DISPLAY CARDS

trash trunk

A KIT FOR LEARNING ABOUT MARINE DEBRIS

INTRODUCTION

Across the Great Lakes basin, many educators are interested in the topic of marine debris but lack the resources needed to explore this topic with their students.

Welcome to the **Trash Trunk: A Kit for Learning About Marine Debris!** This kit contains an Educator's Guide with lessons and activities, equipment and materials needed to perform the activities, and these display cards.

These display cards are recommended for specific Trash Trunk activities, but you can use them to support additional activities, introduce a concept or simply display them in your educational setting. They are durable and water-proof so feel free to use them outdoors.

Browse activity summaries in the Educator's Guide to determine which are best for your group and start learning about marine debris. Summaries include time estimates, recommended age ranges, activity descriptions, extensions and supplemental resources. For convenience, the Educator's Guide also reprints full activity descriptions.

Trash is found in all aquatic environments, ponds, lakes, rivers, streams and oceans. The Educator's Guide and these display cards use the term "marine debris" because the National Oceanographic and Atmospheric Administration (NOAA) includes the Great Lakes watershed in its definition of marine debris. "Marine debris is defined 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" (NOAA, Ocean Service, n.d.). Note that other educational resources may use the term "aquatic debris."

Finally, to help us evaluate how the Trash Trunk kit is being used and what resources would be helpful to include in future kits, please complete and return the survey at bit.ly/CGLLresourceevaluation.

TOP 10 GREAT LAKES BASIN LITTER ITEMS

1. PLASTIC PIECES **289,295**

2. CIGARETTES/CIGARETTE FILTERS **135,211**

3. FOAM PIECES **114,240**

4. BOTTLE CAPS (PLASTIC) **61,510**

5. FOOD WRAPPERS (CANDY, CHIPS, ETC.) **48,185**

6. STRAWS/STIRRERS **45,691**

7. CIGAR TIPS **44,261**

8. GLASS PIECES **42,158**

9. OTHER PLASTIC/FOAM PACKAGING **19,692**

10. BOTTLE CAPS (METAL) **14,525**

Data from Alliance for the Great Lakes Adopt-a-Beach™ Program, greatlakesadopt.org. 2019 Adopt-a-Beach™ Top 10 Items Found

Great Lakes RESTORATION

NOAA

Sea Grant Great Lakes Network

TOP 10 ITEMS COLLECTED INTERNATIONALLY

1. CIGARETTES/CIGARETTE FILTERS **5,716,331**

2. FOOD WRAPPERS **3,728,712**

3. STRAWS/STIRRERS **3,667,871**

4. FORKS, KNIVES, SPOONS **1,968, 065**

5. PLASTIC BEVERAGE BOTTLES **1,754, 908**

6. PLASTIC BOTTLE CAPS **1,390,232**

7. PLASTIC GROCERY BAGS **964,541**

8. OTHER PLASTIC BAGS **938,929**

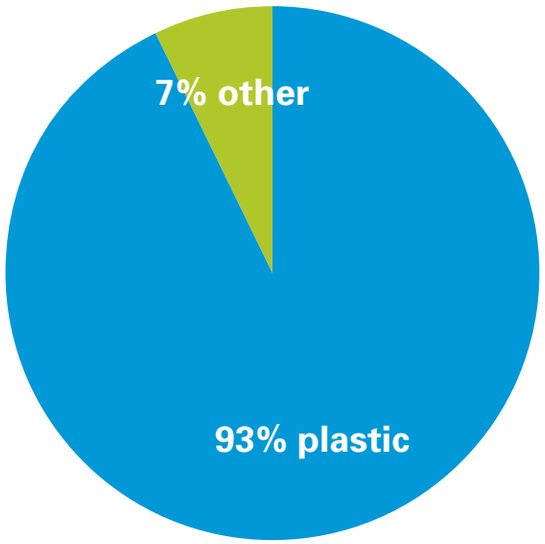
9. PLASTIC LIDS **728,892**

10. PLASTIC CUPS, PLATES **656,276**

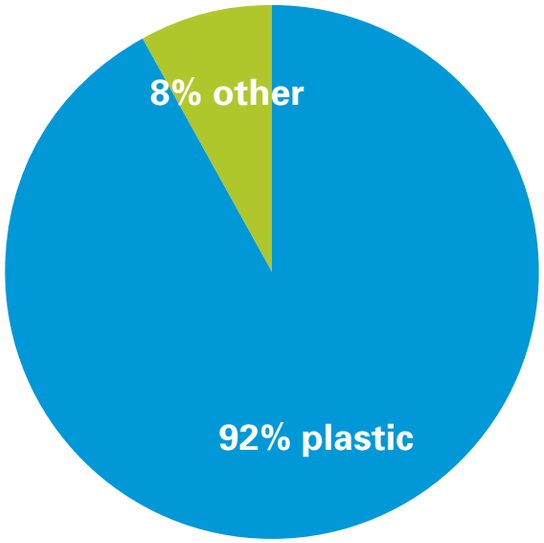
Adapted from and used with permission by Ocean Conservancy, oceanconservancy.org
2019 International Coastal Cleanup Report

LITTER COMPOSITION BY WATER BODY 2019 REGIONAL DATA

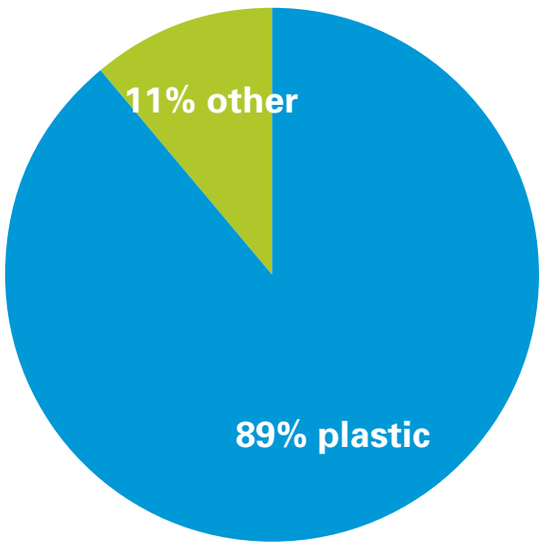
LAKE ERIE



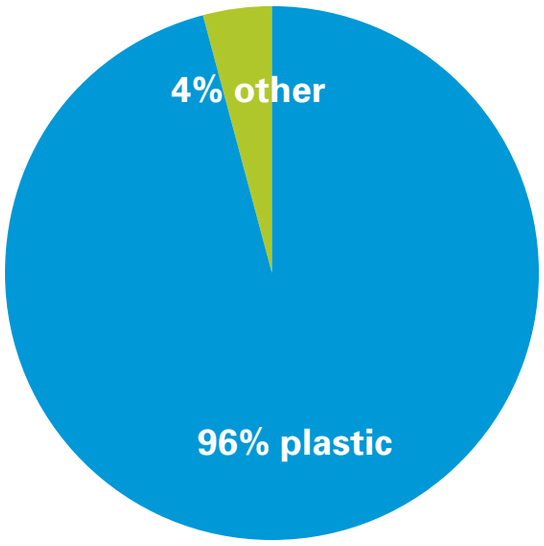
LAKE HURON



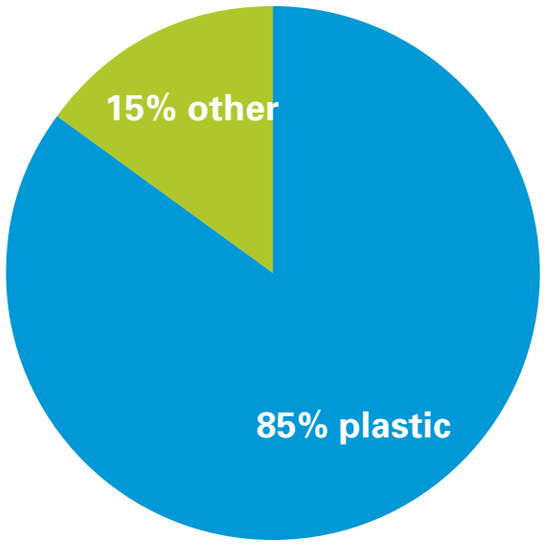
LAKE MICHIGAN



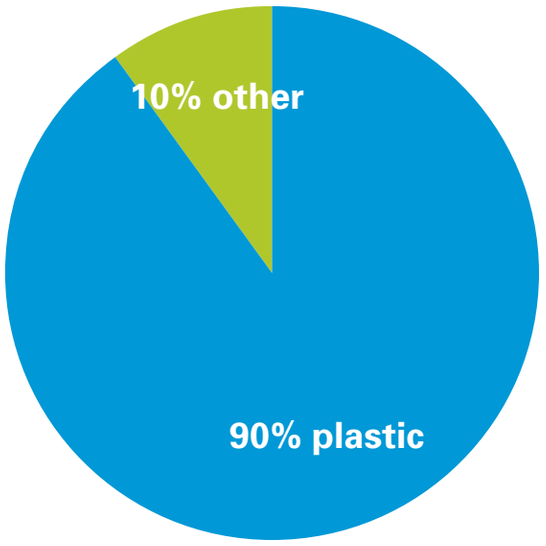
LAKE ONTARIO



LAKE SUPERIOR

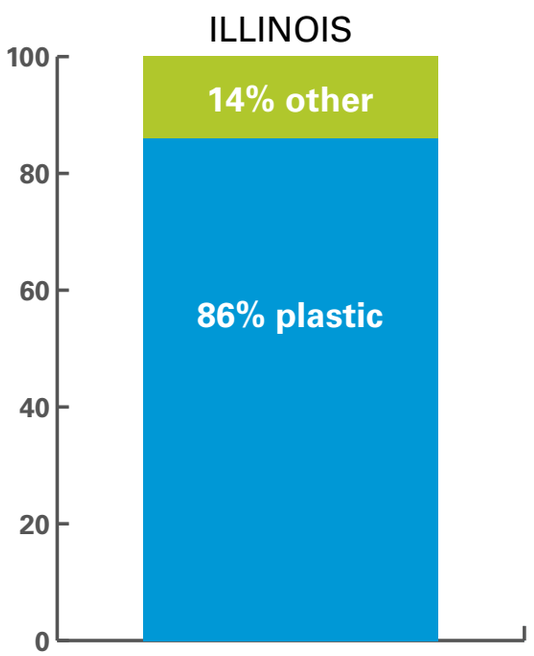


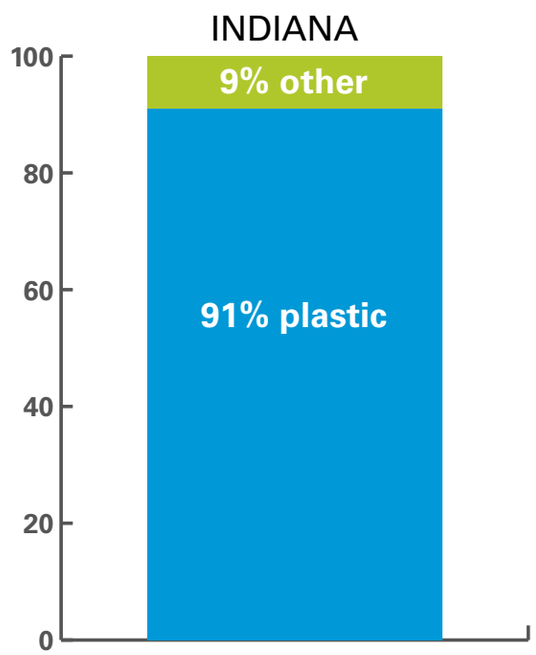
GREAT LAKES BASIN

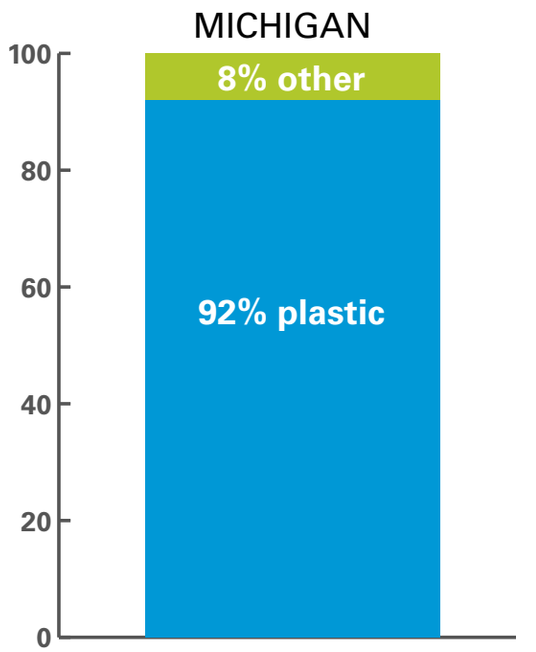


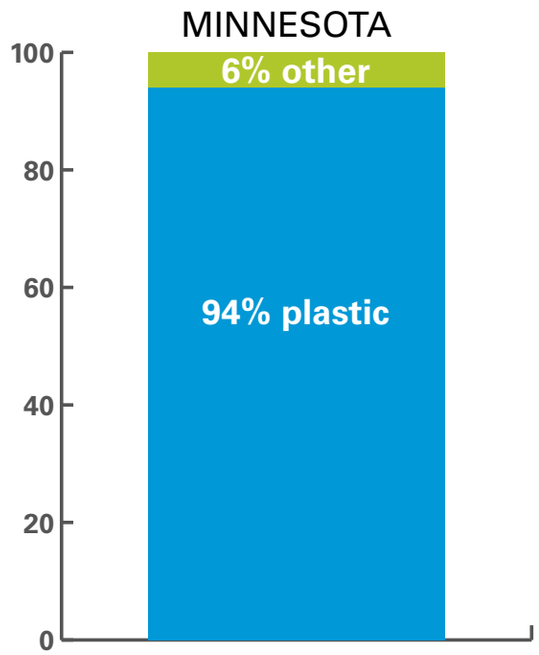
Data from Alliance for the Great Lakes Adopt-a-Beach™ Program, greatlakesadopt.org

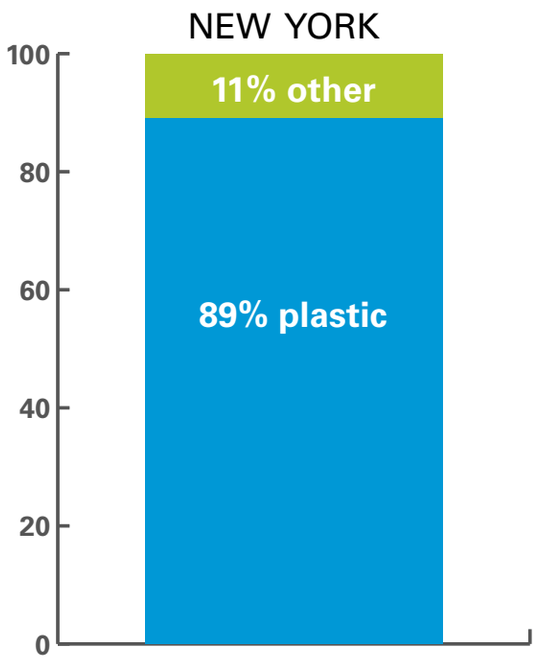
LITTER COMPOSITION BY STATE 2019 REGIONAL DATA

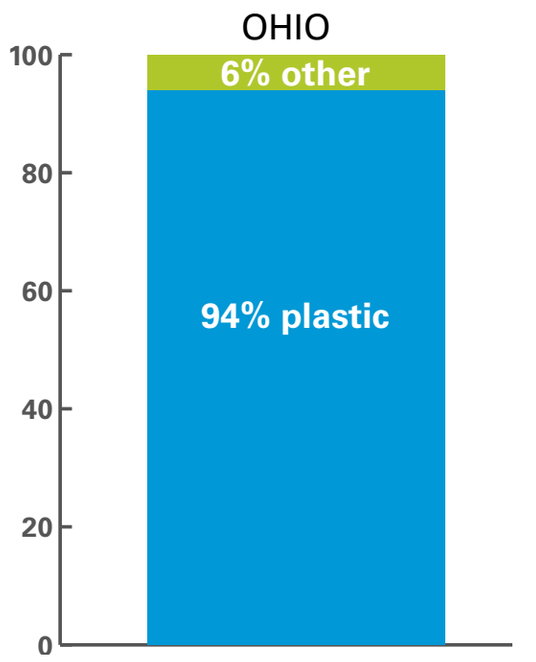


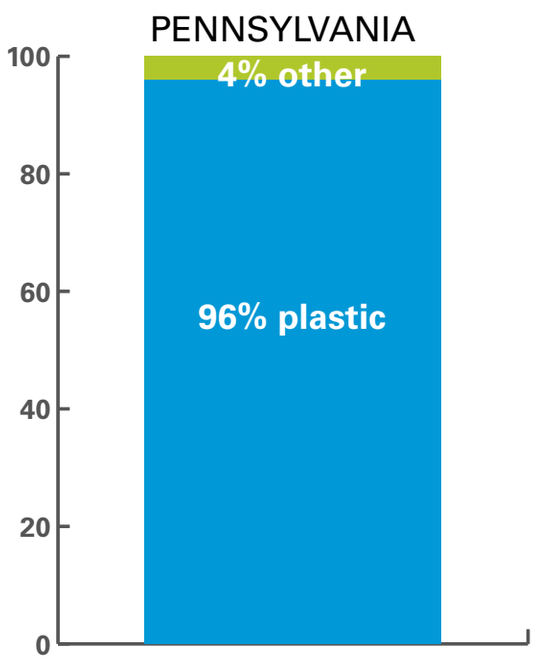


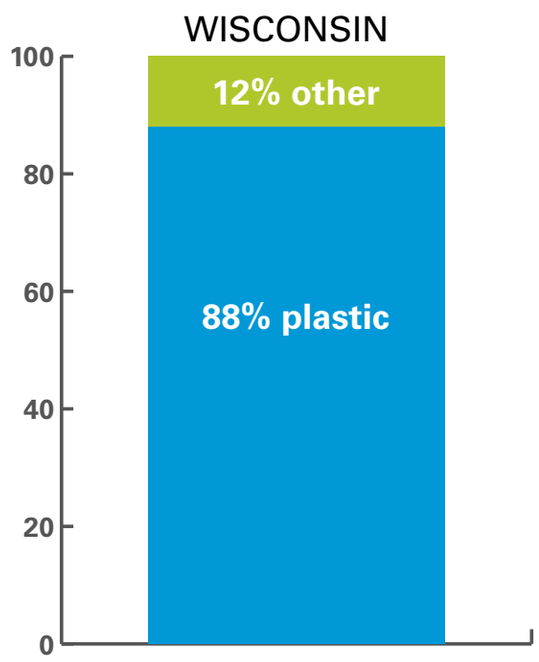












Data from Alliance for the Great Lakes Adopt-a-Beach™ Program, greatlakesadopt.org

COMMON TYPES OF PLASTICS

Resin codes assist with recycling efforts. However, having a resin code does not mean an item is recyclable.

RESIN CODE	NAME	PRODUCT EXAMPLES
1	**Polyethylene Terephthalate** (PETE, PET)	Plastic bottles, food jars, oven-safe and microwavable food trays, textiles (polyester), monofilament, carpet and films
2	**High Density Polyethylene** (HDPE)	Bottles (beverage, detergent, shampoo), bags, cereal box liners, extruded pipe, and wire and cable coverings
3	**Polyvinyl Chloride** (PVC)	Packaging (clamshells, shrink wrap), pipes, siding, window frames, fencing, flooring and medical products (blood bags, tubing)
4	**Low Density Polyethylene** (LDPE)	Bags (produce, dry cleaning, newspaper and garbage bags), squeeze bottles, container lids, shrink wrap, toys, coatings for milk cartons and beverage cups, and wire and cable coverings
5	**Polypropylene** (PP)	Yogurt and other food containers, medicine bottles, straws, bottle caps, fibers, appliances and carpeting
6	**Extruded and Expanded Polystyrene** (PS)	CD cases, yogurt containers, cups, plates, bowls, cutlery, clamshells, electronic housings, building insulation, coat hangers, medical products, packing peanuts and other packaging foam, foam coolers and egg cartons
7	**Other**, a resin different than the six listed above OR made from a combination of resins	Three- and five-gallon reusable water bottles, glasses (lenses), some citrus juice and ketchup bottles, oven-baking bags and custom packaging

Source: National Oceanic and Atmospheric Administration Marine Debris Program Plastic Marine Debris Fact Sheet

MICROPLASTIC IDENTIFICATION

Microparticles are very small — less than 5 millimeters in size, which is about the size of an eraser head on a pencil.

FILMS

Pieces of plastic that are thin and flexible

Density: 0.94 g/cm3

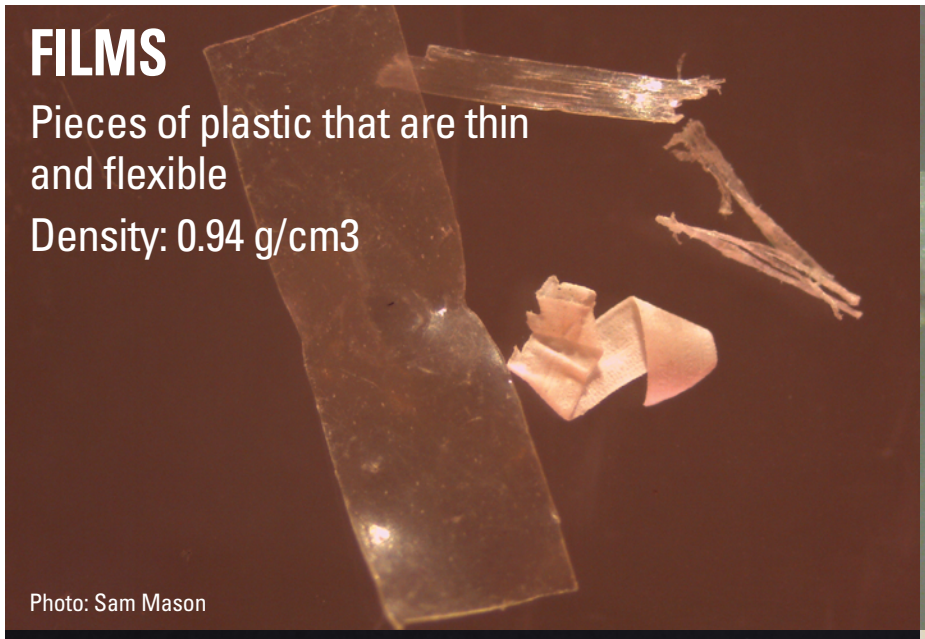


Photo: Sam Mason

FRAGMENTS

Pieces of hard plastic

Density: 1.11 g/cm3

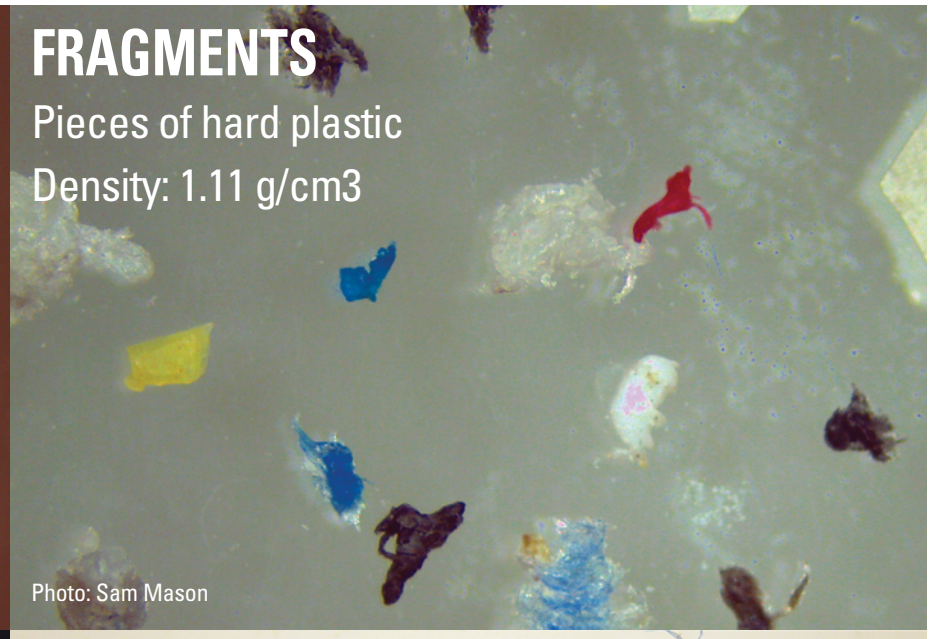


Photo: Sam Mason

FOAMS

Material such as polystyrene

Density: 1.0 g/cm3

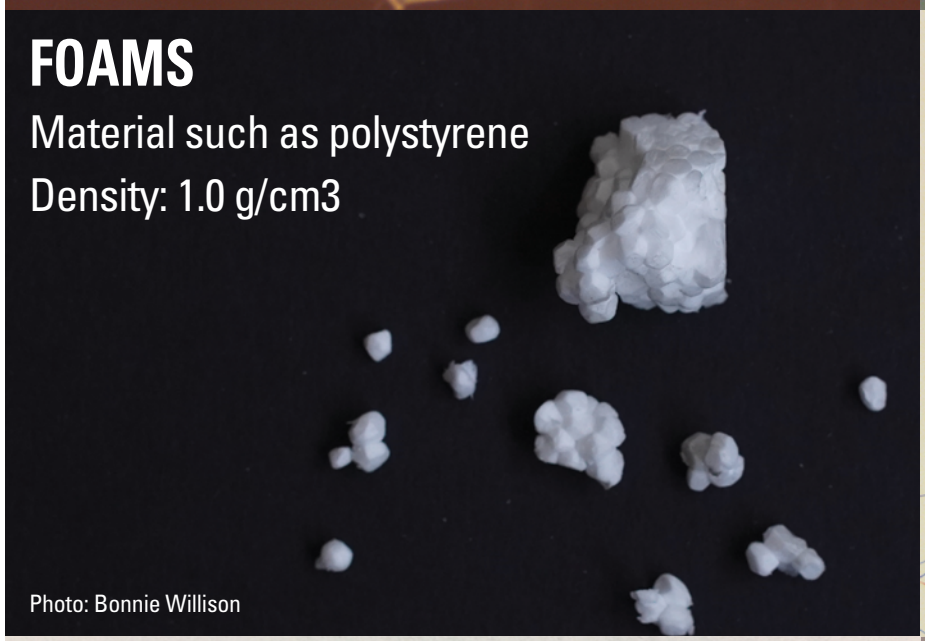


Photo: Bonnie Willison

FIBERS

Fish line, rope or synthetic including cigarette parts (inset)

Density: 1.15 g/cm3

Photos: Sam Mason and Jill Barlotta

NURDLES

Pellets used as raw material for almost everything plastic

Density: Depends on material

Photo: Jill Barlotta

MICROBEADS

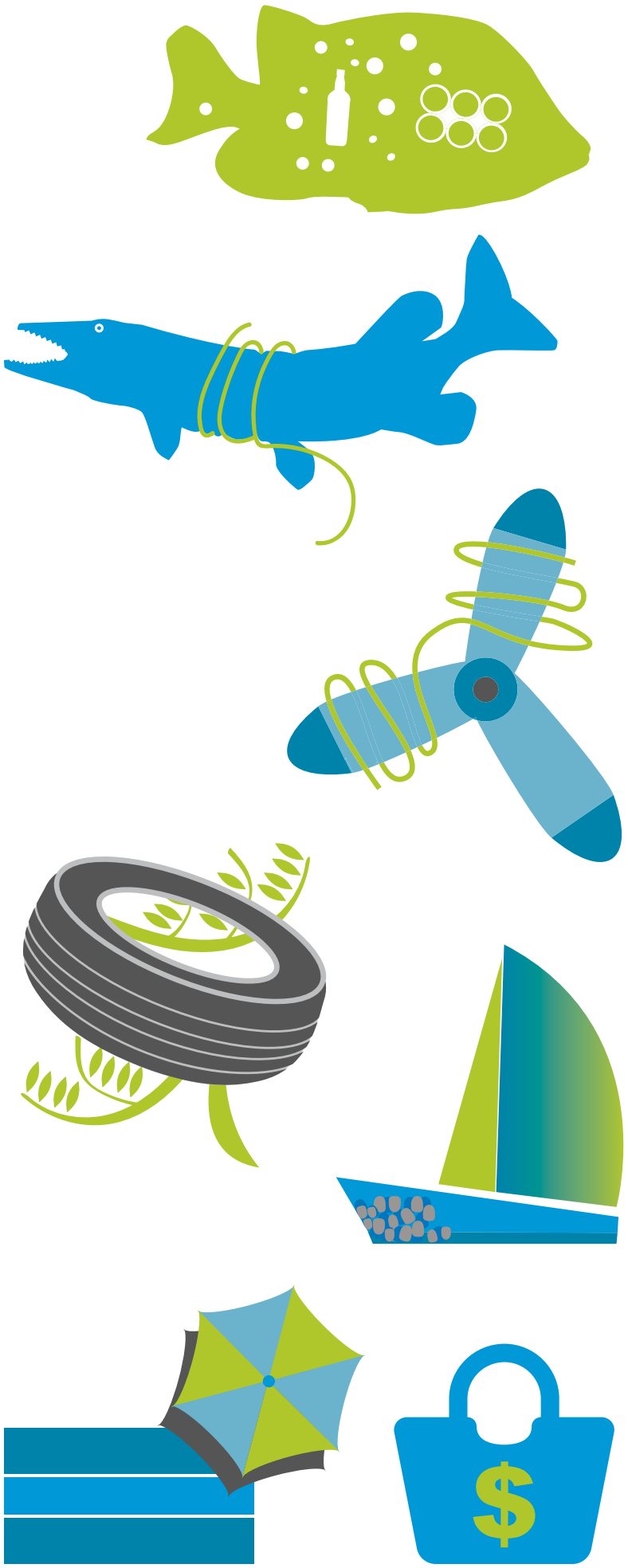
Personal care products, over-the-counter drugs and biomedical research

Density: Depends on material

Photo: Sam Mason

Modified with permission from Georgia Sea Grant
Micro Particle Identification Sheet

IMPACTS OF MARINE DEBRIS



INGESTION

Animals mistakenly eat plastic and other debris.

ENTANGLEMENT AND GHOSTFISHING

Marine life gets caught and killed in ghost nets, trapped in derelict gear, and entangled in plastic bands and other marine debris.

HAZARD TO NAVIGATION

Marine debris can be difficult to see in the lake if it's floating below the water's surface. Encounters with large items can result in costly vessel damage, either to its structure or through a tangled propeller or obstructed mechanical gears.

HABITAT DAMAGE

Heavy marine debris crushes sensitive habitat, such as wild rice (manoomin) beds and wetlands.

NON-NATIVE SPECIES

Marine debris and unclean boats both serve as mechanisms for transport of alien and invasive species from one region to another.

ECONOMIC COST

Communities lose a lot of money cleaning up trash, as well as the economic benefit of beach tourism and recreation.

Modified and used with permission from National Oceanic and Atmospheric Administration Marine Debris Program
Impacts of Marine Debris: The Struggle for Marine Animals

10 THINGS YOU CAN DO FOR TRASH-FREE LAKES

1

CAN IT

Use a trash can with a lid

2

TAP IT

Drink tap water from a reusable bottle

STOW IT

Prevent items from blowing into the lake by storing properly

3

4

BUTT IN

- Tell others about the impacts of marine debris
-

5

REMOVE IT

Participate in a local cleanup or the International Coastal Cleanup signuptocleanup.org

BUTT OUT

Use an ashtray so cigarette butts don't reach waterways and lakes

6

REFUSE IT

Buy less to reduce the amount of manufactured items winding up as trash in the lakes

7

REUSE IT

Bring your own reusable coffee mug, picnic supplies or shopping bag

8

REINVENT IT

Ask companies to optimize packaging and create lake-friendly materials

9

10

RECYCLE IT

Go the extra mile to sort and separate items that can be recycled

Modified from and used with permission by Ocean Conservancy, oceanconservancy.org
10 Things You Can Do for Trash Free Seas

Center for Great Lakes Literacy (CGLL)

Great Lakes RESTORATION

NOAA

Sea Grant Great Lakes Network

THE 8 Rs

1. RETHINK YOUR CHOICES

2. REFUSE SINGLE USE ITEMS

3. REDUCE CONSUMPTION

4. REUSE EVERYTHING

5. REFURBISH OLD STUFF

6. REPAIR BEFORE YOU REPLACE

7. REPURPOSE AND BE CREATIVE

8. RECYCLE LAST OPTION