

## AMPHIBIAN DENSITY AND DIVERSITY IN A DISTURBED HABITAT IN BELUM TEMENGOR FOREST COMPLEX, PERAK , MALAYSIA.

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### ABSTRACT

A Rapid Visual and Auditory Encounter Survey (RVAES) of frogs and toads was carried out in a disturbed area of Belum Temengor Forest Complex, for three consecutive nights in August 2013. A search party comprising 4 persons scoured the grounds, locating the frogs and toads in the vicinity. Amphibian species were recorded by sight and calls. A total of 30 man-hours search effort were expended for the survey. The results showed that the study area harbour six species of anurans from four families, namely Bufonidae (one species), Microhylidae (three species), Ranidae (one species) and Rhacophoridae (one species). The most abundant species were the *Microhyla heymonsi* (26 individuals), followed by the *Polypedates leucomystax* (16 individuals), and the *Duttaphrynus melanostictus* (14 individuals), while two species were considered rare, namely *Microhyla butleri* (two individuals) and *Kaloula pulchra* (one individual). The diversity of amphibians in the area were analysed using the Shannon-Wiener, Simpson and Evenness Indices. Generally, the amphibian assemblage at the Belum Rainforest Resort is typical of disturbed area habitats.

**Keywords:** Anurans, *Microhyla heymonsi*, Microhylidae, Rapid Visual and Auditory Encounter Survey

### INTRODUCTION

The Belum Temengor Rainforest Complex (BTRC), which is believed to be around 130 million years old, is the largest continuous rainforest in Peninsular Malaysia. With an area of 300,000 ha, it is a home to about 3000 flowering plants, 64 species of ferns, 62 species of mosses and has a lake with 23 species of freshwater fishes (Belum Rainforest Resort, 2008). This area is undisturbed and was inaccessible to the general public prior to 1990s for security reasons. The area harbours 39 species of amphibians (Amirah *et al.* 2013), which is more than one third of the known amphibian species in Peninsula Malaysia (Chan *et al.* 2010). Most of the forest of BTRC is still pristine and undisturbed, however a large area of the Temengor forest has been given away to timber companies and logging has been going on for years. The BTRC is dissected by the East West Highway which was built in the 1980s, which separates the northern Belum from the southern Temengor part of the BTRC (Figure 1). Currently certain stretches of of the highway has been opened up to settlements and plantations on both sides, and disturbances are encroaching all along the highway.

Several amphibian surveys has been conducted in the BTFC, namely Kiew *et al.* (1995), Norsham *et al.* (2000), Sukumaran (2002), Grismer *et al.* (2004) and Amirah *et al.* (2013). Most of these studies covers the undisturbed primary forest, but no in a disturbed habitat of the BTFC. Therefore, this study were carried out to inventory the amphibian species present and determine the density and diversity of amphibians in a disturbed habitat of the BTFC.

## METHODOLOGY

### Study Site

The site chosen for the project is the ground of the Belum Rainforest Resort (5° 32' 36" N, 101° 20' 29" E; c. 300 m a.s.l) on Banding Island, in the district of Gerik, Perak. It lies on the southern side of the East-West Highway connecting Gerik, Perak to Jeli, Kelantan. The resort, was built for ecotourists who use it as a launching area for travels within the huge BTRC, or for those who like to rest and recuperate in the setting of nature.

### Field methods

A group of 4-5 persons were locate and record the presence of amphibian species in the area, from 2100 hrs to 2300 hrs. Frogs and toads were located by active searching with the help of headlamps and handheld torch lights, and its vocal calls were used to locate in wet areas, under vegetation mats, in the undergrowth and flowerbeds all over the grounds of the resort. A total of 30 man-hours search effort were spent for this survey.

## RESULTS AND DISCUSSION

A total of 67 individuals of amphibian comprising six species from four families were captured (Table 1). The family Microhylidae was represented by three species, while the other three families were represented by one species each.

Table 1. List of anuran species captured in the study area.

Family	Species	No.
Bufonidae	<i>Bufo melanostictus</i>	14
Microhylidae	<i>Kaloula pulchra</i>	1
	<i>Microhyla butleri</i>	2
	<i>Microhyla heymonsi</i>	26
Ranidae	<i>Hylarana nigrovittata</i>	8
Rhacophoridae	<i>Polypedates leucomystax</i>	16
Total		67

The most abundant species was *Microhyla heymonsi*, followed by *Polypedates leucomystax* and *Bufo melanostictus*, whereas two species, namely *M.butleri* and *Kaloula pulchra* were considered rare. The Shannon-Weiner Diversity Index (H) and Simpson Diversity Index (D) were calculated at 2.10 and 0.75, respectively, showing that the amphibian assemblage there is moderately diverse, while the Simpson Evenness Index (J) was 0.81, which shows that community was evenly spread across species. Current survey added two additional species to the existing list of amphibians in BTFC (Amirah et al., 2013), this make up a total of 107 species to the area.

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