

Metadata for Lake Simcoe Monitoring Data

This table provides essential information about the program data.

Dataset Title	Lake Simcoe Monitoring Data
Abstract	<p>1. Program Description</p> <p>The Lake Simcoe lake monitoring program provides measurements of biological, chemical and physical water quality parameters such as total phosphorus, nitrogen, chlorophyll a, pH, alkalinity, conductivity, dissolved organic and inorganic carbon, silica, other ions, water transparency, temperature, dissolved oxygen, phytoplankton biovolume, zooplankton density and spiny water flea (Bythotrephes, a type of invasive zooplankton) density.</p> <p>Samples are collected biweekly during ice free season (April-November). Under ice samples are collected occasionally when the lake freezes (January-March).</p> <p>2. Data Description</p> <p>The dataset provided is raw data that has been collected through the Ministry of Environment, Conservation and Parks (MECP) long-term monitoring program. This dataset includes water chemistry and physical parameters for 1980-2020, phytoplankton biovolume from 1980 to 2016, zooplankton density from 1986 to 2019 and spiny water flea density from 1999 to 2019.</p> <p>The water quality data have not been edited or screened to fill in blanks, exclude outliers or substitute values below limits of detection. The historical data has some gaps as not all parameters are available for all stations for all dates.</p> <p>Parameter Notes:</p> <p>Chlorophyll-a</p> <p>Pre-1985 values in the dataset must be increased by 35% to account for a lab methodology change from cellulose nitrate filters and glass fiber filtration to nylon filters, which increased CHLRAT yields by 35% (Nicholls and Hopkins. 1993. Journal of Great Lakes Research, 19:637-647).</p> <p>Nitrate (NNO3)</p> <p>From 1984 to 1994 and beyond 1996, NNO3 (nitrate) was not measured in the lab. NNO3 values can be calculated by subtracting NNO2 from NNOT.</p> <p>Total Phosphorus (PPUT)</p> <p>Since 2002, the Total Phosphorus (PPUT) parameter has been measured more than once from the same grab sample of water. From 2002–2008, duplicates were sent to the ministry’s laboratory at Dorset, ON (PPUT1 and PPUT2) and a single sample was analysed at the ministry’s laboratory at Etobicoke, ON (PPUT). From 2009 onwards, only duplicates are analysed at Dorset.</p> <p>pH</p> <p>There was a coincident drop in pH at the lake stations when analysis of lake samples was transferred from the Etobicoke laboratory to the Dorset laboratory in 2009. This change could have been due to slight differences between analytical methodologies; while all labs use a meter and an electrode to measure pH, there can be differences due to analytical biases, methods of standardization or electrode maintenance.</p> <p>Phytoplankton biovolume</p> <p>Biweekly phytoplankton samples were combined and counted as a single seasonal composite per year. Data have been grouped into phytoplankton Class.</p> <p>Zooplankton species density</p> <p>Species density is the estimated number of individuals divided by volume</p>

	<p>(cubic metres), which was the product of tow depth, net surface area and tow efficiency. 1986-1988 samples for stations K42, K45 and C9 were recounted in 2011, and individuals previously identified as <i>Daphnia pulicaria</i> are thought to be <i>Daphnia catawba</i>.</p> <p>Spiny water flea density</p> <p>Bythotrephes cederstroemi (previously named Bythotrephes longimanus: Korovchinsky and Arnott 2019) is an invasive species, known as spiny water flea, that invaded Lake Simcoe in 1994. MECP sampling for this species began in 1999. From 2000 onwards, samples collected at K42, K39 and K45 were from 20-m depth to lake surface. For all other stations, and all stations in 1999, samples were collected from 5 metres off lake bottom. Density is the estimated number of individuals divided by volume (cubic metres), which was the product of tow depth, net surface area and tow efficiency (95%).</p> <p>3. Data Use Requirements</p> <p>See Open Government Licence https://www.ontario.ca/page/open-government-licence-ontario</p>
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Geographical Bounds	<p>West bound: -95.15699</p> <p>East bound: -74.30798</p> <p>South bound: 41.6723</p> <p>North bound: 56.850117</p>
Keywords	LAKE SIMCOE, WATER QUALITY, MONITORING, ENVIRONMENTAL MONITORING, NUTRIENTS, CHLOROPHYLL, ALGAE, PHYTOPLANKTON, ZOOPLANKTON, pH, SPINY WATER FLEA, EMRB
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