

Monitoring Survey of the Distribution of Herpetofauna in Khao Soi Dao Wildlife Sanctuary, Chanthaburi Province, with a Note on Faunal Comparison with the Cardamom Mt. Ranges

Tanya Chan-ard^{*1}, Thongchai Seangthianchai² and Sunchai Makchai¹

¹Natural History Museum, National Science Museum, Thailand,
Technopolis, Khlong 5, Khlong Luang, Pathum Thani 12120 Thailand

²National Parks, Wildlife and Plants Conservation Department, Bangkok 10900 Thailand

ABSTRACT: In this resurvey of herpetofauna in Khao Soi Dao between January and June 2008, 51 species of reptiles and 25 species of amphibians were found with three new records of snakes: *Pareas hamptoni*, *Amphiesma khasiense* and *Ovophis convictus*. The presence of some endemic reptiles and amphibians in the region was confirmed: *Lycodon cardamomensis* and *Quasipaa fasciculispina*. The diversity of herpetofauna in the study area compared to that in the Cardamom Ranges indicates that these areas are continuous territories.

KEY WORDS: new records, Khao Soi Dao, geographic distribution.

INTRODUCTION

Khao Soi Dao has been established as a wildlife sanctuary and forest reserve since 1972. The area was initially of 465,637 rai (745.02 km²). The area has been slightly reduced several times for many purposes. The remaining area is 465,602 rai (744.96 km²). The Khao Soi Dao Wildlife Sanctuary includes territory in Soi Dao, Pong Namron, Makhm and Thamai Districts of Chanthaburi Province. Its coordinates are from 12° 50' N to 13° 20' N and from 102° 02' to 102° 16' E.

The geographical feature of Khao Soi Dao W.S. is a mountain range, the highest peak of which is 1,675 m. asl. The average annual temperature in the area is 26.8°C and the annual rainfall is 2,874 mm. Plant communities in the area consist of moist evergreen forest and dry dipterocarp forest. The existing herpetofauna records for the area include 88 species for reptiles and 29 species for amphibians (RFD, 1993). The Chanthaburi Ranges, where the Khao Soi Dao W.S. is located, is connected to the

Cardamom Ranges in Cambodia so the herpetofauna of Khao Soi Dao should be closely related to that of the Cardamoms. Accordingly, the reports of Ohler *et al.* (2002); Stuart & Emmett (2006) and Grismer *et al.* (2008) will be considered in this study.

MATERIALS AND METHODS

Field data surveys were conducted by a general collecting technique from 16 January and 25 June 2008. Information collected included numbers of species and descriptions of microhabitats, aural records, signs, photographs and tadpole determinations. The classification used in this study follows Taylor's work (Taylor, 1962, 1963, 1965, 1970). The up-to-date taxa in this work follows Frost *et al.* (2006) for amphibians, and Uetz (2007) for reptiles. The results of this study are compared with several literature sources such as (RFD, 1993, 2000), Ohler *et al.* (2002), Stuart and Emmett (2006), and Grismer *et al.* (2007, 2008).

*Corresponding author.
E-mail: tanya@nsm.or.th

RESULTS

Because of the high diversity of plants at high altitudes random surveys were conducted in the sub-areas of Khao Soi Dao Noe (northern peak) and Khao Soi Dao Tai (southern peak).

The streams were surveyed for amphibians and the reptiles that prey on them.

We also used road-side surveys at night in the forest: in particular along the internal road of the Khao Soi Dao Noe sub area, of which approximately 10 km passes through the forest.

SYSTEMATIC ACCOUNT

Reptilia

Testudines (Turtles)

Geoemydidae

Cyclemys atripons

Found in streams between 300 and 600 m asl.

Sauria

Gekkonidae

Cnemaspis chanthaburiensis

Specimen examined: 18545 (male); svl 3.0 cm tail 3.5 cm. An endemic species in the Chanthaburi and Cardamom Ranges, they are abundant in tree buttresses and underneath rotten logs at all elevations. Because of the high population of this lizard, it is the preferred food of many kinds of snakes.

Cyrtodactylus intermedius

Specimen examined: 19329 (female); svl. 7.5 cm, tail 8.6 cm); 18530-31 (male); svl. 7.0-8.0 cm, tail 9.0-10.0 cm. A small gecko, often found at the base of big trees, especially figs. Young geckos were found lying on the leaves of bushes at night.

Gehyra mutilata

Usually found on the forest floor and in buildings.

Hemidactylus frenatus

Usually found under the bark of trees and also in buildings.

Hemidactylus platyurus

Usually found under the bark of the trees and also in buildings.

Gekko gekko

Found in hollow trees and in buildings.

Agamidae

Acanthosaura crucigera

Specimen examined: 19297, svl. 96 mm. tail 148 mm. This agamid lizard was found on mountains at the base of big trees from an altitude of 600 m asl. to the summit. It was active in the day time but was easily found at night when sleeping in small trees, 1-2 m high, or in small bushes.

Bronchocela smaragdina

A rare lizard, found resting on the top branches of trees, above an altitude of 300 m asl.

Calotes emma

Only found in evergreen forest, usually resting on tree trunks. Like *Acanthosaura*, this species was easily found at night.

Calotes versicolor

Usually found in the transitional zone between the forest and agricultural areas.

Draco taeniopterus

Specimen examined: 18544 (male), svl. 7.8 cm. tail 15.5 cm. Found resting on tree trunks along the banks of streams or in open areas.

Varanidae

Varanus salvator

Found in streams.

Scincidae***Eutropis multifasciata***

Found both in the forest and in the headquarters area.

Lipinia vittigera

Specimen examined: 18537 (male), svl. 3.5 cm.; tail 4.5 cm. Found on the forest floor and on tree trunks in open sunny areas.

Lygosoma bowringi

Found on the forest floor, under rotten logs and leaf-litter.

Lygosoma corpulentum

Found on the forest floor and under rotten logs.

Lygosoma quadrupes

Found under rotten logs in all types of forest.

Scincella siamensis

Specimen examined: 18533 (male), svl. 4.5 cm. tail 3.0 cm. (tip lost); 18560 (male), svl. 4.3 cm. tail 5.5 cm. A small skink, found on the ground or under rotten logs.

Sphenomorphus maculatus

Specimen examined: 18532 (male), svl. 5.0 cm. tail 8.0 cm. Found on the ground near stream banks, and sometimes feeding on rocks at the edge of a stream.

Tropidophorus microlepis

Specimen examined: 18536 (male), svl. 7.5 cm. tail 8.6 cm. A moderate sized skink found in shallow streams. In the rainy the season when the current in streams is too strong, the skinks inhabit the forest floor close to the streams.

Dibamidae***Dibamus somsaki***

A limbless lizard, endemic in Khao Soi Dao, discovered and named by Honda *et al.*, 1997. This animal was found under a rotten log at an altitude of 300 m asl.

Ophidia**Typhlopidae*****Ramphotyphlops braminus***

A common blind snake found under rotten logs.

Xenopeltidae***Xenopeltis unicolor***

A non-venomous snake usually found on the road at night.

Pythonidae***Broghammerus reticulatus***

Found feeding at night in streams. A dead body of this snake was found on the bank of a stream in Khao Soi Dao Noe. (At least a hundred of these snakes were released in this area before the second trip in June by which time many had died).

Elapidae***Bungarus candidus***

Found feeding along stream banks at night.

Bungarus fasciatus

Found feeding along the stream banks at night.

Ophiophagus hannah

A large venomous snake, found feeding at dawn and dusk.

Colubridae**Colubrinae*****Ahaetulla prasina***

A dead body was found on the road.

Boiga cyanea

Specimen examined: 19328, svl. 116.5 cm. tail 30.3 cm. A mildly venomous snake, found feeding at night in small bushes. (One was observed capturing a bulbul which was asleep on a branch at the time).

Boiga multomaculata

Specimen examined: 18534, svl. 56.0 cm. tail 15.0 cm. A mildly venomous snake found in bushes at night.

Chrysopelea ornata

A mildly venomous snake, found feeding on a *Gekko gecko* under the roof of a building.

Coelognathus radiatus

Specimen examined: 19369, svl. 104.5 cm. tail 20.7 cm. A non-venomous snake found in the transitional zone between open woodland and agricultural areas, usually found dead on the road.

Dendrolaphis pictus

A non-venomous snake: usually found in the transitional zone between the forest and agricultural areas.

Dryocalamus davisonii

Specimen examined: 19368, young, svl. 22.3 cm. tail 9.8 cm. A non-venomous snake found on tree trunks at night.

Gonyosoma oxycephalum

A large non-venomous snake found in large trees, crossing the road and sleeping in the bush after big meals.

Lycodon cardamomensis

Specimen examined: 19232 (female), svl. 78.5 cm. tail 15.5 cm. Found at the edge of a stream at night.

Oligodon fasciolatus

Specimen examined: 18546 (male), svl. 52.5 cm. tail 9.5 cm. (road killed); 19352 (juvenile), svl. 15.6 cm. tail 3.2 cm. Found at night in tree buttresses, and sometimes on the road.

Psammodynastes pulverulentus

Specimen examined 19366, svl. 30.2 cm. tail 6.7 cm. Found on the ground under leaf litter.

Ptyas korros

A large non-venomous snake: found in the transitional zone between the forest and agricultural areas in the day time. Sometimes found sleeping in bushes at night.

Homalopsinae***Enhydris plumbea***

A water snake: usually found in temporary ponds in the rainy season or under logs close to bodies of water.

Natricinae***Amphiesma khasiense***

Specimen examined 19231, svl. 43.5 cm. tail 13.6 cm. Found on the peak of Khao Soi Dao Tai. This is a new record for the area. This species is commonly found in Chiang Mai, Northern Thailand.

Rhabdophis nigrocinctus

Specimen examined: 18535, svl. 56.0 cm. tail 18.5 cm. A mildly venomous snake: found on the forest floor at night.

Rhabdophis subminiatus

A mildly venomous snake: usually found in the day time or at dusk.

Pareatinae***Pareas hamptoni***

Specimen examined 19367, svl. 22.3 cm. tail 9.8 cm.; 19326, svl. 34.5 cm. tail 10.4 cm. Found on the road at night. This species is a non-venomous snake with enlarged vertebral scales and a body that is strongly compressed. The dorsal scales are smooth, in 17 rows on the mid-body. There are 165 rows of ventral scales and 17 rows of sub-caudal scales. The sub-caudal scales are divided and the anal plate is single. These characteristics fit with *Pareas hamptoni* Boulenger, 1905. This is new record for this snake in this area.

Pareas margaritophorus

Found under rotten logs in the forest.

Viperidae**Crotalinae*****Calloselasma rhodostoma***

A venomous snake, found on the ground or on logs.

Cryptelytrops macrops

Specimen examined 19327, svl. 42.5 cm. tail 7.8 cm. Usually found on bushes near stream banks.

Ovophis convictus

Specimen examined: 19233, svl. 36.5 cm. tail 4.6 cm. A venomous, ovoviviparous snake, found on the ground, under rotten logs at an elevation of 600 m asl. This specimen has 23 keeled dorsal scale rows at mid-body. There are 138 ventral scale rows and 23 divided sub-caudal scale rows. Normally this species is distributed in the northwestern and upper northeastern regions of the country. This is the first discovery in this southeast region.

Viridovipera vogeli

Specimen examined: 19298, total length 69.0 cm. A green pit viper found in medium sized trees. This snake was found climbing down from the tree-top in the early evening.

Amphibia
Megophryidae

Xenophrys lekaguli

Specimens examined: 19299, svl. 6.4-6. cm. Found on the forest floor higher than 600 m asl. Sometimes the tadpoles were found in streams at lower altitudes than the adults inhabit.

Bufonidae

Duttaphrynus melanostictus

Often found in the transitional zone between the forest and agricultural areas.

Ingerophrynus parvus

Found in moist evergreen forest above 600 m asl.

Microhylidae

Kaloula pulchra

Commonly found in all habitats.

Microhyla berdmorei

Only found in evergreen forest.

Microhyla butleri

Specimen examined: 19336 svl. 24 mm Found in lowland forest especially in secondary growth. Pairs were found in temporary ponds in the rainy season.

Microhyla fissipes

Specimens examined: 19337-49, svl. 25-31 mm. Commonly found in evergreen forest, it was former known as *Microhyla ornata* (Taylor, 1962; Nabhitabhata *et al.*, 2000). Since 2005, Matsui *et al.* (2005) discovered that the DNA ranking is different for three related species (*M. ornata* Duméril and Bibron, 1841, *M. fissipes* Boulenger, 1884 and *M. okinavensis* Stejneger, 1901). They proposed this as a distinct species.

Microhyla heymonsi

Specimens examined: 19313, 19334-35, svl. 19-22 mm. Commonly found in all habitats.

Microhyla pulchra

Found in pairs in temporary rain water pools along the road in the forest together with *Micryletta inornata*, *Occidozyga martensii* and *Polypedates leucomystax*.

Micryletta inornata

Specimen examined: 19319, svl. 28 mm. Found on the forest floor and in temporary ponds.

Dicroglossidae

Quasipaa fasciculispina

Specimen examined: 19310, svl. 72 mm. Found in rapidly flowing streams. It is abundant above altitudes of 600 m asl. The holotype and paratypes of this species were taken from this area more than 30 years ago. It was described in 1970 as *Rana fasciculispina* (Inger, 1970). It is also found in other areas: Khao Kitchakut National Park and Namtok Plieu Nation Park.

Fejervarya limnocharis

Specimen examined: 19333, svl. 62 mm. Found in all habitats.

Limnonectes gyldenstolpei

Specimen examined: 19360 svl. 37 mm.
 Found in hilly, rocky streams over than 600 m asl. This species was known as *Rana pileata*. Ohler and Dubois (1999) proved that it is a synonym for *Elachyglossa gyldenstolpei*. So now the up-to-date name is *Limnonectes gyldenstolpei*.

Occidozyga lima

Found in permanent ponds, close to the sanctuary.

Occidozyga martensii

Specimens examined: 19332, 19350, svl. 23-26 mm Found on the forest floor from 300 to 400 m asl.

Rhacophoridae***Aquixalus bisacculus***

Specimen examined: 3507
 Found on bushes next to streams.

Chiromantis hansenae

Specimen examined: 19351, svl. 26 mm
 Found sitting on glass leaves at the edge of permanent pond closed to the sanctuary.

Philautus parvulus

Specimens examined: 19300-09, 19353-58, svl. 20-23 mm. Found on bushes nearby streams.

Polypedates leucomystax

Found in all habitats.

Ranidae***Hylarana faber***

Specimens examined: 18558-59, 19362-64, svl. 47-71 mm. Found along rapid streams over than 900 m asl.

Hylarana mortenseni

Specimens examined: 18539-43, 18547-52, 19331, svl. 51-85 mm. Found along rapidly flowing streams. Sometimes there were adult males found in water pipes in the vicinity of the headquarters.

Hylarana nigrovittata

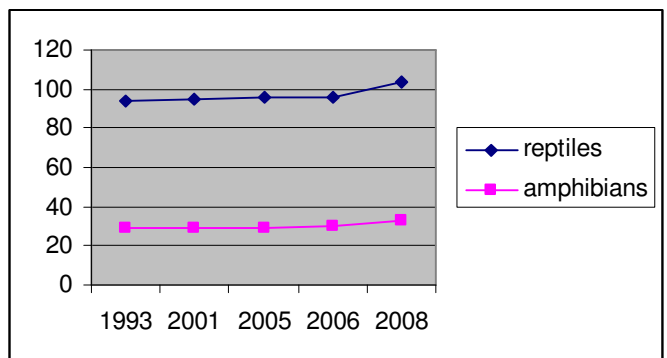
Found in streams.

Ichthyophiidae***Ichthyophis kohtaoensis***

Specimen examined: 19281, svl 377 mm, tail 4 mm. This specimen was found dead on the road in front of the check-point at the headquarters after heavy rain at night.

In all, 51 species of reptiles and 25 species of amphibians were found. Compared with the existing list, 40 species of reptiles (42.5%) and 10 species of amphibians (34.4%) were missed but an additional 10 species of reptiles (10.6% with three of them new records for the region) and 4 species of amphibians (13.7%) were found, indicating that there is a high diversity of reptiles and amphibians in this area. An intensive long term intensive study is needed. From the graph shown below it is apparent that it is possible that new species or new records of known species could be found in such a study. In 2001 *Viridovipera vogeli* was described from Khao Yai N.P. and confirmed by Chan-ard, Schulz and Gumprecht (unpublished) in this area, in 2005. *Lycodon cardamomensis* was reported from this area (the second known sighting) by Pauwels *et al.* and in 2005 *Xenophrys lekaguli* was described from this area by Stuart *et al.*

Figure 1. Number of species reported from various years:



Faunal comparison between Khao Soi Dao and the Cardamom Ranges

The Chanthaburi Range is in the same geographical formation as the Cardamom Ranges. Consulting the work of Ohler *et al.* (2002) Stuart & Emmett (2006) and Grismer *et al.* (2007, 2008), is helpful in confirming the similar distribution of animals in both areas.

Reptilia

Testudines

There was no record of the occurrence of *Manouria impressa* until Grismer *et al.* (2007) reported its distribution in the Cardamom Ranges. The species has never been found in the eastern region of Thailand.

Sauria

Gekkonidae

The occurrence of lizards in this family in the Chanthaburi to Cardamom Ranges is similar, in particular *Cnemaspis chanthaburiensis*, which is endemic in both regions.

Agamidae

Agamid lizards in the genus *Acanthosaura* is a defining feature of the areas. *Acanthosaura crucigera* is distributed from the west of the Cardamom Range eastward to the eastern region of Thailand; whereas, *Acanthosaura capra* has been found in the eastern area of the Cardamoms but not in Thailand.

Scincidae

Species which are found in both areas include: *Lipinia vittigera*, *Lygosoma bowringi*, *Sphenomorphus maculates*, *Sphenomorphus stellatum*, *Scincella melanostictis* (*S. siamensis*), etc. Some species are found in one area but not the other, for instance *Sphenomorphus rufocaudatus* which has been found in the Cardamom Range but does not occur in Thailand. This species was described by

Darevsky and Nguyen in 1983 from the Gia Lai Province in Vietnam.

Dibamidae

Dibamus somsaki is endemic and found only in Khao Soi Dao. The lizard in this genus with a distribution closest to the Cardamoms is *D. montanus*, which is found on the mainland and the islands of Vietnam.

Ophidia

Colubridae

Lycodon cardamomensis is an endemic species in both areas. This species was discovered and described from the Cardamoms by Daltry & Wüster, 2002. In Thailand 2 specimens have been found in Khao Sabab (Namtok Plieu N.P.) and a single specimen was found in Khao Soi Dao, Chanthaburi Province (Pauwels *et al.*, 2005). The sample in this study is the fifth known specimen.

Oligodon sp. reported by Grismer *et al.* (2008) is similar to *Oligodon taeniurus*. It could be a new species for this region.

Gongylosoma baliodeira cochranae, is endemic in Khao Soi Dao, and is regarded as a rare species. We did not find it, and there is no report of it from the Cardamoms. *Amphiesma khasiense* was initially reported as *A. modesta* from the Kamchay Mountains (now the Cardamom Mts.) by Smith (1943), and was sighted by Stuart & Emmet (2006). It is confirmed in Khao Soi Dao in this study.

Amphibia

Megophryidae

Xenophrys lekaguli is endemic in Khao Soi Dao, but is distributed as far as Khao Yai in the Khao Sankhampaeng Ranges. In the Cardamoms, there is another related species, *Xenophrys auralensis* which differs from *Xenophrys lekaguli* in the lack of vomerine teeth [*Xenophrys lekaguli* has vomerine teeth (Stuart *et al.*, 2006)]. *Xenophrys auralensis* was described from the Cardamoms by Ohler *et al.* (2002).

Dicroglossidae

In both the Chanthaburi and Cardamom Ranges, there are populations of *Quasipaa fasciculispina* (an endemic species for this region). In the same way, *Limnonectes kohchangae* which is otherwise found only on Koh Chang and Koh Kut, is very common in the Cardamoms.

Rhacophoridae

Philautus parvulus is a widespread species, distributed from the north of Thailand downward to Perak in Peninsular Malaysia (Sukumara, 2002; Taylor, 1962). This species was described from Karin Bia-po in Myanmar. This species is found in the Cardamoms, instead of *Philautus cardamonus* which was described by Ohler, Swan and Daltry (Ohler *et al.*, 2002). The clear difference between them is the toe-webbing: small in *Philautus parvulus*, but moderate in *Philautus cardamonus*.

Ranidae

Hylarana faber is endemic in both the Chanthaburi and Cardamom Ranges. A sample of his species in Khao Soi Dao was collected by D. Damman and sent to be deposited in the Field Museum in Chicago, U.S.A. under the name of *Rana montivaga*. Ohler *et al.*, 2002 described *Hylarana faber* from the Cardamoms. We have re-examined this specimen and found it to be the same species. In Khao Soi Dao we found a small population of *Hylarana faber* at high elevations on both the northern and southern peaks.

CONCLUSION

A total of 51 species of reptiles and 25 species of amphibians have been listed in this study.

The list does not exactly correspond to previously existing records, probably because reptiles and amphibians are somewhat secretive animals and not easy to find.

The new list contains three new records, *Pareas hamptoni*, *Amphiesma khasiense* and *Ovophis convictus* and the presence of some species that are endemic to the region has been confirmed: *Lycodon cardamomensis* and *Quasipaa fasciculispina*. The diversity of herpetofauna in the study area compared to that in the Cardamom Ranges indicates that both of these areas are continuous territories.

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Appendix I

Table 1. Reptile and amphibian species in Khao Soi Dao W.S. & adjacent areas.

Taxa	RFD (1993)	THNHM (this study)	Ohler <i>et al.</i> , 2002	Stuart & Emmett, 2006	Grismer <i>et</i> <i>al.</i> , 2007,2008	Remarks
Reptilia						
Platysternidae						
<i>Platysternon megacephalum</i>	x*					introduced by law enforcement
Geoemydidae						
<i>Cuora amboinensis</i>					x	
<i>Heosemys grandis</i>	x					
<i>Cyclemys atripons</i>	x*	x				Currently recorded as <i>C. tcheponensis</i>
Testudinidae						
<i>Indotestudo elongata</i>	x				x	
<i>Manouria impressa</i>	x				x	
Trionychidae						
<i>Amyda cartilaginea</i>	x				x	
CROCODYLIA						
Crocodylidae						
<i>Crocodylus siamensis</i>					x	
Gekkonidae						
<i>Cnemaspis chanthaburiensis</i>	x*	x			x	Currently recorded as <i>C. siamensis</i>
<i>Cyrtodactylus intermedius</i>	x	x		x	x	
<i>Dixonius siamensis</i>	x				x	
<i>Gehyra mutilata</i>	x	x		x		
<i>Hemidactylus frenatus</i>	x	x			x	
<i>Hemidactylus garnotii</i>	x					
<i>Hemidactylus platyurus</i>	x	x			x	
<i>Hemiphyllodactylus cf. yunnanensis</i>					x	
<i>Gekko gecko</i>	x	x		x	x	
<i>Ptychozoon lionotum</i>	x			x		

Table 1. Continued.

Taxa	RFD (1993)	THNHM (this study)	Ohler <i>et al.</i> , 2002	Stuart & Emmett, 2006	Grismer <i>et al.</i> , 2007,2008	Remarks
Agamidae					x	
<i>Acanthosaura crucigera</i>	x	x		x		
<i>Calotes emma</i>		x		x	x	
<i>Calotes mystaceus</i>	x			x	x	
<i>Calotes versicolor</i>	x	x		x	x	
<i>Draco maculatus</i>	x			x	x	
<i>Draco taeniopterus</i>	x	x		x	x	
<i>Gonocephalus sp.</i>	x					
<i>Pseudocalotes floweri</i>	x					
<i>Physignathus cocincinus</i>	x			x	x	
Leiopeltidae						
<i>Leiopelis belliana</i>	x				x	
Varanidae						
<i>Varanus nebulosus</i>	x				x	
<i>Varanus salvator</i>	x	x			x	
Lacertidae						
<i>Takydromus sexlineatus</i>	x			x	x	
Scincidae				x		
<i>Dasia olivacea</i>	x					
<i>Eutropis longicaudata</i>	x					
<i>Eutropis macularia</i>	x			x	x	
<i>Eutropis multifasciata</i>	x	x		x	x	
<i>Isopachys roulei</i>	x					
<i>Lipinia vittigera</i>	x	x		x	x	
<i>Lygosoma bowringi</i>	x	x		x	x	
<i>Lygosoma corpulentum</i>	x	x				
<i>Lygosoma haroldyoungi</i>	x					
<i>Lygosoma quadrupes</i>	x	x			x	
<i>Scincella melanosticta</i>				x	x	
<i>Scincella siamensis</i>	x	x				
<i>Scincella sp.</i>					x	

Table 1. Continued.

Taxa	RFD (1993)	THNHM (this study)	Ohler <i>et al.</i> , 2002	Stuart & Emmett, 2006	Grismer <i>et</i> <i>al.</i> , 2007,2008	Remarks
<i>Sphenomorphus maculatus</i>	x	x		x	x	
<i>Sphenomorphus rufocaudatus</i>				x		
<i>Sphenomorphus stellatum</i>	x			x		
<i>Tropidophorus microlepis</i>	x	x				
Dibamidae						
<i>Dibamus somsaki</i>		x				
Typhlopidae						
<i>Ramphotyphlops albiceps</i>	x					
<i>Ramphotyphlops braminus</i>	x	x			x	
<i>Typhlops diardi</i>					x	
<i>Typhlops muelleri</i>				x		
Xenopeltidae						
<i>Xenopeltis unicolor</i>	x	x				
Pythonidae						
<i>Python bivittatus</i>	x					
<i>Broghammerus reticulatus</i>	x	x				
Elapidae						
<i>Bungarus candidus</i>	x	x			x	
<i>Bungarus fasciatus</i>	x	x			x	
<i>Naja kaouthia</i>	x				x	
<i>Naja siamensis</i>	x*					Currently recorded as <i>N. atra</i>
<i>Ophiophagus hannah</i>	x	x			x	
Colubridae						
Colubrinae						
<i>Ahaetulla nasuta</i>					x	
<i>Ahaetulla prasina</i>	x	x		x	x	
<i>Boiga cyanea</i>	x	x		x	x	
<i>Boiga multomaculata</i>		x		x		
<i>Boiga siamensis</i>	x*			x		Currently recorded as <i>B. ocellata</i>
<i>Chrysopelea ornata</i>	x	x		x	x	
<i>Coelognathus radiatus</i>	x	x				

Table 1. Continued.

Taxa	RFD (1993)	THNHM (this study)	Ohler <i>et al.</i> , 2002	Stuart & Emmett, 2006	Grismer <i>et</i> <i>al.</i> , 2007,2008	Remarks
<i>Boiga cyanea</i>	x	x		x	x	
<i>Boiga multomaculata</i>		x		x		
<i>Boiga siamensis</i>	x*			x		Currently recorded as <i>B. ocellata</i>
<i>Chrysopelea ornata</i>	x	x		x	x	
<i>Coelognathus radiatus</i>	x	x				
<i>Dendrolaphis pictus</i>	x	x		x	x	
<i>Dryocalamus davisonii</i>	x	x		x		
<i>Gongylosoma baliodeira cochranae</i>	x	x				
<i>Gonyosoma oxycephalum</i>	x	x		x		
<i>Lycodon cardamomensis</i>		x			x	
<i>Lycodon capucinus</i>	x					
<i>Lycodon laoensis</i>	x					
<i>Oligodon barroni</i>	x				x	
<i>Oligodon fasciolatus</i>	x	x		x		
<i>Oligodon inornatus</i>	x			x	x	
<i>Oligodon mouhoti</i>	x					
<i>Oligodon sp.</i>					x	
<i>Oreocryptophis porphyracea</i>					x	
<i>Orthriophis taeniurus</i>					x	
<i>Psammodynastes pulverulentus</i>	x	x		x	x	
<i>Psammophis indochinensis</i>	x*					Currently recorded as <i>P. condenarus</i>
<i>Ptyas korros</i>	x	x		x	x	
<i>Ptyas mucosus</i>	x				x	
<i>Sibynophis collaris</i>					x	
<i>Sibynophis triangularis</i>	x					
Homalopsinae						
<i>Homalopsis buccata</i>	x			x	x	
<i>Enhydris bocourti</i>	x			x		
<i>Enhydris plumbea</i>	x	x			x	
<i>Homalopsis buccata</i>	x			x	x	

Table 1. Continued.

Taxa	RFD (1993)	THNHM (this study)	Ohler <i>et al.</i> , 2002	Stuart & Emmett, 2006	Grismer <i>et</i> <i>al.</i> , 2007,2008	Remarks
Natricinae						
<i>Amphiesma boulengeri</i>					x	
<i>Amphiesma khasiense</i>		x		x		
<i>Amphiesma stolum</i>				x		
<i>Rhabdophis chrysargos</i>	x				x	
<i>Rhabdophis nigrocinctus</i>	x	x		x	x	
<i>Rhabdophis subminiatus</i>	x	x		x	x	
<i>Xenochrophis piscator</i>	x					
<i>Xenochrophis flavipunctatus</i>	x				x	
<i>Xenochrophis trianguligerus</i>				x		
Pareatinae						
<i>Pareas carinatus</i>				x		
<i>Pareas hamptoni</i>		x				
<i>Pareas macularius</i>	x					
<i>Pareas margaritophorus</i>		x		x	x	
Viperidae						
<i>Calloselasma rhodostoma</i>	x	x		x	x	
<i>Cryptelytrops albolabris</i>	x			x	x	
<i>Cryptelytrops macrops</i>	x	x		x	x	
<i>Ovophis convictus</i>		x				
<i>Viridovipera vogeli</i>		x		x	x	Currently recorded as <i>T. popeiorum</i> and <i>T. stejnegeri</i>
AMPHIBIA						
Megophryidae						
<i>Xenophrys auralensis</i>			x	x		
<i>Xenophrys lekaguli</i>	x*	x				Currently recorded as <i>X. longipes</i>
<i>Xenophrys parva</i>	x					
Bufoidea						
<i>Duttaphrynus</i>						
<i>Melanostictus</i>	x	x		x	x	
<i>Ingerophrynus macrotis</i>					x	

Table 1. Continued.

Taxa	RFD (1993)	THNHM (this study)	Ohler <i>et al.</i> , 2002	Stuart & Emmett, 2006	Grismer <i>et al.</i> , 2007,2008	Remarks
<i>Ingerophrynus parvus</i>	x	x			x	
Microhylidae						
<i>Calluella guttulata</i>				x		
<i>Glyphoglossus molossus</i>	x					
<i>Kaloula pulchra</i>	x	x	x		x	
<i>Kalophrynus interlineatus</i>	x*			x	x	Currently recorded as <i>K. pleurostigma</i>
<i>Microhyla annamensis</i>	x		x		x	
<i>Microhyla bermorei</i>	x	x	x	x	x	
<i>Microhyla butleri</i>	x	x	x	x		
<i>Microhyla fissipes</i>	x*	x		x	x	Currently recorded as <i>M. ornata</i>
<i>Microhyla heymonsi</i>	x	x		x	x	
<i>Microhyla pulchra</i>		x		x	x	
<i>Micryletta inornata</i>	x	x		x	x	
Dicroglossidae						
<i>Quasipaa fasciculispina</i>	x	x	x	x	x	
<i>Fejervarya limnocharis</i>	x	x		x	x	
<i>Hoplobatrachus rugulosus</i>	x*			x	x	Currently recorded as <i>R. rugulosa</i>
<i>Limnonectes gyldenstolpei</i>	x	x	x		x	
<i>Limnonectes kohchangae</i>			x	x	x	
<i>Occidozyga lima</i>	x	x		x	x	
<i>Occidozyga martensii</i>	x	x		x	x	
Rhacophoridae						
<i>Aquixalus bisacculus</i>		x	x	x	x	
<i>Chiromantis doriae</i>			x			
<i>C. hansenae</i>	x	x				

Table 1. Continued.

Taxa	RFD (1993)	THNHM (this study)	Ohler <i>et al.</i> , 2002	Stuart & Emmett, 2006	Grismer <i>et</i> <i>al.</i> , 2007,2008	Remarks
<i>C. nongkhorensis</i>				x	x	
<i>C. vittatus</i>			x	x	x	
<i>Philautus cardamonas</i>			x		x	
<i>Philautus parvulus</i>		x	x	x		
<i>Polypedates leucomystax</i>	x	x		x	x	
<i>Rhacophorus bipunctatus</i>			x	x	x	
<i>Theلودerma asperum</i>	x		x			
<i>Theلودerma stellatum</i>	x			x		
Ranidae						
<i>Hylarana erythraea</i>	x			x		
<i>Hylarana macrodactyla</i>	x			x		
<i>Hylarana taipehensis</i>	x		x		x	
<i>Hylarana faber</i>	x*	x	x	x	x	Currently recorded as <i>R. montivaga</i>
<i>Hylarana mortenseni</i>		x	x		x	
<i>Hylarana cf. milleti</i>				x	x	
<i>Hylarana nigrovittata</i>	x	x				
Ichthyophiidae						
<i>Ichthyophis kohtaoensis</i>	x	x				

Appendix II.

Photographs of some herpetofauna from the Khao Soi Dao Wildlife Sanctuary.



Plate I. (From top to bottom) **left:** *Hylarana faber*, *Hylarana mortenseni*, *Limnonectes gyldenstolpei*; **right:** *Xenophrys lekaguli*, *Ingerophrynus parvus*, *Quasipaa fasciculispina* and *Rhacophorus bisacculus*.



Plate II. (From top to bottom) **left:** *Cyclemys atripons*, *Scincella siamensis*, *Lipinia vittigera*, *Boiga multomaculata*, *Amphiesma khasiense* ; **right:** *Cnemaspis chanthaburiensis*, *Cyrtodactylus intermedius*, *Tropidophorus microlepis*, *Lycodon cardamomensis*, *Rhabdophis nigrocinctus* and *Ovophis convictus*.