CALIFORNIA STATE SCIENCE FAIR
2014 PROJECT SUMMARY

Name(s)
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Project Number
34121

Project Title
Can Crabs Beat Global Warming?

Abstract

Objectives/Goals
The purpose of this project was to find if ocean acidification and global warming affect the thermal tolerance of crabs.

Methods/Materials
Crabs were collected from the intertidal and put them in tanks of either a pH of 8.0 or 7.1. An infrared sensor was attached to the crabs and connected to a heartbeat recording system. The heartbeats were converted to a heart rate. I attached the crabs to this system and then set them in a water bath in a jar of water at the pH level they had been living in. Over the course of an hour I increased the temperature of the water bath and simultaneously recorded water temperature and crab heart rate. I then compared temperature and heart rate to find the critical temperature.

Results
The crabs under the influence of the lowered pH had a lower critical temperature. I found that females were also more vulnerable to the lowered pH than the males.

Conclusions/Discussion
I concluded that crabs' thermal tolerance is affected by global warming in a negative way. This is important because this could also affect other crustaceans in the same way and affect the food web.

Summary Statement
My project is about how ocean acidification affects crabs thermal tolerance.

Help Received
Dr. James Barry helped with experiment; Used MBARI lab equipment.