



# 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.

**Will there be more plankton in clearer water or less clear water?**

**Pacific Northern Academy - 6th & 7th Grades  
Anchorage, Alaska**

Spring 2007

Salish Sea Expeditions  
647 Horizon View Pl. N.W.  
Bainbridge Island, WA 98110

phone: 206.780.7848  
[www.salish.org](http://www.salish.org)



**School:** Pacific Northern Academy  
Anchorage, Alaska  
**Dates:** May 20 – 23, 2007  
**Grades:** 6<sup>th</sup> & 7<sup>th</sup>  
**Teachers:** Charlie Tyrell  
Pam Smelcer

## **I. Title**

*Will there be more plankton in clearer water or less clear water?*

## **II. Abstract**

Our hypothesis was “There will be more plankton in clearer water.” We chose this experiment because we thought it would be neat to learn how to check water clarity and because we wanted to learn more about plankton.

We used several different pieces of science equipment. We used the phyto and zooplankton nets to collect samples. We used the secchi disk to test the water clarity. We used the dissolved oxygen probe to check the dissolved oxygen. Lastly we used the sonde to measure salinity, temperature, and dissolved oxygen, but the software didn’t work for us. We found that the clearer the water, the more zooplankton, the murkier the water, the more phytoplankton. We didn’t entirely reject our hypothesis, but found different variables that didn’t prove our entire hypothesis.

## **III. Introduction**

Our hypothesis was that there would be more plankton in clearer water. We originally really wanted to do seafloor bottom study but the Salish crew told us that only looking at the bottom would be very limiting due to the structure of the bottom of Puget Sound. Another reason it would be hard to study the seafloor because of a limit on tools.

We arrived in Anacortes, Washington to board the Carlyn, a 61 foot yawl. The sixth and seventh grade boarded the Carlyn and we remade our hypothesis. After ten to fifteen minutes of discussion we came with our new hypothesis and question. “Where will there be more plankton?” and our hypothesis was “There will be more plankton in clearer water.”

## **IV. Experimental Design**

Our Hypothesis: There will be more plankton in clearer water.

The equipment that we used, that the Salish crew provided, were the phyto and zooplankton nets, the Secchi Disk, the Sonde, the Dissolved Oxygen Probe, and the Eckman Dredge.

An idea for the deployment that we had was to use an assembly line. The quicker the deployment, then the quicker you can start sailing the ship. The thing that you don't want to hurry on is when the boat stops. We had to be sure that we had permission from the Captain, and the Watch that was running the sails, if it was okay to deploy.

First we had to dip the bottles of the nets for the zoo and phytoplankton, into the water so that there would not be any air or air bubbles in the bottle. Then we would deploy the equipment, making sure that it is securely tied to the boat, just in case it fell into the water. That is how we did our science experiment.

## **V. Conclusion**

After studying the data we collected over four days in Puget Sound, we concluded that there was more zooplankton in clearer water, but less phytoplankton. Also, there were more phytoplankton in less clear water and less zooplankton. We think this is because phytoplankton are dark colors, like green and brown, and zooplankton are lighter colors, like white and clear. The plankton drift with the tides, and where they go, they make the water clearer or darker depending on if the type of plankton they are. If some phytoplankton drift into an area they will make the water less clear, and if some zooplankton drift into an area, it will make the water clearer because the zoo plankton are lighter colors.

## **VI. Results**

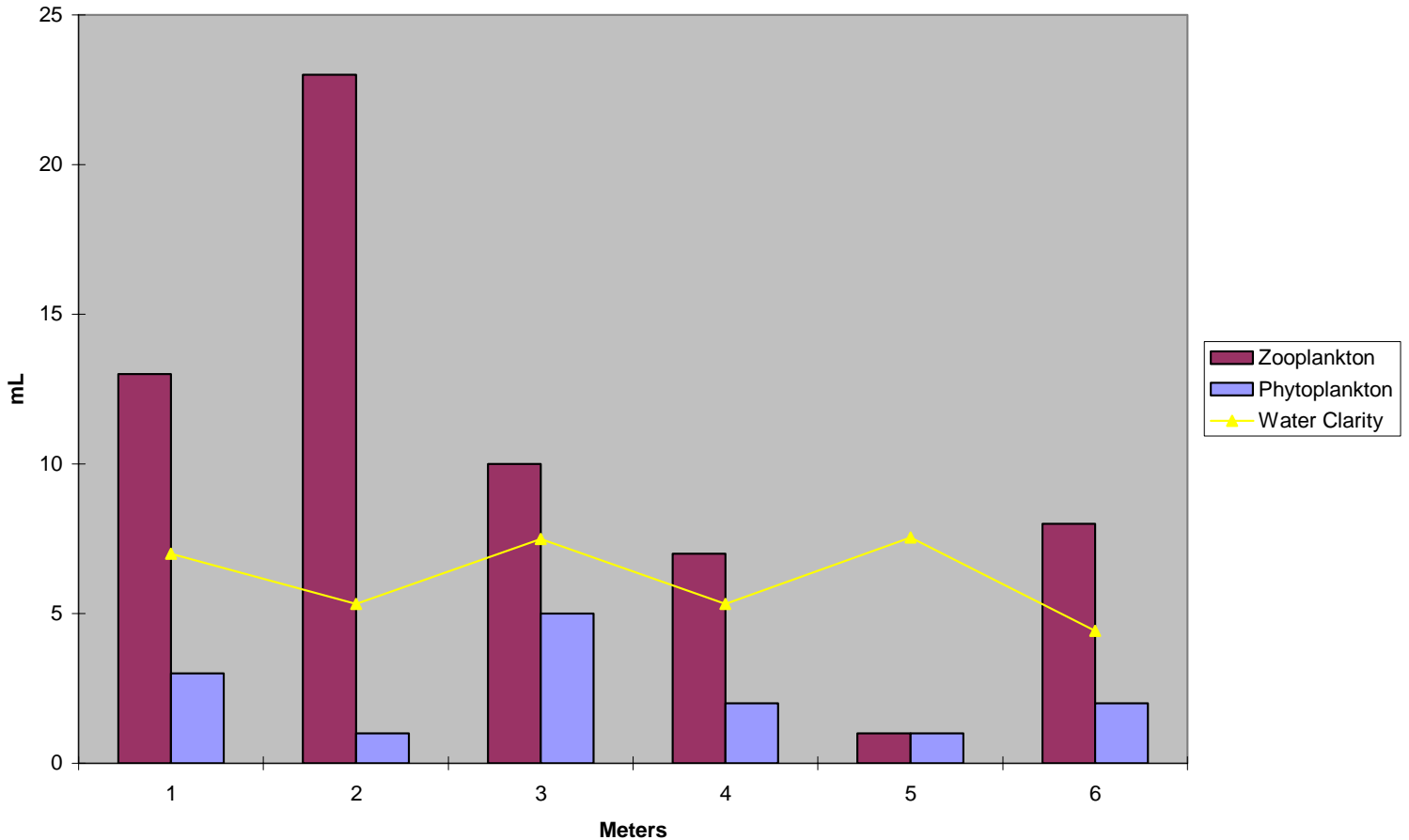
Our hypothesis was that there would be more plankton in clearer water. After taking some samples of plankton we came up with the following:

Clearer Water= more zooplankton and less phytoplankton

Less clear water= less zooplankton and more phytoplankton

This states that our hypothesis was partly right and partly incorrect. We thought that the answer would be the same for all plankton, but the results showed that it

### Results



changes between the different types. We weren't completely wrong, but our hypothesis was not specific enough.

### VII. Discussion

If we were to change part of our expedition, we would have different challenges everyday. This would help us make progress throughout our research. To help our procedure, we would work more as a team than in little pairs. Each person would have a job. One would check knots, another would time, some would hold the nets, etc... An assembly line also worked very well for our group. Our results would have been more accurate if we had deployed the nets one at a time. Then the timing would only start once the net person was ready.

We should have considered all the variables during the experiment. To be aware of all the variables, we would need more information about the spot of deployment. For example, a Niskin bottle and an Eckman dredge. The Niskin bottle would show us about the amount of nutrients at different depths when the dredge would show the contents of the ocean floor. Using these instruments, we could have discovered the probability of phytoplankton living in that area. After the experiment, it was helpful when we had a discussion about our results and why the things were the way they were.

### VIII. Cruise Summary

In our experiment there were many non-scientific variables. Some of them had to do with the people and groups themselves, such as teamwork, communication, how much sleep we got, general health, and our overall emotions at the time. There was also the factor of human error. Each person looks at things differently, therefore it is practically impossible to get the exact same results from everyone. No two people deployed the instruments the exact same way, and there were differences in the way people looked at the samples.

Then there were the variables we didn't have any control over, like the weather. In the rain it was harder to see things, like the secchi disk and the numbers on the beakers. The wind might also have contributed to our results. We took samples and deployed the equipment from different locations in order to compare different amounts. The aspects of the places could have made a difference. Areas in the San Juan's have different currents, slight variants in animal and plant life and the presence of human development. All of these things were incalculable in the sense that we could not factor them accurately into our results.