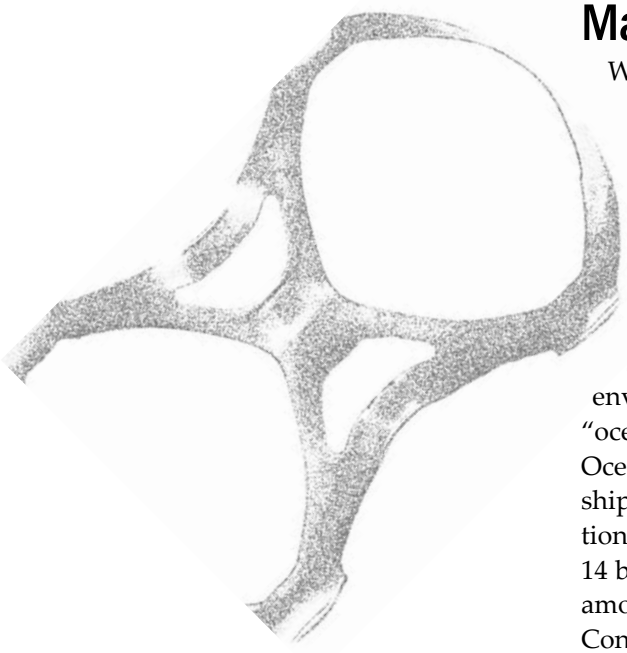
Activity for All Grades



Science skills

- Analyzing
- Evaluating
- Predicting
- Problem solving

Concepts

- Marine debris harms ocean wildlife.
- Our actions contribute to marine debris.
- We can make a difference in the amount of marine debris in the oceans by conducting a beach cleanup and by changing some of our trash habits.

Objectives

Students will:

- Understand what marine debris is and from where it comes.
- Describe the hazardous effects of marine debris on marine wildlife.
- Consider solutions to problems associated with marine debris.

Time to complete

50 minutes

Activity CA1
Marine Debris: It's Everywhere!

What is marine debris—where does it come from, and where does it go? Find out the sources and figure out some solutions to one of our ocean's most pervasive problems.

Background

Marine debris is trash found in the ocean or along its shores. From the sandwich wrapper left on the playground that's washed into the gutter leading to an ocean outfall, to the cigarette butt a smoker left in the sand, it's all trash that ends up in the ocean environment. The source of marine debris can be classified as either "ocean-based" or "land-based" depending on where it enters the water. Ocean-based marine debris is waste that is disposed of in the ocean by ships, recreational boats, and petroleum rigs and platforms. The National Academy of Sciences estimates that ocean sources once dumped 14 billion pounds of garbage into the ocean every year! While the amount of ocean dumping has been curtailed due to the International Convention for the Prevention of Pollution from Ships, known as MARPOL 73/78 (MARine POLlution), illegal dumping continues to contribute to the marine debris problem.

Land-based debris, on the other hand, is debris that blows, washes, or is discharged into the water from land. Studies estimate that about two-thirds of marine debris enters the water from land. Contributors include recreational beach users, people who drop litter on sidewalks and streets, plastics manufacturers and transporters, inadequate sewage treatment operations, and illegal dumping. It is important to remember that land-based garbage has the potential to become marine debris. People don't often realize that garbage they produce in their homes and communities can reach the ocean via storm drains, sewer systems, streams, and rivers.

Besides the fact that trash on beaches and in oceans looks ugly, why should we be concerned with marine debris? For one reason, dirty beaches reduce tourism in the area and subsequently tourist revenue, so communities are forced to spend millions of dollars each year to clean their beaches. Marine debris is also dangerous to beach visitors and scuba divers. Beach visitors have required stitches from stepping on broken pieces of glass and metal buried in the sand, and scuba divers have become entangled in lost fishing gear.

Marine debris not only harms humans, it can be fatal to marine wildlife. Marine mammals, sea turtles, birds, and fish can become entangled in plastic fishing line, plastic strapping bands, six-pack rings, and other plastic trash. Once entangled, they may spend energy trying to get free, may become sick or weak, and even die. Certain marine animals can also mistake plastic debris for food and may die as a result of eating it. Sea turtles mistake plastic bags for their favorite food, jellies, and birds mistake small pieces of plastic for fish eggs. Humans are responsible for

Mode of instruction

Students watch the *International Coastal Cleanup* slide show and afterward discuss the various sources of marine debris. Next, conduct a whole class discussion on waste reduction as one solution to the problem.

Materials

1. *International Coastal Cleanup* slide show (order from *www.oceanconservancy.org*)
2. One 3" x 5" card for each student

Preparation

Three weeks in advance, order *International Coastal Cleanup* slideshow from:
www.oceanconservancy.org
cleanup@oceanconservancy.org
(202) 429-5609
Director of Publications
The Ocean Conservancy
1725 De Sales Street, NW, #600
Washington, DC 20036

Outline

Before class

Order Coastal Cleanup slideshow

During class

Whole class discussion on marine debris and waste reduction methods.

the destruction caused by marine debris and it is up to us to bring the destruction to an end.

What can we as individuals do to help solve the hazardous problem of marine debris? We can participate in a beach cleanup. We can also rethink some of our habits, and reduce, reuse, and recycle trash—all trash is potential marine debris.

Activity

1. Begin by asking what your students know about marine debris. What is it, where does it come from, who is responsible for it, and how does it affect our lives? How does it affect marine life? Put some of the student answers on the blackboard to refer to later.

2. Present the *International Coastal Cleanup* slide show. Hold a whole class discussion on the sources of marine debris. Questions can include: How does marine debris reach the oceans? What are some additional land-based sources? What happens to all the trash they throw away? What is "away?" How can this trash become marine debris? What about litter that they see in the streets and on the school grounds? *(Pipes connected to storm drains often carry runoff storm water from streets directly to nearby bodies of water such as streams, rivers, and oceans. Consequently, they transport street litter to the nearest body of water as well.)*

3. Now discuss with your students how they can become part of the solution instead of part of the problem. What can they do to decrease the amount of debris ending up on the beach and in the ocean? Write the solutions on the blackboard. *They can rethink purchasing a product that is poorly packaged; reduce, reuse, and recycle trash; and remember that every choice they make can make a difference.* What kinds of trash are recyclable? Do any of the students recycle regularly? What about non-recyclable trash—can these items be reused or can our use of them be reduced?

4. Make a Reduce, Reuse, Recycle, Remember table on the board. Ask students for their ideas on specific actions they can take to reduce the amount of waste they produce. Here are some suggestions to get started. See if your students can add to this list.

Reduce

Use a sponge instead of paper towels; use metal utensils, a glass, or a plate instead of paper cups and plates and plastic utensils; write on both sides of paper; bring a canvas bag to the store instead of accepting a paper or plastic one; share items with friends and family and use the library; buy products with less packaging—one-third of our garbage is packaging! If you don't really need something, don't buy it!

Reuse

Use a lunch sack for more than one day; bring lunch in reusable containers; reuse bags from the store; use containers such as shoe boxes and margarine tubs for storage; donate items to charities and thrift stores when you're done using them.

Recycle

Newspapers, bottles, aluminum cans, car batteries, paint, automotive fluids, and plastic bottles. Complete the recycling loop and buy recycled products.

Remember

We can all make a difference!

5. Emphasize that in taking these actions, students can help solve the problem of marine debris. Encourage students to implement these waste reduction methods at school and at home. Encourage them to share these ideas with their families.

Results and reflection

Students write a one-page summary on the sources and effects of marine debris, and what they can do to help reduce the problem.

Conclusions

It's never too late to do something for the oceans. Rethinking our use of everyday products can make a difference to the creatures that depend upon clean oceans and beaches for survival.

Extensions and applications

1. Design and conduct a survey of local boaters and fishers to find out how they handle their trash.
2. Design an informative handout or pamphlet about marine debris using photographs of marine wildlife and marine debris.

Adapted from

Save Our Seas, A Curriculum for Kindergarten through Twelfth grades. The Ocean Conservancy (formerly known as Center for Marine Conservation) and California Coastal Commission, 1993.