

HydroNet Project Title: Ecological effects of river discharge and temperature regimes on fish populations



Camille Macnaughton, PhD. student
Université de Montréal

Supervisor: Dr. Daniel Boisclair Co-Supervisor: Dr. Pierre Legendre

Collaborators: Caroline Senay, Gabriel Lanthier, Guillaume Bourque

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Rationale: Extensive ecological alteration and loss of biodiversity resulting from river regulation has led to widespread concern for the viability of maintaining and restoring healthy river ecosystems. Fish are generally adapted to a wide range of variability in stream discharge and temperatures, but the scarcity of high quality data sets complicate the task of accurately comparing the environmental and biological parameters between natural and regulated systems.

Project Description: Complementary fish surveys (electrofishing and snorkelling) were conducted in 2010 and 2011, to be continued in 2012 and 2013, across regulated and natural rivers from QC, ON, AB, NL, and BC. Biotic indices such as fish densities, biomass and species specific growth (salmonid and catostomid spp.) will be estimated and multivariate analyses will serve to quantify the role of flow and thermal metrics (e.g. magnitude, duration of flows etc.) in determining the variability of these biotic indices.

Outcomes: A comprehensive characterization of the variability of rivers to include both water quantity and quality metrics may elucidate the temporal and spatial impacts of altered flows and temperatures in shaping ecological patterns and processes in riverine ecosystems.

Benefits from this research: With the recognition that ubiquitous flow alterations threaten biodiversity and ecosystem functions of rivers on a global scale, the development of quantitative indices characterizing the various types of flow alterations and understanding how measures of ecological integrity are affected, will ultimately contribute to management and conservation efforts.



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