



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

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| Name(s) Phoebe Stewart; Alana Vieira; John Waggoner | Project Number S1730 |
| Project Title Acid Tide | |
| <p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this study was to determine the effect of an acidified ocean environment on the tensile strength of two intertidal photosynthetic organisms, a seagrass and a coralline algae.</p> <p>Methods/Materials The seagrass and the coralline algae were legally collected from Point Fermin, San Pedro. They were kept in tanks with artificial seawater made from Instant Ocean sea salt, as well as a bubbler to keep the water oxygenated. We used a spring scale and weights to measure the tensile strength of the seagrass and coralline algae grown in the artificial seawater (control). We then increased the acidity of the seawater using hydrochloric acid. We then measured the tensile strength of the seagrass and the algae again(experimental).</p> <p>Results We found that the coralline algae control broke under a strain of 1.6 Newtons and after acidification the coralline alagae broke at an average of 1.0 Newtons. The seagrass under controlled conditions held 3.4 Newtons before breaking whereas the seagrass in acidified seawater broke under strain of 3.35 Newtons.</p> <p>Conclusions/Discussion The coralline algae was more susceptible to the detrimental effects of the acidification of seawater than the seagrass. This is possibly because of the calcareous structure of the coralline algae. The seagrass, which has cellulose cell walls, was less susceptible to the effects of the acidification of seawater. The seagrass also has internal strengthening cells. However, on further reasearch, it was found that the seagrass requires the coralline algae, without it, the seagrass seeds cannot establish. The coralline algae also uses the seagrass as a sheild from the heavy wave action of the intertidal. It can be concluded that if either population suffered, both species would decline, causing an unravelling of the interdependent organisms that rely on seagrass and coralline algae as a food source and for shelter.</p> | |
| Summary Statement The effect of an acidified environment on the tensile strength of two intertidal photosynthetic organisms which are subjected to wave action. | |
| Help Received Used lab equipment at Loyola Marymount University under the supervision of Dr. Drennan | |