**TOPIC: Mosquito-borne Diseases (dengue, malaria, yellow fever, zika, chikungunya)**

**APPROACH: Vector biology and eco-epidemiology**

# An exploratory research of morphological patterns of *Aedes albopictus* (Diptera: Culicidae) in Misiones, Argentina.

**Keywords:** mosquito-borne deseases; vector biology; eco-epidemiology; morphological patterns; *Aedes albopictus.*

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*Aedes albopictus* (Diptera: Culicidae) is a vector of several arboviruses, distributed from Misiones to the northern of Corrientes province in Argentina. Its wide distribution around the world has been attributed to rapid reproduction and adaptive capacity to different environments. The objective of this work was to search morphological patterns of *Aedes albopictus* populations, using wing geometric morphometric analysis. Our study area was the city of Puerto Iguazu and Iguazu National Park, characterized in three environments: urban (UR), periurban (PU) and sylvatic (SY). Ovitraps were placed in these environments to obtain eggs. The larvae from hatched eggs were reared in the laboratory until the emergence of adults. A total of 179 female wings were extracted and photographed. Seventeen (17) landmarks (LM) were placed on the images and a Generalized Procrustes Analysis was applied. Univariate and multivariate analyses were performed on the shape and centroid size.

Wing size of PU was larger than SY (p-value=0.0096). In contrast, those of UR had intermediate size values and more variability. Heterogeneity conditions and resources present in urban environments could influence the size of females bred there and their offspring. The metric disparity index (as an estimate of wing shape variance) did not show significant differences among environments, although an increased variability was observed from the sylvatic environment (SY=0.00092) to the urban environment (UR=0.00101). This pattern could be associated with an environment more disturbed by human activity. Scatter plot of Canonical variate analysis showed overlap among the shapes of different environments, however, the permutation test was significant between UR and PU (p=0.0019) and between SY and UR (p=0.0457). Cross-validated reclassification had overall accuracy of 64 % with a higher percentage for UR (68.4%). Therefore, UR shapes could be partially differentiated by their morphological distances, observed in the cluster analysis and less classification error, indicating a particular or more dissimilar form.

Wing morphology has differences among environments, and the shape variables discriminate most individuals. Anthropic processes which affecting the urban environment, as well as environmental characteristics, could be associated with variability in shape and size, and operate selectively on morphs. While between sylvan and peri-urban environments, less differences were observed which could be related to common characteristics that also affect the shape. These possible morphological structural patterns of *Aedes albopictus* could be complemented in the future by genetic studies.