CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)

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Project Number

22178

Project Title

The Role of Odors in the Shell Selection of Pagurus samuelis

Abstract

Objectives/Goals

Experiments were conducted to test the role of odor in the shell selection of Pagurus samuelis by using dead gastropods and dead conspecifics. Attraction to the chemical odor was examined in multiple trails using different hermit crabs. Two types of trials were done; one using empty gastropod shells and the second is using caps as artificial shells.

Methods/Materials

Hermit crabs were collected from Sunset Cliffs in Ocean Beach, San Diego along with salt water and spare shells. They were then put in an aquarium with a rocky dry area and a side with 1.5cm of water. A soldering iron was used to heat the shell of the hermit crab and coax it to come out. The naked crab was then put into a rectangular container, in 2.5cm of salt water along with the options of shells or caps and the odors.

Results

The data supports the hypothesis that the odor of the dead conspecific or snail plays a role in the selection of shells by Pagurus samuelis. The hermit crabs choose the dead conspecific scent more often than the snail scent and unscented option. Chi-square tests were conducted to determine the significance of any difference. Based on that test, I rejected the null hypothesis based at a significance level of 0.05 for the shells and 0.001 for the caps (artificial shells).

Conclusions/Discussion

The data supports the concept that the odor of dead conspecifics plays a significant role in the selection of shells or caps for Pagurus samuelis.

Summary Statement

Experiments were conducted to test the role of odor of dead gastropods and dead conspecifics in the shell selection of hermit crabs. In trials where crabs had the option of choosing an odorless scented shell, dead conspecific scented shell

Help Received