CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY

Name(s)
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Project Number
S0709

Project Title
The Ballona Project: A Multi-Year Analysis of Ballona Creek Water

Abstract

Objectives/Goals
The objective of this project is to measure the water properties, such as pH, density, and non-volatile residue, at various points along Ballona Creek. The mussel population at each point is correlated to these water properties. The properties studied in the past three years were compared.

Methods/Materials
Water samples were taken at various points along Ballona Creek. Density, pH, and non-volatile residue (NVR) tests were used to evaluate the amount of salt in the water samples. The samples were tested for turbidity using a homemade turbidimeter. The results were graphed versus the distance inland from the ocean. Mussels were identified and counted at each water testing location along the creek. Four six-inch square test areas were established at each spot and the mussels within each square were counted. The mussel results were graphed against the various water properties to determine if there was any correlation between the mussel population and water properties.

Results
Mussel population does depend upon some of the water properties I measured. The average mussel count is greater at the outlet of the creek than it is further inland. As salinity increases, mussel count also increases, but mussel count decreases when temperature and nitrite increase. Mytilus galloprovincialis and Mytilus californianus were found and identified in the creek. Mytilus californianus was only found at the first three sampling locations closest to the ocean outlet. Over the three years of repetitive measurements, there was not much variation in the chemical properties of the water that were tested in this project.

Conclusions/Discussion
Mytilus galloprovincialis and Mytilus californianus are both found in Ballona Creek. The majority of Mytilus californianus mussels were found at the outlet of the creek. Once beyond the region of the creek populated by Mytilus californianus, the water conditions did not have a strong correlation to the mussel population. My comparisons from the last three years also show that the conditions in the creek have remained consistent.

Summary Statement
Ballona Creek water properties, such as salinity, turbidity, and density, were measured to determine changes along the creek, and these properties were correlated with the populations of Mytilus californianus and Mytilus galloprovincialis.

Help Received
Dr. Jayson Smith (Cal. State Fullerton) gave me guidance and assistance in mussel identification.