

***Aedes* DISTRIBUTION, INSECTICIDE SUSCEPTIBILITY AND NATURAL INFECTION: AN OVITRAP BASED DESCRIPTIVE STUDY IN THE DISTRICT OF JAFFNA, SRI LANKA**

T.T.P. Jayadas<sup>1\*</sup>, S. Sharanga<sup>1</sup>, V. Thiruchenthooran<sup>1</sup>, S. Kokila<sup>1</sup>, A. Tharsan<sup>1</sup>, P. Bharathy<sup>2</sup>,  
K. Sudhakar<sup>2</sup> and S.N. Surendran<sup>1</sup>

<sup>1</sup>Department of Zoology, Faculty of Science, University of Jaffna, Sri Lanka

<sup>2</sup>Department of Geography, Faculty of Arts, University of Jaffna, Sri Lanka

\*tibutius@gmail.com

Dengue Virus (DENV) is transmitted by *Aedes aegypti* (Linnaeus) and *Ae. albopictus* (Skuse) there is laboratory evidence that *Ae. vittatus* (Bigot) also has the ability to transmit dengue. Dengue is a major public health problem Jaffna. As there is no licensed vaccine, vector control remains the efficient option available to control dengue. Vector surveillance is needed as part to determine the factors that influence dengue virus transmission. Ovitrap survey is a commonly used technique for vector surveillance to estimate *Aedes* diversity and distribution. This study was to identify distribution, insecticide resistance and natural infection of the dengue vectors to implement efficient vector control program. A total of 40 conventional ovitraps were randomly placed in the Jaffna and Nallur Divisional Secretariats area in the District of Jaffna. Weekly collections were carried out from March to December 2019. Ovitrap index was calculated to each ovitrap and geospatial interpolation of ovitrap index was done using Arc GIS 10.1 and compared with land use map. Emerged *Aedes* adults were identified with available keys and insecticide susceptibility status of adult mosquitoes were performed for deltamethrin (0.03%), malathion (0.8%), DDT (4%) using WHO bioassay test kits. Ovi-trap collected *Aedes* species also pooled and tested for DENV NS1. In this study *Ae. aegypti* (n=2556), *Ae. albopictus* (n=1376) and *Ae. vittatus* (n=414) were collected. In this study *Ae. aegypti* and *Ae. albopictus* present in both wet and dry season but *Ae. vittatus* was only present in wet season. According to interpolation model the built up areas has the high ovitrap index (>20%) and barren land area has very low ovitrap index (0%- 5%). *Ae. aegypti* was resistant to deltamethrin (0.03%) and DDT (4%), suspected to develop resistance to malathion (0.8%). *Ae. albopictus* is susceptible to deltamethrin (0.03%) and suspected to develop resistance to malathion (0.8%). *Ae. vittatus* only resistant to DDT (4%). One of the ovi-trap collected *Ae. aegypti* pool is positive for DEN NS1 antigen. Presence of all potential dengue vectors and co-breeding of vectors along with the

development of resistance to the available common insecticides should be considered as serious threats. A renewed approach in vector control is warranted considering these aspects.

**Keywords:** *Aedes*, dengue, insecticide, Jaffna