CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY

Name(s)

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Project Number

J2403

Project Title

Clone Wars: The Effect of Food on Clonal Fighting among Anthopleura elegantissima

Abstract

Objectives/Goals

My purpose was to see if Anthopleura elegantissima clonal wars are affected by the amount of food available to them. My hypothesis was that A. elegantissima clonal wars will not be affected by the amount of food available to them because the wars are for territory, not food.

Methods/Materials

I used 10 A. elegantissima specimens, 2 of which were for backup. These were put in a plastic tank with 4 subdivisions each with two anemones separated with removable dividers. Each one of these subdivisions was a trial. First the specimens were collected and the tank set up. For the next week, the anemones were fed the minimum, once that week. After that, I tested them by removing the divider and recording the amount and time of the attacks that were made in 45 minutes. The next week they were fed the maximum, every day, and I did the same tests. The week after that they were fed the normal amount of food, 3 times a week, and I did the last of the tests.

Results

When fed the minimum amount of food, the attacks averaged 12 per test with a standard deviation of 11.5. When fed the maximum amount of food, the attacks averaged 16.75 per test with a standard deviation of 8.7. When fed the normal amount of food, the attacks averaged 19 per test with a standard deviation of 9.9. Also, the aggression between the anemone pairs differed from trial to trial. The anemones in trial 1 had an average of 4.6 attacks per test with a standard deviation of 2.5; in trial 2 there was an average of 11 attacks per test with a standard deviation of 7.1; in trial 3 there was an average of 21.6 attacks per test with a standard deviation of 5.4; in trial 4 there was an average of 26.3 attacks per test with a standard deviation of 7.8.

Conclusions/Discussion

A. elegantissima is a type of sea anemone that reproduces asexually through binary fission. After some time, this will create a large colony made up of genetically identical anemones. When two genetically different colonies meet, they will fight. The results of this experiment seem to show that A. elegantissima clonal fighting is not affected by the amount of food available to them. This irregular fighting pattern supports the hypothesis because the anemone fighting did not increase when there was less amount of food available to them or decrease when there was more food available to them. This would show that the fighting was not for food and therefore for territory.

Summary Statement

My project is about the effects of different amounts of food on the inter-clonal fighting among the sea anemone Anthopluera elegantissima.

Help Received

Participant in the Cabrillo Marine Aquarium Young Scientist program (specimens collected, housed, and fed at Cabrillo Marine Aquarium)