

NOAA Marine Debris Monitoring and Assessment Project

Marine Debris Item Categorization Guide



This guide is a tool for categorizing marine debris items during NOAA Marine Debris Monitoring and Assessment Project (MDMAP) surveys. Items are categorized and counted according to material and then item type. The examples of debris types within each category are meant to help ensure that items are categorized consistently across the project. Visit the [Monitoring Toolbox Photo Gallery](#) for more examples.

DEBRIS CATEGORY	PAGE
● PLASTIC	2
● METAL	9
● GLASS	10
● RUBBER	12
● PROCESSED WOOD	14
● FABRIC	15
● CUSTOM	18
● OTHER	18



Photo: NOAA

How to record debris fragments and unrecognizable items

Items that are broken pieces from an **unidentifiable**, larger item are considered fragments, and should be counted according to their **material type**.

Items that can be **identified** (even if they are not whole) should be counted according to **predominant material and item type**. If the item does not fit into a category, it should be counted as Other according to predominant material type (e.g., Plastic - Other). If neither the material or item type fit these categories, it should be counted as Other.

An item that is unidentifiable to you but is complete enough to be identified by someone, should be counted as Other according to material type (e.g., Fabric - Other). If the material is also unidentifiable or not listed as a category it should be counted as Other.

Example	Count as
A broken piece of a frisbee	Plastic – Other
A broken piece of polystyrene/foam that can't be recognized as part of a specific item	Plastic – Foam fragments
A broken piece of a plastic soda bottle	Plastic – Beverage bottles
A couch	Fabric – Other

PLASTIC

Plastics are a diverse material type and make up the majority of marine debris documented on MDMAP surveys. Interested in learning more about plastics? Check out our [Plastic Marine Debris Fact Sheet](#).

Film fragments

Plastic film fragments are broken pieces of a larger plastic film item that cannot be identified and are greater than 2.5 centimeters long. They are made of thin plastic sheets called films that are flimsy and bend easily. See more [examples](#).



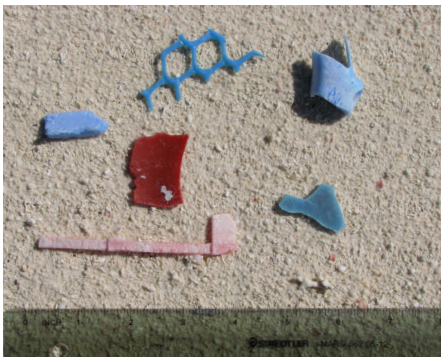
Foam fragments

Plastic foam fragments are broken pieces of a larger plastic foam item that cannot be identified and are greater than 2.5 centimeters long. Plastic foam has air pockets and some kinds easily crumble apart. See more [examples](#).



Hard fragments

Plastic hard fragments are broken pieces of a larger hard plastic item that cannot be identified and are greater than 2.5 centimeters long. They have a hard, rigid structure and weathering may cause hard plastics to become brittle. See more [examples](#).



PLASTIC

Bags

Plastic bags are made of thin flexible plastic and may or may not have handles. Examples include grocery, garbage, pet waste, frozen food, bulk ice, and fresh produce bags. Thicker plastic bags designed for reuse, such as totes, should be counted under Plastic - Other. See more [examples](#).



Beverage bottles

Plastic beverage bottles are any plastic container designed to hold a beverage. Examples include juice boxes, milk jugs, and containers for soft drinks, water, sports drinks, and beer. Thicker plastic bottles designed for reuse should be counted under Plastic - Other. See more [examples](#).



Bottle or container caps

Plastic bottle and container caps come in various sizes and colors. If a cap is found still connected to a bottle or container, it should NOT be counted separately. See more [examples](#).



PLASTIC

Cups (including polystyrene/foam)

Plastic cups can be made of hard or foamed plastic. Most paper cups are coated with a plastic film and should also be counted in this category.



Food wrappers

Plastic food wrappers are usually films that encase single servings of food and come in a variety of shapes and sizes. Examples include wrappers for snack bars, candy, and frozen burritos, as well as shrink wrap. See more [examples](#).



Other jugs and containers

Other plastic jugs and containers are a large category that encompasses a variety of packaging. Examples include food containers (e.g., yogurt and takeout containers), gas cans, motor oil bottles, cleaning product bottles, buckets, bait containers, baskets, and barrels. See more [examples](#).



PLASTIC

Straws

Plastic straws come in various sizes and shapes, such as those used in cocktail drinks, coffee, bubble tea, and soft drinks.



Utensils

Plastic utensils include disposable knives, forks, spoons, and sporks.



Six-pack rings

Six-pack rings are composed of a strong, semi-flexible plastic material. They are used in beverage can packaging.



PLASTIC

Cigar tips

Cigar tips are hard plastic holders that come on some cigar brands and are typically beige in color. See more [examples](#).



Cigarettes

Cigarettes and cigarette filters can be hard or fibrous. Cigarette butts that are less than 2.5 centimeters long should not be counted. See more [examples](#).



Disposable lighters

Disposable cigarette lighters come in a variety of colors and have a casing made of a rigid plastic (usually with a metal top). They may or may not contain fluid.



PLASTIC

Buoys and floats

Buoys and floats are generally associated with fishing and boating activities (recreational or commercial) and may be made of foam or rigid plastic. Buoys come in various sizes, shapes, and colors. See more [examples](#).



Lures and line

Fishing lures come in a variety of shapes, sizes, and materials depending on their function. Modern types are made of plastic with metal hooks and openings for lines. Fishing line with lures attached to line should be counted as one item. Fishing line types include monofilament, braided, and fluorocarbon. See more [examples](#).



Rope and nets

Plastic rope and net pieces are composed of synthetic material rather than natural fibers. Monofilament fishing line is NOT included, and should be counted as Lures and line. See more [examples](#).



PLASTIC

Balloons (mylar)

Mylar balloons have a seam and come in a variety of shapes. They usually have a shiny, reflective surface and are decorated with pictures and words. See more [examples](#).



Personal care products

Personal care products are a broad category that encompasses health and beauty products. Examples include deodorants, sunscreen bottles, combs and brushes, toothbrushes, chapstick tubes, earplugs, diapers, and tampon applicators. See more [examples](#).



Shotgun shells and wads

This category encompasses two components of shotgun ammunition packaging. A shotgun wad (left and middle) is a plastic piece inside a shotgun shell (right) that separates the shot from the powder. The shell is the larger tube-shaped casing. Both are released when a shotgun is fired, and the wad can be ejected up to 30 meters from the barrel of the gun.



PLASTIC

Other plastic

Other plastic items are larger than 2.5 centimeters and do not fit into one of the plastic categories above. They may or may not be identifiable. See more [examples](#).



METAL

Metal fragments

Metal fragments are broken pieces of a larger metal item that cannot be identified and are greater than 2.5 centimeters long. Certain metal materials that have been exposed to the environment may rust. See more [examples](#).



Aerosol cans

Aerosol cans have an outer shell of metal (aluminum or steel) and compressed contents. The spray valve will be made of plastic and the cap is also usually plastic. The spray valve and cap may not be attached to the canister.



METAL

Aluminum/tin cans

Aluminum and tin cans are used for beverages (e.g., sodas, juice, beer) and food. Exposure to the environment will cause these containers to deteriorate. Aluminum cans become brittle over time and collapse. Tin cans rust when exposed to the environment.



Other metal

Other metal items do not fit into one of the metal categories above. They may or may not be identifiable. Describe these items in the notes section of the [Transect Survey Form](#). See more [examples](#).



GLASS

Glass fragments

Glass fragments are broken pieces of larger glass items that cannot be identified and are greater than 2.5 centimeters long. If glass fragments have been in the environment for long periods of time, they may become weathered and appear with smooth edges and a frosted appearance (e.g., sea glass).



GLASS

Beverage bottles

Glass beverage bottles are used for sodas, water, liquor, beer, and wine and come in assorted colors (clear, green, brown, blue, and other colors). Most glass beverage bottles have metal caps. If a bottle cap is attached, the cap should not be counted as a separate item. See more [examples](#).



Jars

Glass jars are containers that come in many shapes. They may be tall and thin or short and squat, and may have a wide or narrow opening. Glass jars include non-beverage containers used for food, condiments, and cosmetics. The lids are usually metal. If a jar has a lid attached, the lid should not be counted as a separate item. See more [examples](#).



Other glass

Other glass items do not fit into one of the glass categories above. Describe these items in the notes section of the [Transect Survey Form](#).



RUBBER

Rubber fragments

Rubber fragments are broken pieces of a larger rubber item that cannot be identified and are greater than 2.5 centimeters long. As a material, rubber may be natural or synthetic. Rubber fragments may not feel 'rubbery' due to their degradation when exposed to the environment but are distinguishable from film, foam, and hard plastic fragments by being both dense and soft.



Balloons (latex)

Latex balloons are the traditional party balloons. These balloons are made of natural or synthetic latex, may have a ribbon attached, and come in a variety of colors.



Flip flops

Flip flops or "slippers" are primarily composed of a rubber sole. Other shoes that have a primarily rubber exterior, such as rubber fishing boots, should be counted as Rubber – Other. Shoes that are primarily fabric should be counted as Fabric – Clothing and shoes.



RUBBER

Gloves (rubber and latex)

Rubber and latex gloves include disposable medical gloves, as well as thicker fishing and dishwashing gloves. They may be made of natural rubber latex, or synthetic rubber, such as nitrile, neoprene, or polyvinyl alcohol.



Tires

Tires can come in a range of sizes depending on whether they come from trucks, trailers, and cars or from smaller items, such as bikes and lawn mowers. Tires may have the wheel rim, hub cap, and/or lug nuts attached. See more [examples](#).



Other rubber

Other rubber items do not fit into one of the rubber categories above. Describe the 'other' items in the notes section of the [Transect Survey Form](#).



PROCESSED WOOD

Cardboard cartons

Cardboard cartons are cardboard containers. Examples include cereal boxes and moving boxes. They are distinguished from paper and cardboard by their carton/container shape, although they may be flattened. Cartons with plastic coatings should be counted as Plastic – Beverage bottles or Plastic – Other jugs and containers.



Lumber and building

Dimensional and treated lumber should be counted as lumber and building material. Non-lumber building materials could be plastic or metal and should be counted according to their majority material type. Natural woody debris and burnt firewood are not considered marine debris. See more [examples](#).



Paper and cardboard

Paper and cardboard include a variety of items not covered by the other processed wood categories. Examples of paper products include newspapers, magazines, paper towels, and books. Examples of cardboard products to count here include toilet and paper towel rolls, egg cartons, hardback book covers, and firework components. See more [examples](#).



PROCESSED WOOD

Paper bags

Paper bags include items such as fast food bags, grocery bags, and beer/wine bags. As bags absorb moisture, the paper will fall apart.



Other processed wood

Other processed wood items do not fit into one of the processed lumber categories above. Describe these items in the notes section of the [Transect Survey Form](#). See more [examples](#).



FABRIC

Fabric fragments

Fabric fragments are broken pieces of a larger fabric item that cannot be identified and are greater than 2.5 centimeters long.



FABRIC

Clothing and shoes

Clothing items include shorts, tops, underwear, socks, etc. Shoes counted here should be primarily composed of cloth/fabric on the exterior. See more [examples](#).



Face masks

Masks made of natural or synthetic cloth that are meant to cover the nose and mouth for prevention of contagious disease. This category also includes surgical and dust masks.



Gloves (non-rubber)

Gloves made of fabrics, including leather, are used for gardening, construction, and other manual labor, or to protect hands from cold weather.



FABRIC

Rope and nets (natural fiber)

Rope and net pieces that are made of natural fibers can be identified by a 'softer' feel in most cases. This includes large (very thick) natural ropes used as mooring lines for ships when in port.



Towels and rags

Fabric towels and rags left behind by beach-goers or used on boats for equipment and maintenance (cleaning) activities.



Other fabric

Other fabric items do not fit into one of the cloth/fabric categories above. Describe these items in the notes section of the [Transect Survey Form](#).



CUSTOM

Custom items

In some cases, partners and participants may wish to track a specific marine debris item(s) in their area that is not applicable at all MDMAP locations. Custom items are subcategories of the standard material and item types listed in this guide, such as Plastic - Rope and nets (left), Plastic - Other (middle), and Processed Wood - Paper and cardboard (right). For more information, review the [MDMAP Shoreline Survey Guide](#) or contact md.monitoring@noaa.gov.



OTHER

Other items

If the primary material type could not be identified or is not listed above, count the item as Other. Examples below (left to right) include a leather belt, a piece of conglomerate asphalt, and a plaster component of a firework.



ABOUT THIS GUIDE

This Marine Debris Item Categorization Guide was first published in 2011 after consultation with marine debris monitoring experts and was designed to be comparable to international efforts, broadly indicative of item sources and uses, and succinct enough to be applied consistently.

A review and update in 2021 was aided by the [Trash Taxonomy Tool](#).

For further information about MDMAP, please visit the [Monitoring Toolbox](#) or contact us by email at md.monitoring@noaa.gov.

Photo Credits

Photos for this guide came from a variety of volunteers and partner organizations. Photo credits are listed below and organized by page and item type. Credits are numbered from left (1), middle (2), and right (3).

Page 2

Plastic - Film fragments

1. NOAA
2. Seba Sheavly, Sheavly Consultants, Inc.
3. NOAA

Plastic - Foam fragments

1. Greater Farallones National Marine Sanctuary
2. Katmai National Park
3. Katmai National Park

Plastic - Hard fragments

1. Olympic Coast National Marine Sanctuary
2. Seba Sheavly, Sheavly Consultants, Inc.
3. Olympic Coast National Marine Sanctuary

Page 3

Plastic - Bags

1. NOAA
2. Ocean Conservancy
3. NOAA

Plastic - Beverage bottles

1. Olympic Coast National Marine Sanctuary
2. NOAA
3. Junichi Sugishita

Plastic - Bottle or container caps

1. NOAA
2. Katmai National Park
3. Katmai National Park

Page 4

Plastic - Cups (including polystyrene/foam)

1. NOAA
2. NOAA
3. Brian Yurasits/Unsplash

Plastic - Food wrappers

1. NOAA
2. NOAA
3. Olympic Coast National Marine Sanctuary

Plastic - Other jugs and containers

1. Ocean Conservancy
2. Katmai National Park
3. NOAA

Page 5

Plastic - Straws

1. NOAA
2. NOAA
3. NOAA

Plastic - Utensils

1. NOAA
2. NOAA
3. Earth Team

Plastic - Six-pack rings

1. Olympic Coast National Marine Sanctuary
2. Paul Pagano
3. Brian Yurasits/Unsplash

Page 6

Plastic - Cigar tips

1. NOAA
2. Ocean Conservancy
3. NOAA

Plastic - Cigarettes

1. NOAA
2. Hawppon
3. NOAA

Plastic - Disposable lighters

1. NOAA
2. Seba Sheavly, Sheavly Consultants, Inc.
3. NOAA

Page 7

Plastic - Buoys and floats

1. Olympic Coast National Marine Sanctuary
2. Olympic Coast National Marine Sanctuary
3. Greater Farallones National Marine Sanctuary

Plastic - Lures and lines

1. Junichi Sugishita
2. Seba Sheavly, Sheavly Consultants, Inc.
3. Seba Sheavly, Sheavly Consultants, Inc.

Plastic - Rope and nets

1. Katmai National Park
2. Seba Sheavly, Sheavly Consultants, Inc.
3. NOAA

Page 8

Plastic - Balloons (mylar)

1. Russ Lewis, GrassRoots Garbage Gang
2. NOAA
3. Olympic Coast National Marine Sanctuary

Plastic - Personal care products

1. Junichi Sugishita
2. California Coastal National Monument Task Force
3. Hawppon

Plastic - Shotgun shells and wads

1. NOAA
2. NOAA
3. NOAA

Page 9

Plastic - Other plastic

1. NOAA
2. Surfrider Foundation Siuslaw Chapter
3. NOAA

Metal - Metal fragments

1. Olympic Coast National Marine Sanctuary
2. Olympic Coast National Marine Sanctuary
3. NOAA

Metal - Aerosol cans

1. Junichi Sugishita
2. NOAA
3. Olympic Coast National Marine Sanctuary

Page 10

Metal - Aluminum/tin cans

1. NOAA
2. Ocean Conservancy
3. NOAA

Metal - Other metal

1. NOAA
2. Greater Farallones National Marine Sanctuary
3. Hawaiian Islands Humpback Whale National Marine Sanctuary

Glass - Glass fragments

1. Seba Sheavly, Sheavly Consultants, Inc.
2. Ocean Conservancy
3. NOAA

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Page 11

Glass - Beverage bottles

1. NOAA
2. Junichi Sugishita
3. Olympic Coast National Marine Sanctuary

Glass - Jars

1. Seba Sheavly, Sheavly Consultants, Inc.
2. Seba Sheavly, Sheavly Consultants, Inc.
3. Seba Sheavly, Sheavly Consultants, Inc.

Glass - Other glass

4. Russ Lewis, GrassRoots Garbage Gang
5. NOAA
6. Russ Lewis, GrassRoots Garbage Gang

Page 12

Rubber - Rubber fragments

1. Seba Sheavly, Sheavly Consultants, Inc.
2. Kristen Cotiaux
3. Kristen Cotiaux

Rubber - Balloons (latex)

1. Olympic Coast National Marine Sanctuary
2. NOAA
3. Paul Pagano

Rubber - Flip flops

1. Greater Farallones National Marine Sanctuary
2. Blue Fox Bay Lodge
3. Padre Island National Seashore

Page 13

Rubber - Gloves (rubber and latex)

1. NOAA
2. Greater Farallones National Marine Sanctuary
3. NOAA

Rubber - Tires

1. Greater Farallones National Marine Sanctuary
2. NOAA
3. Redfish Rocks

Rubber - Other rubber

1. Ocean Conservancy
2. Greater Farallones National Marine Sanctuary
3. NOAA

Page 14

Processed Wood - Cardboard cartons

1. NOAA
2. NOAA
3. NOAA

Processed Wood - Lumber and building

1. Olympic Coast National Marine Sanctuary
2. Greater Farallones National Marine Sanctuary
3. California Coastal National Monument Task Force

Processed Wood - Paper and cardboard

1. NOAA
2. NOAA
3. NOAA

Page 15

Processed Wood - Paper bags

1. NOAA
2. NOAA
3. NOAA

Processed Wood - Other processed wood

1. Pulama Lana'i
2. NOAA
3. Greater Farallones National Marine Sanctuary

Fabric - Fabric fragments

1. NOAA
2. NOAA
3. NOAA

Page 16

Fabric - Clothing and shoes

1. California Coastal National Monument Task Force
2. Junichi Sugishita
3. NOAA

Fabric - Face masks

1. NOAA
2. NOAA
3. NOAA

Fabric - Gloves (non-rubber)

1. Ocean Conservancy
2. NOAA
3. NOAA

Page 17

Fabric - Rope and nets (natural fiber)

1. NOAA
2. Katmai National Park
3. Redfish Rocks

Fabric - Towels and rags

1. NOAA
2. Kristen Cotiaux
3. NOAA

Fabric - Other fabric

1. NOAA
2. NOAA
3. NOAA

Page 18

Custom

1. NOAA
2. NOAA
3. Olympic Coast National Marine Sanctuary

Other

1. NOAA
2. NOAA
3. NOAA