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*Quantifying stress in fish: The relationship between flow magnitude and stress biomarkers in hydro-peaking and natural rivers*. S. Harvey-Lavoie; D. Boisclair, Université de Montréal.

Abstract

Stress in fish has been widely studied in response to different stressors, particularly in regards to temperature variations. For one of the first time, a field stress study will be directed to assess the effect of hydropeaking and therefore unpredictable flow discharge in the river on stress of *Salvelinus fontinalis* (Brook trout) and *Cottus cognatus* (Slimy sculpin). Magpie River will be sampled for three different distances from the Steephill Falls Dam in Algoma district, Northern Ontario. A gradient of stress response is expected to be seen as the sampling unit are getting further from the Steephill Falls Dam. Batchawana River, a natural river without hydropower dam, serves as a control for absence of stressful conditions related to hydropeaking management strategy. Batchawana River is also situated in Algoma district and has similar physical characteristics of Magpie River. Chosen stress biomarkers are cortisol, glucose, lactate and Fulton’s *K* condition factor*.* Besides, a heat shock proteins (hsp’s) expression assessment will be conducted on both species to determine the relationships between traditional stress biomarkers, as listed above, and HSP70 expression in fish cells. Assessing stress state of fish in regulated river is important for conservation of natural fish populations. By providing useful tools and concrete recommendations for healthy fish populations, this study will help dam hydropower managers to take decision regarding their future hydropower plant flow management strategy.