**Biology of lake sturgeon (*Acipenser fulvescens*) spawning below a dam on the Richelieu River, Quebec: endocrinology, behaviour, and egg deposition**

J. D. Thiem1\*, P. Dumont2, D. Hatin2, G. Van Der Kraak3, K.E. Smokorowski4, S. J. Cooke1, 5

1Fish Ecology and Conservation Physiology Laboratory, Department of Biology, Carleton University, 1125 Colonel By Drive, Ottawa, Ontario K1S 5B6, Canada 2Ministère des Ressources naturelles et de la Faune, 201 Place Charles Le Moyne, 4e étage, bureau 4.05, Longueuil, Québec, J4K 2T5, Canada 3Department of Integrative Biology, University of Guelph, Guelph, Ontario N1G 2W1 Canada 4Great Lakes Laboratory for Fisheries and Aquatic Sciences, Fisheries and Oceans Canada, 1219 Queen Street East, Sault Ste. Marie, Ontario, P6A 2E5, Canada 5Institute of Environmental Science, Carleton University, 1125 Colonel By Drive, Ottawa, Ontario K1S 5B6, Canada

\*Corresponding author email: jdthiem@gmail.com

**Abstract**

Knowledge of the reproductive biology of wild populations of sturgeon is critical to ensure the perpetuation of this unique group of animals. We combined intensive netting surveys, non-lethal blood sampling, radio telemetry and egg collection to examine the reproductive biology of lake sturgeon (*Acipenser fulvescens*) at a suspected spawning ground below a dam on the Richelieu River, Quebec, Canada. Using the aforementioned techniques we quantified and described the timing of spawning, the characteristics and location of a spawning ground, the composition and residency of reproductive and non-reproductive individuals, and temporal trends in reproductive hormone titers. Lake sturgeon were present at the site when sampling began at the start of May, however spawning was not detected until 30 May, with back calculated embroyonic ageing indicating that spawning took place from 26 May – 5 June when water temperature averaged 13.4 ± 0.1oC (range 11.5–15.5oC). We estimated the spawning population at 1629 individuals (1129–2452; 95% C.I.). These results indicate that suitable spawning habitat for lake sturgeon exists downstream of a dam equipped with a fishway and have important implications for passage which will be discussed in the broader context of sturgeon fishway passage.