

GRADUATE EXIT SEMINAR

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Historical Land Use Changes and Hydrochemical Gradients In Ohio's Sphagnum-Dominated Peatlands

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Although peatlands occupy only 3% of the earth's land surface, they store ~30% of the world's soil carbon. Peatlands are not common in temperate climates, where they increase landscape diversity and provide habitat to many locally rare species. Field surveys show that 96% of Ohio's historical peatlands no longer support peatland vegetation; however, spatial data on historical bog extent is lacking. USGS maps since the early 1900s were used to make rough estimates of historical bog extent and evaluate current land use in historical bogs. However, comparisons of bog extent over time were confounded by changes in mapping criteria.

Spatial gradients in vegetation and hydrochemistry have been extensively studied in northern raised bogs but remain understudied in temperate basin bogs. I examined several potential indicators of hydrology and water chemistry in Ohio's basin bogs. Dominant vegetation was the best indicator of water table level, water table level range, and phosphorus concentrations. Water table level, in turn, was the best indicator of pH, electrical conductivity, and calcium concentrations. The latter relationship is likely due to mineral-rich groundwater input at bog margins and the formation of drier areas more removed from groundwater influence through peat accumulation near the bog center.

