

Information Sheet on Ramsar Wetlands (RIS)– 2009-2012 version

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar Site designations are provided in the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition).
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

1. Name and address of the compiler of this form:

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Designation date

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Site Reference Number

2. Date this sheet was completed:

9 September, 2011

3. Country:

Cambodia

4. Name of the Ramsar Site:

The precise name of the designated Site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Prek Toal Ramsar Site Ramsar Site (In Khmer Language: Damban Ramsar Prek Toal)

5. Designation of new Ramsar Site or update of existing Site:

This RIS is for (tick one box only):

- a) Designation of a new Ramsar Site ; or
b) Updated information on an existing Ramsar Site

6. For RIS updates only, changes to the Site since its designation or earlier update:

a) Site boundary and area

The Ramsar Site boundary and Site area are unchanged:

or

If the Site boundary has changed:

- i) the boundary has been delineated more accurately ; or
- ii) the boundary has been extended ; or
- iii) the boundary has been restricted**

and/or

If the Site area has changed:

- i) the area has been measured more accurately ; or
- ii) the area has been extended ; or
- iii) the area has been reduced**

**** Important note:** If the boundary and/or area of the designated Site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar Site, including in the application of the Criteria, since the previous RIS for the Site:

7. Map of Site:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps, including digital maps.

a) A map of the Site, with clearly delineated boundaries, is included as:

- i) a hard copy (required for inclusion of Site in the Ramsar List): ;
- ii) an electronic format (e.g. a JPEG or ArcView image) ;
- iii) a GIS file providing geo-referenced Site boundary vectors and attribute tables .

b) Describe briefly the type of boundary delineation applied:

e.g. the boundary is the same as an existing protected area (nature reserve, national park, etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The boundary of Prek Toal Ramsar Site is the same as the boundary of the Prek Toal Ramsar Site of the Tonle Sap UNESCO Biosphere Reserve (TSBR). Roughly circular in shape, it is located entirely within the TSBR's Buffer Zone (or Tonle Sap Multiple Use Area in Battambang Province), with its eastern boundary bordering the dry season (low water) edge of the lake and in the northwest it roughly follows the rivers Prek Mous and Prek Da.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

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.

Central point: 13°08'49" N 103°37'55" E

9. General location:

Include in which part of the country and which large administrative region(s) the Site lies and the location of the nearest large town.

Prek Toal Ramsar Site is situated at the western edge of Tonle Sap Lake, including parts of Ek Phnom and Sangkab Districts in Battambang Province.

It is about 40 km southwest of Siem Reap Town. However, in Battambang Province, the nearest town is Bak Prea in Prey Chas Commune, about 50 km from Prek Toal Village upstream along the Sang Ke River.

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

Minimum elevation is about 1.5 m above mean sea level (a.m.s.l) and maximum is about 10.3 m a.m.s.l.

11. Area:(in hectares)

21,342 ha

12. General overview of the Site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

The Prek Toal Ramsar Site is considered to contain some of the most pristine floodplain habitats in the Tonle Sap Biosphere Reserve. In the dry season, the area is dry and covered mostly by forest, and permanent water remains only in the major streams, ponds and creek system where the water depth ranges between 0.5 to 1.5 meters deep. The area is annually flooded in the rainy season with water depths of about 7-8 meters and only the canopy of tall trees remain above water. The Site is of significant importance in the Mekong River biogeographic region through supporting a number of globally threatened species such as the critically endangered Siamese crocodile (*Crocodylus siamensis*) and river terrapin (*Batagur baska*), as well as the Mekong giant catfish (*Pangasianodon gigas*), and the giant barb (*Catlocarpio siamensis*). The high concentration, variety and numbers of nesting waterbirds, including many globally threatened species such as the endangered greater adjutant (*Leptoptilos dubius*) and masked finfoot (*Heliopais personatus*), also make the area unique for the biogeographic region. Aquatic productivity is very high, currently yielding the best fish harvests on the lake, with estimates during the period from August 2008 to July 2009 of up to 4,178 tonnes (Allebone-Webb and Clements, 2009).

13. Ramsar Criteria:

Tick the box under each Criterion applied to the designation of the Ramsar Site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11). All Criteria which apply should be ticked.

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Criterion 2:

Common name	Scientific name	IUCN status	CMS status	CITES status	National Status
Waterbirds					
Greater Adjutant	<i>Leptoptilos dubius</i>	EN	-	-	Endangered
Lesser Adjutant	<i>Leptoptilos javanicus</i>	VU			Rare
Milky Stork	<i>Mycteria cinerea</i>	VU		I	Rare
Masked Finfoot	<i>Heliopais personatus</i>	EN			Rare
Fishes					
Mekong Giant Catfish	<i>Pangasianodon gigas</i>	CR	I	I	Endangered
Giant Barb	<i>Catlocarpio siamensis</i>	CR			Endangered
Leaping Barb	<i>Laubuka caeruleostigmata</i>	EN			
Jullien's Golden Carp	<i>Probarbus jullieni</i>	EN		I	
Laotian Shad	<i>Tenuulosa thibaudeani</i>	VU			
Silver Shark	<i>Balantiocheilos melanopterus</i>	EN			
Asian Bonytongue/Asian Arowana	<i>Scleropages formosus</i>	EN		I	
Reptiles					
Siamese Crocodile	<i>Crocodylus siamensis</i>	CR		I	Rare
River Terrapin	<i>Batagur baska</i>	CR		I	EN
Cantor's Giant Soft-shell Turtle	<i>Pelochelys cantorii</i>	EN		II	Rare
Elongated Tortoise	<i>Indotestudo elongata</i>	EN		II	
Yellow-headed Temple Turtle	<i>Heosemys annandalii</i>	EN		II	
South Asian Box Turtle	<i>Cuora amboinensis</i>	VU		II	
Black Marsh Turtle	<i>Siebenrockiella crassicollis</i>	VU		II	
Giant Asian Pond Turtle	<i>Heosemys grandis</i>	VU			Rare
Malayan Snail-eating Turtle	<i>Malayemys subtrijuga</i>	VU		II	Rare
Asiatic Soft-shell Turtle	<i>Amyda cartilaginea</i>	VU		II	Rare
Mammals					
Hairy-nosed otter	<i>Lutra sumatrana</i>	EN		II	
Smooth-coated otter	<i>Lutrogale perspicillata</i>	VU		II	Common
Fishing cat	<i>Prionailurus viverrinus</i>	EN		II	
Slow Loris	<i>Nycticebus coucang</i>	VU		I	Rare

Criterion 4:

Prek Toal Ramsar Site is a globally important site for colony-nesting waterbirds (Davidson, 2006). It is by far the single most important nesting site on the lake, supporting populations of four globally threatened species including greater adjutant (*Leptoptilos dubius*), lesser adjutant (*Leptoptilos javanicus*), milky stork (*Mycteria cinerea*) and masked finfoot (*Heliopais personata*); six globally near-threatened species namely spot-billed pelican

(*Pelecanus philippensis*), oriental darter (*Anhinga melanogaster*), black-headed ibis (*Threskiornis melanocephalus*); painted stork (*Mycteria leucocephala*) and grey-headed fish-eagle (*Ichthyophaga ichthyaetus*); and other internationally significant populations of waterbird species such as Asian openbill (*Anastomus oscitans*), great egret (*Casmerodius albus*), Indian cormorant (*Phalacrocorax fuscicollis*) and little cormorant (*Phalacrocorax niger*). There are also several regionally significant populations of waterbirds that make the area unique and globally significant. Prek Toal Ramsar Site is one of the 40 IBAs in Cambodia. It contains the world's largest breeding colonies of some large waterbird species especially spot-billed pelican (30% of global population) and greater adjutant (10% of global population) and Prek Toal Ramsar Site is perhaps the only one site in the world where milky stork breed in freshwater (Seng Kim Hout et al.2003 and Sun Visal per presentation).

Criterion 5:

Prek Toal Ramsar Site regularly supports more than 20,000 individuals of a number of large waterbird species on an annual basis. Since 2001, a monitoring program has been established to monitor biodiversity especially the breeding colonies of large waterbirds. The Asia Waterbird Census is also conducted annually at Prek Toal Ramsar Site. According to the bird colony counts and AWC, total number of waterbirds in the breeding season always exceeds 20,000. The table below shows populations of selected bird species monitored each year as part of the Prek Toal Core Area biodiversity monitoring with technical support from Wildlife Conservation Society (Prek Toal Core Area unpublished report).

Scientific name	English name	Population number		
		2008	2009	2010
<i>Leptoptilos dubius</i>	Greater Adjutant	240	244	252
<i>Pelecanus philippensis</i>	Spot-billed Pelican	3500	3600	2950
<i>Leptoptilos javanicus</i>	Lesser Adjutant	446	704	624
<i>Mycteria cinerea</i>	Milky Stork	24	20	24
<i>Anhinga melanogaster</i>	Oriental Darter	10800	14600	10874
<i>Mycteria leucocephala</i>	Painted Stork	4600	3900	4838
<i>Anastomus oscitans</i>	Asian Openbill	19000	23200	27690
Total		38, 610	46, 268	47, 263

Sources: The unpublished monitoring data of Prek Toal Core Area, Prek Toal Core area monitoring team 2010.

Criterion 6:

The Site regularly supports >1% of individuals in the breeding populations of several species of waterbirds as listed in the table below.

Scientific name	English name	Population Number					1% level
		2006	2007	2008	2009	2010	
<i>Leptoptilos dubius</i>	Greater Adjutant	112	150	240	244	252	2
<i>Pelecanus philippensis</i>	Spot-billed Pelican	3800	3600	3500	3600	2950	45
<i>Leptoptilos javanicus</i>	Lesser Adjutant	486	500	446	704	624	50
<i>Anhinga melanogaster</i>	Oriental Darter	5400	8200	10800	14600	10874	100
<i>Mycteria leucocephala</i>	Painted Stork	3700	3800	4600	3900	4838	100

Sources: The unpublished monitoring data of Prek Toal Core Area, Prek Toal Core area monitoring team 2010.

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar Site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:

b) biogeographic regionalisation scheme (include reference citation):

WWF Terrestrial Ecoregions

16. 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.

Prek Toal Ramsar Site is a part of the unique Tonle Sap Lake ecosystem, the functioning of which determines the Site's biophysical features and biological importance. During most of the year (October to June) the lake drains into the Mekong through the Tonle Sap River, becoming incrementally shallower and smaller in area, up to about 2,500 km², and decreasing in depth to a maximum of about 1 m. However, when the Mekong floodwaters peak in mid-year, the Tonle Sap River reverses its flow and back-floods the lake, expanding the lake area up to about 12,000 km² and maximum depths to about 10 m. Prek Toal Ramsar Site is largely dry during the period of lowest water levels (March to June), with water remaining only in scattered pools and watercourses, and all land is inundated during the peak floods (August to January).

The analysis of water samples have shown that these waters are generally still less polluted if compared to other sites. In the rainy season (July to October), the river water is turbid with high concentration of silt being brought in via the Mekong and from local catchments areas. In contrast, in the dry season especially in April the BOD value (1-12 mg/l) exceeds the water quality standard for public water areas set up by the Ministry of Environment (1-10mg/l) and also the coliform value (75000MPN/100ml) is concernedly high in February to July.

The climate in the area is tropical monsoon with two distinct seasons: dry season and rainy season. Rainfall occurs mainly between April and November, with a peak in September. Winds are frequent and annual rainfall is 1342 mm in Battambang and 1492 mm in Siem Reap city. Mean daily temperature at Prek Toal Ramsar Site varies between about 20 °C and 36 °C with lowest temperatures in January and highest in April.

In general, two types of soil can be identified throughout the Prek Toal Ramsar Site: Fluvaquentic Endoaquoll and Aquic Hapludolls. A combination of mud and decomposed branches have formed as Fluvaquentic Endoaquoll with pH 6 to 6.5 but soil along the rivers and ponds is covered by aquic hapludoll with pH 5.5 to 6. However, in some areas covered by dense forest, and permanently wet conditions, peatlands have formed.

17. Physical features of the catchment area:

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

The Prek Toal Ramsar Site is part of the Tonle Sap floodplain with the local catchment including Cardamon Mountains to the southwest and Dong Rek Mountains to the north, while being strongly influenced by the Mekong River and its catchments. Water from Battambang Province is channelled in to the area through the Sang Ke River.

18. Hydrological values:

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

The rise and fall of the Tonle Sap Lake waters play a vital role in creating the biological richness of Prek Toal. The forests in Prek Toal Ramsar Site trap large quantities of sediment coming from various sources. The high nutrient deposition enables a very productive food chain, stimulating plant and fish growth and thus contributing significantly to supporting high numbers of waterbirds and other wildlife.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar “Classification System for Wetland Type” present in the Ramsar Site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

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)

b) dominance:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar Site, starting with the wetland type with the largest area.

In the dry season, the Prek Toal Ramsar Site is mostly covered with freshwater-swamp forest (also called flooded forest or inundated forest (Khmer: Prey Liktoek) and water remains only in the permanent freshwater marsh, ponds and seven main rivers and between March to April the area becomes very shallow in water depth and water is available in the rivers and lakes.

However, during the rainy season, the entire area is covered mostly with water. The whole area is completely flooded, with emergent and floating plants and gallery forest with scattered taller trees not entirely submerged.

20. General ecological features:

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

Prek Toal Ramsar Site is largely dry from March to July, with remaining water only in scattered ponds and watercourses, but completely flooded during the wet season from August to February. During the flood, only the tops of tall trees remain above the water surface. The area consists of the predominant vegetation, including *Barringtonia acutangula*, *Coccoloba sanisopodum*, *Brownlowia paludosa*, *Gmelina asiatica*, *Vitex holoadenon*, and *Croton caudatus*, which comprises seasonally flooded freshwater swamp forest known also as flooded or inundated forest. Composition and structure of the vegetation cover varies according to depth and duration of inundation, soil composition, and human influence, primarily cutting and fire.

Three main vegetation types can be distinguished on the basis of habitat structure and plant species composition: 1) gallery forest is located along the riverside, waterways, around seasonal ponds and lakes, and dry season shoreline of the lake (eastern edge of Ramsar Site and in small patches scattered elsewhere in the Ramsar Site); 2) Dense stands of shrub and scattered trees, covering most of the Ramsar Site; and 3) along the shoreline and patches within the gallery/swamp forest, dense mats of grasslands/herbaceous vegetation, covering extensive areas primarily in the southwest and the eastern part of Prek Toal Ramsar Site subject to an annual cycle of flooding and dry season fires. A narrow strip of grassland/herbaceous vegetation also occurs along the shallow rivers and in the ponds. The common species found are *Sesbania javanica* (*Papilionaceae*), the grass *Brachiaria muticus*, *Polygonum barbatum* (*Polygonaceae*) and the introduced *Eichhornia crassipes* (*Pontederiaceae*) occur, and along the Sangkhe River, *Achyranthes aquaticus* (*Amaranthaceae*) co-dominates with these species.

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, Justification for the application of the Criteria) 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 RIS.*

Prek Toal Ramsar Site supports diverse plant communities including inundated grasslands, mosaic shrubs and swamp forest which are central to the overall ecology of the Tonle Sap Lake and its biological productivity. No detail study about plant species in Prek Toal Ramsar Site have been conducted so far however about 200 higher plant species have been recorded in the Tonle Sap area (McDonald et al., 1997; Triet, 2002). About 90% of the flora consists of trees and shrubs, 8% consists of climbers, and most of the rest of herbaceous terrestrial species. Composition and structure of the vegetation varies according to depth and duration of inundation, soil composition, and human influence, primarily cutting and fire. Based on the observation, three main vegetation types can be distinguished on the basis of habitat structure and plant species composition as mentioned in section 20 above.

22. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

Fish is the largest vertebrate group in the Prek Toal Ramsar Site ecosystem both in term of biomass and number of species. Scientific surveys and species identification is still lacking, yet around 500 fish species are believed to live in the Tone Sap system and at least 197 species have been recorded in the Tonle Sap and its floodplains such as *Pangasius larnaudii*, *Clarias batrachus*, *Channa striata*, *Trichogaster microlepis*, and *Channa micropeltes* (Neou, 2003 cited in Kottelat, 1989; Rainboth, 1996). Prek Toal Ramsar Site supports the most productive fishery in the Tonle Sap Lake (Davidson, 2006). However, fish stocks are declining due to overharvesting and habitat loss.

Additionally, Prek Toal Ramsar Site is home to many species of birds, mammals and reptiles, with most large animals being globally significant species (Long, 2003). Three species of primate, including Silvered Langur *Semnopithecus cristatus*, have been confirmed from Prek Toal. Water snakes are abundant in Prek Toal Ramsar Site and the most abundant species is Rainbow Water snake *Enhydryis enhydryis*, followed by Tonle Sap Water snake *Enhydryis longicauda* which is endemic to the Prek Toal floodplain. The total catch of water snakes from the Tonle Sap was estimated at about 3.8 million individuals per year and is considered the largest in the world (Brooks, 2007). Current rate of water snake harvesting is very large and make the concern to the conservationist.

23. Social and cultural values:

a) Describe if the Site has any general social 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:

The Khmer people make up 70% of the population and the rest are ethnic minorities including Cham and Vietnamese. However, all people live in floating houses and do fishing and fish trade for their livelihoods. The Khmer mostly engage in family fishing and aquaculture. The Vietnamese and Cham people are principally involved in large scale fishing and aquaculture. Vietnamese mostly settle along the rivers close to the open lake in Prek Toal and Kbal Toal villages. However, livelihood and economy of the communities are dependent on aquatic products directly harvested from the area. A few families of Khmer and Vietnamese earn their living in boat manufacture and construction/renovation.

Every year, at the beginning of the fishing season large scale fishing operators usually perform a religious ceremony and pray for a good fish catch.

According to the study by the Wildlife Conservation Society and Ministry of Environment rangers in cooperation with Fishery Administration the total catch of fish in Prek Toal Ramsar Site/Core Area (fishing lot No.2 in Battambang province) was estimated at 4,178 tonnes from August 2008 to July 2009 (Allebone-Webb and Clements, 2009).

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?

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:

There are many traditional gears used by local fishermen that do not lead to overfishing, however most fishermen now also use modern gears that are far more destructive.

ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:

Life in floating villages may be considered an important and unique cultural tradition. These villages are always concentrated along major rivers and therefore much of the wetland has been preserved.

iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:

Although not proven, large scale fishing operations in which the area is fenced in and fish are trapped in the Prek Toal Ramsar Site may be beneficial to the waterbird breeding colonies.

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:

24. Land tenure/ownership:

a) within the Ramsar Site:

The land in the area is state-owned land. The Prek Toal Ramsar Site used to overlap with the former fishing lot No. 2 (abolished in early 2012) and fisheries conservation area which is designated as a fish sanctuary to increase fish stock in the lake and provide more fish for the wider community.

However, there are no land titles for the communities live in the floating villages.

b) in the surrounding area:

The surrounding areas are covered by the flooded forest and grasslands and owned by the state. Rice fields are found further south where are privately owned by upland local communities.

25. Current land (including water) use:

a) within the Ramsar Site:

There is no agriculture or control over water within the Ramsar Site. For many years, up until the start of 2012 a fishing lot concession controlled access to the area, especially in the dry season, when the whole area

was fenced in (along the lake shore and northern and southern boundaries). All fishing lots around the Tonle Sap were abolished by a prime ministerial decree in early 2012 and now access is not controlled.

b) in the surroundings/catchment:

The surrounding area is devoted to wet season rice cultivation and fisheries (in natural habitats).

26. 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 Ramsar Site:

Due to development the dam along Mekong River and increasing industrial and residential enlargement have caused the change of water regime and water quality in the Tonle Sap Lake. This change can significantly affect the ecological characteristics of the area, especially fish, aquatic animals and waterbirds. In addition, the conversion of flooded forest for agriculture on the far outside the Prek Toal Ramsar Site to the south and southwest can be considered as a critical change of land use nearby the boundary of the Site.

At present, the fishing lot overlapping with Prek Toal Ramsar Site as well as all the lots within the Tonle Sap Lake have been abolished and certain parts of the former fishing lots were officially declared for conservation to increase fish stocks in the next few years. However, this change may affect the conservation of breeding colonies of large waterbirds if access to the area is not managed and the government does not have enough money to support patrolling and law enforcement activities.

b) in the surrounding area:

The majority of the increasing rural population depends on the Prek Toal Ramsar Site resources for their subsistence and the increasing land encroachment and firewood collection nearby the boundary of the Site can have a significant effect on the Site.

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar 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.

Prek Toal Ramsar Site overlaps with Prek Toal Ramsar Site of the Tonle Sap Biosphere Reserve which was designated by Royal Decree on the Establishment and Management of the Tonle Sap Biosphere Reserve, issued in 2001 and concluded in the Law on the Protected Areas issued in 2008. Additionally, the whole of the Prek Toal Ramsar Site and its surrounding areas was designated as the Tonle Sap Multiple Use Area by the Royal Decree dated 1st November 1993.

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

Ia ; Ib ; II ; III ; IV ; V ; VI

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

A 5-years management plan (2007-2011) was developed by the Tonle Sap Conservation Project and was officially approved by Minister for Environment and being implemented by the Prek Toal Ramsar Site Management Centre under direct supervision of the Wetlands and Coastal Zone Department, General

Department of Administration for Nature Conservation and Protection, Ministry of Environment. However, this management plan will need to be updated to adjust with the change of the fishing lot status and current situation. To update the management plan require financial resources to support the government and project team and it will take about six months to complete.

d) Describe any other current management practices:

Management activities such as law enforcement and administration in the Prek Toal Ramsar Site have been carried out and strengthened by MoE staffs and local rangers primarily through NGO support of both finance and technical assistance.

Osmose (a Cambodian NGO), has provided support for community livelihoods and environmental education for school aged children. Additional support has been provided from 2005 to 2011 by GEF/UNDP and from 2001 to the present by WCS who are mainly focused on protection of large waterbird colonies, monitoring populations of waterbird colonies and law enforcement through Mist patrol. Fishing lot 2 overlapped with the boundary of Prek Toal Ramsar Site but was cancelled for fish conservation on March 7th, 2012. However, only one of seven rivers in the Prek Toal wetland has been protected as feeding grounds of waterbirds.

Prek Toal Ramsar Site boundary was demarcated with cement-concreted poles, which were installed at 6 different locations of the boundary.

28. Conservation measures proposed but not yet implemented:

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

Prek Toal Ramsar Site is one of the Tonle Sap Biosphere Reserve's three Ramsar Sites, which are devoted to long term protection and conservation of natural resources and the ecosystem.

When all the fishing lots in the Tonle Sap Lake were cancelled, joint committees have been established and the local authorities empowered to control and manage the released fishing lots but effective measures have not yet been taken to prevent public access to the fishing lots and Ramsar Site due to lack of financial support and adequate mechanisms.

29. Current scientific research and facilities:

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

Biodiversity monitoring program was set up since 2002 to monitor change of large waterbirds and water snake populations in Prek Toal wetland and the Tonle Sap Lake as the whole. Additionally, fish catch and socio economics of the local communities in and around the Prek Toal Ramsar Site have also been studied to assess economical values of the fishing lot#2 (Prek Toal Ramsar Site) contributing to the local communities and environmental protection by Prek Toal Ramsar Site management team in collaborate with Fishery Administration. However, there are no continuous researches and facilities and equipment available to monitor quality of water and change of the water level in the area.

30. 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.

An environmental awareness raising programme has been developed to educate the local communities on environment, biodiversity and sustainable use of the natural resources of the Prek Toal Ramsar Site. The Tonle Sap Conservation Project (TSCP) through financial support from GEF/UNDP had established Mobile Community Outreach Program (MCO) for local communities and eco-club for schools. However, these programs were ended at the end 2010 and mid 2011, respectively. Every year with support from Department

of Wetland and Coastal Zones and other NGO partners, the World Wetland Day event have been organized at village level particularly with school children.

Osmose (a local NGO) program has provided the environmental education for school-aged children in collaboration with MoE's rangers. The out-door activity was designed and carried out focusing on importance of the flooded forest, waterbirds and waste management. These have already been initiated on a modest scale, primarily involving structured visits to the Prek Toal Ramsar Site by school children from Prek Toal village and adjacent villages, and delivery of environmental education and awareness programming within the village. However, this program will be continued and/or terminated in the future depending on fund available and there is no guarantee for its sustainability.

31. Current recreation and tourism:

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

Prek Toal Ramsar Site has a huge potential for ecotourism, having significant endangered bird colonies which are easy to see, beautiful Site, pristine forest and is close to Angkor Wat which is a Cambodia World Heritage Site. Ecotourism in Prek Toal was initiated in 1999 by the Ministry of Environment (former Environmental Research Station) in collaboration with "Osmose" non-profit organization. Since then, another non-profit organisation, "Sam Veasna Centre" and other private travel companies based in Siem Reap Province have also started to bring tourists to Prek Toal. A visitor centre was established under financial support of the Asian Development Bank through the Tonle Sap Environmental Management Project. The visitor centre plays important roles as ranger headquarter, office and environmental education and awareness raising centre to educate both national and international visitors and local communities.

The visitor centre provides some information about the importance of Prek Toal wetlands and the Tonle Sap Lake in general. There is also an information centre in Chong Kneas, where most tourists take a boat to come to Prek Toal Ramsar Site. There are 12 light tree-top observation platforms have been constructed for sighting the area and protecting breeding colonies of large waterbirds. At least 4 platforms have been used by visitors to watch and learn about waterbirds breeding the colonies.

32. Jurisdiction:

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

1. Territorial Jurisdiction: Prek Toal Ramsar Site lies under the administrative supervision of Battambang provincial authority.

2. Functional Jurisdiction: The Ministry of Environment under the Royal Degree dated Nov, 01, 1993 has the jurisdiction in supervising resource management activities in the area. However, the Fisheries Administration takes the responsibility over the management of the fish sanctuary overlap with this Ramsar Site.

33. 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. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.

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34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

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Appendix I.

Table 1. Waterbird Species of Conservation Concern Occurring in Prek Toal Ramsar Site ¹

Species	IUCN Status	Significance
Greater Adjutant <i>Leptoptilos dubius</i>	Endangered	second largest colony in the world (>10% of global population)
Spot-billed Pelican <i>Pelecanus philippensis</i>	Vulnerable	largest colony in the world (20% of global population)
Lesser Adjutant <i>Leptoptilos javanicus</i>	Vulnerable	largest colony in Southeast Asia (4% of global population)
Milky Stork <i>Mycteria leucura</i>	Vulnerable	largest colony in mainland Southeast Asia
Masked Finfoot <i>Heliopais personata</i>	Vulnerable	likely of global significance
Oriental Darter <i>Anhinga melanogaster</i>	Near-threatened	largest colony in Southeast Asia (>10% of global population)
Black-headed Ibis <i>Threskiornis melanocephalus</i>	Near-threatened	largest colony in Southeast Asia (4-8% of global population)
Painted Stork <i>Mycteria leucocephala</i>	Near-threatened	largest colony in Southeast Asia (20% of global population)
Black-necked Stork <i>Ephippiorhynchus asiaticus</i>	Near-threatened	breeds in Prek Toal
Grey-headed Fish-Eagle <i>Ichthyophaga ichthyaetus</i>	Near-threatened	likely of global significance
Little Cormorant <i>Phalacrocorax niger</i>	Least Concern (but Prek Toal population is internationally significant)	>1% of Asian biogeographic population
Indian Cormorant <i>Phalacrocorax fuscicollis</i>	Least Concern (but Prek Toal population is internationally significant)	>1% of Asian biogeographic population
Great Egret <i>Casmerodius albus</i>	Least Concern (but Prek Toal population is internationally significant)	>1% of Asian biogeographic population
Asian Openbill <i>Anastomus oscitans</i>	Least Concern (but Prek Toal population is internationally significant)	>1% of Asian biogeographic population
Woolly-necked Stork <i>Ciconia episcopus</i>	Least Concern (but Prek Toal population is regionally significant)	threatened as a breeding species in adjacent countries
Glossy Ibis <i>Plegadis falcinellus</i>	Least Concern (but Prek Toal population is regionally significant)	threatened as a breeding species in adjacent countries
Purple Heron <i>Ardea purpurea</i>	Least Concern (but Prek Toal population is regionally significant)	threatened as a breeding species in adjacent countries
Great Cormorant <i>Phalacrocorax carbo</i>	Least Concern (but Prek Toal population is regionally significant)	threatened as a breeding species in adjacent countries

¹adapted from Goes 2005, Davidson 2006 and IUCN 2006

Table 2. Reptile Species of Conservation Concern Occurring in the TSBR¹

Species	IUCN Status	Significance
Siamese Crocodile <i>Crocodylus siamensis</i>	Critically Endangered	small numbers may persist in Prek Toal
River Terrapin <i>Batagur baska</i>	Critically Endangered	probably extinct in TSBR
Asian Giant Softshell Turtle <i>Pelochelys cantorii</i>	Endangered	reported from the Tonle Sap, but no confirmed specimens or photographs
Elongated Tortoise <i>Indotestudo elongata</i>	Endangered	reported from the Tonle Sap, but no confirmed specimens or photographs
Yellow-headed Temple Turtle <i>Hieremys annandalii</i>	Endangered	TSBR population may be the most important in Cambodia; known from Prek Toal Ramsar Site
Burmese Python <i>Python molurus</i>	Near-threatened	occurs in Prek Toal
Asian Box Turtle <i>Cuora amboinensis</i>	Vulnerable	now uncommon in TSBR
Black Marsh Turtle <i>Siebenrockiella crassicollis</i>	Vulnerable	rare, but TSBR population may be the most important in the region
Giant Asian Pond Turtle <i>Heosemys grandis</i>	Vulnerable	considered to be scarce
Malayan Snail-eating Turtle <i>Malayemys subtrijuga</i>	Vulnerable	reportedly the most numerous turtle around the Tonle Sap, but declining across its range
Asiatic Softshell Turtle <i>Amyda cartilaginea</i>	Vulnerable	common to rare around the Tonle Sap; populations have recently declined

¹adapted from Davidson 2006 and IUCN 2006

Table 3. Fish Species of Conservation Concern Occurring in the TSBR¹

Species	International Status	Significance
Mekong Giant Catfish <i>Pangasianodon gigas</i>	IUCN Critically Endangered; CITES Appendix I	Fishing Lot No. 2 may be an important nursery area
Leaping Barb <i>Chela caeruleostigmata</i>	IUCN Critically Endangered	not recorded from Tonle Sap Lake, but possibly occurs
Jullien's Golden Carp <i>Probarbus jullieni</i>	IUCN Endangered; CITES Appendix 2	recorded from Tonle Sap Lake
Laotian Shad <i>Tenualosa thibaudeaui</i>	IUCN Endangered	populations have recently drastically declined due to factors outside of the Tonle Sap
Tricolor Sharkminnow <i>Balantiocheilos melanopterus</i>	IUCN Endangered	depicted on FiA's Endangered Fishes of Cambodia
Asian Bonytongue/Asian Arowana <i>Scleropages formosus</i>	IUCN Endangered; CITES Appendix I	occurrence in TSBR not confirmed
Thicklip Barb <i>Probarbus labeamajor</i>	IUCN Data Deficient	recorded in Tonle Sap, but little known
Giant Pangasius <i>Pangasius sanitwongsei</i>	IUCN Data Deficient	becoming increasingly rare throughout its range
Giant Barb <i>Catlocarpio siamensis</i>	not listed, but requires urgent evaluation and immediate conservation attention	numbers have declined drastically
<i>Puntioplites bulu</i>	not listed	formerly common, but has recently become very rare. Depicted on FiA's Endangered Fishes of Cambodia. Occurrence in TSBR requires confirmation.
Sabretoothed Thryssa <i>Lycotryssa crocodilus</i>	not listed	depicted on FiA's Endangered Fishes of Cambodia
Four-barred Tigerfish <i>Datnioides quadrifasciatus</i>	not listed	occurrence in TSBR not confirmed. Depicted on FiA's Endangered Fishes of Cambodia
<i>Wallago leeri</i>	not listed	occurrence in TSBR not confirmed. Depicted on FiA's Endangered Fishes of Cambodia
<i>Albulichthys albuloides</i>	not listed	depicted on FiA's Endangered Fishes of Cambodia
Elephant-ear Gourami <i>Oxonedus exodon</i>	not listed	occurrence in TSBR not confirmed. Depicted on FiA's Endangered Fishes of Cambodia
<i>Botia</i> genus	not listed	several species recorded in first half of 20 th Century, but no recent records

¹adapted from Davidson 2006 and IUCN 2006