

## **A REVISED AND UPDATED CHECKLIST OF HERPETOFAUNA OF TASEK BERA RAMSAR SITE, PAHANG, MALAYSIA**

**\*Badmanathan Munisamy<sup>1</sup>, Khairul Nizam Kamaruddin<sup>1</sup>, Noor Azleen Mohd Kulaimi<sup>1</sup>, Khairul Amirin Mohamed<sup>1</sup>, Hartini Ithnin<sup>1</sup>, Jeffrine Japning Rovie-Ryan<sup>1</sup>, Rahmat Topani<sup>1</sup>, & Subashini Manickam<sup>2</sup>**

<sup>1</sup>*Ex-situ Conservation Division, Department of Wildlife and National Parks (DWNP) Peninsular Malaysia, KM 10 Jalan Cheras, 56100 Kuala Lumpur, Malaysia.*

<sup>2</sup>*Faculty of Health Sciences, University Selangor (UNISEL) Shah Alam Campus, Jalan Zirkon A7/A, Seksyen 7, 40000 Shah Alam, Malaysia.*

\*Corresponding author's email: badmanathan@wildlife.gov.my

### **ABSTRACT**

Tasek Bera Ramsar Site (TBRS) is the largest freshwater wetland located in Pahang state of Peninsular Malaysia. This natural wetland has a unique, complex and diverging ecosystem, providing a sustainable habitat for various species of amphibians and reptiles. Several herpetofauna surveys of this wetland had been documented previously. We review these published herpetological literatures to prepare a comprehensive current revised checklist of herpetofauna species of TBRS. This revised and updated checklist of herpetofauna species reported 32 species of amphibians and 55 species of reptiles for TBRS, which equivalent to approximately 29% and 19% of the total number of amphibian and reptile species recorded in Peninsular Malaysia, respectively. This reviewed data of herpetofauna of TBRS will be helpful in the integrated management and conservation plan of wildlife species, specifically herpetofauna of TBRS.

**Keywords:** Survey, wetland, Tasek Bera Ramsar Site, amphibian and reptile, Pahang.

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## INTRODUCTION

Tasek Bera Ramsar Site (TBRS) is a natural freshwater wetland (GPS coordinate: 3°5'15"N 102°36'55"E / 3.08750°N 102.61528°E) located in Bera district, south-west of Pahang state of Peninsular Malaysia. The site covers 31,120 ha meanwhile the wetland covers 6,870 ha, contribute to the largest freshwater wetland in Peninsular Malaysia and the first to be protected under the Ramsar Convention in November 1994 (WIAP, 1999; Chong, 2017). The wetlands consist of diverging inflowing streams with freshwater and peat swamp forest (5,440 ha, 79%), open transition swamp forest (510 ha, 7%), filled with *Pandanus helicopus* and *Lepironia articulata* plants (800 ha, 12%), and open water (120 ha, 2%). The wetland is surrounded by dry lowland dipterocarp forests and disturbed forest.

Lying at 30-35m above sea level, TBRS is an example of inland riverine wetland system that has transformed into peat swamp topogenic due to the river channel blockage (WIAP, 1999). TBRS form a part of water catchment area of Pahang River. The Tasek Bera water drains through the Bera River into the South China Sea via Pahang River. TBRS annual rainfall is 1200-2500 mm, and the annual rainfall variation usually follows a bimodal pattern of Peninsular of Malaysia's monsoon season. The mean lake water temperature is 26.3°C (WIAP, 1999).

These varieties of the ecosystem and unique climates of TBRS support livelihood of diversity of flora and fauna including herpetofauna (WIAP, 1999). A total of 374 plant species has been recorded, of which 10 species are known to be endemic to Peninsular Malaysia (Giesen, 1998). Faunal diversity of TBRS consist of 453 vertebrate species comprising of 62 species of amphibians and reptiles, 94 species of fish, 230 species of birds, and 67 species of mammals (Chong, 2017). The Semelai tribe are the aborigines living around TBRS and estimated there are more than 3,500 of Semelai population living around Tasek Bera (Elagupillay *et al.*, 2008). They collect various forest products such as rattan, resin, bamboo, timbers, hunting of wildlife and fishing for their survival and livelihood (WIAP, 1999; Chong, 2017).

The lake also contributes to the ecotourism industry, biodiversity research site, conservation education and public awareness. Principally, TBRS is managed by Department of Wildlife and National Parks Peninsular Malaysia (DWNP) and assisted by other government agencies such as Forestry Department of Peninsular Malaysia, Department of Environment, Department of Fisheries and Department of Orang Asli Affairs Malaysia. Therefore, to assist the multi-agencies on the integrated management and conservation plan of faunal diversity, this paper provide a revised and updated checklist of amphibians and reptiles in TBRS.

## METHODOLOGY

This paper provides an overview of the herpetofauna of TBRS. Previously published literatures and biodiversity inventory reports on herpetofauna surveys of Tasek Bera from the year 1972 to 2019 were reviewed. There are a total of six different series of herpetofauna survey conducted previously in this Ramsar site (Kiew, 1972; Lim, 1998; Norsham *et al.*, 2000; Shaaruddin *et al.*, 2008; DWNP, 2009; Munisamy *et al.*, 2019). Reviewed data were tabulated, compared and discussed. Taxonomic identification follows the: Amphibia.My: Amphibians and Reptiles of Peninsular Malaysia by Norhayati *et al.* (2019) (<http://www.amphibia.my>); Amphibian Species of the World 6.0 by Frost (2019) (<http://research.amnh.org/herpetology/amphibia/index>); and The Reptile Database by Uetz *et al.* (2019) (<http://www.reptile-database.org>). The individual which were unidentified into species level in this review were excluded in the total number of amphibian and reptiles species counted for TBRS. The population trend and global status of the species follow the International Union for Conservation of Nature (IUCN) Red List of Threatened Species (IUCN, 2019).

## RESULTS AND DISCUSSION

The first survey of herpetofauna at Tasek Bera was recorded by Kiew (1972). The author describes seven species of frogs from five families. The described species are *Nectas subasper*, *Rana erythraea*, *Rana nicobariensis*, *Rana paramacrodon*, *Rana limnocharis* and *Rhacophorus leucomystax* (which were currently recognised by synonym of *Pseudobufo subasper*, *Hylarana erythraea*, *Amnirana nicobariensis*, *Limnonectes paramacrodon*, *Fejervarya limnocharis*, *Polypedates leucomystax*, respectively) and *Leptobrachium nigrops* (Table 1).

Subsequently, more herpetofauna were described and reported by Norsham *et al.* (2000) in three consecutive periods of survey between years 1997-1998, where more new species records for TBRS were described. A total of 60 species of amphibians and reptiles were recorded at 11 sites in TBRS which comprised 19 species of amphibians (frogs and toads), eight species of freshwater testudines, 15 species of lizards and 18 species of snakes (Norsham *et al.*, 2000). The 19 amphibians species collected in this survey were classified into five families (Megophryidae, Bufonidae, Ranidae, Rhacophoridae, and Microhylidae). However, the currently revised data recommends another additional family namely, Dicroglossidae. *Limnonectes blythii*, *Fejervarya cancrivora*, *F. limnocharis*, and *L. paramacrodon* (previously identified as *Rana (blythi) macrodon*, *Rana cancrivora*, *R. limnocharis*, and *L. (Rana) paramacrodon* respectively), which were formerly from Ranidae were regrouped into Dicroglossidae. The species *Bufo asper*, *Bufo melanostictus*, *Rana chalconota*, *R.*

*erythraea*, *Rana glandulosa*, *Rana hosei*, and *R. nicobariensis* were revived with new synonym; *Phrynoidis asper*, *Duttaphrynus melanostictus*, *Chalcorana labialis*, *H. erythraea*, *Pulchrana glandulosa*, *Odorrana hosii*, and *A. nicobariensis*, consequently (Table 1). Norsham *et al.* (2000) also recorded 18 species of snakes comprising of six families. The snake's family, Boidae, was substituted with Pythonidae, which includes *Malayopython reticulatus* (previously known as *Phyton reticulatus*) and *Python curtus*. The three freshwater snake species which were previously categorised into Colubridae; *Enhydris enhydris*, *Kualatahan pahangensis* (previously *Enhydris pahangensis*), and *Homalopsis buccata*, were re-categorised into Homalopsidae. The species name *Ramphotyphlops braminus* (Typhlopidae) and *Macropisthodon flaviceps* (Colubridae) were revived with new synonym of *Indotyphlops braminus* and *Rhabdophis flaviceps*, respectively. Among the 15 species of lizards recorded, three species *Cosymbotes platyurus*, *Draco fimbriatus*, and *Mabuya multifasciata* were now considered a synonym of *Hemidactylus platyurus*, *Draco punctatus*, and *Eutropis multifasciata*. The taxonomy of four turtle species that were formerly classified in Emydidae were revised and re-classified into Geoemydidae. *Pelochelys cantorii* (endemic to South and Southeast Asia) in this survey was misidentified as *Pelochelys bibroni* (which is endemic to New Guinea). A partial of this survey data were also published in Lim (1998).

Later, Shaaruddin *et al.* (2008) described the distribution and genetic diversity of frog species in TBRS, where they yielded eight different species, initially belonging to four families. The species recorded were *Bufo kumquat*, *R. erythraea*, *Rana hosii*, (current synonyms, *Ingerophrynus kumquat*, *H. erythraea*, and *O. hosii* accordingly), *F. cancrivora*, *L. blythii*, *P. leucomystax*, *Buergeria buergeri*, and *Microhyla heymonsi*. Later, the *F. cancrivora* and *L. blythii* species from Ranidae were re-grouped into Dicroglossidae. The discovery of *B. buergeri* in this survey were uncertain, as it is known to be endemic to the islands of Honshu, Shikoku, Kyushu in Japan (Frost, 2019) and further exploration is needed.

In the year 2009, DWNP conducted a herpetofauna survey at TBRS as a part of National Biodiversity Inventory Programme (NBIP) and documented 27 species of amphibians from six families, eight species of lizard from three families and five species of snakes from three families (DWNP, 2009). Six amphibian species described in this survey were revised and now identified with new synonym; *Bufo quadriporcatus* as *Ingerophrynus quadriporcatus*; *Limnonectes laticeps* as *Limnonectes khasianus*; *Hylarana (chalconota) labialis* as *C. labialis*; *Hylarana baramica* as *Pulchrana baramica*; *Hylarana glandulosa* as *P. glandulosa*, and *Hylarana nicobariensis* as *A. nicobariensis*. Similarly, two species of snakes, *Calliophis intestinalis* and *Rhabdophis rhodomelas* were revived from the synonymy of *Maticora intestinalis* and *Macropisthodon rhodomelas*. The findings of *Microhyla petrigena* species in TBRS is suspicious since this species

is previously not reported in Peninsular Malaysia and only distributed at Northern Borneo in south-eastern Sabah and central Sarawak (Malaysia), Brunei, central Kalimantan (Indonesia) and Sulu Archipelago of Philippines (Frost, 2019).

Subsequent, the second NBIP of TBRS was conducted in May 2014 to review the species richness in this natural wetland area. During the inventory, 17 species of herpetofauna consists of five species of frogs and toads, five species of snakes, and seven species of lizards were recorded (Munisamy *et al.*, 2019). *M. flaviceps* termed in this survey were then identified as *R. flaviceps*.

In summary, 87 species of herpetofauna (32 amphibians and 55 reptiles) were presence in TBRS. Among these, 52 species were identified as Least Concern; three Nearly Threatened; four Endangered; one Critically Endangered, and four Vulnerable, as categorised by the IUCN Red List of Threatened Species (Table 1) while the remaining 23 species have insufficient data available for any assessment to be conducted. Therefore, more studies and data survey are needed to update the status and population trend of herpetofauna, particularly in TBRS. The individual, *Polypedates* sp. (Norsham *et al.*, 2000), *Ansonia* sp., *Bufo* sp., and *Microhyla* sp. (DWNP, 2009) which were unidentified into species level in this reviews were excluded in the total number of amphibian and reptiles counted for TBRS to avoid possible duplicates counting of the same species. The frog species *M. petrigena* and *B. buergeri* was previously not reported in Peninsular Malaysia, hence the presence of these species in TBRS require further investigation and confirmation. *H. erythraea* was identified as the most dominant species of TBRS. This may be due to the lake's natural habitat suitability as this species inhabit subtropical or tropical moist montane forests, freshwater lakes, wetlands, introduced vegetation, and swamps (IUCN SSC Amphibian Specialist Group, 2014).

## CONCLUSION AND RECOMMENDATION

From the revised checklist of herpetofauna of TBRS, the amphibians were represented by 32 species from six families, and the reptiles were represented by 55 species from 14 families. These are approximately 29% and 19% of the total species number of amphibian and reptiles recorded from Peninsular Malaysia, respectively (Chan *et al.*, 2010; Grismer & Quah, 2019; Norhayati *et al.*, 2019). This revision provides a cumulative herpetofauna species for TBRS, which will be helpful in the integrated management and conservation planning of the site. Specifically, we recommend the following actions to be taken by the managing authorities of TBRS: 1) continuous monitoring of herpetofaunal population trend; 2) conduct comprehensive surveys and research on utilisation and harvesting of herpetofauna by local community; 3) establish *ex-situ* conservation

programmes for endangered and critically endangered species to protect them from extinction; and 4) sustainable management plan of habitats, populations, and associated recreational activities.

**Table 1** A revised checklist of the herpetofauna of TBRS with its population trend and global status by the International Union for Conservation of Nature Red List of Threatened Species (IUCN, 2019). IUCN Status: NA= Not Available; DD= Data Deficient; NT= Near Threatened LC= Concern; VU= Vulnerable; EN= Endangered; and CR=Critically Endangered. Population trend: I= Increasing; S= Stable; D=Decreasing; NA= Not Available; U=Unknown.

Family Species	Kiew (1972)	Norsham <i>et al.</i> (2000)	Shaaruddin <i>et al.</i> (2008)	DWNP (2009)	Munisamy <i>et al.</i> (2019)	Population Trend; IUCN Status
<b>FROGS AND TOADS</b>						
<b>Bufonidae</b>						
<i>Ansonia</i> sp.	-	-	-	√	-	-
<i>Bufo</i> sp.	-	-	-	√	-	-
<i>Duttaphrynus melanostictus</i>	-	√	-	-	√	I; LC
<i>Ingerophrynus kumquat</i>	-	-	√	-	-	U; EN
<i>Ingerophrynus quadriporcatus</i>	-	-	-	√	-	D; LC
<i>Phrynoidis asper</i>	-	√	-	√	-	U; LC
<i>Pseudobufo subasper</i>	√	√	-	√	-	D; LC
<b>Dicroglossidae</b>						
<i>Fejervarya cancrivora</i>	-	√	√	√	-	I; LC
<i>Fejervarya limnocharis</i>	√	√	-	√	√	S; LC
<i>Limnonectes blythii</i>	-	√	√	√	-	D; NT
<i>Limnonectes khasianus</i>	-	-	-	√	-	S; LC
<i>Limnonectes malesianus</i>	-	-	-	√	-	D; NT
<i>Limnonectes paramacrodon</i>	√	√	-	-	-	D; NT
<b>Megophryidae</b>						
<i>Leptobrachium hendricksoni</i>	-	-	-	√	-	U; LC
<i>Leptobrachium nigrops</i>	√	√	-	√	-	D; LC
<i>Megophrys nasuta</i>	-	√	-	-	-	S; LC
<b>Microhylidae</b>						
<i>Kalophrynus palmatissimus</i>	-	-	-	√	-	NA:NA
<i>Kaloula pulchra</i>	-	√	-	√	-	S; LC
<i>Microhyla berdmorei</i>	-	√	-	-	-	S; LC
<i>Microhyla butleri</i>	-	√	-	√	-	S; LC

Family	Species	Kiew (1972)	Norsham et al. (2000)	Shaaruddin et al. (2008)	DWNP (2009)	Munisamy et al. (2019)	Population Trend; IUCN Status
	<i>Microhyla heymonsi</i>	-	-	√	√	-	S; LC
	* <i>Microhyla petrigena</i>	-	-	-	√	-	NA; NA
	<i>Microhyla</i> sp.	-	-	-	√	-	-
	<i>Micryletta inornata</i>	-	-	-	√	-	S; LC
Ranidae							
	<i>Amnirana nicobariensis</i>	√	√	-	√	-	S; LC
	<i>Chalcorana labialis</i>	-	√	-	√	-	NA; NA
	<i>Humerana miopus</i>	-	-	-	-	√	U; LC
	<i>Hylarana erythraea</i>	√	√	√	√	√	S; LC
	<i>Odorrana hosii</i>	-	√	√	-	-	D; LC
	<i>Pulchrana baramica</i>	-	-	-	√	-	D; LC
	<i>Pulchrana glandulosa</i>	-	√	-	√	-	U; LC
Rhacophoridae							
	* <i>Buergeria buergeri</i>	-	-	√	-	-	S; LC
	<i>Nyctixalus pictus</i>	-	-	-	√	-	NA; NA
	<i>Polypedates colletti</i>	-	-	-	√	-	D; LC
	<i>Polypedates leucomystax</i>	√	√	√	√	√	S; LC
	<i>Polypedates</i> sp.	-	√	-	-	-	-
<b>SNAKES</b>							
Colubridae							
	<i>Ahaetulla prasina</i>	-	√	-	√	-	S; LC
	<i>Boiga dendrophila</i>	-	√	-	-	-	NA; NA
	<i>Boiga nigriceps</i>	-	√	-	-	-	U; LC
	<i>Chrysopelea ornata</i>	-	-	-	-	√	NA; NA
	<i>Chrysopelea paradisi</i>	-	√	-	-	-	S; LC
	<i>Dendrelaphis formosus</i>	-	√	-	-	-	S; LC
	<i>Dendrelaphis pictus</i>	-	√	-	√	-	NA; NA
	<i>Dendrelaphis striatus</i>	-	-	-	-	√	U; LC
	<i>Gonyosoma oxycephalum</i>	-	√	-	-	-	D; LC
	<i>Ptyas korros</i>	-	√	-	-	-	NA; NA
	<i>Rhabdophis flaviceps</i>	-	√	-	-	√	U; LC
	<i>Rhabdophis rhodomelas</i>	-	-	-	√	-	U; LC
Elapidae							
	<i>Calliophis bivirgatus</i>	-	-	-	-	√	NA; NA
	<i>Calliophis intestinalis</i>	-	-	-	√	-	S; LC
	<i>Naja sumatrana</i>	-	√	-	-	-	I; LC
	<i>Ophiophagus hannah</i>	-	√	-	-	-	D; VU

Family Species	Kiew (1972)	Norsham <i>et</i> <i>al.</i> (2000)	Shaaruddin <i>et al.</i> (2008)	DWNP (2009)	Munisamy <i>et al.</i> (2019)	Population Trend; IUCN Status
<b>Homalopsidae</b>						
<i>Enhydris enhydris</i>	-	√	-	-	-	U; LC
<i>Homalopsis buccata</i>	-	√	-	-	-	U; LC
<i>Kualatahan pahangensis</i>	-	√	-	-	-	NA; NA
<b>Pythonidae</b>						
<i>Malayopython reticulatus</i>	-	√	-	-	-	U; LC
<i>Python curtus</i>	-	√	-	-	-	U; LC
<b>Typhlopidae</b>						
<i>Indotyphlops braminus</i>	-	√	-	-	-	NA; NA
<b>Viperidae</b>						
<i>Tropidolaemus wagleri</i>	-	-	-	-	√	S; LC
<b>Xenopeltidae</b>						
<i>Xenopeltis unicolor</i>	-	√	-	√	-	S; LC
<b>LIZARDS</b>						
<b>Agamidae</b>						
<i>Aphaniotis fusca</i>	-	-	-	√	-	U; LC
<i>Bronchocela cristatella</i>	-	√	-	-	-	NA; NA
<i>Calotes versicolor</i>	-	√	-	-	-	NA; NA
<i>Draco punctatus</i>	-	√	-	-	-	NA; NA
<i>Draco maximus</i>	-	√	-	-	-	U; LC
<i>Draco melanopogon</i>	-	√	-	-	-	NA; NA
<i>Draco quinquefasciatus</i>	-	√	-	-	-	NA; NA
<i>Draco sumatranus</i>	-	-	-	√	-	U; LC
<i>Draco taeniopterus</i>	-	-	-	√	-	U; LC
<i>Draco volans</i>	-	√	-	-	-	U; LC
<i>Gonocephalus belli</i>	-	-	-	√	-	U; LC
<i>Gonocephalus grandis</i>	-	√	-	-	-	U; LC
<i>Gonocephalus liogaster</i>	-	√	-	-	√	NA; NA
<b>Gekkonidae</b>						
<i>Cyrtodactylus consobrinus</i>	-	-	-	-	√	NA; NA
<i>Gehyra mutilata</i>	-	-	-	-	√	NA; NA
<i>Gekko monarchus</i>	-	√	-	√	√	NA; NA
<i>Gekko smithii</i>	-	√	-	√	√	U; LC
<i>Hemidactylus frenatus</i>	-	√	-	√	-	S; LC
<i>Hemidactylus garnotii</i>	-	-	-	-	√	NA; NA
<i>Hemidactylus platyurus</i>	-	√	-	-	-	NA; NA

Family Species	Kiew (1972)	Norsham et al. (2000)	Shaaruddin et al. (2008)	DWNP (2009)	Munisamy et al. (2019)	Population Trend; IUCN Status
Scincidae						
<i>Eutropis multifasciata</i>	-	√	-	√	-	S; LC
Varanidae						
<i>Varanus nebulosus</i>	-	-	-	-	√	NA; NA
<i>Varanus salvator</i>	-	√	-	-	-	U; LC
<b>TURTLE AND TORTOISE</b>						
Geoemydidae						
<i>Cuora amboinensis</i>	-	√	-	-	-	NA; VU
<i>Heosemys spinosa</i>	-	√	-	-	-	NA; EN
<i>Orlitia borneensis</i>	-	√	-	-	-	NA; EN
<i>Siebenrockiella crassicollis</i>	-	√	-	-	-	NA; VU
Testudinidae						
<i>Manouria emys</i>	-	√	-	-	-	D; CR
Trionychidae						
<i>Amyda cartilaginea</i>	-	√	-	-	-	NA; VU
<i>Dogania subplana</i>	-	√	-	-	-	NA; LC
<i>Pelochelys cantorii</i>	-	√	-	-	-	NA; EN

**Note:** \*No previous data/records of the presence of these species in Peninsular Malaysia.

## REFERENCES

- 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.
- Chong, G. (2007). Tasek Bera: past, present and future. In *Colloquium on lakes and reservoir management: status and issues* (Anton, A., eds.), pp. 35-40. Putrajaya, Malaysia: Ministry of Natural Resources and Environment.
- DWNP. (2009). *Laporan Inventori Biodiversiti Tapak Ramsar Tasek Bera*. Kuala Lumpur: Department of Wildlife and National Parks. Unpublished.
- Elagupillay, S.T., Mokbolhassan, H.K. & Kassim, H. (2008). Tasek Bera: the co-management model employed to administer the first Malaysia Ramsar Site, Lake Governance Workshop, Putrajaya, Malaysia. Academy Sciences Malaysia.

Frost, D.R. (2019). Amphibian Species of the World: an Online Reference. Version 6.0. Available from <http://research.amnh.org/herpetology/amphibia/index.html>. (Version on 2nd January 2019).

Giesen, W. (1998). The habitats and flora of Tasik Bera, Malaysia: an evaluation of their conservation value and management requirements. In *Integrated management of Tasik Bera technical report series*. Kuala Lumpur: Wetlands International-Asia Pacific.

Grismer, L.L. & Quah, E.S.H. (2019). An updated and annotated checklist of the lizards of Peninsular Malaysia, Singapore, and their adjacent archipelagos. *Zootaxa*, **4545**: 230-248.

IUCN. (2019). The IUCN Red List of Threatened Species. Version 2019-1. Available from <http://www.iucnredlist.org>. (Version on 17 July 2019).

IUCN SSC Amphibian Specialist Group (2019). *Hylarana erythraea*. The IUCN Red List of Threatened Species 2014. Available from <http://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T58593A64131003.en>. (Version on 07 October 2019).

Kiew, B.H. (1972). Frogs of Tasek Bera. *Malayan Naturalist*, **25**: 130-134.

Lim, B.L. (1998). A baseline study on the reptilian and amphibian fauna of Tasek Bera. In *Integrated management of Tasek Bera technical report series*. Kuala Lumpur: Wetlands International - Asia Pacific.

Munisamy, B., Kamaruddin, K.N., Zamahsari, A.I., Ithnin, H. & Razali, M.F. (2019). Checklist of herpetofauna of Tasek Bera Ramsar Site, Pahang. *Journal of Wildlife and Parks*, **34**: 129-135.

Norhayati, A., Belabut, D.M., Juliana, S. & Chan, K.O. (2019). Amphibia.My: Amphibians and Reptiles of Peninsular Malaysia. Available from <http://www.amphibia.my>. (Version on April 2019).

Norsham, Y., Lopez, A., Prentice, R.C. & Lim, B.L. (2000). A survey of the herpetofauna in the Tasek Bera Ramsar Site. *Malayan Nature Journal*, **54**(1): 43- 56.

Shaaruddin, S., Kamarudin, K.R., Chowdhury, A.J.K., Nurhidayati, A.A. & Juliana, S. (2008). Distribution and genetic diversity of frog species in Tasek Bera, Pahang. In *19th intervarsity biochemistry seminar - science empowers change*. Selangor, Malaysia: University of Tunku Abdul Rahman (UTAR), Petaling Jaya Campus.

Uetz, P., Freed, P. & Hošek, J. (2019). The Reptile Database. Available from <http://www.reptile-database.org>. (Version on 2 October 2019).

Wetlands International-Asia Pacific (WIAP). (1999). *Tasek Bera Ramsar Site integrated management plan (1999-2004)*. Kuala Lumpur: Wetlands International - Asia Pacific.