

INTER- AND INTRA-SPECIFIC LARVAL COMPETITION OF TWO CONTAINER BREEDING MOSQUITOES IN SOUTH TEXAS

¹SAKSHI PURI, ²FELICIA VAZQUEZ, AND ²CHRISTOPHER VITEK

¹Hidalgo County Health Department

²University of Texas Rio Grande Valley

Abstract There has recently been an observed increase in vector-borne disease in the Americas, including those diseases which are primarily vectored by *Aedes aegypti*. South Texas is at risk of vector-borne diseases due to the mild temperatures, year-round presence of the disease vectors, and proximity to Mexico where disease like dengue, Zika, and Chikungunya have been circulating. Longitudinal and seasonal patterns in abundance in South Texas of the two vector species, *Aedes aegypti* and *Aedes albopictus*, were hypothesized to be due in part to larval competition. We examined inter-specific and intra-specific interactions with *Aedes aegypti* and *Aedes albopictus* at 30°C with a 13:11h light:dark cycle, and 15°C with a 11:13h light:dark cycle, representing average summer and winter temperatures (respectively) for South Texas. Using F2 generation colony mosquitoes, we reared mosquitoes at varying densities and food availability. In experiment one, we kept the overall density and food levels the same, and varied the level of interspecific competition. In experiment two, we varied the starting densities and the food levels, but only included intraspecific competition. Temperature significantly influenced survivorship of both species regardless of density ($p < 0.05$), with increased survivorship in hot temperatures. In experiment two, food levels also significantly influenced survivorship ($p < 0.05$), and significantly interacted with temperature ($p < 0.05$) for both species. Starting density was not significant by itself in either experiment or interacting with any other variables in the first experiment ($p > 0.05$), but in the second experiment starting density of *Aedes aegypti* interacted with temperature to significantly influence *Aedes aegypti* survival ($p < 0.05$). Our results indicate that *Aedes albopictus* has an overall higher survivorship rate in all conditions, although in typical summer conditions the difference is minimal. At the densities tested, starting density of hetero- or con-specific larvae was not a primary influence on survivorship. These results may partially explain the differences observed in *Aedes albopictus* and *Aedes aegypti* abundance that was observed longitudinally in residential areas, although competition alone may not sufficiently explain the pattern of more *Aedes albopictus* in cooler, coastal areas. Development time and size at emergence are planned for future analysis.

