



CALIFORNIA STATE SCIENCE FAIR 2012 PROJECT SUMMARY

Name(s) Owen J. Lincoln	Project Number S1114
Project Title Are the Wetlands Working? The Effect the Goleta Wetlands Have on the Bacteria Levels in the Goleta Slough	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My goal was to find out if the wetlands in the Goleta Slough had any kind of an impact on the amount of bacteria, specifically E. coli, and Total Coliform, found downstream from the wetlands at the mouth of the Goleta Slough.</p> <p>Methods/Materials I collected and then tested the stream water in the Goleta Slough 1,000 meters upstream from the mouth of the Goleta Slough, and at the mouth of the Goleta Slough, 1,000 meters upstream from the mouth of the Arroyo Burro Creek and at the mouth of the Arroyo Burro Creek where it runs into the ocean/beach. The Arroyo Burro Creek does not have an established wetlands area, where the Goleta Slough does have established wetlands. I collected a 100mL water sample using sterile bottle and gloves from each location. I took these samples to the Channel Keepers lab where I added a reagent to the water samples which enables the bacteria to grow. I then poured the water samples into IDEXX test trays where they incubated for 18 hours at 35 degrees Celsius. After the incubation time, the test trays were observed for change in color and for fluorescence under a black light and recorded my findings. I did this testing on five separate occasions over the course of three weeks.</p> <p>Results Four out of the five tests indicated that the bacteria levels of both E. coli and Total Coliform at the mouth of the Goleta Slough were lower than these bacteria levels 1,000 meters upstream. Four out of the five tests also indicated that the bacteria levels at the mouth of the Arroyo Burro Creek were higher than the bacteria levels 1,000 meters upstream. The fifth test showed bacteria levels at all locations being so high that there was no distinction between the mouths of the creek/slough and 1,000 meters upstream. This was most likely due to the rain fall of the day before the test.</p> <p>Conclusions/Discussion These results do support my hypothesis that the wetlands would filter out some of the bacteria as the water runs downstream to the ocean. The results also suggest that without a wetland area to filter the water, the bacteria levels do not drop and may actually become elevated, as was the case with the Arroyo Burro Creek water samples. This information obtained from my testing can be used to conduct further studies on what types of plants may be the best filters of bacteria, and support the argument for creek restoration, especially where the water runs directly into the ocean at public beaches.</p>	
Summary Statement My project consisted of testing creek water to find out if the wetlands in the Goleta Slough acted as a filter to remove some of the bacteria from the water as it proceeded downstream to the ocean.	
Help Received I used lab equipment at Channel Keepers under the supervision of Penny Owens. Penny also gave me guidance on how to carry out the tests in a sterile manner. My Mom drove me to the testing sights.	