOTEWORTHY FAUNA :

Birds: At least 217 species of birds have been found.

Three of them are globally vulnerable bird species and are also recorded as nationally critically endangered i.e. Lesser Adjutant Stork (*Leptoptilos javanicus*), Masked Finfoot (*Heliopais personata*), and Large Green-pegion (*Treron capellei*).

Six of them are globally near threatened species i.e. Grey-headed Fish-eagle (*Ichthyopaga ichthyaetus*), Cinnamon-headed Pigeon (*T. fulvicollis*), Reddish Scops-owl (*Otus rufescens*), Black Hornbill (*Anthracoceros malayanus*) Many-colored Barbet (*Megalaima rafflesii*), and Olive-backed Woodpecker (*Dinopium rufesii*). Grey-headed Fish-eagle (*Ichthyopaga ichthyaetus*) and Cinnamon-headed Pigeon (*T. fulvicollis*) are also recorded as nationally critically endangered species. Whereas, Reddish Scops Owl (*Otus rufescens*), Black Hornbill (*Anthracoceros malayanus*), Many-colored Barbet (*Megalaima rafflesii*), Olive-backed Woodpecker (*Dinopium rufesii*), and also Purple Heron (*Ardea purpurea*), and Rufous-tailed Shama (*Copsychus pyrropygus*) are recorded as nationally endangered species of Thailand as well.

Reptiles: Found 52 reptile species in the site.

One of them is a globally endangered reptile species i.e. False Gaviol (*Tomistoma schlegelli*) and two of them are globally vulnerable reptile species i.e. Malayan Box Turtle (*Cuora amboinensis*) and Black Marsh Turtle (*Siebenrockiella crassicollis*). And, there are reports of the nationally threatened Salt Water Crocodile (*Crocodylus porosus*) also. Other general species are such as Water Monitor (*Varanus salvator*), Elephant Trunk Snake (*Acrochordus javanicus*) Plumbeous Water Snake (*Enhydris plumbea*), Bocourt's Water Snake (*E. bocourti*) and Malayan Brown Snake (*Xenelaphis hexagonatus*).

Fishes: There are at least 62 fish species found including the nationally vulnerable *Rasbora heteromorpha*, *R. pauciperforata*, *Indostomus paradoxus* and *Chaca bankanensis*.

Amphibians: Amphibians 19 species are found in the site such as Upland Green Frog (*Rana chalconota*), Rough-sided Frog (*R. glandulosa*), Masked Frog (*R. paramacrodon*), Collet's Tree Frog (*Polypedates colleti*), Butler's Frog's (*Microphyla butleri*), Inornate Froglet (*M. inornata*), *Occidozyga hima* and Straight-ridged Toad (*Bufo parvus*).

Butterflies: Butterflies 106 species were recorded such as *Papilio paris paris*, *Pareronia anias*, *Loxora atymnus continentalis* and *Stichophthalma godfreyi*.

Mammals: Found 60 mammal species such as Banded Langur (*Presbytis melalophos*) Crab-eating Macaque (*Macaca fascicularis*), Panther (*Panthera pardus*), Common Wild Pig (*Sus scrofa*), Greater Mouse Deer (*Tragulus napu*), Lesser Mouse Deer (*T. javanicus*), Small-clawed otter (*Aonyx cinerea*), Gray-bellied Squirrel (*Callosciurus caniceps*) and included 16 species of bats. Two of them are globally near threatened species i.e. Banded Langur (*Presbytis melalophos*) and Crab-eating Macaque (*Macaca fascicularis*).

(Forest Research Center 2000, Hilton-Taylor 2000).

19. SOCIAL AND CULTURAL VALUES :

Pru To Daeng is a famous tourist site of Narathiwat Province. Communities around the forest largely depend on direct and indirect use of the forest's product such as fisheries, melaleuca logging (for make charcoal) and mostly, local people harvested for the household consumption.

20. LAND TENURE/OWNERSHIP OF :

Most of the area proposed is wildlife sanctuary, that has been operated by the Royal Forest Department with surrounding privately-owned land mostly use either for agriculture.

21. CURRENT LAND USE :

Onsite : preserve the biological diversity and research.
Surrounding areas : agriculture and human settlement.

22. FACTORS (PAST, PRESENT OR POTENTIAL) ADVERSELY AFFECTING THE SITE'S ECOLOGICAL CHARACTER, INCLUDING CHANGES IN LAND USE AND DEVELOPMENT PROJECT :

Since 1981, a number of public agencies have been implementing many development projects in Pru To Daeng. These project have had severe impacts to the forest, including the loss of two-third of the forest area from increase in soil acidity, clearing and bush burning. Some parts of the forest were cleared for rice cultivation, These areas had, however, been able to be cultivated for only 1-2 years, due to high acidity and were replaced by Melaleuca forests. The highest level of destruction in the forest occurred in 1983.,

- Pru To Daeng was declared as wildlife sanctuary, the section 160 of the 108th issue of the Royal Decree, on September 12, 1991.
- Some parts of the swamp forest are reserved forests, while the remaining are generally public land. The surrounded areas are privately owned. These areas are situated at higher elevation than the forests and are thus densely populated. There are roads encircled the swamp forest.

- The forest is currently under threat from forest fire, land encroachment and illegal collection of rare plants and animals.

23. CONSERVATION MEASURES TAKEN :

After the development project, many strategy for conservation was taken.

24. CONSERVATION MEASURES PROPOSED BUT NOT YET IMPLEMENTED :

Master plan management, conducted by Faculty of Forestry, was approved by the Royal Forest Department and the plan for building capacity of its own staff will be implemented first in the next few years.

25. CURRENT SCIENTIFIC RESEARCH AND FACILITIES :

Pru To Daeng is the largest remaining peat swamp forest in Thailand the forest is thus of tremendous importance for research and study. Sirindhorn Peat Swamp Forest Research and Nature Study Center conduct research and support the research project of other organization and encourage peat swamp forest conservation and disseminate information about peat swamp ecology.

26. CURRENT CONSERVATION EDUCATION :

Sirindhorn Peat Swamp Forest Research and Nature Study Center disseminates information about peat swamp forest ecology and acts as visitor center for students and tourist to study on ecosystem.

27. CURRENT RECREATION AND TOURISM :

None

28. JURISDICTION :

The site is managed by Wildlife Conservation Division, The Royal Forest Department and Narathiwat Province.

29. MANAGEMENT AUTHORITY :

Pru To Dang Wildlife Sanctuary Office,
The Royal Forest Department
Post Box 12, Muang District,
Narathiwat Province, 96000
Thailand.
Tel. 66-73-437228

30. BIBLIOGRAPHICAL REFERENCES :

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