

Site F. Tonle Sap River

Date: 28 March 1994 *Surveyors:* TM, PC, SH and HS

Location and Description: Surveyed by boat 12°30'N 104°27'E (at Chhunuk Tru) to 11°33'N 104°56'E (at Phnom Penh).

The Tonle Sap River follows a meandering course between Tonle Sap Lake and the Mekong River at Phnom Penh (Figures 3 and 5). It then becomes the Bassac river, flowing south into Vietnam in a meandering path roughly parallel to the Mekong. The Tonle Sap River has one main river channel with a number of smaller channels and small and large islands. The river reverses its flow twice a year depending on the level of the Mekong River. During the dry season months, it drains Tonle Sap Lake and flows south. During the wet season months, it flows north into Tonle Sap Lake carrying water from the Mekong River. Not far from the town of Chhunuk Tru, the Tonle Sap River is connected to Tonle Sap Lake through a number of channels and islands that form a great inland delta. There were extensive mudflats that were exposed during the low water periods. The banks of the Tonle Sap River were relatively steep and vegetated. In some stretches, the vegetation overhung the river.

Human Activities: There were villages and inhabitations along the length of the river, with most of these being on the west bank. The river was important for river transport and a number of boats ply the river throughout the year. There were fishermen operating fish nets and traps all along the river.

Avifauna: Birds were surveyed by boat from Phnom Penh to Chhunuk Tru (Table 13). On the river itself, the most abundant species was Whiskered Tern. Large numbers of Brahminy Kites were associated with the numerous fishing villages and fishing activities north of Praektam.

All along the river, there were static fish traps, cages and other floating structures and debris that herons and egrets used as perches for fishing. Around Chhunuk Tru, some large flocks of large waterbirds (storks, pelican) were observed flying over the river. These probably feed along the rivulets and associated wetlands on the sides of the river where there is shallow waters and marshy vegetation.

Along the main waterway, the sides of the river are steep sloped and may only provide a suitable habitat for pelicans, although the high level of disturbance from river traffic would probably deter these large birds.

Summary: Over most of its length, the Tonle Sap River does not appear to be a very important habitat for large waterbirds. However, associated wetlands, especially along the eastern and northern side, should be surveyed for large waterbirds as they appear to provide suitable habitat, and the area around Chhunuk Tru and towards Tonle Sap Lake could be most important.

Flood Plain Wetlands (marshes and ponds)

Site G. Kin Kleang

Date: 22 March 1994 *Surveyors:* TM, SH, HS

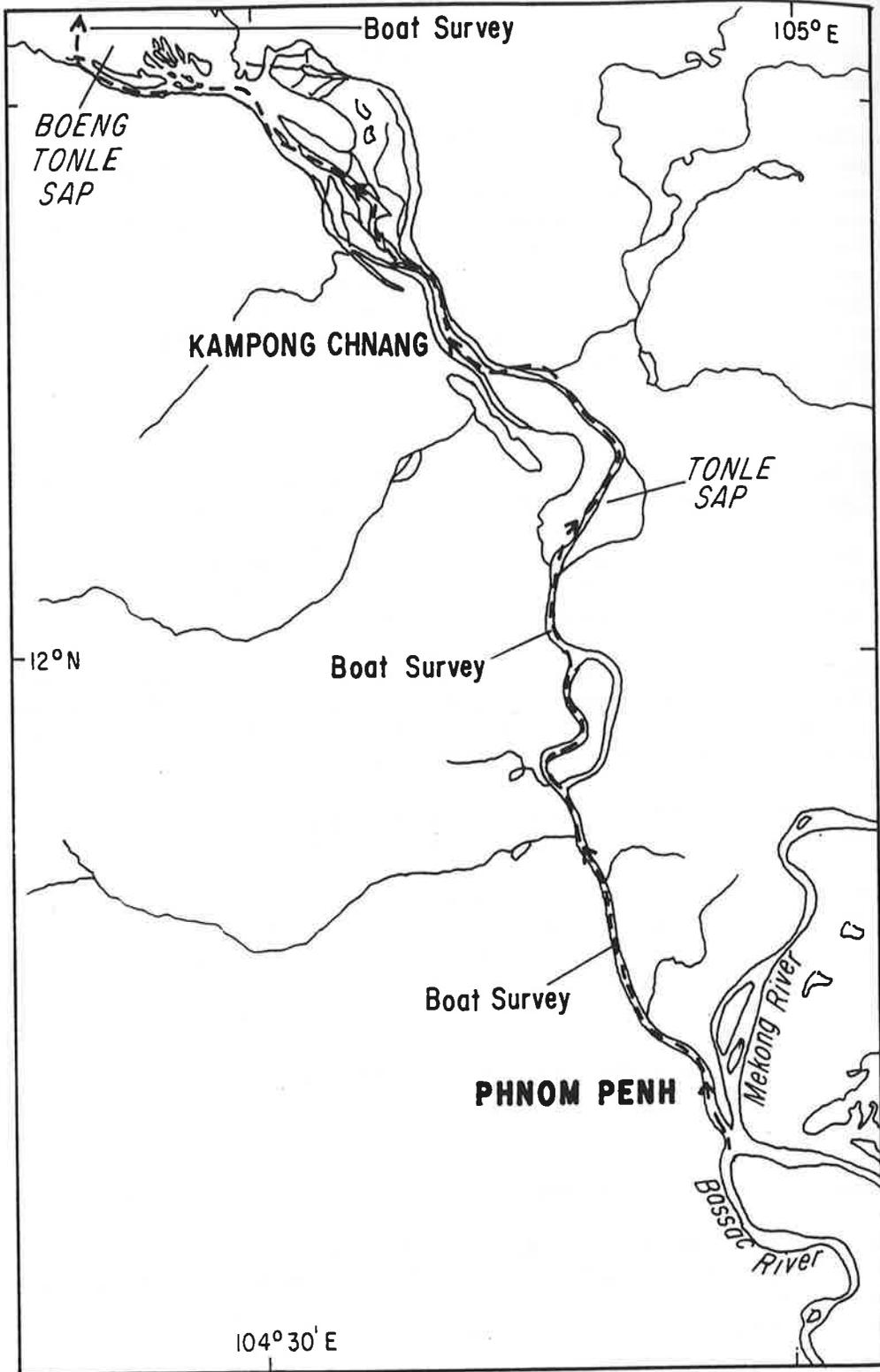
Location and Description: Situated close to Phnom Penh City, Kin Kleang (11°35'N 104°56'E) is a small wetland along the road to Phum Russei Kev (Figure 5). During the wet season, it becomes a large wetland connected to others in this low lying area. In the dry season, it becomes a marsh overgrown with a variety of aquatic plants, lotus, sedges, short bushes and creepers.

Human Activities: During the visit, lotus flowers and stems were being collected by villagers.

Avifauna: A good variety of waterbirds were feeding among the vegetation (Table 14).

Summary: Not an important wetland for waterbirds in April.

Figure 15. Tonle Sap River



Site H. Boeng Kak

Date: 22 March 1994 *Surveyors:* TM, SH, HS

Location and Description: (11°35'N 104°55'E) Situated within Phnom Penh city (Figure 5). Medium sized wetland, surrounded on all sides by inhabitation and construction. Vegetation mainly large mats of water hyacinth, which are driven by wind around the lake.

Human Activities: Fishing and dumping of domestic wastes.

Avifauna: Few birds were observed (Table 14).

Summary: Not an important wetland for waterbirds due to its location.

Site I. Boeng Snav

Date: 22 March 1994 *Surveyors:* TM, SH, HS

Location and Description: (11°31'N 104°58'E) Situated south-east of Phnom Penh city on Route 1 to Ho Chi Minh (Figure 5). Medium sized marsh with lotus, water hyacinth and sedges.

Human Activities: Two families of fishermen lived on the marsh; one caught waterbirds for sale in a local market.

Avifauna: Small number of jacanas and Cotton Pygmy Geese (Table 14).

Summary: Not an important wetland for waterbirds due to its small size and location.

Site J. Kein Tsay Marsh

Date: 22 March 1994 *Surveyors:* TM, SH, HS

Location and Description: Situated south-east of Phnom Penh city on Route 1 to Ho Chi Minh (Figure 5), Kein Tsay is a tourist site with a famous temple. The wetland is surrounded by cultivation and human settlements.

Avifauna: The visit was made during midday and only few birds were seen (Table 14).

Summary: The site should be visited during other times of day. Likely site for herons and egrets.

Site K. Sri Ample Lake

Date: 22 March 1994 *Surveyors:* TM, SH, HS

Location and Description: Situated south-east of Phnom Penh city off Route 1 to Ho Chi Minh (11°30'N 105°04'E: Figure 5). One of the many Mekong-Bassac marshes situated near a temple. A shallow, medium sized wetland, with submerged vegetation, reed borders and small islands, surrounded by cultivation. From the map, it appears that this wetland was connected to other marshes to the west, although these were not visited.

Human Activities: There were a number of fishermen at the marsh.

Avifauna: Bird diversity was relatively high, although the total number was low (Table 14).

Table 14. Summary of bird counts for selected species at freshwater wetlands (sites G-P) in Cambodia (22-31 March 1994)

Site numbers as in text. G - Kin Kleang Marsh, H - Boeng Kak, I - Beong Snav, J - Kein Tsay Marsh, K - Sri Ambil Lake, L - Basset Marsh, M - Phum Au Krang Ambel, N - Wetland on Route 1 to Neak Leung, O - Beong Khsach Sa, P - West Baray Lake.

Sites	G	H	I	J	K	L	M	N	O	P
Little Grebe	3		40			22	6			11
Little Cormorant	2		2		8	3				
cormorant sp.					26					
Oriental Darter					2					
Grey Heron									1	
Purple Heron	1				1	3			1	
Little Heron									5	
Chinese Pond Heron							1	12	10	
Javan Pond Heron								3		
Pond Heron sp.	40					11	1	32	3	4
Cattle Egret						0		1	200	5
Great Egret	1					0	1	3	5	9
Plumed Egret						1				
Little Egret					1	4	1	3	1	15
white egrets					25				540	
Yellow Bittern	3					1	1			
Cinnamon Bittern	1						1			
Painted Stork									8	
Lesser Treeduck			4	6	56	129	24		1,028	500
Spot-billed Duck									4	
Garganey									3,400	
Cotton Pygmy Goose	5		50	8	6	72				
Common Moorhen	3					10				
Purple Swamphen						2				
Pheasant-tailed Jacana			12			25	4			
Bronze-winged Jacana	3		4	2		2	11			
Red-wattled Lapwing							1			
Small Pratincole									4	

Summary: The site seems to be important for waterbirds. It was one of the few wetlands where Oriental Darter was observed.

Recommendations: Additional surveys are recommended for this site as it is likely that large waterbirds, mainly storks and pelican, occur here at other times of the year.

Site L. Basset Marsh

Date: 23 March 1994 *Surveyors:* TM, SH, HS

Location and Description: An extensive area of marshes and lakes a few kilometres north-west of Phnom Penh city, 11°38'N 104°50'E, off Route 5 (Figure 5). The marshes receive most of their water from the Tonle Sap River. The water level of a large part of the marsh is controlled by a gate system. At the time of the visit, the water level was low and some sections of the marshes were covered almost completely with floating and emergent vegetation. Only a small section of the area was surveyed. A section of this area is to be developed as a natural recreation site by the Phnom Penh authorities in consultation with the Forestry Department.

Human Activities: Several fishermen were present, and domestic ducks were reared.

Avifauna: There were a large number and diversity of waterbirds (Table 14). Of interest was the high number of Cotton Pygmy-Geese and Pheasant-tailed Jacanas. Spot-billed Pelicans were reported to visit the area at other times of the year. Oriental Pratincole were probably breeding in the area.

Summary: The marsh was important for marsh-dwelling waterbird species. Surveys are recommended at other times of the year. It is possible that disturbance levels by people and fishermen may prevent its use by large numbers of storks etc.

Site M. Phum Au Krang Ambel

Date: 25 March 1994 *Surveyors:* TM, HS, NBT

Location and Description: Located on the south-west of Phnom Penh city, along Route 4 to Sihanoukville, about 7km before Kampong Speu town, 11°29'N 104°40'E, (Figure 5). The wetland is divided by the road with the major portion to the north, but the deeper section on the south. The water level was controlled by three gates and an overflow weir. The south side was covered almost completely by lotus although the deepest section was free of any vegetation. On the north side, the wetland was surrounded by cultivation. At the time of the visit, the water level was very low and cultivation appeared to extend into the wetland. The wetland was fed by a small river entering the wetland from the north.

Human Activities: There were a few fishermen present, and a few army personnel shooting fish with their guns. Cattle were being grazed along the shores of the northern side.

Avifauna: A few Bronze-winged Jacana, including some recently fledged individuals, were present on the south side (Table 14).

Summary: The wetland appeared to be good for waterbirds even though the road ran through it. During higher water, the birds feeding at the edges of the wetland would be quite a distance from possible disturbance and it is probable that storks visit the area.

Site N. Flooded fields near Neak Leung

Date: 23 March 1994 *Surveyors:* TM, PC, SH

Location and Description: Flooded lowlands of the Mekong-Bassac area on the side on Route 1 from Phnom Penh to Ho Chi Minh (Figure 5). Flooded fields with emergent vegetation.

Avifauna: See Table 14.

Summary: Not an important site.

Site O. Boeng Khsach Sa - Boeng Pring

Date: 26 March 1994 *Surveyors:* TM, SH, HS

Location and Description: (Boeng Khsach Sa - 11°16'N to 11°22'N, 105°20'E to 105°23'E and Boeng Pring 11°22'N to 11°28'N, 105°22'E to 105°25'E).

Two adjacent seasonal wetlands south-east of Phnom Penh, close to provincial capital of Prey Veng and the Mekong River (Figure 16). The immediate catchment was mainly covered with cultivated land and some forest. They are fed by rain water and possibly received additional water from the Mekong River. Boeng Khsach Sa covered an area of about 1,700ha. The water was quite turbid and there was no aquatic vegetation. The lakes were at their lowest level in April but rise during the wet season (June to December), spreading out over a larger area and inundating nearby agricultural land.

Human Activities: The edges of the lakes are cultivated. Fishermen lived along the lake. Eggs of waterbirds nesting around the lake were collected by local people.

Avifauna: A large number of Garganey, Lesser Treeduck and Spot-billed Duck (Table 14) were observed. Painted Stork were observed flying over the lakes. Oriental Pratincole were observed breeding near the lake. At dusk, a number of flocks of egrets were flying out of view beyond the south-west side of the lake. Large numbers of Spot-billed Pelican were reported to feed in the lakes, and large numbers of herons and egrets were reported to breed in the thorny vegetation growing on the sides of the wetlands.

Summary: This is an important site for waterbirds. Reports of egrets nesting here during the wet season should be investigated further.

Site P. West Baray Lake

Date: 31 March 1994 *Surveyors:* TM, PC, SH, HS

Location and Description: (13°26'N, 103°47'E) Situated about 10km north-west of Siem Reap town on the Sisophon road, this was a rectangular reservoir (8km x 2km) used for irrigation and water supply. On the west side of the reservoir, the water was deep; while on the east the land sloped up towards the embankment. There were some pools of water on the south side. The reservoir was close to its lowest level in March. It rises at least 15-20m above the minimum water level during the wet season (June to December).

Avifauna: The diversity of birds was the highest on the east side, with only Lesser Treeduck and few Whiskered Tern on the water (Table 14). No large waterbirds were observed and no information was available as to their occurrence at other times of the year.

Summary: There is a need to undertake a follow up visit to check whether large waterbirds, particularly Spot-billed Pelican, visit this site at other times.

Site Q. Prasat Tuyu (Bassac Marshes)

Date: 16 April 1994 *Surveyors:* JD, TM, BC

Location and Description: Area surveyed: 11°17'N 105°09'E south westwards to 11°15'N 105°07'30"E. Located south-east of Phnom Penh, between the Bassac and Mekong Rivers. At the time of the survey, Prasat Tuyu was an elongated narrow body of open water 20-40m in width oriented south-east and south-west, surrounded by extensive marshland.

The Bassac Marshes are inundated during July to November to about 3m depth. During the dry season, Prasat Tuyu was a narrow elongated body of open water surrounded by marshland. It appeared to have a slow flow in the dry season to the south-west, so that the water drains eventually into the Bassac River.

Closest to Prasat Tuyu village, Prek Prasat flows through swamp savanna with a few *Barringtonia* trees interspersed. The open water was covered with floating vegetation, providing a substrate for herons and egrets to stand, predominated by water lily *Nymphaea* sp. and *Ottelia* sp.

Human Activities: Fishing was the most important activity. At the southern end of the village, there was a fish corral which spanned the entire width of the river, whilst there were many smaller moveable fish corrals in the many side channels of the river. Large snails (*Pila* sp.) were collected for domestic consumption. Nursery beds for rice had been established along the sides of the river.

Several rows of stakes were strategically placed near reed beds and along the water ways to trap waterbirds. Monofilament fishing lines were stretched between these stakes from which single lines with fish hooks were suspended to about one metre above the water. Waterbirds were caught when they became tangled in the hooks as they flew into and out of the reed beds.

Avifauna: A number of waterbirds were observed at the wetland although no count was taken. They included large numbers of Little Grebe (in flocks of up to 100-200), Oriental Darters, Black, Yellow and Cinnamon Bitterns, Javan and Chinese Pond Herons, Little Cormorants and Whiskered Terns. No large waterbirds were observed, but fishermen reported that pelicans visit the wetlands during high water.

Summary: Prasat Tuyu is important for waterbirds. Further surveys are recommended. It is possible that egrets and other species breed here during the wet season and this should be investigated. Capture of birds is probably a major threat to waterbird populations considering the numbers of lines with hooks which were positioned within the wetland. Other disturbance was probably minimal, being confined to fishing, collection of snails and clearance of aquatic plants to aid transport through the wetland.

Coastal Areas (Estuaries and Coastal Salt Works)

Site R. Wetlands between Prek Khsach Thom and Prek Khsach Toch

Date: 25 April 1994 *Surveyors:* TM, D, JD, MK

Location and Description: This is a creek and islet system on the coast facing the southern end of Koh Kong island which appears to be relatively undisturbed (Figure 5). The area was roughly 2,200ha and lies within the coordinates 11°17'N, 103°04'E; 11°17'N, 103°06'E; 11°14'N, 103°04'E; 11°14'N, 103°07'E. Mangrove was the principal habitat, with possible *Melaleuca* on the islet between the two rivers and possible seasonally inundated mixed freshwater swamp forest further inland.

Avifauna: No large waterbirds observed in this section.

Summary: This was a fairly undisturbed area that may be important for large waterbirds. A survey at another time of year is recommended.

Figure 16. Map of Boeng Khsach Sa-Boeng Pring with boat survey route

