CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
S2003

Project Title
The Effects of Environmental Nitrite Levels on the Reproductive Success of Purple Sea Urchins

Abstract

Objectives/Goals
The purpose of this experiment was to determine how environmental nitrite levels impact the reproductive success of purple sea urchins. The hypothesis of this experiment was that higher environmental nitrite levels have a negative affect on reproductive success. As part of a three-year study, the hypothesis this year was based on previous results which showed that higher levels of nutrient pollution do not encourage larval growth. In addition, high nitrogen levels are toxic to a variety of marine life.

Methods/Materials
To test if high nitrogen levels are toxic to purple sea urchins, mature purple sea urchins were collected from two test sites, which differ in their pollutant levels (as rated by Heal the Bay Beach Report Card): Inner Cabrillo Beach and Portuguese Bend Cove. The sea urchins were spawned, their eggs fertilized and fixed with formalin, and the number of eggs counted. A water sample from each site was tested concurrently for nitrite levels.

Results
The data supported the hypothesis; Inner Cabrillo Beach had lower water nitrite levels than Portuguese Bend Cove, and there were more eggs counted in the Cabrillo samples.

Conclusions/Discussion
These results call for deeper, more comprehensive research with revised protocols on this subject.

Summary Statement
This project investigates a possible correlation between high environmental nitrite levels and compromised reproductive success in purple sea urchins.

Help Received
Cabrillo Marine Aquarium#s Aquatic Nursery for providing a laboratory in which I performed my experiments; Dr. Kiersten Darrow & Dr. Juli Kalman for advising me on my project; the Aquarist team for harvesting half of the urchins used; all the Lab Assistants for supervising my procedures