

A Review of Primate Research and Conservation in Sarawak, Malaysia

Tukiman Nur-Aizatul^{1,2}, Mohammad Noor-Faezah^{1,2}, Tingga Roberta Chaya Tawie^{2,3}, Mohamad Fhaizal Bukhori², Jayasilan Mohd-Azlan⁴, Azroie Denel⁵, Badrul Munir Md-Zain³, Muhammad Abu Bakar Abdul-Latiff⁶, Abd Rahman Mohd-Ridwan^{2*}

¹Animal Resource Science and Management, Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

²Centre for Pre-University Studies, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

³Department of Biological Sciences and Biotechnology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43000 Bangi, Selangor, Malaysia

⁴Institute of Biodiversity and Environmental Conservation, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

⁵Sarawak Forestry Corporation, Kota Sentosa, Sarawak, Malaysia

⁶Environmental Management and Conservation Research Unit (eNCORe), Faculty of Applied Sciences and Technology (FAST), Universiti Tun Hussein Onn Malaysia (Pagoh Campus), 84000, Muar, Johor, Malaysia

*Email: armridwan@unimas.my

Received: 26 May 2023 / Revised: 25 August 2023 / Accepted: 29 August 2023/ Published online: 31 August 2023.

How to cite: Nur-Aizatul, et al. (2023). A Review of Primate Research and Conservation in Sarawak, Malaysia, *Journal of Wildlife and Biodiversity*, 7(Supplementary issue), 69-95. DOI: <https://doi.org/10.5281/zenodo.10023073>

Abstract

Sarawak is home to a diverse array of primate species in Malaysia, i.e., 14 species from five families. Over the years, many studies on primates' behavior, ecology and conservation have been conducted in Sarawak. Here, we provide a comprehensive overview of previous primate studies in Sarawak from 1960 to 2022 and discuss primates' threats, conservation status, and initiatives. Despite the vast number of these primate studies, the majority of them only focus on proboscis monkeys (n=24) and orangutans (n=21) and lack comprehensive studies that cover all primate species in Sarawak. Studies on ecology and natural history were the most prevalent for all Sarawak primate genera (n=51), accounting for more than half of publications. Thus, it advocates a more holistic approach to fill the knowledge gaps and meet conservation needs. Conservation efforts are urgently needed to protect primates currently threatened by deforestation, habitat fragmentation, hunting, and illegal trade. However, conservation efforts may be restrained by the limited information on primates in Sarawak. To preserve the primates in Sarawak, a robust protection strategy that synergizes the participation of government authorities, non-government organizations, and local communities needs to be developed.

Keywords: Sarawak primates, Primate research, Conservation, Threats, Endangered species

Introduction

Malaysia has a wide range of primate species; the number of non-human primates in Malaysia varies depending on the primatologist (Brandon-Jones *et al.* 2004; Roos *et al.* 2014). An estimated number of 26 species, from nine genera in five families, including nocturnal primates from the Lorisidae and Tarsiidae families and diurnal primates from the Cercopithecidae, Hylobatidae, and Hominidae families, were found in Malaysia (Md-Zain *et al.* 2019; Roos *et al.* 2014). Furthermore, Peninsular Malaysia has 13 species and 6 genera, whereas Malaysian Borneo has 15 species and 8 genera. Sarawak has 14 primate species from eight genera, including *Cephalopachus*, *Nycticebus*, *Macaca*, *Presbytis*, *Trachypithecus*, *Nasalis*, *Hylobates*, and *Pongo* (Table 1). Sarawak also hosts Bornean endemic species, such as the proboscis monkey (*Nasalis larvatus*), orangutan (*Pongo pygmaeus*), and Bornean banded langur (*Presbytis chrysomelas*).

To date, 91% of primate species in Asia are declining (Amano *et al.* 2021). According to the International Union for Conservation of Nature (IUCN), the disappearances of primate populations were primarily driven by the loss of habitat due to agricultural practices, commercial development (e.g., road construction), deforestation (e.g., logging), and livestock farming, in addition to direct losses incurred through hunting and poaching (Estrada *et al.* 2017). Primates are also facing new challenges, such as pollution, climate change, and disease (Chapman & Peres, 2021). In Malaysia, primates are vulnerable to habitat destruction, degradation, and habitat fragmentation. In addition, Malaysian primates are hunted and illegally traded for food, kept as pets, and used for traditional medicine (Brodie *et al.* 2014; Lappan & Ruppert, 2019; Yi & Mohd-Azlan, 2018).

Primate studies are urgently needed to obtain crucial information about primates, including their food preference, social dynamics, territoriality, habitat preference, and carrying capacity (Shook *et al.* 2019). Scientists have emphasized the need to study how distinct primate species react to anthropogenic disturbances; how climate change affects their behavior, distribution, and habitat; and the relevance of primate biodiversity hotspots (Estrada *et al.* 2018; Shook *et al.* 2019). In this review, we delved into past and present studies on each of the primate genera in Sarawak by analyzing the number and the subject of papers published over 60 years, from 1960 to the recent year. Moreover, we outlined some of the issues that need to be elucidated.