



Journal of Student Research on Puget Sound

The collected reports of the student scientific explorations aboard the *SV Carlyn*

Salish Sea Expeditions is a catalyst for students in their inquiry of Puget Sound through boat based-scientific exploration.

Plankton in the Deep

Meadowdale Middle School - 7th Grade
Lynnwood, Washington



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School: Meadowdale Middle School
Dates: March 30-April 2, 2007
Grades: 7th Grade
Teacher: Steve Howard

I. Title

Plankton in the Deep

II. Abstract

Our prediction was, if we compare plankton at different depths then there will be more zooplankton deeper in the water than phytoplankton because phytoplankton photosynthesize. We collected our data using the plankton nets and we also used the dissolved oxygen probe and the secchi disk. Once we collected the plankton in the nets we settled it in graduated cylinders to measure the volume. When we had collected our data we found that our hypothesis was correct because there was more zooplankton deeper than at the surface. If we had the chance to do this experiment again, then we might take a longer trip because there might be better weather, and we could collect better data.

III. Introduction

On March 30, 29 Meadowdale Middle School students, our teacher Mr. Howard, and the Salish crew set sail from Tacoma to carry out our plankton study on our way to Seattle. Our prediction was "If we compare the amount of plankton at different depths then there will be more zooplankton at deeper depths than phytoplankton because phytoplankton photosynthesizes."

We chose this prediction because it sounded the most interesting and because plankton is all around us. We measured zooplankton and phytoplankton at different depths the surface (0 meters), then 3 meters and then 15 meters.

Plankton photosynthesize from the sun's energy to produce their own food. The zooplankton don't use photosynthesis to get their food; instead, they eat other plankton and they can move around independently unlike phytoplankton. We had a chance to see the plankton and other creatures under the microscopes

IV. Experimental Design

Our prediction was: If we compare the amount of plankton at different depths then there will be more zooplankton at depth and more phytoplankton near the surface because phytoplankton photosynthesis and zooplankton don't. To test this prediction, we used many different materials including phytoplankton nets, zooplankton nets, a secchi disk, a dissolved oxygen probe, a niskin bottle, and graduated cylinders.

One decision we had to make about how to deploy these instruments was; "what depths should we take samples from?" Our answer was the surface, 3 meters, and 15 meters. Another question we had was; "How long should we tow our plankton nets?" That answer was for 5 minutes.

Each person had a job of what to deploy and when. We also decided to take samples from various places that we sailed such as, South Vashon island, North Blake island, Colvos passage, north west Blake island, and north east Blake island.

In order to deploy our equipment, we had to ask permission from the captain, be sure to tie off the equipment to the boat, be precise with our measurements, and settle the plankton in order to measure the amount from our samples. After we settled our plankton, we were able to look at them under a microscope and found many kinds of phyto and zooplankton that looked very peculiar. We found our methods to be very successful.

V. Results

We measured the amounts of Phyto and zoo plankton at different depths. The results for the surface were 5.52mL for phyto and 3.14mL for zoo. At 3 fathoms the results were 4.325mL for phyto and for zoo it was 2.75mL. For 15 fathoms the zoo plankton was 3.3mL. Overall there was more zooplankton and less phytoplankton the deeper the water got. **[see graph on large paper- not yet converted to e-form]** We measured the amounts of the dissolved oxygen at the surface, 3 meters, and 15 meters. At the surface it is 9.4 mg/L, at 3 meters 9.38mg/L and at 15 meters 4.00 mg/L.

VI. Discussion

Prediction: If we compare phyto-plankton and zooplankton at different depths, we will find more phyto-plankton at the surface and zooplankton at deeper depths because phyto-plankton photosynthesizes and zooplankton doesn't.

Supporting/ Not Supporting Data:

Our data supports our prediction because there was more phyto-plankton on 3 meters and less at the surface. There was none at 15 meters. There was more zooplankton at 15 meters than there was at 3 meters and at the surface.

How does this help us? This helps us because this gives us more oxygen. Also this means that the plankton are healthy.

Observations:

If the weather conditions had been better, our data would have been very different. For example, more sunshine means more phytoplankton.

Questions for future study:

Would the moon affect our data if we got plankton at night?

Would high/low tide affect our plankton amounts?

Would the amount of oxygen in the water affect the amounts of plankton?

VII. Cruise Summary

We had a lot of fun on our trip and it was a great way to spend the first few days of Spring Break!

CAMPING SITES.

We stayed at two places. Vashon Island for one night and Blake Island for two nights.

FOOD AND COOKING.

We had a lot of really yummy meals. We ate French Toast, Pancakes, Oatmeal, Chicken Nuggets, Sandwiches, SOUP, Chili, Spagetti, Burritos, desserts were brownies s'mores and much more.

SAILING AND NAVIGATION.

We had a lot of fun on sailing watch, learning about charting and navigation, and learning how to steer the boat!

THE WEATHER

The weather was random going from rain to a nice sunny day. It was mostly cloudy but we had some sun towards the end of the trip.

SHORE ACTIVITIES

On shore, we set up tents for sleeping and our very own camp kitchen. We played many games on land, such as Capture the Flag and Bob the Chicken, and we also enjoyed the campfires and eating.

WILDLIFE

We saw many different animals in addition to the plankton we caught each day. We saw many raccoons, deer, geese, and Dall's porpoises.

SINGING

Our group did a lot of singing, learning a few sea chanteys, and even writing our own! Our favorite song to sing was "Black Socks," and we sang it at every possible chance.