

The Freshwater Connection

Publication of the Central Algoma Freshwater Coalition - Spring 2023

Spring 2023
Vernal Ponds
Planting Trees / Shrubs
Salt



Spring 2023

This spring has been a real battle with winter. Spring is a time of renewal and it is exciting to watch the snow melt, deer return to open areas, waterfowl migrate to the newly bare and flooded fields, followed by the songbirds to the forests. It is also a time to explore vernal pools.

Vernal Pools

Vernal pools are forest wetlands that have water in the spring but dry up in the summer. These pools are unique because they don't support fish which might otherwise eat the eggs of wood frogs and salamanders. The pools however need to persist long enough for the eggs to hatch and mature. Vernal pools are often found in the interior of hardwood forests. The pools are habitat for wood frogs, one of the first frogs to sing in the spring. Wood frogs sound like quacking ducks. If you find a vernal pond also look for salamander egg masses. Vernal pools are important wetlands as some species depend on them for survival.



Preserving Water Quality

Spring runoff can also be a time when your mind turns to preserving water quality.

- **controlling erosion and sediment**
 - grow and maintain vegetation along shorelines.
 - plant trees on hillsides and steep slopes
 - fence livestock from stream banks
 - grassed waterways and buffer strips
- **protecting wetlands**
 - maintain vegetation beyond the wetland boundary (>300m)
 - keep livestock away.
 - eliminate dredging, filling and trash disposal.
- **conserving groundwater**
 - minimize paving and concrete to allow water to reach the water table.
 - maintain forested headwaters.
 - maintain abandoned and existing well to prevent overland flooding.
- **managing storm water**
 - create catch basins, detention ponds and artificial wetlands.
 - clean and catch - sediment, nutrients, bacteria, oil, grease, salts, heavy metals.

Spring Tree and Shrub Planting

Spring is a good time to plant trees. Trees can help improve water quality by preventing erosion and keeping water temperatures cooler by providing shade. Planting trees can also help with reducing the impacts of climate change. Planting locally native species also provides habitat that will help maintain biodiversity without introducing invasive species.

Plant Native Species

Native species are plants that grow naturally in a specific region. They are used to provide food and shelter to wildlife.

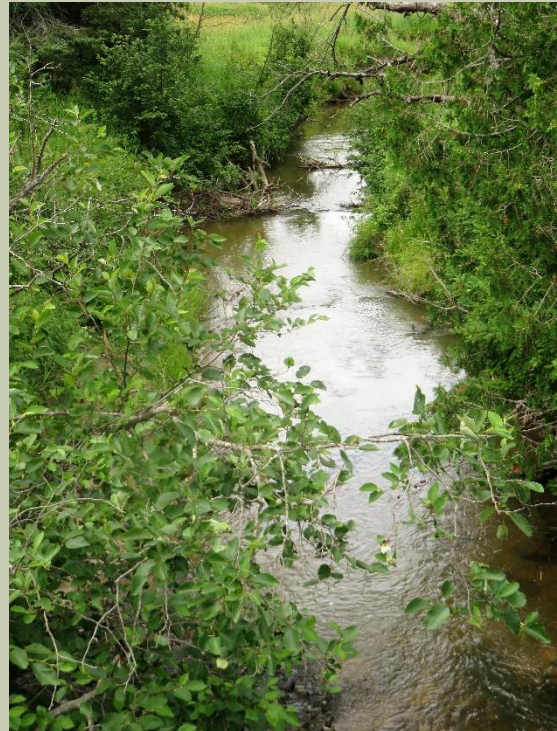
Restoring Shorelines with Willows (red osier dogwood, Virginia creeper)

Willows are an ideal choice for first stage shoreline restoration because:

- They thrive in damp, boggy soil along riverbanks and flood plains.
- They can be reproduced from whips or cuttings.
- They grow quickly.
- They have an extensive root system to anchor soil together.
- Their stems slow the velocity of flood water and wind, reducing erosion.

Where to Get Willows

- Willows can be purchased at nurseries.
- Live willows can be also planted from cut slips (before leafing out) from existing willows on your property.



To learn more, watch a 2-minute video at <https://www.facebook.com/watch/?v=135328597873911> or Google Pennsylvania Department of Conservation and Natural Resources, Harvesting and Planting Live Stakes

Planting / Staking Live Willow

- First row planted at high water mark.
- Planted .75m to 1m apart.
- 3 or more row recommended along a stream bank.

Planting Trees

What to plant is determined by soil, moisture, and shade.

A good starting point in deciding what to plant is the Ontario Tree Atlas.

<https://www.ontario.ca/page/tree-atlas>

Funding Opportunities – Tree Planting 3 Acres or More

Funding opportunities are available to landowners planning to plant trees to reduce the impacts of climate change.

Forests Ontario – 50 Million Trees (generally 3 acres or more)

<https://forestsontario.ca/en/program/50-million-tree-program>

Canada – 2 Billion Trees (generally 10 acres or more)

<https://www.canada.ca/en/campaign/2-billion-trees/2-billion-trees-program.html>



Lake Huron Nearshore = Our Shore + Your Shore – Mini Summit

CAFC attended the online mini summit in March. The meeting made people aware of what has been happening on Lake Huron – some reports are available online.

The draft Lakewide Action and Management Plan (LAMP) is the definitive base document. The 2022- 2026 plan has just been released. The restoration and protection actions identified in the LAMP respond to, the major threats specifically:

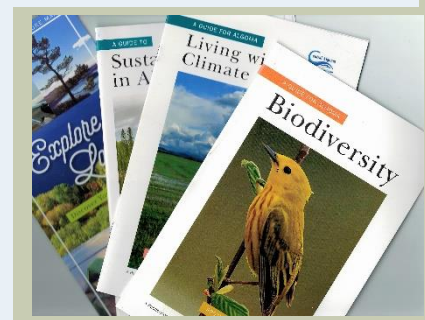
- chemical contaminant pollution;
 - nutrient and bacterial pollution;
 - invasive species;
 - loss of habitat and native species; and,
 - other threats including plastic pollution, climate change, risks from oil transport and cumulative impacts on the nearshore areas of the lake
- Read more at

<https://binational.net/2023/03/13/2022-2026-lake-huron-lakewide-action-and-management-plan-available-for-public-review-and-comment/?fbclid=IwAR1IQsrhbC0Vq7pkXWY>

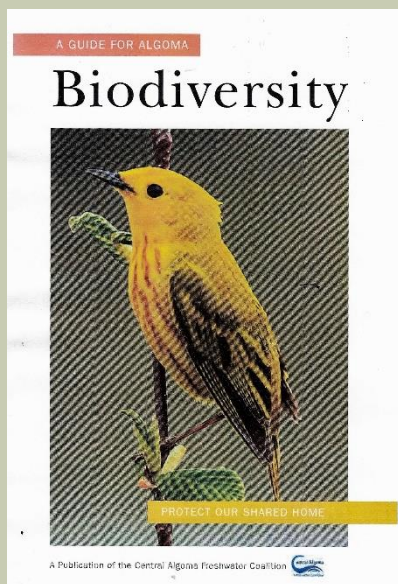
CAFC has been highlighting these threats at the local level with its recent publications during the pandemic.

The mini summit also featured what has been happening on Lake Huron's nearshore – including regional examples of how landowners have been responding to fluctuating water levels. Read more at

<https://www.canada.ca/en/environment-climate-change/services/great-lakes-protection/taking-action-protect/nearshore-waters/lake-huron-nearshore-assessment.html>



Save The Date Sustain Algoma
Johnson Township Community
Centre in Desbarats, ON
June 17, 2023



A Guide for Algoma - Biodiversity - Protect Our Shared Home

CAFC has published a new 16 page booklet on - Biodiversity - Protect Our Shared Home - it is now available on our website as an electronic version or contact us at cafreshwatercoalition@gmail.com if you would like a copy (number of mailings may be limited). This joins our previous publications Sustainable Living in Algoma, Living With Climate Change and our Explore Local Map.



This article originally published in The Conversation <https://theconversation.com/freshwater-ecosystems-are-becoming-increasingly-salty-heres-why-this-is-a-concern-202285>

Freshwater ecosystems are becoming increasingly salty. Here's why this is a concern

Published: March 22, 2023 Authors

Alison Derry, Professeure agrégée, Université du Québec à Montréal (UQAM)

Miguel Cañedo-Argüelles, Profesor lector en Ecología, Universitat de Barcelona

Stephanie J Melles, Associate Professor, Spatial Ecology, Toronto Metropolitan University

Freshwater ecosystems around the world are becoming saltier and saltier. Many human-driven factors contribute to freshwater salinization, including: irrigation, oil extraction, potash mining, and road de-icing.

As a result, salts enter waterways. But as bad news never comes alone, the salts are often accompanied by a toxic cocktail of other pollutants, whose combined toxicological effects are largely unknown.

Although the problem of rising freshwater salinization went largely unaddressed for many decades, it has gained considerable attention during the last 20 years.

Scientists around the world are working together to understand the ecological impacts of increasing salinization on aquatic biodiversity and food webs. Our ultimate goal? To examine the adequacy of water quality toxicity thresholds for the protection of aquatic life.

Salinization, a major problem

Canada is home to a majority of the world's freshwater resources, mostly concentrated in the provinces of Ontario and Québec, where close to 5 million tons of road salt are applied annually to de-ice roads.

Combined with climate change and increasing frequency and duration of drought in many regions of the world, the problem is getting worse. This is a major concern. Why? Because the availability of freshwater resources will become a critical factor for humanity over the next 50 years.

Researchers from around the world mobilized

We recently presented a series of articles in a special issue on freshwater salinization in the journal *Limnology and Oceanography Letters*, published last February.

In this special issue, we focus on sodium chloride (NaCl), the same molecule found in table salt, as a key agent of freshwater salinization. We highlight a series of co-ordinated field experiments, conducted by researchers in North America and Europe, that have addressed the impacts of freshwater salinization on zooplankton (microscopic crustaceans) at a regional scale.

Zooplankton are an ecologically critical group in aquatic food webs and are often used as indicators to detect environmental change due to their sensitive ecological tolerances.

The main conclusions of these experiments are as follows:

Water quality guidelines in Canada and the United States (standards) do not adequately protect freshwater zooplankton, which could lead to an increase in the abundance of algae, which the zooplankton feed on. This is because when zooplankton abundance decreases, especially for large grazers such as *Daphnia*, phytoplankton can proliferate under conditions of reduced predation;

Salinization of freshwater systematically leads to a loss of abundance and diversity of zooplankton in all regions; and

Individuals of the same zooplankton species do not all exhibit the same tolerance to salinity. Thus, this variation may interfere with our ability to predict community-level responses. Water quality guidelines may therefore need to be adjusted to become more region-specific.

A matter of regulation

Many questions remain unanswered. However, what we do now know is that long-term water quality guidelines (Canada: 120 mg Cl⁻¹L⁻¹; United States: 230 mg Cl⁻¹L⁻¹) and in the short term (Canada: 640 mg Cl⁻¹L⁻¹; United States: 860 mg Cl⁻¹L⁻¹) for chloride concentrations are too high to protect aquatic life in Canada and in the United States. For reference, a pinch of salt in a pot of water corresponds to approximately 0.3 mg of Cl⁻¹/L⁻¹. In other words, adverse effects are observed at much lower concentrations. Regulations in Canada and the United States should therefore be reviewed. In Europe, the water quality standards for salinity for the protection of aquatic life in freshwater ecosystems are mostly absent.

The importance of taking concrete action

Water quality guidelines for the protection of aquatic life are generally established using laboratory tests (called toxicological tests) on a single species.

However, aquatic habitats harbour a complex array of predators, prey, competitors, and pathogens, the interactions of which can limit our ability to predict the responses of communities and species to pollutants.

Thus, the collective research published in this special issue also highlights the importance of understanding ecological responses in multi-species communities in natural settings to assess the responses of freshwater life to human impacts.

We also need to establish more appropriate water quality guidelines to improve controls on salts entering our freshwater environments to reduce adverse effects on aquatic life and the quality of our freshwater resources.

Become a Member



Your annual membership fee will provide a base budget for work of CAFC and demonstrate the commitment of local partners working towards a common goal. A strong diverse group is an essential component in meeting the goals of the Central Algoma Region. Support us at <https://www.centralalgomafreshwatercoalition.ca/>

