



**CALIFORNIA STATE SCIENCE FAIR
2004 PROJECT SUMMARY**

Name(s) Kevin N. McCully	Project Number S1912
Project Title Environmental Influence on the Cloning Rates of Metridium Sea Anemones	
Abstract Objectives/Goals The purpose of this experiment is to determine if different external environmental factors, which simulate different natural habitats, affect the reproduction rates of Metridium sea anemones. With species becoming extinct, it is critical to know the habitats in which reproduction is maximized. Methods/Materials My hypothesis was that environment would affect the cloning rates. Metridium senile sea anemones were chosen since in an aquarium tank they reproduced very fast (probably by cloning) and were happily attached to any surface. I tested cloning rates with nine tanks having their own water supply; each tank was divided in two with a plastic mesh placed in the middle. One sea anemone was placed in each half tank. Four half tanks received extra feeding of immature brine shrimp, four had double the circulation, and four had reduced lighting. I also had six half tanks with the nominal conditions, meaning they got fed three times a week, had a set circulation, and constant light. Each week for 14 weeks I tabulated the number of sea anemones in each half tank. If any half tank had no anemones, I added one from the aquarium's tank. I maintained my results on a spreadsheet and applied statistical methods to evaluate the data. Results The results of this experiment stated that the control half tanks had the highest average cloning rates of Metridium senile sea anemones (mean of 5.33 births per half tank over the 14 week experiment). The second highest average was the dark half tanks (4.75) followed by circulation (3.50) and extra food (3.50) tanks. I adjusted the water flow every week but fluctuations in the aquarium water system meant that water circulation during the week was often low or nonexistent which caused much waste and extra food to dirty the tanks; thus creating an unhealthy environment. This circulation problem may be the reason my results were not statistically significant. Conclusions/Discussion The results were statistically insignificant due to inconsistent variation in the data. If these results were significant, I would have concluded that extra food, faster circulation, or restricted light negatively affect cloning rates of Metridium senile. I hope to continue this experiment using new techniques to minimize the varying circulation conditions, increase the sample size, and prevent migration of the anemones from their tanks.	
Summary Statement This experiment researched the reproduction rates of Metridium senile sea anemones under different conditions (more food, faster circulation, restricted light).	
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