



Will there be more zooplankton at the surface
where the water is less salty?

Journal of Student Research on Puget

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 5th & 6th graders of REACH.

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

phone: 206.780-7848
www.salish.org



School: REACH
Stanwood, WA
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Grades: 5th & 6th
Teacher: Cheryl Anderton

I. Title

Will there be more zooplankton at the surface where the water is less salty?

II. Abstract

Our hypothesis is that there will be more zooplankton at the surface where it is less salty. We towed the zooplankton net for three minutes at both the surface and at five meters to measure the zooplankton, and tested surface and five meter water samples for salinity. To find our results we settled the zooplankton in graduated cylinders. At about five meters we caught more plankton than at the surface at each station.

III. Introduction

Our hypothesis is that there will be more zooplankton at the surface where it is less salty. We decided on our hypothesis because all of us didn't think that plankton could survive in deeper, saltier water. We chose our subject because too much salt may kill plankton. That possibility seemed like it would give us a better chance to use the scientific equipment. Our subject could be comprehended and answered better in the salty plankton contained in Puget Sounds.

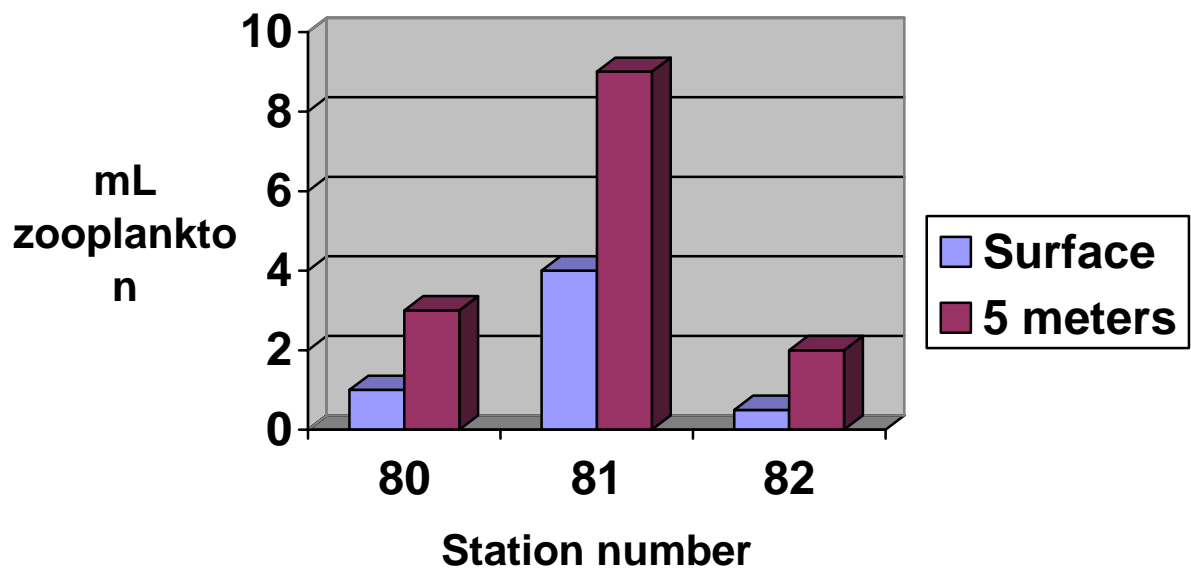
IV. Experimental Design

We used the Niskin bottle, zooplankton net, phytoplankton net, oxygen probe, and the bucket. The oxygen probe found less oxygen the deeper it got. We also used the refractometer to measure salinity. The mean discovery was 30 ppt salinity of the water. The oxygen probe we dipped in the water meter by meter. The zooplankton net we kept in the water for three minutes and deployed it at the surface and at five meters depth. The deeper net got more plankton than the surface net. We used the Niskin bottle to sample the water at five meters and the bucket to sample water at the surface to measure the salinity of the water. Once we caught the plankton we put them in a container then we estimate the amount of plankton in each sample on a scale of 1-5, then we settled each sample and measured the volume of plankton. The secchi disk measured how clear the water was, the plankton covered the disk so it disappeared faster.

V. Results

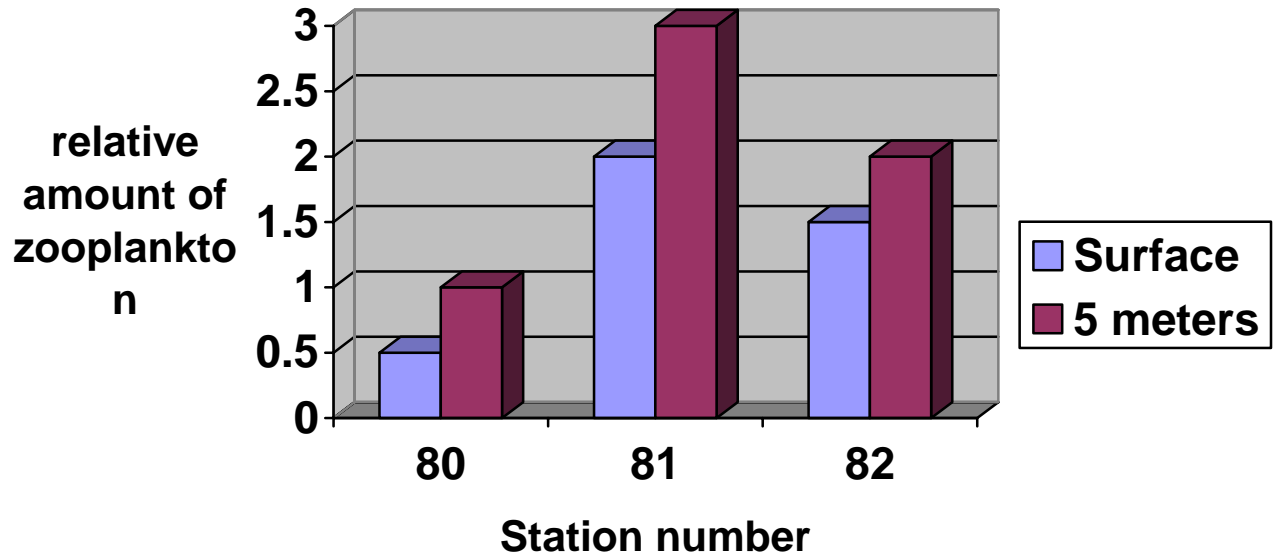
Station number	mL zooplankton Surface	mL zooplankton 5 meters
80	1	3
81	4	9
82	0.5	2

Zooplankton settling (quantitative)



Station number	Estimated zooplankton Surface	Estimated zooplankton 5 meters
80	0.5	1
81	2	3
82	1.5	2

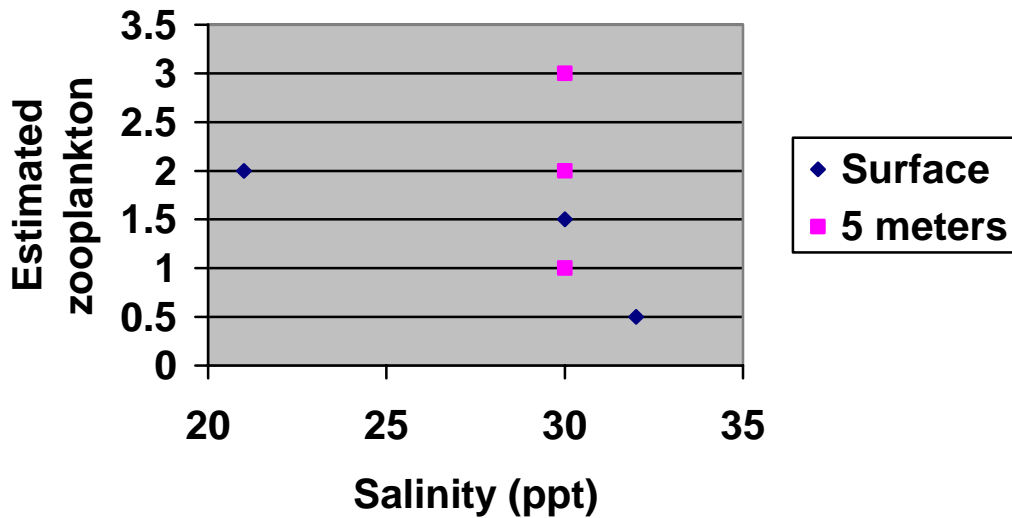
Zooplankton estimated abundance



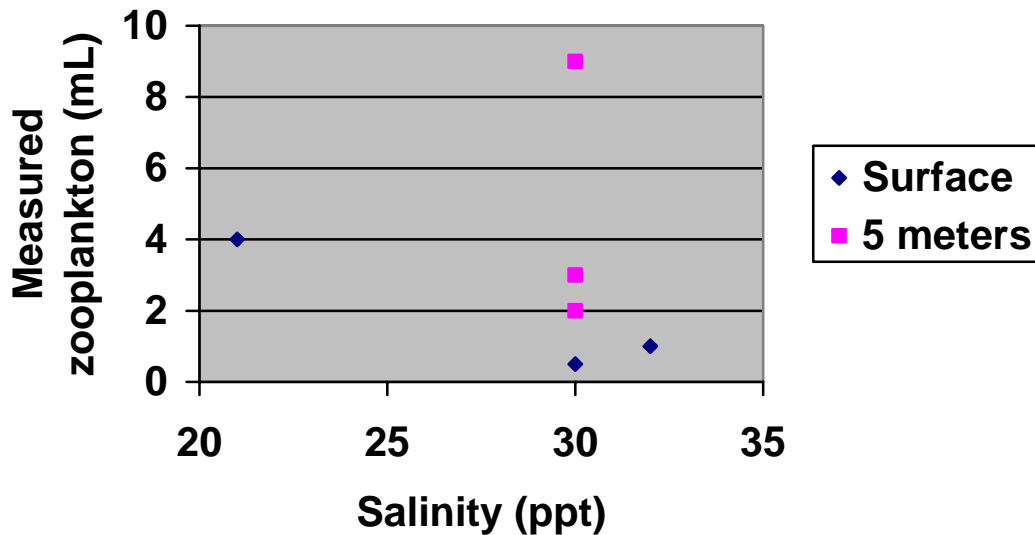
At every station we found more zooplankton deeper than at the surface. The total amount of zooplankton was different at each station, but we always found more in the five meter tow.

As for salinity, it was the same at every five meter water sample, 30 ppt. The surface samples were different, 32 ppt, 21 ppt, and 30 ppt. They showed more plankton where it was less salty.

Salinity comparison



Salinity comparison



VI. Discussion

Our hypothesis is there will be more plankton at the surface where it's less salty. We had to reject our hypothesis though because we found more plankton at five meters than at the surface at every station. Our first research station was in between the Lummi Indian reservation and Lummi Island, near shore. Our second station was North by Northwest of Macia Island, away from land, and the

third station was South by Southwest of Barnes and Clark Islands, near Orcas Island and near shore. Then *Carlyn* broke down and had to be towed to Camp Four Winds by *Remedy*. The station away from shore had the most zooplankton overall, so maybe that was more important than salinity in determining how much plankton we caught.

VII. Cruise Summary

Shore Activities:

What we did on shore was we played a hand slap game, we also played *Carlyn* family fun and then we did boat Olympics and hangman. Last but not least we went to the China Caves.

Food and Cooking:

In our first meal on our expedition we had grilled cheese, vegetable soup, and lemonade. The cook crew for that meal was Jen and Ms. D. In our second meal (dinner) we had burritos, salad, rice, sautéed vegetables, and lemonade. The cook crew on shore was Kristin, Brandi, Bailey, Taylor, William, Carl, and Anthony. For dessert on shore we had apples with cinnamon sugar cooked on the campfire.

Camping Sites:

The crew stayed at two places. The first place we stayed was Sucia Island. Wind watch went on shore while the water watch stayed on the boat. The wind watch went on a walk and climbed on rocks to get to some cool caves. While that was going on the water watch was preparing dinner. After dinner the water watch played a game of *Carlyn* family fun. That game was like a mix of mad libs and charades. The second day was fun. The engine broke down and we had to be towed to Orcas Island by the *Remedy*. While we were being towed we held the boat Olympics. When we got to Orcas Island we went to Camp Four Winds. The whole trip was a blast!!!!

Wildlife Sightings:

On our trip we saw sea otters, porpoises, seagulls, crabs, fish, sea anemones, eagles, and jellyfish. All the jellyfish on the trip we saw were crystal jellies and had no tentacles. Most of the seagulls we saw were on the ferry. Sea anemones, barnacles, and tube worms were attached to the dock at Camp Four Winds. The crabs hid in the sand.