



# Ramsar Information Sheet

Published on 14 August 2015

## Thailand Khao Sam Roi Yot Wetland



Designation date: 8 January 2008

Ramsar ID: 2238

Coordinates: 12°11'58"N 100°1'8"E

Official area (ha): 6 892,00

Number of zones:

## Color codes

Fields back-shaded in light blue relate to data and information required only for RIS updates.

Note that some fields concerning aspects of Part 3, the Ecological Character Description of the RIS (tinted in purple), are not expected to be completed as part of a standard RIS, but are included for completeness so as to provide the requested consistency between the RIS and the format of a ' full ' Ecological Character Description, as adopted in Resolution X.15 (2008). If a Contracting Party does have information available that is relevant to these fields (for example from a national format Ecological Character Description) it may, if it wishes to, include information in these additional fields.

## 1 - Summary

**Summary** The Khao Sam Roi Yot Wetland is located approximately 275 km southwest of Bangkok, on the Gulf of Thailand, in Sam Roi Yot District and Kuiburi District of Prachuap Khiri Khan Province. The unique combination of freshwater and coastal wetland is rare in Thailand and in the Malayan Rainforest biogeographic region. In particular, it supports the largest remaining marshland including *Phragmites karka* reedbeds in Thailand (and thus in the biogeographic region).

The site supports coastal wetlands of outstanding diverse natural beauty at the foot of an outcrop of spectacular wooded limestone mountains which rise to 605 m. Two major wetland ecosystems are (1) freshwater marsh and (2) coastal and marine wetlands. The freshwater marsh is formed from unconsolidated deposition of stream process and former brackish lagoon process. Drainage ditches and embankments have been constructed in order to bring in saltwater for aquaculture. Around the margin of the marsh are rice paddies, plantation and settlement.

The freshwater marsh supports at least 292 plants species in 233 genera, 92 families including 174 species of aquatic plants and rare plant species, including *Limnophila siamensis*, *Afzelia xylocarpa*, *Burretiodendron esquirolii* and *Wrightia lanceolata*. There are at least 41 species of freshwater fishes in 35 genera, 20 families. Moreover, the marsh is a habitat for at least 72 wildlife species in 62 genera, 42 families (8 species of mammals, 60 species of birds, and 4 species of reptiles), many of which are included in the IUCN Red List as Endangered or Vulnerable.

## 2 - Data & location

### 2.1 - Formal data

#### 2.1.1 - Name and address of the compiler of this RIS

Name Mr.Wanlop PREECHAMART

Institution/agency Office of Natural Resources and Environmental Policy and Planning

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Rama VI Road, Phayathai,  
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#### 2.1.2 - Period of collection of data and information used to compile the RIS

From year 2010

To year 2014

#### 2.1.3 - Name of the Ramsar Site

Official name (in English, French or Spanish) Khao Sam Roi Yot Wetland

### 2.2 - Site location

## 2.2.1 - Defining the Site boundaries

b) Digital map/image

<1 file(s) uploaded>

Boundaries description (optional)

The Khao Sam Roi Yot Wetland is located within the Khao Sam Roi Yot Marine National Park. The area is surrounded by the Route marker No.4, the Southern railways and the east coast of southern Thailand. The area of wetland is mostly within the national park boundary except for the freshwater marsh in the north, southwest, and south.

It is located approximately 275 km southwest of Bangkok, on the Gulf of Thailand, in Sam Roi Yot District and Kuiburi District, Prachuap Khiri Khan Province.

## 2.2.2 - General location

a) In which large administrative region does the site lie? Prachuap Khiri Khan Province

b) What is the nearest town or population centre? Pranburi and Kuiburi District

## 2.2.3 - For wetlands on national boundaries only

a) Does the wetland extend onto the territory of one or more other countries? Yes  No

b) Is the site adjacent to another designated Ramsar Site on the territory of another Contracting Party? Yes  No

## 2.2.4 - Area of the Site

Official area, in hectares (ha): 6892

Area, in hectares (ha) as calculated from GIS boundaries 178802.1

## 2.2.5 - Biogeography

Biogeographic regions

Regionalisation scheme(s)	Biogeographic region
Udvardy's Biogeographical Provinces	Malayan Rainforest Biogeographic region

## 3 - Why is the Site important?

### 3.1 - Ramsar Criteria and their justification

#### Criterion 1: Representative, rare or unique natural or near-natural wetland types








**Other reasons** Khao Sam Roi Yot Wetland is an example of a unique combination of freshwater and coastal wetlands that is rare in Thailand and the Malayan Rainforest biogeographic region. In particular, it supports the largest remaining marshland including *Phragmites karka* reedbeds in Thailand (and thus in the biogeographic region). The site consists of two major ecosystems, marine and inland, on the western coast of the Gulf of Thailand. This creates a unique brackish transition zone, dominated by mangrove forest and tidal-flats. The marine ecosystem comprises several islands, sea shore and sand beach. The inland ecosystem consists of the largest remaining freshwater reed swamp in Thailand and limestone karst dominated by dry evergreen forest at the foot hill, and limestone forest. Thus, Khao Sam Roi Yot Wetland provides a diverse range of habitats including coastal flats, sandy beaches, slow-flowing streams, narrow fringes of mangrove along the riverine margins, estuarine mudflats, rocky cliffs, shallow sea and offshore islands.

#### Criterion 2 : Rare species and threatened ecological communities



















#### Criterion 3 : Biological diversity

**Justification** Khao Sam Roi Yot is an exceptional bird area with a total of 316 bird species (both landbirds and waterbirds) having been recorded since 1966 in and around the Khao Sam Roi Yot National Park. In 1996, at least 157 species (approximately 50%) were more or less exclusively associated with wetland habitats. The freshwater marsh itself is a habitat for at least 72 wildlife species in 62 genera, 42 families, including 8 mammal species, 60 bird species, and 4 reptile species. The freshwater marsh is of great importance for a large range of bird species, including the majority of larger, both resident and migrant waterbirds (herons, ducks, rails and crakes); birds of prey, including wintering Greater spotted eagles (*Aquila clanga*) (VU on IUCN), as well as harriers (*Circus* spp.) and shorebirds (*Charadriiformes*) characteristic of freshwater habitats. A variety of smaller birds (e.g., warblers, wagtails) are also present, and includes insectivorous species although significant numbers of granivores are also dependent on marshland. These include weavers (*Ploceus* spp.) and the Chestnut munia (*Lonchura malacca*). Many of these species have become scarce elsewhere in Thailand due to the loss or conversion of marshes and paddy basins. There are at least 41 species of freshwater fishes in 35 genera, 20 families. However, no fish species are categorized in the IUCN Red List. The freshwater marsh also supports at least 292 plants species in the 233 genera, 92 families including 174 species of aquatic plants and rare plant species, which are *Limnophila siamensis*, *Azelia xylocarpa*, *Burretiodendron esquirolii* and *Wrightia lanceolata*. A total of at least 64 wetland species are associated with coastal, estuarine and marine habitats. Estuarine or brackish water and mudflats are of particular importance for a large range of migrant shorebirds (*Charadriiformes*). Sand beaches are of particular importance as a nesting habitat for two shorebird species which are very scarce and declining in Thailand: Malaysian plover (*Charadrius peronii*) (NT on IUCN) and Little tern (*Sterna albifrons*) (LC on IUCN). The most recent survey in June, August and September 2007 confirmed that at least 110 bird species were found at Khao Sam Roi Yot including 82 resident species and 28 migratory species. At least 6 species are on Thailand Red Data List i.e. Malaysian plover (*Charadrius peronii*), River lapwing (*Vanellus duvaucelii*), Purple heron (*Ardea purpurea*), White-bellied sea eagle (*Haliaeetus leucogaster*), Little tern (*Sterna albifrons*), and Baya weaver (*Ploceus manyar*).

## 3.2 - Plant species whose presence relates to the international importance of the site

Scientific name	Common name	Criterion 2	Criterion 3	Criterion 4	IUCN Red List	CITES Appendix I	Other status	Justification
Afzelia xylocarpa 		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	EN 	<input type="checkbox"/>		
Burretiodendron esquirolii 		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	VU 	<input type="checkbox"/>		
Limnophila siamensis 		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		The species is only known from two locations in Thailand (Kamphaeng Phet Province (west-central Thailand) and Nakhon Nayok Province, northeast of Bangkok). The distribution of the species requires research and there is little information on the species ecology, population, and threats. It is not possible to derive an informed assessment of its risk of extinction, it is therefore assessed as Data Deficient.
Wrightia lanceolata 		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	VU 	<input type="checkbox"/>		Endemic to Thailand. It has been collected several times in a single locality, at Sam Roy Yot National Park.

### 3.3 - Animal species whose presence relates to the international importance of the site

Phylum	Scientific name	Common name	Species qualifies under criterion				Species contributes under criterion				Pop. Size	Period of pop. Est.	% occurrence	IUCN Red List	CITES Appendix I	CMS Appendix I	Other Status	Justification
			2	4	6	9	3	5	7	8								
CHORDATA / AVES	 <b>Acrocephalus tangorum</b>	Manchurian Reed-warbler	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA / AVES	 <b>Aquila clanga</b>	Greater Spotted Eagle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input checked="" type="checkbox"/>			
CHORDATA / REPTILIA	 <b>Cuora amboinensis</b>	Southeast Asian Box Turtle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA / REPTILIA	 <b>Indotestudo elongata</b>	Yellow-headed Tortoise	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN 	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA / MAMMALIA	 <b>Macaca arctoides</b>	Bear Macaque	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA / MAMMALIA	 <b>Macaca leonina</b>	Northern Pig-tailed Macaque	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA / MAMMALIA	 <b>Orcaella brevirostris</b>	Irrawaddy Dolphin	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
CHORDATA / MAMMALIA	 <b>Prionailurus viverrinus</b>	Fishing Cat	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				EN 	<input type="checkbox"/>	<input type="checkbox"/>			
CHORDATA / REPTILIA	 <b>Siebenrockie crassicolis</b>	Black Marsh Turtle	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				VU 	<input type="checkbox"/>	<input type="checkbox"/>			

### 3.4 - Ecological communities whose presence relates to the international importance of the site

<no data available>





## 4 - What is the Site like? (Ecological character description)

### 4.1 - Ecological character

The area has a variety of terrestrial and wetland habitats. Terrestrial habitat or Sam Roi Yot limestone mountain range does not have especially diverse forest fauna, since the only woodland type is dry woodland on steep limestone crags which is usually referred to as mixed deciduous forest. The principal wildlife conservation importance of the area stems mainly from its more diverse wetland habitats. Chief components of importance are freshwater marsh, estuarine and mudflats, sand beaches, and marine habitats. The juxtaposition of mountains and wetlands has resulted in a uniquely high diversity of habitats located in close proximity. The freshwater marsh covers extensive beds of common reed (*Phragmites*), water chestnut (*Eleocharis dulcis*) and other tall emergent swamp plants; open water with bladderwort (*Utricularia aurea*), bushy pond weed (*Najas graminea*), hydrilla (*Hydrilla verticillata*) and other floating and submerged plants; extensive grazing marshes in which mud and shallow water alternates with short grass; and rice paddies.

Phragmites reedswamp is the key habitat for birds. Phragmites is particularly important as the nesting habitat of very rare breeding birds in Thailand. All *Acrocephalus* warblers showed a strong positive association with mature stands of Phragmites reeds and a negative association or avoidance of *Typha angustifolia* or mixed *Typha* and young Phragmites. Both *Acrocephalus tangorum* (VU) and *Acrocephalus concinens* (LC) are almost entirely confined to Phragmites. The proximity of open water is perhaps a requirement of *Acrocephalus tangorum* (VU).

The marsh acts as a saline encroachment protection mechanism. The freshwater retained within the marsh has a significant but undetermined effect on local groundwater supplies. Irrigation channels pass the southern area of the marsh. Water quality of the marsh at the south is classified as class II, receiving wastewater from nearby activities but can be used domestically and for fisheries after prior treatment. Water quality of the canals, classified as class III-IV, can be used for transportation and some other activities after prior treatment. Water quality of the marsh at the north is classified as class I, can be used for domestic purpose after prior treatment, and can be used for fish breeding and for conservation.

### 4.2 - What wetland type(s) are in the site?

#### Marine or coastal wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
A: Permanent shallow marine waters		4		Representative
D: Rocky marine shores		0		
E: Sand, shingle or pebble shores		0		
G: Intertidal mud, sand or salt flats		0		
I: Intertidal forested wetlands		0		
Zk(a): Karst and other subterranean hydrological systems		3		

#### Inland wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
P: Seasonal/ intermittent freshwater lakes		0		
Tp: Permanent freshwater marshes/ pools		2		Unique
Zk(b): Karst and other subterranean hydrological systems		1		

## Human-made wetlands

Wetland types (code and name)	Local name	Ranking of extent (1: greatest - 4: least)	Area (ha) of wetland type	Justification of Criterion 1
1: Aquaculture ponds		0		
3: Irrigated land		0		
9: Canals and drainage channels or ditches		0		

## 4.3 - Biological components

### 4.3.1 - Plant species

Other noteworthy plant species

Scientific name	Common name	Position in range / endemism / other
<i>Arundo donax</i>		Dominant tall emergent swamp plant
<i>Burmannia coelestis</i>		
<i>Ceratophyllum demersum</i>		Dominant submergent plant
<i>Ceratophyllum demersum</i>		Dominant submergent plant
<i>Eleocharis dulcis</i>		Shorter dominant emergent plant
<i>Hydrilla verticillata</i>		Dominant submergent plant
<i>Myriophyllum tetrandrum</i>		Dominant submergent plant
<i>Najas graminea</i>		Dominant submergent plant
<i>Nelumbo nucifera</i>		Dominant floating plants
<i>Nymphaea ampla</i>		Dominant submergent plant
<i>Nymphaea stellata</i>		Dominant floating plant
<i>Phragmites karka</i>		Dominant tall emergent swamp plant
<i>Schoenoplectus pungens pungens</i>		Shorter dominant emergent plant
<i>Typha angustifolia</i>		Dominant tall emergent swamp plant
<i>Utricularia aurea</i>		Dominant submergent plant

## 4.3.2 - Animal species

## Other noteworthy animal species

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/AVES	<i>Acrocephalus agricola</i>	Paddyfield Warbler				Important wintering and feeding area
CHORDATA/AVES	<i>Aquila nipalensis</i>	Steppe Eagle				
CHORDATA/AVES	<i>Ardea cinerea</i>	Gray Heron				
CHORDATA/AVES	<i>Ardea purpurea</i>	Purple Heron				On the Thailand Red Data List
CHORDATA/MAMMALIA	<i>Capricornis milneedwardsii</i>					
CHORDATA/ACTINOPTERYGII	<i>Channa striata</i>					Dominant resident
CHORDATA/ACTINOPTERYGII	<i>Channa striata</i>					Dominant resident
CHORDATA/AVES	<i>Charadrius peronii</i>	Malaysian Plover				Sand beaches important nesting site
CHORDATA/AVES	<i>Haliaeetus leucogaster</i>	White-bellied Sea Eagle				On the Thailand Red Data List
CHORDATA/AVES	<i>Lonchura malacca</i>	Tricolored Munia				Dependent on marshland
CHORDATA/MAMMALIA	<i>Macaca fascicularis</i>	Crab-eating macaques				
CHORDATA/ACTINOPTERYGII	<i>Monopterus albus</i>	Asian swamp eel				Dominant resident
CHORDATA/ACTINOPTERYGII	<i>Monopterus albus</i>					Dominant resident

Phylum	Scientific name	Common name	Pop. size	Period of pop. est.	% occurrence	Position in range /endemism/other
CHORDATA/MAMMALIA	Muntiacus muntjak	Indian muntjac				Rarely seen, but believed to be present
CHORDATA/ACTINOPTERYGII	Oreochromis upembae					Dominant resident
CHORDATA/MAMMALIA	Panthera pardus	Leopard				
CHORDATA/AVES	Ploceus manyar	Streaked Weaver				On the Thailand Red Data List
CHORDATA/ACTINOPTERYGII	Pristolepis fasciata					Dominant resident
CHORDATA/ACTINOPTERYGII	Pristolepis fasciata					Dominant resident
CHORDATA/AVES	Sternula albifrons	Little Tern				sand beaches important nesting site
CHORDATA/AVES	Threskiornis melanocephalus	Black-headed Ibis				
CHORDATA/MAMMALIA	Trachypithecus obscurus	Dusky Langur				
CHORDATA/AVES	Vanellus cinereus	Grey-headed Lapwing				
CHORDATA/AVES	Vanellus duvaucelii	River Lapwing				On the Thailand Red Data List

## 4.4 - Physical components

### 4.4.1 - Climate

Climatic region	Subregion
A: Tropical humid climate	Af: Tropical wet (No dry season)
A: Tropical humid climate	Aw: Tropical savanna (Winter dry season)

The Khao Sam Roi Yot Wetland is a sub-components of the west coast-gulf basin. It has a tropical monsoonal climate with average annual rainfall of 800 – 1,200 mm. Once several canals and streams drained into the marsh before flowing into the sea. The southern highway and railway have changed the hydrological pattern. At present, the freshwater marsh is fed mainly by annual rainfall and two main streams. There is considerable seasonal variation in the extent of flooding, but the marsh has never dried out. Flooding period is 4 – 10 months (June – March) with average depth of 1 m. The highest flood is in November with average flooding surface area 70 sqkm. Parts of the area are tidal. Khao Daeng canal, the major connection between the marsh and the sea has the highest tide of 3 m on average. Saline intrusion occurs during high tides in the southern part. About one-third of the marsh becomes brackish.

#### 4.4.2 - Geomorphic setting

a) Minimum elevation above sea level (in metres)

0

a) Maximum elevation above sea level (in metres)

230

Not in river basin

Coastal

Please name the river basin or basins. If the site lies in a sub-basin, please also name the larger river basin. For a coastal/marine site, please name the sea or ocean.

Gulf of Thailand

The site has the distinct traces of ancient shorelines. Formation of the Khao Sam Roi Yot Wetlands is part of coastal geological evolution. Once inundated by the sea, the area experienced at least 3 periods of sea level changes. The area is flat lowland and holds water all over the year.

Formation of the mountains is a limestone karst, created in the Permian period. The rocks were classified in the Ratburi group. Geology in the freshwater marshes was created by the deposition of sediment accumulated in the water, gravel, and sand, generated in the Quaternary period. The marshes themselves are influenced by the mountain ranges 15 km, which extend in the north – south and parallel to the coast. They shelter influences of the sea, and finally create a large basin of wetlands.

#### 4.4.3 - Soil

Are soil types subject to change as a result of changing hydrological conditions (e.g., increased salinity or acidification)? Yes  No

Please provide further information on the soil (optional)



The area is flat lowland and holds water all over the year. Soil forming materials in the marsh are of acid sulphate, saline marine origin. Sulphides were accumulated. Due to the oxidation and hydrolysis of these sulphides, soils become acidic. Sediments are mostly fine texture. Soils are very poorly drained and are not suitable for agriculture.

#### 4.4.4 - Water regime

##### Water permanence

Presence?	Changes at RIS update
Usually permanent water present	No change

##### Source of water that maintains character of the site

Presence?	Predominant water source	Changes at RIS update
Water inputs from rainfall	<input type="checkbox"/>	No change
Marine water	<input checked="" type="checkbox"/>	No change

##### Water destination

Presence?	Changes at RIS update
Feeds groundwater	No change
To downstream catchment	No change

##### Stability of water regime

Presence?	Changes at RIS update
Water levels fluctuating (including tidal)	No change

Please add any comments on the water regime and its determinants (if relevant). Use this box to explain sites with complex hydrology:

Fluctuation in the gulf coast of Prachuab Khirikhan province is diurnal - one high tide and one low tide per day. The tidal variation is between 0.5-3.0 msl.

The marsh acts as a saline encroachment protection mechanism. The freshwater retained within the marsh has a significant but undetermined effect on local groundwater supplies. Irrigation channels pass the southern area of the marsh.

#### 4.4.5 - Sediment regime

Water temperature	In the freshwater marshes, the temperatures are in the natural condition and ranges between 25.8-32.6 C.
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#### 4.4.6 - Water pH

Circumneutral (pH: 5.5-7.4 )

#### 4.4.7 - Water salinity

Fresh (<0.5 g/l)

Mixohaline (brackish)/Mixosaline (0 .5-30 g/l)

Please provide further information on salinity (optional):

Salinity in dry season is higher than that in the wet season, ranges between 0.5-30 ppt., indicating the connectivity and effects from the sea water.

Dissolved gases in water

Suspended solid and turbidity are within the Surface Water Quality Standards, which are 8-66 ppm, and 3.3-21.5 NTU, respectively. Dissolved oxygen is likely at a low level (0.49-4.21 mg/L), and may harm aquatic creatures. Nitrogen value, determined as the total Kjeldahl nitrogen (TKN), ranges from 3 to 11 mg/l. However, the phosphate and phosphorus are undetectable. Conductivity is between 4.96-23.48 (mS/cm) and dissolve solid is between 3.95-20.35 ppt.

#### 4.4.8 - Dissolved or suspended nutrients in water

Mesotrophic

Water conductivity

Conductivity is between 4.96-23.48 (mS/cm).

#### 4.4.9 - Features of the surrounding area which may affect the Site

Please describe whether, and if so how, the landscape and ecological characteristics in the area surrounding the Ramsar Site differ from the site itself: i) broadly similar  ii) significantly different

### 4.5 - Ecosystem services

#### 4.5.1 - Ecosystem services/benefits

Provisioning Services

Ecosystem service	Examples	Importance/Extent/Significance
Food for humans	Sustenance for humans (e.g., fish, molluscs, grains)	High
Fresh water	Water for irrigated agriculture	Medium
Wetland non-food products	Livestock fodder	Medium

Regulating Services



Ecosystem service	Examples	Importance/Extent/Significance
Maintenance of hydrological regimes	Groundwater recharge and discharge	High

## Cultural Services

Ecosystem service	Examples	Importance/Extent/Significance
Recreation and tourism	Water sports and activities	Medium
Recreation and tourism	Nature observation and nature-based tourism	Medium
Spiritual and inspirational	Cultural heritage (historical and archaeological)	Medium

## Other ecosystem service(s) not included above:

Khao Sam Roi Yot wetlands are of great local socio-economic importance. In 2007, there were 8 sub-districts, 27 villages and a total of 5,028 households in its vicinity. The local people depend very much on the marsh for its freshwater fisheries, seasonal wild food gathering, crop growing, grazing grounds and water for livestock. Aquaculture is increasingly significant. Tourism is of growing importance given the wide variety of natural attractions of the site. Sight-seeing along the canal and boat punting in freshwater marsh are ecotourism activities of high potential. Traditional fisheries and life style of fishing communities, which is closely related to wetlands are of high cultural importance for Thai people. Khao Sam Roi Yot Wetland has its own legend.

Besides, the site has hydrological values such as saline encroachment protection and groundwater recharge (undetermined).

Irrigation channels pass the southern area of the marsh.

Have studies or assessments been made of the economic valuation of ecosystem services provided by this Ramsar Site? Yes  No  Unknown

## 4.5.2 - Social and cultural values

<no data available>

## 4.6 - Ecological processes

<no data available>

## 5 - How is the Site managed? (Conservation and management)

### 5.1 - Land tenure and responsibilities (Managers)

#### 5.1.1 - Land tenure/ownership

##### Public ownership

Category	Within the Ramsar Site	In the surrounding area
Provincial/region/state government	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Other public ownership	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

##### Private ownership

Category	Within the Ramsar Site	In the surrounding area
Other types of private/individual owner(s)	<input type="checkbox"/>	<input checked="" type="checkbox"/>

##### Provide further information on the land tenure / ownership regime (optional):

###### Land tenure within the Ramsar site:

The Khao Sam Roi Yot mountains and most of the nearby estuarine and marine wetland habitats are state owned. Only approximately half of the freshwater marsh is in Khao Sam Roi Yot National Park. Most of the rest is still idle land, open to public, and adjacent lowland wetlands are partly farmed and settled as private holdings. The land is owned by Prachuap Khiri Khan Provincial Administrative Organization.

###### Land tenure in the surrounding area:

The outside the wetlands surrounded by private lands, and some areas are public lands owned by Prachuap Khiri Khan Provincial Administrative Organization.

Land use within the Ramsar Site: Fishing, a local road for tourist to access the National Park.

Land use in the surrounding area: Rice paddies, fishing, shrimp farms, duck farms, Casuarina plantations, irrigation channels.

#### 5.1.2 - Management authority

##### Please list the local office / offices of any agency or organization responsible for managing the site:

Sam Roi Yot National Park

Provide the name and title of the person or people with responsibility for the wetland: Mr. Roongroj Atsawakultharin

Postal address: Khao Daeng sub-district,  
KuiBuri district,  
Prachubkirikhun province, 77150, Thailand.  
Phone #: 032 619078

## 5.2 - Ecological character threats and responses (Management)

### 5.2.1 - Factors (actual or likely) adversely affecting the Site ' s ecological character

#### Human settlements (non agricultural)

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Tourism and recreation areas	Medium impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Unspecified development	Low impact	High impact	<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Agriculture and aquaculture

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Annual and perennial non-timber crops			<input type="checkbox"/>	<input checked="" type="checkbox"/>
Marine and freshwater aquaculture	Medium impact		<input type="checkbox"/>	<input checked="" type="checkbox"/>

#### Transportation and service corridors

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Roads and railroads	Low impact	High impact	<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Biological resource use

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Hunting and collecting terrestrial animals	Medium impact		<input checked="" type="checkbox"/>	<input type="checkbox"/>

#### Pollution

Factors adversely affecting site	Actual threat	Potential threat	Within the site	In the surrounding area
Agricultural and forestry effluents	Medium impact		<input type="checkbox"/>	<input checked="" type="checkbox"/>
Garbage and solid waste			<input type="checkbox"/>	<input checked="" type="checkbox"/>

Please describe any other threats (optional): Within the Ramsar Site: Proposed projects for road construction along the coast and inside the national park boundaries without an appropriate environmental impact assessment will deteriorate and cause irreversible damages on Khao Sam Roi Yot wetland ecosystems as a whole.

In the surrounding area: The principal threats stem from increasingly intensified use by people within and adjacent to the site. Larger and larger areas have been greatly modified by aquaculture. Disturbance occurs through physical destruction caused by the excavation of ponds, changes in tidal patterns and salt water encroachment. In 1993, prawn disease quickly spread through ponds and large areas were abandoned. However prawn farming still expands. The site has lost a substantial amount of natural wetland habitats including mangrove, tidal mudflats, beaches, and freshwater marsh, and of course wildlife and birds that go with it. The most critically endangered habitat component of the freshwater ecosystem is Phragmites. Waste water released onto adjacent land and into the waterways kills the freshwater reedbeds, contaminates the marsh as well as coastal water. Perhaps no more than 4 km<sup>2</sup> of more or less pure Phragmites remained in the entire marsh area. Typha and Eleocharis are increasingly replacing Phragmites. Colonization of these taller grasses would reduce areas of short-grass nesting habitat for Oriental Pratincoles (*Glareola maldivarum*) perhaps reduce the importance of the area for herons and egrets. There is a high level of disturbance from bird hunting (mainly Watercocks and White-breasted Waterhens) for food and for sale. Local people hunt wildlife illegally both in the marshy areas and in the adjacent forested mountains within the park. Increased human use of sandy beaches, especially by tourism industry could disturb sensitive nesting species such as *Charadrius peronii* and *Sterna albifrons*. There is a small-scale agricultural encroachment into the drier margins of the freshwater marsh.

Only half of Khao Sam Roi Yot freshwater swamp grassland is within the boundary of the national park. Although most of its area is still natural grassland, some parts have been converted for agricultural and settlements. Private land acquisitions include those with legal property documents as well as those without any official certification document.

Development projects (roads, tourism industry) in adjacent areas may have long term impact on the national park.

## 5.2.2 - Legal conservation status

### National legal designations

Designation type	Name of area	Online information url	Overlap with Ramsar Site
National Park	Khao Sam Roi Yot National Park		partly

## 5.2.3 - IUCN protected areas categories (2008)

II National Park: protected area managed mainly for ecosystem protection and recreation

## 5.2.4 - Key conservation measures

### Legal protection





Measures	Status
Legal protection	Partially implemented

#### Habitat

Measures	Status
Land conversion controls	Implemented

#### Human Activities

Measures	Status
Communication, education, and participation and awareness activities	Implemented

**Other:** Most beaches, main canals, salt flats, offshore islands and shallow sea have been protected as Khao Sam Roi Yot National Park since 1966 under the National Park Act (1961). Half of the Sam Roi Yot freshwater marsh (36.8 km<sup>2</sup> of reedbeds) was included in the Park boundary in 1982.

Mangrove rehabilitation programmes have been carried out in conjunction with school visits to the park as part of an educational programme. Several NGOs, both Thai and international, are constantly active in bird observation at the site and provide a great deal of information that, in turn, is used to increase public awareness.

### 5.2.5 - Management planning

Is there a site-specific management plan for the site? Yes

Has a management effectiveness assessment been undertaken for the site? Yes  No

If the site is a formal transboundary site as indicated in section Data and location > Site location, are there shared management planning processes with another Contracting Party? Yes  No

Please indicate if a Ramsar centre, other educational or visitor facility, or an educational or visitor programme is associated with the site:

The current management plan draws attention to the potential the site has for development of educational center and ecotourism due to its proximity to Bangkok and the tourist centres of Cha-am, Hua Hin and Pranburi districts.

Local schools nearby Khao Sam Roi Yot National Park have used Sam Roi Yot Wetlands as natural laboratories. Students formed “ Marsh Lovers Group ” and carried out continuous wetland-related activities such as bird-watching during the weekends and nature youth camps. School teachers and students also take part in guiding activities and providing visitors with information about freshwater marsh.

In 2000s, the Office of Natural Resources and Environmental Policy and Planning of Thailand (ONREP) in cooperation with the Wildlife Fund Thailand, Prachuap Khiri Khan Province and local schools have carried out various educational and public awareness raising campaign activities.

### 5.2.6 - Planning for restoration

Is there a site-specific restoration plan? No need identified

### 5.2.7 - Monitoring implemented or proposed

The Centre for Conservation Biology, Mahidol University, has developed a database containing full information on protected areas of Thailand. Information on Khao Sam Roi Yot National Park especially its biodiversity and conservation has been compiled. Bird lists have been published and are available from the Royal Forestry Department as well as at the National Park headquarters.

The final report on Khao Sam Roi Yot Wetlands Study and Management Planning prepared by the Faculty of Environment and Resource Studies of Mahidol University, submitted to the Office of Natural Resources and Environmental Policy and Planning of Thailand (ONREP), gives detailed information on the status of these wetlands. This report proposed how the Park should be managed. It also reveals for the first time that the local villagers as well as Prachuap Khiri Khan Province would like to maintain the natural values of the wetlands, and would therefore fully support the nomination of Khao Sam Roi Yot wetlands as a Ramsar site.

## 6 - Additional material

### 6.1 - Additional reports and documents

#### 6.1.1 - Bibliographical references

Please see the attachment THlit1505.docx under Other published literature.

#### 6.1.2 - Additional reports and documents

i. taxonomic lists of plant and animal species occurring in the site (see section 4.3)

<no file available>

ii. a detailed Ecological Character Description (ECD) (in a national format)

<no file available>

iii. a description of the site in a national or regional wetland inventory

<no file available>

iv. relevant Article 3.2 reports

<no file available>

v. site management plan

<no file available>

vi. other published literature

<1 file(s) uploaded>

#### 6.1.3 - Photograph(s) of the Site

Please provide at least one photograph of the site:



Khao Sam Roi Yot Wetland ( Office of Natural Resources and Environmental Policy and Planning, Thailand., 15-05-2007)



Khao Sam Roi Yot Wetland ( Office of Natural Resources and Environmental Policy and Planning, Thailand., 15-05-2007)



Khao Sam Roi Yot Wetland ( Office of Natural Resources and Environmental Policy and Planning, Thailand., 15-05-2007)



Khao Sam Roi Yot Wetland ( Office of Natural Resources and Environmental Policy and Planning, Thailand., 15-05-2007)

## 6.1.4 - Designation letter and related data

Designation letter

<1 file(s) uploaded>

Date of Designation