

AN UPDATE OF HERPETOFAUNAL RECORDS FROM BUKIT FRASER, PAHANG, PENINSULAR MALAYSIA

NORHAYATI, A.^{1,2*}, FARAH, A.D.¹, CHAN, K.O.², DAICUS, B.^{2,3} and MUIN, M.A.⁴

¹*School of Environmental & Natural Resource Sciences, Faculty of Science & Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia*

²*Institute for Environment and Development (LESTARI) Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia*

³*Institute of Biological Sciences, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia*

⁴*Centre for Drug Research, University of Science Malaysia 11800 Minden, Penang, Malaysia*

*Email: yati_68@yahoo.co.uk

ABSTRACT

A survey on the herpetofauna of Bukit Fraser, Pahang was conducted on three occasions: 27–30 October 2008, 9 June 2009 and 19–21 June 2009. A total of 20 species of herpetofauna were obtained, representing 14 species of amphibians, five species of lizards, and one species of snake. A revised checklist is presented with five new records. In total, Fraser's Hill now harbours 67 species of herpetofauna (22 frogs, one caecilian, two tortoises, 22 lizards, 20 snakes).

Key words: highland, frogs, reptiles, taxonomy, species richness.

ABSTRAK

Tinjauan herpetofauna telah dijalankan di Bukit Fraser, Pahang, sebanyak tiga kali pada 27–30 Oktober 2008, 9 Jun 2009 dan 19–21 Jun 2009. Sejumlah 20 spesies herpetofauna yang mewakili 14 spesies amfibia, lima spesies cicak/biawak, dan satu spesies ular telah diperolehi. Senarai spesies terkini telah dihasilkan, termasuk lima rekod baru. Jumlah besar species herpetofauna di Bukit Fraser adalah 67 spesies (22 spesies katak, satu caecilian, dua kura-kura, 22 cicak dan 20 ular).

Kata kunci: tanah tinggi, katak, reptilia, taksonomi, kekayaan spesies

INTRODUCTION

Bukit Fraser (3°43'N, 101°45'E) is located along the Selangor/Pahang border, approximately 80 kilometers from Kuala Lumpur. It occupies a total land area of about 2804 hectares within the Titiwangsa range and rises to an altitude of 1448 meters above sea level (Sahibin *et al.*, 2001). Vegetation in the area is composed primarily of upper dipterocarp and lower montane forests dominated by trees from the families Fagaceae and Lauraceae, with patches of cloud forests on mountain tops (Leong & Lim, 2003; Perumal *et al.*, 2001). Receiving an annual rainfall of 3230 mm and a moderate temperature averaging around 22°C

makes Bukit Fraser a popular tourist destination renowned for its diverse flora and fauna. Most impressive is its rich bird diversity with a record of 247 species and an additional 61 hypothetical species (Strange, 2004).

Herpetological records from Bukit Fraser were first reported by Smith (1922). Since then, records have been published haphazardly, such as Berry (1975), who recorded 15 species of anurans from Bukit Fraser, while Aziz (1998) noted presence of the tortoise, *Manouria impressa*. Neeta (2000) reported the presence of only five species of amphibians; *Megophrys longipes*, *Metaphrynella pollicaris*, *Polypedates leucomystax*, *Hylarana labialis* and *Rhacophorus prominanus*. Subsequently, Leong and Lim (2003) published a compilation of a checklist comprising 43 species of

* To whom correspondence should be addressed.

reptiles (two turtles, 20 lizards, 21 snakes) and 22 species of amphibians (one caecilian, 21 frogs). Continuous inventories and surveys, however, are still required to monitor any changes to the species composition or diversity. For instance, Grismer (2008) found *Cyrtodactylus brevipalmatus* at Bukit Fraser, which was previously known as an endemic species to Thailand, during his survey in 2004. Since Bukit Fraser is still relatively less developed than Cameron Highlands, certain issues plagued the local authority in terms of promotion for tourism, natural and man-induced soil erosion and massive slope failure (the new road). Although Bukit Fraser is more famous for its bird assemblages and flora, the herpetofauna assemblage is also diverse and interesting. In this paper, we present an updated checklist of the herpetofauna of Bukit Fraser with five new additions and some comments on taxonomy.

METHODS

Surveys were conducted during the day and night from 27–30 October 2008, 9 June 2009, and 19–21 June 2009 at Bukit Fraser, Pahang, Peninsular Malaysia (Figure 1). Five sampling sites were selected: along Ledgeham Road, Bishop Trail ($3^{\circ} 43.0' N$; $101^{\circ} 44.89' E$), Pine Trail, Sungai Hijau ($03^{\circ} 43.109' N$, $101^{\circ} 44.066' E$), and Sungai Jeriau ($03^{\circ} 43.5' N$, $101^{\circ} 42.86' E$) (Figure 2). Specimens were caught by active sampling using hands and dip nets based on visual and audio cues. Night sampling was done with the assistance of headlights. Measurements were taken with Mitutoyo Digimatic Caliper to the nearest 0.1 mm. Specimens were euthanized with Tricane (Ethyl 3-aminobenzoate methanesulfonate salt), fixed in 10% formalin and transferred to 70% alcohol for storage. Colour photographs were taken and liver tissue was

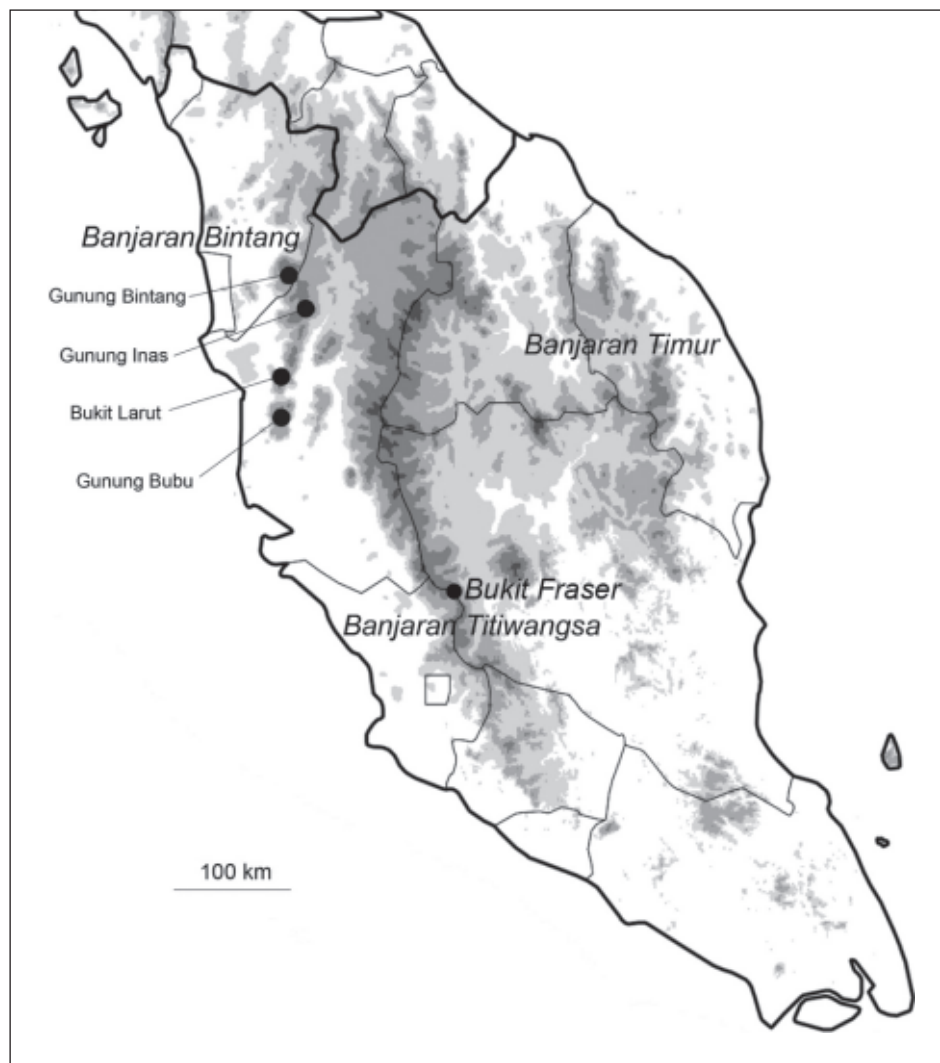


Fig. 1. Schematic map of the Malay Peninsula, illustrating the three main mountain ranges (from west to east): Banjaran Bintang; Banjaran Titi Wangsa; Banjaran Timur.

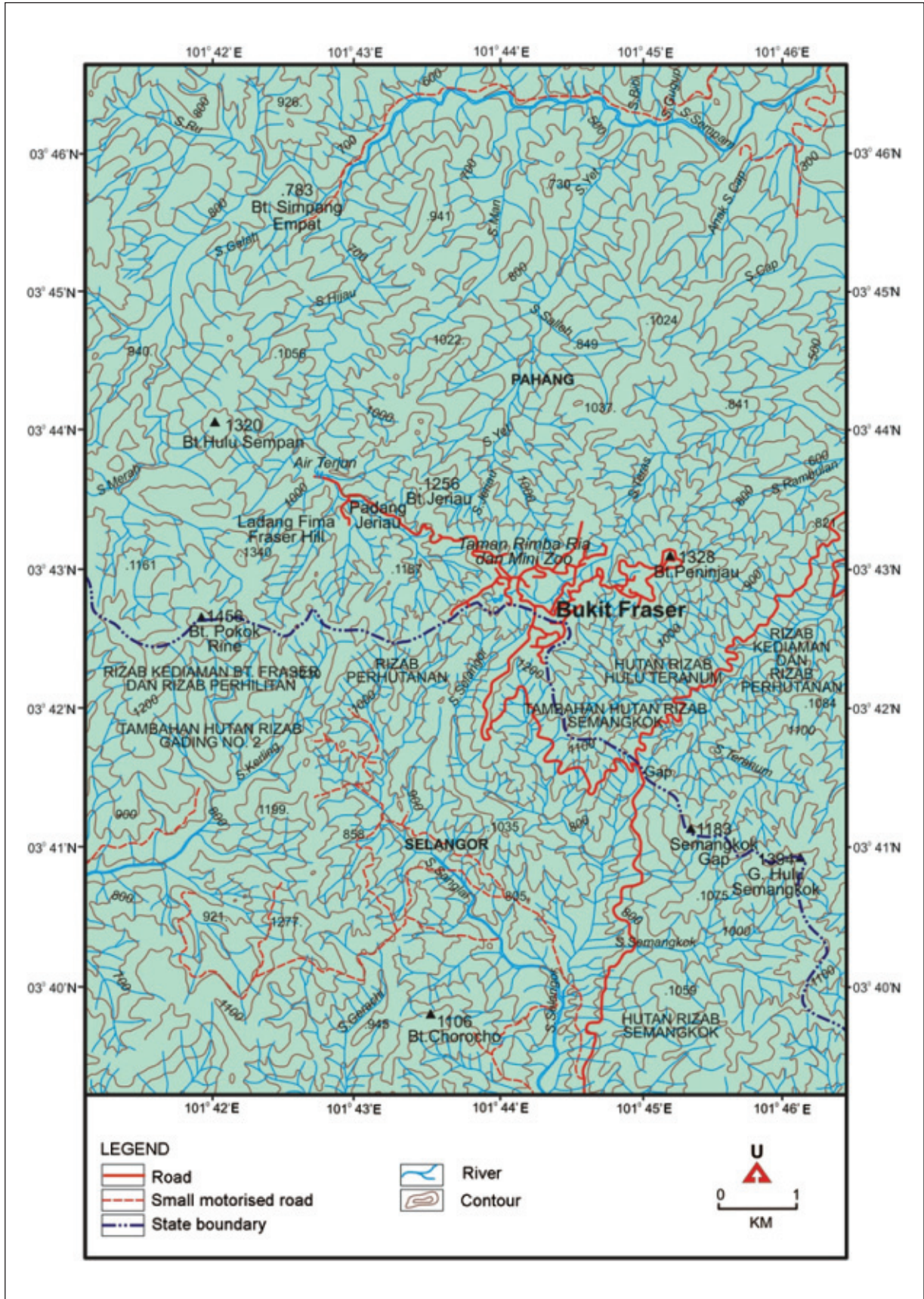


Fig. 2. Survey sites of herpetofauna at Fraser's Hill.

Table 1. Checklist of the amphibians and reptiles of Fraser's Hill, Pahang

Taxa	Location	Data source	
AMPHIBIA			
Ichthyophiidae			
1	<i>Ichthyophis</i> sp	Jeriau; The Gap; Bukit Telaga	1
Bufoidea			
2	<i>Ansonia jeetsukumarani</i>		1, 2
3	<i>Phrynoides aspera</i>	Semangko Pass; High Pines	1, 2
Dicroglossidae			
4	<i>Limnonectes blythii</i>	The Gap; Jeriau	1
5	<i>Limnonectes laticeps</i>	Bishop's Trail; Sungai Hijau	1, 2
6	<i>Limnonectes nitidus</i>	Jeriau	1
7	<i>Limnonectes plicatellus</i>		1
Megophryidae			
8	<i>Leptolax</i> sp.	The Gap	1
9	<i>Megophrys nasuta</i>	Jeriau; Bishops Trail	1, 2
10	<i>Xenophrys longipes</i>	Bishop's Trail; The Gap	1, 2
Microhylidae			
11	<i>Metaphrynella pollicaris</i>	Bishop's Trail; Ledgeham Road	1, 2
12	<i>Microhyla butleri</i>		1
Ranidae			
13	<i>Amolops larutensis</i>	Jeriau;	1, 2
14	<i>Odorrana hosii</i>	Bishop's Trail; Sungai Hijau	1, 2
15	<i>Hylarana banjarana</i>		1, 2
16	<i>Hylarana labialis</i>	Sungai Hijau	2
17	<i>Hylarana luctuosa</i>	Jeriau	1
Rhacophoridae			
18	<i>Philautus petersi</i>	Bishop's Trail	2
19	<i>Philautus vermiculatus</i>		1
20	<i>Polypedates leucomystax</i>	Telecom's Loop; Research Centre	1, 2
21	<i>Rhacophorus bipunctatus</i>	Lady Maxwell Road; Valley Road	1, 2
22	<i>Rhacophorus prominans</i>	Lady Maxwell Road; Jeriau; Research Centre; Singapore House	1, 2
23	<i>Theloderma aspera</i>	Telecom's Loop; Research Centre	1
REPTILIA			
Testudinidae			
24	<i>Manouria emys emys</i>	The Gap	1
25	<i>Manouria impressa</i>	Bishop's Trail	1
Agamidae			
26	<i>Acanthosaura titiwangsaensis</i>	Pine Tree Trail	2
27	<i>Draco blanfordii</i>	Semangko Pass	1
28	<i>Gonocephalus belli</i>	Semangko Pass	1
Eublepharidae			
29	<i>Aeluroscalabotes felinus</i>	Jeriau	2
Gekkonidae			
30	<i>Cnemaspis flavolineata</i>	The Gap	1
31	<i>Cyrtodactylus quadrivirgatus</i>	Bishop's Trail; Jeriau	1, 2
32	<i>Gehyra mutilata</i>	Telecom's Loop	1, 2
33	<i>Gekko monarchus</i>	Telecom's Loop	1
34	<i>Hemidactylus frenatus</i>		2
35	<i>Hemiphyllodactylus harterti</i>		1
36	<i>Ptychozoon kuhlii</i>	The Gap	1
Scincidae			
37	<i>Eutropis multifasciata</i>		1
38	<i>Larutia miodactyla</i>	Semangko Pass	1
39	<i>Larutia trifasciata</i>		1
40	<i>Lipinia vittigera</i>	The Gap resthouse	1
41	<i>Sphenomorphus bukitensis</i>		1
42	<i>Sphenomorphus indicus</i>		1
43	<i>Sphenomorphus praesignis</i>	Semangko Pass	1
44	<i>Sphenomorphus stellatus</i>		1

Varanidae			
45	<i>Varanus dumerilii</i>		1
46	<i>Varanus rudicollis</i>		1
47	<i>Varanus salvator</i>		1
Colubridae			
48	<i>Amphiesma inas</i>		1
49	<i>Asthenodipsas vertebralis</i>	Telecom's Loop	1
50	<i>Calamaria lowi</i>		1
51	<i>Calamaria lumbricoidea</i>		1
52	<i>Calamaria schlegeli</i>	The Gap; Road along Richmond House	1
53	<i>Collorhabdium williamsoni</i>		1
54	<i>Gongylosoma baliodeira</i>	The Gap	1
55	<i>Gonyosoma prasinum</i>	The Gap	1
56	<i>Lycodon butleri</i>	Telecom's Loop	1
57	<i>Macrolalamus lateralis</i>	Road along Richmond House	1
58	<i>Oligodon purpurascens</i>		1
59	<i>Orthriophis taeniurus</i>		1
60	<i>Psammodynastes pulverulentus</i>	High Pines Road; Road along UEP bungalow	1
61	<i>Pseudorabdion longiceps</i>		1
62	<i>Rhabdophis chrysargos</i>	Semangko Pass; Telecom's Loop; The Gap	1
63	<i>Sibynophis collaris</i>		1
Elapidae			
64	<i>Calliophis gracilis</i>	The Gap	1
65	<i>Calliophis intestinalis</i>		1
Viperidae			
66	<i>Ovophis monticola</i>		1
67	<i>Popeia fucata</i>	The Gap; Jeriau	1, 2

Data source: 1= Leong & Lim (2003); 2= This study.

extracted and stored in 95% ethanol prior to preservation. Taxonomic nomenclature follows the Amphibian Species of the World 5.3 by the American Museum of Natural History (<http://research.amnh.org/herpetology/amphibia/>), last accessed on 5 June 2009. Taxonomy for family Bufonidae follows Frost *et al.* (2006); Ranidae follows Che *et al.* (2007). Taxonomy for *Hemidactylus* follows Carranza and Arnold (2006); *Draco* taxonomy follows (Manthey 2008); Amphibian taxonomy follows Frost *et al.* (2006) and Che *et al.* (2007). All specimens were deposited at the Zoology Museum, Universiti Kebangsaan Malaysia, Bangi, Selangor (UKMHC).

RESULTS

SPECIES ACCOUNT

Class Amphibia: Order Anura

Family Bufonidae

Ansonia jeetsukumarani (Wood *et al.*, 2008) – Sukumaran's dwarf toad

New road, 30 October 2008, UKM00185, 186, 187: Three males were found calling from a slope by the new road near a culvert, about 2 km from town. They were found on rock at the bottom of the culvert, and on leaves of *Melastoma malabathricum* (Straits rhododendron) about 0.5 m above ground at the edge of a closed canopy forest. This species

was recently described from Fraser's Hill and Sungai Pergau, Kelantan by Wood *et al.* (2008).

Phrynoidis aspera (Gravenhorst 1829) – River toad
Bishop's Trail, 30 October 2008, UKM00159: One individual was found half-immersed in a creek in a narrow channel between two big boulders along the trail.

Family Dicroglossidae

Limnonectes laticeps (Boulenger 1882) – Corrugated frog

Sungai Hijau, 30 October 2008, UKM00176, 177: One individual was spotted in a swampy area, while two others were found in a waterhole along the same river.

Family Megophryidae

Xenophrys longipes (Boulenger 1885) – Long-legged horned frog

Sungai Hijau, 30 October 2008. Only the tadpoles were collected at Sungai Hijau using an aquatic net. The stream substrates were mainly composed of gravels, sand, and leaf litters/debris.

Megophrys nasuta (Schlegel 1858) – Malayan Horned Frog

Bishop Trail, 30 October 2008, UKM00506: One individual was found on forest floor among leaf

litters during the day at the Jeriau waterfall. SV length 144 mm.

Family Microhylidae

Metaphrynella pollicaris (Boulenger 1890) – Malayan tree frog

Ledgeham Road, 30 October 2008, UKM00154, 156: Two individuals were found on a steep rocky wall covered with wet lichens (almost 90° incline) during a slight drizzle.

Family Ranidae

Amolops larutensis (Boulenger 1899) – Larut Hill cascade frog

Sungai Jeriau, 29 October 2008, UKM00161–164: Two individuals were collected from the boulders along the fast current of the Sungai Jeriau and the rest were found perched on the leaves at the Jeriau Waterfall.

Fraser's Pine Resort, 19 June 2009, (UKMHC001_Amla_Fraser19062009): One individual found on the road besides the resort.

Hylarana banjarana (Leong & Lim 2003) – Mountain range frog

New road, 30 October 2008, UKM00183: A male was found calling on a rock below a bridge, near a culvert beside the new road, about 2 km from town.

Hylarana labialis (Peters, 1871) – White-lipped frog

Sungai Hijau, 30 October 2008, UKM00182: An individual was found perched on a tree root by the stream.

Odorrana hosii (Boulenger 1891) – Hose's rock frog

Bishop's Trail, 28 October 2008, UKM160: An adult female was found jumping across Ledgeham Road near the entrance to Bishop Trail; Sungai Hijau, 30 October 2008, UKM178–181. Frogs were found on rocks near a small waterfall. This species was common at Sungai Hijau, especially on fern leaves and narrow flat areas of steep boulders.

Abu Suradi Trail, 9 June 2009, (UKMHC002_Odho_Fraser09062009): An individual was found dead and was smoldered with ants. Another individual was found jumping across the road at the starting point of Abu Suradi trail.

Family Rhacophoridae

Rhacophorus bipunctatus Ahl 1927 – Twin-spotted tree frog

Lady Maxwell Road, 27 October, UKM152: An individual was found perched on a leaf about 3 m above the ground.

Philautus petersi (Boulenger 1900) – Peter's bush frog

Bishop's Trail, 28 October 2008, UKM00166, 167: Two individuals were found perched on the leaves while they are made the advertisement calls.

Polypedates leucomystax Gravenhorst 1829 – Common tree frog

Bukit Fraser Research Centre building, 29 October 2008, UKM165: An adult male was found amongst blades of herbaceous plant behind a water tank behind the building.

Rhacophorus prominanus (Smith 1924) – Malayan flying frog

Bukit Fraser Research Centre building, 30 October 2008, UKM184: An individual was found on a leaf of *Pandanus* sp. behind the water tank located behind the building.

Class Reptilia: Order Squamata

Family Agamidae

Acanthosaura titiwangsaensis Wood, Grismer, Grismer, Norhayati, Chan, Bauer 2009 – Titiwangsa horned lizard

Pine Tree Trail, 28 October 2008. UKM188: One male (SVL 125mm) was found along an old trail, next to the new trail about 400 m from the starting point of the new trail. It was perching at the top of a marker pole about 1.4 m from the ground.

Family Gekkonidae

Aeluroscalabotes felinus (Günther, 1864) – Cat gecko

Jelai resort, 9 June 2009, photo voucher (UKMHC001_Aefe_Fraser21062009).

Cyrtodactylus quadrivirgatus Taylor 1962 – Four-lined bent-toed gecko

Bishop's Trail, October 2008, UKM168, 169, 28: Both male adults were collected from the leaves and twigs of herbaceous plant. Sungai Jeriau, 29 October, UKM 171–175: They were collected from bare soil on the slope of Jeriau Waterfall's Trail.

Cyrtodactylus elok Dring, 1979 – White-eyed forest gecko

Jeriau Waterfall, 19 June 2009. One gravid female with two eggs were caught while crawling on an overhanging vine besides the pathway.

Gehyra mutilata (Wiegmann 1834) – Common four-clawed gecko

Material. An individual was found under a metal divider by the roadside leading towards the Pine Resorts.

Hemidactylus frenatus Duméril & Bibron 1836 – Common house gecko

Material. Found on the roof ceiling.

Gekko monarchus Schlegel in: Duméril & Bibron 1836 – Spotted House Gecko

Jelai resort, 9 June 2009, photo voucher (UKMHC001_Gemo_Fraser09062009): An individual found on the ceiling of the resort.

Hemiphyllodactylus harterti (Werner, 1900) – Hartert's dwarf gecko

Fraser's Pine Resort, 19 June 2009, photo voucher (UKM HC001_Heha_Fraser 20062009): An individual was found resting on a leaf of a shrub at the resort.

Class Reptilia: Order Serpentes

Family Viperidae

Popeia fucata (Vogel, David & Pauwels 2004) –

Sungai Jeriau, 29 October 2008, UKM189: An individual was found resting on a low branch overhanging the river, before the bridge to the Jeriau falls.

Jelai Resort, 9 June 2009, photo voucher (UKMHC002_Pofu_Fraser09062009): An individual was found resting on a branch in the shrub in front of the resort.

Fraser's Pine Resort, 19 June 2009, photo voucher (UKMHC003_Pofu_Fraser19062009): A male individual was found hunting on a bourgainvilla tree at the resort.

Family Colubridae

Psammodynastes pulverulentus (Boie, 1827) – Common mock viper

Fraser's Pine Resort, 19 June 2009, photo voucher (UKMHC001_Pspu_Fraser19062009): A male individual was found resting on a branch of a shrub below the resort.

DISCUSSION

Ansonia penangensis was reported from Fraser's Hill by Smith (1922), followed by Leong and Lim (2003). This species has been re-described as *Ansonia jeetsukumarani* (Wood *et al.*, 2008), and as such, *A. penangensis* remains endemic to Penang Hill, Penang. *Limnonectes doriae* was reported by Berry (1975) and included in the checklist by Leong and Lim (2003). We treat this species as absent from Peninsular Malaysia (*vide* Ohler and Dubois 1999) and is thus omitted from this present checklist. *Cnemaspis affinis* is also removed from this

checklist as it has been given a restricted distribution to Penang (Grismer *et al.*, 2008). Smith (1922) and Sly (1976) reported *Sphenomorphus butleri* from Fraser's Hill but this species has since been re-described as *S. bukitiesis* Grismer 2007. Leong and Lim (2003) included a *Rana* sp. in their checklist, which was subsequently described as *Hylarana banjarana*. New records are *Hylarana labialis*, *Philautus petersi*, *Acanthosaura titiwangsaensis* and *Hemidactylus frenatus*. In total, Fraser's Hill now harbours 67 species of reptiles and amphibians (22 frogs, one caecilian, two tortoises, 22 lizards, 20 snakes).

It has been known for many years that the highlands of Peninsular Malaysia harbour great levels of herpetological biodiversity and endemism (e.g., Boulenger, 1900; Chan and Grismer, 2008; Das and Norsham, 2003; Dring, 1979; Grandison, 1972; Grismer *et al.*, 2004, 2008; Grismer 2006, 2007, 2008; Hallerman and McGuire, 2001; Leong and Lim, 2003; Lim *et al.*, 2002; Matsui and Ibrahim, 2006; Norsham and Lim, 2002; Smedley, 1931; Smith, 1922, 1935; Wood *et al.*, 2008) and Fraser's Hill is no exception. Despite having been surveyed for many years (Boulenger, 1912; Berry, 1975; Chan-ard *et al.*, 1999; Leong and Lim, 2003; Neeta, 2001; Nicholls, 1949; Smith, 1922, 1930; Sly, 1976), new discoveries are still forthcoming (eg. *Acanthosaura titiwangsaensis*). With the onset of encroaching development, research efforts must be stepped up to fully realize and understand the true biodiversity of Fraser's Hill.

ACKNOWLEDGEMENTS

We thank Lee L. Grismer for his help in identification of several species and for his helpful suggestions while reviewing the manuscript; and the rangers from the Forestry Department of Pahang for their assistance during sampling.

REFERENCES

- Berry, P.Y. 1975. *The Amphibian Fauna of Peninsular Malaysia*. Tropical Press, Kuala Lumpur, x + 130 pp., 91 figs.
- Boulenger, G.A. 1900. Descriptions of new batrachians and reptiles from Larut Hills, Perak. *Annals and Magazine of Natural History*, **6**: 186–193.
- Boulenger, G.A. 1912. *A vertebrate fauna of the Malay Peninsula from the Isthmus of Kra to Singapore including adjacent islands*. Reptilia and Batrachia. Taylor and Francis, London, U.K.

- Chan-ard, T., Grossmann, W., Gumprecht, A. and Schulz, K.D. 1999. *Amphibians and Reptiles of Peninsular Malaysia and Thailand*. Bushmaster Publications, Wuersele, Germany. 240 pp.
- Chan, K.O. and Grismer, L.L. 2008. A new species of *Cnemaspis* Strauch 1887 (Squamata: Gekkonidae) from Selangor, Peninsular Malaysia. *Zootaxa*, **1877**: 49–57.
- Das, I. and Norsham, Y. 2003. A new species of *Dibamus* (Squamata: Dibamidae) from Peninsular Malaysia. *Raffles Bulletin of Zoology*, **51**: 137–141.
- Das, I. and Norsham, Y. 2007. Status of knowledge of the Malaysian herpetofauna. In: Chua, L.S.L. (ed.). *Proceedings of the Seminar on the Status of Biological Diversity in Malaysia and Workshop on Threat Assessment of Plant Species in Malaysia*, 28-30 June 2005. Forest Research Institute Malaysia, Kepong. pp. 31-81.
- Das, I. 2006. Crocker Range National Park, Sabah, as a refuge for Borneo's montane herpetofauna. *Amph. Rept. Conserv.* **4(1)**: 3–11.
- Dring, J.C.M. 1979. Amphibians and reptiles from northern Terengganu, Malaysia, with descriptions of two new geckos: *Cnemaspis* and *Cyrtodactylus*. *Bulletin of the British Museum of Natural History*, **34**: 181–241.
- Grandison, A.G.C. 1972. The Gunong Benom Expedition 1967. Reptiles and amphibians of Gunong Benom with a description of a new species of *Macrocalamus*. *Bulletin of the British Museum of Natural History (Zoology)*, **23**: 45–101.
- Grismer, J.L., Grismer, L.L., Das, I., Norsham, Y., Lim, B.L., Leong, T.M., Youmans, T.M. and Kaiser, H. 2004. Species diversity and checklist of the herpetofauna of Pulau Tioman, Peninsular Malaysia with a preliminary overview of habitat utilization. *Asiatic Herpetological Research*, **10**: 244–276.
- Grismer, L.L. and Pan, K.A. 2008. Diversity, endemism, and conservation of the amphibians and reptiles of southern Peninsular Malaysia and its offshore islands. *Herpetological Review*, **39(3)**: 270–281.
- Grismer, L.L. 2007. A new species of small montane forest floor skink (Genus *Sphenomorphus* Fitzinger 1843) from Southern Peninsular Malaysia. *Herpetologica*, **63(4)**: 544–551.
- Grismer, L.L. 2008. On the distribution and identification of *Cyrtodactylus brevipalmatus* Smith 1931 and *Cyrtodactylus elok* Dring 1979. *Raffles Bulletin of Zoology*, **56**: 177–179.
- Grismer, L.L. 2006. A new species of *Ansonia* Stoliczka 1872 (Anura: Bufonidae) from central peninsular Malaysia and a revised taxonomy for *Ansonia* from the Malay Peninsula. *Zootaxa*, **1327**: 1–21.
- Grismer, L.L., Grismer, J.L., Wood, P.L. Jr. and Chan, K.O. 2008. The distribution, taxonomy, and redescription of the geckos *Cnemaspis affinis* (Stoliczka 1887) and *C. flavolineata* (Nicholls 1949) with descriptions of a new montane species and two new lowland, karst-dwelling species from Peninsular Malaysia. *Zootaxa*, **1931**: 1–24.
- Hallermann, J. and McGuire, J.A. 2001. A new species of *Pseudocalotes* (Squamata: Agamidae) from Bukit Larut, West Malaysia. *Herpetologica*, **57**: 255–265.
- Inger, R.F., Stuart, B.L. and Iskandar, D.T. 2009. Systematics of a widespread Southeast Asian frog, *Rana chalconota* (Amphibia: Anura: Ranidae). *Zoological Journal of the Linnean Society*, **155**: 123–147.
- Leong, T.M. and Lim, B.L. 2003. A new species of *Rana* (Amphibia: Anura: Ranidae) from the highlands of the Malay Peninsula. *Raffles Bull. Zool.* **51(1)**: 115–122.
- Leong, T.M. and Lim, K.K.P. 2003. Herpetofaunal records from Fraser's Hill, peninsular Malaysia, with larval descriptions of *Limnonectes nitidus* and *Theloderma asperum* (Amphibia: Ranidae and Rhacophoridae). *The Raffles Bulletin of Zoology*, **51**: 123–136.
- Lim, K.K.P., Leong, T.M. and Lim, B.L. 2002. Herpetofaunal records from Cameron Highlands, Peninsular Malaysia. *Journal of Wildlife and Parks*, **20**: 49–57.
- Matsui, M. and Jaafar, I. 2006. A new cascade frog of the subgenus *Odorrana* from Peninsular Malaysia. *Zoological Science*, **23**: 647–651.
- Neeta, D.S. 2001. Brief microhabitat notes and discussions on five species of anurans from Fraser's Hill. In: Latiff, A., Zuriati, Z., Zaidi, M.I., Kamarudin, M.S., Noorazuan, M.H. and Laily, D. (Eds.). *Fraser's Hill: Physical, Biological and Socio-economic Environments*. Bangi: Universiti Kebangsaan Malaysia. pp. 174–180.
- Nicholls, L. 1949. A new gekkonid from the Malay Peninsula. *Bulletin of the Raffles Museum, Singapore*, **19**: 47–49.
- Norsham, Y. and Lim, B.L. 2002. A new species of mountain reed snake, *Macrocalamus gentingensis*, from Genting Highlands, Pahang, Peninsular Malaysia. *Hamadryad*, **27**: 83–89.
- Perumal, B., Petol, H.G., Mat-Salleh, K. and Latiff, A. 2001. Floristic composition and stand structure of tree population in submontane forest of Fraser's Hill. In: Bukit Fraser: Persekitaran Fizikal, Biologi dan Sosio-ekonomi. Latiff, A., Zuriati, Z., Zaidi, M.I., Kamarudin, M.S., Noorazuan, M.H., and Laily, D. (eds). University Kebangsaan Malaysia. pp. 289–310.

- Roberts, J.L., Brown, J.L., v. May, R., Arizabal, W., Schulte, R. and Summers, K. 2006. Genetic divergence and speciation in lowland and montane Peruvian poison frogs. *Mol. Phyl. Evol.* **41**: 149–164.
- Sahibin, A.R., Zulfahmi, A.R., Jasni, Y. and Muhammad Barzani, G. 2001. Soil characteristic of Fraser's Hill. In. Latiff, A., Zuriati, Z., Zaidi, M.I., Kamarudin, M.S., Noorazuan, M.H. and Laily, D. (Eds.). *Fraser's Hill: Physical, Biological and Socio-economic Environments*. Bangi: Universiti Kebangsaan Malaysia. pp. 1–10.
- Sly, G.R. 1976. New locality records for some peninsular Amphibia, Reptilia, and Mammalia. *The Malayan Nature Journal*, **29**: 155–157.
- Smedley, N. 1931. Amphibians and reptiles from the Cameron Highlands, Malay Peninsula. *Bulletin of the Raffles Museum*, **6**: 105–123.
- Smith, M.A. 1930. The reptilia and amphibia of the Malay Peninsula. A supplement to G.A. Boulenger's Reptilia and Batrachia, 1912. *Bulletin of the Raffles Museum* **3**: 1–149.
- Smith, M.A. 1922. On a collection of reptiles and batrachians from the mountains of Pahang, Malay Peninsula. *Journal of the Federated Malay States Museums*, **10**: 263–282.
- Smith, M.A. 1935. On a collection of reptiles and amphibians from Perak, Malay Peninsula. *Bulletin of the Raffles Museum of Singapore*, **10**: 61–63.
- Strange, M. 2004. *Birds of Fraser's Hill*. Nature's Niche Pte Ltd, Singapore.
- Wood, P.L. Jr., Grismer, L.L., Norhayati, A. and Juliana, S. 2008. Two new species of torrent dwelling toads *Ansonia* Stoliczka, 1872 (Anura: Bufonidae) from Peninsular Malaysia. *Herpetologica*, **64(3)**: 321–340.

