

Preliminary Checklist of Herpetofauna of Mount Sago Along the Hiking Trail in the Dry Season

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ABSTRACT

Some pristine habitat in the region of west Sumatera is less-explored due to low number of herpetologists in the area. However, many species were described as new to science based on morphological or molecular approaches. We conducted preliminary study to uncover the diversity of amphibians and reptiles in mount Sago, Sumatera Barat. In this study, we surveyed the amphibian and reptiles in the dry season. We performed a visual encounter survey along the hiking trails to the mount peak. A group of 3 persons searched systematically in the potential habitat. We stop at two points where these were located close to the stream to focus the searching at the potential habitat. A small collection was made comprised 25 individuals of 7 families and 15 species. At lower altitude (1000 meter above sea level/m.a.s.l), we found *Chalcorana calconota*, *Fejervarya cancrivora*, *Odorrana hossii*, *Phrynoidis aspera*, *Microhyla heymonsi*, *Polypedates leucomystax*, *Megophrys nasuta*, *Limnonectes kuhlii*, *L. macrodon*. At higher altitude (2567) masl, we collected *Philautus polymorphus*, *Leptophryne borbonica*, *Leptobrachium hasseltii*, and the juvenile of *Broncochela hayeki*. The limited finding to amphibians and reptiles were caused by the time of survey which was conducted in the dry season. Amphibians and reptiles less-active during dry season to prevent the loss of excessive water.

Keywords: diversity, mount Sago, desiccation, rehydration andrographolide, bitter, epididymal, spermatozoa quality

1. INTRODUCTION

Bacterial resistance is one of the causes of increasing cases. Compared to other Sundaland islands, Sumatera is relatively poorly studied for its herpetological fauna. Some researchers indicated that Sumateran amphibian and reptile inventories are limited [1, 2, 3, 4]. However, some species were described as new taxa [4, 5, 6, 7, 8, 9, 10, 11, 12].

A survey has been conducted in August 2019 in mount Sago from the elevation of 1000 meter above sea level (masl) to 2567 masl. Although the collection is few in size, the information of herpetological fauna lists is important to uncover the species distribution in Sumatera Barat. Some researchers have revealed the herpetofauna communities in the dry season and wet season [13, 14]. Based on [15] BMKG (2019) dry season in Sumatera Barat, region Payakumbuh and Tanah Datar will end in August. Hence our survey, in this part of study, was conducted in the dry season.

2. MATERIALS AND METHODS

The survey was conducted in the dry season month of July 2019. We performed visual encounter survey [16] where a group of 3 persons systematically searched the frogs and

reptiles in the potential habitat along the hiking trail. We planned to survey 3 streams in this mountain but then only 1 stream that served as good habitat while 2 others were destructed by landslide occurred in March 2019. The two streams previously were pristine, many rocks covered by moss, slow water current, and clean water. Our visit was not at the right time according to the condition and the season. However, all specimens found were photographed and marked down the microhabitat. We make a herpetofauna checklist in a table and discuss their natural histories. Reptiles were identified following Das (2010) [17] while amphibians followed appropriate articles published for Sumatran frogs.

3. RESULT AND DISCUSSION

We found that although in the dry season, several genera of anuran were observed during our survey while only one reptile was observed in our survey. In the first stream at elevation of 1055 masl we observed ranid and dicroglossid along the contaminated stream. The landslide through the stream made many rocks are covered by sandy soil. No vegetation in the edge of the stream, only wet and dry rocks that be utilized by the group of frogs, and no tadpoles have been observed in that stream. In the second stream at elevation of 2019 m.a.s.l, we collect *Leptophryne*

borbonica, *Philautus polymorphus* and *Philautus. sp* which is likely similar with *P. refugii*. Although the calls of *P. polymorphus* were clearly heard by the surveyors, they were difficult to find due to steep topology of habitat thus only two individuals were collected. Microhylidae and Megophryidae were observed far from standing water

while bufonidae represented by two species was found near the water. *Phrynoidis aspera* was seldom to be found perching on the leaf with high about 1.2 m from the ground but we found it on leave.

TABEL 1. LIST OF HERPETOFAUNA OF MOUNT SAGO, SUMATERA BARAT

Family	Species	Number of individuals	Habitat
Bufonidae	<i>Leptophryne borbonica</i>	2	On rock in stream
	<i>Phrynoidis aspera</i>	1	On leave in the edge of stream
Megophryidae	<i>Leptobrachium hasseltii</i>	1	On the leave litter
	<i>Megophrys montana</i>	1	On the grass after rainfall
Rachoporidae	<i>Philautus polymorphus</i>	2	On the leaves near stream
	<i>Polypedates leucomystax</i>	2	Stick on the banana tree
	<i>Phylautus sp.</i>	1	On the leave near stream
Ranidae	<i>Odorana hossi</i>	2	On the rock near waterfall
	<i>Chalcorana calconota</i>	7	On the rock along the stream
Microhylidae	<i>Microhyla heymonsi</i>	1	On the soil
	<i>Microhyla sp.</i>	1	On the soil
Dicroglossidae	<i>Fejervarya cancrivora</i>	1	On the soil
	<i>Limnonectes macrodon</i>	1	In the stream, submerging partially
	<i>Limnonectes kuhlii</i>	1	In the stream, submerging partially
Agamidae	<i>Bronchocella hayeki</i>	1	On the stem on mahogany

Bufonidae

Leptophryne borbonica

(Fig. 1a-c)

Morphological characteristics. This species can be recognized by its smaller size compared to other bufonids. Black hourglass shape on the dorsum and red ventral of tibia. **Microhabitat.** The species mainly occurred in the edge of stream, on the rock in the stream and on vegetation on the stream. We found two individuals sitting on small leave on the stream with very little water flowing. The stream is rocky. **Distribution.** Sumatera, Java and Kalimantan. In Sumaterea Barat, it can be found in all regions.



Fig. 1. A male of *L. borbonica*; (a) dorsal, (b) ventral, and (c) lateral

Phrynoidis aspera

(Fig. 2)

Morphological characteristics. Highly tuberculated with projected snout. Parotoid gland is about 1 cm distance

behind the eye and it is almost rounded. **Distribution.** It can be found in all Sumatra Barat regions. **Microhabitat.** Found on the leave in the edge of the stream at night about 23.46 around waterfall.



Fig. 2. A male of *Phrynoidis aspera* found perching on the leave above the stream.

Megophryidae

Leptobrachium hasseltii

(Fig. 3a-c)

Morphological characteristics. Dorsum part is grey, no black circle pattern on it, head wider than body and large black eye. **Distribution.** In Sumatera it can be found in all regions. **Microhabitat.** This single specimen was collected in the tracking trails above leaf litter.



Fig. 3. A female of *L. hasseltii*; (a) dorsal, (b) ventral and (c) lateral

Rachoporidae

Philautus polymorphus

(Fig. 4a-f)

Morphological characteristics. Prominent conical tubercles on the eyelids, one individual has a white skin on the rostrum, small size frog, color variation among 2 observed individuals were highly variable. **Distribution.** In Sumatera Barat, this species can be found in Mount Merapi and Mount Sago. In Sumatera island it can be found in Jambi, Bengkulu, Sumatera Selatan and Lampung. **Microhabitat.** We collected 2 individuals of this species perching on the leave near the small stream at the elevation of 2019 masl.



Fig. 4. Two individuals of *P. polymorphus* showing morphological color variation; (a,b) dorsal part of the body, (c,d) lateral and (e,f) ventral of body).

Polypedataes leucomystax (Gravenhorst, 1829)

(Fig. 5)

Morphological characteristics. Reddish-brown skin in the dorsum. **Distribution.** The species existed in all regions of Sumatera island. **Microhabitat.** We found the species sticking on the banana plant in the afternoon approximately at 18.20. The species occurred in the plantation area at 853 masl.



Fig. 5. Single specimen of *P. leucomystax* stucked on banana plant.

Several studies have been conducted to appraise the herpetofaunal diversity of Sumatera Barat. Teynie et al (2010) conducted survey in Jambi province and Lake Maninjau (Sumatera Barat) and made collection of 17 amphibians species (16 anurans and 1 caecilia) and 38 reptiles species. Previously, Inger and Iskandar (2005) collected 30 species of anurans from Payakumbuh, northeast of Padang and Lubuk Sulasih.

Although Teynie et al (2010) surveyed in August which nowadays that month is dry season, He did not list what and how many species found in August. Moreover, November (when the rainy season starts) specimens may contribute much to the number of findings. While Inger and Iskandar (2005) surveyed 3 locations where of course the number much higher than ours.

Several studies have been showed the pattern of herpetofauna distribution pattern, richness and diversity in both rainy and dry season. Leyte-Manrique et al (2018) revealed that there was similar value of species richness between dry and rainy season but species diversity is higher in dry season than in wet, but the number of species is less in dry than in wet season. In other hand, the number of species in Ciremai National Park both in dry and wet season was similar (15 amphibians in rainy season and 14 species in dry season) [15].

Amphibian skin is special among other vertebrates because it is highly permeable which could allow exchanging gases for respiratory. The skin lacks any kind of vertebrates' skin structure like scales, feathers or fur. There for, water balance and water loss of the frog are the major physiological issue among biologist. Aquatic and semiaquatic frog acquire water easily but must deal with excessive water intake hence they excreted diluted urine, whereas terrestrial and arboreal frog deal with loosing water rapidly. To prevent dehydration, terrestrial and arboreal frog reduce the production of urine and their bladder could hold water as much as 20-25% of their body mass [18].

Among 6 families of anurans, 2 families were observed far away from water body but on the moist habitat while the others were found in the water or near it. It is well known among biologist that many frogs and other amphibians depended completely on standing water but some lineages have been success to life completely independent of standing water although they do require moist microhabitat [19]. Regardless of the need for water, stream might play crucial role in the breeding and also in the development of tadpole to adult frog [20]. Due to landslide which was occurred in March the stream along our hiking trails were contaminated with soil and sand which covered the rocks. No green vegetation observed in the stream, on the rock and in the edge of stream.

This collection of herpetofauna is very limited in terms of quantity, but this information is very important in the inventory of species and their distribution given the lack of herpetofauna information. Among mountains in Sumatera Barat, mount Sago is the less-explored by biologist, other mountains were studied by some herpetologists such mount Talang [5], Mount Singgalang and Mount Merapi[12]. Hence, further exploration might bring to the

discovery of unique distribution and speciation compared to other population in other mountains.

4. CONCLUSION

More surveys are needed including comprehensive study on single species to uncover the underestimated-diversity on Sumatra island

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