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House Crow in flight.

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Preliminary investigation on taxonomic status of sympatric *Tylonycteris* species in Malaysia

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Abstract: *Tylonycteris* or flat-headed bat is known for its taxonomic complex within this genus. This study attempts to investigate the complexity within *Tylonycteris* using morphometric approach. The result from 34 morphological characters of hierarchical tree constructed two major groups splitting each respective *Tylonycteris* species into Malaysia Peninsular and Borneo populations. It is suggested to revise the species name according to type specimen, as proposed by recent previous study. Conservation and taxonomic status of *Tylonycteris* requires immediate reassessment due to the cryptic nature of these species.

Keywords: *Tylonycteris*, taxonomy complex, morphological characters, cryptic

INTRODUCTION

Tylonycteris or bamboo bats are widely distributed, covering the tropical and sub-tropical regions of Asia (Corbet and Hill, 1992). Currently, there are two species in Malaysia, namely, *Tylonycteris robustula* and *T. pachypus*. Both species commonly roost in the internodes of bamboos, enters through the narrow slits created by beetles (Medway and Marshall, 1970; Phillips and Phillips, 2016). Recent finding of the new species under *Tylonycteris* in China (Feng *et al.*, 2008) had indicated that there is a complexity in the taxonomic status of this genus. As there is lack of research findings on these total-dependent bamboo bat species in Malaysia, a thorough morphological analyses were conducted on both external and internal characteristics to further investigate the complexity status within this genus. The woody bamboo vegetation is the main microhabitat for roosting, foraging and mating. This study is important to further explore its complexity in order to have a better management conservation plan on these species in Malaysia.

A total of 39 individuals of *Tylonycteris* consist of *T. pachypus* and *T. robustula* from Malaysia were subjected for morphometric study. Thirty-four morphological characters include external body and craniodentals were measured for discriminant function analysis (DFA) (Figure 1). Our findings indicate four significant characters (forearm (FA), fifth digit first (D5P1L), third digit first (D3P1L) and canine molar length or maxillary tooth row length (C1M3L)) can be used as point of reference in identifying *Tylonycteris* species.

These characters primarily reflect the body size of *Tylonycteris* species. In bats, the size of body does affect their flight behaviour, diet preference, roosting, reproductive behaviour and physiology (Swartz, Freeman and Stockwell, 2003). Smaller body size is an adjustment taken by the species to cope for space and resource shortage (Raia and Meiri, 2006). Both *Tylonycteris* species were found occupying the same internodes of bamboo (*Bambusa stenostachya*) but at different times. Most of the time, they were never found inside in the same internode at the same time (Zhang *et al.*, 2004). According to Medway and Marshall (1972) these two species were found roosting together once.

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