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Short Notes on The Diversity of Butterflies (Order: Lepidoptera) at Selected Residential Areas in Sematan, South-Western Sarawak

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ABSTRACT

Diversity and abundance of butterflies in Sematan area of South-Western Sarawak are studied. In Borneo, 944 different species of butterflies have been documented. In tropical countries, butterflies are essential for monitoring ecological pollination, part of food chain development, temperature change and the degradation of the environment. The study was carried out in order to better understand the presence and variety of butterflies in residential areas at Sematan. The natural vegetation of the area consists of shrubs, herbs, grasses, and tall trees such as Family Malvaceae. Aerial scoop nets were used for the collection in eight residential areas in Sematan. A total of 515 specimens belonging to 63 genera and six families were identified. The family Nymphalidae is the most abundant with 35 genera and 61 species. The family Nymphalidae has the highest Shannon-Wiener Index at 2.63 and the Simpson Diversity Index of 0.92. Nymphalidae are significant in abundance and common species widely distributed in the lower elevation of coastal areas. The occurrence of available adult plant resources and larval host plants contributed to the high diversity of Nymphalidae butterflies. Findings from this study are hoped to contribute to the existing data collection of butterflies especially in Sematan, and for future management and conservation of the native butterflies in Sematan.

Keywords: Butterfly, Lepidoptera, diversity, Sematan, Nymphalidae

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Jabatan Muzium Sarawak

SHORT NOTES ON THE DIVERSITY OF BUTTERFLIES (ORDER: LEPIDOPTERA) AT SELECTED RESIDENTIAL AREAS IN SEMATAN, SOUTH- WESTERN SARAWAK

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Diversity and abundance of butterflies in Sematan area of South-Western Sarawak are studied. In Borneo, 944 different species of butterflies have been documented. In tropical countries, butterflies are essential for monitoring ecological pollination, part of food chain development, temperature change and the degradation of the environment. The study was carried out in order to better understand the presence and variety of butterflies in residential areas at Sematan. The natural vegetation of the area consists of shrubs, herbs, grasses, and tall trees such as Family Malvaceae. Aerial scoop nets were used for the collection in eight residential areas in Sematan. A total of 515 specimens belonging to 63 genera and six families were identified. The family Nymphalidae is the most abundant with 35 genera and 61 species. The family Nymphalidae has the highest Shannon-Wiener Index at 2.63 and the Simpson Diversity Index of 0.92. Nymphalidae are significant in abundance and common species widely distributed in the lower elevation of coastal areas. The occurrence of available adult plant resources and larval host plants contributed to the high diversity of Nymphalidae butterflies. Findings from this study are hoped to contribute to the existing data collection of butterflies especially in Sematan, and for future management and conservation of the native butterflies in Sematan.

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INTRODUCTION

Butterflies are very diverse and abundant insects with many different body sizes, wing patterns and colours (Ghazanfar *et al.*, 2016). Butterflies are species in the order Lepidoptera, which comprise of six families: Papilionidae, Nymphalidae, Pieridae, Hesperidae, Riodinidae and Lycaenidae (Melendez-Jaramillo *et al.*, 2019). According to Nieukerken *et al.* (2011), approximately 155,000 species of Lepidoptera are well documented worldwide. A total of 944 butterfly species have been described in Borneo (Otsuka, 2001).

In tropical countries, butterflies are important as ecological pollinators and part of the food chain (Ismail *et al.*, 2018). It also plays a significant role in monitoring climate change and environmental degradation (VenkataRamana, 2010). Climatic seasonality such as wind, light, temperature and humidity allow butterfly species to reproduce continuously throughout the year (Abrahamczyk *et al.*, 2011). In Pahang, the records of 125 species of butterflies belonging to five families at Tasek Bera were compiled by Tan *et al.* (2015). Another study reported about 40 species of butterflies in six families and 27 genera in Gunung Ledang National Park, Johor (Hasnizan *et al.*, 2021).

Studies on butterfly diversity have been conducted in different habitats in Sarawak. A study conducted by Gintoron and Abang (2014) documented a total of 24 species with 13 genera collected in a peat swamp forest, Kota Samarahan. In a survey by Hilo *et al.*, (2022) at second forest vegetation at Bau, they reported 63 species belonging to six families in 35 genera of butterflies. Christharina *et al.* (2022) further captured 49 species of Nymphalidae butterflies in Kubah National Park, Kuching.

Butterflies are the most important ecological indicators of the health of an environment (Ghazanfar *et al.*, 2016). The diversity of butterflies and their caterpillars are dependent on their specific adult food resources as well as host plants in the environment (Padhye *et al.*, 2006). However, urbanisation including building structures and road development, can reduce the diversity and abundance of butterfly (Kocher and Williams, 2000). This study was conducted to investigate the occurrence and diversity of butterflies in village areas in Sematan, South-Western Sarawak.

MATERIALS AND METHODS

The present study was conducted between May and October 2019 and June to November 2022 in Sematan, Sarawak. The collections were conducted continuously for seven days each month. Butterflies are diurnal species, so the specimens were collected during daytime when they are actively foraging.