Comparison of Duckweed and Marsileain a low pH environment

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Background Information

Common Duckweed (*Lemna minor*) is a native aquatic plant that lives in ponds and lakes

Common water clover (*Marsilea quadrifolia*) is a non native species and is found in in ponds and lakes. It is becoming a problem for native plants

Background information

- Breakdown of plants releases carbon dioxide which has low pH of around 5
- Duckweed can withstand from 5 to 9 pH while marsilea can withstand 6 to 8 pH
- Duckweed should be able to withstand around 5.5 pH while the marsilea should not

http://tropical.theferns.info/viewtropical.php?id=Marsilea+quadrifolia

http://www.fao.org/ag/againfo/resources/documents/DW/Dw2.htm

Hypothesis

- Lower pH will affect the Marsilea in a more negative way than Duckweed

Method

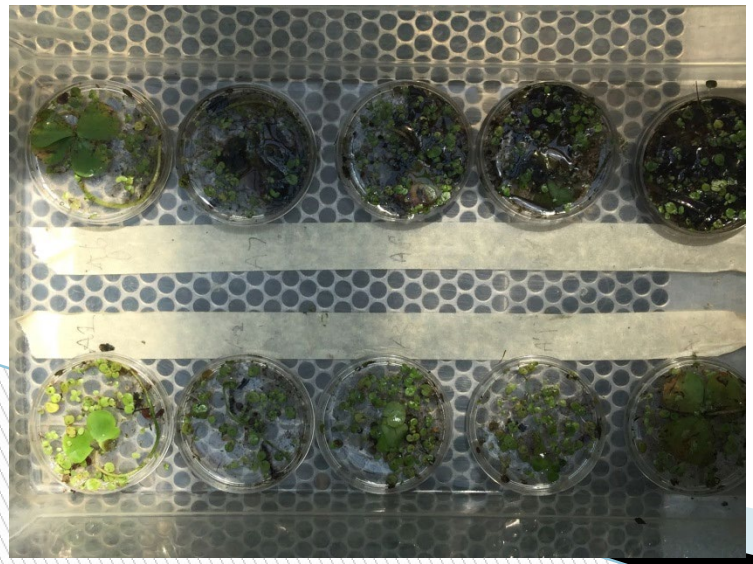
- Samples were collected at Teatown lake
- The marsilea and duckweed were placed in petri dishes with either lake water or an acidic solution
- Acidic solution was made out of water and vinegar

Me collecting samples of both plants at Teatown lake

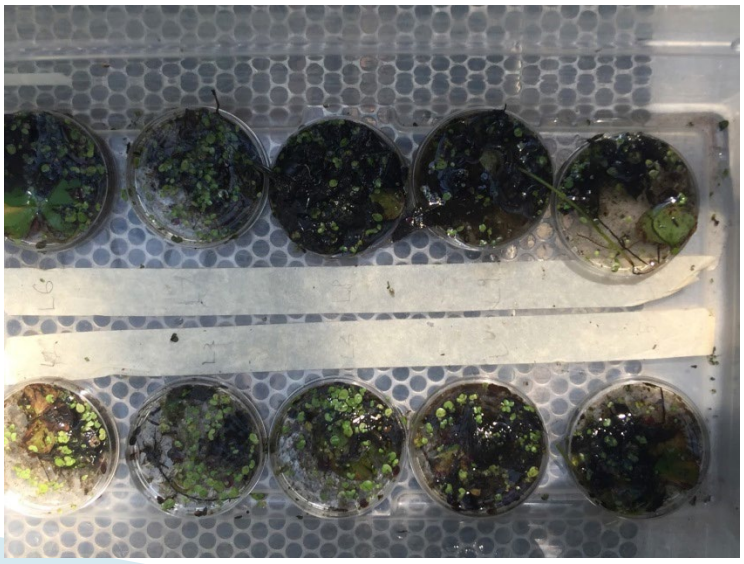
Method

- There were 20 petri dishes, 10 had acidic solution and other 10 had lake water
- 20 pieces of duckweed in each petri dish and put one piece of marsilea in each petri dish
- Duckweed would be tested based on count and marsilea was tested based on condition

Acidic solution set



Lake water set



Method

- Net, Bucket, and pH probe were used
- Samples were placed under shade cloth under pavilion
- All petri dishes were refilled daily

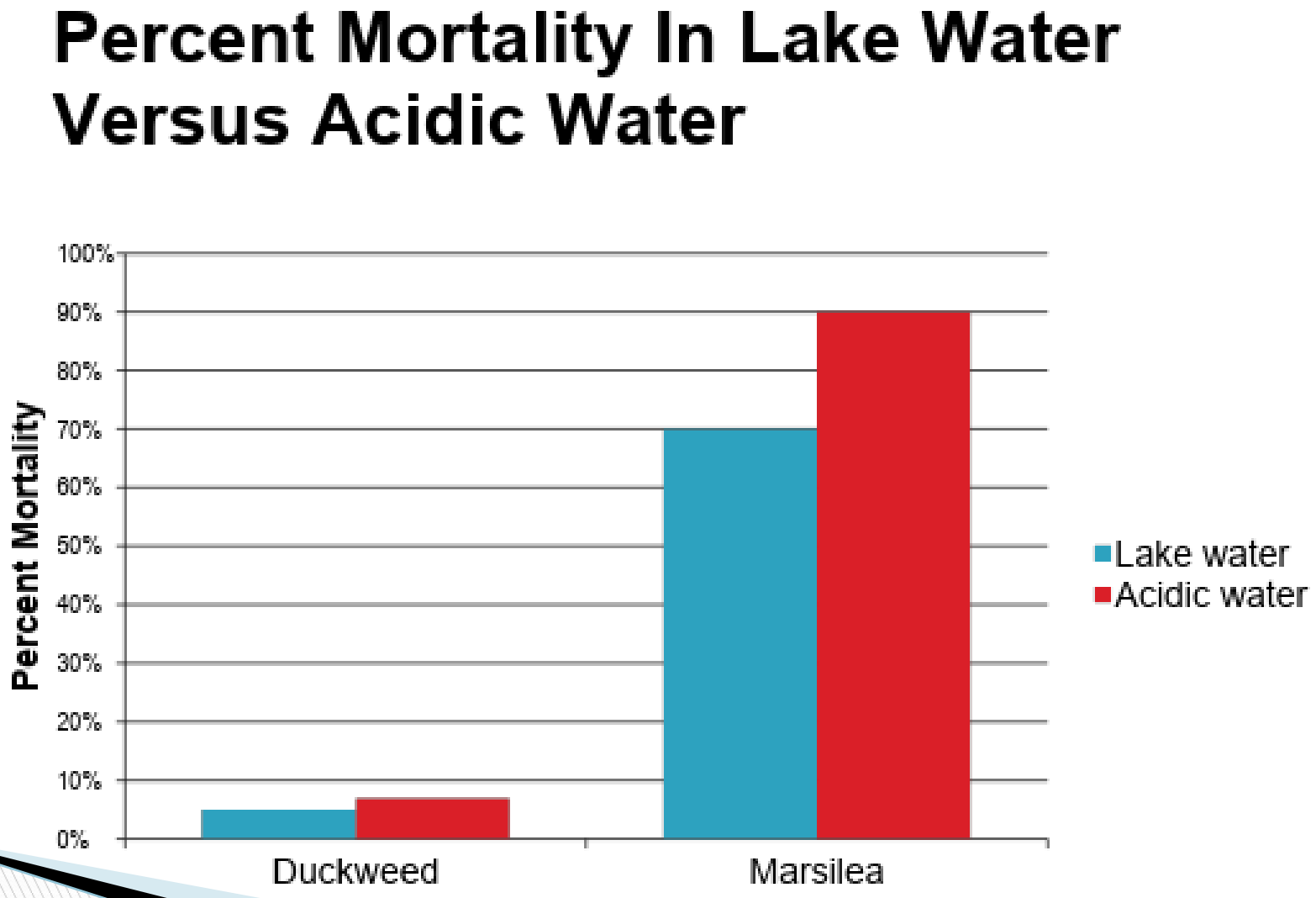
Results

- Acidic water effected both the duckweed and marsilea
- The marsilea had a higher mortality rate than duckweed

Acidic water

Lake water

Results


Percent Mortality In Lake Water Versus Acidic Water
Percent Mortality
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
Duckweed
Marsilea
Lake water
Acidic water

Discussion/Conclusion

- Duckweed showed more resistance to low pH than marsilea
- Marsilea mortality rate rose at higher percent than duckweed
- Even though there was a rise in mortality rate this may warrant further research

Discussion/Conclusion

- Future research should include a larger sample size
- More controlled environment that wont face as many problems
- Not use petri dishes because marsilea does not do well in them
- Heat was a problem because of evaporation

Discussion/Conclusion

- This test is important because marsilea is a non native plant that is spreading at a faster rate
- It gives us an idea of what would happen to both plants if pH of a lake lowers

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