Stress state of fish in hydro-peaking River: effects of heavy daily flow discharge in a top predator, *Esox lucius* (Northern pike)

Simonne Harvey-Lavoie, Ph.D candidate
Université de Montréal
Supervisor : Daniel Boisclair
Participants: Suzie Currie, Mount Allison University
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Rationale: *The study takes place in a hydro-peaking river, where hydropower facilities usually run in response to a high demand in energy. Therefore, events of massive and unpredictable flow discharge happen daily. The effects of this high flow variation have been assessed in a top predator, Esox lucius (Northern pike).*

Description: *In 2011 and 2012, a total of 150 fish have been caught in Mississagi River, regulated by Aubrey Falls Dam, and Aubinadong River, unregulated, both situated in Northern Ontario. Aubinadong River serves as a control for absence of high variations in flow, related to hydro-peaking management strategy. The natural river, which is a tributary of the regulated river, has similar physical characteristics of Mississagi River. Chosen traditional stress biomarkers are part of the primary, secondary and tertiary physiological responses. Besides, a heat shock proteins (HSP) expression assessment has been conducted on Northern pikes to determine the relationships between traditional stress biomarkers and HSP expression in fish cells.*

Outcomes: *Response of cortisol, lactate, glucose, hsp's in a regards to flow regime, effects of hydro-peaking water characteristics in top predator survival and reproduction capacities*

Benefits from this research: *By providing useful tools and concrete recommendations for healthy fish populations, this study will help dam hydropower managers to take decisions regarding their future hydropower flow management strategy.*

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