

Lake Ontario CSMI Summary: 2023 Field Year Priorities

In addition to the below priorities, the Lake Ontario Partnership identified the priority for the 2023 CSMI projects to be inclusive of indigenous communities and traditional ecological knowledge. Indigenous Nations, traditional knowledge holders, and the indigenous science community is encouraged to identify projects according to traditional teachings and cultural views of the Lake Ontario basin and connecting channels, and in surrounding indigenous territories to protect water quality, indigenous cultural species, and ecosystem sustainability in Lake Ontario.

Chemical Contaminants

1. Characterize critical and emerging pollutants, with a focus on chemicals with potential for trophic transfer in nearshore and offshore.
2. How do shifts in the Lake Ontario food web and invasive species affect contaminant transfer?
3. What are the impacts of climate change on contaminant bioavailability, cycling and movement?
4. What is the abundance and distribution of microplastics in Lake Ontario and are microplastics significant vectors for inter/intra basin transport of chemical contaminants and bioaccumulation?

Nutrient and Bacterial Pollution

1. Improve whole-lake phosphorus load and productivity estimates.
2. Better characterize and increase understanding of spatial and temporal patterns of microbial, heterotrophic, and primary production.
3. Establish a coupled hydrodynamic ecosystem model that includes phosphorus inputs, transport, fate, and effects in the Lake.
4. Integrate new innovative approaches and technologies for measuring/monitoring primary production (including the benthic alga *Cladophora*).

Habitat and Species

1. Increase understanding of the physical drivers of fish habitat and impacts on fish recruitment and production.
2. Survey and map lake bottom substrates in targeted locations in Lake Ontario.
3. What are the impacts of lake level fluctuations on habitat and wetland health and ecology?
4. Improve and enhance winter limnology research and increase understanding of the impacts of a changing winter season (due to climate change) on Lake and wetland ecosystems.
5. Understand changing species dynamics, food web structure and energy transfer in Lake Ontario, including benthos, zooplankton, and fish populations.

Invasive Species

1. Dreissenid mussel population dynamics (including fecundity/recruitment and predation by Round Goby) and ecosystem impacts.
2. Impacts of invasive species on wetlands, especially invasive plant species and the question of whether road salt is driving increases in invasive aquatic plants.