CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)
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Project Number
J2299

Project Title
Investigating Impacts of Human Intrusion on Lottia gigantea Populations

Abstract

Objectives/Goals
I heard of an intertidal animal, the owl limpet, that was at risk due to poaching, and I wanted to learn more about this species. Owl limpets start out
juvenile with no gender, and gradually grow to become male and later female,
so size-selective poaching leads to a skewed population with not enough females to reproduce. I documented two areas at the Point Loma Tide Pools, one with many visitors (~200,000 annually) and one with fewer (~20,000 annually), to see if there was a difference in either the sizes or numbers of owl limpets. I collected data both in the middle tide zone, as I thought I'd see more females there, and in the high tide zone, as I thought I'd see limpet recruitment there. I believed that the area with fewer visitors would have both more owl limpets and a larger average size.

Methods/Materials
By documenting 1,500 grid squares in 60 half-meter square quadrats, I counted 109 owl limpets in the middle tide zone and 171 in the high tide zone. I laid down quadrats and noted the number and sizes of owl limpets in each grid square. I did this in both Zone 1 (more visitors) and Zone 2 (fewer visitors).

Results
Surprisingly, there was no statistically significant difference in sizes or numbers of owl limpets between Zones 1 and 2. However, there was a significant difference in sizes between the high and middle tide zones. The percentage of mature owl limpets varied: Zone 2 (with fewer visitors) had more mature owl limpets than Zone 1. The high tide zones generally had more juvenile owl limpets than the middle tide zones. I think this could mean that there is limpet recruitment in the high tide zone; more juvenile owl limpets living in the high tide zone, slowly growing larger and later replacing the mature owl limpets dying off in the middle tide zone.

Conclusions/Discussion
It seems that at Point Loma, the difference in the number of visitors does not have a significant effect on the owl limpet population. I think this may be because Point Loma is protected and visitors here learn about minimizing their impact on the environment. This shows that if we protect more intertidal areas and educate visitors, we can help conserve owl limpets. Progress is being made, but more work needs to be done to help these delightful creatures.

Summary Statement
I found that at the Point Loma Tide Pools, human intrusion does not seem to have a significant effect on the owl limpet populations.

Help Received
My science teacher lent me some materials, and my mother drove me to the tide pools. Two marine biologists at Cabrillo National Monument gave me helpful advice as well as long term data to compare my results to.