Copper vs Zooplankton

The Carlyn (trip #1)
Catharine Blaine K-8

A study on how copper affects zooplankton population in the Puget Sound.

Introduction

– We are 8th graders at Catharine Blaine. We went on our expedition in October 2015.

– How does copper affect zooplankton population in the Puget Sound?

– We chose this experiment because we were interested in Zooplankton and how could copper affect their population.

Background knowledge

– Our subject relates to the Puget Sound because Zooplankton is a big part of the food chain in the Puget Sound.

– Zooplankton are animal Plankton. Copper is a natural element but can also be introduced by human influence.

Background knowledge

- Because of prior knowledge we expected to see a decline in the zooplankton population in areas with excessive amounts of copper. We know excessive amounts of copper can be toxic to sea life.

Question and Hypothesis

- We hypothesized that if there were high levels of copper in the ocean, then the zooplankton levels would decrease because copper is essential in order for the zooplankton to thrive, but too much can be harmful to their survival.

Variables

- The MANIPULATED variable was the location we took samples of water.
- The CONTROLLED variable is the depth of the samples and the time the net was dragged in the water.
- The RESPONDING variable was the amount of plankton we obtained in the net.

Materials

- A boat (the S/V Carlyn)
- Niskin Bottle/Messenger
- Copper tablets
- Jars
- Colorimeter
- Zooplankton net
- Microscope
- Stopwatch

Methods

- We put the **Niskin Bottle** and **Zooplankton net** in for 90 seconds at a depth of 7ft. The niskin bottle would capture zooplankton so we could compare the population by location.

- We used microscopes and test tubes to analyze the zooplankton.
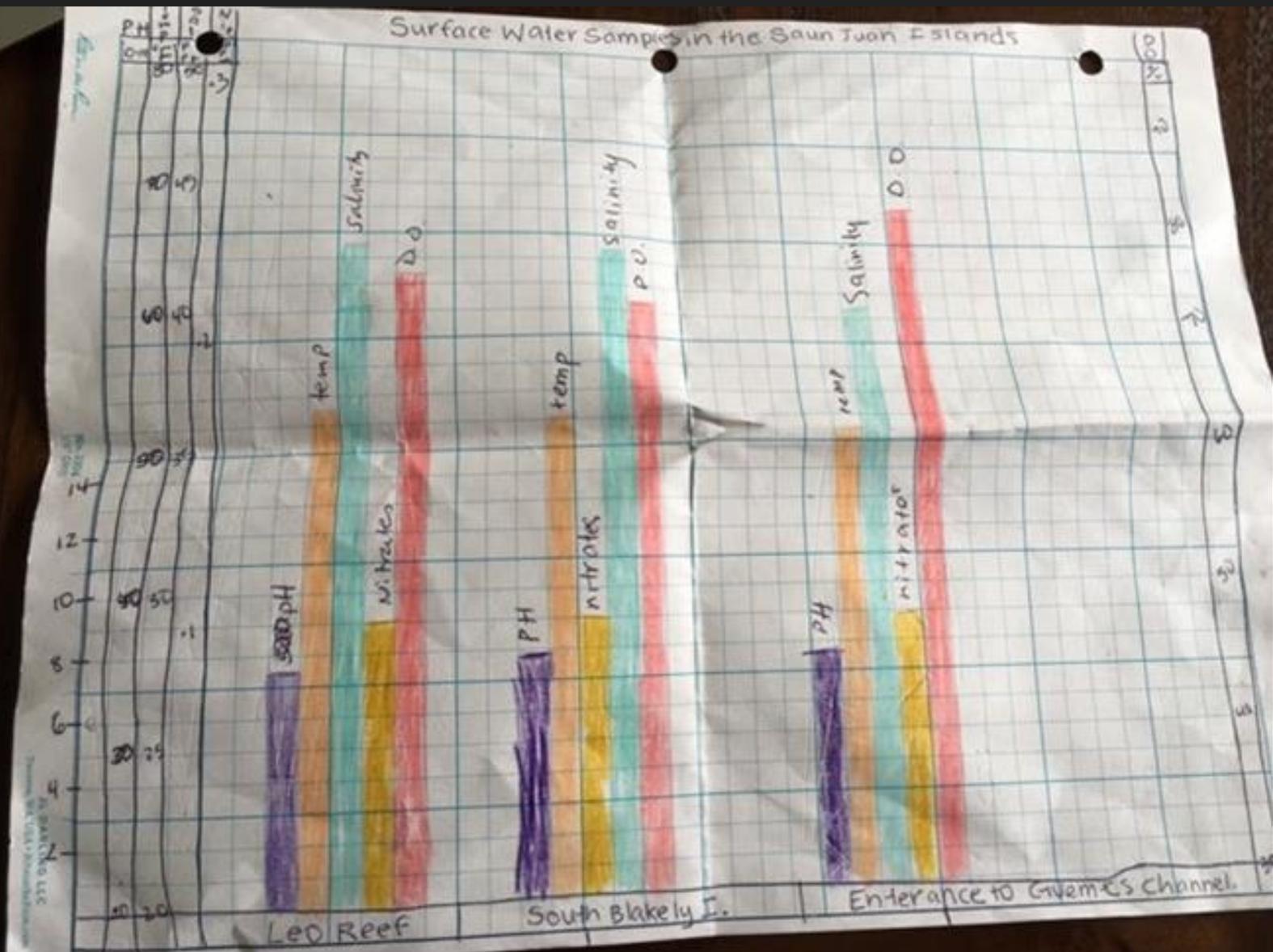
Methods Continued

- Over the period of 3 days, we continued collecting samples to add to our data analysis.

Data Analysis

Station	CU (ppm)	Zooplankton (ml)
1	0	5
2	.025	10
3	.06	15
4	.07	5

Data Analysis

Data Analysis Continued

- There is an uneven amount of copper and zooplankton in the Puget Sound.
- Copper and zooplankton don't directly correlate.
- The farther we went in our stations, the more copper there was in the water.
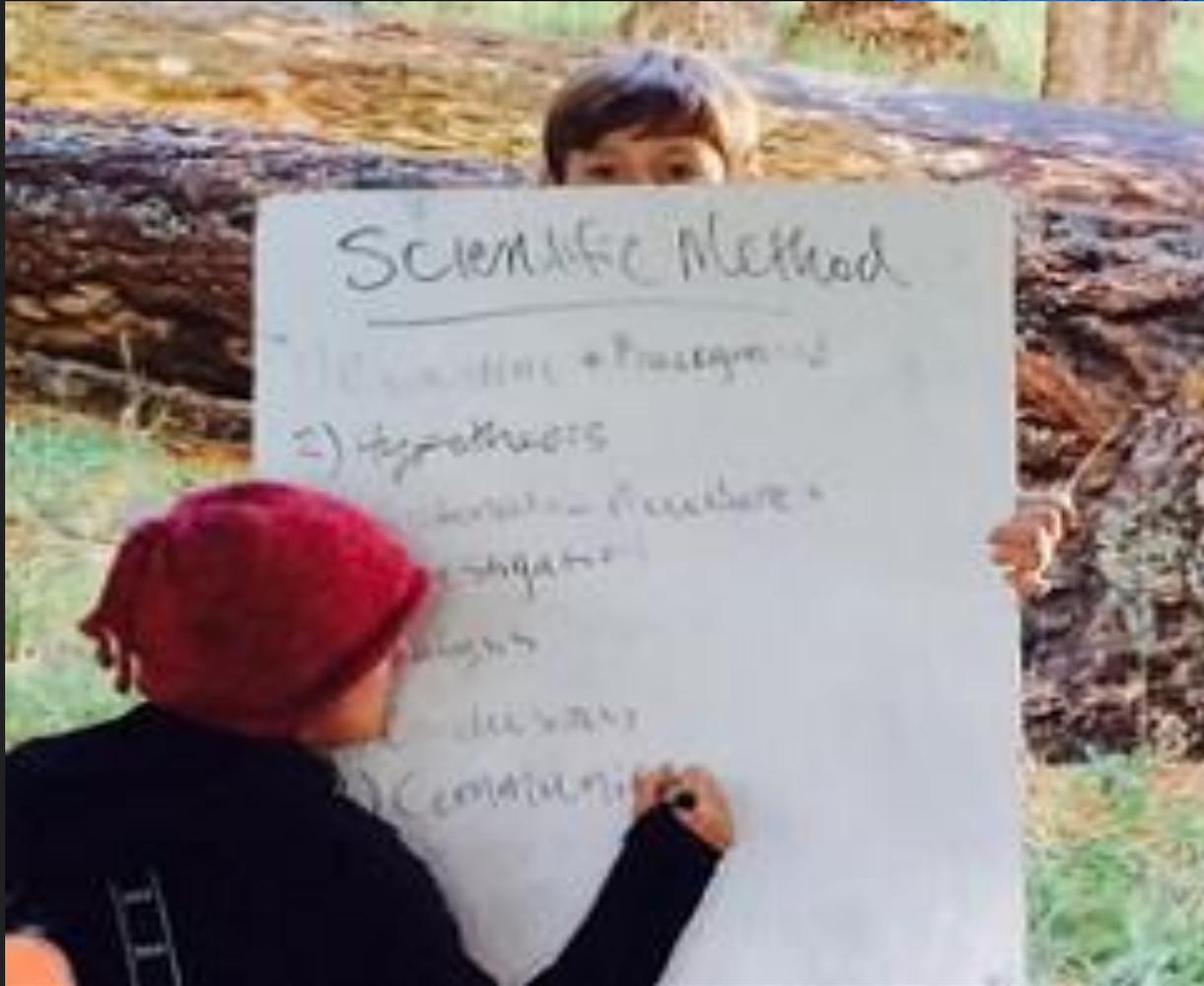
Ideas for the Future

- Some new questions I have are how can we naturally balance the levels of copper in the ocean to make it safer for wildlife.

- Other methodologies I might use are trying to find how to change our ways to make our marine ecosystem healthier.

Conclusion

- Our data refuted our hypothesis because as the number of zooplankton increased as the amount of copper increased.

- However, in healthy ecosystems, the organisms need copper to survive so it would make sense that as the population increased the amount of copper would increase too.

Evaluation

- If we were able to produce a more advanced study in the future, we would want to include how dissolved oxygen and PH affect zooplankton.

- If we conducted this study again we would take more samples so we could get a more accurate average and wider sample spread.

- Making sure everything is controlled, and the data is important, so we could be extra careful when taking samples and store data in a controlled environment.

The End!