



Research Article

# Interspecific variation in the diet of *Symphalangus syndactylus* and *Macaca nemestrina* at Genting Highlands, Pahang, Peninsular Malaysia

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## Abstract

Primate communities in the Genting Highlands consist of a single species of Hylobatidae and four species of Cercopithecidae, which are known to exhibit social interaction behaviour. Thus, a study on the diets of *Symphalangus syndactylus* (siamang; family Hylobatidae) and *Macaca nemestrina* (pig-tailed macaque; family Cercopithecidae) was carried out at Genting Highlands, in order to compare the dietary preferences and interspecific competition between the two primate families. A DNA metabarcoding approach

was used to analyse diet intake using non-invasive samples based on the trnL region. Based on the 140 amplicon sequence variants (ASVs) generated, 26 plant orders, 46 different families, 60 genera and 49 species were identified from 23 different plant classes. Fabaceae and Moraceae were classified as the most preferred plants at the family level for *S. syndactylus*; meanwhile, Piperaceae and Arecaceae were classified as the most preferred for *M. nemestrina*. Only six out of the 60 different plant genera classified in this study, were found to be consumed by both species. Therefore, the low similarity of preferred plants in the diets between the two families suggests that there is little interspecific competition. These findings are important for future conservation management of highland primates, especially in the Genting Highlands.

## Keywords

Cercopithecidae, diet, DNA metabarcoding, Hylobatidae, interspecific competition

## Introduction

Genting Highlands is a potential highland area for ecotourism, with a height of 1770 m a.s.l. and has several residential neighbourhood hotels, amusement parks and casinos at the top (Peh et al. 2011). It is located in Bentong, Pahang. Despite the hilltop of the Genting Highlands being opened for amusement and tourism activities, approximately 4297 ha of the surrounding logged forest is being protected for sustainability purposes (Peh et al. 2011). The foothills and peaks of Gunung Bunga Buah and Gunung Ulu Kali have been identified as suitable flora conservation sites (Ariffin and Kumari 1989, Kumari 1989). The area is predicted to have over 460 types of flowering and non-flowering plants, divided into 90 families. In terms of fauna diversity, the Genting Highlands has diverse wildlife, including 18 amphibian, 134 bird, 42 mammal and 18 reptile species (Musthafa and Abdullah 2019). Nevertheless, the continuous rapid development of the surrounding area in the Genting Highlands has impacted the forest area, thereby altering the composition of flora and fauna species (Chua and Saw 2001). Chua and Saw (2001) also noted a dramatic decrease in floral variations in the Genting Highlands because of significant environmental changes.

Early reports have identified a few species of primates in the Genting Highlands, including *Symphalangus syndactylus*, *Trachypithecus obscurus*, *Presbytis siamensis*, *Macaca nemestrina* and *Macaca fascicularis* (Md-Zain et al. 2021). Conducting studies on primate species within the Genting Highlands is suitable because it provides an excellent habitat for primates with a relatively preserved area, free from logging activities that could obstruct the primate's access to food or shelter (Azmi 2021). Furthermore, the occurrence of mixed-species associations within the primate communities in the Genting Highlands was previously observed to have social interaction with each other in close proximity (Md-Zain et al. 2021). Based on these results, it was also stated that *S. syndactylus* exhibited non-hostile interactions since it made an effort to get close to other species, including *M. fascicularis* and *T. obscurus*. An interaction that involves any two or more species that live