



CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

Name(s) Wyatt G. Alvis	Project Number J0802
Project Title Tidal Fluctuations: The Effects of Tides on the Salinity of Elkhorn Slough	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My project was to determine if tides have an effect on the salinity of water in Elkhorn Slough. My hypothesis is high tides will cause an increase in salinity, by the seawater being pushed up into the slough. Additionally, low tides may have a decrease in salinity where brackish water of the slough is sucked back into the ocean and replaced by fresh water.</p> <p>Methods/Materials I sampled water from Elkhorn slough at high (7 feet) and low (-1 feet) tide. I took samples from three locations: (#1)sea level or near the mouth of Elkhorn Slough, (#2)mid-way up the slough at Kirby Park and (#3)the head of Elkhorn Slough. Thirty total samples were taken with five samples taken at each site at both high and low tide. A conductivity meter was used to measure the total dissolved solids (TDS) in parts per million (ppm) of each sample.</p> <p>Results At high tide, the salinity was higher, compared to low tide, where the salinity was lower. There was an average of 26,701.7 parts per million (ppm) of total dissolved solids (TDS) at high tide. At low tide there was an average of 23,521(ppm) of (TDS). The salinity at low tide, location #3, was about 17,000 (ppm), and at high tide was about 26,000 (ppm). This shows that at location #3 during high tide the water is mostly sea water.</p> <p>Conclusions/Discussion The results of my experiment showed that my hypothesis was correct. At high tide the salinity level is higher, and at low tide the salinity level is lower. The samples at locations #1, #2 and #3 at high tide were similar in salinity level and all in the average range of ocean salinity. At low tide the samples at locations #1 and #2 were also similar to ocean water, but at the sample location # 3 the salinity was much lower. This was because at low tide the ocean water receded towards the Monterey Bay, and fresh water (with lower salinity) moved into the upper slough at sample location #3.</p>	
Summary Statement The effect of tides on the salinity of Elkhorn Slough.	
Help Received Father who drove me to Elkhorn Slough and showed me how to use the conductivity meter.	