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### Project team

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## Abstract

Dissolved organic carbon (DOC) affects nutrient and metal cycles by controlling their water-sediment distribution, bioavailability and/or toxicity. These effects are dependent on DOC type, concentration, and quality (degree of humification). We aim to describe how DOC quality controls primary production, food web structure and mercury bioaccumulation in lacustrine ecosystems in South-Central Ontario by focusing on four main questions: (1) How do type and age of forests affect DOC quantity and quality in lake ecosystems? (2) How does DOC control primary production in lakes? (3) What drivers determine food chain length? (4) How does DOC affect mercury bioaccumulation? Samples of organisms (phytoplankton, zooplankton and fish) from a set of lakes - selected to represent a gradient of organic matter and phosphorus content- will be analyzed using stable isotope analysis and elemental analysis. Stable isotope analysis helps define the position of an organism in the food chain and the dominating primary production in the ecosystem. Elemental analysis allows us to trace nutrients and metals in the food web. Our research will increase the knowledge about connectivity between forests and lakes and will therefore aid the development of management plans that consider aquatic food webs and ecosystem services

**Keywords:** Dissolved organic matter, nutrients, catchment, primary production, food web, mercury, fish

**Geographic Location:** Temperate forest in the Canadian Shield, approximately from Kingston to Wawa.

## How does your project link to Canadian aquatic ecosystem services?

Understanding the processes regulating the length and complexity in aquatic food webs will help us define the links between forests and lakes, as well as the drivers of mercury accumulation in fish.