

Diversity and Abundance of Suborder Brachycera (Diptera) from Selected Oil Palm Plantation in Bukit Perah, Banting, Selangor.

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Structured Abstract

Background: Oil palm plantations often face negative perceptions due to their potential impacts on local ecosystems and communities. However, a recent study on Brachycera species in the Bukit Perah Oil Palm Plantation, which supports diverse and abundant Diptera populations, shows that well-managed oil palm fields can support biodiversity. The objective of this study is to establish a baseline for future biodiversity research by quantifying the diversity and abundance of Brachycera at specific sampling sites. This study is valuable for oil palm plantation management and may serve as a reference for future research.

Methods: Three Malaise traps were used to capture samples of Brachycera (flies), with each trap bottle half-filled with 70% alcohol. The traps were placed at three different plots: the edge, the middle, and the inner plantation, with approximately 100 meters between each trap. They were left unattended for one month. All the data were analysed using diversity indices such as the Shannon-Wiener Diversity Index, Evenness Index, and Kruskal-Wallis Index.

Results: A total of 2088 individuals from 22 families and 105 morphospecies were identified from three distinct plots. The inner plot recorded the highest number of Brachycera collected with 2071 individuals (20 families, 94 morphospecies). The middle plot obtained 11 individuals (5 families, 10 morphospecies). The edge plot recorded the least abundant of Brachycera with only 6 individuals (4 families, 5 morphospecies). The Kruskal-Wallis test shows that there was a significant difference ($P < 0.05$) in the distribution of Brachycera among the landscapes. Diversity indices revealed that Inner trap had the highest Shannon-Wiener Diversity Index ($H' = 1.740$) and Margalef Index ($R' = 2.488$) compared to middle trap ($H' = 1.468$, $R' = 1.668$) and edge trap ($H' = 1.330$, $R' = 1.674$). Edge trap had the highest Evenness Index ($E' = 0.9449$) compared to middle trap ($E' = 0.8682$) and inner ($E' = 0.3007$).

Conclusion: In conclusion, the findings of this study indicate that understanding Brachycera abundance and distribution in oil palm environments is key to recognizing their ecological role, potentially mitigating deforestation impacts and promoting biodiversity within these agricultural landscapes.

Keywords: Brachycera, Oil Palm Plantation, Diversity and Abundance, Shannon-Wiener Diversity Index, Evenness Index

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