

Graduate Exit Seminar

Hannah Blice

The Impact of Landscape Characteristics on Phosphorus and Nitrogen in Stream Water

Agricultural activities significantly impact water quality through nutrient runoff, especially in intensively managed watersheds. This study evaluates the dynamic concentrations of nitrogen (N) and phosphorus (P) species as they are influenced by landscape characteristics across 45 subwatersheds within the Sugar Creek Watershed of Ohio, a region with a long-standing Nutrient Trading Program (NTP). Water samples collected from 2022 to 2024 were analyzed for total nitrogen (TN), nitrate, ammonia, total phosphorus (TP), and dissolved reactive phosphorus (DRP), and paired with spatial data on land use, soil characteristics, topography, precipitation, and regulated point source discharges. Spearman correlation analyses revealed that N concentrations were more strongly influenced by soil texture, vegetation (NDVI), and land use than P species, which showed fewer spatial patterns and appeared more closely tied to point source discharges. Notably, subwatersheds with food processing facilities exhibited significantly elevated nutrient concentrations, suggesting a disproportionate contribution from these sources despite ongoing non-point source management. This study aims to highlight the importance of integrating spatial landscape data with water quality and flow monitoring to better target management interventions. Effective nutrient reduction in agricultural watersheds requires not only widespread adoption of non-point source best management practices (BMPs) but also improved treatment of point source discharges.

Advisor: Dr. Steven Lyon

Thursday, August 7, 2025, at 10:00 AM

Location: Williams Hall 117a

Join the seminar via Zoom:

<https://osu.zoom.us/j/92430921263?pwd=U2CEbRV7fLSLm3PVnxQ3l3tdjqiwGd.1>

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