Biological evaluation of upstream lake sturgeon passage at the Vianney-Legendre fishway. \*J.D. Thiem, Department of Biology, Carleton University (jthiem@connect.carleton.ca; presentation).

Spawning migrations of sturgeon have been affected by the construction of dams, which create barriers to migration and have contributed to the imperilment of sturgeon. Although devices have been installed to facilitate the upstream passage of fish at barriers, they have been generally unsuccessful and not designed for sturgeon. Using a successful sturgeon fishway as a model enabled quantification of passage efficiency and fine scale passage behaviours of lake sturgeon (*Acipenser fulvescens*). Turning basins within the fishway delayed upstream passage and contributed to a disproportionate reduction in overall passage efficiency. Accelerometers were subsequently deployed on individuals to determine location-specific activity and energy use, and to compare the energetic costs of successful and unsuccessful passage. A physical model of a sturgeon fitted with force transducers was also used to determine the effect of path selection on profile drag during upstream fishway passage. Despite evidence of lake sturgeon spawning downstream of the dam and fishway, the Vianney-Legendre fishway is still regarded globally as one of the few facilities that has successfully passed sturgeon. Collectively, data from this study contribute to understanding how fishways can be used to facilitate the upstream passage of imperilled sturgeon at dams.