

TURNING THE TIDE ON TRASH

A LEARNING GUIDE ON MARINE DEBRIS



How Harmful Is Marine Debris?

Grade Level:
Grades 3 – 7

Subjects:
Language Arts, Science, Social Studies

Overview:
Students complete a form that requires them to make decisions about how severely different types of marine debris affect animals, people, vessels, and habitat. As a class, results are totaled and analyzed to determine which types of marine debris are most harmful to the different categories.

Objective:
To explore the effects of marine debris on animals, people, vessels and habitats.

Vocabulary:
ghost fishing, medical waste

Materials:

- Enough copies of the “How Harmful Is It?” handout for the entire class. This is a three-page handout.
- Examples of the different types of debris to be discussed (to accompany the handout above):
 - Fishing line
 - Paper cup
 - Lobster or crab pot
 - Six-pack ring
 - Resin Pellet
 - Plastic grocery or trash bag
 - Broken glass bottle [CAUTION – use care when handling this material]

- Section of a fishing net

Learning Skills:
Analyzing, Calculating, Classifying, Comparing and Contrasting, Decision-Making

Duration:
30 minutes to complete tally; 30 minutes (preferably the next day) to analyze and discuss results

Activity

1. Distribute the “How Harmful Is It?” (three-page) handout to the class. Make sure students are familiar with the types of debris presented in the handout. If possible, label and display examples of the actual debris or use sample debris images provided at the end of this lesson. Review with students the instructions at the top of the handout. Then have students complete the table.

2. Collect the handouts and calculate class subtotals for each type of debris on the handout (add together the students’ subtotals and divide by the number of students in the class). NOTE: You can do this with the class or on your own and present the totals the next day. Pass back to students their original handouts.

3. Write the class subtotals on the board. As a class, analyze the results of the tally. Initiate discussion by asking questions such as the following:

LESSON THREE

- According to class results, which types of marine debris are most harmful to seals? Sea turtles? Seagulls? Which type or types of debris seem to be most harmful to animals in general? (Repeat this series of questions for people, vessels and habitats.)
- According to class results, which types of marine debris are the most harmful? Do you agree? Why or why not?
- According to class results, which type of debris is the least harmful? Do you agree? Why or why not?
- Are there any types of debris that received a low grand total, yet are very harmful on the list? Which ones?

4. Discuss with students how their individual results might have varied from the class results. Help them to understand that people may have had different opinions about how harmful certain debris is based on their own attitudes and experiences.

The discussion also should introduce the concept that the abundance of certain types of debris may make them more harmful on a large scale than other types that appear to be more dangerous. For example, bottles and cans may be abundant forms of debris, but they are not as potentially harmful as other forms of debris such as discarded fishing line and abandoned nets. One fishing net can continually maim or kill unsuspecting wildlife, while a hundred soda cans on the beach are primarily an eyesore and will not intentionally harm marine and coastal animals and communities.

NOTE: The numbers that students arrive at by doing this exercise do not represent objective data on marine debris effects. Instead, they help students explore the

many ways that debris can harm the different components of marine and coastal communities. Students should come away with the knowledge that certain types of debris may have a greater effect on specific animals, people, vessels and habitats, but that almost all marine debris can be harmful to these different communities.

EXTENSIONS

Have students design a “Most Wanted” poster for the type of marine debris that they think is the most dangerous. The poster should include an illustration of the debris and list some of its “crimes.” Students might also mention a “reward” on the poster for the person who finds this type of debris and disposes of it properly or identifies it to the proper authorities for disposal.

Have students find articles and papers about marine debris written by scientists, and compare the data in these publications with the results from the class exercise. Have the students compare and contrast the two sets of information, and indicate what they found most interesting from the scientific publications about marine debris.

DIVE DEEPER:

Other Resources on Marine Debris

- NOAA's Marine Debris 101:
www.marinedebris.noaa.gov
- EPA's Marine Debris site:
<http://water.epa.gov/type/oceb/marinedebris/index.cfm>

HANDOUT

How Harmful Is It?

Instructions: Decide how harmful each type of marine debris would be if it came into contact with the animals, people, vessels and habitats listed below. Write the number that best reflects your opinion in the appropriate box. (For example, if you think fishing line would be very harmful to a seal, write the number “3” in the spaced provided.) When you have completed the chart, calculate the subtotals for each type of debris. Then calculate the grand totals at the bottom of the page.

- 1 = rarely or never harmful
- 2 = sometimes harmful
- 3 = very harmful

Animal	Fishing Line	Paper Cup	Lobster Trap	Six-Pack Ring	Resin Pellet	Plastic Bag	Broken Glass Bottle	Lost Fishing Net
Crab or Lobster								
Fish								
Sea turtle								
Seagull								
Seal								
Subtotal								

People	Fishing Line	Paper Cup	Lobster Trap	Six-Pack Ring	Resin Pellet	Plastic Bag	Broken Glass Bottle	Lost Fishing Net
Beachgoer								
Boater								
Diver								
Fisherman								
Subtotal								

HANDOUT

How Harmful Is It?

1 = rarely or never harmful
 2 = sometimes harmful
 3 = very harmful

Vessels	Fishing Line	Paper Cup	Lobster Trap	Six-Pack Ring	Resin Pellet	Plastic Bag	Broken Glass Bottle	Lost Fishing Net
Boat with motor								
Canoe or Kayak								
Personal watercraft (example: jet ski)								
Sailboat								
Subtotal								

Natural Environments	Fishing Line	Paper Cup	Lobster Trap	Six-Pack Ring	Resin Pellet	Plastic Bag	Broken Glass Bottle	Lost Fishing Net
Beach								
Coral reef								
Oyster bed								
Open water								
Wetland or Marsh								
Subtotal								

Grand Total								
-------------	--	--	--	--	--	--	--	--

How Harmful Is It?



Fishing Line



Paper Cup



Lobster Trap



Six-Pack Ring



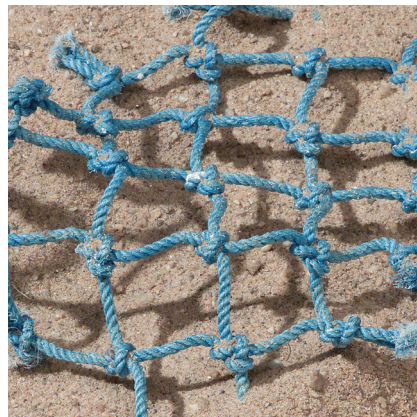
Resin Pellet



Plastic Bag



Broken Glass Bottle



Lost Fishing Net