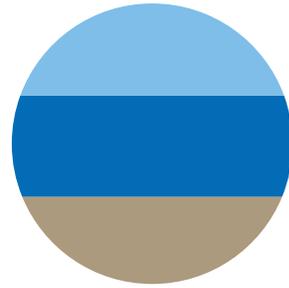


GEORGIAN BAY **FOREVER**



FALL 2021
VOL. 12, ISSUE 3

Protecting your water.

Photo: Andy Metelka



WILD & FREE

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MUCH MORE TO DO

By Adam Chamberlain, Chair of Georgian Bay Forever



Recently I have been reminded that this isn't the first time a pandemic has impacted the shores of Georgian Bay. The last time it happened on a scale similar to today was a century ago when the 1918 Flu Pandemic left a devastating toll worldwide and locally. Back then, there were many fewer cottagers on the Bay (it was hard to get here at the time) and the impact would have been more notable among year-round residents.

Many of those affected residents were Indigenous. Accounts I have read of the impacts of the 1918 Flu Pandemic on members of First Nations and Métis communities in the area reflect devastation that would seem all too familiar to us now—but made much worse given the absence of vaccines and medical assistance we now enjoy.

Indeed, stories passed down by elders (most of whom had yet to be born when that pandemic landed in their communities) speak of terrible illness and many deaths.

Without modern medicine and vaccines these communities experienced losses equal or greater to those we have seen with COVID. Further, as Canadians are increasingly coming to appreciate, our society did not (and still does not) provide the same level of medical and other support to Indigenous citizens as it does to those who are non-Indigenous.

While much has changed, there is a great deal to do to rectify this imbalance. Reconciliation is needed and non-Indigenous Canadians need to become more active in this regard. I might suggest a good start can be made by reading, considering and discussing the 94 Calls to Action issued by the Truth and Reconciliation Commission—it can be found easily online.

A final note. One First Nations elder related stories of how community members were told to stay apart to protect themselves from becoming sick. I was struck by how familiar that sounded to public health advice we have been provided more than 100 years later.

Georgian Bay Forever is a community response to the growing need for major research and education to sustain the Georgian Bay aquatic ecosystem and the quality of life its communities and visitors enjoy.

We help monitor the Bay's well being, throughout the seasons, year after year.

We fund the research needed to protect the environmental health of Georgian Bay and the surrounding bodies of water. Using our research findings, we inform and educate the general public and governments about threats to environmental health and propose possible solutions.

Through workshops, seminars and online, we are educating the Georgian Bay community. By teaming up with reputable institutions, we enhance the credibility of our research and strengthen our ability to protect what's at stake.

Georgian Bay Forever is a registered Canadian charity (#89531 1066 RR0001). We work with the Great Lakes Basin Conservancy in the United States, as well as other stakeholder groups all around the Great Lakes.

Deeply rooted and broadly drawn, Georgian Bay Forever is steered by lifelong devotees of the Bay. We are committed advocates, educators, environmentalists, realists, idealists, and of course, residents.

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Canadian citizens may send their donations to the address above.

U.S. citizens wishing to make a donation to support our work can do so by giving to:
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This newsletter is just a snapshot of our work. For the most up-to-date information on our projects, longer versions of newsletter articles and breaking news about Georgian Bay, please become a regular visitor to our website and Facebook page.
GBF.ORG

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FOREVER 

YOU'RE INVITED!

To join an exclusive group of committed Georgian Bayers working hard to protect our water quality, every single month. With your commitment to monthly giving in any amount, you will become a member of the new GBay Keepers Circle!

Why join?

Because our work together is not done. The Bay is still under threat to climate change, invasive *Phragmites*, plastic pollution, sewer overflow runoffs and so many other issues. GBF is not operationally funded by any government entity, and the only way we can implement our critical programs is through donations, annually and monthly!

But here's the best part—when you join the GBay Keepers Circle, you get peace of mind, convenience, and confidence that your gift is providing stable and reliable income to plan for the future. Monthly giving also allows us to have the pleasure of thanking you instead of always asking for a gift, and it helps GBF be more efficient which means more of your contribution is spent on things that really matter.



Email amber.gordon@gbf.org to join the other members of the GBay Keepers Circle today and help to make a difference for your Bay!

TRASH-TRAPPERS SHOW US WHAT'S BEING LITTERED

By Nicole Dimond, Georgian Bay Forever Coordinator for Diversion 2.0

GUTTER BINS – STOPPING CIGARETTE BUTT POLLUTION AND MORE.

As of August 25, 2021, GBF staff conducted 10 deep dive sorts (waste characterizations) of the collected trash from Collingwood Gutter Bins. These devices trap the trash at 8 storm drain locations preventing that pollution from getting into Georgian Bay. Each Gutter Bin has a bright coloured Mundus Bag that sits in the storm drain where it captures anything larger than 600 microns in size.

Why are waste characterizations necessary and important?

Well, “waste characterizations constitute an analysis of the contents collected by trash capturing devices,” says Plastic Pollution Program Assistant Bronwyn Kirby.

“Devices are research tools, capturing pollution at various locations and conditions. Their contents provide insights to preventing pollution in the first place.”

Major Takeaway: 89% of all litter items captured are plastic or have plastic components.

And, at this time cigarette butts are the top pollution identifiable item being found in the Gutter Bins. Many cigarette butts unfortunately contain plastic fibres as well as harmful chemicals that can leach into the environment when littered. As we continue to identify the major pollution types being found in the Gutter Bins, it gives us the opportunity to work with you to develop and execute tailored programs to prevent littering of each major litter type at source.

Look for us to do more on cigarette butt litter and continue to broadly educate around reducing single use-plastic consumption!

See image 1 below for an image of a Mundus Bag (Gutter Bin)

TOP 4 IDENTIFIABLE LITTER TYPES

Items	# of Pieces
Cigarette Butts	658
Foam Pieces	160
Film Pieces (Wraps, Labels)	149
Paper	70
*20 other categories	225
Total # of litter items	1,262

SEABINS – CATCHING FOAM AND MORE

As of August 25, 2021, GBF Staff and volunteers have conducted 23 deep dive waste characterizations on GBF and Great Lakes Plastic Cleanup Seabins located in Parry Sound, Penetanguishene, Midland, Honey Harbour and on Beausoleil Island.

The Seabin is a floating trash bin that is attached to a floating dock and consists of an electric motor that pulls water through the device to capture pollution and debris 2mm and larger in a removable catch bag.

91% of the items characterized were plastic or had plastic parts.

The number 1 litter item were small pieces of foam. One major source of this pollution, unencapsulated foam from floating docks, will soon be eliminated thanks to your support of GBF's efforts to highlight this issue. MPP Miller's Bill 228, *Keeping Polystyrene Out of Ontario's Lakes and Rivers Act*, 2021, will outlaw unencapsulated polystyrene to be used in new floating docks, platforms and buoys in 2023.

For more info on unencapsulated dock foam and alternates you can explore, please visit gbf.org/DocksPSFoam.

Going forward

Thanks to you, we will continue to collect and remove large and small pieces of polystyrene during shoreline cleanups and with the help of the Seabins, as well as collect and monitor other sources of trash collected by these hardworking devices.

TOP 4 IDENTIFIABLE LITTER TYPES

Items	# of Pieces
Foam Pieces	450
Film (Wraps, Labels)	195
Hard Fragments	110
Cardboard	32
*14 other categories	67
Total # of litter items	854



Image One: Town of Collingwood staff remove a Gutter Bin from a street gutter in order to remove the collected litter from the Mundus bag.



Image Two: A Seabin in action. Photo: WPS America.

This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :



CREATING A RESILIENT SHORELINE

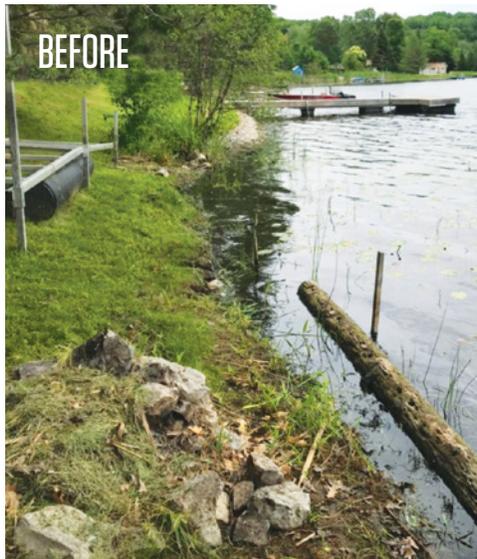
KEEPING A NATURAL SHORELINE THAT BENEFITS YOUR FAMILY AND LOCAL WILDLIFE

By Monica Seidel, Guest Writer

Monica is a passionate and experienced environmental educator and communicator focused on connecting people with nature and wildlife and helping spark their natural curiosity. She has worked with conservation authorities, wildlife rehabilitation centres, and non-profit organizations and is currently the Communications and Fundraising Coordinator at Watersheds Canada.

About Watersheds Canada

Watersheds Canada is a federally incorporated non-profit organization and registered Canadian charity (863555223RR0001) that is committed to building and sharing education and stewardship programs in communities across the country. Since 2002, these programs have engaged and helped youth, property owners, community groups, and organizations enhance and protect the health of their lakes, rivers, and shorelines. For more information, please visit watersheds.ca



This property was re-naturalized in 2018 using a variety of native plants. The photo on the right shows the transformation as of 2020. Photo provided by Watersheds Canada.

This past summer, you might have enjoyed the company of a northern map turtle, green frog, calico pennant dragonfly, or Great Blue Heron along the shores of Georgian Bay. Like you probably did, these charismatic and iconic species spent a large part of their summer near the shoreline. In fact, these species depend on the shoreline and riparian zone for their very survival. This zone includes the first 30-metres of land around a lake, river, or bay and is often seen as a ribbon of life because it supports 70% of land-based wildlife and 90% of aquatic species at some point in their lifetime (Kipp & Callaway, 2003). Wildlife will use this area for food, water, shelter, breeding, and nesting.

In addition to supporting wildlife populations, shorelines are important to Canadians—53% of surveyed Canadians said natural shorelines are an element that affected their personal enjoyment of being by the lake (Love Your Lake, 2020). Shorelines provide people with important cultural, recreational, and economic opportunities and can be fundamental in shaping our connection and relationship with freshwater and nature from an early age. Ontario is home to more than 250,000 lakes which means many of us have (or know someone who has!) a waterfront property that we can visit and enjoy.

Increasingly though, these important areas and the wildlife that live there are under threat.

Over 55% of Canada's species or unique populations of freshwater fish are at risk (Cooke, et al., 2021), with the Eastern Georgian Bay sub-watershed being scored as "very high" for various threat indicators including pollution, habitat fragmentation, invasive species, and overuse of water (WWF-Canada, 2020). Facing increasing pressures from development and the changing climate, it is important to look at nature-based solutions to protect our freshwater areas.

Planting on-land native vegetation — creating a buffer

The best way to create wildlife habitat and protect your shoreline from erosion is to start or enhance a native plant buffer. In planting a variety of native trees, shrubs, and wildflowers, your shoreline benefits from different root structures working to hold it together.

When choosing suitable plants for your shoreline, it is important to consider your site conditions (sunlight, soil, moisture), personal preferences (plant type and height), and goals of planting. If protecting waterfront views is important to you, you will want to plant low growing species. Alternatively, if your main priority is attracting wildlife and pollinator species to your property, you may want to plant a variety of flowering and fruiting shrubs and wildflowers.

By choosing many plants that bloom and fruit throughout the year, you will increasingly help local wildlife.

Some examples include:

- **Wildflowers:** Blue Lupine (blooms in spring), Wild Columbine (spring), Wild Bergamot (summer), Common Milkweed (summer), New England Aster (late summer/fall)
- **Shrubs:** Allegheny Serviceberry (spring/summer), Shrubby Cinquefoil (summer), Black Elderberry (late August), Smooth Arrowwood (fall), Winterberry Holly (winter), Red Osier Dogwood (winter)

A great free tool you can use to pick native plants best suited for your property is the Native Plant Database (natuledge.watersheds.ca). This database selects plants based on Canada's hardiness zones; much of Georgian Bay is located in zone 5b. Once you decide what you want to plant on your property, it is important to consider the size of your buffer.

One study found that a 30-metre buffer removed more than 85% of all studied pollutants including suspended sediment, nutrients, and pesticides (Zhang, et al., 2010)!

Compared to turf grass, deep rooted plants like silver maple, black chokeberry, and nannyberry have extensive root systems, making them valuable for filtering runoff and stabilizing



Wild Bergamot (*Monarda fistulosa*) is a perennial wildflower that blooms a beautiful pink/lavender flower between July and September.

loose soils that may be vulnerable to erosion, ice push, and boat wakes. Any sized buffer is better than no buffer at all! Remember that your buffer can be completely customized based on your preferences and budget.

Leave it alone. Protecting and enhancing in-and near-water habitat

Another critical component of a resilient shoreline is the presence of different types of habitat features which provide shade and protection for fish, turtles, and macroinvertebrates.



Fragrant White Water Lily (*Nymphaea odorata*) is an example of a floating aquatic plant as it has most or all of its leaves floating freely on the water's surface.

Start enhancing in-and near-water habitat this fall by doing...nothing! Fallen branches, leaves, and downed trees in the water and along the shoreline act as a valuable land-water interface for species like northern map turtle and great blue heron and provide protection for fish and frogs. You likely already have some of these features on your property and they simply need to be left alone if it is safe for you to do so.

As for aquatic vegetation, you may have seen these plants and not thought about their many amazing benefits—aside from being beautiful! Aquatic vegetation absorbs wave energy, protects water quality, produces oxygen, takes up nutrients, stabilizes shorelines and bottom sediments, and protects against invasive species and algae competition. They keep busy! In order to experience these full benefits on your property, you are best to manually clear a small path through any existing aquatic vegetation so you can get to deeper waters. You then leave the rest untouched.

Additional resources

If you are looking for more information about taking local action, please visit watersheds.ca/resources to access free fish habitat enhancement guides, plant care guides, and self-assessment tools to help you protect Georgian Bay for years to come.

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History. Timeless. Perfection. Paradise. Sanctuary. These are just a small smattering of words that people use to describe their beloved Georgian Bay. Words that are echoed and felt by John and Pinky McAllister.

Water has always been an integral part of the lives of both John and Pinky. John grew up in a small town on the Welland Canal called Port Robinson. He swam in the canal each and every summer and would sit on the banks, watching the lake ships pass by, dreaming of sailing the Great Lakes one day. He made that dream come true in his teens by obtaining summer jobs working on the freighters. Pinky, who lived in Etobicoke growing up, attended McMaster University and then went on to teach Physical Education for 38 years at The Bishop Strachan School, where a good deal of her time was spent in the pool teaching children to swim. She also coached the senior swim team to many championships.

Pinky's mother's parents used to own a cottage on Cache Lake, just north of Kenora. This cabin gave the entire family a love for "cottage-life". Once Pinky was born, her parents decided they needed to purchase their very own cottage, one closer to home. After several years of searching, they found "Blink Bonnie" and purchased it in 1962. This cabin had the same feeling as Cache Lake; boat access only, isolated, with a beautiful log cabin which appealed to her parents.

Blink Bonnie is a Gaelic term for a glimpse of beauty—an enchanting magnificent expanse. This Heavenly "Blink Bonnie" is on Derbyshire Island in the South Channel out of Parry Sound, and is rich in history.

Built around 1940, it was the year-round home of Willy Moreau, his wife and sister-in-law who all immigrated from Scotland. The property consisted of a log cabin, an ice house, a stable and a two-slip boat house. Willy was a caretaker for the Eaton family. He farmed the island with a cow and a horse and had supplies flown in and dropped during the winter. Painted on the rocks, many moons ago, was the name they had given to their home, "Blink Bonnie", Pinky's parents kept the name as did John and Pinky when they purchased the island from Pinky's family in 2000.

John and Pinky met through mutual friends while vacationing in Daytona Beach on March Break in 1976 and have celebrated 42 years of being happily married. They have two children and five grandchildren, all of whom have grown up on the water, enjoying all that Georgian Bay has to offer. When their kids, Rebecca and Patrick, were growing up, they would come every year as soon as school was finished for summer vacation, obtaining jobs on the Bay and in the words of Patrick, were "living the dream". Rebecca worked at Craganmor Resort for eight summers and also directed the Sans Souci Summer Day Camp one year. Patrick, along with friends, worked for Student Haulage for nine summers and Patrick's now-wife Ana, who was his girlfriend at the time, also worked and directed the San Souci Day Camp for two summers.

Today, John and Pinky are proud grandparents, sharing their love of the Bay with their five grandbabies, all under the age of 4. Rebecca and her husband Gareth Smith have two children, Audrey who is three and Griffith who is a year and a half old. Patrick and his

wife Ana have three children, Ronan who is four and twin girls Maeve and Fiona, a year and a half old. Some of the favourite activities the family engages in during their summer adventures are to explore and hike the many inland trails and to picnic on the outer islands.

Loving Georgian Bay so much, upon retirement the McAllisters moved to Wasaga Beach and now live on Georgian Bay all year. Whether they are skiing at Blue Mountain, hiking the Bruce Trail, cycling along Shore Lane or walking the sandy beaches of Wasaga, they never tire of looking out across the crystal blue waters of Georgian Bay and remarking how fortunate they are to live here and cottage here. According to them, "If you have to endure and survive a pandemic, there is certainly no better place to be than the shores of Georgian Bay." We agree!

The McAllisters have seen changes to Georgian Bay over the years and have become increasingly aware of the fragility of the Bay and the need to get involved to help create change before it is too late. They remain optimistic that, through the efforts of Georgian Bay Forever and other organizations, we will all save this piece of paradise for future generations to love and enjoy. John and Pinky hope that their children and grandchildren learn from their involvement, that this unique body of water needs to be protected. "From the rugged granite shoreline of the Canadian Shield in the north, to the sandy beaches of Wasaga, to the limestone cliffs of the Niagara Escarpment along the Bruce Peninsula, Georgian Bay is one of a kind and it's our mission and responsibility to join with Georgian Bay Forever and others, to save it for the generations to follow."

SHOULD YOU GO ELECTRIC?



By Plug'n Drive, a non-profit organization committed to accelerating electric vehicle adoption in order to maximize their environmental and economic benefits. For more information about our programs and services, please visit plugndrive.ca



* This article is supported by GBF's Families for Change program

The electric vehicle (EV) is here to stay!

Industry commitments, combined with government strategies to phase out the sale of internal combustion engines, means the world is steadily on a path toward an electrified future.

This comes as no surprise. EVs not only offer many performance improvements over their internal combustion engine counterparts; they are also one of the easiest and fastest ways to reduce greenhouse gas (GHG) emissions. And the need has never been greater.

This summer, Toronto experienced two extreme heat events with temperatures spiking above the 40°C mark and the “hottest day on record” is a statistic that is seemingly being updated annually in many regions around the world. Climate change is already having detrimental impacts on our communities, shorelines and water habitats and one of the largest producers of GHG emissions is transportation.

It is no secret that the burning of fossil fuels contributes heavily to GHG emissions. Across Ontario, transportation is the number one source of GHG emissions, accounting for

about 35% of the province's total emissions. Long story short, meaningful climate change action is not possible without tackling transportation. Enter the electric vehicle (EV)!

How Many Emissions Does Your Road Trip Cost?

To put things in perspective, a standard road trip from Toronto to the Georgian Bay region is anywhere between 140 km to 300 km one-way. Depending on the car you drive, that could mean anywhere between 25–55 kg of CO₂, or, 4–10 bowling balls worth of greenhouse gases shot into the atmosphere. By making that trip in an electric car, the CO₂ emissions drop to between 1.1–2.2 kg. That's a 95% reduction for doing nothing but driving a different car.

What's Keeping You from Making Your Next Car Electric? Myths.

With one of the cleanest electricity grids in the world, the environmental benefit of an EV in Ontario is clear. That said, EVs still only account for a small percentage of car sales and there are several barriers holding drivers back.

One common myth is that EVs are too expensive. This can be attributed partly to the fact that a lot of marketing and media coverage surrounding EVs tends to focus on the more expensive luxury brands. While luxury EV models do exist, many other EV models fall in the \$35,000 to \$45,000 range. In addition, government incentives help drive this cost down. In Ontario, for example, all EV drivers qualify for Canada's federal EV incentive of up to \$5,000 off their purchase.

The other part of the cost equation is ownership. Electricity is not only cleaner than gasoline, it's also cheaper, and the average cost to “fuel” an EV is about 1/5th the cost of an equivalent gas car. EVs also require less maintenance; they don't need oil changes, fluid flushes or tune-ups. Combined, an EV driver can realistically save well over \$2,000 per year.

Another common myth is so called “range anxiety”, or the fear of running out of battery halfway leaving you stranded. Most EV models sold today travel 400 km or more on a full charge. With trips from Toronto to the Georgian Bay region being anywhere between 140 to

TYPICAL MID-SIZE GAS CAR (7.9 L/100 KM NISSAN ALTIMA)

	Litres of Gasoline Burned (L)	CO2 Emissions Created (kg)
Toronto to Parry Sound (244 km)	19.3	44.4
Toronto to Tay (159 km)	12.6	29.0
Toronto to Tobermory (296 km)	23.4	53.8
Toronto to Collingwood (146 km)	11.5	26.5

TYPICAL MID-SIZED ELECTRIC CAR (18.9 KWH/100 KM NISSAN LEAF)

	kWh of Electricity Used	CO2 Emissions Created (kg)
Toronto to Parry Sound (244 km)	46.1	1.8
Toronto to Tay (159 km)	30.1	1.2
Toronto to Tobermory (296 km)	55.9	2.2
Toronto to Collingwood (146 km)	27.6	1.1

300 km (depending on where you're going), it's clear that EVs are more than capable of going the distance.

If you do need to stop halfway to charge, Ontario's public charging infrastructure has grown steadily over the years and there are well over 200 fast charging stations across the province that will charge your EV battery from empty to 80% in 30–45 minutes.

Electrification is not just for cars; it has wide-ranging applications for all forms of

transportation. Georgian Bay Forever is in the process of adding an electric boat to its fleet to educate the public about the benefits of electrification and further its water protection mandate—and this is only the beginning.

It's obvious that EVs have several advantages: they save you money on fuel and maintenance, reduce GHG emissions and deliver equal or better performance. Instead of asking "Should you go electric?" a better question might be "Why shouldn't you?"

GBF notes:

In the Township of The Archipelago, waterborne transportation accounts for 76.1% of greenhouse gas emissions.

Source: The Georgian Bay Biosphere (GBB) coordinated Township of The Archipelago (TOA) Milestone 1 submission to the Federation of Canadian Municipalities Partners for Climate Protection Program.

The GBB, TOA, GBF and many other regional NGOs will be working to help improve electric car adoption and electric boat use.

GREAT EXPECTATIONS

By David Sweetnam, Executive Director of Georgian Bay Forever



The latest assessment of the climate crisis was delivered a few weeks ago by the United Nations Intergovernmental Panel on Climate Change. The assessment wasn't good, and we are now seeing reports of tragedies directly attributed to increasing greenhouse gas emissions from human activity: hundreds of record heat related deaths in the Canadian west; hundreds of drowning victims from floods in Germany and the US southeast; entire towns burned to the ground in the Canadian and US western states and provinces; the first ever recorded rainfall on the ill-fated Greenland Glacier.

One might expect more people to take action. But the pandemic has also revealed that a portion of the public does not view communal life-ending crises as something

to be solved with their help. Some people refuse to avail themselves of life saving vaccination technology with the exact same mantra that others embrace it with—we all say we want to protect our families and we all cling to the facts that reinforce our beliefs.

So, is it a lost cause? Protecting one hundred percent of families is impossible in light of the "baked in" impacts of our activities to date; fortunately, the majority of the public is on the right side of both of these issues. Unfortunately, it only takes one infected unvaccinated person to breed a mutation and risk the safety and resources of so many others. So, actions at a high community-wide level are necessary for the protection of all our families. And the same goes for climate change: The alarming costs to lives and property requires more

insistent collective expectations to increase the speed of many, many more people taking action.

Meantime, GBF continues to work with you to take direct actions to protect our water from these increasing impacts—storms are increasing in strength so we are installing devices in storm water systems to trap pollution before it washes off the streets and into our Bay; we are reducing the spread of invasive plants destroying our coastal wetlands that will be needed to clean the water after more frequent sewage spills despoil it; and we are educating our public on how you can take actions that will reduce pollution and greenhouse gasses to halt the increasing temperature of the planet. Thank you for caring. Together we are making a difference.

INVASIVE PHRAGMITES ACTION CONTINUES

By Nicole Carpenter, GBF Coordinator on *Phragmites* and Ecosystems Projects

2021 marks the start of a 2-year project to Save Matchedash Bay. Georgian Bay Forever and its partners Ganawenim Meshkiki, the MTM Conservation Association and the Severn Sound Environmental Association are working together to remove invasive *Phragmites*, monitor species at risk in the wetland and advance knowledge of the risk of *Phragmites* to biodiversity in Matchedash Bay. Matchedash Bay is a wetland of international importance (Ramsar Site) and is home to many plants, mammals, reptiles, fish, amphibians, migrating birds and species at risk.

If we don't continue to take actions to manage and remove this plant, it grows into 15 foot high monoculture 'walls' replacing diverse wetland plant species and removing natural habitat for species like turtles who struggle and have been found dead in dense patches of *Phragmites*.

GBF staff spent a full week mapping the main bay, small islands, tributaries, and surrounding shores of the wetland by canoe, identifying 55 infestation sites. These sites varied in size from a few individual stalks, to as large as 100m² and dense. *Phragmites* was located at the water's edge and deep in the wetlands amongst cattails, making it almost impossible for volunteers to reach every known stand.

Though much of our time was spent in the main bay, our adventures canoeing up and down the North River and Coldwater River allowed us to get deeper into the wetland and see some quite unique wildlife. Unfortunately, the Coldwater River itself was home to one third of the total number of sites mapped



and the largest most dense sites found. The water levels were too low for amphibious Truxor machines to work properly to cut these dense stalks, so we will find other solutions.

In the rest of southeastern Georgian bay, along the shorelines of Tay Township, Georgian Bay Township (GBT) and the Township of the Archipelago (TOA), GBF staff and volunteers continue to manage and control phragmites stands. In GBT, where stands are much more numerous, our efficacy has allowed us to spend more time reaching new areas. Overall, our annual cutting technique takes 2-6 years to be effective depending on the site size. We've now mapped over 700 sites, noting that over 300 of those sites have not come back due to this process, and more than a hundred have received cuts

and are on their way to 'gone'. A full report of the progress in each community will be available late Fall.

Funding

Matchedash: Funding and assistance for the 2021 Save Matchedash Bay was undertaken with the financial support of the Government of Canada through the federal department of Environment and Climate Change *, Ganawenim Meshkiki (GMI) who is the Trustee of the Eastern Georgian Bay Initiative ("EGBI") managed by Henvey Inlet First Nations, Township of Georgian Bay, Tay Township, MTM Conservation Association, and our many individual donors.

General Phrag: Funding and assistance for the 2021 Georgian Bay Forever project, *Phragmites* Eradication for the Health of our Water and Wetlands, was provided by Canada Summer Jobs, Township of Georgian Bay, Tay Township, The Township of The Archipelago, the Honey Harbour and Cognashene Cottagers Associations, and our many individual donors.

We send our sincerest thanks to all for their investment in these initiatives.



>100m² stand of invasive phragmites along the Coldwater River in August. Photo Credits: Nicole Carpenter

* Ce projet a été réalisé avec l'appui financier du gouvernement du Canada agissant par l'entremise du ministère fédéral de l'Environnement et du Changement climatique. The views expressed herein are solely those of Georgian Bay Forever. Les opinions exprimées dans ce document sont celles de / de la / du / d' / des Georgian Bay Forever.

MICROFIBRE POLLUTION BROADER THAN PLASTICS CONTAMINATION

By Lisa Erdle, Guest Author.
Lisa is a PhD candidate and researcher at the Rochman Laboratory at the University of Toronto.



Over the past two years, Georgian Bay Forever with the University of Toronto carried out one of the largest studies on microfiber solutions to date. Called “Divert and Capture”, the study placed washing machine filters in nearly 100 homes in Parry Sound, and over the course of a two-years, these filters captured billions of microfibres. The final, peer-reviewed results from this study are still wrapping up, although the frontline of our understanding has advanced, which is worth sharing.

We now know that microfiber pollution is much broader than focusing on only “plastics”.

It is well understood that microfibres, small anthropogenic fibers (<5mm), are found in habitats globally. The Great Lakes are no exception, and research shows that microfiber contamination is relatively high compared to other parts of the world. In the Great Lakes, high concentrations of microfibres litter surface water, near shore sediment, deep water sediment, and wildlife such as birds and fish. Recent research by Munno et al., (2021) shows that microfibres are prevalent in many Great Lakes species of fish, including yellow perch, brown bullhead, white sucker, and shiners. Also, this research found that fish contained up to 915 anthropogenic particles per fish, which were mostly fibers.

However, not all fibres contaminating habitats and wildlife are synthetic (plastic).

Microfibres can include a range of non-plastic materials, such as cotton, wool, and semi-synthetic cellulose (plant-based). When reported, non-plastic microfibres can be more common than their plastic counterparts. For example, microfibres in the Mediterranean deep sea were over 50% non-plastic fibres.

One major distinction between these fibre types is degradation rate. Unlike plastic, research shows that non-plastic fibres can fully break down (mineralize) in nature—non-plastic fibres can break down in weeks to months in marine and freshwater ecosystems. However, non-plastic fibres may also cause negative effects.

New research shows that non-plastic microfibres can have negative impacts on animals. For example, a recent study shows that cellulosic microfibres pass through the digestive tracts of freshwater crustaceans (*Gammarus duebeni*) more slowly than plastic microfibres (Mateos-Cárdenas et al., 2021). Also, lyocell (non-plastic) and polyester (plastic) microfibres both caused mortality and damage to digestive systems in brine shrimp (*Artemia franciscana*) (Kim et al., 2021).

So, there are growing concerns that there are negative effects from particles that are either plastic or non-plastic.

Still, data on non-plastic microfibres is scarce. In a recent review, we analyzed hundreds of peer-reviewed studies that reported microfibres in the environment. We found that many studies underreport non-plastic fibers, often due to laboratory constraints (e.g., chemicals in processing steps that degrade cellulose) (Athey and Erdle, 2021). So, non-plastic microfibres could be even more prevalent than what current studies report.

We have also observed that the line between “natural” and “synthetic” microfibres is somewhat blurry. The prevalence of non-plastic microfibres in the environment is of growing concern due to some studies that show negative effects. Also, since non-plastic microfibres can have a substantial proportion of synthetic chemicals (including plastic), this may also impact toxicity of microfibres. Textiles typically contain chemical treatments and dyes. Some treatments include known toxics, such as bisphenols, polyfluorinated alkyl compounds (PFAS), and formaldehyde. Recent research shows that chemicals can remain on microfibres and then slowly release into the environment over time; for example, PFAS applied to textiles can remain on microfibres, and when these microfibres are released into the environment, fibres can slowly leach chemicals over time. In addition to treatments and dyes, natural fibres can also be coated in plastic; machine washable wool, for example, is often coated in a thin layer of polyurethane to protect fibres from shrinking when we wash our clothes.

An improved understanding of fibres, effects, and associated chemicals has helped

inform solutions. Recently, some companies have proposed material redesign. Clothing brands, for example, have suggested making a swap from plastic textiles to natural materials in an effort to limit microfiber release. However, since microfibres are still shed from natural materials, changing the base material doesn't completely solve the problem.

Therefore, solutions that can reduce all microfiber emissions (and not just plastic) are likely most effective.

We know that washing machine filters are effective at capturing microfibres. We have seen that filters are effective when tested in the lab, and new results from *Divert and Capture* show that washing machine filters can also be an effective tool to capture microfibres in people's homes. Moving forward, solutions that will capture and reduce all microfibres close to the source should be prioritized since they can limit the release of plastic as well as non-plastic microfibres to the environment.

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