Effect of Regional Differences in Fish Biodiversity on Fish Production and Trophic Structure

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Rationale: *Different geographical regions, and different aquatic systems within those regions, vary greatly with respect to fish biodiversity. However, while it is widely accepted among researchers that biodiversity has a considerable influence on ecosystem processes, few studies have produced quantitative estimates of the relationship between biodiversity and fish production. Furthermore, those that have ,have been restricted to relatively small spatial scales, or are largely theoretical in nature.*

Description: *A number of regulated rivers, unregulated rivers, reservoirs and lakes will be sampled from within each of four geographical regions of Canada (BC-AB, MB, ON, NL-Lab), over a three year period (2013-2015). Abundance, biomass, species, size and age structure data will be collected via a combination of sampling methods, including hydroacoustics, index netting, beach seining, and boat and backpack electrofishing. Trophic relationships, food web structure and habitat use will be assessed and analyzed using a stomach content and stable isotope analysis, while production estimates will be derived from biomass with the use of allometric models.*

Outcomes:

- *This research will provide a quantitative estimate of the effect of fish biodiversity on trophic structure and productive capacity of fish habitat, on a large spatial scale.*

Benefits from this research

This research will provide a better understanding of baseline productivity values, specific to a variety of regulated and unregulated systems as well as geographic regions across Canada, which will help in making accurate assessments of the impacts of environmental disturbances to these systems (ie. hydroelectric operations). This study will also be among the first to quantify the relationship between biodiversity and productivity across an entire food web, thereby providing a valuable contribution to our knowledge of the ecology of food webs.