

Barrier Islands and Sea-level Rise

Make a Barrier Island Habitat Wheel

Overview

Students can refer to the DISCOVER page of the module as they construct a habitat wheel and draw a cross-section of a barrier island.

Grade Level

7th - 12th

Materials

- cardstock paper
- colored markers, pencils, or pens
- scissors
- gluesticks
- metal brads

Time Required

45 minutes

Objectives

Students will demonstrate their knowledge of the future effects of sea-level rise on Assateague Island habitats from the perspectives of the plants and animals that live and people that visit there.

National Science Education Standards

Standard F: Science in Personal and Social Perspectives

- Natural resources

Procedure

1. Students can work individually or in groups of two. Have each group cut out the parts of the wheel.
2. Have the students note on the picture the location of the habitats.
3. Allow students to cut and assemble for about 10 minutes.
4. On the board, create a list of the plants and animals that live in each of these six habitats found on barrier islands. Discuss what students found unique or interesting. Ask questions to stimulate students' thoughts on possible changes due to sea-level rise for each habitat.

Habitats:

- 1) Beach Intertidal
- 2) Dunes and Grass
- 3) Forest and Shrub
- 4) Inland Wetland
- 5) Salt Marsh
- 6) Bay Subtidal and Mudflat

5. Have students label and draw a side view or cross section across Assateague Island below the picture provided.
6. Glue this to the back of the wheel model.

Discussion

How do habitats change as you travel across a barrier island from one side to the other?

Name two plants and animals each and how they use barrier islands.

How would a rising sea level affect barrier island habitats and the plants and animals that rely on them?

How do people use barrier islands?

How would a rising sea level possibly affect people that visit a barrier island?



National Park Service
www.nps.gov



University of Maryland

CENTER FOR ENVIRONMENTAL SCIENCE

Integration & Application Network (IAN)

University of Maryland Center for Environmental Science

www.ian.umces.edu

Barrier Island Habitats Wheel Activity: Lesson Plan
Cut out the wheels.

Look at this wheel as a learning tool to see what are some possible effects of Sea-level Rise within each habitat

Beach Intertidal Effects:

Increased storm surge will flood, or completely submerge some beaches. Erosion will increase. Some species will tolerate these conditions.

Bay Subtidal and Mudflat Effects:

Sea-level rise will cause shallow areas to change to deep water habitats and species may change.

Salt Marsh Effects:

Increased overwash will speed up island rollover. Sea-level rise will change some marshes to deep water habitat and species may change.

<-- Habitats -->

Dunes and Grass Effects:

Increased storm surge will cause increased overwash and flooding. Some species may benefit from the extra overwash.

Forest and Shrub Effects:

Increased storm surge will flood forest and shrub habitats. Trees and shrubs sand and salt spray may die off.

Inland Wetland Effects:

Saltwater intrusion and overwash flooding will contaminate freshwater.

Color edge of wheel for each habitat

Beach Intertidal - blue

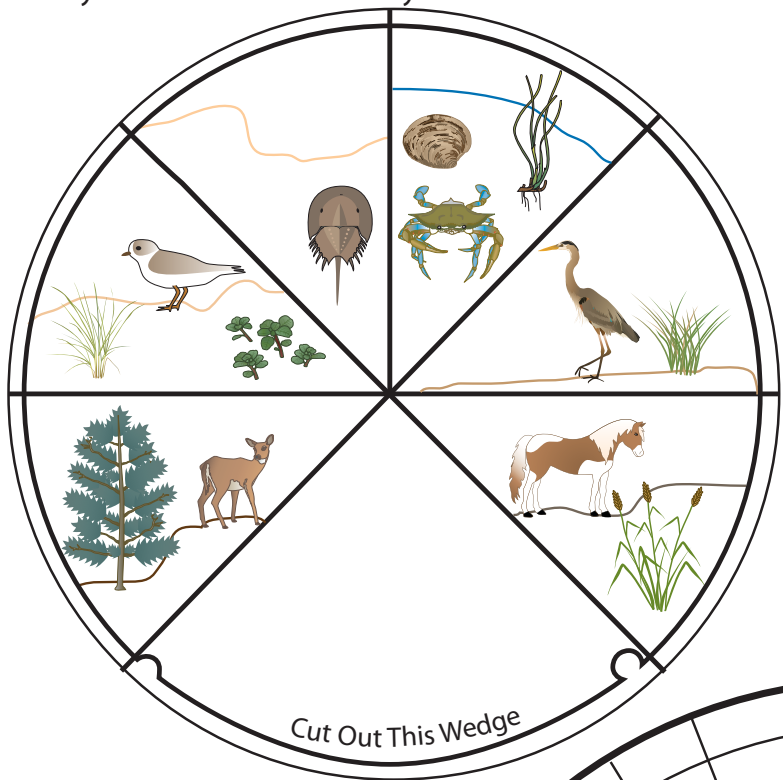
Dunes and Grass - tan

Forest and Shrub - green

Inland Wetland - light blue

Salt Marsh - light green

Bay subtidal and Mudflat - yellow



Symbols and names of key species on Assateague Island.

American Beach Grass



Blue Crab



Cattail



Wild Horse



Loblolly Pine



Great Blue Heron



Salt Marsh Grass



Hard Clam



Sea Beach Amaranth



Horseshoe Crab



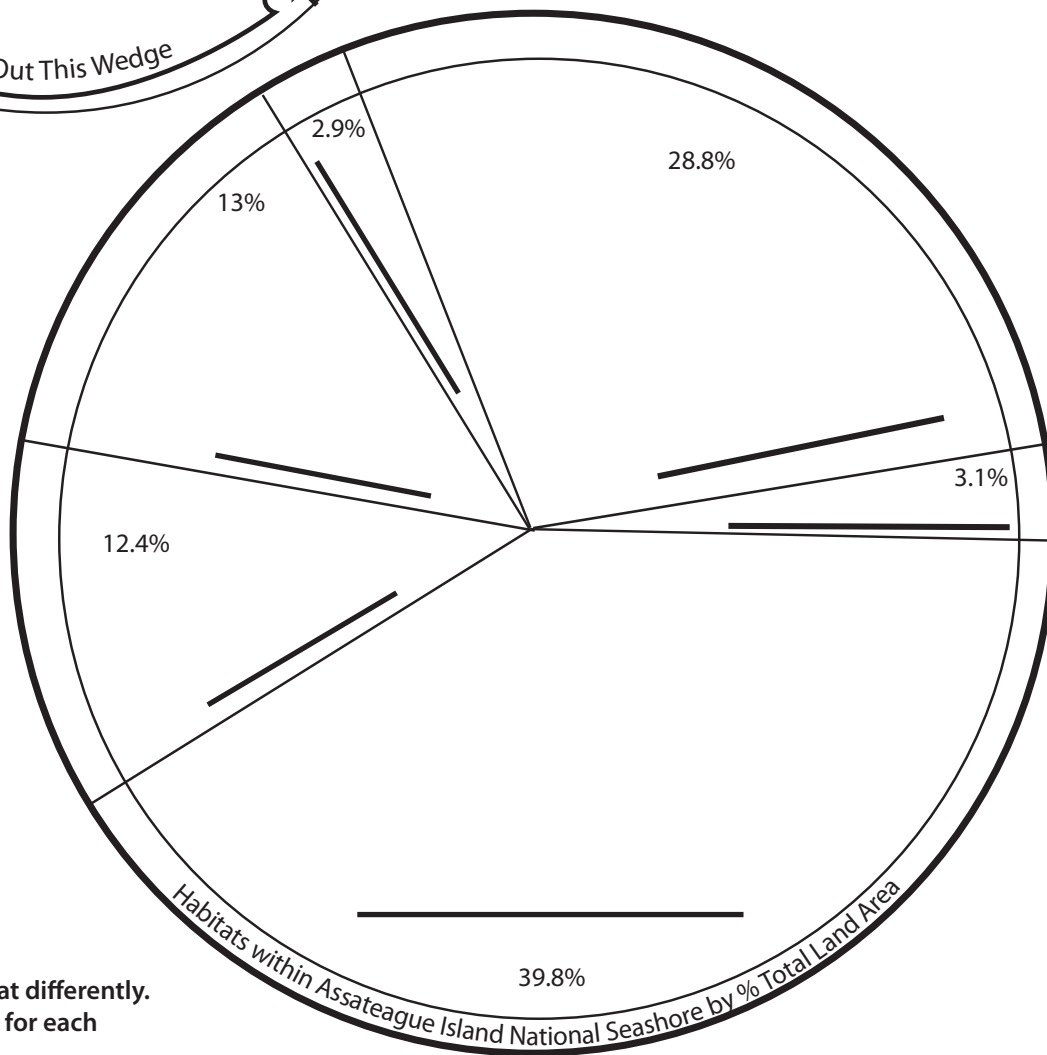
Sea Grass



Piping Plover



Whitetail Deer



Cut out circle. Color each habitat differently. Label the correct habitat name for each piece of the pie chart.

Student Instructions: Barrier Island Cross-Section Activity

Cut out the circle of North Assateague Island.

What would the island look like in cross-section?

Make a cross-section drawing in the lower half of the circle, showing the change in elevation as you travel from the ocean to the bay.



Barrier Islands Habitat Wheel Worksheet - Classroom Questions

Name: _____

Period: _____

The wheel is a tool to help you learn key concepts relating to barrier islands and how sea-level rise could affect each of the habitats. One part of the wheel looks at key species of plants and animals found in each habitat, and another part looks at different land type percentages on Assateague Island.

After you have cut, colored, and assembled your wheel, use it to answer these questions:

- 1) What are the six main habitats on this barrier island?
- 2) What habitat takes up the most land area?
- 3) What habitat takes up the least land area?
- 4) What habitat provides the most important resource for large animals on the island and what resource is that?
- 5) What is an effect that sea-level rise will have on Inland Wetland habitat?
- 6) What is an effect that sea-level rise will have on Forest and Shrub habitat?
- 7) What is an effect that sea-level rise will have on Salt Marsh habitat?
- 8) What are the two key species highlighted in the Dunes and Grass habitat?

After you have drawn the cross-section on the back of the wheel, describe in one paragraph what you have learned from this activity. What did you find interesting, what was new, and what did you learn about sea-level rise and barrier islands?

In your paragraph, underline and explain the following terms:

sea level rise

habitat

barrier island

salt marsh

key species

dunes

wetland

cross-section

land area

saltwater intrusion