NOTES ON HERPETOFAUNA IN KUALA SUNGAI SERLOH, KRAU WILDLIFE RESERVE, PAHANG, MALAYSIA

Badmanathan Munisamy*, Muhamad Aminnurdin Bin Ahmad Lotffi & Mohd Faiz Bin Abd Halim

Department of Wildlife and National Parks (DWNP) Peninsular Malaysia, KM 10 Jalan Cheras, 56100 Kuala Lumpur, Malaysia.

**Corresponding author: badmanathan@wildlife.gov.my*

ABSTRACT

A herpetofauna survey in Krau Wildlife Reserve at Kuala Sungai Serloh was conducted between 18th and 27th September 2013 as part of National Biodiversity Inventory Programme. The main objective of the survey was to document the diversity of herpetofauna at this study area. Amphibians were sampled by hand at night, and reptiles were sampled during day and night using scoop net and snake tong. The captured individuals were photographed and morphology measurements were taken for species identification. A total of 26 individuals representing of 13 species were captured. Of these, nine species were amphibians from 6 families **(**Bufonidae = 1; Ranidae = 4; Dicroglossidae= 1; Rhacophoridae = 1; Microhylidae = 1; Megophryidae = 1), three species were snakes from one families (Colubridae) and one species of lizard from one family (Agamidae). Ranidae was the amphibian family with highest individuals (12) and species (4). The data collected from of this study will be useful for the sustainable management of fauna in Krau Wildlife reserve.

Keywords: Amphibians, Ranidae, Reptiles, scoop net, snake tong,

INTRODUCTION

Krau Wildlife Reserve (KWR) is the second largest protected area in Peninsular Malaysia after Taman Negara National Park, located in the state of Pahang. It was first established in 1923 as the Krau Game Reserve by British colonial, covering an area of 55,182 ha. The initial aim of KWR was to protect the wildlife habitat such as deer and gaur. The reserve had been re-gazetted on 1965 and 1968, and now covers an area of 62,395 ha (DANCED, 2001). KWR is managed by Department of Wildlife and National Park (DWNP). It is comprises of lowland and hill dipterocarp forests and drained by four major rivers, namely Sungai Krau, Sungai Lompat, Sungai Teris and Sungai Tekal. Gunung Benom within the reserve with the height of 2107 m a.s.l. is the tenth highest mountain in Peninsular Malaysia. KWR is rich in flora and fauna biodiversity including herpetofauna species.

The first comprehensive survey of herpetofauna in KWR was conducted in year 1967 at Gunung Benom (Grandison, 1972). Later, more herpetofauna species richness was conducted in this reserve including Sg. Chenderoh (Jasmin *et al*., 1999), Bukit Rengit (Salman *et al*., 1999; Norsham *et al.,* 2001), Kuala Gandah (Chan *et al*., 2008) and Lata Bujang (Nurolhuda *et al.,* 2011). The revised checklist of the herpertofauna in KWR has updated 60 species of amphibians and 61 species of reptiles (Norhayati *et al.,* 2011). However, the herpetofauna biodiversity resources in this area as yet to be completely investigate and documented. The main objective of the survey is to document the diversity of herpetofauna in the study area.

Study sites

The survey was carried out at Kuala Sungai Serloh, a confluence where Sg. Serloh and Sg. Lompat meet. Localities of survey area are along Kuala Sg. Serloh basecamp trails, and confluence of Sg. Serloh and Sg. Lompat streams.

METHODOLOGY

Sampling Methods

Amphibians sampling were actively and systematically done at night by a group of 4-5 people using headlights along the river bank, forest trail, water pools, puddles and suitable microhabitats. The amphibian can be easily located from their hidden place by their vocal call resonation and eyeshine due to headlight reflection. The encountered amphibians were caught by hand (Norhayati *et al.,* 2007a). Searching of reptiles was done during day and night using scoop net and snake tong. The captured specimens were photographed, measured, and identified. Among the parameters of the specimen measured were snout-vent-length, tibia, total body length, head width and body weight (Norhayati *et al*., 2007b). The identification was followed Inger and Stuebing (2005), Cox *et al*. (1998), and Norhayati *et al*. (2009).

Sample collection

The selected specimens were euthanised by injecting Tricaine (Ethly 3-aminobenzoate methane sulfonate salt) and liver biopsy was taken. The liver biopsies obtained were stored in microvial containing 95% ethanol (Norhayati *et al.,* 2008), and submited to Wildlife Genetic Resource Bank (WGRB), DWNP. The remaining body was fixed in 10% formalin.

RESULT

A total of 26 individuals comprising of 13 species were captured. Of these total species captured, nine species were amphibians from six family **(**Bufonidae 1; Ranidae 4; Dicroglossidae 1; Rhacophoridae 1; Microhylidae 1; Megophryidae 1), three species were snakes from Family Colubridae, and one species of lizard from Family Agamidae (Table 1). Ranidae was the highest amphibian family captured, with 12 individuals comprising four species. *Odorrana hosii* and *Hylarana labialis* were the most captured species from family Ranidae, with 5 individuals each, followed by *Phrynoidis asper* (4 individuals) from family Bufonidae. Some of the photos are shown in the Appendix 1.

Table 1. List of herpetofauna recorded.

	Family/Species	No. of individuals
Amphibians	**Bufonidae**	
	Phrynoidis asper	4
	Ranidae	
	Odorrana hosii	5
	Hylarana labialis	5
	Hylarana picturata	1
	Humerana miopus	1
	Dicroglossidae	
	Fejervarya limnocharis	2
	Rhacophoridae	
	Polypedates leucomystax	1
	Microhylidae	
	Calluella minuta	1
	Megophryidae	
	Megophrys nasuta	1
Reptiles	***Colubridae***	
	Lycodon effraenis	2
	Xenochrophis trianguligera	1
	Asthenodipsas malaccanus	1
	Agamidae	
	Aphaniotis fusca	1

DISCUSSION

This is the first record of herpetofauna for Kuala Sungai Serloh, KWR. The Ranidae was the most abundant amphibian family caught, and this reveals that most of the ranid frogs were the riparian species which dominantly inhabit streams and rivers (Norhayati *et al*., 2007b). Rivers and streams provide a variety suitable biotic and abiotic factor for the amphibians and reptiles to live and breed. However, the number of species captured was less than expected, probably due to the time constraints and limited coverage area. Current study recorded only one Bufonidae species, while 17 species were recorded in Peninsular Malaysia (Chan *et. al*., 2010), probably related to microhabitat preferences.

Species number captured can be improved by an intensive and long term survey which covers a larger study area, and by focusing the search in potential microhabitats such as surfaces and under leaf litter, woody debris, puddles rain pools and river streams. Herpetofauna survey is very useful for herpetologist to determine its distribution. In addition, this information will be helpful for management of protected areas and conservation of herpetofauna species.

ACKNOWLEDGEMENT

We wish to thank the organiser of the National Biodiversity Inventory Programme 2013, Department of Wildlife and National Parks. The study was funded by Ministry of Natural Resources and Environment, Malaysia**.**

REFERENCES

Chan, K.O., Norhayati, A. & Juliana, S. (2008). Kekayaan spesies herpetofauna di Kuala Gandah menggunakan kaedah perangkap lubang berpagar. In *Biodiversity Resources and Conservation Status in Peninsular Malaysia* (Sivananthan, E., Siti Hawa, Y., Abd Kadir, A. H., Hasdi, H., Lim, B. L., Rosli, H., Noorlidah, A., Shukor, M. N. & Rahmah, I., eds.). pp.71-84. Department of Wildlife & National Parks.

Chan, K.O., Daicus, B. & Norhayati, A. (2010). A revised checklist of the amphibians of Peninsular Malaysia. *Russian Journal of Herpetology*, **17(3)**: 202–206.

Cox, M.J., Dijk, P.P.V., Jarajin, N. & Kumthorn, T. (1998). A photographic guide to snakes and other reptiles of Peninsular Malaysia, Singapore and Thailand. United Kingdom: New Holland publisher.

DANCED (2001). Management plan for the Krau Wildlife Reserve 2002-2006. PERHILITAN: DANCED.

Grandison, A.G.C. (1972). The Gunong Benom Expediton. 1967. Reptiles and amphibians of Gunong Benom with a decsription of a new species of *Macrocalamus*. Bulletin of the British Museum (Natural History). *Zoology*, **23(4)**: 45-101.

Inger, R.F. & Stuebing, R.B. (2005). A field guide to the frogs of Borneo. Second Edition, Kota Kinabalu, Sabah: Natural History Publications.

Jasmi, A.S., Shaari, M.A., Norsham, Y. & Lim, B.L. (1999). Herpetofauna survey at Sungai Chenderoh, Perlok, Krau Wildlife Reserve, Pahang. *Journal of Wildlife and Parks,* **17**: 82-88.

Norhayati, A., Bharathyraja, T., Nurolhuda, N., Juliana, S., Daicus, B., Chan, K.O. & Shukor, M.N. (2007a). An annotated checklist of the amphibians at the Endau-Rompin National Park (Selai), Johor. *Journal of Wildlife and Parks*, **24**: 11-19.

Norhayati, A., Hazirah, A.H., Juliana, S., Daicus, B., Chan, K.O. & Shukor, M.N. (2007b). An account of the amphibians at Sungai Milo Sungkai Wildlife Reserve, Perak. *Journal of Wildlife and Parks*, **24**: 21-27.

Norhayati, A., Abdul Rahman, M.R., Juliana, S., Daicus, B. & Chan, K.O. (2008). A checklist of amphibians at Taman Negara Kelantan National Park, Kuala Koh, Peninsular Malaysia. *Journal of Wildlife and Parks,* **25**: 1-7.

Norhayati, A., Belabut, D.M., Juliana, S. & Chan, K. O. (2009). Amphibia My: Amphibians and Reptiles of Peninsular Malaysia. Available from: http://www.amphibia.my.

Norhayati, A., Juliana, S., Chan, K.O., Daicus, B., Fakhrul Hatta, H. & Khairul Nizam, K. (2011). A revised and up-dated checklist of the herpetofauna of Krau Wildlife Reserve. In Gunung Benom, Krau Wildlife Reserve, Pahang. Geology, Biodiversity and Socio-economic Environment (Latiff, A., Mohd Shafeea, L. & Norhayati, A., eds.), pp. 229-238. Academy of Sciences.

Norsham, Y., Leong, T.M. & Gary, L. (2001). Amphibians checklist of Bukit Rengit, Lanchang, Pahang. *Journal of Wildlife and Parks*, **19**: 123-124.

Nurolhuda, N., Sharma, D.S.K., Norhayati, A., Nurulhuda, Z., Sharifah Ruqaiyah, S.M., Lau, C.F. & Suhaimi, Y. (2011). Survey on herpetofauna at Lata Bujang Camp, Krau Wildlife Reserve. In *Gunung Benom, Krau Wildlife Reserve, Pahang. Geology, Biodiversity and Socio-economic Environment* (Latiff, A., Mohd Shafeea, L. & Norhayati, A., eds.), pp. 215-228. Academy of Sciences.

Salman, S., Pazil, A.P. & Sailun, A. (1999). A survey of the amphibians fauna in the Wildlife Training Centre, Lanchang at Krau Game Reserve, Pahang. *Journal of Wildlife and Parks,* **17**: 132-133.

Appendix 1. Pictures of Kuala Sungai Serloh herpetofauna; A: *Phrynoidis asper,* B: *Hylarana picturata,* C: *Polypedates leucomystax,* D: *Calluella minuta*, E: *Megophrys nasuta*, F: *Xenochrophis trianguligera*, G: *Asthenodipsas malaccanus,* H: *Aphaniotis fusca.*