CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
S1503

Project Title
Don't Move a Mussel!

Abstract

Objectives/Goals
The objective of this project is to create an eco-friendly, anti-corrosion and anti-biofouling coating to deter and control bio invasive Quagga Mussels from adhering to substrate surfaces and contaminating fresh water sources. This project is the result of extensive field research whereby coatings were created from plant and mineral extracts and applied to substrate surfaces and field tested. A second objective was to determine whether bees and wasps can be trained to detect quagga mussels attached to water recreational vehicles at lakeside checkpoints thus providing an economical on-site investigative method for park rangers to prevent cross contamination of waterways.

Methods/Materials
This researcher made plant extracts, believed to be selectively toxic to the Dreissena species based on their biology; then added them to an eco-friendly, sticky coating thus creating boosted anti-corrosive,bio-friendly coatings. These boosted coatings would not only deter quagga mussel adhesion to substrate
surfaces, but would have the added benefit of efficiently preventing corrosion of those surfaces. Finally, training bees and wasps to recognize the scent of the quagga mussel was tested using blocks of dessicated quagga mussels.

Results
The data gathered to date is supportive of original hypothesis in that bio-friendly sticky coatings to which natural extracts are added do have a deterring effect on quagga mussel veliger attachment; and show anti-corrosion capabilities of target treated substrate surfaces. Furthermore, trained wasps can be used for early detection of quagga mussel around recreational equipment assisting authorities in mitigating quagga mussel cross-contamination of water supplies.

Conclusions/Discussion
Initial observations of the experiment show promise of proving my preliminary hypothesis that certain plants have deterring molluscidal potential. Specifically, the organic mixtures on the coupons placed in Lake Skinner appear to deter and repel quagga attachment activity. Further research is ongoing with test coupons set in several lakes in Riverside and Ventura Counties and data is being analyzed. Laboratory studies are underway in order to substantiate field study data conclusions.

Summary Statement
Improve upon anti-corrosion coatings using eco-friendly botanicals and minerals in an attempt to prevent Quagga Mussel biofouling of substrate surfaces.

Help Received
California Department of Fish and Game grant of permits and use of boating equipment allowing me to study the quagga. Parents for transportation to lake areas.