



CALIFORNIA STATE SCIENCE FAIR 2006 PROJECT SUMMARY

Name(s) Steffani L. Campbell	Project Number S1906
Project Title The Downside of Desalination	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The purpose of this project was to determine the range of salinity in the slough and the tolerance of Tigriopus Californicus copepods to increased salinity levels.</p> <p>Methods/Materials The first part of the experiment documented the salinity in different parts of the Elkhorn Slough and surrounding area at high and low tide. A canoe was use to collect samples and a refractometer was used to test the salinity of each. The second part of the experiment investigated the ability of a local copepod, Tigriopus Californicus, to survive in high salinity solutions. A plankton net was used to collect these organisms which were then placed in six chambers, each with the same amount of sea water in them. Two of the groups became control groups and a hypersaline solution as added in varying amounts to each of the other four chambers. Salinity was measured in each chamber, and then all six were submerged in running ocean water. Every 24 hours for the next three days measurements were taken to determine what percentage of each population was still alive.</p> <p>Results The measurements from the first part of the project showed the great range of salinity levels in the slough, and led to the conclusion that the organisms who would be most affected by the salinity changes caused by the expansion of the desalination plant would be those located about 200 meters offshore near the ocean floor, where a hyper saline layer could form from the brine discharge. The second part of the experiment showed that the increased salinity did have a significant effect on the survival of the population of Tigriopus Californicus. While the control group gruops suffered only an average 4% decline in the live population over the entire 72 hour testing period, the groups subjected to increased salinity levels suffered losses from 15% to 46% of their live populations over the same time period. It was also observed that females with egg sacks suvived in greater numbers than the general population.</p> <p>Conclusions/Discussion My results generally supported my hypothesis. Further research should be done to test the long term effects of increased salinity on this organism, as well as the effects of increased temperature on the plankton and other marine life near the Elkhorn Slough and Moss Landing Harbor.</p>	
Summary Statement This project investigates the effect of desalination plants on the local environment by studying the reactions of the copepod Tigriopus Californicus to short term exposure to hypersaline solution.	
Help Received Advised by Dr. Preston; used refractometer at the Monterey Bay Aquarium Research institute under the supervision of Dr. Ken Johnson, Used equiptment at The Hopkins Marine Station with the help of Dr. Christian Reilly.	