



How Does pH Affect Zooplankton in the Puget Sound Waters?

By Ms. Ferris's Class



Introduction

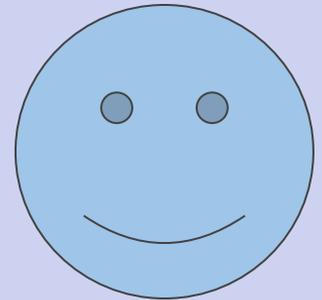
- We are Schmitz Park Mrs. Ferris 5th grade classroom.
- Our Salish SOUND Program started Sunday 22, 2016 at 11:30 am.
- Our team question was: If pH is high, then the zooplankton will be high, because low pH levels affect zooplankton.
- We chose this question because zooplankton are at the bottom of the food chain and we wanted to see if there was a relationship.

Background knowledge

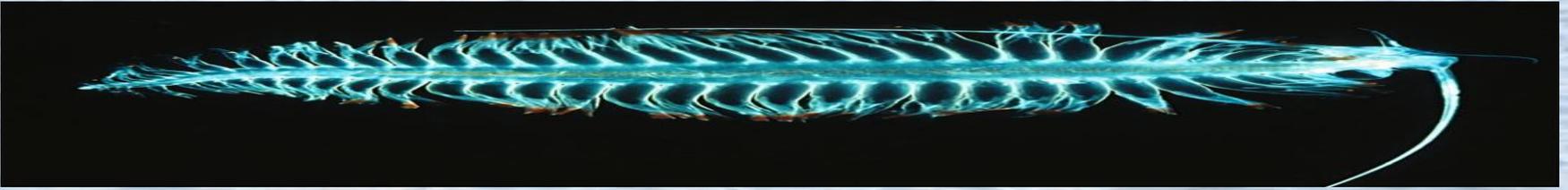
- We have learned about about pH and zooplankton in class
- All our experiments were done in Puget Sound.
- Zooplankton is an animal that can't fight the currents and Phytoplankton is a plant that can't fight the current.
- The pH scale ranges from 0 -14. 0 being the most acidic and 14 being most basic.

Question and Prediction

- Question: What is the effect of zooplankton VS. pH?
- Prediction . . .
- IF: The pH is outside the range of 7.8 to 8.2,
- THEN: The amount of Zooplankton will be lower,
- BECAUSE: That is out of the range that they are adapted.



Variables



- Manipulated variables: pH (location)
- Responding: number of zooplankton (ml)
- Controlled : depth niskin and plankton net 10(m), time plankton net towed (2.5min)

We are trying to find the range of pH to see how that affects zooplankton.

Materials

Niskin bottle

- Zooplankton net
- Bucket
- Colorimeter
- Line
- Sample jar
- Squirty bottle
- S/V Carlyn
- Messenger weight
- Clips
- Stop watch



Methods

- We deployed the niskin bottle at 10 meters
- We lowered the plankton net for 2.5 minutes for all samples
- Sample 1 was deployed at Rosario Strait with 65 percent cloud coverage
- Sample 2 was deployed at West Sound with a 65 percent cloud coverage
- Sample 3 was deployed near Lopez Island
- Sample 4 was deployed near west of Blakely Island
- We always ask the captain for permission to deploy the niskin bottle the science equipment.

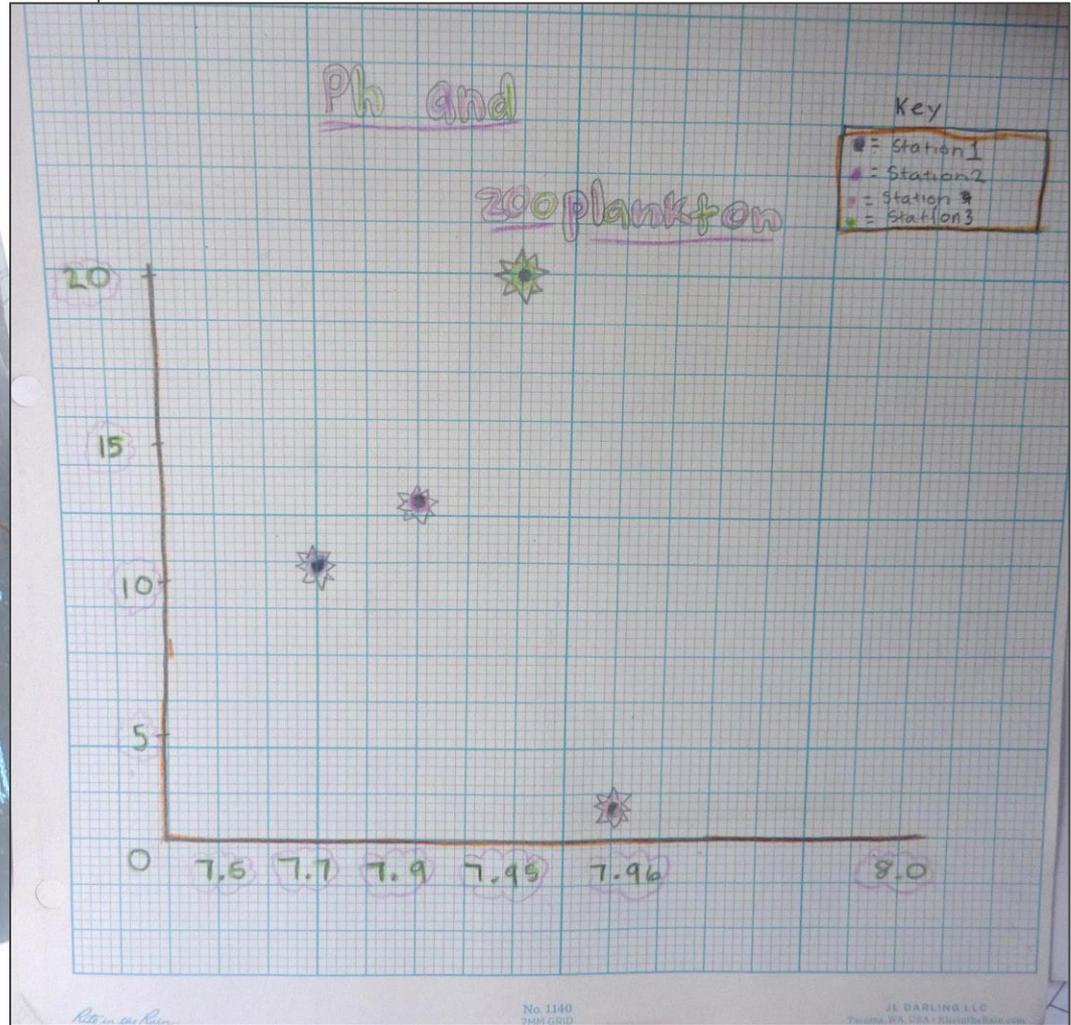
Methods Continued

- We analyzed the samples with a pH probe and graduated cylinders



Data Analysis

Station	PH	Zooplankton
1	7.7	11mL
2	7.9	13mL
3	7.96	20mL
4	7.95	2mL



Data Analysis Continued

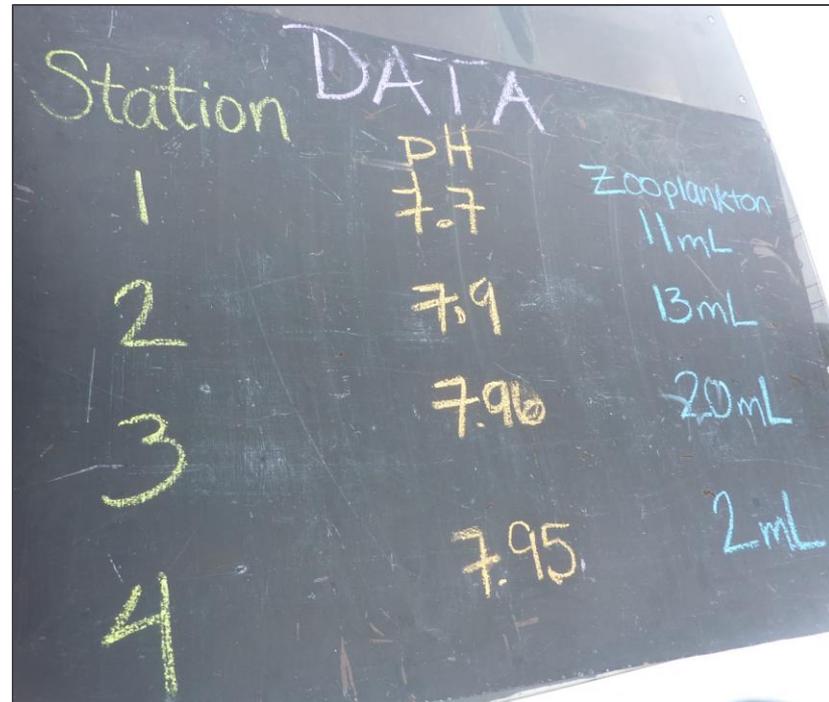
The data show that our prediction was right if the pH is in the range the zooplankton will be higher.

An interesting pattern is that our zooplankton measurements were;

2 low, 1 high, and then 1 low.

The pH patterns were;

1 low, 2 high, and 1 low.



Station	pH	Zooplankton
1	7.7	11mL
2	7.9	13mL
3	7.96	20mL
4	7.95	2mL

Conclusion

- Our data was sort of supported, because most of the higher pH sites had more zooplankton, except for one outlier. The average was 11.5 mL of Zooplankton to 7.8775 pH.
- If pH is closer to the center of the range (7.8 -8.2), there is more zooplankton.

Evaluation

- We would have changed the depth that the zooplankton net went below the water.
- We would do the study somewhere else besides the San Juan Islands.

Ideas For the Future

- If there is less Phytoplankton, will there be less Zooplankton?
- If there is less CO₂, will there be less Phytoplankton?
- How does pH affect plankton?
- We could have a better way to communicate.
- We could take more samples to get a better idea of what results tell us.