CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
Ben R. Chubak

Project Number
S1908

Project Title
Generational Adaptation of Coral to Variables in a Simulated Reef Environment

Abstract

Objectives/Goals
My objective was to determine if new generations of Xenia elongate coral would adapt better to changing conditions in a simulated reef environment compared to the mother colony coral which originated in the ocean.

Methods/Materials
A mother colony coral, and a first, second, third, fourth, and fifth generation offspring were tested. During this experiment, each coral was first monitored in a constant and balanced environment and then introduced to various changes. The changes were: exposure to excess lighting, placement under low lighting,exposure to low pH, and exposure to excessive pH. Growth and health were monitored and documented every day.

Results
Growth and health for all generations followed a similar pattern when exposed to each variable. The mother colony adapted to low lighting better than the other generations of coral. The fifth generation coral adapted to placement under high lighting better than the other colonies. During low pH, all of the corals' health declined and their polyps stopped pulsing. During high pH, all corals' health improved and their polyps pulsed faster than normal.

Conclusions/Discussion
Many scientists believe it is only a matter of time until all coral reefs will perish. One idea to save the coral reefs is to create massive man-made reef environments. This project shows how a wild coral and its new generations adapted to a new environment. Although all tested corals had similar reactions to the variables, it is encouraging that they were all able to survive the changes. Further testing is necessary to confirm whether subsequent future generations would adapt significantly better than the mother colony.

Summary Statement
My project tested the resilience of a mother colony coral (originally from the ocean) as well as a first, second, third, fourth, and fifth generation coral colony to variables that might arise in a simulated reef environment.

Help Received
Ryan Honda(Friend) helped with board layout.