REAL 2021 Shoreline Clean-up Report

The Event

The 2021 Rideau Environmental Action League shoreline clean-up event took place on Saturday, October 2. It was in Smiths Falls, picking-up along the shoreline of the Rideau River. It started at 10 a.m. with 9 volunteer members of the community helping clean-up garbage around the Bascule Bridge along the shoreline. 4 of these participants stayed to go clean-up around the Lower Reach Park area, and behind the Heritage House museum by the Old Slys overflow dam.

The second phase of the clean-up started at 1 p.m. at the boat launch near Edmonds Lockstation off of Jasper Avenue, near its intersection with Eric Hutcheson road. 11 community members came out to help with this part of the clean-up. 4 participants came to the second part of the afternoon clean-up along the roadside of Highway 43, in an accessible and safe location beside the Edmonds Lockstation overflow dam. One of these participants brought their canoe from their place close-by and helped get the garbage in the water which we could not reach on land in the location by highway 43.

Below are the areas we picked garbage from for the 4 areas: Bascule Bridge parking and surrounding area (top left), surrounding area of Old Slys overflow dam (top right), parking area by the boat launch off Jasper Ave (bottom left), side of highway 43 by Edmonds Lock overflow dam (bottom right).



The Results

It was great effort put forth by everyone involved. We worked hard and filled many garbage bags. Everything put together totalled 377.5 pounds.

The garbage was separated into garbage and different kinds of recycling. Here are the total amounts collected:

Type of garbage	Total weight
Garbage - General	196 lbs
Garbage - Paper cups (from fast food restaurants)	9
Recycling - Plastic	27.5 lbs
Recycling - Glass	16.5 lbs
Recycling - Aluminum cans	11 lbs
Recycling - Steel	19 lbs
Wood/Building materials	98.5 lbs
Total	377.5 lbs



The Clean-up



The problem of plastic in our waterways and oceans

When the high waters come during the springtime, much of this garbage would have flowed further down the river, a lot of it making it all the way to the Ottawa River, then to the St. Lawrence Sea, and eventually to the Atlantic Ocean. Sometimes those plastics remain on the shoreline for a while, and slowly break down into microplastics (any piece of plastic smaller than 5 mm in width), before they can travel down-river to the oceans.

The world's oceans are facing a plastic crisis right now, with an estimated 5.25 trillion pieces of plastic floating or resting at the bottom of it (Condor Ferries, 2020). The Canadian government estimates that over 8 million tonnes of plastic flows into our oceans worldwide (Inside Ottawa Valley, 2020).

Cleaning up the plastic in today's oceans is incredibly important. Phytoplankton are the main primary producers of the ocean, and they play a key role in the production of oxygen on our planet. The primary producers in the ocean account for an incredible 80% of the world's oxygen (Science Direct, 2020), as well as 30-60% of the world's carbon fixation (EOLSS, n.d.). However, when exposed to microplastics, research has shown that phytoplankton's rate of photosynthesis (the process which phytoplankton use to fixate carbon and create oxygen), reduces by 45% largely due to light not being able to reach them (Science Direct, 2020). In the Western Mediterranean Sea, there is a 1:2 ratio of plastic to phytoplankton (J. Ruxton et al, 2016). Much of this plastic is in the form of microplastics.

Plastic is detrimental to marine wildlife, causing major health problems and even death for whales who filter feed near the surface of the water, seeking plankton, but getting a mouthful of plastic. Sea turtles mistake plastic bags as jelly fish, and consume the bags as food. These bags can then cause intestinal blockages, preventing the turtles from being able to feed, leading to starvation. 22% of sea turtles who ingest just one piece of plastic will die (World Wildlife Foundation, n.d.). There are countless other examples, many of which are undiscovered, of marine wildlife who fall victim to the plastic in our oceans.

What about if the plastic remains in the rivers, and doesn't make it all the way to the ocean? Slowly, the plastics will break down into smaller pieces, eventually becoming microplastics and nanoplastics. This causes health risks for us humans, when we drink water with plastic particles, and the aquatic wildlife. We simply don't understand the health effects of humans ingesting plastics yet.

According to National Geographic, nearly every seabird on Earth is eating plastic. In 1960, fewer than 5 percent of seabirds were found to have plastic in their stomach. In 1980, an estimated 80 percent of sea birds had plastic in their stomach, and now, that number has risen to a staggering estimated 90%. A recent study has found a 67% decrease in population of seabirds from 1950 to 2010 (National Geographic, 2015). The gulls, cormorants, and terns of our local rivers and lakes, are facing a similar issue here, as 80% of the litter on the shore of the great lakes is plastic (J. Ruxton et al, 2016), and around the same percentage applies to the garbage found along the Rideau River in our clean-up.

The Canadian Wildlife Foundation reports that researchers have found polymer fibres and plastic pellets in the digestive tracts of fish in Lake Erie. When the fish absorb these microplastics or ingest the plastic particles, contaminants leach from these particles and cause liver damage (Canadian Wildlife Foundation, n.d.). Again, this just scratches the surface of the effects of plastic and microplastics in our local freshwater ecosystems.

What Can We Do?

Many people believe because there are 5.25 trillion pieces of plastic in the oceans, and there is the equivalent of 1 garbage truck of plastic being dumped into the ocean every minute, that any individual effort is of little to no impact on the issue of plastics in our waterways or plastic in our oceans. Because it is such a daunting task, we will often not take any action to begin with. 8 million tonnes of plastic flowing into the ocean every year might seem like an overwhelmingly large number compared to the 377.5 lbs that was collected. But I believe that rather than focusing on all the wildlife or natural habitat which we cannot save or have any significant impact on, we must focus on the impact that we *are* making, and the wildlife and natural habitat which we *are* impacting.

90% of seabirds are eating plastic, which means that there a significant chance that with every piece of plastic we are picking up, we are preventing that plastic from entering into the stomach of a seabird or its chicks. And with every piece of plastic we pick up, we are saving a large amount of fish from developing liver damage from ingesting or absorbing plastic.

When we remove plastic from the waterways, we are preventing microplastics from reaching the ocean, allowing the phytoplankton to produce more oxygen and fixate more carbon. As a result, we are giving back the opportunity for the phytoplankton to live and function in their natural way, producing the equivalent of our every second breath of oxygen.

Here are some things we can do to play our part in the plastic pollution problem:

- 1. Get out there and clean-up the garbage from the river banks and beaches. Picking up garbage from ditches or the streets is also effective, because that plastic will likely flow into the waterways when large rainfalls happen.
- 2. Dispose of trash properly, ensuring that all of your personal trash ends up in either recycling or the garbage can where it will be properly handled and brought to a landfill.
- 3. Reuse and recycle whenever possible, and avoid buying single-use plastics.
- 4. Stop buying polyester clothing made of plastic, and instead buy cotton or other natural-fiber clothing materials.

Finally, when we come together, and make a collaborative effort to clean-up our waterways, we can make a much greater impact in greater numbers. So please stay watch for future garbage clean-ups in with the Rideau Environmental Action League, and any other similar initiatives in your community.

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