

SURVEY OF MAMMALS IN SOUTH THAILAND PARKS

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ABSTRACT

From 17 November 1987 through 24 January 1988, a brief survey of mammals was conducted at 9 national parks of South Thailand. The presence and relative abundance of mammals in the various parks were determined. An assessment was also made of conservation-related problems in these parks. A total of 77 species of land mammals were seen or reported from these parks.

INTRODUCTION

Most protected conservation areas in Thailand have not been thoroughly surveyed for their biological resources. Detailed information on relative abundance for forest mammals in most national parks of South Thailand is sparse and opportunistic. Most knowledge of presence and abundance of mammals is outdated (KLOSS, 1916a; 1916b; 1917; 1919; CHASEN, 1935; GLYDENSTOLPE, 1919; LEKAGUL & MCNEELY, 1977; MEDWAY, 1982) or is based on imprecise locations (e.g. NOWAK & PARADISO, 1983). Few reports give specific locations (FOODEN, 1976; STORER, 1978).

The main purpose of this project was to briefly survey and determine the presence and relative abundance of the mammalian fauna in parks in peninsular Thailand. Special attention was paid to non-human primates, particularly the increasingly rare stump-tailed macaque (FOODEN, 1976; LEKAGUL & MCNEELY, 1977). Information gathered is being provided to the Conservation Data Center, Dept. of Biology, Mahidol University, and will contribute to the general store of knowledge on mammals in South Thailand.

METHODS

Maps (1 : 50,000 Series L7017) were used to locate the areas visited; relative abundance and distribution were estimated from sightings, calls, tracks, feces, and other indicative signs in the different habitats. Where the terrain was unfamiliar and hostile, local guides were used. Trails were trekked extensively in search of animal signs. Interviews with reliable hunters, villagers, and park workers were conducted for information on the presence, relative abundance, poaching of wildlife; and the

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Table 1. List of National Parks visited with dates, during winter of 1987-88.

No. Park and location	For.	Land area (ha)	Days surveyed
1 Phangnga Bay, Phangnga Province (8° 04' - 8° 25' N/98° 25' - 98° 40' E)	ma	40,000	Nov. 17 - 21
2 Khao Lampi-Hat Thai Muang, Phangnga Province (8° 23' - 8° 33' N/98° 12' - 98° 20' E)	me	7,200	Nov. 21 - 25
3 Laem Son, Ranong Province (9° 16' - 9° 41' N/98° 18' - 98° 31' E)	me	31,500	Nov. 25 - 28
4 Hat Noppharat Thara- Mu Ko Phi Phi, Krabi Province (7° 39' - 8° 08' N/98° 44' - 98° 56' E)	ma/bf	38,996	Dec. 09 - 12
5 Khao Phanom Bencha, Krabi Province (8° 13' - 8° 19' N/99° 53' - 99° 58' E)	me	5,012	Dec. 12 - 17
6 Hat Chao Mai, Trang Province (7° 17' - 7° 32' N/99° 13' - 99° 29' E)	ma	23,088	Dec. 17 - 21
7 Mu Ko Phetra, Satun Province (6° 45' - 7° 08' N/99° 23' - 99° 49' E)	me	49,438	Dec. 21 - 23
8 Khao Luang, Nakhon Sri Thammarat Province (8° 39' - 8° 41' N/99° 41' - 99° 43' E)	me	57,000	Jan. 11 - 17
9 Khao Sok, Surat Thani Province (8° 50' - 9° 05' N/98° 30' - 98° 50' E)	me	64,552	Jan. 18 - 24

Key to Table :

For. - Dominant Forest Type

ma - Mangrove

me - Moist Evergreen

bf - Beach Forest

extent of encroachment in the park. No trapping was carried out; thus, small mammals which do not leave specific signs or which are difficult to observe were not adequately surveyed. Bats were also not surveyed. Table 1 lists all areas visited and dates.

RESULTS

During the survey of the 9 national parks, it was observed (Table 2) that the park that had the highest number of species seen/reported was Khao Luang National Park (46 species); followed by Khao Lampi-Hat Thai Muang National Park (42 species), Khao Sok and Khao Phanom Bencha National Parks (both parks having 38 species), Phangnga Bay National Park (26 species), Laem Son National Park (23 species), Hat Chao Mai National Park (22 species), Hat Noppharat Thara-Mu Ko Phi Phi National Park (19 species), and Mu Ko Phetra National Park (12 species).

The mammals that were seen/reported in all the parks surveyed are *Cynocephalus variegatus*, *Presbytis obscura*, *Presbytis cristata*, *Sus scrofa*, and *Tragulus javanicus*. Species that were seen/reported in most of the parks include *Tupaia glis*, *Nycticebus coucang*, *Macaca nemestrina*, *Macaca arctoides*, *Manis javanica*, *Ratufa bicolor*, *Rattus rattus*, and *Hystrix brachyura*. It was also noted that highest diversity and highest relative abundance of species were in parks where the dominant forest type is moist evergreen.

The major threat to primates in all these parks is habitat loss, and the gibbons were usually the most seriously threatened. Besides that, female gibbons are sometimes killed for their infants, to be sold as pets. Infant pig-tailed macaques are acquired in the same manner for the purpose of harvesting coconuts. Pig-tailed macaques are trained to harvest coconuts while infants and these trained macaques fetch a high market price. Some species of primates as the dusky leaf monkeys, silvered leaf monkeys, and long-tailed macaques are sometimes hunted as source of protein. Most seriously affected are the little-known stump-tailed macaques which are killed when they become agricultural pests. Stump-tailed macaques practise crop raiding during the rice harvest season, from December to February. However, the main animals that are poached in parks are wild pigs, barking deer, sambar deer, and lesser mousedeer, which are either used for local consumption or sold to restaurants specialising in game animals, along with certain species of birds, reptiles and amphibians.

Comments on Parks

1. Phangnga Bay National Park

Phangnga Bay National Park was surveyed for mammals, mainly on the islands; and Wat Tham Suwan Khwan Khuha in Amphur Muang Phangnga, a few kilometers from the park, was also visited. Forest type on the islands is forest on

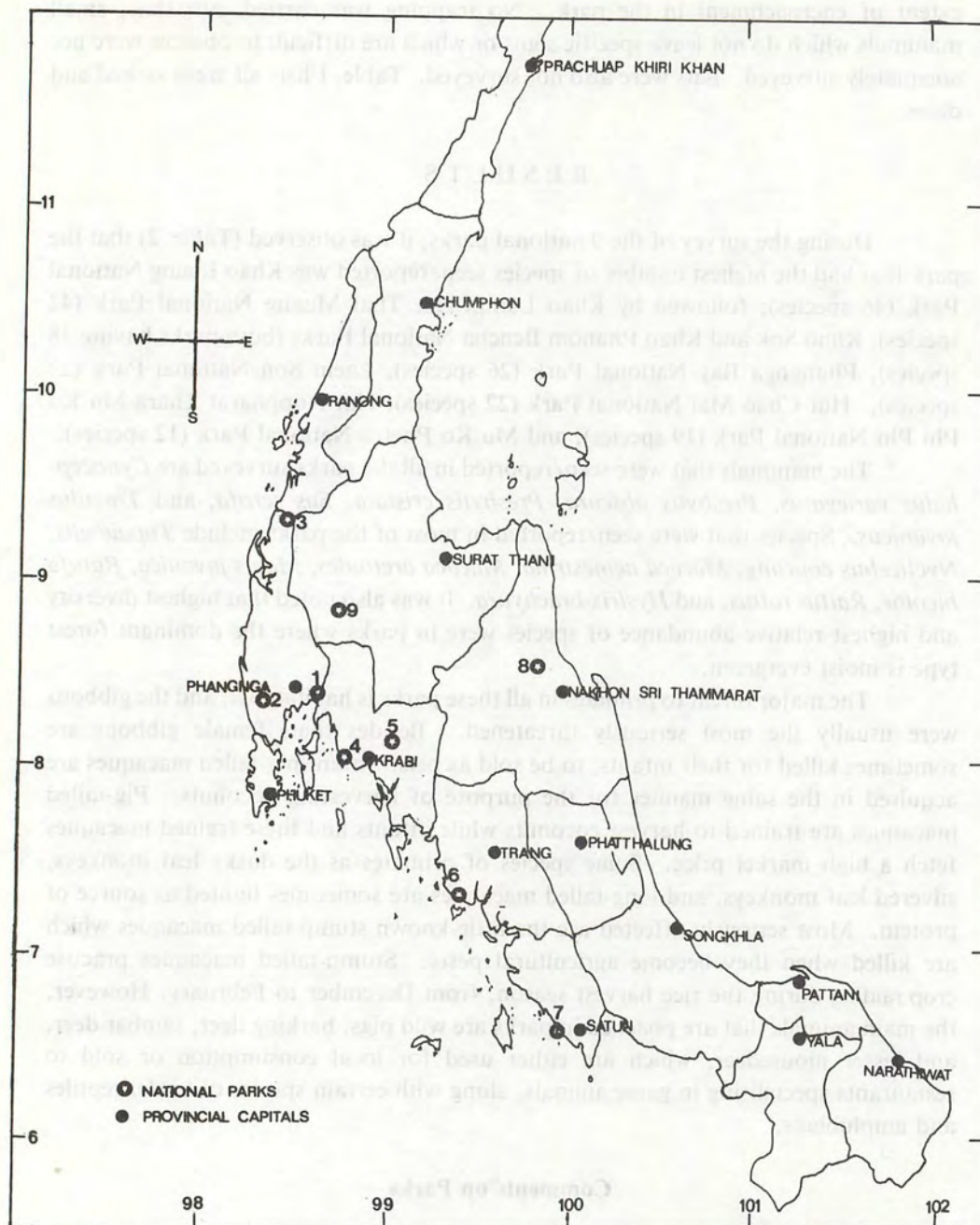


Figure 1 Map of South Thailand showing national parks surveyed (starred circle). Numbered parks are identified in Table 1.

limestone fringed with mangroves. The terrestrial part is wholly mangroves but adjoins the lowland evergreen forest of Suan Pa Na Kok (a protected area). There are fishing villages on the islands visited. At Wat Tham Suwan Khuha, a non-protected area, there were a good number of *Macaca fascicularis*; these macaques are sometimes shot as a source of protein by the Thai Buddhist villagers living in the vicinity.

Phangnga Bay National Park is a very well visited place. However, wildlife at this park is not disturbed by the touristic activities. But presently it is not possible to keep a constant check on the illegal squatters and loggers with the single boat that the park has.

2. Khao Lampi – Hat Thai Muang National Park

Forest types in Khao Lampi - Hat Thai Muang National Park include tropical rainforest, tropical evergreen forest, mangrove forest, beach forest and swamp forest. Poaching for mammals is not serious here although a few live-traps intended for *Tragulus javanicus* were found at Hat Thai Muang. However, during the months of November to February, the park wardens work overtime to ensure that the eggs of sea turtles are not robbed from their nests on the beach. A troop of *Macaca nemestrina* from Khao Na Yak (a Naval area) practices crop-raiding during the rice harvest months from December to January in the areas bordering the park. However, organised illegal logging is quite serious at Khao Lampi. I found many logged areas, both recent and old, but these areas are off the normal trails, hidden from sight. These loggers would convert the fallen logs into planks using chainsaws. Trees logged were 'Mai Lumpho' (*Intsia palembanica*) and 'Mai Champa Thong' (*Michelia chamtaea*). The wardens need to be provided with better arms, binoculars and walkie-talkies before this forest is stripped bare. The illegal loggers are armed due to the high value of the timber.

3. Laem Son National Park

Laem Son National Park includes moist evergreen, beach and mangrove forest. Rice cultivation is practised along with cashew and coconuts in areas surrounding the park. Poaching for *Sus scrofa* and *Tragulus javanicus* is done mainly to obtain meat to be consumed locally, or at times sold in Ranong. *Tragulus javanicus* trapped alive are sometimes sold as pets. *Nycticebus coucang* are at times killed due to superstitious beliefs, as they are considered bad omens by the local Moslems and non-Moslems alike. At Ratcha Krut, there is a shop that buys animal hides and reptilian skins from poachers and villagers, which are either sold as such or converted into leather goods and later resold. Illegal felling of trees is greatly reduced due to the efficient patrolling by the park workers.

Table 2. List of mammals seen or reported in each park visited with relative abundance or approximate number of individuals.

Species	National Park											
	1a	1b	2	3a	3b	4	5	6	7a	7b	8	9
<i>Echinosorex gymnurus</i>	w4		w3			w5	u5				w4	*
<i>Hylomys suillus</i>			w4									
<i>Crocidura fuliginosa</i>	w3		w5									
<i>Suncus murinus</i>			w5									
<i>Tupaia glis</i>	w5		w4	w5		w4	v-1	w4			v-1	w4
<i>Cynocephalus variegatus</i>	w5		w4	u4		w3	w4	w2	w3		w4	w3
<i>Nycticebus coucang</i>	w3		w5	u4		w3	v-2	w3	w4		w4	
<i>Macaca nemestrina</i>	w4		w4	u4		u4	w4	w5			v-20	w4
<i>Macaca arctoides</i>			w4	w2		u-25	v-40	s-50			v-20	w5
<i>Macaca fascicularis</i>	v-9	v-94	u5	v-8	s-10	u5		w5		v-80		
<i>Presbytis melalophos</i>			w3	u3			*	w3			w3	w3
<i>Presbytis obscura</i>	w4	v-3	v-7	u4		u2	w5	w4	v-2		w3	w4
<i>Presbytis cristata</i>	w5	u4	w3	v-1		u4	v-2	w4	w4		v-4	v-6
<i>Hylobates lar</i>			a-2			a-1	v-5				a-2	a-6
<i>Cuon alpinus</i>							t-1				w4	
<i>Ursus thibetanus</i>							v-1					
<i>Helarctos malayanus</i>			t-2				t-1				t-1	v-1
<i>Mustela nudipes</i>							w4	*	w3			
<i>Martes flavigula</i>			w2	u5		w2	w2				w4	*

Table 2 (continued).

Species	National Park											
	1a	1b	2	3a	3b	4	5	6	7a	7b	8	9
<i>Arctonyx collaris</i>							v-1				w2	
<i>Lutra perspicillata</i>	w2											
<i>Lutra sumatrana</i>	w4											
<i>Aonyx cinerea</i>	w5				w4					w3	w4	w3
<i>Viverricula indica</i>	w2		w4								w3	w4
<i>Viverra zibetha</i>	w2							v-1	w4		*	w4
<i>Viverra megaspila</i>	w3											w3
<i>Prionodon linsang</i>											w3	≠/
<i>Arctogalidia trivirgata</i>						w4		w2			w4	
<i>Paradoxurus hermaphroditus</i>			w4	w3			w5				w4	w4
<i>Paguma larvata</i>			w2	w4		w4	v-1				w4	w3
<i>Arctictis binturong</i>			w4	u4			w2				w3	
<i>Hemigalus derbyanus</i>											w3	w2
<i>Herpestes javanicus</i>	w5							w2			w4	w2
<i>Herpestes urva</i>											*	
<i>Felis marmorata</i>									h2		w3	
<i>Felis viverrina</i>						*	w4	*			w4	
<i>Felis bengalensis</i>			w4				w4				w4	
<i>Felis planiceps</i>											w2	
<i>Felis temminckii</i>							*				w3	

Table 2 (continued).

Species	National Park											
	1a	1b	2	3a	3b	4	5	6	7a	7b	8	9
<i>Neofelis nebulosa</i>							*				*	w2
<i>Panthera pardus</i>			w3				h2					w3
<i>Panthera tigris</i>			w3				h2				w3	w3
<i>Elephas maximus</i>											w2	w3
<i>Tapirus indicus</i>			t-1				t-2				t-3	t-8
<i>Sus scrofa</i>	w5		v-2	t-11	t-3	u4	t-1	v-1	w4		v-1	t5
<i>Tragulus napu</i>				h5				h3	w3		w4	
<i>Tragulus javanicus</i>	w5	t-2	t-1	h5	t-3	t-1	w5	t-1	w4	w4	t-3	w4
<i>Muntiacus muntjak</i>			t-1				t-1	h3			t-5	t-3
<i>Cervus unicolor</i>			w3								t-3	w3
<i>Bos javanicus</i>											*	t2
<i>Bos gaurus</i>											w1	t3
<i>Capricornis sumatraensis</i>	u4	f-1	w3				t-2				f-2	w3
<i>Manis javanica</i>	v3		w5	u4		w3	w4	u3			s-1	
<i>Ratufa bicolor</i>	w5	v-2	w3	v-2		w3	w4	≠/	w4		v-2	w3
<i>Ratufa affinis</i>			v-1				w4				v-3	w3
<i>Callosciurus notatus</i>	*											
<i>Callosciurus flavimanus</i>							w4					
<i>Callosciurus caniceps</i>				u4		w5	v-5				w4	w4
<i>Callosciurus prevosti</i>							w2					

Table 2 (continued).

Species	National Park											
	1a	1b	2	3a	3b	4	5	6	7a	7b	8	9
<i>Tamias maclellandi</i>							w3				w4	w3
<i>Dremomys rufigenis</i>			w2	v-1								
<i>Petaurista elegans</i>									≠/			
<i>Petaurista petaurista</i>									≠/		w2	w2
<i>Hy. spetes lepidus</i>	w4											
<i>Petinomys setosus</i>								≠/				
<i>Rhizomys sumatraensis</i>	w5		w5	u5			w4				≠/	w4
<i>Chiropodomys gliroides</i>			w4									
<i>Bandicota indica</i>								w2				
<i>Mus caroli</i>	w4											
<i>Mus castaneus</i>			w4									
<i>Berylmys bowersi</i>			w2									
<i>Maxomys whiteheadi</i>			v-1									
<i>Maxomys surifer</i>			u4									
<i>Niviventer cremoriventer</i>			w2									
<i>Rattus rattus</i>	w6		w5				w4	w5	w6	v-1	w4	w4
<i>Hystrix brachyura</i>	w4		w4	u5			w4	w4			t-1	w3
<i>Atherurus macrourus</i>			w2	u4			16	w3			f-5	w3

Table 2 (Continued).

Key to Table :

- 1a Phangnga Bay National Park (terrestrial)
- 1b Phangnga Bay National Park (marine)
- 2 Khao Lampi - Hat Thai Muang National Park
- 3a Laem Son National Park (terrestrial)
- 3b Laem Son National Park (marine)
- 4 Hat Noppharat Thara - Mu Ko Phi Phi National Park
- 5 Khao Phanom Bencha National Park
- 6 Hat Chao Mai National Park
- 7a Mu Ko Phetra National Park (terrestrial)
- 7b Mu Ko Phetra National Park (marine)
- 8 Khao Luang National Park
- 9 Khao Sok National Park

- w- reported by N.P. workers
- h- reported by hunters
- u- reported by villagers
- v- sighted
- a- heard
- t- tracks
- f- feces
- s- scrapes/other indicative signs

*- probably present

≠/ possibly present

Figures following hyphen (-) refer to approximate number of individuals

Figures without hyphen (-) refer to abundance level :

- 1 - vagrant
- 2 - status undetermined
- 3 - rare
- 4 - uncommon
- 5 - common
- 6 - abundant

4. Hat Noppharat Thara - Mu Ko Phi Phi National Park

Forest types in this park are moist evergreen, mangrove and swamp forest. Only the mainland was surveyed. Poaching for *Sus scrofa* and *Tragulus javanicus* occurs in the park. Live-traps are laid out for *Tragulus javanicus* at off-route places. I found a live-trap set at Khao Hang Nak, and also saw the remains of a recently consumed *Tragulus javanicus* in one of the homes at the foothills. I was informed that recently two hunters had shot down two *Macaca arctoides* when they failed to get any *Sus scrofa*. Villagers would be pleased if they were rid off these macaques, as they are considered agricultural pests. Illegal felling of trees within the park boundary has been greatly reduced but deforestation outside the park is occurring at an alarming rate making the forested areas into 'islands'. Rubber trees are sometimes planted in these forested areas.

5. Khao Phanom Bencha National Park

Poaching of animals is quite serious here either for meat or to be sold/kept as pets. Numerous poachers' camps were found, both old and recent, during the survey. The ungulates are most sought for in terms of protein. In one of the villagers' homes, I found a black bear (*Ursus thibetanus*) cub a few months old, and also a reticulated python 1.2 m long. The villagers consider it their right to trap or kill animals on their cultivated lands, which some animals enter in search of food. Many of the park workers are from the same village where these poachers are from and thus they tend to ignore these activities. Encroachment is quite serious and increasing by the day in the form of rice and rubber cultivation. Another serious matter is the large-scale growing of marijuana deep in the forested areas. There is urgent need to improve protection as this park has a rich fauna and flora. At present this park, because it is not regarded as an important tourist spot, lacks basic facilities and has insufficient substations due to its low budget. For tropical forest and wildlife conservation, I strongly feel that this park needs to be placed on the 'priority one' list.

6. Hat Chao Mai National Park

Forest types in this park are moist evergreen, mangrove and beach forest. In the course of the survey, I found many traps and met a number of poachers. They seem ignorant of the fact that poaching is unlawful. At Khao Nam Rap, a villager was killed in one of the gun-traps set out for *Sus scrofa*. It consisted of a trip-wire attached to the trigger of a gun positioned at knee level, but it must have reoriented its line of fire. (I had trekked the same path a day earlier!) *Macaca arctoides* are killed as agricultural pests or for their infants to be kept as pets or to be trained to climb for coconuts. A villager had recently killed a mother and obtained an infant and a young juvenile which later died in captivity. The forest here is in a very sad state. There is serious logging and encroachment in the form of cultivation and residences. The new superintendent of three months on the job is conscientious, but up to his neck in problems. The headquarters still lacks the basic amenities like water and electrical supply, and has serious problems with the local villagers who do not wish to obey park regulations. I feel that this problem started when the park was initially set up; nobody bothered to explain the purpose of the park. The villagers feel that the park has deprived them of their ancestral lands which can be put to better uses like cultivation or construction of homes.

7. Mu Ko Phetra National Park

Mu Ko Phetra Park has evergreen forest, beach forest, mangrove forest and coconut plantations. The park does not offer much wildlife, but there is hope for the species that are present because the human population around the park are Moslems and they are preoccupied with fishing-their main livelihood. Primates, especially *Macaca*

fascicularis, flourish, especially on islands and in the mangrove forests. Illegal logging rarely occurs, but mangrove trees are being logged outside the park boundary for the purpose of making charcoal to be exported to Singapore. I see no threat to the wildlife, especially primates.

8. Khao Luang National Park

Forest types in the park are evergreen, forest over limestone and swamp forest. Poaching is quite serious in the areas from Klong Ra Nae toward Ban Phi Phun, where I found many recent poachers' camps all along the river (Klong Ra Nae). On January 11, 1988; the park workers managed to seize a freshly killed *Sus scrofa* weighing more than 100 kg, while the poachers managed to escape. The *Sus scrofa* was later buried at the park headquarters. Illegal logging has reportedly stopped due to the frequent arrests, but encroachment in the form of crop cultivation does occur at various places around the park. Presently, road construction within the park has caused major deforestation. There is a need to set up a substation at Klong Ra Nae near Ban Phi Pun to look into the poaching activities. Also, I feel that the forested area between Khao Luang National Park and Tai Lom Jen National Park (Surat Thani Province), needs to be surveyed for any wide-ranging species of mammals. If there are any, then that area should be incorporated into either of the parks.

9. Khao Sok National Park

This park has undulating terrain with limestone hills and the predominant forest type is moist evergreen. Poaching is frequent here but the main threat is encroachment in the form of rice cultivation in the park area during the dry season in the months of January to March. Village folk often enter the park and harvest rattan canes which fetch a high market value. During the survey at Klong Waang, I found many dead fishes in the stream caused by the illegal use of explosives to harvest the fishes. There seems to be overcrowding of wildlife in the areas of Tham Khee Khang Khow and Klong Waang caused by flooding of the park with the construction of the Rajaprabha Dam.

DISCUSSION

Mammals seen/reported in the 9 national parks surveyed, in comparison with previous surveys wherever conducted, are similar in most cases but their relative abundance has decreased in most parks. This is attributed to several factors; firstly, these parks have become isolated pockets surrounded by human settlements and cultivated crops. With this the ranges of certain mammals have been reduced, and the movements of certain wide ranging species are prevented. Secondly, there is serious encroachment at these parks which has led to an increase in poaching and animals being killed as agricultural pests. Most animals are poached for food, either to be

consumed locally or sold to restaurants. Sometimes these animals are killed for their hides or skins; or when live-trapped, are kept/sold as pets. In those parks where stump-tailed macaques occur, they are always killed because they raid crops during the rice harvest.

In all the parks I visited, the park officials appear to work hard and try their best to eradicate poaching, encroachment and tree-felling, but they are not completely successful because of a lack of manpower, modern firearms and good telecommunications equipment. A basic cause of poaching is the poverty of the villagers living close to the national parks. Most of these villagers rely on agriculture for their livelihood and try to extend their cultivated lands into the park areas in order to increase their income. Poaching by these villagers is mainly to try to supplement their diet. However, when the poachers are town dwellers, or when tree-felling is done by organised groups, the lack of modern firearms discourages the park wardens from wishing to have any encounters with them. More emphasis should also probably be placed by the park officials on public relations and extension work with the villagers living near the parks to help solve the poaching problem.

Out of the total of 157 species of non-volant land mammals from the 26 families found in Thailand (HONACKI et al., 1982), the investigator managed to find evidence for 77 species. Of the 9 national parks surveyed, there is a strong need to put maximum conservation efforts into Khao Phanom Bencha National Park, Khao Luang National Park and Khao Lampi – Hat Thai Muang National Park, which still have excellent forest habitat and the largest number of species.

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