

Synthetic Sand

Background: Plastic and other materials foreign to the coastal ecosystem are often found on our beaches. Aside from being unsightly, they can wreak havoc for wildlife that live there. Foraging birds can mistake the colorful plastic fragments for food or become tangled in fishing line or nets. Understanding what types of materials and how much are found on our beaches can help develop solutions for curbing the flow of trash, mostly plastic, that ends up on our shores.



Procedure:

1. Select site. Collect all materials and travel to beach.
2. Select collection sites on the high tide debris deposit line, also known as the “wrack-line”. Make a detailed map of the site with the exact location identified using GPS. This is just in case you come back later to replicate sampling.
3. Take the 4-meter rope grid and stretch the loop to make a perfect square 1m x 1m over the high tide wrack-line. Use pencils or sticks as stakes to hold down the corners.
4. Remove big pieces of natural debris, like seaweed, leaves and wood. Brush them off and throw them away. We don’t need them in this study.
5. Measure the 10-liter mark, or halfway point, on the large plastic bucket. Mark this point with a line around the bucket using a permanent marker.

Grade: 7th and up

Objectives: In this activity students conduct a transect of an area of beach to identify and catalogue the various materials collected there.

Time Needed to Complete: 60 minutes

Materials Needed:

1. One five-gallon bucket
2. 2 metal scoops
3. 1 colander with 1mm sieve
4. 1 loop of rope with a 4-meter circumference
5. Box or bag to hold sample





6. Using the small shovel, scoop an inch of the surface of the grid into the 5-gallon bucket. Scrape the surface EVENLY! Do not dig a hole in the sand. We are measuring the quantity of plastic over a square meter of area. This is the total amount of sand that you will collect.

7. Use the colander to sieve the 10 liters of sand in the bucket.
8. Transfer the contents of the colander to the collection bag or box.
9. Fill out the label in APPENDIX A and place it with the sample.
10. Sort the sample. Empty the bag into a pan and sort items into the seven categories listed on the data sheet below.



Extension:

Make a graph (pie, bar, graph of your choosing) of your findings. Return to the location another day to conduct a second transect and see how it compares to your initial results. Track the debris on a weekly, monthly, quarterly, or annual basis to see how the quality of your beach changes over time.



APPENDIX A: SAND SAMPLE LABEL

Synthetic Sediment Sample	
Location of collection site GPS	
Date	
Collected by:	



APPENDIX B : DATA SHEET

Data Sheet: Sorting by Type of Plastic				
Type of Plastic Debris	Count <5mm	Count >5mm	Weight <5mm	Weight >5mm
Pellets Pre-production plastic pellets, also known as "nurdles."				
Fragment Pieces of hard plastic debris that is unrecognizable.				
Film Flat and flexible plastic debris, such as pieces of bags or wrappers.				
Foam Expanded polystyrene used for insulation or packaging, sometimes called "Styrofoam"				
Filament Examples of filament include: fishing line, rope, synthetic cloth.				
Cigarette butts				
Other Includes: glass, rubber, metal or tar				
TOTAL				

