



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

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Project Title
Biomonitoring: Using Benthic Macroinvertebrates to Determine the Health of the San Lorenzo River

Abstract

Objectives/Goals
To determine the water quality of the San Lorenzo River by analyzing the benthic macroinvertebrates, their diversity, and by finding good, middle, or poor water quality indicator organisms.

Methods/Materials
In the field we collected Benthic Macroinvertebrates, (BMI's) from one riffle at three different transections with kick nets. In the lab we stored our samples in an ethanol glycerine solution. We counted and sorted our 100 bug sample using microscopes and numerous taxonomic references. Working as a team, and with our mentors, we were able to conduct an in-depth analysis of our sample. We found that over ninety percent of our sample was made-up of BMI's that are indicators of good water quality.

Results
Insect, Number, Eating Habits ,Niche:
Blue Caddisflies 2 scavengers scavengers
Heptageniidae (Mayfly) 1 range from predaceous to plant(algae) feeders omnivores
Perlidae (Stonefly) 5 range from predaceous to plant(algae) feeders omnivores
Tabanida (Deer Fly) 2 very predacious, eats other aquatic bugs carnivores
Aquatic Nematodes 3 algae, ditritus herbivores
Lepidostoma larval cases (Caddisfly) 2 eat algae, decaying plant matter and microorganisms omnivores
Amphipoda (Scuds) 5 anything, including larger organisms omnivores
Apatania larval cases (Caddisfly) 1 algae, decaying plant matter and microorganisms omnivores
Optioservus (Riffle Beetle Larvae) 9 diatoms and algae herbivores
Optioservus (Riffle Beetle Adult) 1 diatoms and algae herbivores
Simuliidae (Black Fly Larvae) 1 algae herbivores
Coenagrionidae Arval larva (Narrow-winged Damselfly) 1 very predacious, eats other aquatic bugs carnivores
Hydropsychidae (Caddisfly) 67 small aquatic organisms and various plants omnivores

Conclusions/Discussion
91% of the BMI#s were indicators of good water quality: caddisflies(72%), stoneflies(5%), mayflies(1%), damselflies(1%), and deerflies(2%). Due to the vast amount of good water indicators, it is plausible to assume that the river is in good health; this is also supported by the lack of moderate and poor water indicators. A mere 5% of our sample was comprised of moderate water quality indictors, solely scuds. This left us with only 4% of our sample composed of indicators of poor water quality, including aquatic

Summary Statement
Our project was designed to collect, sort, and count Benthic Macroinvertebrates, (which are indicator species of water quality) to determine the health of the San Lorenzo River.

Help Received
Our mentor, Tamara Clinard Doan, helped with field and lab procedures and gave us numerous references; Our teacher, Jane Orbuch, offered various support, supervision, references, and materials.