



2019 Student Wildlife Research Symposium

Paper Session Abstracts



Cate Banks

Granville High School-Jim Reding, Science Teacher



Maple Sap (Syrup) Production in a Changing Climate

To explore the impact that climate has on sap production (and therefore syrup production) in Ohio woodlots, we looked at data from several decades of tapping by our local Kiwanis and current data from our own woodlot production. During the tapping season we monitor sap production and sugar (sucrose) content in relation to temperature, precipitation and photo-period. Based on these environmental factors, significant changes can occur on a daily, weekly or yearly basis. Key factors and correlations will be discussed and implications for sugar (syrup) production in light of a climate change will be explored.

Bryan Rego and Thomas Butler

University School-Sara Laux, Director of Science Research



The occurrence and impact of microplastics in freshwater ecosystems

As the issue of microplastic populations grows, so does the importance of studying its impact. The objective of this research is to 1) document the presence of microplastics (plastic fragments and fibers < 5mm) within the Rocky River Watershed, and 2) document the uptake of microplastics by freshwater mussels (*Anodonta sp.*) in mesocosms. To document the occurrence of microplastics within the Rocky River Watershed, water samples were collected using a plankton tow (300 μ m). All collected material underwent wet peroxide oxidation and was filtered using a Büchner funnel lined with a glass filter (0.7 μ m). Any potential microplastics were removed for identification. To document the uptake of microplastics by freshwater mussels, mussels were commercially purchased and placed in two, 25-gallon mesocosms of either clean water or water containing known concentrations of microplastic debris proportional to the composition of microplastics in the tributaries to the Great Lakes. Each replicate lasted two weeks, at which time, mussels were collected and dissected. A wet peroxide oxidation method was used to dissolve organic material leaving behind any plastic debris. Results from both studies indicate the microplastics are present in the Rocky River Watershed and mussels do uptake microplastics from their environment.

Julianna Tristano, Stephanie Tristano, Madison Hines, Kelsey Sharp

New Philadelphia High School-Kip Brady, Teacher



Survey of three different wetlands and their ability to remove excess pollutants

Surface coal mining results in substantial, long-term changes to the landscape. Reclamation laws were enacted in the 1970s to deal with some of the most persistent legacies of mining, but there is little evidence that such reclaimed mine land (RML) ever achieves baseline levels of ecological structure and function. During the winter 2018-spring 2019, we compared the bird and mammal communities of reforested RML to those of pre-1970s reforested abandoned mine land (AML) in Tuscarawas County, Ohio using game cameras and elevated feeding platforms baited with black-oil sunflower seeds. Over twice as many bird and mammal species visited AML platforms as RML platforms. Deer mice (*Peromyscus spp.*) were among the most common visitors to RML platforms but were absent at AML platforms. These results suggest that, even when reforestation is attempted, current reclamation practices can result in significant, long-term alterations of vertebrate community structure with consequences for the preservation of biodiversity and human health.



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Emma Reamer

Granville High School-Jim Reding, Science Teacher



Wetlands in the Agricultural Landscape

The Granville School Land Lab contains four wetlands that have been sampled for the last four years under the guidance of Dr. Smith and Dr. Retig of Denison University. This data (macro-invertebrate diversity and abiotic factors such as temperature and oxygen) suggests that run-off from an adjacent agricultural land might be having a negative impact on several of the wetlands. We will present both qualitative and quantitative data from this four-year study to illustrate a correlation and suggest a possible cause. We will also present data that looks at the possible benefits (ecosystem services) of having the wetlands on the landscape and conclude with a plan to mitigate the possible impact of the agricultural land and improve the wetland ecosystem (and potentially ecosystem services).

Dylan Berr

University School-Sara Laux, Director of Science Research



Managing Predator and Prey Relationships in Lake Kilroy

Lake Kilroy (4.5 ha) was created on the campus of University School in 1968 as a way to further immerse students in scientific inquiry. Originally stocked with rainbow trout, but later bluegill, pumpkinseed, and largemouth bass were introduced. In addition, University School supports an active brook trout hatchery, and as such, brook trout were eventually released into Lake Kilroy. Current management objectives are to reduce the competition between bass and brook trout to help increase brook trout success. Electroshock fishing techniques were used to assess fish populations 4 times between 2010 to 2018. Data collected during each sampling year included species abundance and size (length and weight). With these data measures of relative weight and proportional stocking density were calculated. These data were used to determine health and quality of predator and prey populations, using a quality index plot. We also measured catch per unit effort of predator and prey populations. Over the last 8 years we have been successful in reducing competition between brook trout and largemouth bass. The removal of large predators and increase size of prey available for trout may increase their competitive advantage over bass and thus increase survival rates for brook trout in Lake Kilroy.