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A BIOLOGICAL SURVEY OF A LOWLAND EVERGREEN SCRUB FOREST AND MEADOWLAND IN SOUTHERN THAILAND

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ABSTRACT

From 22 July 1976 through 11 March 1977 a habitat and vertebrate survey was conducted at a lowland evergreen scrub forest and meadowland (Thung Thong Waterfowl Reserve Area, Surat Thani province). The seasonality of birds was also determined. A total of 157 species of vertebrates were identified including 13 species of fish, 8 species of amphibians, 11 species of reptiles, 105 species of birds and 20 species of mammals.

INTRODUCTION

Thung Thong was declared a Waterfowl Reserve Area in 1975 and is of interest in that many species of birds thought to be only found in the Central or Southern part of Thailand are found there.

The main purpose of the project was to conduct a habitat survey and to determine the occurrence of vertebrate fauna in the area. The seasonality of birds was also to be determined. Information from this project is to be used in forming a management plan for the sanctuary.

I wish to express my sincere thanks to the following persons who have provided assistance in completing this work: Mr. Pong Leng-ee, Chief of Wildlife Conservation Division, Royal Thai Forest Department; Mr. Tosapon Naknakled, Chief of Thung Thong Waterfowl Reserve Area; Mr. J.F. Maxwell for identifying all vascular plants mentioned in this paper; Mrs. Ladda Wongrat, Kasetsart University, for analyzing plankton samples; the staff of the Centre for Thai National Reference Collections of the Applied Scientific Research Corporation of Thailand for assisting in the identification of specimens; Mr. Surat Koonphol, Peace Corps Program Manager; Mr. Gary Wiles and Mr. Doyle Damman, Peace Corps Volunteer, Division of Wildlife Conservation;

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Study Area

Thung Thong (Lat 8°50'N, Long 99°15'E) has an area of approximately 29 km². The main water source is the Tapi River. The main water shed is in Nakhon Si Thammarat province. The elevation at Thung Thong is quite uniform ranging from 60 m above sea level in the northeast section of the sanctuary to 30 m above sea level in the southwest section. The area contains 4 distinct habitats:

1. *Lowland evergreen scrub forest.* This area is usually dry but is sometimes flooded from October through December. In December the forest is flooded almost reaching the canopy.
2. *Rice field.* Approximately 110 rai is planted with rice. Villagers report that only one crop of rice is planted per year because at certain times there is too much water. Rice is harvested in October. The fields are then grazed by cattle and water buffalo. In January, villagers repair the dikes and turn the soil. Water is pumped from Thung Phong (wet meadow) into the rice field. In March, some rice had already been planted.
3. *Lallang meadow.* This meadow is usually dry. October through December it is occasionally flooded. It is sometimes planted with peanuts, corn, bananas, coconut palms, rubber or land rice. Villagers report that this habitat was formerly tall, evergreen forest before being logged and cultivated.
4. *Wet meadow.* This meadow is usually wet but dries up for a short period of time in the hot season. It contains permanent pools of water ranging in size from 10–100 m² in dry periods. Many of the smaller pools were dug by fishermen to congregate fish. Water depth ranged between 21 ft in December to 9 inch in March. The water is brown and the bottom is covered with a thick detritus layer (about 3 ft).

Plankton composition infers that the water is acidic (5.5–6.5) and the fertility is rather low. Desmids (Chlorophyta) is the dominant plankton group. Testaceous amoeba (Protozoa) is the second, and rotifers (Rotofera) is the third in abundance. Zooplankton is much less in quantity compared to phytoplankton (WONGRAT, personal communication). Fish composition infers that the dissolved oxygen level is low. Water temperature averaged 25°C with a high of 27°C and a low of 24°C. Turpidity averaged 1 ft 8 inch.

Study Methods

The project was started on 22 July 1976 and ended on 11 March 1977. No field work was conducted during February.

Plankton samples were collected with a plankton net from 4 stations: Khlong Bang Tok (stream), Thung Khwai Kin (wet meadow), Thung Fi Lum (wet meadow), and Thung Phong (wet meadow). The samples were collected in December during the crest of flooding. Turbidity was measured with a secchi disc. Turbidity and temperature were measured at a permanent pool in Thung Phong.

Top soil samples were collected from 6 stations: Thung Phong, ecotone between Thung Khwai Kin and scrub forest, rice field, lallang meadow, Thung Khwai Kin and scrub forest. Ten samples were collected from each station, approximately 100 m a part. Samples from the same station were then mixed together to form a more representative sample.

A mist netting programme was initiated for birds and bats in October and was carried out for the duration of the study period. Mammals were identified by live trapping, tracks, calls or direct sightings. Reptiles and amphibians were collected when found. Fish were collected while examining fishermen's catches. Fish and herptiles were taken to the Centre for Thai National Reference Collections (CTNRC) for identification.

Weather information was supplied by the Royal Meteorological Department, recorded in Surat Thani town.

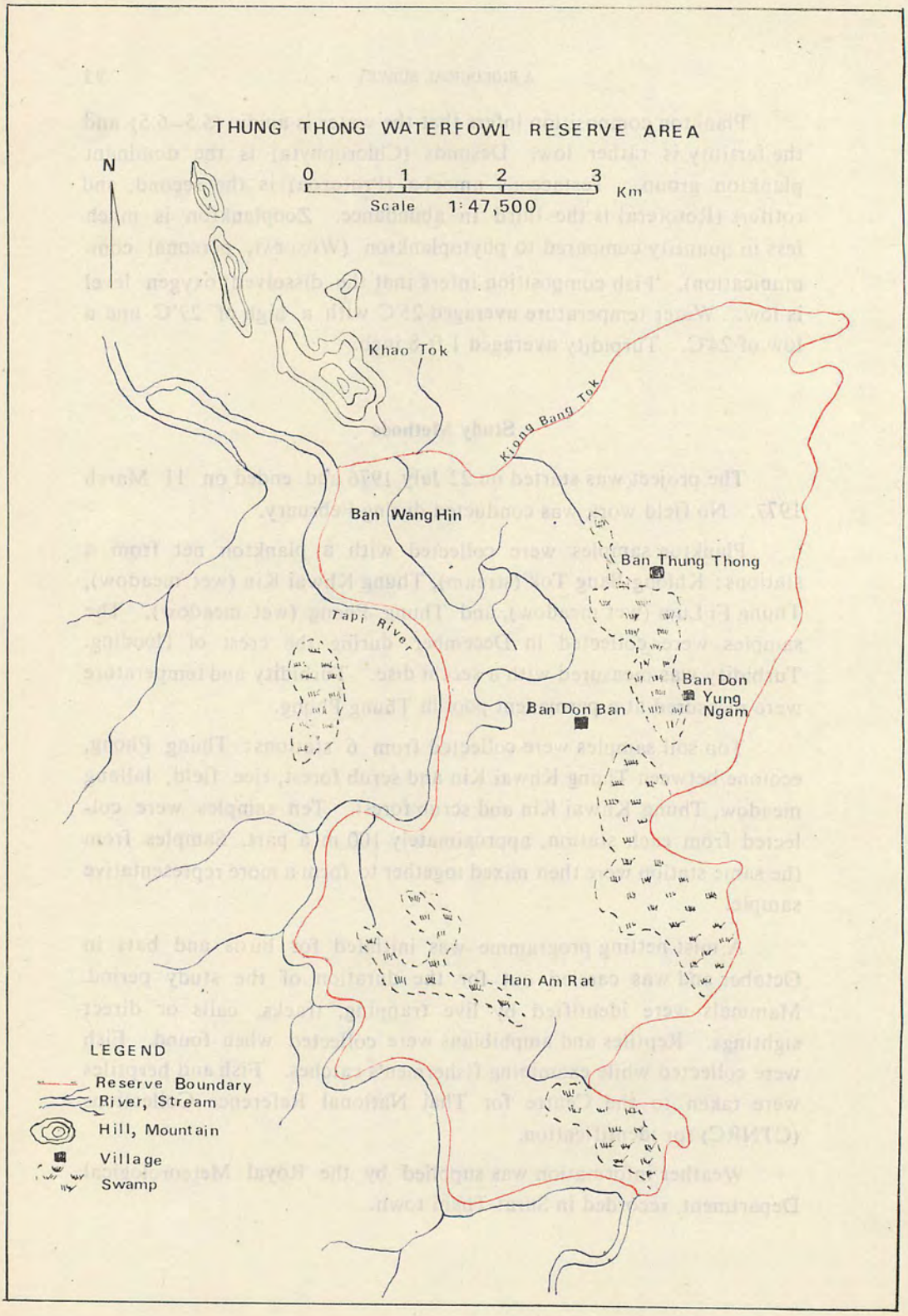
THUNG THONG WATERFOWL RESERVE AREA
N
0 1 2 3
Km
Scale 1:47,500
Khao Tok
Khong Bang Tok
Ban Wang Hin
Ban Thung Thong
Tapi River
Ban Don Yung Ngam
Ban Don Ban
Han Am Rat
LEGEND
Reserve Boundary
River, Stream
Hill, Mountain
Village
Swamp

Table 1. Soil Sample Analysis Results

Determination	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6
pH	4.1	4.3	4.3	5.6	4.3	4.2
Lime Requirement (kg/rai)	2340	2808	2028	468	2808	1872
Available Phosphorus (ppm)	10	15	13	11	16	13
Saturation Percentage	66.36	72.88	117.08	28.68	88.12	51.09
Cl (me/l)	4.97	4.47	5.47	4.47	5.47	5.96
S (ppm)	75.5	82.5	354	4	321	95.5
Ca (me/100g)	4.14	0.92	12.42	2.76	9.20	3.68
Mg (me/100g)	1.38	0	1.84	0	0	0
Na (me/100g)	2.80	2.70	2.10	1.30	2.10	2.90
K (me/100g)	0.10	0.10	0.25	0.20	0.22	0.17
Sum of Base	8.42	3.72	16.61	4.26	11.52	6.75
Cu (ppm)	3	3	6	2	6	3
Mn (ppm)	3	4	19	12	90	3
Zn (ppm)	0.2	0.4	8.6	1.2	5.0	0.4
% Sand	20.10	12.60	15.10	70.10	22.60	43.85
% Silt	19.10	16.60	11.60	8.75	8.75	8.75
% Clay	60.80	70.80	73.30	21.15	68.65	47.40
Textural Class	Clay	Clay	Clay	Sandy, Clay Loam	Clay	Clay

Station: 1 – Thung Phong
2 – ecotone between Thung Khwai Kin and Scrub forest
3 – rice field
4 – lallang meadow
5 – Thung Khwai Kin
6 – Scrub forest

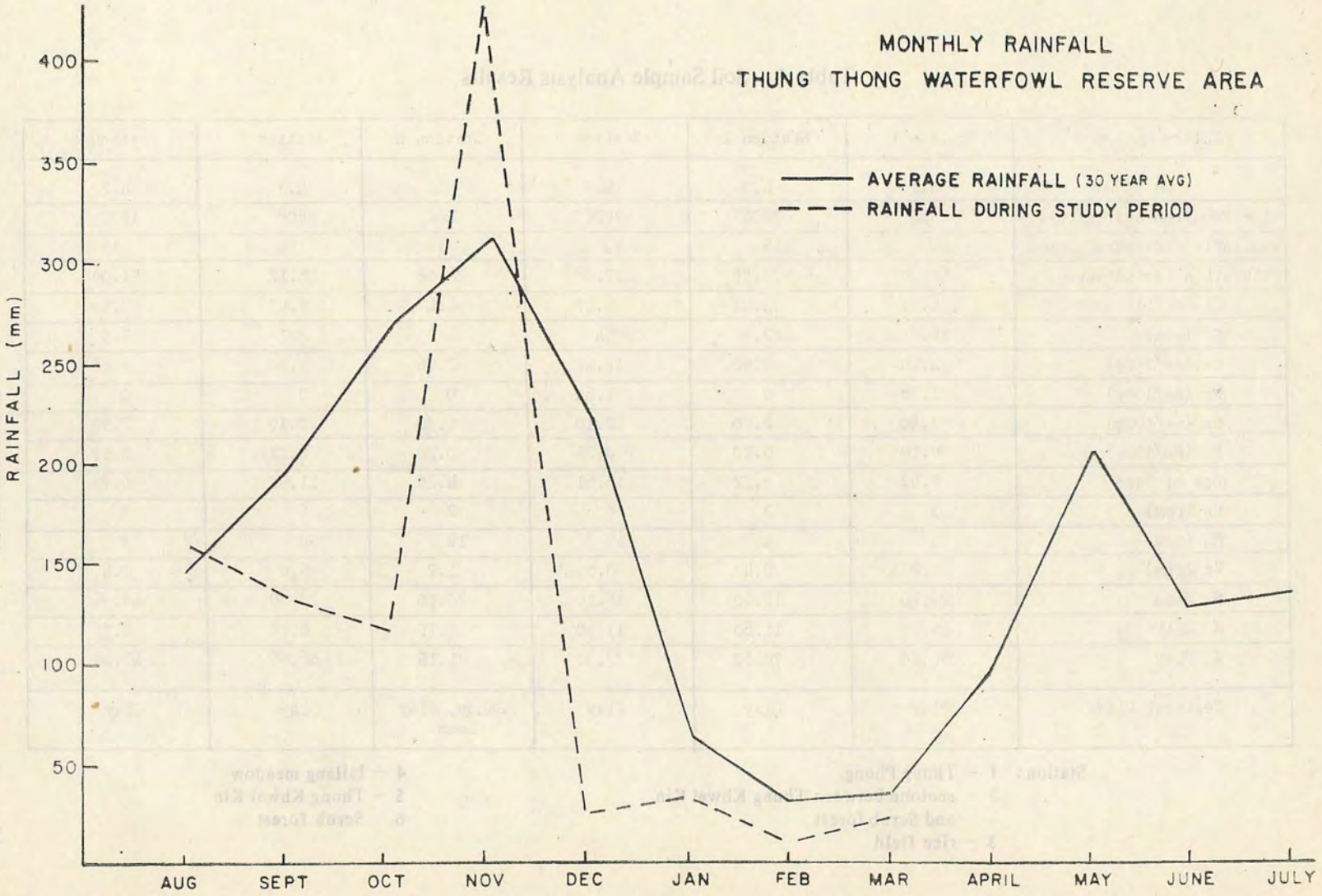
MONTHLY RAINFALL
THUNG THONG WATERFOWL RESERVE AREA
AVERAGE RAINFALL (30 YEAR AVG)
RAINFALL DURING STUDY PERIOD
RAINFALL (mm)
400
350
300
250
200
150
100
50
AUG
SEPT
OCT
NOV
DEC
JAN
FEB
MAR
APRIL
MAY
JUNE
JULY

Table 2. Meteorological Observations at Surat Thani
for the Months July 1976 through March 1977

Month	Mean Pressure (+100 mbs) at M.S.L.	Relative Humidity (%)			Temperature (°C)			Surface Wind (Km/Hr)		
		Mean Mean	Mean Max.	Mean Min.	Mean Mean	Mean Max.	Mean Min.	Prev. Dir.	Mean Speed	Mean Max Speed
Jul.		81.7	94.5	61.5						
Aug.	09.20	83.3	95.8	61.8	27.5	32.2	22.7	Calm/Sw	2.8	32
Sept.	09.75	83.3	95.2	62.7	27.3	31.8	22.8	Calm/Sw	3.4	28
Oct.	09.59	85.8	97.0	66.7	27.0	31.5	22.5	–	2.2	23
Nov.	09.84	88.9	96.7	76.7	25.8	29.0	22.6	NE	3.5	24
Dec.	11.06	83.5	96.6	64.9	25.4	29.8	21.0	NE	3.3	24
Jan.	10.70	82.4	97.1	62.6	25.7	30.7	20.7	NE	3.5	25
Feb.	11.61	77.9	96.4	55.1	25.7	31.5	20.0	E	4.8	28
Mar.	11.86	74.6	96.6	48.7	26.1	32.9	19.4	E	5.5	31

Table 3. Common Plants found in forest and lallang meadow

Scrub Forest	Lallang Meadow
Cyrtococcum patens	*Barringtonia acutangula*
Parameria laevigata	*Eupatorium odoratum*
Hydnocarpus anthelmintica	*Hymenocardia punctata*
Hymenocardia punctata	*Ageratum conyzoides*
Shorea roxburghii	*Gmelina asiatica*
Xanthophyllum lanceatum	*Panicum cambogiense*
	Morindosis capillaris
	Mitragyna javanica
	Rauwenhoffia siamensis
	Streblus taxoides
	Vernonia cinerea
	Tagetes erecta
	Erechtites hieracifolia
	Peronema canescens

Table 4.. Plankton and relative abundance

Organisms	Station 1	Station 2	Station 3	Station 4
PHYTOPLANKTON				
Cyanophyta				
Anabaena	—	R	R	R
Oscilltoria	R	R	—	R
Spirurina	—	R	—	—
Aphanocapsa	C	—	—	C
Lyngbya	R	R	—	R
Chlorophyta				
Desmidium	C	C	A	C
Hyalotheca	C	C	A	C
Bambusia	R	R	A	C
Gonatozygon	A	C	A	—
Staurastrum	—	R	R	R
Pleurotaenium	A	A	C	R
Closterium	R	C	C	R
Cosmarium	R	R	C	R
Xanthidium	R	—	—	—
Euastrum	C	R	C	—
Micrasterias	C	C	—	R
Triploceras	R	R	—	—
Onychonema	—	—	—	R
Spondylosium	—	—	—	R
Tetmemmorus	—	—	R	—
Sphaerozuama	—	R	R	—
Ankistrodesmus	—	—	R	R
Dictyoshaerium	—	—	R	R
Dimorphococcus	—	—	R	—
Oocystis	—	—	R	—
Pediastrum	—	R	R	—
Kirchneriella	—	—	R	R
Botryococcus	—	—	R	—

Legend

A = abundunt R = rare

C = common — = none

Stations

1 – Klong Bang Tok (stream)

2 – Thung Khwai Kin (wet meadow)

3 – Thung Fi Lum

4 – Thung Phong

Table 4. Plankton and relative abundance (Cont.)

Organisms	Station 1	Station 2	Station 3	Station 4
Chlorophyta (cont.)				
Coelastrum	—	—	—	R
Scenedesmus	—	—	—	R
Sphaerocystis	—	—	R	—
Volvox	C	C	C	R
Eudorina	R	R	R	—
Pleodorina	C	C	C	—
Pandorina	R	—	R	R
Zygnema	—	—	—	R
Spirogyra	R	R	—	—
Oedogonium	R	R	—	—
Mougeotia	R	R	—	R
Bulbochaete	R	R	R	—
Bacillariophyta				
Fragilaria	C	R	C	—
Amphora	R	—	—	—
Melosira	R	—	—	—
Navicula	C	—	C	C
Diatoma	R	—	—	—
Phymatodocis	R	R	—	—
Pinnularia	R	—	—	R
Gomphonema	C	—	—	R
Frustulia	R	—	—	—
Synedra	R	—	R	—
Achnanthes	R	—	—	—
Cymbella	R	—	—	—
Nitzschia	R	R	R	—
Chrysophyta				
Dinobryon	—	R	R	R
ZOOPLANKTON				
Protozoa				
Microcorycia	C	C	—	—
Arcella	C	C	—	—
Centropyxis	R	—	—	R
Oxytricha	R	—	—	—
Euglypha	R	R	R	—
Sphaerophyra	R	R	—	—
Diffugia	C	—	—	—

Table 4. Plankton and relative abundance (Cont.)

Organisms	Station 1	Station 2	Station 3	Station 4
Rotifera				
Brachionus	R	R	—	—
Platyias	R	R	—	R
Monostyla	R	R	—	R
Lecane	R	C	—	—
Conochilus	A	—	—	—
Conochiloides	C	—	—	—
Testudinella	C	—	—	—
Asplanchna	C	R	C	C
Polyarthra	—	R	R	—
Ascomorpha	—	R	—	—
Rotaria	—	R	—	—
Asplanchnopus	—	R	—	—
Filinia	—	R	—	—
Keratella	—	R	—	R
Epiphanes	—	R	—	—
Mytilina	—	R	—	R
Trichotia	—	R	—	R
Synchaeta	—	—	—	R
Arthropoda				
Pleuroxus	R	R	R	—
Moina	R	R	—	R
Ceriodaphnia	R	R	—	—
Bosminopsis	C	—	—	—
Chydorus	R	R	R	—
Alona	R	—	R	—
Diaphanosoma	—	R	—	R
Ilyocryptus	—	R	—	—
Alonella	—	R	R	—
Campocercus	—	—	R	R
Cyclops	R	R	R	R
Harpacticoids	R	R	—	—
Insect larvae	R	—	—	A

Results

Table 5. Occurrence of fish.

Common Name	Scientific Name
Climbing Perch	*Anabus testudineus*
Common Eel	*Fluta alba*
Serpent-head Fish	*Ophiocephalus striatus*
——	*O. gachua*
Three-spotted Gourami	*Trichogaster trichopterus*
Snake-skinned Gourami	*T. pectoralis*
Teijsmann's Spotted Catfish	*Claris batrachus*
Croaking Gourami	*Tricopsis vittatus*
Stinging Catfish	*Heteropneustes fossilis*
——	*Rasbora argyrotaenia*
——	*Mystus nemurus*
Feather-backed Fish	*Notopterus notopterus*
Butter Catfish	*Ompok biamaculatus*

Table 6. The occurrence of amphibians.

Common Name	Scientific Name
Common Toad	*Bufo melanostictus*
Lowland Frog	*Ooeidozygna lima*
Crab-eating Frog	*Rana cancrivora*
Southeast Asian Rice Frog	*R. limnocharis*
Hill Forest Frog	*R. hascheana*
Large-toed Frog	*R. macrodactyla*
Painted Burrowing Frog	*Kaloula pulchra pulchra*
——	*Microhyla heymonsi*

Table 7. The occurrence of reptiles.

Common Name	Scientific Name
Reticulated Python	*Python reticulatus*
Checkered Keelback Snake	*Natrix piscator*
Golden Tree Snake	*Chrysopelea ornata*
Cobra	*Naja naja*
White-lipped Pit Viper	*Trimeresurus albolabris*
Banded Krait	*Bungarus fasciatus*
Chinchook	*Platyurus platyurus*
Tou Kay	*Gecko gecko gecko*
Indian Garden Lizard	*Calotes versicolor*
Monitor Lizard	*Varanus sp.*
Asian Snake-eating Turtle	*Malaymys subtrijuga*

Table 8. The occurrence and seasonality of birds.

Species	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Mar.
Little Cormorant *Phalacrocorax niger*				*	*	*	*	*
Chinese Pond Heron *Ardeola bacchus*				*	*	*	*	*
Cattle Egret *Bubulcus ibis*				*	*	*	*	*
Intermediate Egret *Egretta intermedia*				*	*	*	*	*
Yellow Bittern *Ixobrychus sinensis*								*
Schrenck's Bittern *I. eurhythmus*						*		
Cinnamon Bittern *I. cinnamomeus*		*	*	*	*		*	*
Little Green Heron *Butorides striatus*					*	*	*	
Black Bittern *Dupetor flavicollis*				*	*	*		
Purple Heron *Ardea purpurea*						*	*	*
Whistling Teal *Dendrocygna javanica*	*	*	*	*	*	*	*	*
Cotton Teal *Nettapus coromandelianus*	*	*				*	*	
Black-shouldered Kite *Elanus caeruleus*		*	*	*		*		
Pariah Kite *Milvus migrans*						*		

Table 8. The occurrence and seasonality of birds (Cont.)

Species	Jul.	Aug	Sep.	Oct.	Nov.	Dec.	Jan.	Mar.
Brahminy Kite *Haliastur indus*		*	*	*	*		*	
Shikra *Accipiter badius*				*			*	
Black Baza *Aviceda leuphotes*							*	
White-backed Vulture *Gyps bengalensis*				*				
Marsh Harrier *Circus aeruginosus*							*	*
Red-thighed Falconet *Microhierax caerulescens*		*	*	*	*	*	*	
Red Jungle Fowl *Gallus gallus*		*	*	*		*	*	*
Barred Button Quail *Turnix suscitator*						*		
Slaty-breasted Rail *Rallus striatus*								*
White-breasted Waterhen *Amaurornis phoenicurus*					*	*	*	*
Watercock *Gallicrex cinerea*						*	*	*
Pheasant-tailed Jacana *Hydrophasianus chirurgus*					*	*	*	*
Bronze-winged Jacana *Metopidius indicus*	*							
Red-wattled Lapwing *Vanellus cinereus*					*	*	*	*

Table 8. The occurrence and seasonality of birds (Cont.)

Species	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Mar.
Little Ringed Plover *Charadrius dubius*						*		
Wood Sandpiper *Tringa glareola*						*		
Pintail Snipe *Gallinago stenura*				*	*		*	
Common Snipe *G. gallinago*					*	*		
Painted Snipe *Rostratula benghalensis*				*	*	*		*
Thick-billed Green Pigeon *Treron curvirostra*		*		*		*		
Large Green Pigeon *T. capellei*				*				
Spotted-necked Dove *Streptopelia chinensis*	*	*	*	*	*	*	*	*
Lorikeet *Loriculus sp.*								*
Red-winged Crested Cuckoo *Clamator coromandus*								*
Koel *Eudynamys scolopacea*	*	*	*	*		*		*
Lesser Green-billed Malkoha *Phaenicophaeus diardi*	*	*	*	*	*	*	*	*
Greater Coucal *Centropus sinensis*	*	*	*	*	*	*	*	*

Table 8. The occurrence and seasonality of birds (Cont.)

Species	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Mar.
Lesser Coucal *C. toulou*							*	*
Barn Owl *Tyto alba*							*	
Brown Hawk Owl *Ninox scutulata*								*
Collared Scops Owl *Ottus bakkamoena*								*
Buffy Fish Owl *Ketupa ketupa*				*				
Great Eared Nightjar *Eurostopodus macrotis*		*				*		*
Jungle Nightjar *Caprimulgus indicus*					*			
Long-tailed Nightjar *C. macrurus*		*		*	*	*	*	*
Common Kingfisher *Alcedo atthis*				*				*
Stork-billed Kingfisher *Pelargopsis capensis*		*		*		*		*
White-breasted Kingfisher *Halcyon smyrnensis*	*	*	*	*	*	*	*	*
Black-capped Kingfisher *H. pileata*							*	*
Bay-headed Bee-eater *Merops leschenaulti*							*	
Brown-breasted Bee-eater *M. philippinus*		*	*	*	*			*

Table 8. The occurrence and seasonality of birds (Cont.)

Species	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Mar.
Dollar Bird *Eurystomus orientalis*	*	*	*	*	*	*	*	*
Hoopoe *Upupa epops*	*	*		*				*
Wreathed Hornbill *Rhyticeros undulatus*	*		*	*	*	*	*	
Common Golden-backed Woodpecker *Dinoopium javanense*		*		*	*	*	*	*
White-bellied Woodpecker *Dryocopus javensis*		*						
Banded Woodpecker *Picus miniaceus*				*				
Blue-winged Pitta *Pitta moluccensis*				*				
Swift *Apus sp.*	*	*	*	*	*	*	*	*
Barn Swallows *Hirundo rustica*	*	*	*	*	*	*	*	*
Richard's Pipit *Anthus novaeseelandiae*							*	
Grey Wagtail *Motacilla caspica*								*
Forest Wagtail *Dendronanthus indicus*								*
Brown Shrike *Lanius cristatus*				*	*	*	*	*

Table 8. The occurrence and seasonality of birds (Cont.)

Species	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Mar.
Bar-winged Flycatcher Shrike *Hemipus picatus*							*	*
Ashy Minivet *Pericrocotus divaricatus*						*	*	
Rosy Minivet *P. roseus roseus*							*	
Common Iora *Aegithina tiphia*		*					*	*
Yellow-crowned Bulbul *Pycnonotus zeylanicus*				*	*	*	*	*
Black-headed Bulbul *P. atriceps*		*	*	*	*		*	*
Black-crested Bulbul *P. melanicterus*			*					
Red-whiskered Bulbul *P. jocosus*							*	*
Stripe-throated Bulbul *P. finlaysoni*		*	*		*	*	*	*
Yellow-vented Bulbul *P. goiavier*		*	*	*	*			*
Olive-winged Bulbul *P. plumosus*				*			*	*
Blanford's Bulbul *P. blandfordi*			*	*	*	*	*	*
Black Drongo *Dicrurus macrocercus*		*		*	*	*	*	*
Ashy Drongo *D. leucophaeus*								*

Table 8. The occurrence and seasonality of birds (Cont.)

Species	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Mar.
Greater racket-tailed Drongo *D. paradiseus*			*	*	*	*	*	*
Black-naped Oriole *Oriolus chinensis*						*	*	*
Fairy Bluebird *Irena puella*								*
Glossy Starling *Aphonis panayensis*		*				*	*	*
Black-collared Starling *Sturnus nigricollis*	*	*	*	*	*	*	*	*
Common Myna *Accidotheres tristis*	*	*	*	*	*	*	*	*
Hill Myna *Gracula religiosa*				*	*			
Large-billed Crow *Corvus macrorhynchus*	*	*	*	*			*	*
Striped Tit-babbler *Macronous gularis*								*
Magpie Robin *Copsychus saularis*	*	*	*	*		*	*	*
Dark-necked Tailorbird *Orthotomus atrogularis*		*	*	*	*	*	*	*
Black-naped Monarch Flycatcher *Hypothymis azurea*				*		*	*	
Paradise Flycatcher *Terpsiphone paradisi*								*
Brown-throated Sunbird *Anthreptes malaccensis*								*

Table 8. The occurrence and seasonality of birds (Cont.)

Species	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Mar.
Ruby-cheeked Sunbird *A. singalensis*							*	
Purple-throated Sunbird *Nectarinia sperata*			*					
Crimson Sunbird *Aethopyga siparaja*							*	
Spiderhunter *Arachnothera sp.*								
Orange-bellied Flowerpecker *Dicaeum trigonostigma*							*	
Scarlet-backed Flowerpecker *D. cruentatum*		*	*	*	*	*	*	*
Tree Sparrow *Passer montanus*								*
Sharptailed Munia *Lonchura striata*		*						
Spotted Munia *L. punctulata*		*						

Table 9. Mammals at Thung Thong Waterfowl Reserve Area

Common Name	Scientific Name
Greater Shortnosed Fruit Bat	*Cynopterus sphinx*
Cave Fruit Bat	*Eonycteris spelaea*
Intermediate Roundleaf Bat	*Hipposiderus larvatus*
Lesser Great Roundleaf Bat	*H. turpis*
Lesser Brown Horsehoe Bat	*Rhinolophus steno*
Lesser Yellow Bat	*Scotophilus kuhli*
Longtailed Macaque	*Macaca fascicularis*
Golden-backed Squirrel	*Callosciurus caniceps*
Finlayson's Squirrel	*C. finlaysoni*
Malayan Plantain Squirrel	*C. notatus*
Flying Squirrel	Subfamily *Petauristinae*
Malayan Porcupine	*Hystrix brachyura*
Ryu Kyu Mouse	*Mus caroli*
Roof Rat	*Rattus rattus*
Oriental Small-clawed Otter	*Aonyx cinerea*
Large Indian Civet	*Viverra megaspila*
Common Palm Civet	*Paradoxurus hermaphroditus*
Mongoose	*Herpestes sp.*
Golden Cat	*Felis temmincki*
Wild Boar	*Sus scrofa*

APPENDIX

Appendix I. Other bird species thought to be in the area.

Species	Remarks
Little Grebe *Podiceps rufficollis*	Tallied in the area in 1975.
Grey Heron *Ardea cinerea*	Tallied in the area in 1975.
Open-billed Storks *Anastomus oscitans*	Unconfirmed reports in December. In February, 9 fledglings were brought from a breeding colony at Wat Phai Lom (temple) for release.
Lesser Adjutant Stork *Leptoptilos javanicus*	Tallied in the area in 1975.
Purple Gallinule *Porphyrio porphyrio*	Tallied in the area in 1975.

Appendix II. Other mammal species thought to be in the area.

Species	Remarks
Common Tree Shrew *Tupaia glis*	Villagers report its presence.
Slow Loris *Nycticebus coucang*	" " " "
Dusky Leaf Monkey *Presbytis obscurus*	Villagers report its presence but no sightings for about two years. Possibly still some on Khao Tok (mountain)
White Handed Gibbon *Hylolates lar*	At least one pair on Khao Tok, may possibly on occasion enter sanctuary.
Malayan Pangolin *Manis javanica*	Villagers report its presence.
Lesser Bamboo Rat *Cannomys badius*	Villagers report its presence and a possible sighting in March.
Hog Badger *Arctonyx collaris*	Villagers report its presence.
Small Indian Civet *Verricula malaccensis*	" " " "
Leopard Cat *Felis bengalensis*	" " " "
Fishing Cat *F. viverrina*	" " " "
Chevrotain *Tragulus sp.*	" " " "