Nutrient Variability across diverse geographical regions of Canada in Regulated and Reference Rivers

POSTER

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Variability in nutrient cycling and accumulation within a watershed is dictated by many influences including land use, local hydrology and climate, basin characteristics, and ecosystem interactions. Nutrients have been widely established as drivers for primary productivity in aquatic habitats, yet these processes may differ among diverse freshwater ecosystems. Regulated rivers create a low velocity depositional zone, impacting the longitudinal connectivity of rivers by disrupting nutrient pulses and transport of materials downstream. Reservoirs may act as a sink or source of nutrients through internal loading from sediment accumulation or hypolimnetic release downstream. Evaluation of the variability of chemical parameters of regulated and reference systems will help to identify geographic variability of nutrient regimes, and their influence on fish communities.

To advance our understanding of the relationship between fish productivity (biomass) and nutrient regimes among diverse aquatic systems, we compared Total Phosphorus and Total Nitrogen in systems modified by hydropower (regulated) and reference rivers in BC, AB, QC, ONT and NL in 2011 and 2012. In combination with this, we sampled regulated rivers up and downstream of reservoirs to monitor nutrient trends and develop a consistent nutrient database for HydroNet river sites. Using known nutrient values, estimates of fish biomass can be calculated using species specific biomass prediction tools. Continual development and expansion of a nutrient/ fish biomass database to strengthen our estimates provide a useful tool for Hydropower management across diverse aquatic systems.