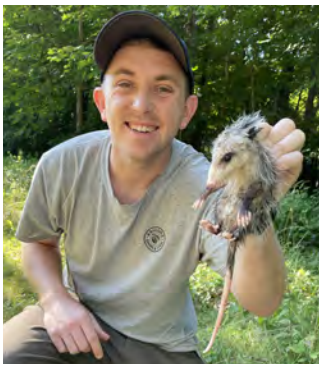
CFAES

SCHOOL OF ENVIRONMENT AND NATURAL RESOURCES

GRADUATE EXIT SEMINAR

MICHAEL GILBOY

Impacts of Artificial Light at Night on Space Use and Trophic Dynamics of Urban Riparian Mammals in Columbus, Ohio.



Artificial light at night (ALAN) is a growing environmental stressor due to human expansion and increased urbanization. ALAN has shown to impact different ecological processes such as migration/movement patterns and energy flow between systems. In this study, I investigated the impacts of ALAN on riparian mammal space use and food webs along 12 small streams in Columbus, Ohio, USA. Seasonality and time of day were the strongest drivers of mammal community composition along streams, despite the presence of ALAN. Seasonality and sediment size were associated with total mammal space use and species richness while ALAN had no impact and site explained more than half of the variation in both. No species-specific small mammal captures or species/guild-specific camera-trap encounters were impacted by ALAN. Both ALAN presence and intensity (i.e., lux) were related to the proportion of energy derived from aquatic vs. terrestrial primary producer pathways in deer mice (*Genus Peromyscus*). At lit reaches, deer mice nutritional subsidies derived from aquatic primary producer pathways (i.e., originating from stream periphyton) were 1.2% lower than at unlit reaches. Higher light intensity also decreased the trophic feeding position of *Peromyscus*, with a decrease of 0.108 of average trophic feeding position per 1 lux increase in light intensity. Canopy cover was also associated with the proportion of energy derived from a terrestrial primary producer pathway that is indirectly consumed by *Peromyscus* (i.e., originating from aquatic detritus). These results can be used in conjunction with the Ohio Department of Transportation (ODOT) to establish potential roadway lighting thresholds to minimize lighting impacts on mammals that use riparian areas in urban centers.

Advisor: Dr. Mažeika Sullivan

THURSDAY, JULY 14, 2022
12:00 P.M.

Join the seminar via Zoom:
https://osu.zoom.us/j/92680079150?pwd=S0NEUnhkNFhkcEhydGhhYUc4RjhuUT09
Meeting ID: 926 8007 9150 Password: 083633