

GRADUATE EXIT SEMINAR

Megan Greige

One Does Not Simply Characterize Small Urban Streams: Seasonal and Spatial Variability in Stream Chemistry in Three Urban Headwater Streams in Columbus, Ohio



Headwater streams make up most of the streams on the landscape and are closely tied to their watersheds, thus their chemistry is heavily influenced by watershed characteristics. Headwater streams also play an important role in exporting nutrients which can impact water quality downstream. Urbanization induces physical changes to the landscape (ex. canopy removal, pavement) and the stream itself (ex. channelization or burial) and introduces novel chemicals which alter the composition of headwater streams. To better understand how small-scale urban land uses (i.e. golf courses, retention ponds, stream burials, parks) can impact stream chemistry in headwater streams, I studied three urban headwater streams in Columbus, Ohio. Turkey Run, Rush Run, and Adena Brook are similar-sized watersheds which experience the same climate and have similar bedrock, discharge, and percentage of developed land cover. Each stream has changes in land cover along its ~6 km reach. I collected longitudinal synoptic samples from 8-10 sites

during monthly baseflow from January – December 2023. When analyzing overall chemistry across all sites and months, dissolved organic carbon and total nitrogen were significantly higher in Turkey Run than the other two streams. Rush Run and Turkey Run, which exist in municipalities that apply more road salt, had much higher chloride concentrations than Adena Brook. In other chemical measurements, there were no differences between streams. Despite all three streams experiencing the same weather patterns, they had different seasonal patterns in stream chemistry. At a smaller spatial resolution, shifts in landcover corresponded with shifts in chemistry and stream alterations like retention ponds and burials also altered stream chemistry. Overall, I found that small-scale urban land use impacts stream chemistry in small urban headwater streams.

Friday, August 9, 2024

Advisor: Dr. Rachel S Gabor

10:45 AM

Location: Kottman Hall 333

Join the seminar via Zoom:

<https://osu.zoom.us/j/98625175501?pwd=s4WvV1yBXPklo5oaCINHbUkRoAwuWa.1>

Meeting ID: 986 2517 5501

Password: 08092024

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