



CALIFORNIA STATE SCIENCE FAIR 2015 PROJECT SUMMARY

Name(s) Sasha E.R. A'Hearn	Project Number 35824
Project Title Finding Nematode and Friends: Biodiversity and Oxygen in Ponds	
Objectives/Goals My project's goal was to determine the effect of changing the amount of dissolved oxygen present in ponds, and how that will affect the biodiversity of microbes (such as nematodes, volvoxes, rotifers, and tardigrades, etc.) in the detritus. I used jars filled with pond water to be "puppets" for real ponds. I hypothesized that the jars with no oxygen in them will have the most microbe biodiversity. Last year I had performed nearly the same experiment and found that the jars with no oxygen had the most biodiversity after 12 days. I wanted to see if the pattern would continue.	
Abstract My project's goal was to determine the effect of changing the amount of dissolved oxygen present in ponds, and how that will affect the biodiversity of microbes (such as nematodes, volvoxes, rotifers, and tardigrades, etc.) in the detritus. I used jars filled with pond water to be "puppets" for real ponds. I hypothesized that the jars with no oxygen in them will have the most microbe biodiversity. Last year I had performed nearly the same experiment and found that the jars with no oxygen had the most biodiversity after 12 days. I wanted to see if the pattern would continue.	
Methods/Materials : I went to a nearby pond and filled a big bucket with some healthy pond water, sludge and detritus. I filled nine one-quart glass jars with the pond water. Then, I labeled three of the jars as #x0#, meaning no oxygen could get into the jars. Another three jars were filled with the same water, designated #x1#, meaning there was one way for oxygen to enter, only the air. I left their metal lids off the entire time of the experiment. I labeled the final three jars as #x2#, meaning they could receive oxygen from the air; I left their lids off and inserted a fish bubbler which ran the whole time of the experiment. I conducted the experiment for four weeks. Once a week, I checked the biodiversity of microbes. I pulled out one drop of water from each jar with an eye dropper. I placed the drop on a slide, covered it with a coverslip, and looked at it under a microscope. I also checked the phosphorus level using a pool kit.	
Results In the #x0# oxygen jars, the biodiversity of microbes was high in the beginning but dropped in the end. #x1# oxygen jars was all over the place, rising and dropping every week. The #x2# oxygen just rose and rose, and ended up as the winner. The phosphorus level started at 200 ppm, on week zero, but then for the rest of the weeks, it was 50 ppm or 0 ppm.	
Conclusions/Discussion : I think that the #x0# oxygen wound up with the least microbe biodiversity, even though it had the highest biodiversity half-way through the experiment, because of something I call "the volvox effect". Volvoxes are microscopic algae that sometimes take over the microorganism community. #x2# oxygen came out with the most microbe biodiversity, and I believe it was because the environment the jars were was most similar to the ponds where I had taken the original sludge from.	
Summary Statement My project was about the effect of dissolved oxygen on pond microorganisms.	
Help Received Dad helped me set up my project and run it, helping me scour the slides I made to check the biodiversity. A big thanks to my mom for helping me buy all the supplies and decorate my board with me. Thank you to Dr.David Polcyn for helping me answer some questions and be a victim of an interview. Thank you,	