Blue-Green Algae Monitoring 2017 Report

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Water Resources Management Division

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Background

Cyanobacteria, commonly referred to as 'blue-green algae', are microscopic, plant-like bacteria that occur naturally in ponds, rivers, lakes and streams throughout the world. They can also exist in salt water. Individual organisms are not normally visible, but populations can increase rapidly when conditions are favorable, congregating together in large masses or 'blooms'.

Blooms most commonly occur in summer or early fall, when surface waters are warmest, but they can also occur at other times during the year. In addition to water temperature, a key factor contributing to the growth of blue-green algae is the amount of available nutrients such as phosphorus and nitrogen in the water.

Many species of blue-green algae can produce toxins that are potentially harmful to humans and animals. The most common blue-green algae toxins encountered and monitored in Canadian waters are microcystins. Health Canada has established guidelines for the cyanobacterial toxin 'microcystin-LR'. The guidelines are "believed to be protective of human health against exposure to other microcystins (total microcystins) that may also be present" (Health Canada, 2016).

Health Canada's '*Guidelines for Canadian Drinking Water Quality*' recommend that microcystin-LR not exceed 1.5 µg/L. The '*Guidelines for Canadian Recreational Water Quality*' recommend that total cyanobacteria not exceed 100,000 cells/mL and total microcystins not exceed 20 µg/L (expressed as microcystin-LR).

Summaries of blue-green algae monitoring on the Avalon Peninsula for the years 2007 to 2016, are available on the Department of Municipal Affairs and Environment website at:

http://www.mae.gov.nl.ca/waterres/quality/background/bgalgae.html

Blue-Green Algae Occurrences in 2017

On June 19, a blue-green algae bloom was reported and observed in Miller's Pond, Portugal Cove - St. Philip's (Figures 1 and 2). Samples were collected by Water Resources Management Division (WRMD) staff and analyzed at the York-Durham Regional Environmental Laboratory in Pickering, Ontario. Microcystin levels were below the laboratory detection limit of 0.1 µg/L. The organism responsible for the bloom and present in large quantities was identified as a genus of cyanobacteria known as *Anabaena*. This is the same blue-green algae that has been present in blooms in Miller's Pond for the last several years.

The site was visited a week later and no bloom was observed at that time. No other reports of blue-green algae in Miller's Pond were received in 2017.

On August 3, WRMD staff inspected Paddy's Pond following reports of a "fish kill" in the area. No blue-green algae bloom was observed during this visit. Dead fish were also not observed. As a precaution, samples were collected. Analysis results (cell counts) indicated that a bloom was not occurring and microcystin levels were below the laboratory detection limit of 0.1 µg/L.

In late October WRMD received a report of a possible blue-green algae bloom in Long Pond, near Hermitage. Photographs taken by a concerned citizen on October 28 were received at WRMD on November 14. The photos clearly indicated that a blue-green algae bloom was present on October 28 (Figure 3). The site was not inspected by WRMD staff and no samples were collected because reports from the area indicated that the bloom dissipated soon after the photographs were taken, as winds increased and temperatures declined.

Figure 1: Miller's Pond (Portugal Cove – St. Philip's), June 19, 2017

Figure 2: Millers' Pond (Portugal Cove – St. Philip's), June 19, 2017

Figure 3: Long Pond near Hermitage, October 28, 2017