CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
Erin C. Gray

Project Number
S1508

Project Title
Prevention of Marine Biofouling Utilizing Natural Substances

Abstract

Objectives/Goals
The objective of this project was to determine whether the biofouling of boat materials (fiberglass) could be avoided by the use of natural substances such as lime juice and olive oil when mixed with latex paint.

Methods/Materials
A piece of fiberglass was cut into eight equal pieces using a saw and a hole was drilled into each one. 40 ml. of lime juice and 60 ml. of white latex paint were mixed as well as 40 ml. of extra virgin olive oil and 60 ml. of the paint. Two of the samples were painted with the lime mixture, two with the olive oil mixture, two with plain latex paint, and two with copper bottom paint. They were allowed to dry in-between the two coats. After all of the paint had dried thin rope was used to tie each piece of fiberglass to the PVC pipe and was submerged into the water.

Results
The final results show that the lime juice sample had the smallest amount of growth out of the samples painted with a natural, nontoxic substance.

Conclusions/Discussion
The results did not support my hypothesis; I believed that the fiberglass pieces painted with the olive oil mixture would help prevent biofouling the best as it creates a slick surface and deflects water. The lime samples proved to prevent a large amount of biofouling and hold up to the rough ocean environment without significant paint loss. This suggests that lime juice does inhibit the development of organisms on fiberglass and may be a good antifouling agent without the harmful effects of chemicals and toxins.

Summary Statement
This project investigates the utilization of natural substances, such as lime juice and olive oil, and if they can be proven effective in preventing marine biofouling without the excretion of toxins from chemicals.

Help Received
Father helped cut fiberglass.