CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY

Name(s)
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Project Number
J1104

Project Title
An Ocean of Plastic

Abstract

Objectives/Goals
In September our class went on a weeklong trip to Catalina to learn about the ocean. When I returned home, I took my own plankton sample, and I found microplastic. A goal of this project was to see what the ratio of plastic to plankton was in a sample of ocean water. Another goal was to see how much microplastic was in a sample from the ocean at a lagoon effluent versus the ocean north of the effluent. I believed that overall there would be more plankton than plastic in each sample.

Methods/Materials
I first studied eight preliminary samples and created a plastic control so I could recognize the plastic pieces. I then obtained multiple samples on three different days. The materials that I used were a 153 micron plankton net, water bottles, a computer, a microscope, and petri dishes for viewing. I obtained samples at low tide and high tide for both locations. The counting and documentation for the sample contents took many hours.

Results
After examining more than 100 Petri dishes of sample water, I found the plastic count to be at least three times the number of plankton in the all of the samples. The highest ratio of plastic to plankton was at the effluent at 28:1 and the lowest ratio was 3:1. For this project I used a microscope that could take photographs and video with 40x and 100x lenses.

Conclusions/Discussion
In one Petri dish of ocean water there were at least 45 pieces of plastic, and it contained just 5ml of water. I was surprised by how much plastic was in my samples and how some of the phytoplankton were able to form colonies on the plastic (which eventually sinks the plastic). The findings in this project made me aware of much plastic might be present at our local beaches.

Summary Statement
The goal of my project was to document microplastic in ocean water samples from a lagoon effluent and along the beach at high and low tide.

Help Received
My Dad who drove me to the Carlsbad State Beach; My science teacher, Mrs. Hunker for her help and support.