

# Lake Recovery in Nova Scotia



## Lakes in Nova Scotia

Nova Scotia is home to over 3,000 lakes that provide Nova Scotians with drinking water and water for agriculture and recreation. In the 20th century, many of the lakes in Nova Scotia were negatively impacted by acid rain related to industrial emissions. These lakes became more acidic and less able to support a rich diversity of organisms.

## What is lake recovery?

Regulatory changes in Canada and the United States have led to a decrease in acid rain in Eastern Canada. As a result, many lakes are returning to their natural state, which may impact their ability to handle agricultural wastewater and run-off.

## Study Methodology

A study was conducted by the Centre for Water Resources Studies at Dalhousie University for the Nova Scotia Federation of Agriculture to investigate the recovery of four Nova Scotian lakes known or suspected to be affected by agricultural wastewater or run-off containing nutrients such as phosphorous or nitrogen.

The project included three main tasks:

**Task 1:** Collection and Review of Historical Data

**Task 2:** Lake Monitoring Program

**Task 3:** Data Analysis and Modelling

Sulfate Deposition in NS

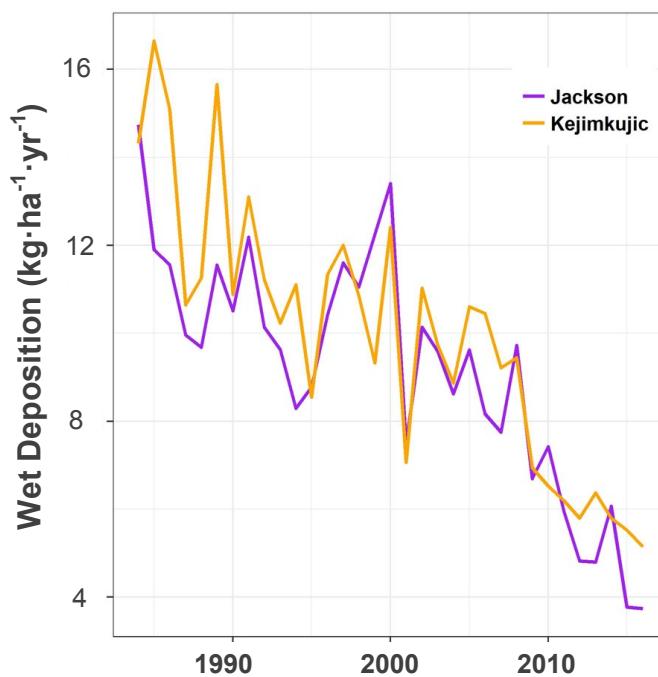


Figure 1: Sulfate levels in Nova Scotia (Environment Canada)

## Findings

The results of this study indicate that Nova Scotia lakes are changing in response to reductions in sulfate deposition associated with acid rain.

Changes include increased alkalinity, pH, colour, and organic matter.

These findings are consistent with findings in other parts of North America and in Europe.

## Conclusions and Implications

As a result of lake recovery, some Nova Scotia lakes are potentially more sensitive to releases of nutrients such as phosphorus and nitrogen, which are associated with the development of algal blooms.

It is expected that biological recovery will follow chemical recovery, and that increases in pH and alkalinity will encourage greater species diversity and richness in lakes in Nova Scotia.

## Where can I learn more?

Nova Scotia Federation of Agriculture

<http://nsfa-fane.ca>

## References

Anderson, L., Krkošek, W., Stoddart, A., Trueman, B., and Gagnon, G. (2017) Environmental Science and Technology, 51(3), 1414-1422

Environment Canada, Canadian Air and Precipitation Monitoring Network <https://www.canada.ca/en/environment-climate-change/services/air-pollution/monitoring-networks-data/canadian-air-precipitation.html>, Accessed 2017

Clair, T., Dennis, I., Vet, R. Weyhenmeyer, G. (2011) Canadian Journal of Fisheries and Aquatic Sciences, 68 (4), 663-674

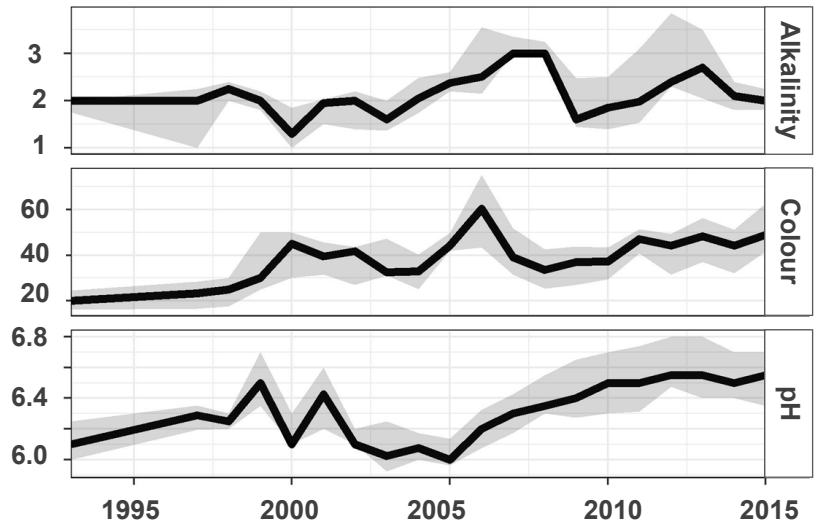


Figure 2: Historical water quality in lakes in King's County NS

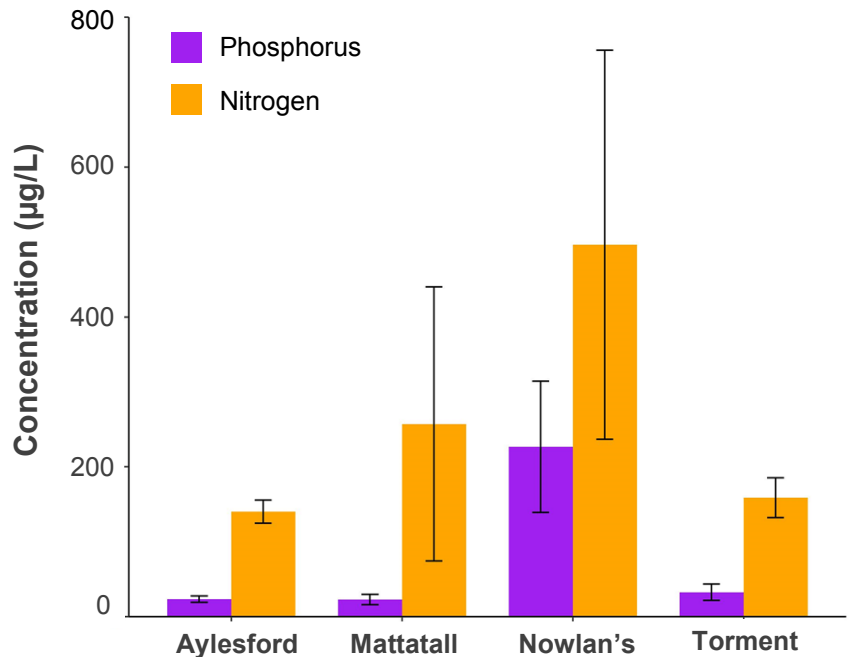


Figure 3: Total phosphorus and nitrogen measured in lakes in King's County NS in 2017