CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY

Name(s)
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Project Number
S1912

Project Title
Environmental Influence on the Cloning Rates of Metridium Sea Anemones, Year 2

Abstract

Objectives/Goals
The purpose of my experiment is to determine if different external environmental factors, which simulate different natural habitats, affect the reproduction rates of Metridium sea anemones. If more sea anemones can be grown using a particular environment, it may be possible to use them as food for other species or to repopulate damaged habitats, such as sub-tidal zones.
This is my third year of working with sea anemones and the second year of experimentation to measure cloning rates. Improved tank configuration, constant water flow, and more consistent feeding were implemented this year. My hypothesis is that environment would affect the cloning rates of these anemones. My tanks simulated the intertidal zone (warmer temperature), sub-tidal zone (control temperature with colder water temperature and circadian lighting) and deeper water (dark tanks).

Methods/Materials
I tested the reproduction rates using 6 small tanks split in two by fine mesh which allowed passage of nothing except for water. Four half tanks received warmer (room temperature 68˚) water and four half tanks had reduced lighting due to black acrylic covering. I also had four half tanks with control conditions consisting of colder ocean temperature water and circadian lighting. All tanks were fed a mixture of immature brine shrimp or rotifers twice daily. The number of anemones was counted weekly. After a noticeable difference in size of anemones among the different variables, I added measurement of the size of the sea anemones to my project. I also surveyed the tide pools to measure the water temperature (57˚F) and search for sea anemones.

Results
The dark tanks reproduced the fastest out of all of the tanks; but had the lowest survival rate. The warmer tanks reproduced faster and had the larger sea anemones than but did not survive as well as the control anemones. The control tanks reproduced the slowest, but had the highest survival rate, so they ended with the highest total of anemones.

Conclusions/Discussion
The data did not support my hypothesis because the restricted light tanks actually reproduced faster than the control. However the hypothesis was correct in saying that a warmer temperature would cause an increased reproduction rate. The control tanks best symbolized the environment of Metridium senile where it is found in Southern California, the sub-tidal zone, about two to five feet below low tide.

Summary Statement
This project simulated different tidal zones to determine the ideal condtions for reproduction of Metridium senile.

Help Received
Used student intern labratory at Cabrillo Marine Aquarium; under the supervision of Dr. Kiersten Darrow.