



**CALIFORNIA STATE SCIENCE FAIR  
2015 PROJECT SUMMARY**

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<b>Project Title</b> Turning the Tides on Marine Pollutants: Surface Pollutant Effect on Acidification	
<b>Abstract</b> <b>Objectives/Goals</b> The objective is to observe the effects of hard, surface pollutants on aquatic plants ability to photosynthesize and ocean acidification. <b>Methods/Materials</b> Goldfish and aquatic ferns were placed in different marine environments, some including pollutants, others not, to see how pH could be altered. Clear plastic and Styrofoam were used to cover the surface of the tank including the aquatic plants and fish, in separate trials. Fish and plants were tested alone and together with no pollutants. Each trial was carried out in sunlight for twelve hours through out the day. <b>Results</b> The greatest change in pH occurred with fish alone in the testing tank and no plants present, on average there was a drop from 8.10 to 5.33. With plants alone, the pH did not change significantly. When fish and plants were added to the test tank, the pH dropped from a high of 8.04 to 7.18, which was statistically significant when compared to fish alone. The pH drop with Styrofoam on the surface was not significantly different from fish alone. The pH drop with plastic on the surface was significantly different from fish alone with a drop of 1.27 in pH. <b>Conclusions/Discussion</b> Results conclude that pH levels drop as a result of cellular respiration in fish. This drop is lessened when live plants are added to the tank and the exposure to sunlight so that photosynthesis can occur. Blocking sunlight by the addition of hard pollutants on the surface of the water led to a decrease in ability of plants to photosynthesize and convert CO <sub>2</sub> to oxygen. This resulted in a greater decrease in pH. Plastic pieces resulted in a lower change in pH compared to Styrofoam likely because sunlight was not blocked to the same degree.	
<b>Summary Statement</b> The focus is to study how anthropogenic pollutants can affect ocean acidification.	
<b>Help Received</b> Mother helped putting board together; father helped with collecting data; brother helped maintain fish/plants.	