



2019 Student Wildlife Research Symposium Poster Session Abstracts



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New Philadelphia High School-Kip Brady, Teacher



Stream-dependent salamander communities along a conductivity gradient

The Appalachian Region of Ohio has a long history of coal mining, which has left lingering effects on the region's water quality. Headwater streams affected by mining in this region typically have conductivities over 5-10 times the level of non-impacted streams, strongly altering the structure of headwater stream communities. We used visual encounter and litter bag surveys to evaluate the stream-dependent salamander communities of first and second order headwater streams spanning a range of conductivities and mining impacts during the autumn of 2018-spring 2019. Our results revealed an exponential decrease in the relative abundances of Northern Dusky Salamanders and Two-lined Salamanders in response to increases in stream water conductivity. Changes in conductivity explained 82% of the variation in salamander relative abundance. Mean salamander abundance was 14 times greater in streams of unmined watersheds than those of mined watersheds, but preliminary data suggest that within unmined watersheds salamander relative abundance also varied in a consistent way with conductivity. Our results suggest that even small increases in the conductivity of streams may have an effect on shaping the distribution of stream-dependent salamander communities in the Appalachian Region.

Jason Reding

Granville High School-Jim Reding, Science Teacher



Surveying Wildlife with Digital Cameras

Basing this study off work currently being done at The Wilds, we placed digital cameras (trail cams) at several key locations (habitats) around the school Land Lab. After monitoring for several weeks, we can use the pictures (and species identified) to estimate species diversity using the Shannon Diversity Index. This index looks at both species number and species dominance to provided assessment on the balance of an ecosystem. It can also be used to compare different ecosystems as it is not species dependent. This allows us to compare four distinct habitats within the land Lab: Wetland, Prairie, Forest and Riparian Corridor.

Shannon Browning

Northwest High School-Tim Browning, Parent



"What Do the Bugs Say?" About the Water Quality of Scioto Brush Creek Watershed

The purpose of this study is to take aquatic macroinvertebrate samples in the Scioto Brush Creek watershed to test the water quality. The procedure for this study consists of taking two samples in the Scioto County portion of the watershed and one sample in the Adams County portion of the watershed. The samples were taken once a month on the first or second weekend of every month. The samples were collected from March 2018 to December 2018. The main conclusion from the samples is that the mainstream of Scioto Brush Creek has excellent water quality, and so does the South Fork and the mouth of Shawnee Creek test site, but the South Fork test site has a fair to poor water quality.



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Brayden Shaver, Greg Tan, Jason Lin

Ontario High School-Roger Nikiforow, Teacher



Correlations Between Amphibian Populations and Water Chemistry in a Constructed Wetland

The objectives of this experiment are to find possible correlations between *Lithobates catesbeianus* population and the levels of dissolved oxygen, pH, nitrate, and phosphate within the pool, as well as identify possible sources of the chemical variance present. Sampling of the pool was conducted in two week increments over the autumnal, winter, and early spring months. Researchers collected samples from both the regular body of water and its inflow point in two 500mL bottles respectively. The aforementioned chemicals and their concentrations were tested using the Vernier LabQuest 2 Measurement Tool and the Hach Pocket Colorimeter II. The results revealed that *Lithobates catesbeianus* populations increased as dissolved oxygen increased, with the other factors not correlating to amphibian population shifts.

Madeline Shumaker

Pettisville High School-Tara Shumaker, Parent



The Effect of Water Transparency on Algae Growth

The objective was to determine how water transparency affects the amount of algae growth. The hypothesis is when bottles of water, infused with 5 mL of Sandusky Bay water is exposed to a greater light intensity, there will be an increase in measured chlorophyll levels and indicates more algae growth, than the bottles exposed to a lower light level. When there is an increase in the clarity of water, the more sunlight will be able to reach the water, causing more Cyanobacteria growth. The procedure was to collect 2L of water from the Maumee River. After having the water settle for 24 hours and decanting it into 200 mL bottles, with 200 mL of water. Three of the bottles were placed under a low light and the other three underneath a high light. Every two days for ten days, 10 mL of water was filtered. After four trials the samples were tested in a lab to see how much chlorophyll was in each. After testing it was found that the first two trials showed that there was less algae grown from the high light than the low light. However, the last two trials had a significant difference. The high light had a greater chlorophyll count than the low light. The hypothesis was not supported at the time because the first two trials contradict the last two. More trials will need to be tested.