CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY

Name(s)
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Project Number
22712

Project Title
Can Aquatic Plants Improve the Water Quality of Polliwog Pond?

Abstract

Objectives/Goals
My objective was to determine if water hyacinth, a common aquatic plant, could improve water quality in a local pond. The pond is polluted with nitrogenous compounds from urban runoff, which in high concentrations can become toxic. Through this experiment, I hoped to test a natural treatment system that could be applied on a large scale to solve a water pollution problem.

Methods/Materials
Using 2 large plastic tubs, 10 gallons of the pond water, an aquarium test kit for ammonia, nitrites, and nitrates, and 5 water hyacinth plants I was able to conduct an experiment to determine the plants# ability to remove ammonia, nitrites, and nitrates from the pond water. I did so by adding 5 gallons of pond water and the 5 water hyacinth plants to one of the tubs. The other tub was my control, which had only 5 gallons of pond water. I monitored the levels of the 3 nitrogen chemicals in the tubs on a 12-hour basis for 3 days.

Results
I found that the water hyacinth were very effective at removing the aforementioned nitrogen pollutants from the water. Most of the ammonia, nitrites, and nitrates significantly reduced in the experimental tub within 72 hours. Also, the water in the tub with the plants was clearer within 1 day. At the end of the experiment, I found an abundance of algae and insect larvae in the tub without the plants.

Conclusions/Discussion
The results supported my hypothesis. Aquatic plants can improve water quality with benefits that include clearer water and reduced pollutants such as ammonia, nitrites, and nitrates. I hope to present a proposal to the City of Manhattan Beach to grow water hyacinth in the pond. The plants will not only clean the water, but they will also provide additional habitat for the existing waterfowl. If the water becomes clean enough, the introduction of fish might be possible. It would be a great thing if I could make such a difference in my community. On a larger body of water, such plants could be used to improve water quality by removing ammonia, nitrites, and nitrates.

Summary Statement
My project#s purpose was to see if aquatic plants could improve the water quality of a local pond.

Help Received
Mother provided transportation and aided with water collection and board design. Father aided with scientific method and data interpretation.