

Algae Blooms in Nova Scotia

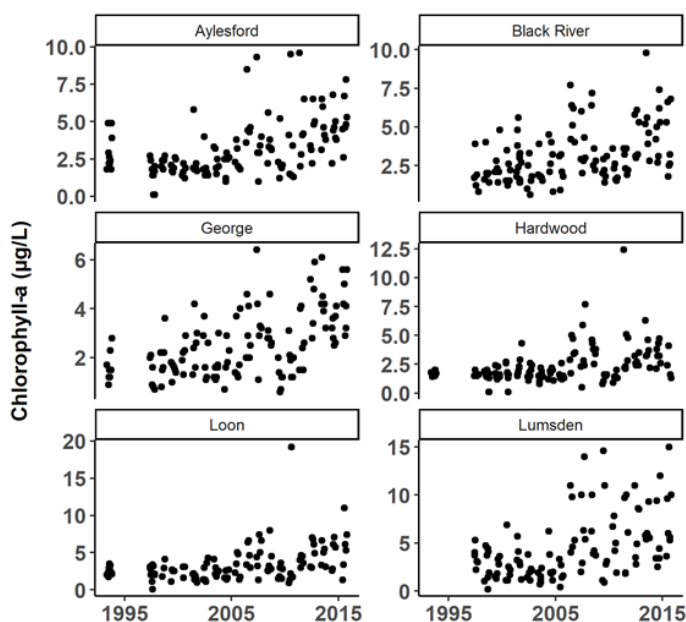
What is an algae bloom?

Algae blooms are unsightly, potentially dangerous communities of algae that develop in surface water bodies, usually during the warmer part of the year. They are caused by blue green algae (also known as cyanobacteria), which can release toxins that can cause skin irritation and, in some cases, can damage the brain or liver. Algae blooms are more likely to form in lakes that contain high levels of nutrients such as phosphorus and nitrogen.

High profile algae blooms have occurred in King's County, Yarmouth County, and Dartmouth in the past five years. These events have resulted in do not consume orders and restrictions on recreational activities in some communities.

Study on Water Quality in Lakes in King's County, NS

In 2017, the Centre for Water Resources Studies at Dalhousie University and the Nova Scotia Federation of Agriculture investigated four Nova Scotian lakes known or suspected to be affected by agricultural wastewater or run-off containing nutrients such as phosphorous or nitrogen.



A review of historical water quality in lakes in King's County NS determined that chlorophyll-a, a measure of algal activity, has increased over time.

The concentrations of nutrients such as phosphorus and nitrogen did not change in these lakes during this time period, indicating that for many lakes, the increase in algal activity was not exclusively related to nutrient levels.

Other factors that might explain the increase in algal activity in lakes in King's County include higher temperatures overall and increases in organic matter and pH due to lake recovery following lake recovery from acid rain.

Figure 1: Chlorophyll-a levels in lakes in King's County NS

Four lakes in King’s County NS were targeted for additional water quality monitoring over the summer of 2017. Only one of these lakes – Aylesford Lake – has not experienced algae blooms in the past. The water chemistry in Aylesford Lake and Lake Torment are relatively similar, and they are in the same region, other factors, such as lake depth, volume, and flushing rates might explain why algae blooms have been observed in Lake Torment but not in Aylesford Lake. Algae blooms occurred in Nowlan’s Lake and a small amount of microcystin-LR, an algal toxin, was detected in this lake. This is very likely because of the high levels of nutrients in this lake related to nearby agricultural activities.

Table 1: Summary of conditions in four lakes in King’s County, NS, monitored over the summer of 2017

Lake	Activities	Past Issues	Trophic Status (2017)	Microcystin LR (2017)
Aylesford Lake	Residential, recreational	None	Mesophilic	No
Lake Mattatall	Residential, recreational	Algae blooms	Mesophilic	No
Nowlan’s Lake	Fur farming	Algae blooms	Eutrophic	Yes
Lake Torment	Residential, recreational	Algae blooms	Mesophilic	No

What can I do to prevent algal blooms?

You can help to reduce the likelihood of algae blooms by limiting the release of phosphorus and nitrogen from your property. This means ensuring that agricultural wastewater is properly captured and treated, using phosphorus-free fertilizers, and ensuring that your septic system is in good repair.

Where can I learn more?

Nova Scotia Federation of Agriculture:
<http://nsfa-fane.ca>

Nova Scotia Environment:
<https://novascotia.ca/nse/water/docs/BlueGreenAlgae.pdf>

WHO:
http://www.who.int/water_sanitation_health/publications/toxicyanobact/en/

Environment Canada:
<http://ec.gc.ca/grandslacs-greatlakes/default.asp?lang=En&n=6201FD24-1#archived>



Figure 2: Algae growing in a Nova Scotia lake