

Diversity and Abundance of Suborder Nematocera (Diptera) at Selected Oil Palm Plantation in Bukit Perah, Banting

Sharifah Nursyuhairah Syed Roslan^a, Siti Khairiyah Mohd Hatta^{a*}

Structured Abstract

Background: Oil palm trees (*Elaeis guineensis*) are tropical plants mostly grown for palm oil production. The expansion of oil palm plantations is said to be the factor that causes biodiversity loss, especially animals. Among the animals that inhabit oil palm plantations are mosquitoes from suborder Nematocera and order Diptera. A study on the diversity and abundance of suborder Nematocera is scarce and has never been conducted in Bukit Perah, Banting.

Methods: This study aims to determine the diversity of abundance under the suborder Nematocera in the plantation and to compare their distribution at three different landscapes within the plantation using malaise traps. One malaise trap was placed at each landscape (edge, inner, and interior) for a month before the samples were collected, sorted, and identified into their respective families. The distance between each trap was approximately 100 metres.

Results: Overall, a total of 3518 individuals of Nematocera consisting of 13 families and 72 morphospecies were collected in this study. The most abundant family was Phycodidae with 1767 individuals while the least abundance was from family Sciaridae with only one individual recorded. The Shannon Weiner Diversity (H') showed the interior had a higher diversity value with $H' = 1.46$. The Margalef Index (R') showed the inner had higher with $R' = 1.57$ while the edge had the most evenness value with $E' = 0.99$. The distribution of Nematocera across all landscapes differs significantly ($P < 0.05$) using Kruskal Wallis test.

Conclusion: Overall, this study showed that the diversity and abundance suborder Nematocera were higher at interior landscape compared to edge and inner landscape might be due to the abiotic factors such as sunlight exposure, temperature, humidity, and mulching treatments. This study will provide knowledgeable information on the existence of insects especially the suborder Nematocera in the oil palm ecosystem and combat the negative perceptions of the low diversity in the agroecosystems.

Keywords: Suborder nematocera, oil palm plantation, Shannon Weiner Diversity (H'), Margalef Index (R'), Evenness Index

*Correspondence: sitikhairiyah@uitm.edu.my

^a School of Biology, Faculty of Applied Sciences, Universiti Teknologi MARA, Shah Alam, Malaysia