



The physiological, behavioural and morphological responses of fishes to streamflow alteration and the consequent effects on population dynamics

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Rationale: Canada's hydropower sector is forecast to see substantial growth over the coming decades. Indeed, hydropower already accounts for over half of the country's electricity generating capacity, yet despite the prevalence of hydroelectric dams little is known about how fish assemblages downstream of them are affected.

Description: Given the paucity of information regarding how the effect of streamflow alteration varies temporally and spatially, sampling will be conducted throughout 2013 at varying distances downstream from reservoirs in the Tobique River basin, New Brunswick, using nearby natural rivers as controls. Fish assemblage composition, age structure, abundance and condition will be determined by electrofishing. A second field season will be conducted the following year to estimate system variation, after which I will carry out a laboratory study to determine the physiological, behavioural and morphological mechanisms underlying any observed effects.

Outcomes: i) Quantification of the extent to which hydropower induced streamflow alteration affects the spatio-temporal population dynamics of fish; and ii) elucidation of the mechanisms underlying these effects.

Benefits from this research: Understanding whether and by what means hydropower affects fish is an essential step towards finding a balance between these seemingly conflicting interests.

