

# WATER QUALITY IN SHORELINE PARKS

## In the eye of the beholder: assessing the water quality of shoreline parks around the Island of Montreal through Citizen Science

D. Lévesque, A. Cattaneo, G. Deschamps, C. Hudon. [david.levesque@umontreal.ca](mailto:david.levesque@umontreal.ca)

The Island of Montreal, Quebec, Canada lies at the confluence of the St. Lawrence River and the Ottawa River. Although the two rivers no longer receive urban wastewaters in dry conditions, they are periodically contaminated with up to 800 storm overflows during rain events, exposing aquatic ecosystems, and their adjacent shorelines to municipal pollution. Such pollution poses a threat to both water quality and aesthetic value across the island's 28 shoreline parks. Lévesque et al. (2017) *Sci Total Environ.* 579: 978-988

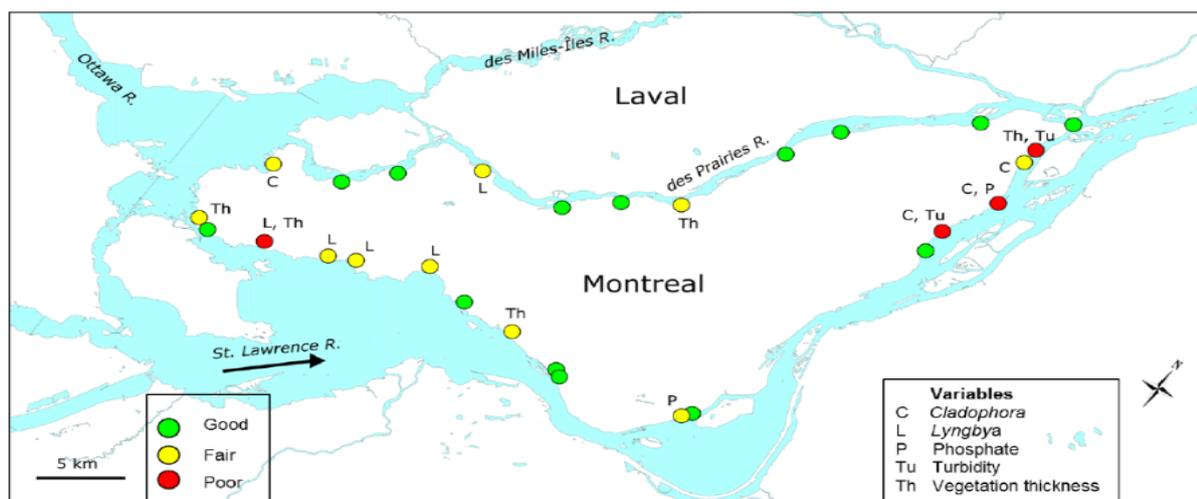
### Aims

The study was designed to assess water quality along the St. Lawrence River, Montreal Island to provide:

- an overview of the water quality of the St. Lawrence and Des Prairies rivers around the Island of Montreal;
- an estimation of the quantity and types of beach-cast aquatic plants and filamentous algae; and
- novel insights into the distribution of the nuisance cyanobacterium *Lyngbya wollei*.

### Approach

Guided by researchers from Université de Montréal, FreshWater Watchers surveyed 28 public shoreline parks around Montreal Island between May 2013 and November 2015. Water turbidity, nitrate and phosphate concentrations were measured in situ, together with the thickness and type of beach-cast vegetation, and the relative abundance of different types of beach litter. Each park was classified from "good" (low levels of nitrate and phosphate, low turbidity little deposition of litter) to "poor".



### Impacts

The City has recently outlined plans to create new parks and to open several existing parks to swimming. This study showed that a simple method could be used to monitor the quality of shoreline parks, and that users could contribute to monitoring efforts. A longer term programme would provide key indicators of change in river shoreline conditions and could eventually be extended to the entire St. Lawrence River through citizen groups involved with river health, contributing to planning and management activities.

### Key results

Half of the sites were classified as "good", i.e. had low turbidity, nitrate and phosphate concentrations, and little deposition of beach-cast vegetation. *Lyngbya wollei* was found at 57% of the sites, revealing a more frequent occurrence than anticipated. The amount of litter recorded along the shoreline was generally small, comprising items related to picnicking (cans/bottles), smoking, and fishing activities in most parks. Wind and rain explained most of the variability in nutrient concentration and turbidity among sites and dates. Shoreline condition assessed from water quality and vegetation data from this study was not correlated, but complemented monitoring by the City of Montreal.