

Temporal Diversity of the Nymphalids in Kubah National Park, Sarawak, Malaysia

CHRISTHARINA S. GINTORON^{1*} AND FATIMAH ABANG²

¹Centre for Pre-University Studies, Universiti Malaysia Sarawak, 94300, Kota Samarahan, Sarawak, MALAYSIA

²2706 Lorong Cendrawasih 1C1, 93050 Kuching, Sarawak, MALAYSIA

*Corresponding author. Christharina S. Gintoron (sgchristharina@unimas.my)

Received: 28 July 2020; Accepted: 3 July 2021

ABSTRACT.– Unique microhabitats caused temporal-space separation which also indicates that animals are constrained in their flexibility to adapt to the environment. Arthropods was recorded to be temporally patchy within seasons, and in the tropical region, rainfall fluctuations are somewhat varied although only in a considerable range. These minute variations are still however observed to provide unique microhabitats to the insects and thus knowledge on the effects of the rainfall is still much required. To determine any distribution patterns of the nymphalid butterflies, bait-trapping was conducted from May to November 2009 in Kubah National Park, Sarawak. Even though there was a linear relationship between the total rainfall and numbers of nymphalids, there was no significant correlation between the nymphalids and rainfall distribution (p -value > 0.05). Rainfall in the preceded month could increase the overall nymphalids abundance which coincides with the leaf-flushing peak, suitably for the larval stages. In contrast, heavy rainfall during the data collection could also lead to larval mortality. Rainfall parameter and possibly many more environmental variables are important, as the distribution pattern of the nymphalids are strongly related to the environment.

KEY WORDS: diversity, rainfall, Nymphalidae, Kubah, Borneo

INTRODUCTION

Temporal variability has accentuated the numerical fluctuations of a particular population and undoubtedly present, as different communities and resources would have, annual, seasonal, and even diurnal periodicity (Lowman and Wittman, 1996; Saldana et al., 2007). With the high specificity and unique microhabitats, courtship has also involved a temporal-space separation, as different species acquired different time and location of perching (Prieto and Dahners, 2009). This also means that the nymphalids were evolutionary constrained in their flexibility to adapt with the environment. By incorporating both spatial and temporal variables to understand the community structure of nymphalids, accurate comparisons could be produced and subsequently contribute to conservation biology (DeVries et

al., 1997). This includes the effects of seasonality to the species abundance of insects which are present yet poorly known (Wolda, 1989; Anu et al., 2007), and thus initiate major interest among ecologists (Thomas, 1991; Molleman et al., 2006).

In the tropical region, the weather is not as distinct as in the temperate, and the temperature fluctuates only in a considerable range (Wolda, 1989; Hill et al., 2003). Borneo, which is in Southeast Asia, is aseasonal, where there is an absence of well-defined wet and dry periods (Hill et al., 2003; Kumagai et al., 2004; Beck et al., 2006). Considerable variations in the distribution patterns and the total amount of rainfall are somewhat evident (Harrison, 2001), and droughts could also happen, which are occasionally associated with the El-Niño Southern Oscillation (ENSO) (Harrison, 2001; Cleary and Mooers, 2004; Kumagai et al., 2004).