# Ecology & Action

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Why Healthy Eelgrass Meadows Matter for the Future of Nova Scotia's Coastal Communities

Pining for Sustainable Christmas Tree Farming

On a Roll



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Ecology Action Centre

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The EAC is a member-based environmental charity in Nova Scotia. We take leadership on critical environmental issues from biodiversity protection to climate change to environmental justice. We are grounded in community and a strong voice and watchdog for our environment. We work to catalyze change through policy advocacy, community development and building awareness. We take a holistic approach to the environment and our economy to create a just and sustainable society. Views expressed in *Ecology & Action* are those of the writers and do not necessarily represent the EAC or its supporters.



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# Letter from the Centre

**WE LOVE HEARING FROM YOU! EMAIL YOUR THOUGHTS TO MAGAZINE@ECOLOGYACTION.CA**

In celebrating EAC's 50th anniversary, we've been doing a great deal of reflecting on our collective history and the half century of action that has brought us to where we are today. But as we reflect on where we are coming from, it's also crucial to envision where we are going.

The next 50 years of the environmental movement will be largely dictated by what we do in the next decade to address the intersecting crises of biodiversity loss, rising inequity and climate change. We need to act swiftly if we are going to deal with these massive challenges in a way that leaves no one behind.

Although our path is characterized by urgency, it's also one of hope and resilience. We have the tools and knowledge necessary to rise to the challenges of climate change and ecological destruction. The COVID-19 crisis has shown us that humanity can take swift and collective action when faced with a truly existential threat. And all around the world, communities are engaged in the act of imagining a better future and figuring out what it will take to make that future a reality.

This issue of Ecology & Action is all about moving forward. You'll read stories of citizens mobilizing to protect lakes, how eelgrass can help fight climate change and support diverse marine ecosystems in Mi'kma'ki, bringing active transportation to traditionally underserved rural communities, what the fight against COVID-19 can teach us about tackling the climate emergency, and more.

We have some big questions to answer in the coming years. What will it take for us to move forward together and ensure that no one is left behind? What can the lessons of our past teach us about the road ahead? How will we support our communities through a just transition to a low carbon future? We invite you to join us in envisioning our collective future, and what the next 50 years of environmental action in Mi'kma'ki might look like.

# Why Healthy Eelgrass Meadows Matter for the Future of Nova Scotia's Coastal Communities

by **HOLLY ISNOR** /// EAC Staff

Once abundant in nearly all coastal ecosystems globally, seagrasses are being lost at an alarming rate. Climate change brings rising seas and temperatures, more frequent and severe storms, and broad changes in ocean conditions, while other direct human impacts have also proven a tough challenge. Overwater structures, boating and fishing activities, pollutants, and excess nutrients are all affecting our coastal ecosystems. With these threats, it is no surprise that we are seeing a decline in seagrass coverage. But at the same time, the value of seagrasses is finally getting some well-deserved attention on a global and local scale.

These marine flowering plants grow in almost all coastal waters around the world. Although there are around 70 species worldwide, eelgrass, *Zostera marina*, is the main species present in Nova Scotia and grows along the Atlantic Coast, Cape Breton, the Gulf of St. Lawrence, and the lower Bay of Fundy.[1]

### DID YOU KNOW?

1. In the 1930s there was a large dieback event of eelgrass in the North Atlantic to 'wasting disease,' caused by the slime mould *Labyrinthula zosterae*. This event caused nearly a 90 per cent decline on both sides of the North Atlantic in just 2 years.
2. Eelgrass can be used as a building material, for things like insulation and roofing. It can also be used for basket weaving.
3. The window for collecting seeds from eelgrass for restoration is only a few weeks in the summertime.

For further information on our eelgrass program, or to get involved in our citizen science program, email **eelgrass@ecologyaction.ca**

Eelgrass meadow at Owls Head Provincial Park
PHOTO: Nicolas Winkler

### TAKE ACTION

Become a citizen scientist! Join us in collecting vital data on eelgrass coverage by getting involved in our sea kayaking program or our iNaturalist Eelgrass monitoring project – visit **inaturalist.org/projects/eac-eelgrass-monitoring-project** to add your observations.

## Importance of eelgrass

Eelgrass is beneficial to the marine environment in Nova Scotia, and to our coastal communities, in that it forms vast meadows of highly productive habitats that support diverse food webs. For example, eelgrass meadows provide a feeding habitat and shelter for many young fish, shellfish, seabirds, and seaweeds. Many of the species that benefit from eelgrass beds are fished both commercially and for subsistence. In addition, eelgrass filters the water column and contributes to the oceanic nutrient cycle.

Eelgrass is unique in Nova Scotia because there are no other organisms that provide the same habitat structure and function. As a result, the loss of eelgrass coverage can turn previously abundant and productive coastal habitats into barren sand and mudflats with much lower habitat value. In fact, eelgrass provides such significant value to ecosystems that it meets the criteria of an ecologically significant species, a designation by the Department of Fisheries and Oceans Canada.

The value of eelgrass meadows doesn't end there! These meadows help buffer coastlines from storm surge and erosion by creating shallow sandbanks and slowing wave energy. Perhaps even more impressive, seagrass meadows sequester large amounts of carbon from the atmosphere into sediments, even rivalling other well-known habitats like salt marshes, mangroves, and tropical forests for their ability to do so.[2] As a result, eelgrass meadows are considered a nature-based solution to climate change, making their protection and restoration even more important.

By working to keep extensive eelgrass coverage over the long term, we can maximize the benefits of climate mitigation and the potential for carbon sequestration of these habitats.

## Protecting and restoring our eelgrass meadows

Protecting established eelgrass meadows is the first priority. However, in the event of eelgrass loss, it is sometimes possible to restore these habitats. While natural re-colonization can happen, additional intervention is sometimes required. Restoration is possible via several methods, including transplanting individual shoots or collecting and distributing seeds by hand.

> *"To ensure Nova Scotia's eelgrass meadows thrive into the future, collaboration across all levels of government is needed to provide resources, capacity and funding for the collection of data, and to protect and restore eelgrass meadows."*

Community-based work to protect, restore and monitor eelgrasses in many communities in North America, and around the world, have been very prominent and successful. Public awareness and engagement must form the foundation of our work. Local and traditional knowledge can inform science and improve our knowledge of eelgrass coverage across the province while monitoring and observations by coastal residents can help identify changes in conditions and coverage.

**Holly Isnor** is a Project Officer, Marine Conservation & Fisheries at the EAC and works to advance eelgrass and fisheries policy.

### THE GREEN CRAB

Green Crab in eelgrass meadow at Owls Head Provincial Park
PHOTO: Nicolas Winkler

Green crabs are thought by many to be a key threat to eelgrasses in Nova Scotia as they burrow into the surrounding sediment and damage roots and rhizomes (although the strength of their impact is not yet well understood). The first sighting of the European Green crab (*Carcinus maenas*) was in Atlantic Canada in 1951 in the Bay of Fundy.[3] They are now abundant in the region and compete with native species. While eradication is not likely, hope is not lost. Efforts to control green crabs in areas of the province give a reason for optimism, and when done in tandem with restoration efforts, eelgrass may be able to recover.

## What's next for eelgrass in Nova Scotia?

A growing number of academics and conservationists globally are working to study, protect, and restore eelgrass meadows, including here in Nova Scotia. The Ecology Action Centre's Marine team launched our eelgrass program in 2020 to advance restoration, monitoring and policy in Nova Scotia and bring attention to these vital habitats. We've been coordinating the Nova Scotia Eelgrass Working Group and growing our citizen science program, and we're excited to begin our fieldwork over the summer of 2022 with a pilot restoration project in Port Medway.

It's time to start thinking about eelgrass meadows when it comes to preserving livelihoods and vibrant communities in coastal Nova Scotia. People need to become more aware of how important this species is to coastal marine ecosystems, because despite its unassuming nature, eelgrass is critical for healthy fisheries and the fight against climate change. We must prioritize protecting and restoring these valuable habitats.

## Acknowledgements

Thank you to all those involved in the Nova Scotia Eelgrass Working Group for your work and dedication to protecting and restoring our eelgrass meadows; your contributions are invaluable.

1. Wong, M.C. 2018. Secondary Production of Macrobenthic Communities in Seagrass (Zostera marina, Eelgrass) Beds and Bare Soft Sediments Across Differing Environmental Conditions in Atlantic Canada.
2. Murray, B.C. et al. 2011. Green Payments for Blue Carbon.
3. Klassen, G. & Locke, A. 2007. A biological synopsis of the European green crab, Carcinus maenas.



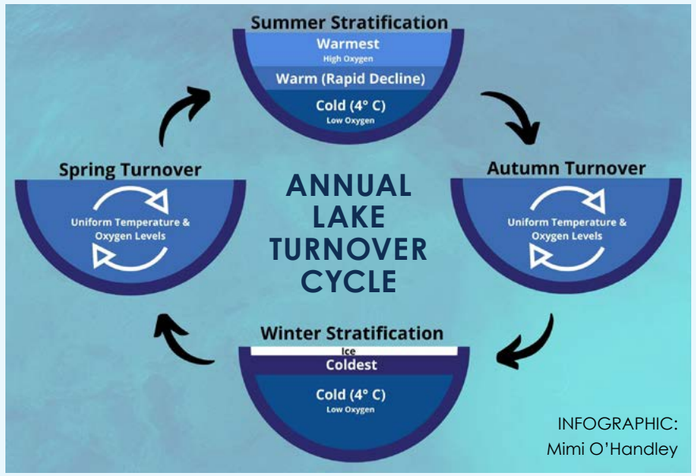
# Can a Lake Die?

by **MIMI O'HANDLEY** /// EAC Staff

Nothing says summer in Mi'kma'ki like spending time at your favourite lake. Whether you're there to sit by the shore and relax, to fish, to explore the nearby trails and neighbourhood, or to go for a refreshing dip in the water, lakes are places where we learn, unwind, and play. Those of you who spend time swimming or splashing about in the water are probably quite familiar with the sensation of having the water around your toes feel cooler than the water near the surface, and know that if you dive a little deeper, the water temperature drops quite rapidly.

This range of temperature is caused by lake stratification: from late spring until early fall, some freshwater lakes separate into three distinct layers. When the days start to get longer and the temperatures rise, the sun warms the surface water of the lake, which in turn creates variation in water density (weight). The densest water (about four degrees Celsius) falls to the bottom of the lake, while the warmest, least dense water remains at the top. Eventually, the surface layer warms to the point where the water densities within the lake are so extreme that neither wind nor waves can generate sufficient energy to mix the layers.

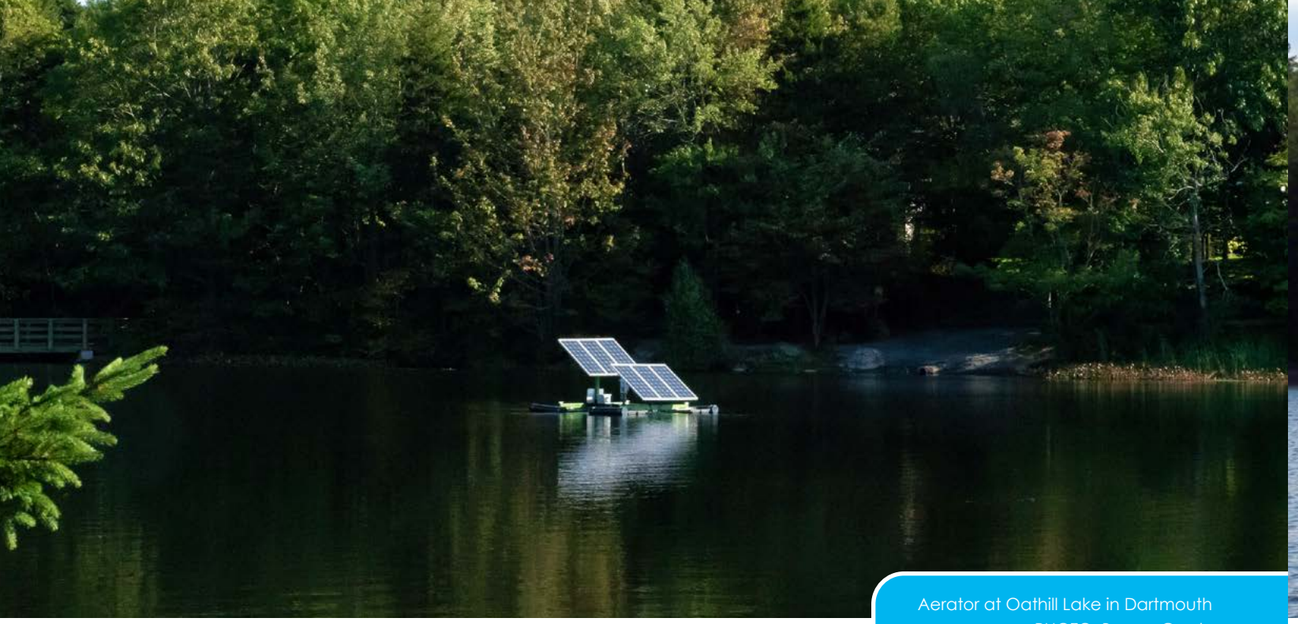
When this happens, the different layers essentially act independently from one another. The bottom layer, cut off from oxygen exchange with the atmosphere, is often too dark for plants and algae to grow, therefore also missing out on the oxygen produced by photosynthesis. In nutrient-rich lakes, this bottom layer can even become anoxic (i.e., containing no oxygen) as the summer progresses, because the supply of oxygen is consumed by bacteria and other bottom-dwelling organisms. In lakes that are contaminated with excess nutrients and organic matter from run-off, algae can grow out of control at the surface. Eventually, these algae blooms sink to the bottom of the lake and decompose; subsequently, "dead zones" form at the bottom of the lake due to both the decomposed algae and the lack of vertical mixing.




INFOGRAPHIC: Mimi O'Handley

As summer comes to an end, chilly fall temperatures begin to cool the surface water. As a result, the water density becomes more uniform throughout the whole water column, and the layers begin to mix with the help of wind energy. In the coldest months of the year, winter stratification can then take place: the coldest, and lightest, layer of water (or ice) remains at the top, and the densest water (about four degrees Celsius) once again is found at the bottom. In the spring, the lake waters mix again before summer stratification occurs.

In the spring and autumn, lake turnover, or lake mixing, is extremely important to freshwater lakes as it replenishes oxygen levels in the deepest lake waters and redistributes nutrients throughout the water column. This process is critical for the health of the lake and its aquatic life. However, if the summer stratification period is prolonged due to higher than usual seasonal temperatures or excess nutrients and organic matter cause a longer and more severe anoxic period, a dangerously short autumn turnover can result. A shortened lake turnover can significantly reduce the oxygen in the surface layer and may actually cause the death of large numbers of fish and other organisms.



Aerator at Oathill Lake in Dartmouth
PHOTO: Becca Grady

## Oathill Lake

Oathill Lake, situated in the middle of Dartmouth a few streets away from Lake Banook, is no stranger to anoxic conditions. Not so long ago, like many natural areas of the province, Oathill Lake was bordered by a number of wetlands including where Brownlow Park and the former Penhorn Mall are located. There was also a small stream at the south end of the lake.

Among the many incredible things they do, wetlands act as natural sponges that absorb rainfall, allowing ground water to replenish. Wetlands also provide water purification by trapping sediment, and by absorbing pollutants and excess nutrients via wetland plant roots and microorganisms in the soil. Also important to any lake's ecosystem are the surrounding forested areas. Like wetlands, trees and forests help to capture and absorb stormwater runoff before it enters nearby watercourses.

By the early 1970's, the part of Dartmouth surrounding Oathill Lake had been developed and the wetlands and stream were infilled. A significant amount of the forested area was also removed. Thus, their support of the lake ecosystem was lost.

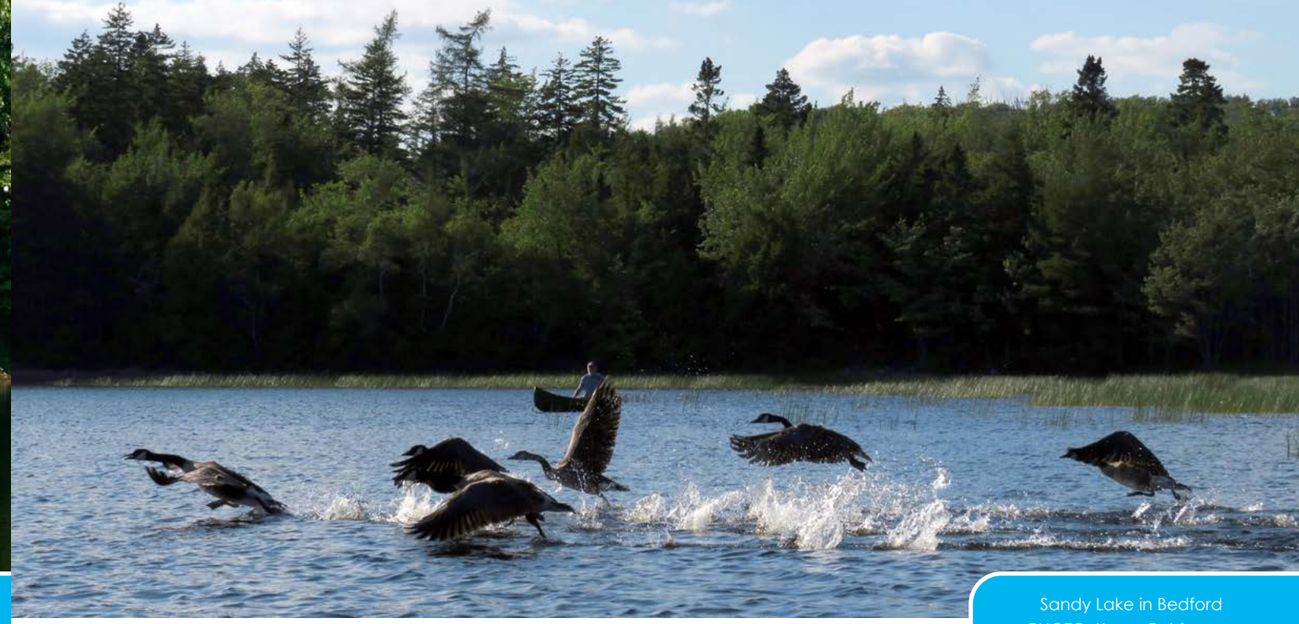
Like other lakes in highly developed areas, Oathill Lake is vulnerable to high levels of chlorophyll, phosphate, and nitrate concentrations that drain into the lake. Excess nutrients within the watershed flow into the lake via storm sewers, augmented by contamination from road salt during the winter. In addition, while the lake has not yet failed to turnover in the autumn, lake mixing in the springtime happens inconsistently. This is not uncommon in Nova Scotian lakes, depending on the ratio of surface area to depth. However, given Oathill Lake's vulnerability to excess nutrients and pollutants, the lack of spring mixing means that the risk and severity of anoxic zones during the summer are exacerbated.

Moreover, the runoff from road salt is even heavier than the four-degree water, causing it to settle at the deepest part of the lake. This contributes to the challenges with the lake's spring turnover. To make matters worse, there have been issues resulting from the improper disposal of dog waste around the water. Taken together, all these factors have had serious impacts on the health and ecosystem of Oathill Lake. Once home to a wide variety of different species of plants, fish, birds, and frogs, this biodiversity had been significantly reduced because of the decline in the lake's health.

In response to the lake's troubles, a group of concerned citizens came together in 2010 to form the Oathill Lake Conservation Society. These volunteers advocate for its protection, monitor the water, and educate the public about caring for the lake. Since its formation, the Society has installed a solar-powered aerator that helps to mix the layers of the water column and supplies crucial oxygen to deeper levels of the lake, reducing the risk of anoxic episodes. The group also initiated the creation of an artificial wetland that serves as a buffer near Oathill Crescent. Their incredible work has restored the health of the lake significantly. Some species of the local ecosystem have returned, including bullfrogs, peepers, and an increased minnow population that is important in the lake's food web.

However, other challenges still need to be tackled. Improper stormwater management is a significant issue, and excess contaminants, nutrients, and road salt still drain into the lake. Nearby Penhorn Lake has had the same problems, and a solar power aerator has been installed there too, with support from Penhorn area developers. However, both lakes will receive runoff from the proposed 900-unit housing complex at the former Penhorn Plaza, so stormwater management needs to be prioritized to ensure that contaminants from the development are properly dealt with and not directed into lakes and watercourses.





Sandy Lake in Bedford
PHOTO: Karen Robinson

## Sandy Lake

Each spring and fall, members of the Sandy Lake Conservation Association feel great relief when their reports confirm that lake mixing in Sandy Lake, a beautiful lake located in Bedford, has taken place. Both the lake and the surrounding area are unique, ecologically rich, and cherished by local residents. Like the conservation society dedicated to Oathill Lake, the Sandy Lake Conservation Association includes engaged and caring citizens who are devoted to protecting Sandy Lake. This is unique as most lakes in the province do not have their own dedicated group of volunteers. Sandy Lake has not yet faced the extreme health and ecosystem issues that Oathill Lake is dealing with, but nevertheless, the Sandy Lake Conservation Association is actively working to advocate for the lake's protection.

The decline of a lake's health is usually the consequence of a number of factors. It is important to not deal with these in isolation but rather to consider them as a collective and examine how they interact with each other. This is why the Sandy Lake Conservation Association focuses their efforts on protecting not just the lake, but also the broader ecosystems and land around the lake. The removal of a limited number of wetlands next to a lake, or the development of roads or infrastructure near a feeder stream, may each seem insignificant on their own, but together they can synergistically contribute to the disruption of natural cycles and the health of a lake.

Shifting to a systems-thinking approach is crucial to finding ways to protect waterways, maintain natural ecosystems, prepare for the impacts of climate change, and keep lakes healthy, safe, and fun. Studies have shown that Sandy Lake is already stressed by physical disturbance, contamination from road salt, and excess nutrients from sewage and stormwater, and it is important to ensure that matters do not become worse.

Though the health of Oathill Lake can now be maintained with the help of the aerator, it is crucial that we all act to protect other lakes, like Sandy Lake, so that they can continue to function by relying on their own natural cycles and be kept safe for present and future generations to love and enjoy.

Aerial view of Sandy Lake in Bedford
PHOTO: Skyline Studios

**Mimi O'Handley** is the Wetlands and Water Officer on EAC's Wilderness and Coastal teams. Mimi works to strengthen protection of freshwater in Nova Scotia.

# Two Sides of the Same Coin: Responses to COVID-19 and Climate Change

by **PAIGE CROWELL** /// EAC Volunteer

In their June 2020 report "Building back better: A sustainable, resilient recovery after COVID-19", the Organisation for Economic Co-operation and Development (OECD) argues that successful COVID-19 recovery and continued environmental destruction are fundamentally incompatible. While it may seem daunting to tackle two global crises at once, there is no shortage of parallels between COVID-19 and environmental issues.

## COVID-19: big problem, big response

In Canada and many other countries, COVID-19 responses have been swift. Lockdowns and closures, which would have been unthinkable just a short time before, were followed by further, more extensive measures. Where the spread of COVID-19 couldn't be mitigated, health systems and healthcare workers kicked into overdrive to adapt and cope. Government aid was made available to affected workers. It was an unprecedented response to an unprecedented problem, and while no country's COVID response was perfect, the overall effort was a clear example of how we can make dramatic transformations in a short time when faced with a collective existential threat.

## Climate change: big problem…big response?

Just as we have been asked to stay home and flatten the curve of COVID-19, environmentalists have long sought to stress the urgency of flattening another curve: greenhouse gas emissions. So, how are we doing so far? Have we flattened the curve?

While observing out-of-control case counts in areas with lax COVID-19 restrictions, many may watch and think, "Why don't they just get their act together? It's so simple!" Similarly, outside observers to our earthly home might wonder, "With all the models predicting a climate catastrophe, why are they so slow to save themselves?" It's no secret that we are well behind on meeting emissions targets. Despite warnings that we need to limit global warming to less than 1.5°C to avoid the worst impacts of climate change, recent reports indicate that we are on track to pass this threshold by 2040.

For both COVID-19 and climate change, we have clear existential risks, we have thorough projections, and we have robust scientific information on how to avoid and mitigate potential damage. So why, while we see a glimmer of hope at the end of the COVID-19 road, are we still lagging on climate commitments and targets in the face of increasingly grim predictions?

Perhaps the largest differentiator between climate change and COVID-19 is the perceived immediacy and realness of the virus. To those not yet experiencing the direct effects of climate change, it may seem like a far-off, abstract concept (which is largely thanks to a well-funded and focused disinformation campaign run by fossil fuel corporations over the past five decades). COVID-19, however, invaded our homes, our workspaces, and our lives in a way we couldn't ignore, with tangible consequences including long-term health impacts and even death. Behavioural shifts to address COVID-19 came more easily because the results of those shifts made one week could be seen in the case counts the next. The public could stomach drastic measures being taken by our government because the effects of the pandemic were immediate and obvious. However, if left unaddressed, the climate emergency has similar potential to upend our society. What then can we learn from the response to COVID-19, and how can this be applied to climate action?




Protesters outside of Halifax City Hall during the 2020 Youth Climate Strike.

## Personal response

The call to fight COVID-19 appeals to our moral compass. We stayed home because it was the right thing to do. Not just for ourselves, but for others too. In successive lockdowns, when Zoom calls, virtual concerts, and distance from loved ones had long grown stale, we drew on our compassion for the broader community of Nova Scotia and hunkered down.

It is important to be skeptical of environmental campaigns, such as banning straws or turning off lights, that place responsibility on individuals and ignore the elephant in the room: large corporations with licence to pollute. However, COVID-19 has reminded us of the power of individual and community-level action.

To many, appeals to alter our lifestyles to combat the seemingly nebulous effects of climate change can feel like a nuisance. If others aren't committing to reducing their carbon footprint, then why should we? The challenge lies in convincingly framing the environmental crisis as a collective issue. Just as with COVID, some level of personal sacrifice will be necessary in order to truly transition to a sustainable future.

## Equitable action

We generally view COVID-19 restrictions as short-term solutions to a passing problem. However, effective climate action must be systemic and long-term. This begs the question: how will a low-carbon transition impact different facets of society? Will some benefit while others lose out? In many cases, the same communities that are at the highest risk from COVID-19 are also expected to face disproportionately worse climate change impacts. Just as many have called for with COVID-19 recovery, climate action must carefully consider the potential impacts of proposed actions on racialized communities, Indigenous communities, rural communities, and other underrepresented groups, and ensure that community health, well-being, and resiliency are prioritized.

## Political response

While individual action has formed important building blocks of our COVID-19 defense, consistent, science-based political leadership is an integral component of the architecture. As with the virus, addressing climate change requires an approach that is rooted in science, one that dispassionately evaluates the risks of projected emissions scenarios and adopts an informed, reasonable, and effective approach. Critically, this approach recognizes that the climate emergency is already underway and does not delay.

Perhaps the most important lesson of the COVID-19 recovery is this: we can swiftly change the status quo in order to address an existential threat like the climate crisis, and it's simply not true when those in power tell us it can't be done. Our communities have always known how to take care of each other. The missing piece has always been political will and leadership. COVID-19 has shown us what can happen when the power of our communities is coupled with political will and resources to support those in need.

## Conclusion

Beyond the theoretical linkages presented here, COVID-19 and climate change are also functionally linked. Increasing human pressure on our planet has resulted in outcomes such as deforestation, biodiversity loss, and global warming. This, in turn, heightened the likelihood of a global pandemic. Environmental health is human health, and a healthy earth is the basis of a healthy society. Examining the response to COVID-19 can provide guidance on our journey to a greener, healthier future.

**Paige Crowell** is a biologist, living, working, and splashing around in Halifax.

# Ecology Action Centre
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People picking out their trees at EAC's annual Christmas tree sale. PHOTO: Ryan J Fisk

# Pining for Sustainable Christmas Tree Farming

by **LIZA TSITRIN** /// EAC Volunteer

For many of us, Christmas trees are a favorite staple of the winter holiday season, but we rarely think of them outside of that short window. For most of the year, they are just another piece of the Nova Scotian scenery – some farms even look more like a forest than a regular crop field. But for those in the industry, cultivating the perfect balsam fir is a decade-long commitment: seeding, pruning, weeding, harvesting, packaging, and so forth. Often, it is a family business, passed down through generations. And it spreads much further than the borders of our little province. What we take for granted as a small, local, rural economy is, in fact, impacted by global trade, changing climatic pressures, and, more recently, the pandemic.

Nova Scotia is uniquely suited for growing Christmas trees, specifically balsam firs, which are native species that thrive in our local soil and weather conditions. This allows farmers to run sustainable operations, reducing pesticide use and incorporating the trees as part of diverse forestry operations that provide steady income throughout the year and reduce the amount of damage to the forest. Nova Scotia produces a whopping one million Christmas trees a year! They are a part of long-standing traditions, from the annual Boston Tree donated as a thank you for the city's support following the Halifax Explosion, to family outings at U-Cuts and Christmas markets.

But the province does not have enough consumers to use all the trees grown, so 90 per cent of the harvest is exported, with markets elsewhere in Canada and in the Unites States, Panama, and even as far as the Caribbean and the United Arab Emirates. This growing market has strained the local supply, especially as tree production has gone down. Long-time Haligonians may remember the days of $15 trees! Today, the wholesale price for a balsam fir can reach $75 or more, and growers are selling out of trees earlier each season. To understand what drives this market, we must look at how the world has changed in recent years.

Readers may remember the devastating spring frost in June of 2018, when record low temperatures struck during a period of new growth, causing substantial crop loss. Christmas trees were hit hard, and many growers are still recovering. It takes a long time to grow a tree, and trees are susceptible to damage at all stages of their life. Late frosts can stunt growth and kill younglings, whereas a lack of freezing temperatures at the end of the season means that trees do not get the "cold hardening" necessary to preserve them for the market. Warmer seasons lead to droughts and changes in weed pressure and pests. Over the last four years, Nova Scotia has seen three dry summer seasons, which have greatly decreased mature tree supply.

## TAKE ACTION

If your winter celebrations include a Christmas tree, enjoy a Green Christmas and support our rural communities by opting for local, sustainably grown balsam firs or greenery arrangements to deck out your halls this holiday season.

To make matters worse, the ongoing COVID-19 pandemic has put production behind schedule, with labour shortages resulting in fewer staff putting in longer work days. Most sellers have not been able to offer attractions like wagon rides and fire pits at their farms, and distancing requirements limit the number of people able to participate in U-cuts. At the same time, global demand for Nova Scotian trees continues to rise as people are prioritizing environmental sustainability in their shopping choices. This combination of natural and economic pressures has left growers hard-pressed to balance retail prices with costs of production.

What does this all mean for the future of Christmas trees? Thankfully, there is some positive news. Kevin Veinotte is a seventh-generation farmer in Lunenburg County, whose land includes 21 acres of Christmas trees. He's also been the supplier of our annual Ecology Action Centre Christmas tree fundraiser for many years, and he encourages Haligonians to stay optimistic. "Right now," he says, "demand is strong, so supply will be tight for a couple of years. But there should still be a tree for everybody that wants one." It may take some time for supply to catch up with demand, but many new trees have been planted in the past five to seven years, and this past year has been good for growth, with lots of water and sun. Haligonians can still expect to bring a live tree into their homes for many Christmases to come.

However, we should prepare to see higher prices than we are used to, and we may need to adjust our expectations and find creative approaches in light of new realities. For example, you might choose a smaller tree this year, or one with a lighter branch density, which can help balance the cost. For even more cost savings, you can opt for greenery arrangements and garlands made out of freshly cut branches, which retain all the beauty and fragrance of a balsam fir without the need for a full tree. And when choosing your tree, it is important to remain mindful of the amount of work that has gone into producing something most of us will only keep for a month. However, you chose to celebrate, the holidays give us a great opportunity to support our rural economy and practice our environmental and social values.

Great thanks to Angus Bonnyman, Executive Director of the Nova Scotia Christmas Tree Council, and Kevin Veinotte, owner of Out to Pasture Farm, for providing information and sharing their experiences from the field.

A volunteer with the Christmas trees laid out and ready for pick up. PHOTO: Adam Travis

A Christmas tree being bundled up at EAC's annual Christmas tree sale. PHOTO: Ryan J Fisk

**Liza** is an Aquatic Science Biologist with Fisheries and Oceans Canada, with a broad range of interests in conservation, art, and scientific communication.


# On a Roll

## THE POP-UP BIKE HUB BRINGS BIKE REPAIRS AND SKILL BUILDING TO OUTLYING COMMUNITIES

by **BEN HAMMER** /// EAC Staff

Measuring in at roughly 100 square feet, the Pop-Up Bike Hub (PUBH) is a compact means of accomplishing great things. Since 2019, the PUBH has been facilitating bike repairs in communities across the province, restoring more than 1,200 dormant bikes back to road-worthy condition.

EAC staff member, Simone demonstrates how to fix a flat tire to summer camps at Lakeside Community Centre.


PUBH crew and team NADACA in Eskasoni after a long day fixing bikes.

The PUBH's goal is to improve access to cycling in under-served rural communities by offering free basic bike repairs locally. The mobility of the PUBH allows it to bring a bike repair space to communities that would otherwise need to drive long distances to the nearest bike mechanic. Indigenous, Black, newcomer, and low-income communities were prioritized. After a successful first summer in 2020, while visiting communities across the mainland, the PUBH expanded its reach this year, crossing the causeway to visit Mi'kmaw communities throughout Unama'ki/Cape Breton.

Eskasoni, the largest Mi'kmaw community in the Maritimes, has a vibrant cycling culture and has been hosting annual bike rodeos for the past 20 years. The bike rodeo includes safe cycling skills workshops, group rides, and the distribution of bike safety accessories, such as lights and helmets. COVID-19 lockdowns put a hold on many events, but this summer's bike rodeo brought the community together safely, outside.

While biking has long been embraced and celebrated in Eskasoni, access to bike repairs has been limited to adjusting seats, handlebars, and other fixes that can be done with little access to replacement parts and specialized tools.

"The closest bike shop is in Sydney, and that's about 45 minutes away," noted Wekatesk Augustine, the Adolescent Education/Accreditation Coordinator with the Native Alcohol and Drug Abuse Counselling Association. Setting aside cost, the one and a half-hour roundtrip drive to access the nearest bike mechanic is a significant barrier; often the journey must be repeated to pick up a bike when repairs cannot be done the same day.

The EAC connected with Eskasoni following the CBC reporting on this summer's bike rodeo, which resulted in a road trip to bring no-cost bike repairs to Mi'kmaw communities across Unama'ki/Cape Breton. Of all the repairs offered by the PUBH, Wekatesk noted that replacing worn-out brake pads and tuning up loose brake cables, in particular, improved bike safety for people in the community. With limited access to the tools and parts to repair brakes, Wekatesk sees members of his community using their feet to brake, wearing down the soles of their shoes, having less control in wet conditions and taking longer to slow down than anticipated by other road users. There was so much interest from the community in Eskasoni that Wekatesk had to delegate a colleague to respond to the influx of messages he was receiving inquiring about the PUBH: "How many people showed up shows how much it's needed."

150 bikes were repaired over three days in Eskasoni, which was just one of many stops the PUBH made this summer. The days were long and busy. "We started at 11:00 a.m. and then 3 o'clock came, just like that our first day was done. It was much busier than we anticipated, and we barely had time to breathe," recounts Simone Mutabazi, the EAC's Community Cycling Activation Coordinator who managed the project. "There was only so much time, and there were so many bikes, but we could at least address some issues that they were having to make sure they could do the basics, start and stop."

The volume of bikes in need of repair with limited time in each community meant having to prioritize repairs that got a bike on the road over fine-tuning a bike's performance. "For example, I would never repack a wheel at the trailer, it's just so much work and time, and if you lose a ball bearing it's just very exhausting," Simone explained. "Shifting at that point became a luxury because it just takes so much time to address a shifting issue."

Community partners helped haul the PUBH trailer, along with tools, repair stands, and an inventory of parts large enough to supply the journey, between communities every few days. "There's a lot to pack up," Simone noted, adding, "on the road, a lot of things move, so you can't really keep it set up like you would a stationary bike shop."

The PUBH brought communities together, with Municipal and Mi'kmaw Physical Activity Leaders arranging BBQs so people could get food while they waited for bike repairs. Potlotek First Nation even set up their own bike rodeo to coincide with the PUBH's visit. "You'd have kids riding their newly tuned up or repaired bikes, and then you have the community huddled together with their parents around and they'd all be chatting," recounts Simone. "And there was us in the middle, fixing bikes!"

Simone's biggest concern was building trust in Black and Indigenous communities. "A lot of times people go into the communities, it's usually an extractive process, whether it's for research or academia," she explained. "So, I was very wary of being part of that practice." She added that was pleasantly surprised by the welcome, enthusiasm and gratitude from communities: "Everyone was so welcoming and kind, and would speak to you as though you came from the community."

Enthusiasm for the PUBH came from people of all ages. "The kids were so, so interested in bike repair," Simone recalled, adding that six-year-olds who could barely hold a wrench would come up and ask how they could help. In Musquodoboit, the crowd was older and appreciated being able to repair their bikes without having to drive into the city.

The team and our community partners look forward to our third summer with the PUBH, but also recognize the need for greater access to permanent bike repair spaces and services across the province, especially in rural, Black, and Indigenous communities.

**Ben** is a sustainable transportation advocate challenging car culture by championing transit and active transportation networks that allow everyone to access and participate in community life, whether or not they can drive.

# Looking Back at *50 Things*

## THANK YOU FOR A FANTASTIC ART ADVENTURE!

*50 Things* has come to a close! This project has been truly inspiring, exciting and rewarding. We are so grateful to Zuppa Theatre Co., the incredible participating artists, the art venues, and of course everyone that came out to experience the artworks. From field trips to Nocturne and everything in between, it has been a wonderful way to celebrate a half-century of environmental advocacy in Mi'kma'ki and come together to envision our future!

Stay tuned for opportunities to enjoy the art "from the *50 Things* archives" in the new year... after a well-deserved break for all who were involved.

Photo contributions by **ANIKA RIOPEL, BEN STONE, JOANNA BULL, MARLA MACLEOD, SIMONE MUTABAZI, SIMON RYDER-BURBIDGE**

# Action is our Middle Name

## COASTAL

The Coastal Team partnered with East Coast Environmental Law to offer three video sessions on the regulations for the Coastal Protection Act. We worked hard to help citizens 'get in the know' and submit their feedback to our new provincial government, to make sure that the Act is a priority. Check out that video on our YouTube page if you want to know more. We'll be eagerly awaiting the province's 'What We Heard' report and monitoring the regulation development.

The wetlands work, a collaboration between the Coastal Team and the Wilderness Team, has continued. We have been sharing information with public educators and collaborating with organizations across the province to amplify our voices for better wetland protection and understanding.

The Northwest Arm infilling issue continues as a priority. Perhaps you've seen the abundance of signs all around Halifax. Email coastal@ecologyaction.ca to get your own lawn sign for $10 to support the cause.

## MARINE

Our work to improve seafood labelling and eco-labels continues. Based on recommendations made through our partners at SeaChoice, the government has added missing species and common names to its seafood naming guidance. We're now working to remove misleading common names and to require species scientific names on seafood labels. In October, we were part of an important discussion with our partners at Make Stewardship Count about the trajectory of seafood best practices and the role of eco-labels in driving sustainable fishing.

We have exciting work ongoing to develop a community-led marine spatial plan with the Gros Morne Region in NL. In September, we had our second workshop, connecting with 26 local fish harvesters. So far, we've met with over 70 people from the region, and the majority are excited for the creation of this plan. They've shown support for low-impact eco-tourism (88 per cent) and zoning for marine protection (73 per cent). We look forward to connecting with more stakeholders and creating a sustainable plan together!

## WILDERNESS

We're delighted to support the new provincial government's goal of 20 per cent land and water protection by 2030 as part of the new Environmental Goals and Climate Change Reduction Act.

The pillaging of our Crown forests continues apace, and the Wilderness Team continues to push for the full implementation of the now three-year-old Lahey Report.

The impacts and threats of gold mining also continue to grow as Atlantic Gold continues to blow up a section of the Eastern Shore to extract micro-gold, producing huge amounts of mining waste and contaminated water. We've submitted to environmental assessment processes for new mines, conveying the major threats to wildlife, water, people, and a warming world.

We participated in an important moment to speak truth to power in Canso, where communities are threatened by an ill-conceived project proposal to build a private spaceport. We, too, Say No to Canso Spaceport!

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## FOOD

This fall, the Food Team dove into public engagement initiatives for the JustFOOD Action Plan, a municipal food strategy co-developed by the Halifax Food Policy Alliance and Halifax Regional Municipality.

We developed and launched the JustFOOD website, which hosts the JustFOOD Action Survey and Engagement Toolkit as well as community food resources and research. Visit justfoodhalifax.ca to learn more and complete the survey!

With the help of EAC volunteers, we assembled 500 Civic Dinner meal kits. The kits contained ingredients for soup and granola bars, plus a conversation guide to help gather feedback on JustFOOD's goals and ideas on actions to improve our food system. Kits were delivered all over HRM with the help of community partners including Halifax Public Libraries and the Association of Black Social Workers.

Continuing our history of advocating for healthy school food programming, EAC has also signed on as a partner for the newly formed Nova Scotia Advisory of the Canada-wide Coalition for Healthy School Food.

## ENERGY & CLIMATE

We're very pleased that the provincial government has introduced the Environmental Goals and Climate Change Reduction Act. When it comes to Energy and Climate, there were some positive goals tabled in the act and others that we wanted to see approved. For a complete analysis of the goals, please visit our website.

We met with all major Canadian ENGOs in October of this year and reiterated the importance of electricity policy work for N.S. and the Atlantic region. Our progress on the Atlantic Loop is well underway. Soon, we'll be releasing a report on decarbonization pathways for Atlantic Canada and how the region could cooperate to get us to clean electricity.

This fall, the Energy & Climate Team welcomed two new Energy Coordinators to our team: Kimberley Fry, who will be focused on energy efficiency, and Thomas Arnason McNeil, who will be working on electric vehicle initiatives.

## TRANSPORTATION

In October, our second Bike Buddy cohort was off to a strong start, with 20 newcomers excited to explore HRM with their mentors. October was also International Walk to School Month, with over 9,000 students participating in walks to and at school!

There were 28 participants who enjoyed Easyride e-bike access for a six-week period. The Pop-Up Bike Hub season has also officially wrapped up, with 931 bikes tuned up/repaired across 24 communities. Additionally, 400 helmets, 640 bike lights, and 130 bike locks were distributed.

Finally, we'll continue to build our inventory of proposed Active Transportation infrastructure projects; this will include an interactive map to visualize the connectivity of the projects and their progress. We'll also continue to advocate to the new provincial government on the importance of transit and active transportation for all Nova Scotians.

## BUILT ENVIRONMENT

The Built Environment Team continues to work with HRM staff and council, as well as coordinating Our HRM Alliance, to advocate for complete communities and discourage sprawl. The alliance had a successful bi-annual meeting in November, with a focus was on how to push forward the Seven Solutions.

We also continue to closely monitor the municipality's Regional Plan review, which is the process to update the highest-level plan that guides where we grow as a city. Recently, we responded to the 'What We Heard' report, ensuring the affirmations and concerns of EAC members were reiterated.

One of our main concerns is the lack of planning tools to control the rapid development. We're working hard to get the actions of the Green Network Plan imbedded into the Regional Plan so that it can be further implemented. Next, you should expect to hear from us in Spring 2022 as we coordinate efforts to respond to the first draft of the new Regional Plan

# The Seasonal Gourmet

by **MADDI TANG** /// EAC Staff

## Butternut Squash & Sage Risotto

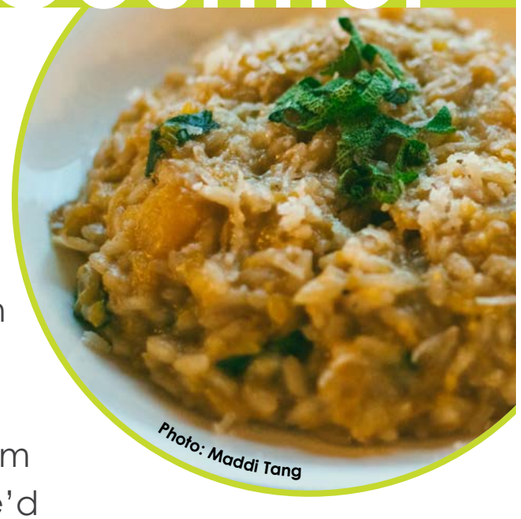
Photo: Maddi Tang

I'm pretty sure I inherited my love of squash from my parents. Growing up, the shift into fall meant that it was time to bring in our harvest from the backyard garden. My mom would proudly show us all the squashes she'd grown, and we'd roast them, turn them into soups, and put them into casseroles. Now, it seems only right to celebrate the changing seasons with a delicious squash recipe!

### INGREDIENTS

**3 ½ cups** of your favourite broth

**½ tbsp** of extra-virgin olive oil

**½** a small onion, chopped

**1 tbsp** of butter, divided in 2

**2 cups** of cubed butternut squash

**1 clove** of garlic, minced

**1 cup** of arborio rice

**¼ cup** of white wine

**½ cup** of freshly grated Parmesan

**1 tbsp** of freshly chopped sage

**½ tsp** of nutmeg

Salt and pepper to taste

### DIRECTIONS

1. Heat mushroom broth in a medium saucepan over medium heat until it comes to a simmer (about 10 minutes), then reduce heat to low.
2. In a large saucepan, heat oil over medium heat. Add onion and cook, stirring often, until it becomes translucent and begins to soften (about 5 minutes).
3. Stir in the squash, half of the butter and the garlic. Cook until the squash begins to soften around the edges (about 6 minutes), stirring often.
4. Stir in the remaining butter and the rice, stirring quickly. Cook until the grains are coated with butter and are slightly toasty (about 2 minutes).
5. Add the wine and simmer until absorbed (about 2 minutes), stirring constantly.
6. Add about ½ cup of the warm mushroom broth to the saucepan and simmer until it is absorbed (about 5 minutes), stirring frequently.
7. Repeat with remaining broth, adding 1/2 cup at a time and stirring until all broth is absorbed.
8. Stir and cook until all of the broth is incorporated, the squash is tender and the rice is tender and creamy. At this point, I use the back of the spoon to mash the pieces of squash so they became incorporated into the sauce, but that part is optional!
9. Once the squash and rice are cooked, remove the pan from heat and stir in the parmesan, sage, and nutmeg.
10. Garnish with some more parmesan and sage, and then serve!

### OPTIONAL ADD-ONS & SUBSTITUTIONS

Consider adding leeks or mushrooms at the same time as the onions. I like to use mushroom broth for the added flavour, but any broth will do, and different broths will give you different final flavours!

Our Seasonal Gourmet for this issue comes from the EAC's very own Communications Officer, **Maddi Tang**.



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Ecology Action Centre

50 Years of Action

# Thank you for your support!

This year, EAC is celebrating our 50th anniversary as an organization.
This remarkable milestone is only possible because of the support of our community.

Thank you for recognizing the importance of our work and the urgency with which we must fight for transformational change. With every member, EAC's voice grows stronger and our impact widens.

Because of you, we continue to advocate for resilient communities supported by local food systems, active transportation, just and equitable decision making and coordinated and funded climate adaptation plans. The support of allies like you has sustained us through 50 years of action, and we can't wait to see what we can accomplish together in the next 50.

You inspire us, keep us grounded and allow us to do what we do best: take action for the communities and natural spaces we all love and rely on.

Thank you, from your friends and allies at the Ecology Action Centre.

PHOTOS: Adam Cornick