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Recommended Citation

Polifrone, Margaret; Wasserman, Sarah; Biberovic, Ismar; Jones, Kaleb; Schroth, Andrew; Lini, Andrea; and Morales-Williams, Ana, "Using Diatoms to Reconstruct Eutrophication in Lake Carmi, VT" (2022). *Lake Champlain Sea Grant Institute*. 7.

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Authors

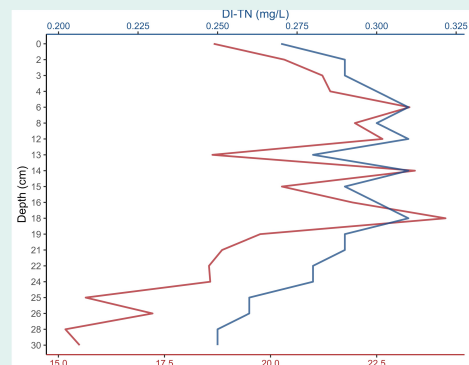
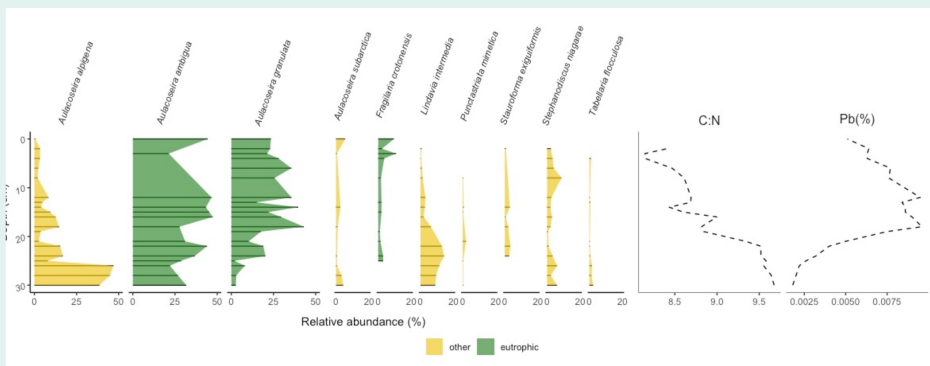
Margaret Polifrone, Sarah Wasserman, Ismar Biberovic, Kaleb Jones, Andrew Schroth, Andrea Lini, and Ana Morales-Williams

Using diatoms to reconstruct eutrophication in Lake Carmi, VT



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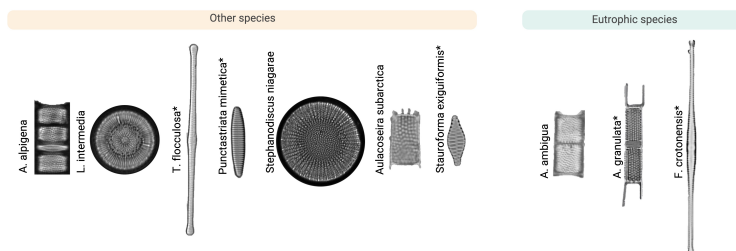
Left: Stratigraph of diatom indicator taxa, measured C:N, and %Pb in core. Right: Diatom inferred TP and TN using training sets of 125 VT lakes

INTRO / BACKGROUND

- Lake Carmi is an upstream tributary to Lake Champlain
- Watershed mostly agriculture and forest
- Persistent cyanobacteria blooms due to watershed and internal nutrient loading
- \$1 mil. aeration system installed in 2018 to oxygenate hypolimnion
- Has Lake Carmi become more eutrophic over the years due to anthropogenic activities?

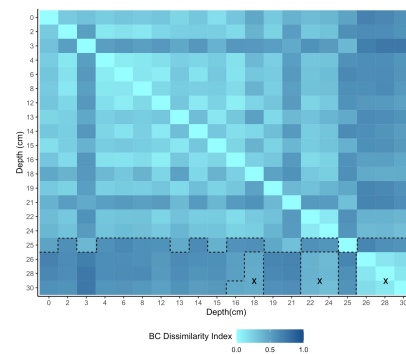
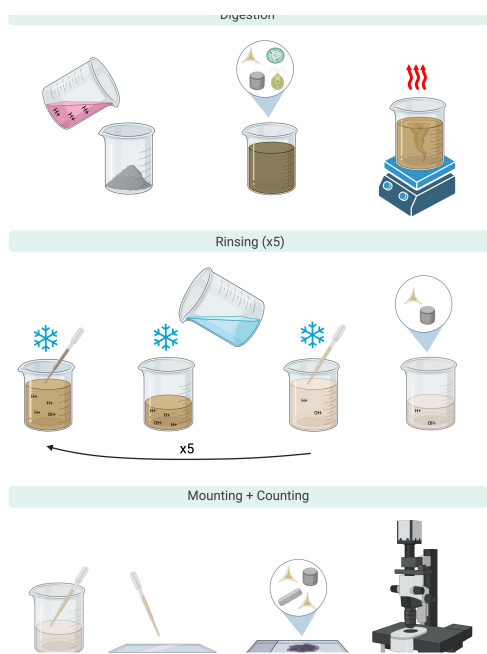


RESULTS

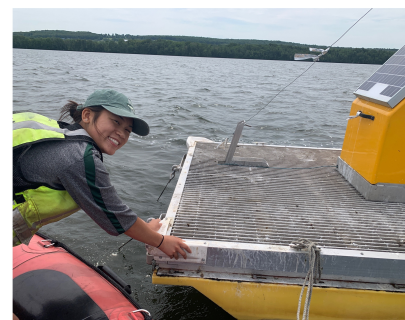


Diatom species that appeared at least 5x, at or above 1%. Images with * are from diatom.org

METHODS



Bray-Curtis Dissimilarity matrix comparing diatom assemblages between core depths. Dotted area indicate highlight area that is over 50%



Me at the buoy (totally not covered in bird scat) in Lake Carmi. Live buoy data of Carmi can be found at <https://epscor.uvm.edu/LakeCarmi>

CONCLUSION

- Increase in eutrophic species and a decrease in oligotrophic diatom species
- Aeration system installed in 2018 may have mixed core layers 1-10cm
- Most dissimilar depths were from 3cm to 30, 23, and 26cm at 74% dissimilarity suggesting a change in the assemblage over time
- Measured C:N decrease over time, suggesting increased primary production
- Future work: Lake Carmi sediment core is currently being Pb-210 dated and analyzed for stable isotopes

ACKNOWLEDGEM

This project was made possible by a USGS Vermont Water Resources and Lake Studies Center award to AMM and a Sea Grant Scholars summer internship scholarship to MP. Thank you to Vermont Limnology Lab members for valuable feedback and support on this project.

