

Lake stratification
because of different
heat and oxygen
distribution, based on
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[Environment](#), [Nature](#)



Pontoosuc Lake and Lake Stratification

Abstract: The purpose of this lab was to examine the distribution of heat and dissolved oxygen throughout the water column from surface to bottom. We then will take this evidence and examine the profile for evidence of stratification or mixing. We also collected some aquatic plants for identification which we identified with simple keys.

Introduction: In this lab, we examined stratification and mixing in Pontoosuc Lake. Since Pontoosuc Lake is a dimictic lake that contains a number of invasive aquatic species, this lab provided us with the opportunity to learn about lake stratification and some aquatic plants first-hand. We also did this because humans alter lakes around the world in several common ways, one of which is introducing new species of aquatic plants. We wanted to research and study these plants and see if we could personally identify them. I predicted that there wasn't going to be oxygen at the bottom but there would be some at the top. There would be enough oxygen at the top for organisms to grow, prosper and survive, but as the water level drops there is less oxygen. I also predicted that we would not find any aquatic plants that were new or unidentifiable.

Method: To obtain the information that we needed to complete this lab, we took readings from a secchi disk to examine the stratification and mixing in Pontoosuc Lake. A secchi disk is an opaque disk, typically white, used to gauge the transparency of water by measuring the depth at which the disk ceases to be visible from the surface.

Results: The air temperature outside when we did this lab was 70.4 degrees Fahrenheit, the water depth we were sampling was 34.6 feet deep and the GPS latitude is N42

29.944' and W083

14.894'.

For our first trial, we went down 6 feet until we could not see the Secchi disk. We then came up to 4 feet 9 inches and could see it. This makes our average for our first trial 5 feet and 5 inches. For our second trial the Secchi disk went down 7 feet until we could no longer see it. We brought it up to 5 feet and 6 inches and we could see it again. This made our average for our second trial 6 feet and 3 inches. Our third trial, we lost sight of the disk at 7 feet and 6 inches. We regained sight at 6 feet and 7 inches. This makes our average for this trial 7 feet exact. The chart is shown below.

Secchi depth down Secchi depth up Average

6 feet 4 feet 9 inches 5 feet 5 inches

7 feet 5 feet 6 inches 6 feet 3 inches

7 feet 6 inches 6 feet 7 inches 7 feet

We did a trial to see the oxygen level and the temperature as the depth of the water increases as well. We came to the conclusion that as the depth increases, the temperature decreases and the oxygen level decreases as well. You can see our data in the chart below.

<https://assignbuster.com/lake-stratification-because-of-different-heat-and-oxygen-distribution-based-on-pontoosuc-lake-lab-report/>

Depth In Feet Temp in Celsius D. O. mg/L

We also observed the water clarity. At 1 meter depth there were bubbles that looked like hairs. At 5 meter depth, it looked like there were more life such as plankton. On the plankton tow observations we saw little crustacean-like particles swimming around. The aquatic species we observed included spiny nyad, eelgrass and phalation algae.

Discussion: As a group, we observed that one of the relationships was that the temperature decreased while the depth increased. We definitely expected that relationship to happen because we learned about this in previous science classes. We knew that temperature would go down due to the water level and water pressure. Another relationship is that as the water depth increased the oxygen level also decreased. We predicted this to happen in our hypothesis because we knew that most fish live on the surface of the water because that is where the most oxygen is. They do not live deep down because there is less oxygen and they will not prosper as well as they would on the surface level.

One of the inconsistencies we had was that our initial results involving the secchi depth were off by a small increment. Our first trial came out with different numbers than our other two trials had. We do not know why this happened but we have a guess as to how it may have. It may have happened because we did this as a group. We all did one trial and since we all have different sights the data could have varied. If we had only one

person taking the measurements then the test may have been more accurate.

From this lab there were several generalizations that we could conclude. We can say that as the depth of the water increases the temperature of the water increases. Also, we can say that as the depth of the water increases the oxygen level decreases.

Conclusion: In the end, we were correct in the beginning with our hypothesis. Our test results came out accurately and the oxygen does in fact slowly deplete as the water level drops. We also found several plants and we found that they had crustaceans on them and particles swimming around. This lab was successful because we came to the correct conclusions and received accurate results.