A first report on the herpetofauna of Pulau Besar, Johor, West Malaysia

The Seribuat Archipelago is composed of approximately 32 islands in the southern section of the South China Sea off the east coast of peninsular Malaysia. Only nine of these islands have had their herpetofauna documented: Pulau Tioman (Day, 1990; Grismer et al. 2002; Hien et al. 2001; Hendrickson, 1966a; Hendrickson, 1996b; Lim and Lim, 1999), Pulau Aur (Escobar et al. 2003a; Grismer et al. 2000), Pulau Sibu (Wood et. al in prep), Pulau Dayang (Wood et. al. 2003), Pulau Tulai (Grismer et al. 2001; Grismer et al. 2002; Hendrickson, 1966a; Hendrickson, 1996b), Pulau Pemanggil (Youmans et al. 2000), Pulau Seribuat and Pulau Sembilang (Wood et al. 2003) and Pulau Tinggi (Escobar et al. 2003b).

Pulau Besar (103° 59'E; 02° 26'N) is a 5 x 2 km island located 18 km off the coast of Mersing, Johor, West Malaysia. It is dominated by a steep sided ridge extending the length of the island covered by primary and reinvaded secondary forest. Few granitic boulders are present. Two higher peaks occur along the ridge; Bukit Berot in the south, reaching 251 km and Bukit Atap Zink in the north, reaching 208 km.

Collections were made along a cross-island trail through the middle of the island from Kampung Aseania in the west to the crest of the island between 1800 and 0100 h on 22-23 July 2003 and from 0900 and 1130 h on 23 July 2003. Another collection along the coast south of Kampung Aseania was made on 30 August between 2000 and 2330 h and on the 31 August between 2000 and 2300 h. Liver tissues were taken from representative specimens and preserved in 100% ethanol. Specimens were preserved using 10% formalin and stored in 70% ethanol. Specimens collected and observed are listed below and deposited in the Forest Research Institute Malaysia (FRIM), Kepong, Kuala Lumpur, Malaysia and the La Sierra University Herpetological Collection (LSUHC) of the Department of Biology, La Sierra University, Riverside, California. Photographic vouchers are deposited in the La Sierra University Photographical Collection (LSUPC).

ANURA (FROGS)

Ranidae

*Fejervarya cancrivora* (Gravenhorst, 1829).– Many individuals were observed sitting in and around brackish water near the inlet of an estuary. Another individual was observed sitting in a puddle of fresh water in a grassy field near the Coconut Island resort. Voucher specimen FRIM 0708.

Rhacophoridae

*Polypedates leucomystax* (Gravenhorst, 1829).– Many individuals were observed on the forest floor and on low-lying vegetation ranging 1-2 m above the forest floor. All individuals were observed at night. Voucher specimen FRIM 0702.

SQUAMATA (LIZARDS)

Agamidae

*Aphaniotis fusca* (Peters, 1864).– Several hatchlings, sub adults, and adults were observed at night sleeping on leaves and small twigs 1-3 m above the forest floor. Voucher specimen FRIM 0697.

*Bronchocela cristatella* (Kuhl, 1820).– One specimen was collected at 2300 h sleeping in a small tree approximately 2 m above the forest floor. Voucher specimen FRIM 0707.

*Draco sumatranus* (Schlegel, 1844).– One specimen was collected during midday on a large coconut palm approximately 6 m above the ground on the beach in Kampung Aseania. Voucher specimen FRIM 0695.

Gekkonidae

*Cnemaspis kendallii* (Gray, 1845).– Three specimens were observed. One was approximately 1.5 m above the ground facing head down on a medium sized dipterocarp (0.75 m in diameter) at 2230 h. Another was hanging upside down on the underside of a leaf in the typical sleeping position at 2345 h. Another was collected at 1120 h on another medium size dipterocarp approxi-
mately 1.2 m above the ground. Others were seen active on trees ranging in size from 0.5–1.3 m in diameter. Voucher specimen FRIM 0704.

_Gekko monarchus_ (Duméril & Bibron, 1836).– One individual was observed at 2143 h on a granitic rock near the beach. Voucher specimen FRIM 0709.

_Gehyra mutilata_ (Wiegmann, 1834).– One specimen was observed on a large tree trunk approximately 2.5 m above the ground at 2330 h. Voucher specimen FRIM 0693.

_Hemidactylus frenatus_ (Duméril & Bibron, 1836).– Many individuals were seen on houses and under old coconut husks. Voucher specimen FRIM 0703.

_Ptychozoon kuhli_ (Stejneger, 1902).– One adult specimen was collected 1.2 m above the ground at 2052 h on a wooden cottage. Several pairs of eggs and egg scars were observed on medium to large sized trees in primary forest 1-6 m above the ground. The embryos were in various stages of development. Voucher specimen FRIM 0700.

**Scincidae**

_Eutropis multifasciata_ (Kuhl, 1820).– One large adult was collected at 2211 h in the leaf litter. Voucher specimen FRIM 0699.

_Lygosoma bowringi_ (Günther, 1864).– Individuals were observed at approximately 1100 h on the beach under coconut husks. All attempted to escape by burrowing into the sand. Voucher specimen FRIM 0696.

**Varanidae**

_Varanus salvator_ (Laurenti, 1768).– One individual was observed sitting in brakish water near the beach at approximately 2100 h. Voucher photograph LSUPC 7805.

_SQUAMATA (SNAKES) Colubridae_  
_Ahaetulla prasina_ (Boie, 1827).– One juvenile was collected at 2229 h. The specimen was observed crawling in low vegetation approximately 1 m above the ground. Voucher specimen FRIM 0701.

_Dendrelaphis caudolineatus_ (Gray, 1834).– Three individuals were observed at night between 2100 and 2400 h. All were sleeping at the ends of branches approximately 2-4 m above the ground. Voucher specimen FRIM 0698 and 0705.

_Dendrelaphis pictus_ (Gmelin, 1789).– One individual was observed sleeping at the tip of a small branch in a secondary shrub at 2108 h approximately 3 m above the ground. Voucher specimen FRIM 0694.

_Lygodon capucinus_ (Boie, 1827).– One individual was observed active in the leaf litter along a trail immediately behind the beach at approximately 2100 h. Voucher specimen FRIM 0710.

Unconfirmed species  
_Dasia olivacea_ (Gray, 1839).– Several individuals were seen on large coconut trees along the beach at midday basking in the sun. No individuals were collected.

_Lipinia vittigera_ (Boulenger, 1894).– One individual was seen on a medium sized tree 3 m above the ground at 1020 h.

This report on the herpetofauna of Pulau Besar is considered preliminary, being that only a small portion of the island was surveyed for only short periods of time. Thus, the species reported are only a subset of the presumed total diversity of the island. Many common species such as *Bufo melanostictus*, *Limnonectes blythii*, *Acanthosaura armata*, *Draco melanopogon*, *Cosymbotus craspedotus*, *Cosymbotus platyurus*, *Cyrtodactylus consobrinus* and *Sphenomorphus scotophilus* were not seen but are expected to be present. The amphibians and reptiles of Pulau Besar are similar to Pulau Tinggi and Pulau Sibu.

Pulau Besar is located 15 km north west of the larger (17 km²) Pulau Tinggi (Escobar et al. 2003b). Species found on Pulau Besar and Pulau Tinggi are *Polypedates leucomystax*, *Aphanotis fusca*, *Bronchocela cristatella*, *Draco
sumatranus, Cnemaspis kendallii, Dasia olivacea, Gekko monarchus, Hemidactylus frenatus, Eutropis multiasciata, Ptychozoon kuhlii and Ahaetulla prasina (Escobar et al. 2003b). Pulau Sibu (6 km²) located 23.1 km south-east of Pulau Besar, shares Fejervarya cancrivora, Polypedates leucomystax, Aphaniotis fusca, Bronchocela cristatellla, Cnemaspis kendallii, Gehyra mutilata, Gekko monarchus, Hemidactylus frenatus, Dasia olivacea, Eutropis multiasciata, Lygosoma bowringi, Varanus salvator and Boiga dendrophila with Pulau Besar (Wood et al. in prep). These islands are relict mountaintops of a previous north-south tending range that became submerged with the latest rise in sea level 8-15 thousand years ago (Voris, 2000). Additional fieldwork is planned to investigate the biogeographical relationships of this island’s herpetofauna to that of the neighbouring islands.

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LITERATURE CITED


As a part of the biodiversity monitoring of Anaikatty Hills, being undertaken by the Salim Ali Centre for Ornithology and Natural History (SACON), Coimbatore, we are conducting investigations on the herpetofauna since 2001. Anaikatty (11º 05´30.9"N; 76º 47´36.2E”) is a part of the Western Ghats hill range, and is also in close proximity to the Eastern Ghats. The forest type of this area is tropical dry deciduous (Champion and Seth, 1967), but is largely in a degraded state due to anthropogenic activities such as agriculture and the brick industry. The hills facing east and contiguous to the plains are covered with tropical thorn forest (scrub jungle).

On 29 October 2003, at 1400 h, we were informed of a dead snake adjacent to the SACON campus on the Coimbatore- Anaikatty State Highway Road, which was run over by a vehicle, and was a juvenile Naja naja. Closer examination revealed that the cobra had swallowed a Uropeltis elliotti, as the tail of the prey was protruding out of the cobra’s mouth. N. naja is known to feed on a variety of prey species. According to Whitaker (1978), juveniles feed on insects, lizards, amphibians and snakes, while larger individuals prefer rodents, amphibians and birds. This species is also known to feed on the eggs and chicks of birds (Wüster, 1998; Daniel, 2002). Das (2002) reported fish in the diet of N. kaouthia and N. naja in India.

Ophiophagy is reportedly common in Ophiophagus hannah, Bungarus and Maticora, and occasional in other species such as Ptyas, Ahaetulla, Dendrelaphis, Elaphe and Naja (Daniel, 2002). This is perhaps the first record of an uropeltid being taken as prey by Naja naja. It is impossible to conclude from this single incident how important these snakes are in the diet of a cobra. The present observation indicates that both the predator and prey species were active during the day. Uropeltid snakes are reportedly nocturnal, but may be found active during day hours during the rainy season (Rajendran, 1985).