

# The Utility of Microsatellite Markers in the Preliminary Study of the Genus *Cynopterus* in Peninsular Malaysia, Sabah and Sarawak Regions.

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## Abstract

Bats from genus *Cynopterus* is one of the widely distributed bats that can be found in the Indo-Malayan region. Recent studies using mitochondrial DNA data suggests that there is a cryptic species within *C. brachyotis* in Peninsular Malaysia up to southern Thailand. Based on these studies, forearm length is the only external morphological measurement that can be used to differentiate *C. brachyotis* and the cryptic species. In this study, *C. brachyotis* and *C. horsfieldii* in Borneo were included and examined using four selected existing microsatellite markers. However, in this preliminary study only basic information derived from the microsatellite data of *C. brachyotis* (with its cryptic species), *C. sphinx*, and *C. horsfieldii* were produced. A total of 93 alleles are generated. Generally most of the populations are deviate from the Hardy-Weinberg equilibrium. The generated result might elucidate the species boundaries and phylogenetic relationship of genus *Cynopterus* in the further study.

## Introduction

Cynopterans fruit bats also known as Dog-faced fruit bats are one of the widespread species in the Indo-Malayan region (Corbet and Hill, 1992). They consume fruits and nectar; hence they are one of the pollinators of the natural environment (Fujita, 1991; Bates and Harrison, 1997; Payne *et al.*, 1985). There are five species have been described so far namely *C. brachyotis*, *C. sphinx*, *C. titthaechelus*, *C. horsfieldii* and *C. nusatenggara* (Kitchner and Maharadatunkamsi, 1991; Corbet and Hill, 1992). Out of these five species, *C. brachyotis*, *C. sphinx* and *C. horsfieldii* can be found in Malaysia including Sabah and Sarawak region.

These fruit bats look similar to each other where most of the external characteristics are overlapping and the morphological differences have not been clearly described (Tate, 1942; Payne *et al.*, 1985; Simmons, 2005). The species boundary of these five species has many uncertainties and the taxonomic status of these species remains unclear (Corbet and Hill, 1992). Several studies had been carried out to shed the light on the species boundary of this genus using mitochondrial DNA, nuclear DNA and morphological analysis (Abdullah, 2003; Campbell *et al.*, 2004; Jayaraj *et al.*, 2004; Pathe, 2006). The authors came with similar conclusion that there is a cryptic species within *C. brachyotis* populations and these two species occupy different habitats. Recently Campbell *et al.* (2006) examined the cynopterans fruit bats found within Peninsular Malaysia using the