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Influence of climatic factors on the butterfly abundance in Kumaragala natural forest of Sri Lanka

W.M.B.M.B. Weerakoon[1]* and K.B. Ranawana[2]

[1] *Post Graduate Institute of Science, University of Peradeniya, Peradenuya, Sri Lanka*
[2] *Department of Zoology, Faculty of Science, University of Peradeniya, Peradenuya, Sri Lanka*

Butterflies are common inhabitants in every terrestrial habitat in the country. However, the species are not evenly distributed. This study was conducted to identify impact of climatic factors, mainly temperature, humidity and wind on butterfly abundance and diversity in Kumaragala forest reserve located in the intermediate zone of Sri Lanka. Systematic random line transects were used to collect abundance data. Five, 100m long transects were placed through the forest which are separated by 25m gaps. Abundance of all butterfly species and climatic factors (temperature, humidity, light intensity, wind speed, and cloud cover) were recorded in each transect. Field sampling was conducted once a week for a seven month period from January 2014. A total of 69 species were recorded during the study. Species diversity of butterflies in study area was calculated using Margalef's index (D_{mg}= 9.43). Canonical Correspondence Analysis (CCA) was performed to see whether butterfly abundance is determined by climatic factors. CCA showed that abundance of butterflies of family Hesperiidae increases towards high temperature and low humidity (Dryer conditions), butterflies of family Papilionidae increases with both cloud cover and humidity (wetter conditions), and the abundance of all butterfly families except Lycaenids decreased in high wind conditions. According to results, other butterfly families (Nymphelidae, Piriidae, and Riodinidae) do not showed a clear relationship with climatic variables. Also CCA results showed that June had high winds and July had comparatively high temperature. Results highlights that butterfly abundance in a natural forest mainly depend on local climatic conditions. Most of families of butterflies showed increased abundance under dry conditions.

Key words: Natural forest, Abundance, Temperature, Humidity

*buddhikavray@gmail.com