



## Sandy Shores

### Concepts

Humans impact the coastal environment such as the sandy shores in many ways including pollution, development, marine debris/littering, and many others.

Human impacts to the sandy shore environment can have a negative effect on the delicate balance that exists between the abiotic and biotic components of the habitat.

### HCPS III Benchmarks

SC 2.1.1  
SC 2.1.2  
SC 2.1.5  
LA.2.1.4  
MA.2.11.1  
MA.2.12.1  
SS.2.5.1  
SS.2.7.4

### Duration

2-3 hours

### Source Material

PRISM

### Vocabulary

Human impact  
Categories

## Human Impacts to the Sandy Shore (Optional)

### Summary

Students will take a field trip to a nearby beach and witness first hand the impact humans have had on that beach. Students will be assigned to a specific area and look for marine debris. They will sort the debris into 2 categories; brought in from the ocean or left by man. As they discuss the human impact on their sandy shores they will gain a better understanding of the delicate balance of the ecosystem.

### Objectives

- Students will observe first hand human impact on the sandy shore through the collection of marine debris.
- Students will sort, classify, and chart the collected debris.
- Students will discuss the implications of their findings and what it means to the future of that ecosystem.

### Materials

Plastic gloves  
Rubbish bags  
Chart stand & chart paper  
Markers  
What I've learned worksheet  
Chaperones for groups of 4/5.

### Making Connections

Students will recall what they have learned about human impacts on an ecosystem, what marine debris consists of, and how the results of their findings relate to what they have learned about the plants and animals of the sandy shore.

### Teacher Prep for Activity

Pack materials for field trip

### Background

The coastal environments such as the sandy shore are very vulnerable to human impact. **Human impact** refers to any disturbance to the natural environment present as a result of man. This could include pollution or marine debris, development, improper use of the environment and the plants and animals that inhabit it, and many others. Thus far, we have covered human impacts through lessons on oil spills and marine debris. This lesson is meant to act as a summation of previously discussed topics related to human impacts and provide a hands-on, visual representation of human impact to the sandy shore.



## Procedure

1. Gather students at a nearby beach into groups of 4 or 5 (1 chaperone needed for each group).
2. Begin the lesson by making a K and W chart on marine debris.
3. Have the students come up with ideas about what they think they will find on this beach and what other human impact features can affect that habitat.
4. Explain to students that they will be responsible for two things.
  - A. recording the type of human debris for a class chart
  - B. making a prediction
5. Explain to the class that each group is going to come up with a prediction on human impact on this sandy shore and test it out. At the end of the field trip they will come back and see if their prediction was correct. Here are a couple of questions students could easily work on; how much rubbish they will find, what kind will be more prevalent, etc...
6. Have each group gather with a sheet of chart paper and discuss what their prediction will be. Circulate among the groups to make sure students are forming a correct prediction.
7. Have the groups pick different areas of the beach and begin gathering marine debris.
8. Once the surface debris has been picked up, have them sit in an area and dig in the sand to see if they find more marine debris/garbage. All items found are put in their individual rubbish bags.
9. Each group returns to the lesson area and begin charting the debris found on the beach onto the class chart.
10. After they are finished recording, each group gathers to see if they have enough information to prove or refute their prediction. If they have enough information, they must make a conclusion to be shared to whole group. If not, they must see if they can gather the info, figure out what they need, or see if they need to change their prediction.
11. Finally, all groups gather and discuss what they have learned. Teacher fills out the “L” part of the KWL chart.
12. Once you have returned and are back in the classroom, have each student fill out the unit post assessment for comparison with the pre assessment. This will provide evidence of student learning and progress throughout the unit.
13. The data collected by the students on the field trip can be utilized in class as an exercise on data management (see Math Connection “Classroom exercise after field trip”).

## Assessments

Prediction made and properly tested

Post-assessment of Sandy Shore unit plan

In class exercise on organizing data and making charts.

## Math Connection

Human impacts to the sandy shore – Classroom exercise after field trip

1. Sort out the samples (marine debris) collected from the beach. Put debris in groups according to categories you came up with during the field trip.
2. Count the amount of all debris in each category and record the numbers. Have students make a table to record the numbers.

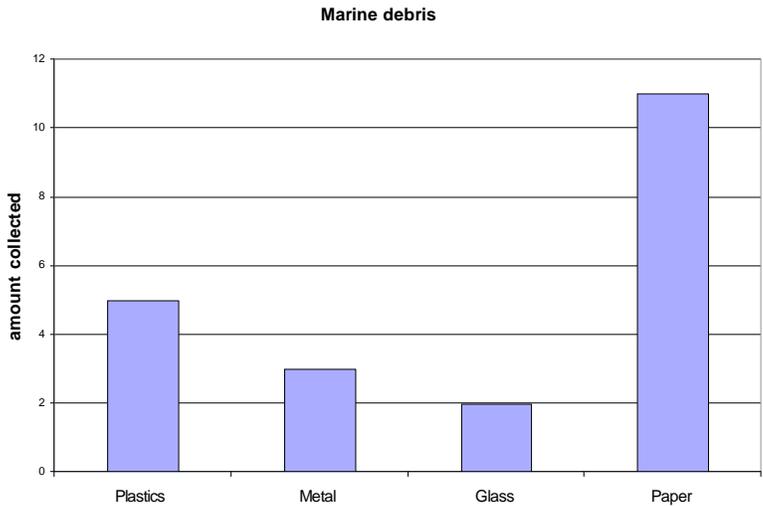


3. If possible, weigh the debris in each category. Other measurements can also be added to the activities.

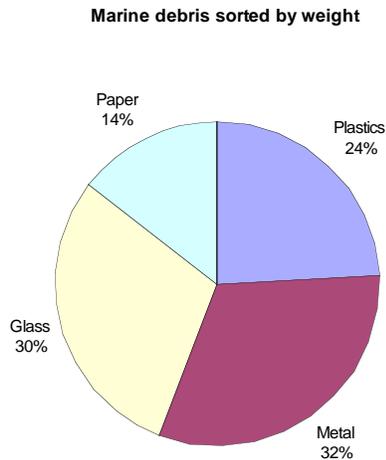
Example:

Category	Amount	Weight (lb)
Plastics	5	2.5
Metal	3	3.3
Paper	11	1.5

4. Construct charts and graphs to summarize results. This can be drawn on the board or by using Microsoft excel on a computer. The purpose is to show how to summarize data and read graphs. For example,



This graph represents the amount of debris counted for each category. Each bar represents a category of debris, and the higher the bar is, the more it has in that category.



This graph summarizes debris by how much it weighed. Paper, for example, represented the least amount according to the weight. (TIP: A pie chart may be easier than the bar graph for the students to read).