CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)

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Project Number

S2402

Project Title

Tidepool Populations: Collapse or Fluctuation? A Study of the Davenport Landing Rocky Intertidal Zone

Abstract

Objectives/Goals

The purpose of our project is to learn how to effectively collect accurate data (biodiversity counts) from the tidepools at Davenport Landing and to compare our data with other data accumulated from previous years: in this way we can observe trends in stability, decline, or increase of organisms, and investigate the possible causes of these trends and to confirm an apparent decline in a clonal species of sea anemone and apparent increase of turban snails at the site and to explore the possible causes of said variations. Although great variability does not allow for a specific hypothesis at this point in our research, we hypothesize that the changes in certain species populations at Davenport Landing are a possible result of effluent from the adjunct abalone farm.

Methods/Materials

Mark the boundaries of the permanent 15x15m plot with meter tapes and permanently placed stainless steel eyebolts. Place a quadrat inside the permanent area using a series of two, three-digit numbers, selected at random, which will be used a coordinates for the quadrat. Center the quadrat over the meter tape.* Record species abundance within the quadrat as directed on the datasheet. Repeat the above procedure until 10 to 20 random quadrats have been completed. *In some cases, the random numbers will place the quadrat in a deep pool or drop-off. When this happens, place the quadrat on a level area as close to the original location as possible.

Results

While our data reflects the likelihood of both a turban snail population increase and an aggregating anemone population decrease, there is not enough data available to us at this time to confirm our hypothesis.

Conclusions/Discussion

Thus far, our data indicates a decrease since 1974 (earliest data collected) in aggregating anemones and an increase in turban snail populations. Our project mentor John Pearse suggested that we look at these two organisms specifically because every other organism that we were monitoring seemed to be retaining a stable population over the years, while both aggregating anemones and turban snails had noticeable population fluctuations. One possible factor is effluent from the adjacent American Abalone Farm, which has been releasing a large amount of algal effluent since 1994. Other factors could include El Niño and the nearby Davenport Creek, which has been known to contain agricultural runoff from nearby farms.

Summary Statement

We monitored population sizes at Davenport Landing and juxtaposed our organism counts with past data to continue the tradition of monitoring the fluctuations of rocky intertidal organisms, focusing on aggregating anemones & turban snails

Help Received

Project mentored by John Pearse, Professor Emeritus, Department of Ecology and Evolutionary Biology, University of California, Santa Cruz; Used protocols from limpetsmonitoring.org