CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

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Project Number
J2203

Project Title
Shellfish: Nature's Water Filter

Abstract

Objectives/Goals
The objective of our experiment is to determine which of three shellfish species (mussels, clams, and oysters) filter bay water for food the fastest. We believe that the mussels will filter the water faster than the oysters and clams because the mass of the animal inside the shell is larger than that of the oysters and clams.

Methods/Materials
We used four 10 gallon tanks, algae, filtered bay water, 8 Pacific oyster, 23 mussels, and 23 clams. We placed oysters, clams, and mussels each in separate tanks (the fourth tank was the control tank). We put 2 ml of concentrated Nannochloropsis algae into each of the four tanks and visually monitored the clarity of the water over the next 24 hours using secchi discs.

Results
Our experiment produced differing results when repeated. After eight hours, the first experiment showed that the clams filtered the water fastest. The mussels were next fastest and the oysters were slowest. An interesting thing happened during the first experiment: the mussels spawned in their tank which added to the murkiness of their water. In the second experiment the clearance rate of the mussels was faster than the other mollusks. The mussels did not spawn during the second experiment.

Conclusions/Discussion
Our conclusion is that mussels are the fastest at filtering water. If they had not spawned during the first experiment, we feel they probably would have consistently been the fastest. The oysters, by comparison, were the least efficient animal during both experiments.

Summary Statement
Demonstrate the filtering ability of three species of shellfish and their ecological benefits.

Help Received
Parental help with photography, animal and water collection, and experiment set up.