

## HABITAT PREFERENCES OF THE BORNEAN HORNED FROG, *Megophrys nasuta* (SCHLEGEL, 1858) (ANURA: MEGOPHRYIDAE) IN SARAWAK

ELVY QUATRIN DEKA<sup>1</sup>, RAMLAH ZAINUDIN\*<sup>1</sup> AND AIDA SHAFREENA AHMAD PUAD<sup>2</sup>

<sup>1</sup>Department of Zoology, <sup>2</sup>Department of Plant Science, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia.

\*Corresponding author: zramlah@unimas.my

**Abstract:** Habitat clearance changes the ecological conditions in adjacent remnants and reduces the range of frog dispersal. Movement between remnants is possible for widely distributed *Megophrys nasuta*, thus this species could be a habitat generalist and able to disperse throughout fragmented areas. This study aims to determine habitat utilization of Sarawak *M. nasuta* as well as investigating correlation between species' habitat preferences with ambient temperature and humidity. A total of 15 vegetation types, 20 horizontal positions, 16 vertical positions and 9 substrates were sampled from 2015-2017 throughout Sarawak. Chi-square and NMDS analyses showed that this species a habitat generalist yet specialized in its horizontal and vertical positions. The results supported the hypothesis of its wide dispersal throughout fragmented areas and implied that horizontal position plays an important role at determining their breeding site in an area. *Megophrys nasuta* showed a positive correlation to ambient temperature and vegetation type, indicating species' high tolerances with temperature at various forest types. The findings suggested that *M. nasuta* is a habitat generalist and a microhabitat specialist, reflecting its response towards habitat fragmentation. Thus, this study allows early identification of the species vulnerability towards extinction and targeting for species sustainability in near future..

Keywords: *Megophrys nasuta*, fragmented habitat, habitat generalist, microhabitat specialist, temperature.

### Introduction

Habitat destruction has become a major threat to species extinction and population decline in the rainforest areas throughout the world (Goldingay *et al.*, 1999). Rapid development, high demand for timber products and an increase in agricultural yields are among anthropogenic activities that contribute to massive deforestation, which lead to habitat fragmentation for flora and fauna. Habitat fragmentation may cause changes in the ecological conditions among the adjacent remnants. This is crucial to physically less defensive organisms such as amphibian species, where most species are highly dependent on their environment to provide shelter, food, breeding sites and moisture for the skin. Fragmented areas also reduce the range of species dispersal resulting in inbreeding among subpopulations of connected remnants

(Cushman, 2006). Movement between remnants is quite likely to some frog species, for example, the Bornean Horned frog species, *Megophrys nasuta* (Schlegel, 1858). This species possesses extensive dispersal range as reflected by its wide distribution throughout Sundaland (Inger & Stuebing, 2017). This may be possible due to its strategy to survive and sustain. *Megophrys nasuta* is a leaf litter frog of family Megophryidae that possesses extended skin appendages projected from the eyelids which mimic the leaf litters on the ground. This characteristic acts as a great tool to camouflage on forest floor against predators and prevent extensive desiccation when hiding under leaf litters during the daytime. Hence, microhabitat selection by frog species is vital to suit the adaptation strategy in the frogs' natural habitat (Bosch & Riva, 2004). Some reported that microhabitat variables may affect the thermoregulatory rate of most amphibians and