

Invisible Plastics in the Great Lakes



Red microfibre found after filtering water sample from Lake Huron.

Increasing Awareness of Plastic Pollution: What are Microplastics?

Plastic is an inexpensive, durable and highly available product that has revolutionized the world over the past 70 years. Its popularity as a product has raised concerns of unsustainable usage and improper disposal. Numerous threats including increased waste in landfills, leaching of chemicals into source water and impacts on wildlife from entanglement or ingestion are creating an urgency for more sustainable plastic usage and better products with less impacts.

Rising plastic usage not only increases the need for land requirements for landfills, but also increases the risk of plastic entering water systems. As plastics are exposed to sunlight and natural weather conditions, they begin to break apart into smaller and smaller pieces of plastic. Once these pieces are smaller than 5 mm in length, they are referred to as microplastics. Microplastics can persist in the environment for hundreds of years. One type of microplastic, called microfibres, comes from synthetic clothing fibres that are shed in washing machines. These fibres can eventually make their way into the lake.

Turning the Tide on Plastic

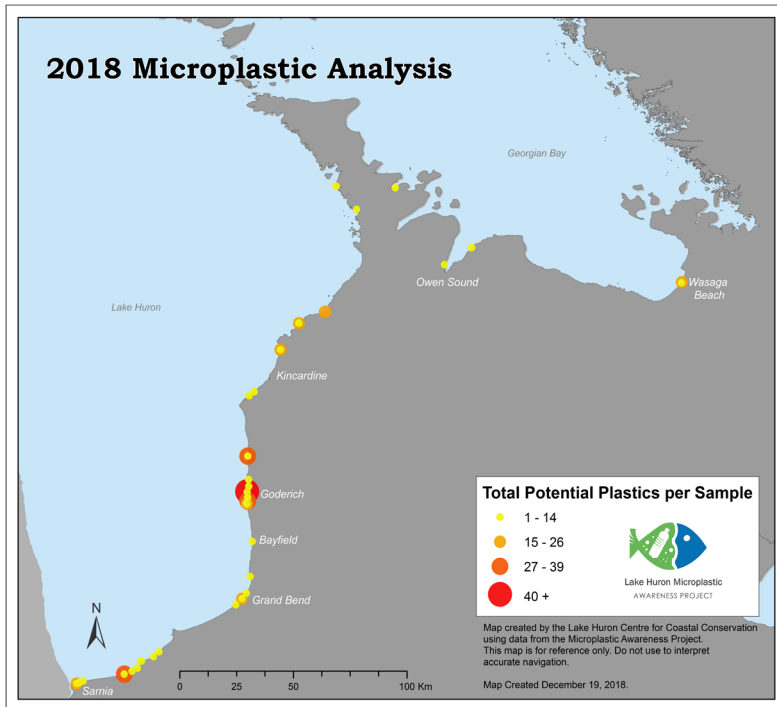
Tackling plastic pollution takes strong support from communities and local organizations. Through the LHMAP, the Coastal Centre engaged volunteers from our citizen science monitoring initiative 'Coast Watchers' in collecting two 1-L water samples from the shoreline they were observing. 70 samples were collected and analyzed for traces of plastic pollution.

Over 50 volunteers from the 'Coast Watchers' program, 700 beach cleanup participants, and 8 microplastic analysis volunteers worked hard to examine human impacts to Lake Huron and improve the shoreline by mitigating plastic pollution.

Community outreach and education on the sources of plastic pollution and sustainable solutions reached a diverse audience along the shoreline, including the Sarnia Justice Film Festival, Camp Menesetung, students on an exchange with Lakeshore United Church and the Goderich Lion's Club to name a few.

THE COLD, HARD PLASTIC FACTS

- Each year, over 400 million tonnes of plastic is produced.
- Only 8% of plastics are recycled, meaning that the majority is taken to landfills for disposal.
- In 2018, the Lake Huron Centre for Coastal Conservation picked up 8,930 cigarette butts off the Lake Huron shoreline. Cigarette butts are a source of microplastics in the Great Lakes.
- 33% of global plastics are single-use, meaning they are used once before being thrown away.



Potential plastics per sample along the Lake Huron shoreline. Data collected from the Lake Huron Microplastic Awareness Project.

What's in Your Water?

For the purpose of this study, all identified plastics were referred to as 'potential plastic' as we did not have the proper instruments to differentiate between natural and synthetic fibres - the most abundant type of potential plastic seen in this study. It's also important to note that many volunteers sampled close to large population centres. This means that there will be more observations found in these areas and does not necessarily indicate that there are higher amounts of plastic - however, many studies have found higher amounts of plastic in water near urban areas.

Analysis of the water samples looked at four different types of microplastics: microfibrils, fragments, microbeads and films. 466 microfibrils were found, making them the most abundant potential plastic found. Fragments (22) and films (10) were also observed. No microbeads were found in this study.

The highest number of potential microplastics found in a single sample was 41. Only 6 of the 68 analyzed samples were considered to have no evidence of microplastics (9%).

A Citizen Science Approach to Monitoring the Shoreline

Engaging volunteers in monitoring initiatives has been increasing in popularity. By utilizing volunteers, we were able to extend our messaging to people that really cared about protecting their shoreline. With any citizen science program, there are often concerns about the quality of data being collected as specific skillsets and scientific knowledge may vary between participants. The focus of this project was to create awareness about the presence of microplastics in the Great Lakes.



The activities and initiatives of the LHMAP were generously supported by:



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