



NOAA Marine Debris Shoreline Survey Field Guide

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National Oceanic and Atmospheric Administration
National Ocean Service
Office of Response and Restoration
Marine Debris Program

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SHORELINE DEBRIS Shoreline Characterization Sheet	Organization		Name of organization responsible for collecting the data
	Surveyor name		Name of person responsible for filling in this sheet
	Phone number		Phone contact for surveyor
Complete this form ONCE for each site location	Date		Date of this survey

SAMPLING AREA

Shore ID			Unique code for the shoreline
Shoreline name			Name by which the section of shoreline is known (e.g., beach name, park)
State/County			State and county where your site is located
Coordinates at start of shoreline section	Latitude	Longitude	Recorded as XXX.XXXX (decimal degrees) at start of shoreline section (in both corners if width > 6 meters)
Coordinates at end of shoreline section	Latitude	Longitude	Recorded as XXX.XXXX (decimal degrees) at end of shoreline section (in both corners if width > 6 meters)
Photo number/ID			The digital identification number(s) of photos taken of shoreline section

SHORELINE CHARACTERISTICS – from beginning of shoreline site

Length of sample area (should be 100 m if standing-stock survey)		Length measured along the midpoint of the shoreline (in meters)
Substratum type		For example, a sandy or gravel beach
Substrate uniformity		Percent coverage of the main substrate type (%)
Tidal range		Maximum & minimum vertical tidal range. Use tide chart (usually in feet).
Tidal distance		Horizontal distance (in meters) from low- to high-tide line. Measure on beach at low and high tides or estimate based on wrack lines.
Back of shoreline		Describe landward limit (e.g., vegetation, rock wall, cliff, dunes, parking lot)
Aspect		Direction you are facing when you look out at the water (e.g., northeast)

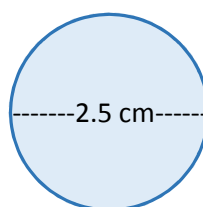
LAND-USE CHARACTERISTICS – within shoreline location

Location & major usage	Urban		Select one and indicate major usage (e.g., recreation, boat access, remote)
	Suburban		
	Rural		
Access			Vehicular (you can drive to your site), pedestrian (must walk), isolated (need a boat or plane)
Nearest town			Name of nearest town
Nearest town distance			Distance to nearest town (miles)
Nearest town direction			Direction to nearest town (cardinal direction)
Nearest river name			If applicable, name of nearest river or stream. If blank, assumed to mean no inputs nearby
Nearest river distance			Distance to nearest river/stream (km)
Nearest river direction			Direction to nearest river/stream (cardinal direction from site)
River/creek input to beach	YES	NO	Whether nearest river/stream has an outlet within this shoreline section
Pipe or drain input	YES	NO	If there is a storm drain or channelized outlet within shoreline section
Notes (including description, landmarks, fishing activity, etc.):			

SHORELINE DEBRIS Debris Density Data Sheet	Organization		Name of organization responsible for data collection
	Surveyor name		Name of person responsible for filling in this sheet
	Phone number		Phone contact for surveyor
Complete this form during EACH survey or transect (if standing-stock) per site visit	Email address		Email contact for surveyor
	Date		Date of this survey

ADDITIONAL INFORMATION

Shoreline name			Name for section of shoreline (e.g., beach name, park)
Survey Type	Accumulation ☐	Standing-stock ☐	Type of shoreline survey conducted (check box)
Transect ID # (N/A if accumulation survey)			Transect ID (include shoreline ID, date, and transect #)
Coordinates of start of shoreline site	Latitude	Longitude	Recorded as XXX.XXXX (decimal degrees). Record in both corners if width > 6 m. If transect, record at water's edge.
Coordinates of end of shoreline site	Latitude	Longitude	Recorded as XXX.XXXX (decimal degrees). Record in both corners if width > 6 m. If transect, record at back of shoreline.
Width of beach			Width of beach at time of survey from water's edge to back of shoreline (meters)
Time start/end	Start	End	Time at the beginning and end of the survey
Season			Spring, summer, fall, winter, tropical wet, etc.
Date of last survey			Date on which the last survey was conducted
Storm activity			Describe significant storm activity within the previous week (date(s), high winds, etc.)
Current weather			Describe weather on sampling day, including wind speed and % cloud coverage
Number of persons			Number of persons conducting the survey
Large items	YES	NO	Did you note large items in the large debris section?
Photo ID #s			The digital identification number(s) of debris photos taken during this survey.



MACRO-DEBRIS (>2.5 cm) DATA: (continued on back)

IDENTIFICATION	NUMBER OF ITEMS (e.g., IIII III = 8)			TOTAL ITEMS	VOLUME (liters)	WEIGHT (kg)
PLASTIC						
	Hard	Foamed	Film			
Plastic fragments						
Food wrappers						
Beverage bottles						
Other jugs or containers						
Bottle or containers caps						
Cigar tips						
Cigarettes						
Cigarettes lighters						
6-pack ring						
Bags						
Cups (including polystyrene/foamed plastic)						
Plastic utensils						
Straws						
Balloons						
Personal care products						
Pellets						
Other:						
Plastic rope/small net pieces						
Buoys and flats						
Fishing lures and line						
METAL						
Aluminium/tin cans						
Aerosol cans						
Metal fragments						
Other:						
GLASS						
Beverage bottles						
Jars						
Glass fragments						
Other:						
RUBBER						
Flip-flops						
Gloves						
Rubber fragments						
Other:						
Tires						

IDENTIFICATION	NUMBER OF ITEMS (e.g., IIII III = 8)	TOTAL ITEMS	VOLUME (liters)	WEIGHT (kg)
CONSTRUCTION MATERIALS AND PAPER				
Cardboard cartons				
Paper and cardboard				
Paper bags				
Lumber and wood/building material				
Other:				
CLOTH/FABRIC				
Clothing and shoes				
Gloves (non-rubber)				
Towels/rags				
Rope/net pieces (non-nylon)				
Fabric pieces				
Other:				
OTHER/UNCLASSIFIABLE				
LARGE DEBRIS ITEMS (> 0.3 m)				
Item type (vessel, net, etc.)	Status (sunken, stranded, buried)	Approximate width (m)	Approximate length (m)	Description/ photo ID#
Notes on debris items, description, remarks, etc.				



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Keep the sea free of debris

NOAA Marine Debris Program

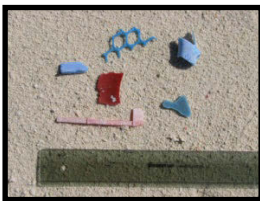
Marine Debris Monitoring and Assessment Project

Marine Debris Survey Photo Manual

Plastic

Plastic fragments will have a similar texture to their original condition, but may be more deteriorated due to exposure to the environment. Polystyrene (PS) can be hard or foamed, but may change with exposure to the environment. Pieces of plastic film or sheeting can be found shredded into strips.

Hard Plastic:



Foamed Plastic:



Plastic Film:



Plastic Film:



Food wrappers come in a variety of types and sizes. Food packaging can be made of polypropylene (PP), polystyrene (PS), or polyethylene (PE). Food wrappers are distinguished from plastic films by identifiable labels.



Beverage bottles for soft drinks, water, juice, sports drinks, and beer. Made in a variety of sizes (e.g. 6 oz. to 2 L), colors vary (translucent, green, brown, light blue, etc.). Usually made of polyethylene terephthalate (PET or can be made of PETE).



Other jugs/containers include a variety of packaging types ranging from the common milk jug to a food container to an oil lube bottle to cleaner bottle to a 5-gallon bucket. Most are made of polyethylene.

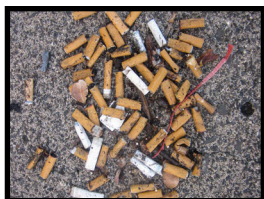




Bottle & container caps come in various sizes and colors. Caps and closures for beverage bottles are usually made of polypropylene (PP) and high density polyethylene (HDPE) with other container lids being made of low density polyethylene (LDPE) or linear LDPE (LLDPE).



Cigar tips are provided on a few brands of cigars and are considered disposable filters.



Cigarettes/cigarette filters can be hard or fibrous (both are made of a synthetic polymer – cellulose acetate); some cigarettes may not have filters and are composed of only tobacco and paper.

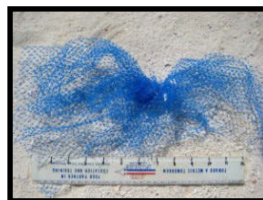
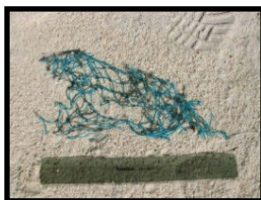


Disposable cigarette lighters have a casing made of a rigid plastic (usually with a metal top). May or may not contain fluids.



Bags (film) used for dry cleaning, newspapers, bread, frozen foods, bulk ice, fresh produce, household garbage, etc. Bags are usually made of HDPE or LDPE

Plastic rope & small net pieces are composed of synthetic material rather than cloth or fabric. Net pieces can be distinguished from rope pieces if knots are present. Plastic rope and net is composed of polypropylene and/or nylon.



Buoys & floats are usually associated with fishing and boating activities. A buoy floats at the surface and is moored to the bottom. Floats (some are also called bobbers) can 'float' at various depths or rest at the surface. These come in various sizes, shapes and colors. Most mooring buoys are made from HDPE. Rope floats are made of compression molded polyvinyl chloride (PVC). Some floats can be made of rigid polystyrene (PS-foamed plastic).



Fishing line & lures can be found in a variety of forms based on fishing type. Fishing lures come in a variety of shapes, sizes and materials dependent on their function. Modern types are made of plastic with metal hooks and eyes for line. Fishing line types are mostly available in three varieties – monofilament, braided and fluorocarbon. Fishing line is usually made of nylon or PET/PETE, with monofilament being the most popular.



Cups (including polystyrene) are usually made of either PP or foamed plastic / PS. However, some cups have been made of HDPE and PET, with most paper cups being coated with a plastic film.



Straws come in various sizes ranging from shorter ones (~ 4 inches) used in cocktail drinks to a variety of beverage types (~8-10 inches). Straws that are made of paper will deteriorate faster, even if wax-coated. Straws found on the beach or floating on the water will most likely be made of polypropylene (PP).



Balloons (mylar balloons) have a seam and are made of a metal (foil) coated plastic such as polyethylene or nylon.

Personal care products is a very broad plastic debris category. This includes various products including health and beauty aids ranging from deodorants (usually with a roller-ball applicator as most aerosol containers are made of metal) to suntan or body lotion bottles to combs/brushes to toothbrushes. This debris can be “left” at the beach or is deposited from storm water drainage or washed in from offshore sources. This debris is usually made of polypropylenes and polyethylenes (including HDPE).



Pellets (for use in pelagic and microdebris analysis) Resin pellets are raw plastic material used to produce plastic products. They come in a variety of basic shapes (e.g. round, cylindrical, ovoid), can be translucent or may be in color, but are usually white, black or clear. Once the pellets have been exposed to the environment, their color will change. Most pellets are less than 5 mm in size.



Metal



Aluminum/tin cans are used for beverages (sodas, juice, beer) and food stuffs. Exposure to the environment will cause these containers to deteriorate – aluminum cans become brittle over time and collapse. If dumped at sea, they will most likely sink out before being deposited on the shore. Tin cans can rust when exposed to the environment. These are usually associated with household trash, but larger cans (6 inch diameters or larger) are usually related to ship galley food products.



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 will most likely not be attached to the canister.



Metal fragments can vary in size and may be located with a metal detector. Metal pieces that have been exposed to the environment may rust depending upon their material.

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.



Jars for condiments and other foods can be made of glass. This type of debris is usually associated with household waste (land) or galley waste (ocean). The lids are usually metal. If these are dumped at sea without their lid, they most likely will sink.



Glass fragments care should be taken in collecting this debris. Use gloves and/or use a slotted scooper to remove pieces of glass.

Rubber

Flip-flops/shoes found as debris may consist of the entire article or part of it, such as the bottom of a flip flop or the sole of a shoe. Shoes may be made of leather, canvas or nylon. Boots used for fishing operations and are usually rubber with heavy soles and steel toes.



Gloves are used for numerous water-related activities (both recreationally and commercially). Work gloves used for fishing may be made of natural rubber latex, Nitrile (synthetic rubber compound), neoprene (polychloroprene), polyvinyl alcohol (PVA), polyvinyl chloride (PVC), polyurethane (PUR), or butyl rubber (synthetic). NOTE: In some geographic areas, evidence of sea turtles attempting to feed on discarded gloves can be seen with diamond-shaped bites in the gloves.



Tires can come in various sizes (trucks, cars, trailer, bicycle, recreational vehicles, lawn mower, etc.) and may have the wheel rim still attached (metal), hub cap (metal) covering lug nuts (metal). If an inner tube is found, it will be made of rubber but will be from a much dated vehicle as current styles do not use inner tubes.



Rubber fragments may not feel like “rubber” due to their degradation when exposed to the environment. Due to oxidation, rubber may even feel brittle.



Balloons are traditionally made of a liquid rubber (natural latex). NOTE: Most toy balloons are made of natural latex, but some are made from a synthetic polymer and are therefore considered plastic.

Processed lumber/paper



Cardboard cartons will begin to deteriorate the longer they are exposed to the environment. They absorb moisture and the layers that form the walls will start to fall apart, resulting in the box collapsing. The longer the cardboard carton is exposed, the faster it will deteriorate.



Paper & cardboard will consist of newspapers, magazines and books that may have been left on the beach or have been blown onto the beach or into the water. Cardboard might be left behind as packaging for a case of beer cans or allowed to be blown onto a beach from a waste bin. Both materials will most likely be deteriorated due to exposure to the environment.

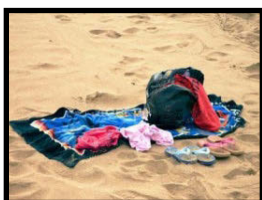


Paper bags may have been left behind by a beach-user or allowed to blow on the beach or into the water. These may be the result of fast food that was consumed near or on the beach. The bags will begin to deteriorate the longer they are exposed to the environment. As bags absorb moisture the paper will fall apart.



Building material may include a variety of material types depending upon the use and source. Plywood and lumber pieces can float and will be carried to other areas by the wind and waves. Other potential types of building materials could include PVC piping (polyvinyl chloride), rebar (metal) and polystyrene insulation.

Cloth/fabric



Clothing is usually left behind (lost) by beach goers or fishermen. Shorts, tops and often underwear have been collected.



Gloves (non-rubber) made of fabrics are most likely not used on boats or fishing activities.



Towels/rags have various sources based on usage. Towels are usually left behind by beach goers and rags might be used on boats for working with equipment and maintenance (cleaning) activities



Rope/net pieces that are not made of nylon can be identified by a “softer” feel in most cases. Natural rope material can also be tested using the flame of a lighter where the synthetic rope will melt when exposed to the rope fibers, natural fibers will ignite (provided they are relatively dry). Large (very thick) natural ropes are often used as mooring lines for ships when in port.

Fabric pieces are identified when the original object is no longer distinguishable due to deterioration. Fabric pieces usually tear when pulled on.