**The effects of suspended sediment on the suspension feeding of unionid mussels**

**Tuttle-Raycraft, S** and **Ackerman, J. D.**

Discerning the role of suspended solids (SS) on aquatic organisms and biogeochemical processes is imperative and unionid mussels provide an excellent model system for investigation. Experimental results revealed that SS concentration > 8 mg/L significantly lowered the clearance rates (CR) of adult *Lampsilis siliquoidea* (shell length = 9-12 cm) by at least 28% compared to in no-sediment controls (CR = 0.87 ± 0.052 L hr -1). This result was not consistent among SS of different grain size. Clearance rates were significantly lower when mussels were exposed to clay (0 - 5 μm) or coarse silt (38 – 63 μm) at 20 mg/L, but interestingly, the CR was not reduced using fine silt (5 - 38 μm). Analogous experiments performed on newly transformed *Lampsilis fasciola* (shell length = 304.5 - 327.2 μm) revealed similar CR vs. SS results (i.e., 32% decrease vs. no-sediment controls where CR = 0.24 ± 0.026 mL hr-1) for juvenile mussels older than two weeks. In contrast, CR were positively related to SS concentration (R2 = 0.67) for one week old animals where CR were 25% higher than control (CR = 0.17 ± 0.010 mL hr-1) for SS >8 mg/L. Understanding how physical processes affect SS concentrations in lakes and rivers will provide valuable information on ecosystem function. Moreover, it will further our understanding of Unionid biology, the role they play in water quality, and assist in the management and conservation within the Great lakes Ecosystem.