



Garbage dumped near a beach in Puerto Rico looks unsightly and is eventually washed into the sea where it impacts marine life.

Chapter 8 Beach debris

Background

Beach debris includes garbage left behind by beach users, as well as materials – both natural and man-made – washed onto the beach by the waves or transported by rivers. Such materials may include tree trunks or branches; seaweed and seagrass; tarballs, which are large or small pieces of tar (solidified oil) and are usually soft to touch; pieces of boats; plastic oil containers etc. The presence of litter such as plastic bottles, snack wrappers and sewage-related debris on beaches and in the water is unattractive, has health and economic impacts on beach users and local communities, and is potentially harmful to marine wildlife through entanglement and ingestion.



Bobbins of thread washed up from a container onto the beach of Anegada, British Virgin Islands. When unravelled the thread made thick underwater mats endangering marine life.



A Sandwatch group in Hope Town, Bahamas, found a large fishing net smothering a nearshore patch reef. With the help of some volunteers they swam out to the reef, carefully cut it away from the reef and swam back to the beach with the net.

Beach debris and climate change

One of the best ways to help beaches cope with the adverse impacts of climate change, such as sea level rise, ocean acidification and an increase in storms and cyclones, is to maintain beaches, and associated systems (rivers, dunes, wetlands, coral reefs, seagrass beds), in a clean state so that the entire ecosystem – the plants, animals and their habitat – remain healthy. This is sometimes referred to as building resilience. So activities such as keeping the beach, and dunes and nearshore waters clean, and making everybody aware of the need for a clean environment are especially important.

Activity 8.1 Measuring beach debris

What and how to measure—Select a point behind the beach and mark off a straight line across the beach towards the sea; this is called a transect line. Collect all the debris found 2 m (2 yds) on each side of this line. Sort the debris into different groups using the categories listed in Figure 14. This figure shows the Beach cleanup data card used by the Ocean Conservancy in their International Beach Clean-ups. Record, count and weigh all the debris found within 2 m (2 yds) either side of the transect line. If you do not have a set of weighing scales available, then count the number of items.

You may also wish to add tarballs to the list of items since these are often numerous on exposed ocean beaches. Tarballs can be recorded in the same way as other debris items, and if these are of particular interest, or they represent a special problem at the beach, they can be counted and the diameter along the longest axis measured.

Record the location of the transect so as to be able to return to the same point at a future date and repeat the measurement. Several transects may be set up on one beach.

It is important to take adequate safety precautions when conducting marine debris surveys. Gloves should be used, and students should be cautioned not to touch anything they may be suspicious about, e.g. any container marked with poison, or syringes.

Once the debris has been recorded, be sure to dispose of it in a proper garbage receptacle.

INTERNATIONAL COASTAL CLEANUP DATA CARD



Thank you for participating in Ocean Conservancy's International Coastal Cleanup (ICC). The commitment you have made today is the first step to ensuring we can enjoy a cleaner ocean all year-round. The data you collect during the Cleanup is invaluable to Ocean Conservancy's effort to start a sea change every day; helping us educate public, business, and government officials about the scale and serious consequences of the global marine debris problem. Thank you. We could not do it without your help!

1. CLEANUP SITE INFORMATION

Category of Cleanup (choose one): Coastal Inland Waterway (River/Stream/Tributary/Lake)

Type of Cleanup (choose one): Beach/Shoreline Underwater Watercraft (powerboat, sailboat, kayak or canoe)

Location of Cleanup: State _____ Country _____

Province _____ Zone or County Cleaned _____

Cleanup Site Name (beach, park, etc.) _____

Today's Date: Month: _____ Day: _____ Year: _____ Name of Coordinator: _____

Number of People Working on This Card _____ Distance Cleaned _____ miles or _____ km

Number of Trash Bags Filled _____ Total Estimated Weight Collected _____ lbs. or _____ kgs.

Estimated Time Spent on Cleanup _____

2. CONTACT INFORMATION (EACH INDIVIDUAL TEAM MEMBER)

1. Name _____ 3. Name _____

Email Address _____ Email Address _____

2. Name _____ 4. Name _____

Email Address _____ Email Address _____

3. ENTANGLED ANIMALS

List all entangled animals found during the Cleanup. Record the type of debris they were entangled in, for example: fishing line, fishing nets, balloon string/ribbon, crab/lobster/fish traps, plastic bags, rope, six-pack rings, wire and other items (please specify).

Animal	Alive/Released or Dead	Entanglement Debris

4. WHAT WAS THE MOST PECULIAR ITEM YOU COLLECTED? _____

The following national and international organizations endorse and/or support the International Coastal Cleanup:

- NOAA Marine Debris Program
- U.S. Environmental Protection Agency
- UNEP - United Nations Environment Programme
- IUCN - The World Conservation Union
- Intergovernmental Oceanographic Commission (IOC) of the United Nations' Educational, Scientific, and Cultural Organization (UNESCO)

Please return this card to your area coordinator or mail it to:

Ocean Conservancy
1300 19th Street, NW
8th Floor
Washington, DC 20036
www.oceanconservancy.org



Figure 14 Beach Clean-up Data Card (See Annex 3 to reproduce for classroom purposes)

When to measure → The surveys can be done just once, or they can be repeated and done at different beaches to provide comparative data. They can also be combined with beach cleanups – see the next activity (8.2).

What will the measurements show → The measurements will show first of all the total amounts and different types of debris at a particular beach, and if repeated at different times of the year, they will show variations over time.

Discuss the possible origins of the materials collected. Divide the materials into three groups:

- group 1: debris that came from the sea, e.g. fishing floats, plastics with labels showing they were used in a different country ;
- group 2: debris that came from careless beach users or nearby communities, e.g. cigarette filters, styrofoam containers;

- group 3: debris that might have come from either group 1 or 2, e.g. pieces of rope and timber, packing material.

Discuss which group is largest and why.



Patches of oil on the beach at Long Bay, Beef Island, British Virgin Islands.

If you measure debris at different times of the year you might be able to relate the amounts of various categories of debris to weather events and to wave and weather conditions (see Chapter 10). For instance, tarballs might only appear at certain times of the year. Figure 15 shows a sample graph of some debris surveys conducted at different times of the year and the graph shows large increases in the volume of debris after a hurricane passed over the island in September.

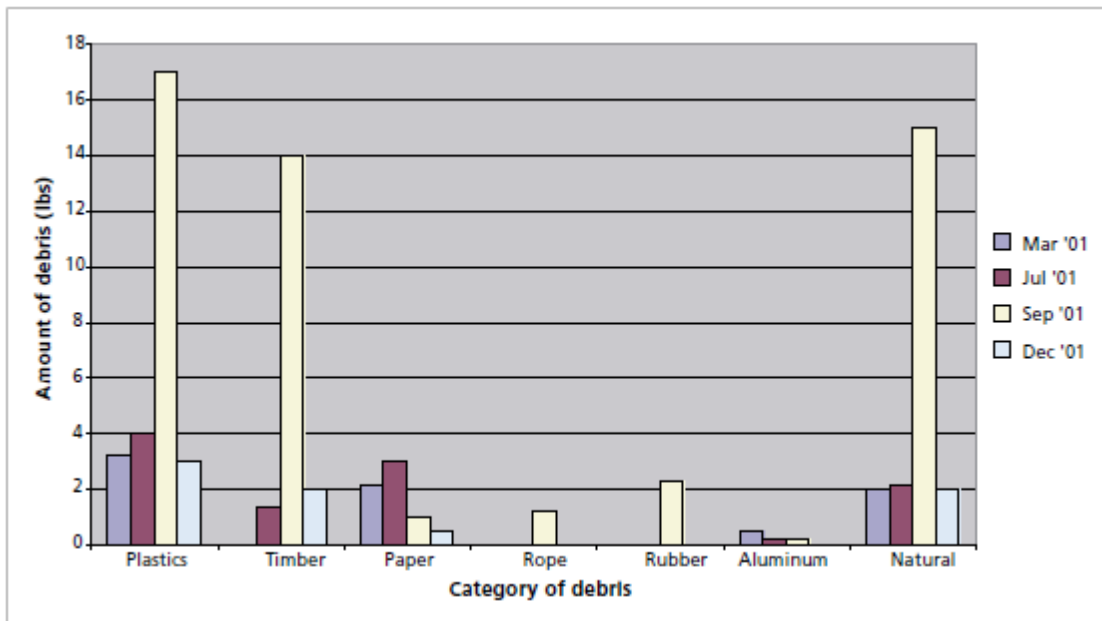


Figure 15 Bar graph showing beach debris changes.

You can also discuss how to inform beach users and the rest of the community about the negative impacts of littering and to encourage them to keep the beaches clean.



Large volumes of seaweed (natural debris) accumulate and cover the sand at this beach in Barbados at certain times of the year.

ACTIVITY 8.2 Conducting a beach cleanup Beach cleanups can be done at any time of the year. You might also want to consider taking part in the International Beach Cleanup organized by the Ocean Conservancy. They organize an international beach cleanups in September each year. The activity focuses on educating and empowering people to become a part of the marine debris solution and consists of data collection (see the data cards referred to in Figure 14) as well as cleaning the beach.



Debris piled up at the back of the beach at Morne Rouge, Grenada

Some points you might want to keep in mind when doing a clean-up activity are the following:

- take photos of the beach before and after the cleanup;
- combine data collection with the cleanup – see activity 8.1;
- see if the students can make something creative from the safe debris items – see photo of the ‘Canny boy’ prepared by the Mayotte Sandwatch group;
- try and involve students, their parents and nearby communities in the cleanup;
- encourage everyone to wear gloves and not to touch any potentially dangerous items
- provide food and drink;
- take into account the temperature at the beach; it may be best to conduct a cleanup early in the day when it is cooler;
- ensure there are sufficient garbage bags;
- make arrangements in advance for the garbage and debris to be removed to a proper waste disposal site;
- inform the press to get maximum publicity;
- make the activity fun.



Sandwatch students from Mayotte in the Indian Ocean created this life-size "Canny Boy" from debris found on the beach and won a prize in an environmental competition.