The Good, the Bad, and the Hypertrophic: A Historical Sedimentary and Geochemical Analysis of Two Connected Suburban Lakes in Scott County, MN

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INTERPRETATIONS: LOWER PRIOR LAKE

Spring Lake has historically held at least a small population of centric diatom species, specifically of the genus Stephanodiscus. Stephanodiscus has been well studied in terms of eutrophication, and its occurrence in Lake Lake suggests a similar trajectory as described for Lake Lake. Stephanodiscus diatoms begin to show up in the record, and since the late 1980s, the population has been increasing, especially in the intermediate core. However, it is not clear whether this increase is due to a change in the environmental conditions or a decrease in iron and manganese. In Figure 4, the concentration of iron and manganese is shown to be strongly correlated to the abundance of Stephanodiscus diatoms. This suggests that iron and manganese are important factors in the increase of Stephanodiscus diatoms in Lake Lake. These findings have important implications for understanding the impacts of nutrient enrichment on Lake Lake.

CONCLUSIONS

1. Sedimentation into both lakes has increased substantially, presumably by human activities.
2. Spring Lake has historically been a more nutrient-rich lake than Lower Prior Lake.
3. Spring Lake is fertilized more in terms of eutrophication and geochemistry. Eutrophication and geochemical analysis show that lower Prior Lake is in a more stable and calmer condition, with higher amounts of calcium, magnesium, and phosphorus. This is consistent with the idea of a more oligotrophic state in Lower Prior Lake.

ACKNOWLEDGEMENTS

I would like to thank everyone who helped me with the project, including Erik Schlie, Alex Strohmeier, Mike Kinney, and Mike Kinney. I would also like to thank the U-M Research Station, the University of Minnesota, and the Minnesota Pollution Control Agency’s Research Center and the University of St. Thomas Geology Department.


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