



Does Phytoplankton like Phosphate? Journal of Student Research on Puget Sound

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

The collected works of the student scientific explorations aboard the *SV Carlyn* on the waters of Puget Sound by the fifth grade of Trafton Elementary School.



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Arlington, Washington
Grade: **5**
Teacher: **Mrs. Faxon**

I. **TITLE: Does Phytoplankton Like Phosphate?**

II. **Abstract**

Our hypothesis was that there would be more phosphate where there was more phytoplankton. We chose this experiment because we wanted to know how phosphate affected phytoplankton.

We used the phyto- and zooplankton nets to collect and test for phytoplankton, and the Niskin bottle to collect water to test for phosphate. We used microscopes to research and identify plankton. We found when we found less phosphate, that we found more phytoplankton. Our conclusion was that we clearly rejected our hypothesis.

III. **Introduction**

We picked phytoplankton as our main subject because it is something we found interesting and something we were able to study. Phytoplankton are important to Puget Sound because phytoplankton are at the bottom of the food chain.

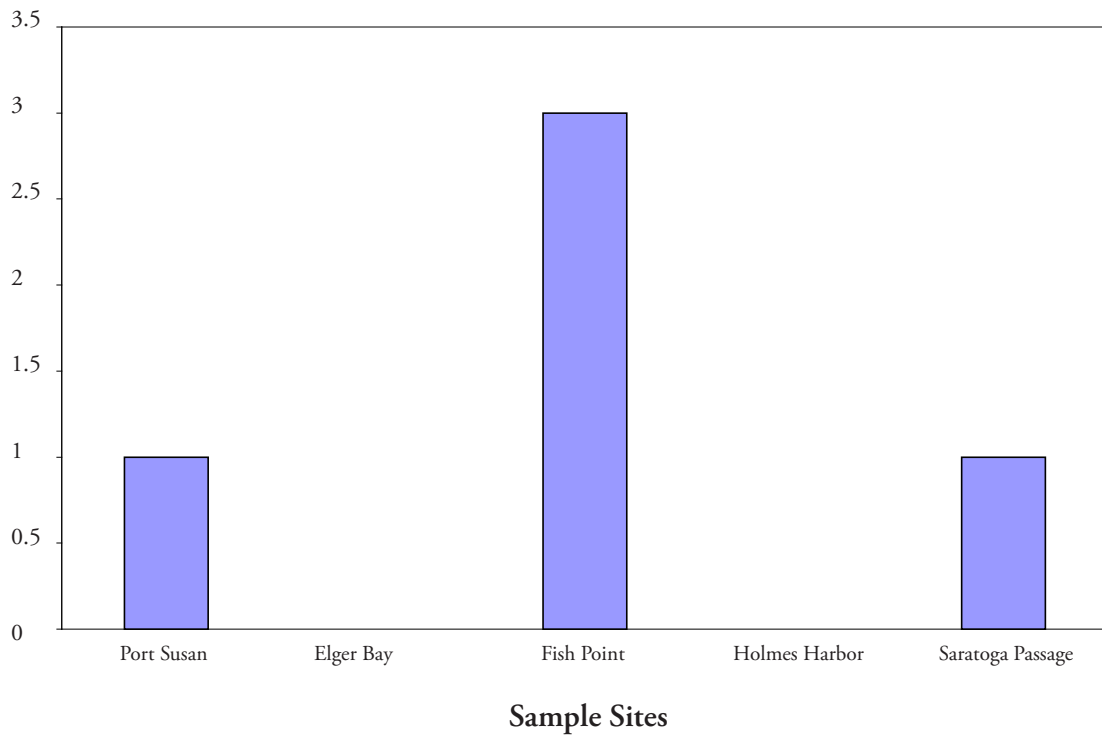
IV. **Experimental Design**

Our class took phytoplankton and zooplankton samples. We put the Niskin bottle in Puget Sound to collect the water and we put the zooplankton and phytoplankton nets to collect plankton. First, we used bowline knots to tie the Niskin bottle, secchi disc, and plankton nets with the rope to the boat. Salish Sea Expedition staff helped us put the Niskin bottle and the zooplankton and phytoplankton nets in Puget Sound. The Niskin bottle was deployed to a depth of 3 meters. The plankton were pulled up out of the water after 5 minutes. Our group used microscopes to look at the plankton.

Our sample sites were chosen by looking at a chart of Puget Sound and then deciding where we would stay each of the two nights we were on our trip. We chose sample locations based on how far these sites were from these overnight sights. We chose Port Susan as a sample site because the Stillaguamish River empties into Puget Sound at this location. We thought because there is phosphate in fertilizer which gets into the water system we might find higher levels of phosphate at the Port Susan location.

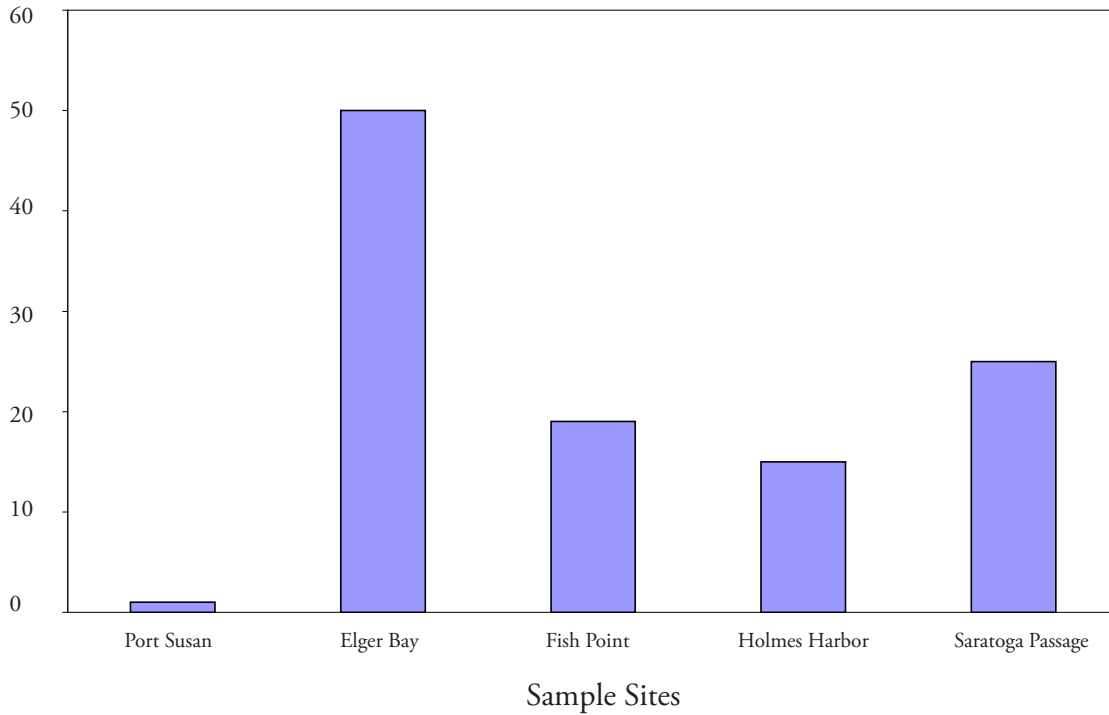
V. Results

Amount of Phosphate Found at Five Sites in Puget Sound



At each site we put the Niskin bottle in 3 meters deep. At Port Susan we collected 1 mg of phosphate, and at Elger Bay we collected 0 mg of phosphate. Then we went to Fish Point and collected 3 mg of phosphate. After that we traveled to Holmes Harbor and collected 0 mg of phosphate and finally at Saratoga Passage we collected 1 mg of phosphate.

Amount of Phytoplankton at Five Sites in Puget Sound



At our first site, Port Susan, we found 1 ml of phytoplankton. At our second site, Elger Bay, we found 50 ml. of phytoplankton. Then, at Fish Point we caught 19 ml of phytoplankton. At our fourth site, Holmes Harbor, we caught 15 ml of phytoplankton. We found 25 ml of phytoplankton at Saratoga Passage. At each site we left the nets in for 5 minutes.

VI. Discussion

Our hypothesis was that there would be more phytoplankton where there is more phosphate. We thought that would be a good hypothesis because we figured if there were more nutrients in the water (such as phosphate) there would be more phytoplankton. At the end of the trip our results were false because there were more phytoplankton when there was less phosphate. We realized there were other factors that could affect the amount of phytoplankton in the water. This included things such as the amount of salt, sunlight, fresh water, and dissolved oxygen in the water.

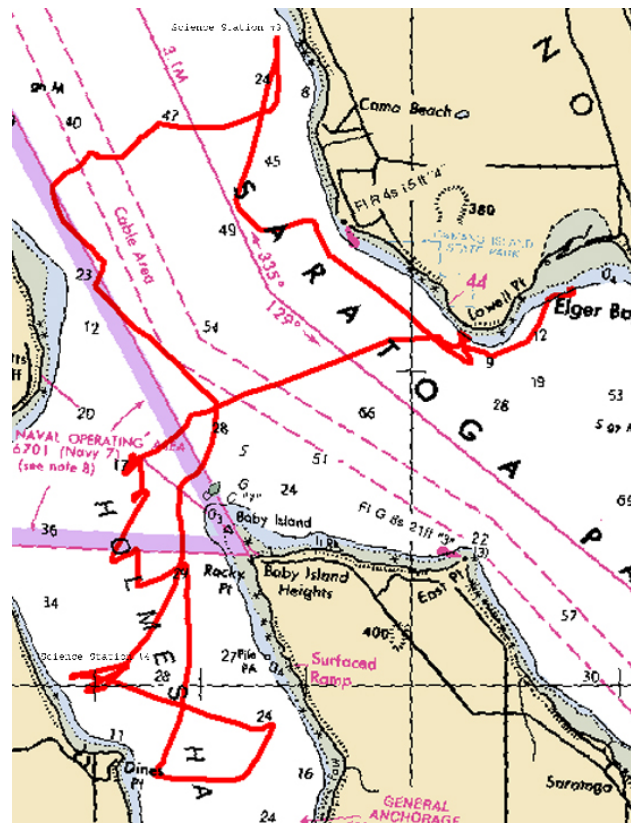
VII. Cruise Summary

Our research project consisted of getting out the phytoplankton nets and Niskin bottle and attaching the equipment with bowline knots to the boat. We deployed the phytoplankton nets and kept them in the water for five minutes. We deployed the Niskin bottle to 3m to get our sample of water to check for the amount of phosphate at each site. The phytoplankton samples were poured into a clear jar with a lid. We poured each sample eventually into a tall plastic cylinder and could see how much phytoplankton there was in each cylinder by looking at how the level of green matter was in the cylinder. We later went down into the main cabin of the Carlyn and looked at the plankton under microscopes. We used pipettes to place drops of the water sample on microscope slides. Under the microscopes we could see phytoplankton and zooplankton. The water from the Niskin bottle was put in a plastic container and was later tested for phosphate with a phosphate testing kit.

Some other questions we had while studying our hypothesis was: How long do phytoplankton live? Is there phosphate in our creek at Trafton? Is there phosphate in the rivers and lakes in our area?

Some ways to strengthen our results would be to take more samples in different areas of Puget Sound. We could also make sure we do the phosphate test correctly.

If our class went on another expedition we would see if there is more zooplankton than phytoplankton. We could also study more about phytoplankton before going back on the trip again.



Sampling Site Cruise Track