

## Morphological Variation in the Dusky Fruit Bat, *Penthetor lucasi*, in Sarawak, Malaysia

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**ABSTRACT.**— Morphological analysis of 70 adult individuals of the dusky fruit bat, *Penthetor lucasi*, was performed using 15 external characters and 18 craniodental characters. Multiple regression and discriminant function analysis (DFA) were applied to test the effects of sex, location and interaction between individuals in the study, and to determine and identify characters which are efficient in differentiating individuals among populations, respectively. Most characters were significantly affected by sex, locality and their interactions. Thus, separate analyses were done for both sexes. The fourth digit metacarpal length (D4MCL) and bulla length (BL) of males, and the hind foot (HF) and dental length (DL) of females, were suggested as the best predictors for the external and craniodental characters, respectively, in differentiating *P. lucasi* from different localities. These findings establish the morphological morphological variation between three geographically separate populations of *P. lucasi* within Sarawak. It is suggested that different ecological forces between populations, such as breeding, foraging behaviour, crowding effects and resource availability, could have been the moulding factors behind the observed morphological variations in the different *P. lucasi* populations.

**KEY WORDS:** *Penthetor lucasi*, Morphological, Discriminant function analysis

### INTRODUCTION

The Indo-Malayan region is of great interest to the evolutionary biologists and systematists in terms of its high biodiversity (Maharadatunkamsi et al., 2003). Within this region, Borneo is the third largest island in the world and is well-known for both its biodiversity richness and the Pleistocene episode, making it one of the most studied areas for its flora and fauna (Abdullah, 2003; MacKinnon et al., 1996). Nevertheless, new unidentified species or subspecies are continuously emerging from the island especially for mammals (Abdullah, 2003; Achmadi, 2010; Faisal, 2008; Hasan, 2009; Jayaraj, 2008).

Borneo has at least 17 species of megachiropterans, including the dusky fruit

bat, *Penthetor lucasi*. Being the only species assigned under the genus *Penthetor*, this species has gone through tentative taxonomic status from *Cynopterus* (*Ptenochirus*) *lucasi* Trouessart (1897) to *Ptenochirus lucasi* Trouessart (1904), which was later placed in the genus *Penthetor* by Andersen (1912). This bat is medium sized, with dark grey-brown upperparts and pale buffy underparts. The weight (WT) is around 30 to 40 g and they have large eyes. The forearm length (FA) ranges from between 57 to 62 mm, while its tail is eight to 13 mm in length (Payne et al., 1985). *P. lucasi* have a pair of lower incisors with the outer upper incisors shorter than the inner pair. It is widely distributed throughout southern Thailand, peninsular Malaysia, Riau Archipelago, Borneo (Abdullah et al.,