

Research Article

Morphometric analysis of Cantor's Roundleaf Bat, *Hipposideros galeritus* Cantor 1846 from several localities in Sarawak, Malaysia

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ABSTRACT. Changes on the body size of bats due to the ecological and environmental aspects usually acts as the indicator for niche preference. Morphological divergence resulting from the natural selection has contributed to discrimination of the same local population. This study attempts to reveal the population structure of Cantor's roundleaf bat, *Hipposideros galeritus* in Sarawak, using 27 morphometrical measurements of its external body, skull and dental characters. A total of 25 voucher specimens deposited in UNIMAS Zoological Museum representing three different localities at Bako National Park, southern Sarawak and northern Sarawak were examined during which all linear measurements were recorded and analysed using Discriminant Function Analysis (DFA) in the Statistical Package of Social Science (SPSS) programme. The result showed that ear length (EL), second molar tooth crown width (M2W) and mastoid width (MW) had significantly discriminated these populations into their own clusters, respectively. The independent clustering for each locality suggests that the population might be initially isolated and may represent different groups or possibly different subspecies. However, further analysis on molecular genetic studies should be highlighted in order to validate the population structure resulting from this morphological variation.

Keywords: Morphological variation, *Hipposideros galeritus*, Sarawak, Discriminant Function Analysis.

INTRODUCTION

Body size is commonly used as an indicator for niche preference as it is highly associated with many ecological attributes (Peters, 1983). Morphological divergence can occur between local populations due to strong differential natural selection (Maryanto *et al.*, 2005). In order to adapt to different habitat and environmental conditions, a particular bat species or population might undergo some changes or adjustment to their internal and external morphological characters that are associated in determining their ecology and behaviour (Findley, 1993; Birch, 1997; Fenton & Bogdanowicz, 2002). These characters include wing morphology, jaw structure, brain size, general extension dimensions and also geographical variations (Kunz, 1982; Findley, 1993; Rhodes, 2002).

Patterns of variation in morphological characters are essential for describing boundaries of evolutionary units in nature, apart from genetic traits (Reis *et al.*, 2002). Wehausen and Ramey II (2000) noted that morphological variation is a result of genetic and environmental components to individual development that possibly describe the genetic and ecophenotypic variation. In the study of paleontology, morphological variation is one of the key indicators used for taxonomic distinction at species- and genus-level (Stafford & Szalay, 2000).