



**CALIFORNIA STATE SCIENCE FAIR
2013 PROJECT SUMMARY**

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| Name(s) Olivia R. Cooper | Project Number S1105 |
| Project Title Ocean Acidification: Its Effects on Mussel Shells | |
| Abstract Objectives/Goals My objective was to determine whether or not mussels shells are affected by relative acidification of their environment in order to collect more information about effects of ocean acidification. Methods/Materials I simulated ocean acidification in 9 jars by making 'sea water' using Instant Ocean salt and filtered water, I then tested the pH and added salt or water until it was between 8.05 and 8.14. In 3 jars labeled "Control", I filled the jars with the sea water, acting as normal sea water. In 3 jars labeled "Acidic 1", I added vinegar until the pH was between 7.75 and 7.84, acting as projected sea water after ocean acidification in the year 2100. In 3 jars labeled "Acidic 2", I added vinegar until the pH was between 7.45 and 7.54, acting as a the most acidified sea water. In each jar, I added exactly 1 oz of cleaned, dried, crushed mussel shells from the Puget Sound, a salt water source. I secured each lid and placed the jars in an undisturbed area for one month, observing them regularly. After a month, I drained the jars, collected and dried the shells. Then, I weighed and observed the shells. Results On average, the shells in the "Control" jars had no weight change, the shells in the "Acidic 1" jars had a -0.01 oz weight change, and the shells in the "Acidic 2" jars had a -0.01 oz weight change. I observed more fading and disintegration of the shells over time in the "Acidic 1" and "Acidic 2" jars compared to the "Control" jars. Conclusions/Discussion The shells did change visually and in weight, however subtle to demonstrate with the measurement tools I had. Over time, the shells in the acidified jars lost their vibrance, thinned, and were somewhat transparent. The shells in the "Control" jars showed little to no change. I believe this suggests the idea of ocean acidification to be a real issue in our oceans, however, I think further research and experimentation would show more powerful results. | |
| Summary Statement I am studying the effects of ocean acidification on mussels by exposing mussels shells to seawater with various levels of acidity. | |
| Help Received Mother helped me critically think through the various aspects of my experiment; Teacher helped me revise report; Mother helped me purchase materials; Mother helped me clean mussel shells | |