



SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

GRADUATE EXIT SEMINAR

HALEY MCLEAN

Remediation Potential of Beaver ponds in Acid Mine Drainage Streams



Acid Mine Drainage (AMD) occurs globally but is concentrated in Appalachia where there is a long history of coal mining. AMD is caused when mining exposes rocks containing sulfur to oxygen and surface water runoff. This creates sulfuric acid which pollutes waterways by causing low pH and high concentrations of metals. Conventional treatment methods are costly and labor intensive which makes remediation difficult and sometimes impossible in areas with a struggling economy. Research shows that beaver ponds can have profound effects on stream geochemistry and as beaver populations continue to grow in Appalachia there could be potential for beaver ponds to act as treatment wetlands in AMD streams. This study focused on an AMD stream located in Cumberland, OH that flows through a series of beaver ponds. We explored changes in stream chemistry before and after three beaver ponds along the stream to understand what mechanisms could explain how a beaver pond influences water quality. Downstream of the beaver ponds we observed improved water quality measured by higher pH, lower conductivity and higher dissolved oxygen. Metal concentrations, including aluminum, iron and manganese, decreased downstream of the beaver ponds. Data suggests that groundwater may be the main source of acid mine drainage and beaver ponds may be improving water quality by helping to recharge groundwater with less contaminated, or uncontaminated, water.

Advisor: Dr. Rachel Gabor

Friday, August 11, 2023
1:00 P.M.

Location: Kottman Hall 245

Join the seminar via Zoom:

<https://osu.zoom.us/j/8694011200?pwd=NEFFU2JPbEJBM1I5R0wyUGtoeldJQT09>

Meeting ID: 869 401 1200

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