CALIFORNIA STATE SCIENCE FAIR
2017 PROJECT SUMMARY

Name(s)
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Project Number
J2219

Project Title
Does Ocean Acidification Affect the Weight of Shellfish Shells?

Abstract

Objectives/Goals
The objective of this project was to test whether increasing ocean acidification, which is caused by rising levels of atmospheric carbon dioxide, affects the weight of shellfish shells.

Methods/Materials
3 types of local shells. 5 pH levels corresponding to different levels of atmospheric carbon dioxide. Weight before/after soaking for 4 weeks. 10 replicates of each shell type at each pH level.

Results
For both crab shells and sand dollars, as pH levels decreased (and acidity levels increased), shell weight generally decreased. I set up my test on assorted shells incorrectly so my results for them did not follow the same pattern.

Conclusions/Discussion
My results from crab shells and sand dollars confirmed my hypothesis, that as ocean acidification increases, shell weight decreases. For the assorted shells I got quite varied results, that did not match my hypothesis. This is because I did not evenly distribute shell types within each pH level. Doing this project raised my awareness that ocean acidification is a growing problem facing marine life around the world. This short experiment shows that we need to investigate the impact of climate change on marine species, and we need to work to protect marine ecosystem health.

Summary Statement
I found that as ocean acidification increases and pH levels decrease, the weight of shellfish shells decreases.

Help Received
I designed and performed this experiment myself. I discussed my design with Dr. Jen Skene, who has her PhD in marine biology, who suggested I add an extreme pH level (3.0) in case my experimental pH levels did not work.