



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Elizabeth Mikszta	Project Number J1199
Project Title The Effect of Ocean Acidification on Bioluminescent Plankton	
Abstract Objectives/Goals Cars and power plants release carbon dioxide. This dissolves into water and makes it acidic. This process is called ocean acidification. I want to know how this will effect sea life. I am using bioluminescent plankton to test whether I can show the effect of ocean acidification. My hypothesis is that pH below the natural about pH 8 of sea water will eventually kill bioluminescent plankton. Methods/Materials I purchased <i>Pyrocystis fusiformis</i> and media and grew it for a month at 68 - 70° in a 12° light/dark cycle. I split the cultures into 6 sets of 3 jars with 50 mls of plankton each and 4 normal controls. I titrated each set to pH 4 through 9 with 0.1 N HCl or NaOH while testing with pH paper. I checked the jars for the first time about an hour after I titrated them and then every day for 7 days and then at two weeks from the beginning. Results All of the acidic samples died. The most acidic died at one day and the pH 7 samples took 6 days to die. The pH 8 and pH 9 samples stayed strong the entire two weeks. Conclusions/Discussion My hypothesis was correct. All of the plankton below pH 8 died. The lower the pH, the faster they died. I found this was a good system to find the effect of ocean acidification on sea life. If I study further I will look at the pHs between 7 and 8. I will then need access to better equipment to measure 0.1 differences between pH 7 and 8. The equipment I would need would be a pH meter, better pipettes and a way to accurately measure luminosity.	
Summary Statement Bioluminescent plankton are sensitive to acid and at risk from ocean acidification.	
Help Received My mother and father helped get the equipment together and supervised the work, especially the acid titration. My mother typed a lot of the report and helped put it on the board. My teacher, Mrs. Yount, encouraged me and Mr. Roth helped me practice the presentation.	