



**CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY**

Name(s) Lily C. Oglesby	Project Number J2211
Project Title How Does Variation in Water Salinity Affect the Survival Rate of Mosquito Larvae?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of the experiments was to show how the <i>C. tarsalis</i> mosquito could potentially adapt to changing conditions of salinity in a controlled experiment.</p> <p>Methods/Materials Materials: 15 containers, <i>Culex tarsalis</i> eggs, mosquito food, 4,800 ml double distilled water, instant ocean sea salt, refractometer</p> <p>Experiment 1: Fill cups with double distilled water, and different amounts of instant ocean depending on desired salinity. There are 3 cups for every salinity. Once hatched, place 15 mosquito larvae in each cup. Each day measure salinity with refractometer, and count the larvae still alive at each salinity in each cup.</p> <p>Experiment 2: Fill 3 cups with double distilled water and place 15 larvae in each. Every other day increase the salinity by 6-7 ppt using a refractometer and instant ocean. Each day count the larvae still alive in each cup.</p> <p>Results Experiment 1: The mosquito larvae in 17.1% seawater survived in the highest number. The larvae in double-distilled (fresh) water survived second best, and some of the larvae in 31.4% seawater survived, but at a significantly reduced number. All of the mosquito larvae put in 40% seawater and higher died on the first day.</p> <p>Experiment 2: All of the larvae survived until 25% seawater, and then gradually started to die. The last mosquito larvae died at 66% seawater.</p> <p>Conclusions/Discussion The mosquito larvae in experiment 1 were never given a chance to adapt to increasing salinities, but were instead placed in the high salinities immediately. This led to a low survival rate. In experiment 2, the larvae were given a chance to adapt and grow more mature, and survived in much higher salinity. In the future, if the drought continues in the Coachella Valley, the mosquitoes will experience higher salinities. The current study gives important information on the salinity at which <i>C. tarsalis</i> can survive, and how mosquito larvae may adapt to increased salinity. Mosquito control districts may benefit from this information by helping them understand the preferred habitats of the <i>C. tarsalis</i> mosquito larvae, and help them make better decisions on mosquito control.</p>	
Summary Statement This project is to test how <i>C. tarsalis</i> mosquito larvae survive and adapt to changing water salinity in a controlled experiment.	
Help Received Jennifer Henke from the Coachella Valley Mosquito and Vector Control District supplied the mosquito eggs for the study, and explained how best to raise mosquito larvae at home. My parents discussed the project with me, helped with the procedure and constructing the display.	