

2020 Marine Debris Shoreline Surveys in
Eastern Cape Breton

Renee MacQuarrie
Cape Breton Environmental Association
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Introduction

Marine debris is defined by the NOAA as “any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes”. Marine debris may consist of common litter or household items, or it may result from other sources like industry or commercial activity.

In the case of our study location, Cape Breton Island is a hotspot for commercial fisheries including lobster and crab. In areas like Cape Breton where heavy fishing activity takes place, we often see marine debris in the form of abandoned, lost or discarded fishing gear. Regardless of how this gear is lost, either intentionally or unintentionally, it is particularly concerning because it can continue to catch or entangle marine life for years to come.

The goal of conducting these surveys was to gain insight into the types of marine debris that are showing up on our shorelines here in Cape Breton.

Methods

As part of these surveys, data was collected from 9 shorelines along the eastern part of Cape Breton Island, as shown below in Table 1.

Table 1. List of survey locations.

Name	Location
Big Glace Bay Beach (Big Glace Bay Migratory Bird Sanctuary)	46°10'38.72"N, 59°55'18.12"W
Schooner Pond Shoreline, Schooner Pond, Donkin, NS	46°10'39.43"N, 59°50'39.02"W
The Cove (Bottom of Browns Rd Ext, New Victoria)	46°15'47.51"N, 60° 7'17.90"W
New Victoria Shoreline (Bottom of Browns Rd)	46°15'30.61"N, 60° 8'3.08"W
Bridgeport Shoreline (Bottom of Davidson St, Bridgeport)	46°13'0.22"N, 59°59'51.67"W
South St Shoreline (Bottom of South St, Glace Bay)	46°10'58.12"N, 59°56'10.27"W
Water St Shoreline (Bottom of Water St, Glace Bay)	46°11'50.46"N, 59°56'51.04"W
Ferguson's Beach (Long Beach Rd, Port Morien)	46° 9'37.94"N, 59°51'11.34"W
Waddens Cove Shoreline (Bottom of Hiawatha Rd.)	46° 4'15.66"N, 59°52'57.08"W

Shorelines were sampled between September 16th and September 21st, 2020, and approximately 30 minutes were spent collecting data at each location. All identified debris was recorded on paper and later entered into an Excel spreadsheet where it was divided into categories (plastics, fishing gear, metal, etc).

Results

A total of 956 pieces of marine debris were recorded across the 9 shorelines. Fishing gear made up nearly half of the debris, followed by plastics at around 30% (Figure 1). Smaller categories included rubber and textiles each making up around 6%, metals at around 5% and paper around 1%. Other categories were glass, cigarettes and medical supplies/PPE, each counting for less than 1% of the materials recorded.

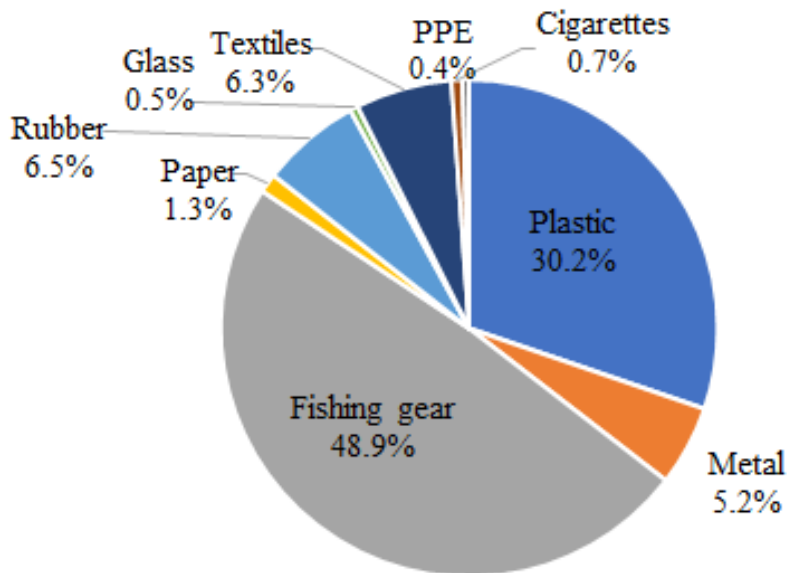


Figure 1. Categorization of the marine debris recorded across 9 shorelines in eastern Cape Breton. Based on 956 items.

Some of the items found during the surveys were much more common than others. The most commonly recorded items were wire lobster trap fragments, followed by lobster bands, miscellaneous plastic fragments, plastic bottles and intact wire lobster traps. A ranking of the ten most common items along with their respective counts can be found below in Table 2.

Table 2. Commonly recorded items from the shoreline surveys.

Rank	Item	Count
1	Wire lobster trap fragment	105
2	Lobster band	87
3	Miscellaneous plastic fragment	83
4	Plastic bottle	66
5	Intact wire lobster trap	61
6	Bottle cap	53
7	Lobster bait bag	50
8	Fabric scrap	44
9	Fishing rope	39
10	Aluminium can	37

Some shorelines were worse than others in terms of how much debris was recorded there. Ferguson’s Beach had the most debris, followed by Waddens Cove and Bridgeport shorelines. Table 3 shows the count per shoreline along with the most common item found on that shoreline.

Table 3. Number of items and the most commonly recorded items from each shoreline.

	Ferguson’s Beach	Waddens Cove	Bridge port	Schooner Pond	Big Glace Bay Beach	New Victoria	The Cove	Water St	South St
Total	206	169	149	133	109	72	50	42	26
Most Common	Wire trap fragment (33)	Wire trap fragment (21)	Fabric scrap (22)	Lobster band (25)	Lobster band (25)	Wire trap fragment (30)	Intact wire trap (6)	Wire trap fragment (6)	Wire trap fragment (3)



Figure 2. Fishing related debris on the Waddens Cove Shoreline, Sept. 21st 2020



Figure 3. Tires, rope and other debris on Ferguson's Beach, Sept. 21st 2020.

Final Notes

In conclusion, this study showed that fishing gear and plastics made up a large portion (nearly 80%) of marine debris present on the shorelines we surveyed. Both of these types of debris pose serious risks to marine life and ecosystem health and considering how prevalent they are, should be prioritized in our attempts to address this issue. Many of the most common items recorded during the survey including lobster trap fragments and fishing rope are likely to cause entanglement, while smaller items like lobster bands or plastic fragments may be consumed by marine life. Additionally, plastic items may cause further harm in the marine environment when they break down into smaller pieces (microplastics) that are more accessible to marine organisms and more difficult to remove from the environment. It is certain that further action needs to be taken and further research needs to be done in order to better understand the issue of marine debris.

References

NOAA. What is marine debris? National Ocean Service website, <https://oceanservice.noaa.gov/facts/marinedebris.html>