



Marine Debris in the Bras d'Or Lakes

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Project Summary

The Bras d'Or Lakes located in Nova Scotia consists of a salt-water estuary watershed 'inland sea' with three passages to the Atlantic Ocean. There is a small lobster fishery and a wide range of recreational activities taking place in and around the Lakes.

Marine debris or most commonly referred to as beach garbage or marine litter is defined by 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.

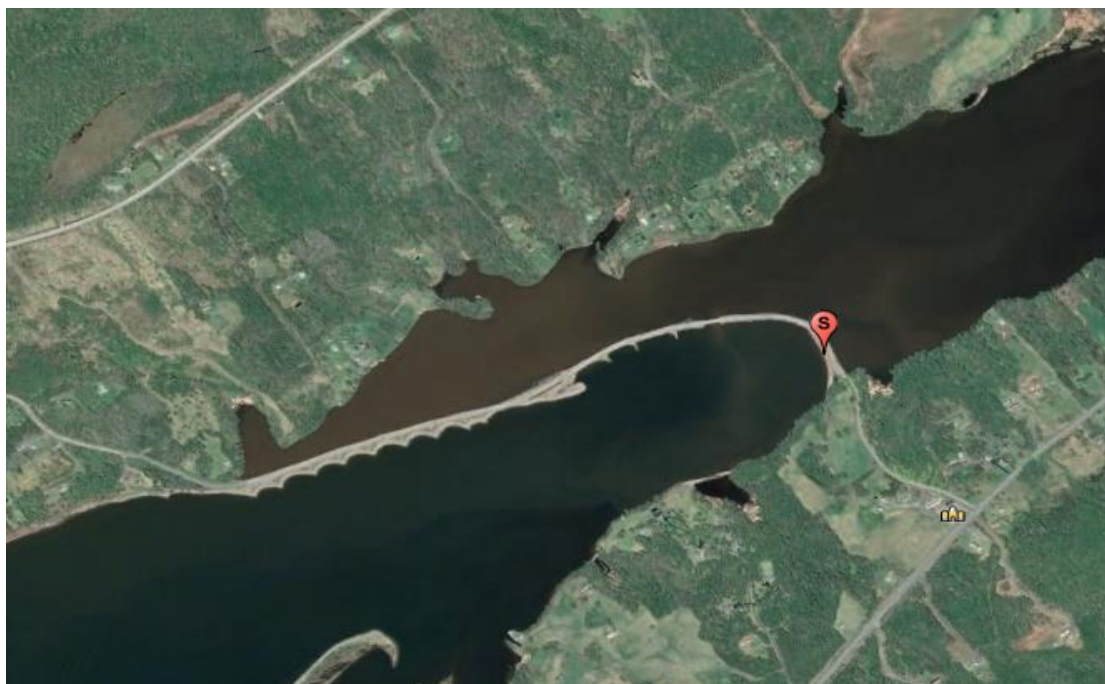
To better understand the scope of marine debris in the Bras d'Or Lakes estuary 30-minute surveys were completed on 11 shorelines along the BDL.

Methods

11 shorelines along the Bras D'Or Lakes were surveyed for 30 minutes; marine debris was collected on the shorelines, and in shallow water (up to 2 inches). Items collected could fit into a regular sized trash bag and weighed under 50 lbs.

The locations that were surveyed include:

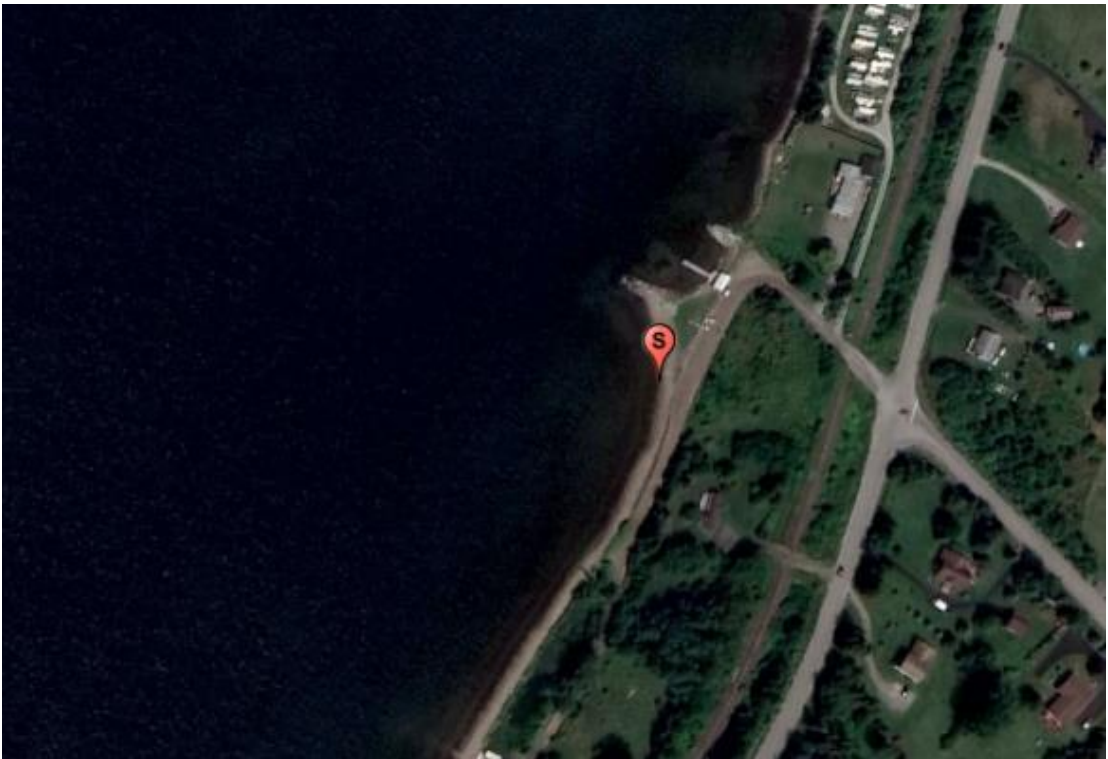
- 1.) East Bay Sand Bar
(46.015506, -60.387479)



2.) St. Peters marina
(45.660854, -60.873875)



3.) Georges River
(46.233503, -60.301443)



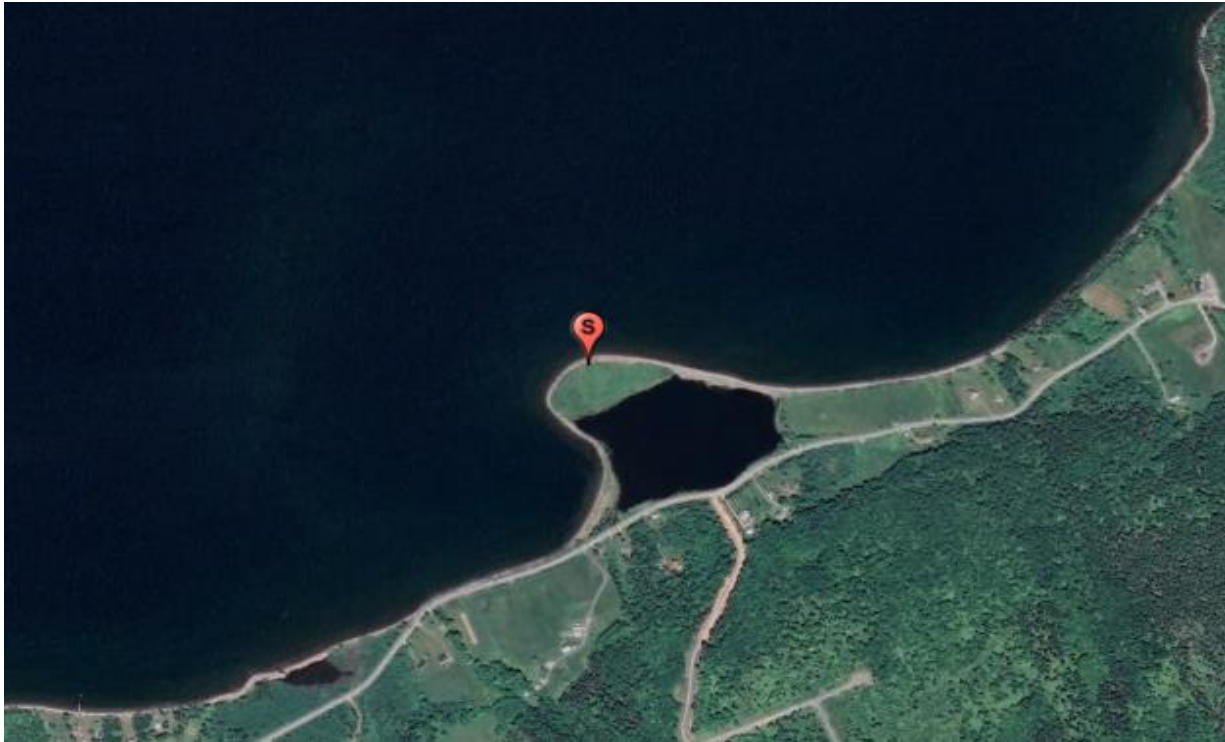
4.) Baddeck Marina
(46.099684, -60.748951)



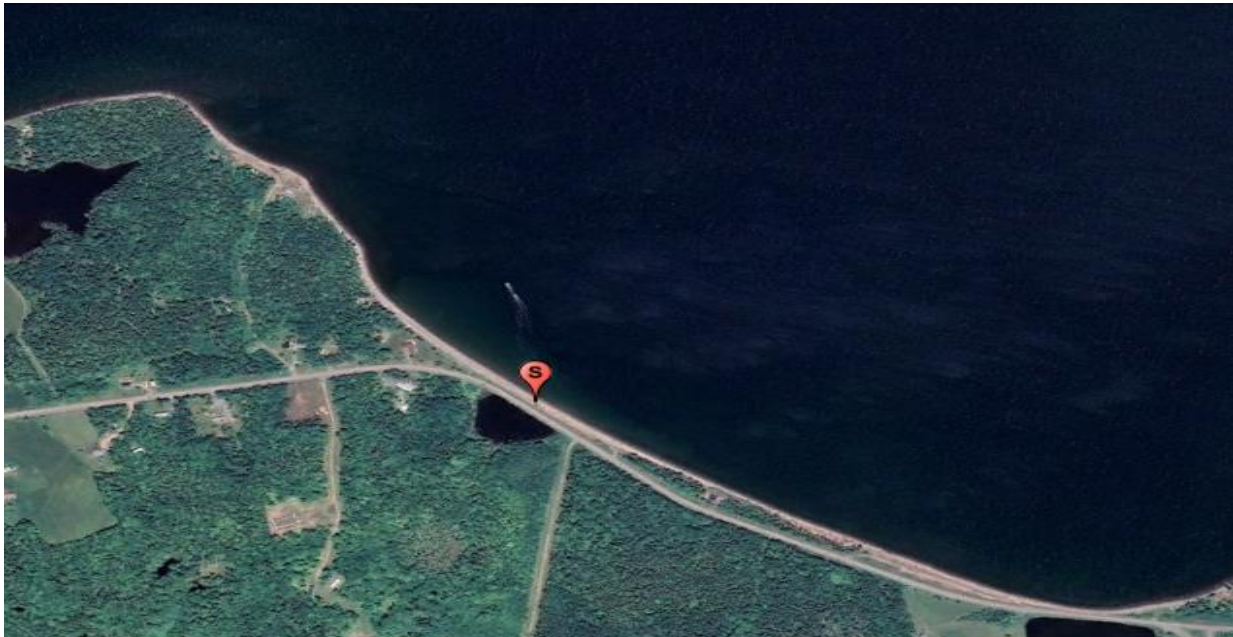
5.) Big Pond Beach
(45.911937, -60.534660)



6.) St. Georges Channel
(45.716175, -61.060678)



7.) Dundee Beach
(45.701093, -61.113882)



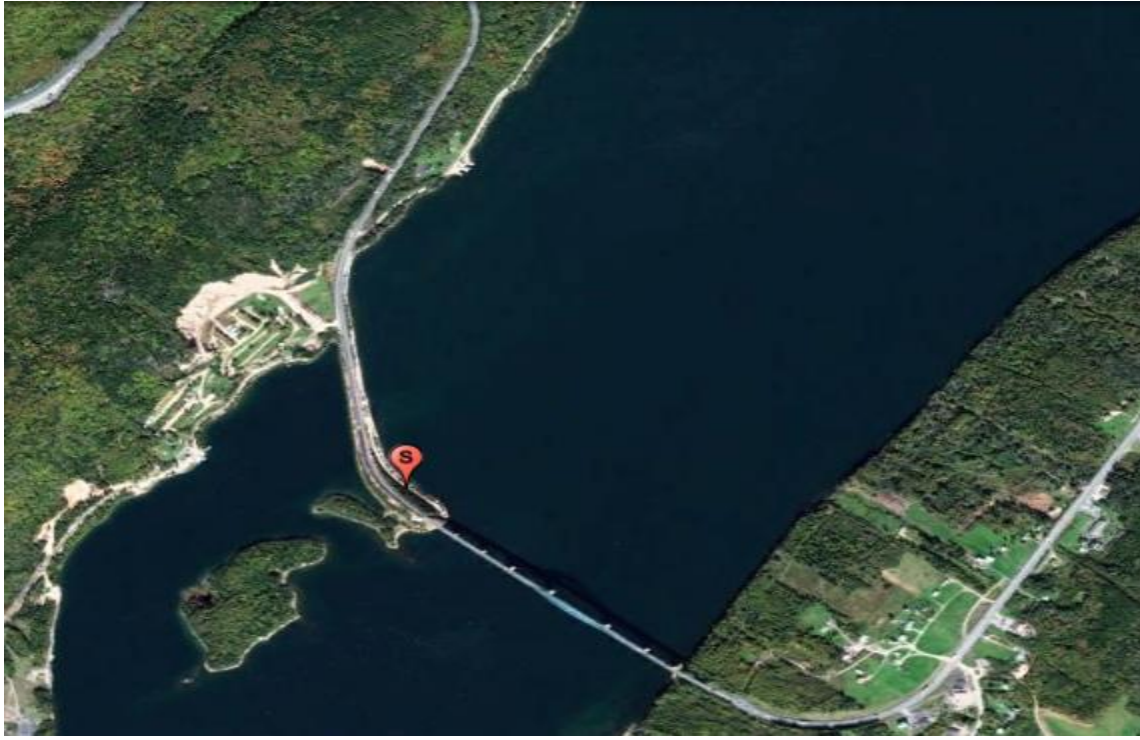
8) Irish Cove Shoreline
(45.806674, -60.721194)



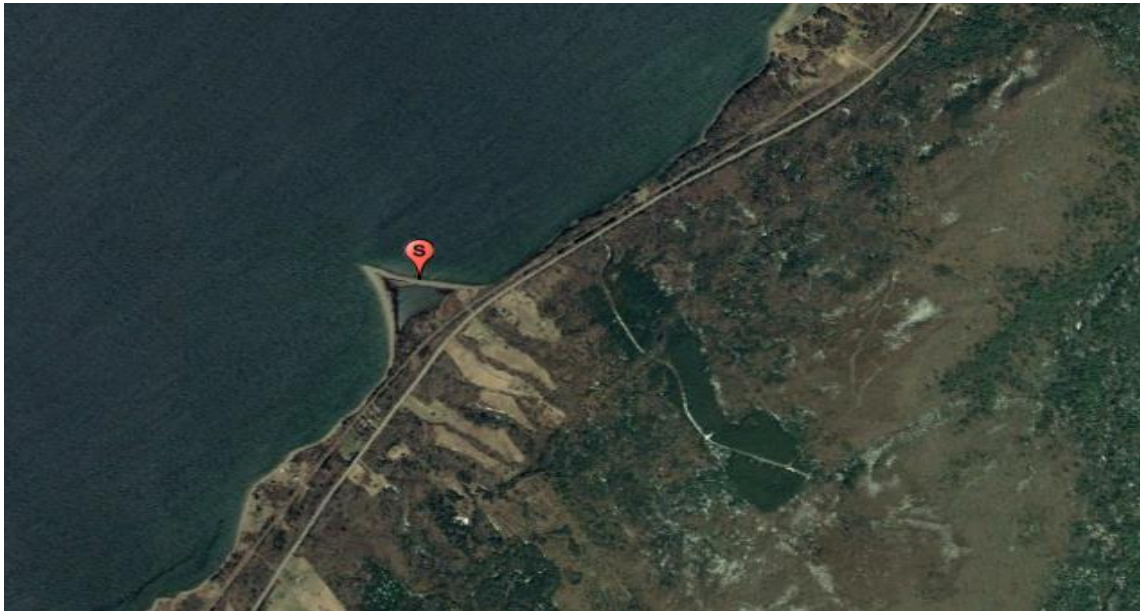
9.) Grand Narrows
(45°57'26.64"N, 60°47'40.62"W)



10.) New Harris
(46°14'9.25"N, 60°29'40.20"W)



11.) Irons Ville
(46° 7'9.59"N, 60°29'3.33"W)



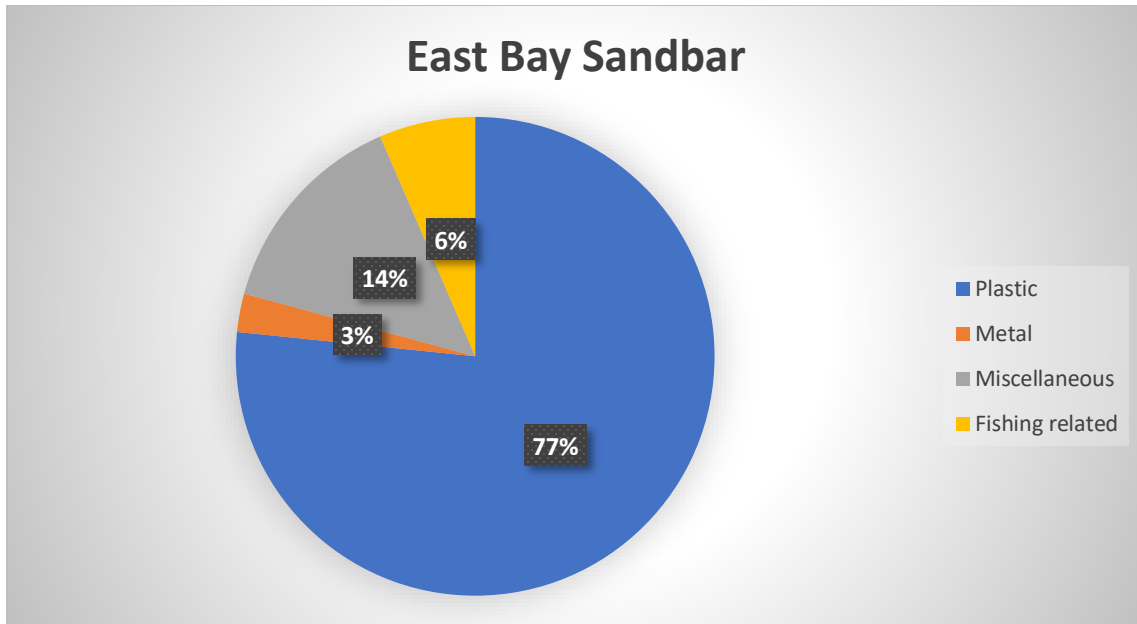


Figure 1. Marine debris collected from East Bay Sandbar on May 3, 2019.

| Plastics | Amount |
|--------------------------|---------------|
| Bottle cap | 9 |
| Straw | 4 |
| Utensil | 1 |
| Hard plastic fragments | 35 |
| Plastic wrapping | 10 |
| Metal | |
| Beer can | 1 |
| Unidentifiable fragments | 1 |
| Miscellaneous | |
| Food wrapper | 7 |
| Fabric | 1 |
| Tim Horton's cup | 1 |
| Duct tape | 1 |
| Paint brush | 1 |
| Fishing Related | |
| Rope under 1(m) | 1 |

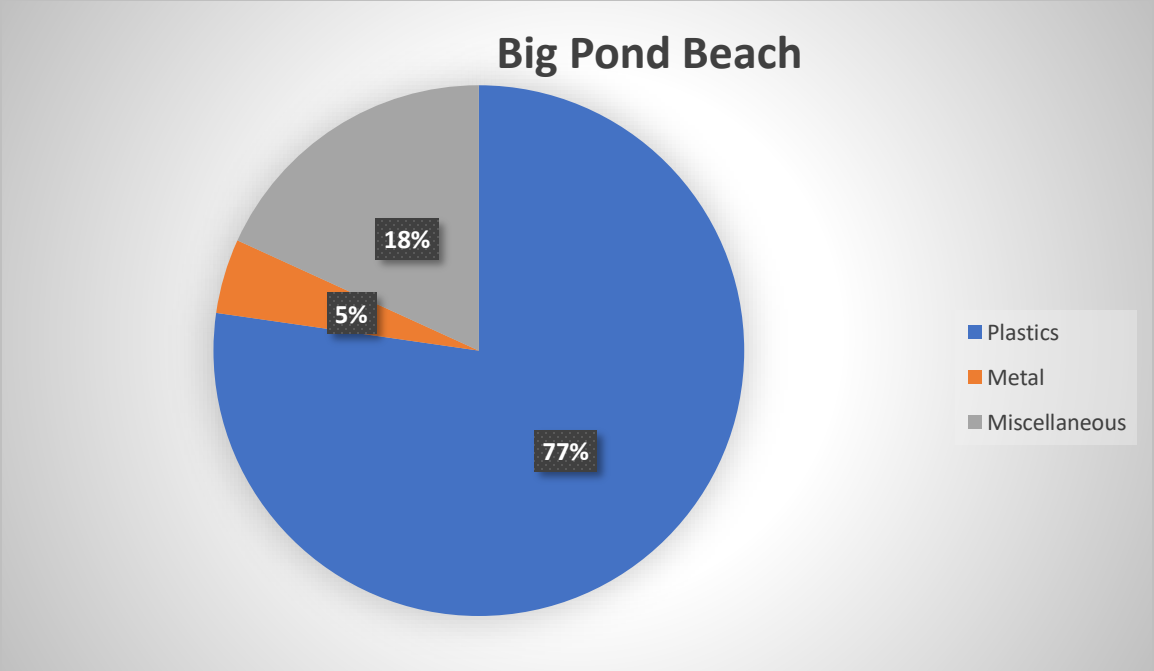


Figure 2. Marine debris collected from Big Pond Beach June 17, 2019.

| Plastics | Amount |
|--------------------------|---------------|
| Bottle cap | 3 |
| Straw | 3 |
| Hard plastic fragments | 18 |
| Shopping bag | 1 |
| Styrofoam | 3 |
| Bottle | 1 |
| Fluid container | 1 |
| Bucket | 1 |
| Metal | |
| Tin can | 1 |
| Unidentifiable fragments | 1 |
| Miscellaneous | |
| Food wrapper | 3 |
| Fabric | 1 |
| Tim Horton's cup | 2 |
| Beer bottle | 2 |
| Sunglasses | 1 |

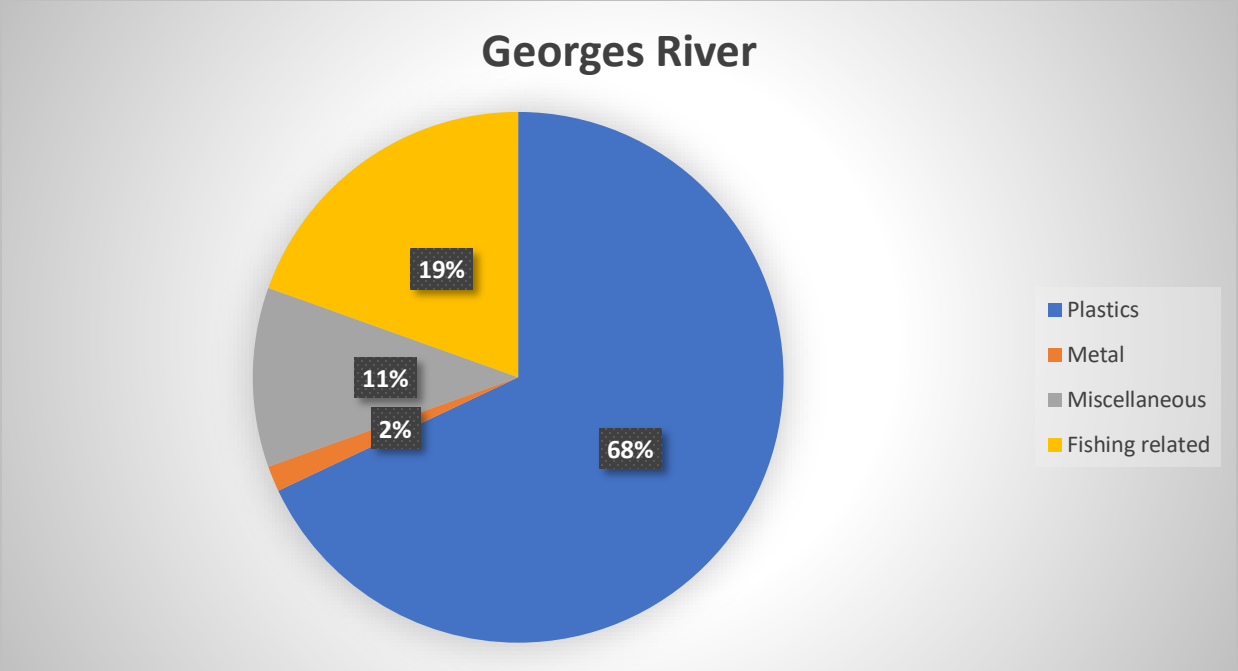


Figure 3. Marine debris collected from Georges River June 2, 2019.

| Plastic | Amount |
|------------------------|---------------|
| Bottle cap | 16 |
| Straw | 13 |
| Hard plastic fragments | 45 |
| Styrofoam | 1 |
| Plastic cup lid | 7 |
| Bottle | 3 |
| Tampon applicator | 1 |
| Shotgun shell | 1 |
| Metal | |
| Beer can | 2 |
| Miscellaneous | |
| Food wrapper | 6 |
| Fabric | 2 |
| Tim Horton's cup | 2 |
| Inhaler | 1 |
| Lighter | 2 |
| Fishing related | |
| Lobster bands | 13 |
| Lobster tag | 1 |
| Rope under 1(m) | 11 |

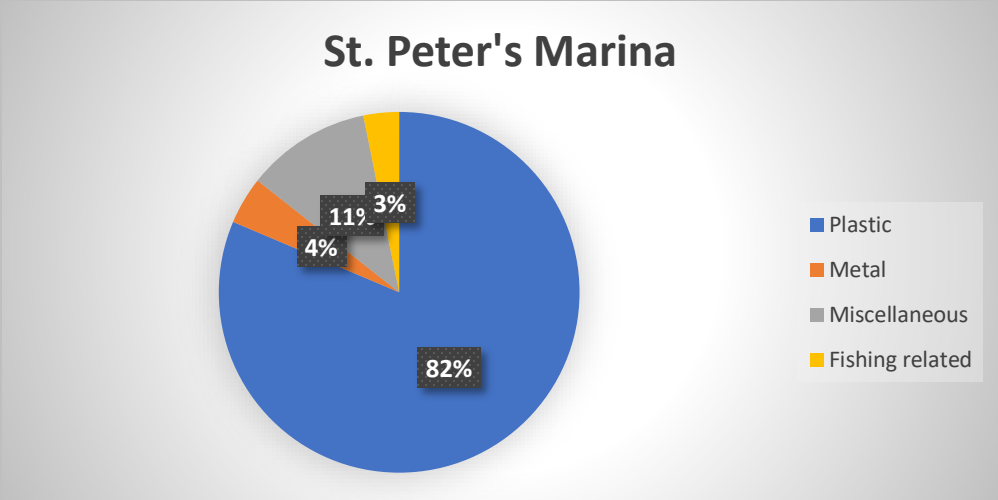


Figure 4. Marine debris collected from St. Peters Marina June 17, 2019.

| Plastic | Amount |
|--------------------------|---------------|
| Bottle cap | 5 |
| Straw | 2 |
| Hard plastic fragments | 6 |
| Plastic wrapping | 37 |
| Shopping bag | 14 |
| Zip ties | 9 |
| Styrofoam | 65 |
| Tubing | 3 |
| Plastic cup lid | 1 |
| Bottle | 5 |
| Water jug | 2 |
| Fluid containers | 2 |
| Sponge | 1 |
| Funnel | 1 |
| Metal | |
| Tin can | 1 |
| Beer can | 5 |
| Wire | 1 |
| Unidentifiable fragments | 1 |
| Miscellaneous | |
| Food wrapper | 9 |
| Fabric | 1 |
| Tim Horton's cup | 5 |
| Duct tape | 2 |
| Beer bottle | 2 |
| Clothing hamper | 1 |
| Shoe | 1 |
| Epoxy marine resin | 1 |
| Fishing related | |
| Rope under 1(m) | 5 |
| Netting | 1 |

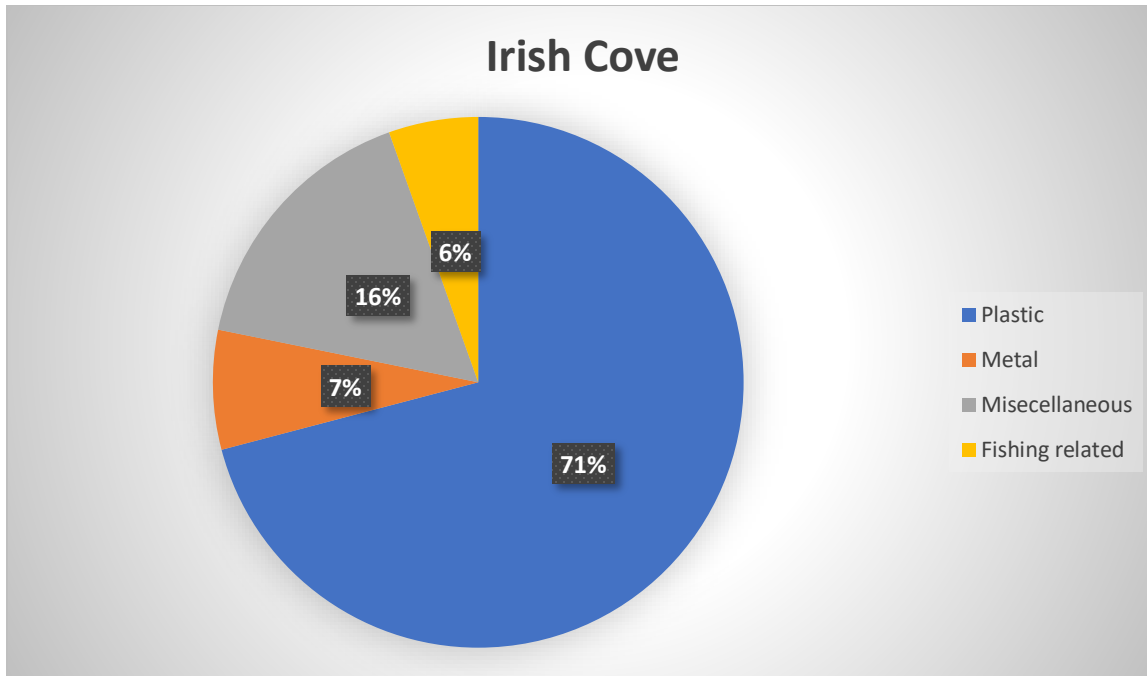


Figure 5. Marine debris collected from Irish Cove July 21, 2019.

| Plastic | Amount |
|--------------------------|---------------|
| Bottle cap | 6 |
| Straw | 1 |
| Hard plastic fragments | 26 |
| Styrofoam | 2 |
| Bottle | 4 |
| Shot gun shell | 2 |
| Metal | |
| Unidentifiable fragments | 4 |
| Miscellaneous | |
| Food wrapper | 6 |
| Tim Horton's cup | 1 |
| Fishing related | |
| Rope under 1 (m) | 5 |
| Netting | 1 |

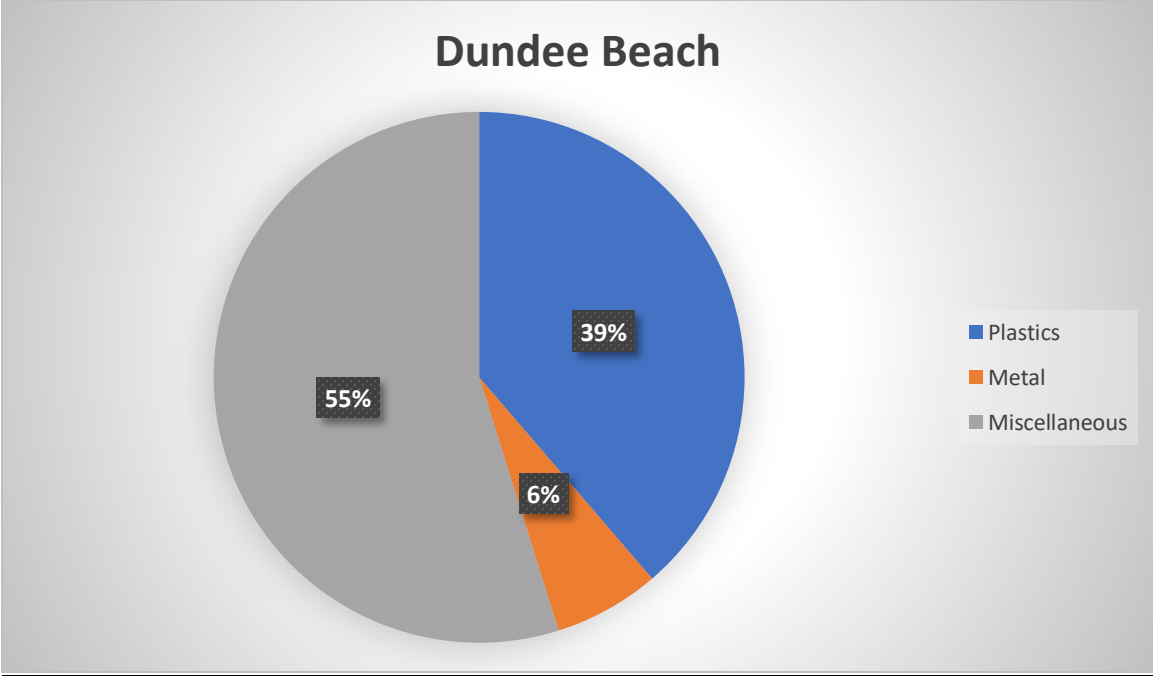


Figure 6. Marine debris collected from Dundee Beach July 21, 2019.

| Plastics | Amount |
|------------------------|---------------|
| Hard plastic fragments | 5 |
| Shopping bag | 5 |
| Plastic cup lid | 1 |
| Fluid container | 1 |
| Metal | |
| Beer can | 2 |
| Miscellaneous | |
| Shoe | 1 |
| Cigarette butt | 15 |
| Pen | 1 |

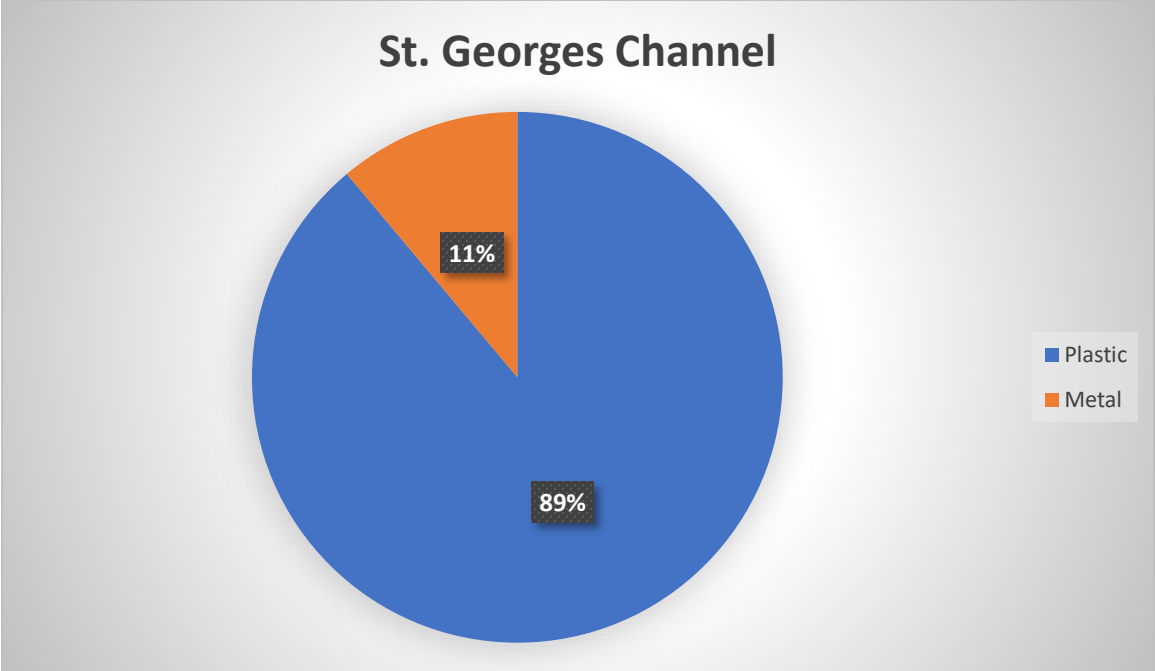


Figure 7. Marine debris collected from Irish Cove July 21, 2019.

| Plastic | Amount |
|--------------------------|---------------|
| Bottle cap | 2 |
| Hard plastic fragments | 20 |
| Shopping bag | 1 |
| Water jug | 1 |
| Metal | |
| Unidentifiable fragments | 3 |

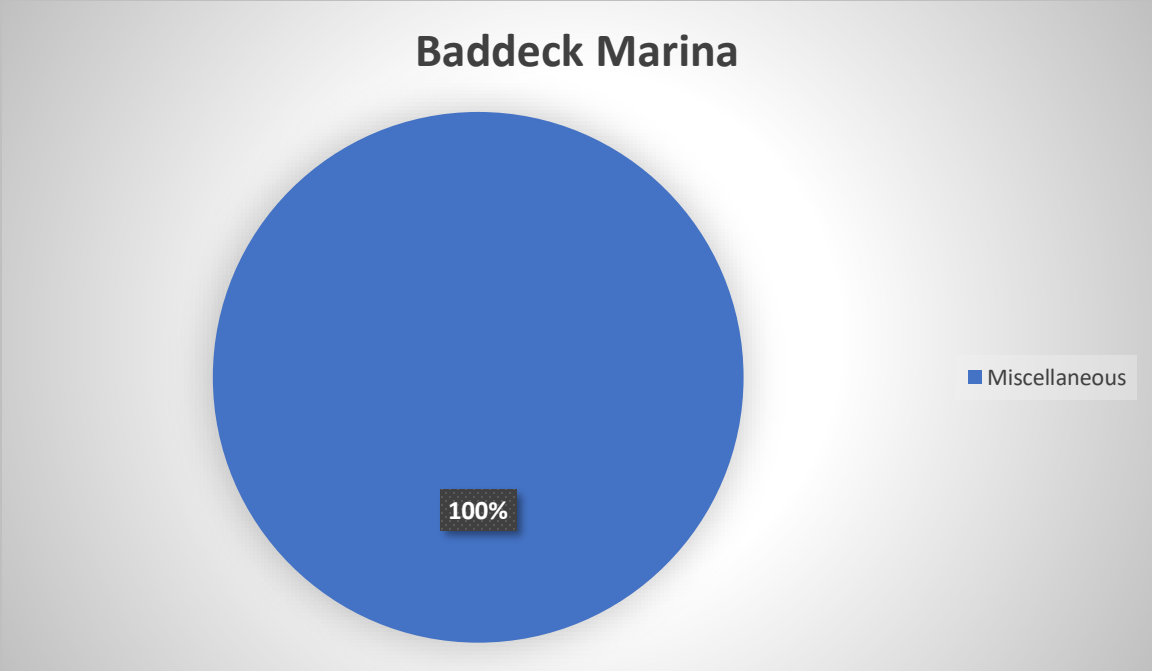


Figure 8. Marine debris found at Baddeck Marina July 8, 2019.

| Miscellaneous | Amount |
|----------------|--------|
| Cigarette butt | 2 |

Note: Heavy tourism in the area, shoreline most likely cleaned daily/weekly.

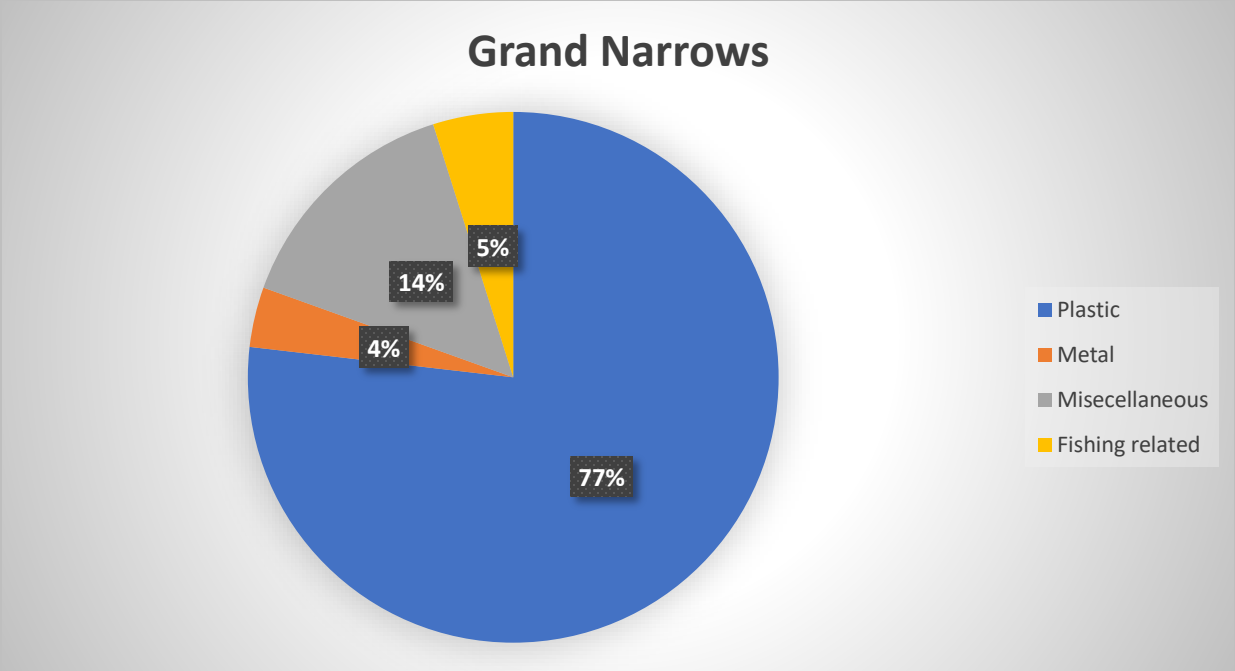


Figure 9: Marine debris found at Grand Narrows July 14, 2019.

| Plastic | Amount |
|------------------------|---------------|
| Bottle cap | 6 |
| Straw | 2 |
| Utensil | 3 |
| Hard plastic fragments | 6 |
| Styrofoam | 41 |
| Plastic cup lid | 2 |
| Bottle | 2 |
| Fluid container | 1 |
| Metal | |
| Beer can | 3 |
| Miscellaneous | 5 |
| Food wrapper | |
| Tim Hortons cup | 1 |
| Cigarette butt | 6 |
| Fishing Related | |
| Lobster band | 4 |

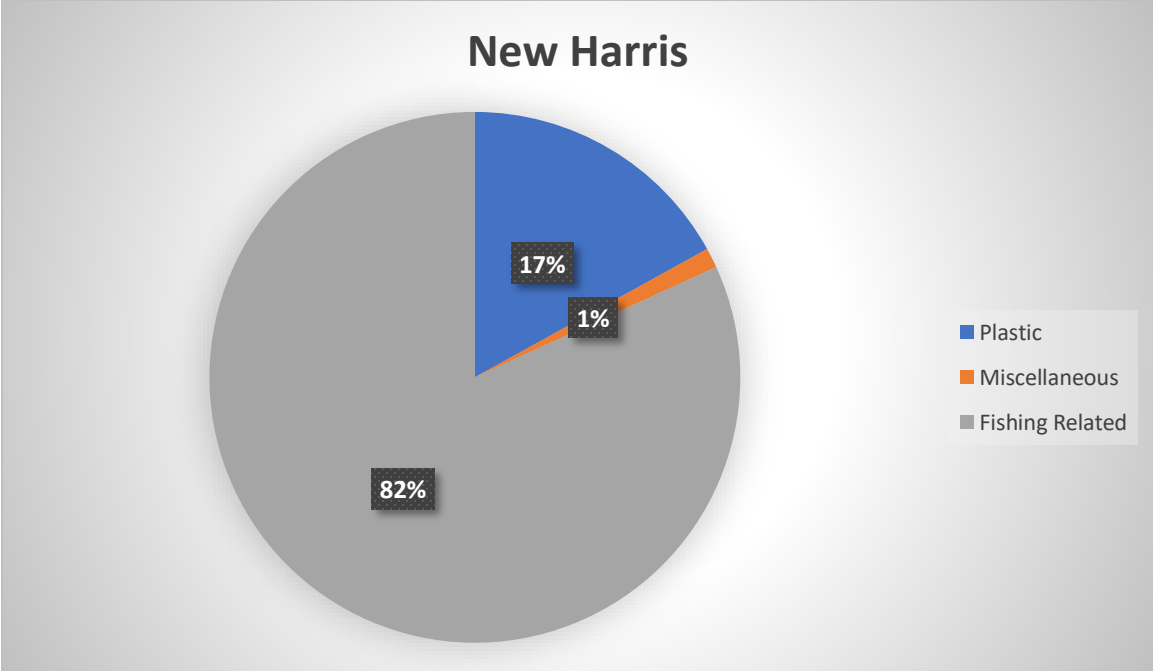


Figure 10: Marine debris found at New Harris shoreline July 15, 2019.

| Plastic | Amount |
|------------------------|---------------|
| Bottle cap | 4 |
| Straw | 1 |
| Hard plastic fragments | 11 |
| Styrofoam | 2 |
| Plastic cup lid | 5 |
| Bottle | 5 |
| Miscellaneous | |
| Sunglasses | 1 |
| Lighter | 1 |
| Fishing related | |
| Plastic packing straps | 5 |
| Lobster bands | 129 |
| Lobster tag | 1 |

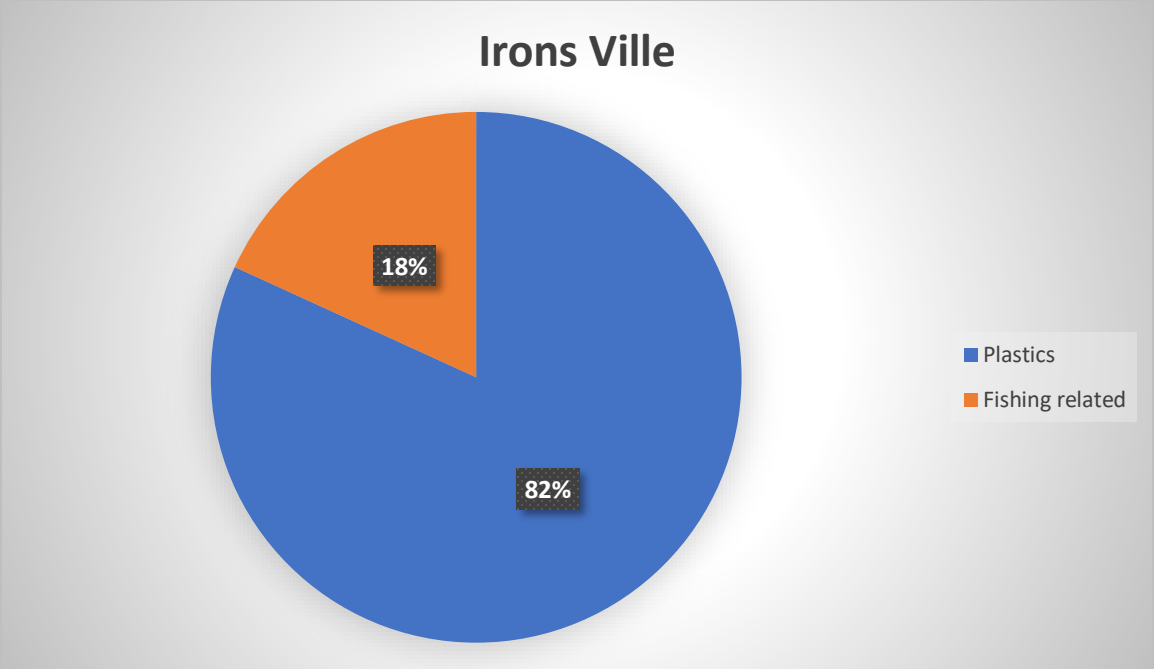


Figure 11: Marine debris found at Irons Ville July 15, 2019.

| Plastics | Amount |
|------------------------|--------|
| Straw | 1 |
| Hard plastic fragments | 6 |
| Styrofoam | 2 |
| Fishing related | |
| Plastic packing straps | 1 |
| Lobster tag | 1 |

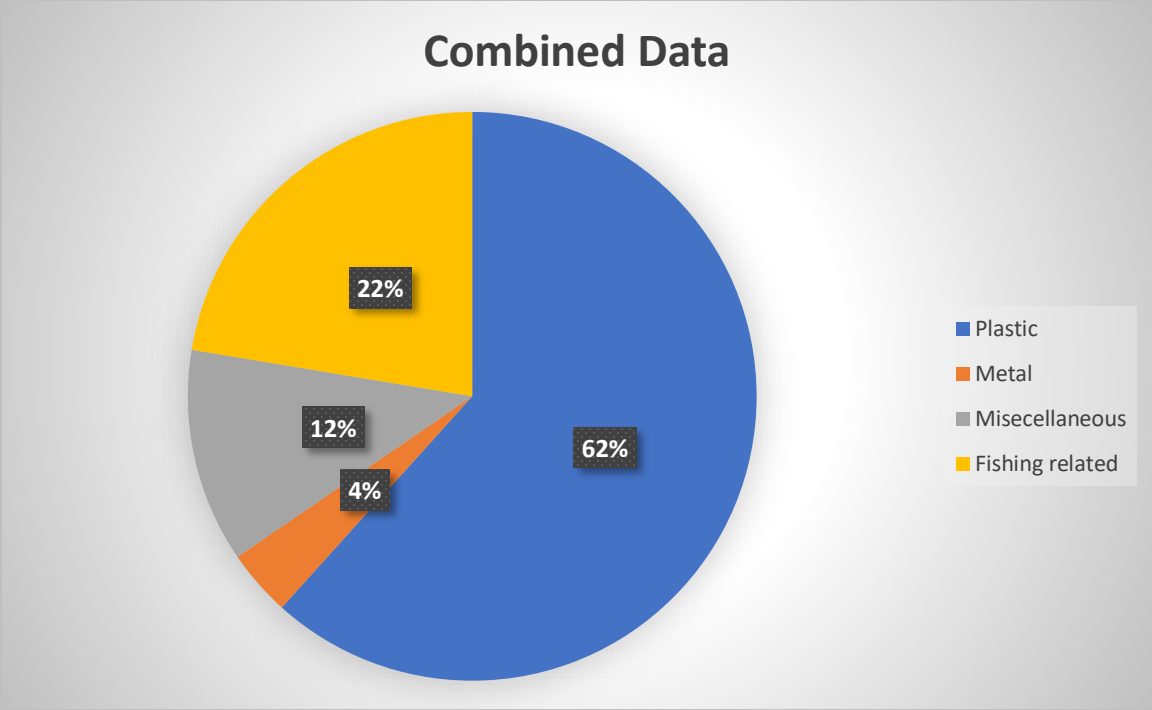


Figure 12: Combined data

| | |
|------------------------|-----|
| Plastic | 507 |
| Metal | 31 |
| Miscellaneous | 100 |
| Fishing related | 184 |

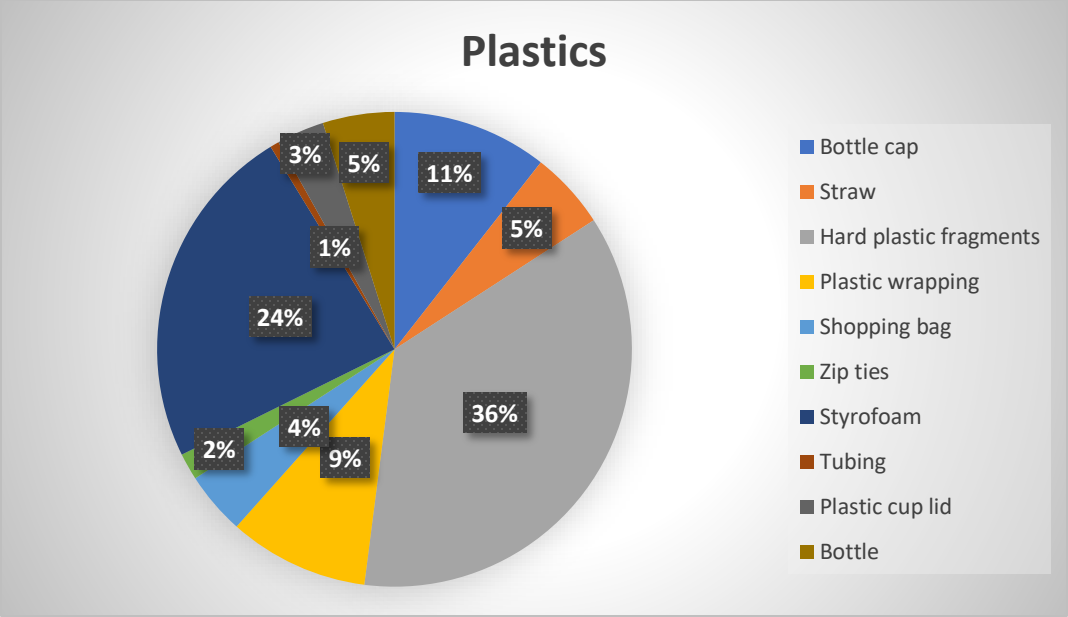


Figure 13: Breakdown of plastics; combined data

| Plastics | Amount |
|------------------------|--------|
| Bottle cap | 52 |
| Straw | 26 |
| Utensil | 4 |
| Hard plastic fragments | 178 |
| Plastic wrapping | 47 |
| Shopping bag | 21 |
| Zip ties | 9 |
| Styrofoam | 116 |
| Tubing | 3 |
| Plastic cup lid | 16 |
| Bottle | 24 |
| Water Jug | 2 |
| Sponge | 1 |
| Bucket | 1 |
| Tampon Applicator | 1 |
| Funnel | 1 |

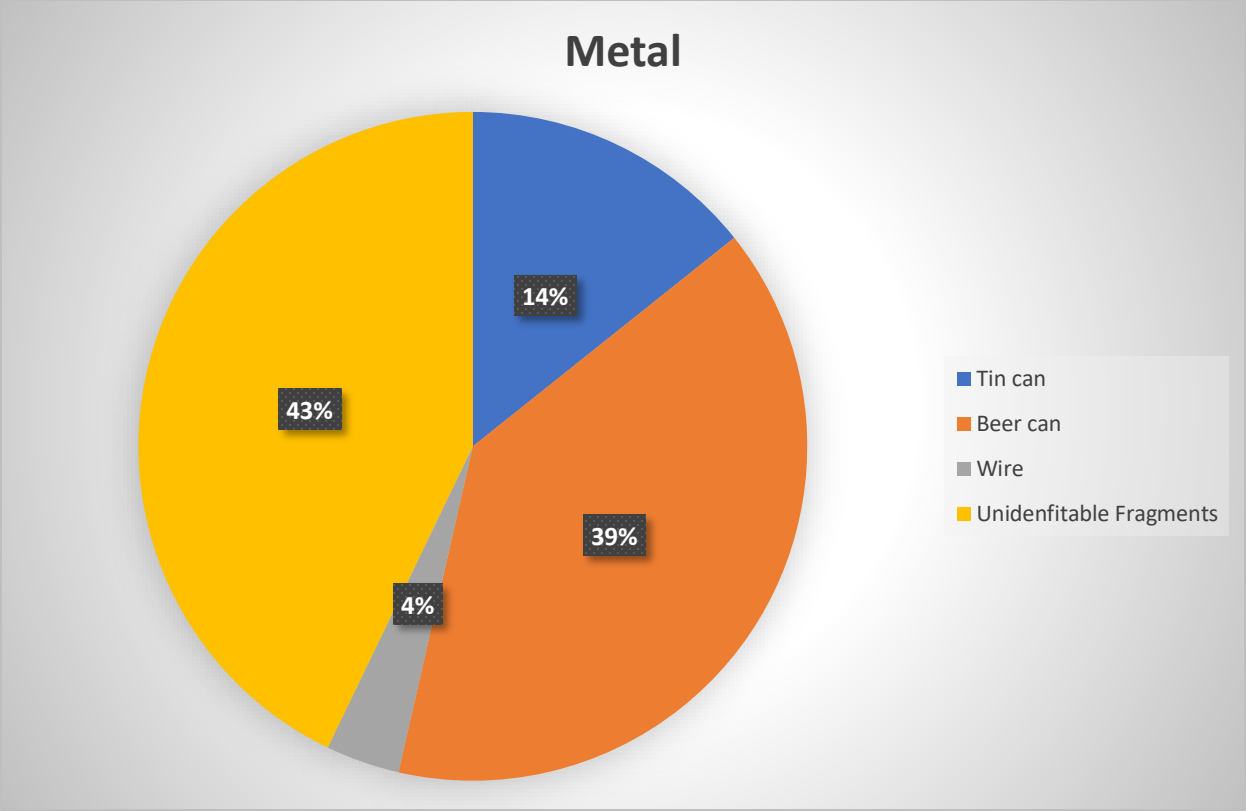


Figure 14: Breakdown of metals; combined data

| Metal | Amount |
|--------------------------|--------|
| Tin can | 4 |
| Beer can | 11 |
| Wire | 1 |
| Unidentifiable Fragments | 12 |

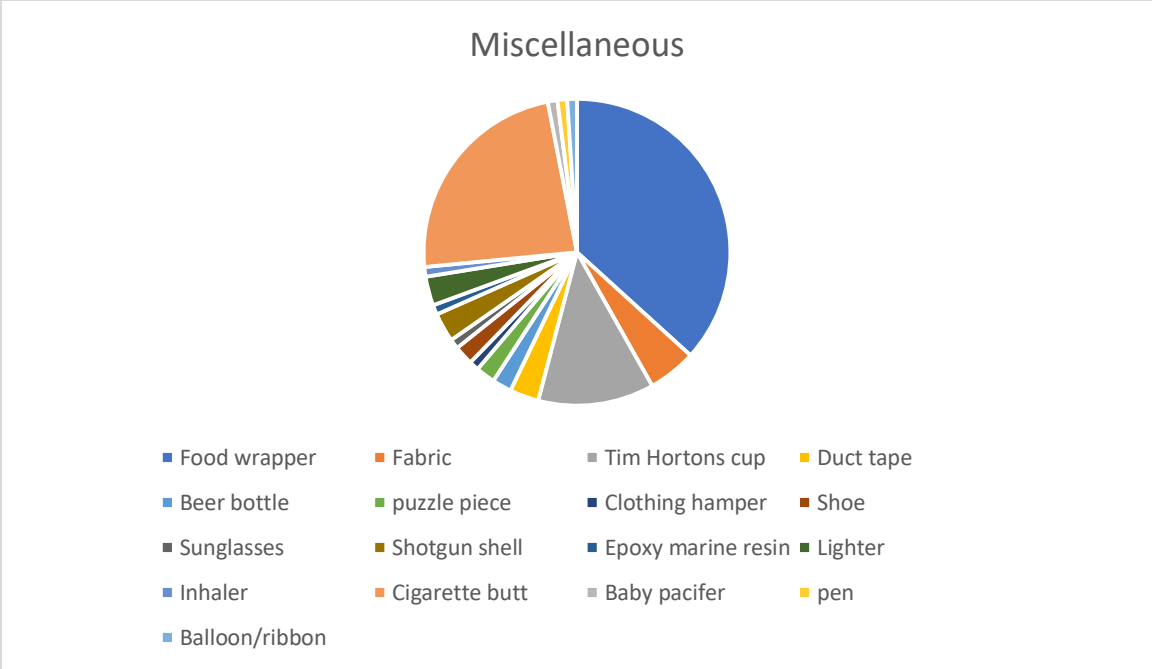


Figure 15: Breakdown of miscellaneous items; combined data

| Miscellaneous | Amount |
|--------------------|--------|
| Food wrapper | 36 |
| Fabric | 5 |
| Tim Hortons cup | 12 |
| Duct tape | 3 |
| Beer bottle | 2 |
| Puzzle piece | 2 |
| Clothing hamper | 1 |
| Shoe | 2 |
| Sunglasses | 1 |
| Shotgun shell | 3 |
| Epoxy marine resin | 1 |
| Lighter | 3 |
| Inhaler | 1 |
| Cigarette butt | 23 |
| Baby pacifier | 1 |
| Pen | 1 |
| Balloon/ribbon | 1 |

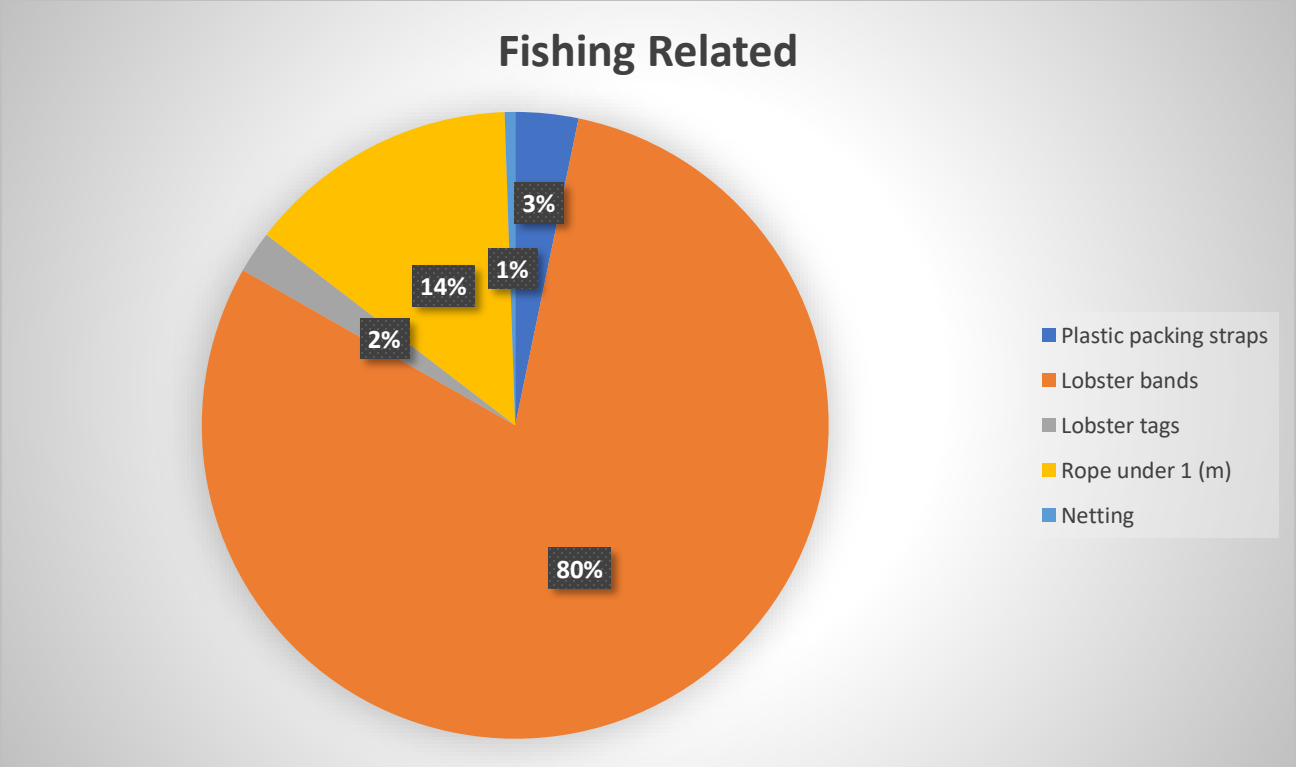


Figure 16: Breakdown of fishing related items; combined data

| Fishing Related | Amount |
|------------------------|--------|
| Plastic packing straps | 6 |
| Lobster bands | 148 |
| Lobster tags | 4 |
| Rope under 1 (m) | 26 |
| Netting | 1 |

Discussion: The combined results of the 11 surveys are as follows 62% plastics, 22% fishing related, 12% miscellaneous, 4% metal. The highest concentration of items collected include:

Hard plastic fragments defined as any plastic material small or large that couldn't be properly identified- 178

Lobster bands- 148

Styrofoam- 116

Bottle caps- 56

Plastic wrapping - 47

Food wrapper - 36

Plastic straw- 26

Rope under 1(m) - 26

Plastic bottle- 24

Cigarette butt - 23

Shopping bags- 21

Tim Horton's cup – 12

Beer can – 11

Highest amounts of fishing related debris recovered: New Harris shoreline, lobster fishing operations are noted adjacent to shoreline; 135.

Highest amounts of plastics recovered: St. Peters Marina; 153.

Highest amounts of cigarette butt litter: Dundee Beach; 15.

| | <u>East Bay Sand Bar</u> | <u>Big Pond</u> | <u>Georges River</u> | <u>St. Peters</u> | <u>Irish Cove</u> | <u>Dundee Beach</u> | <u>St. Georges Channel</u> | <u>Baddeck</u> | <u>Grand Narrows</u> | <u>New Harris</u> | <u>Irons Ville</u> |
|--------------------------|--------------------------|-----------------|----------------------|-------------------|-------------------|---------------------|----------------------------|----------------|----------------------|-------------------|--------------------|
| Plastic | | | | | | | | | | | |
| bottle cap | 9 | 3 | 16 | 5 | 6 | | 2 | | 6 | 4 | 1 |
| straw | 4 | 3 | 13 | 2 | 1 | | | | 2 | 1 | |
| utensil | 1 | | | | | | | | 3 | | |
| hard plastic fragments | 35 | 18 | 45 | 6 | 26 | 5 | 20 | | 6 | 11 | 6 |
| plastic wrapping | 10 | | | 37 | | | | | | | |
| bags | | 1 | | 14 | | 5 | 1 | | | | |
| zip ties | | | | 9 | | | | | | | |
| Styrofoam | | 3 | 1 | 65 | 2 | | | | 41 | 2 | 2 |
| tubing | | | | 3 | | | | | | | |
| plastic cup lid | | | 7 | 1 | | 1 | | | 2 | 5 | |
| beverage bottle | | 4 | 3 | 5 | 4 | | 1 | | 2 | 5 | |
| water jugs | | | | 2 | | | | | | | |
| fluid containers | | 1 | | 2 | | 1 | | | 1 | | |
| sponge | | | | 1 | | | | | | | |
| bucket | | 1 | | | | | | | | | |
| tampon applicator | | | 1 | | | | | | | | |
| funnel | | | | 1 | | | | | | | |
| Metal | | | | | | | | | | | |
| tin can | | 1 | | 1 | | 2 | | | | | |
| beer can | 1 | | 2 | 5 | | | | | 3 | | |
| wire | | | | 1 | | | | | | | |
| unidentifiable fragments | 1 | 1 | | 1 | 4 | | 3 | | | | |
| Miscellaneous | | | | | | | | | | | |
| food wrapper | 7 | 3 | 6 | 9 | 6 | | | | 5 | | |
| fabric | 1 | 1 | 2 | 1 | | | | | | | |
| Tim Hortons cup | 1 | 2 | 2 | 5 | 1 | | | | 1 | | |
| duct tape | 1 | | | 2 | | | | | | | |
| paint brush | 1 | | | | | | | | | | |
| puzzle piece | | | | 2 | | | | | | | |
| beer bottle | | 1 | | 1 | | | | | | | |
| clothing hamper | | | | 1 | | | | | | | |
| shoe | | | | 1 | | 1 | | | | | |

| | | | | | | | | | | |
|--------------------------|---|---|----|---|---|----|---|---|-----|---|
| glasses | | 1 | | | | | | | 1 | |
| shot gun shell | | | 1 | | 2 | | | | | |
| Epoxy Marine Resin | | | | 1 | | | | | | |
| lighter | | | 2 | | | | | | 1 | |
| inhaler | | | 1 | | | | | | | |
| cigarette butt | | | | | | 15 | | 2 | 6 | |
| baby pacifier | | | | | | 1 | | | | |
| pen | | | | | | | 1 | | | |
| balloon and ribbon | | | | | | | 1 | | | |
| Fishing Related | | | | | | | | | | |
| Plastic packaging straps | | | | | | | | | 5 | 1 |
| lobster band | | | 13 | | | | | 4 | 129 | 1 |
| lobster tag | | | 1 | | 1 | | 1 | | 1 | |
| Rope under 1(m) | 5 | | 11 | 5 | 2 | | 3 | | | |
| netting | | | | 1 | | | | | | |