

Why are there so many mosquitos in Arizona???

Aedes aegypti, the mosquito vector of Zika virus and dengue fever, is common in Arizona. When these diseases begin to circulate in our human and mosquito populations, control of the populations of these mosquitos will become very important. Because mosquitos can develop quickly in water pools of tiny to large sizes, it is challenging to find and prevent their growth. A better understanding of how environmental conditions affects the survival and development of *Aedes aegypti* would aid in predicting outbreaks and targeting control; no prior studies have examined how the high temperatures, high solar radiance and low humidities that occur in Arizona summers affect *Aedes aegypti*. This research is aimed at understanding how this mosquito copes with the environmental conditions we experience in the Arizona summer. What temperatures and radiative conditions can the eggs, larvae and pupae tolerate? Are high temperatures ever limiting to mosquito survival, or are water-related parameters the key factors predicting population patterns. For example, how does the time between rains (or irrigation events) affect populations?

To address these questions we are collaborating with Maricopa Vector control, which has a > ten-year high-spatial resolution record of *Aedes aegypti* abundance. We are exploring these data to understand the environmental factors that may contribute to mosquitos being abundant at some locations and times but not others. Also, we are collecting environmental data on micro-climatic conditions in mosquito habitats around Phoenix and on the ASU campus. Finally, laboratory experiments are examining the survival of mosquito life stages at various temperatures, solar radiance and humidities. Student projects may involve fieldwork, labwork, and data explorations. Experience with labwork, data analysis and/or ARCGIS is useful but not critical. Students should expect to work at least ten hours per week, and earning course credit for research is a possibility. Students will work closely with Ph.D. student, Trevor Fox, and should contact Trevor at tpfox1@asu.edu for more information.

