



Diversity, Distribution and Co-occurrence of Genus *Aedes* (*Culicidae*) through Rural and Urban Settings in Kalutara District, Sri Lanka

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ABSTRACT

Most of the entomological surveys target only the vector mosquitoes and distribution of different species were limitedly documented. So, this study was designed to understand diversity, distribution and co-occurrence of *Aedes* species through rural and urban settings in Kalutara district. Palindanuwara and Walallawita were the selected rural areas and Panadura and Wadduwa were the selected urban areas. In every two month from January 2019 to December 2021 larval survey was carried out. For each survey 20 premises including houses, institutions, open areas and croplands were examined. *Aedes* mosquitoes were identified upto species level based on morphology using taxonomic review. Species diversity was calculated by Shannon Weiner Diversity Index (H) and Simpson Index of Diversity (1-D). During the study 4238 *Aedes* mosquito larvae belonging to 12 species were identified. Those species were *Ae. (Collessius) sp.1* (n=336, 7.93%), *Ae. (Downsiomyia) albolateralis* (n=28, 0.66%), *Ae. (Do.) sp.1* (n=4, 0.09%), *Ae. (Fredwardsius) vittatus* (n=283, 6.68%), *Ae. (Hulecoeteomyia) chrysolineatus* (n=243, 5.73%), *Ae.(Stegomyia) aegypti* (n=441, 9.46%), *Ae.(St.) albopictus* (n=2825, 66.66%), *Ae.(St.) krombeini* (n=53, 1.25%), *Ae.(St.) w-albus* (n=27, 0.64%), *Ae.(St.) sp.1* (n=10, 0.23%), *Ae.(St.) sp.2* (n=7, 0.17%), *Ae.(St.) sp.3* (n=21, 0.5%). There was a significant difference in the species richness ($p = 0.0006$, $f = 12.744$) and species diversity in terms of H ($p = 0.012$, $f = 6.530$) and (1-D) ($p = 0.043$, $f = 4.248$). *Aedes aegypti* was not found in rural sites ($p = 0.001$, $f = 11.483$). Co-occurrence of *Aedes* species more frequent in rural areas (n=35, 65%) compared to urban settings (n=19, 35%). *Aedes aegypti* and *Ae. albopictus* co-occurrence were more common in urban areas (n=13, 68%) and *Ae. albopictus* and *Ae. chrysolineatus* co-occurrence were more common in rural areas (n= 14, 40%). So, before implementing vector control measures it is better to be deliberated those variations.

Keywords: *Aedes*, Co-occurrence, Diversity, Kalutara, Species Richness