NSERC Canadian Network for Aquatic Ecosystem Services

Theme 3, Project 3.3.1

Biomass size spectra as indicators of ecosystem health in Ontario's inland lakes

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Project team

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Abstract

Freshwater lakes and rivers support a $234 million commercial fishery and a $2.3 billion recreational industry in Ontario. Habitat degradation, overexploitation, contaminants and the introduction of aquatic invasive species threaten the health of Ontario's lakes and the productivity of their fisheries resources. In 2008, the Ontario Ministry of Natural Resources initiated the Broad-scale Fish Community Monitoring (BsM) program. This long-term program is designed to sample hundreds of lakes in Ontario in order to assess the status and trends in fisheries resources and stressors (habitat degradation, exploitation, contaminants and aquatic invasive species) over time. It provides a unique opportunity to assess the ecosystem health of hundreds of Ontario's inland lakes. This research is scientifically significant because it will provide a broad-scale assessment of the ecosystem health in Central Canadian lakes, and evaluate the potential causes of ecosystem health differences: climate, habitat, exploitation, contaminants and invasive species. It will: (i) provide a cost efficient, methodological tool to assess lake fish community production and ecosystem health, (ii) assess the relative importance of difference variables (climate, habitat, exploitation, contaminants and invasive species) on aquatic ecosystem health and services, and (iii) be used to prioritize research, monitoring and restoration efforts in e.g., lakes identified as at risk or lakes with degraded ecosystem health.

Keywords: lakes, fish communities, ecosystem health, biomass size spectra, environment, anthropogenic stress

Geographic Location: 721 lakes throughout Ontario, Canada

How does your project link to Canadian aquatic ecosystem services?

This research will: (i) provide a cost efficient, methodological tool to assess lake fish community production and ecosystem health, and (ii) assess the relative importance of difference variables (climate, habitat, exploitation, and invasive species) on aquatic ecosystem health and services. It can be used to inform management decisions for inland lakes and their recreationally important fisheries.