Caught in the Web: Plastic Pollution in the Pacific Ocean

Grade Level- 4

Concepts

4th Grade Life Sciences

2. All organisms need energy and matter to live and grow. As a basis for understanding this concept

b. Students know producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs and may compete with each other for resources in an ecosystem.

4th Grade Investigation and Experimentation

6. b. Measure and estimate the weight, length, or volume of objects.

f. Follow a set of written instructions for a scientific investigation.

EXTENSION ACTIVITY

6 a. Differentiate observation from inference (interpretation) and know scientists' explanations come partly from what they observe and partly from how they interpret their observations.

Vocabulary

- Food Web
- Producer
- Consumer
- Herbivore
- Carnivore
- Omnivore
- Organism

EXTENSION ACTIVITY

- Inference
- Observation

Summary

Using geographically linked observations made by the crew aboard Oceanographic Research Vessel Alguita and exploration on the internet, students determine roles of marine organisms in the ocean food web, and consider how plastic pollution may also enter the food web and affect marine organisms.

Materials

- "Caught in the Web: Plastic Pollution in the Pacific Ocean" activity sheet for each student or group: http://algalita.org/MappingPlasticPollution.htm
- Computers with Google Earth software installed and access to the internet
- Any voyage .kml file: http://algalita.org/MappingPlasticPollution.htm
- Pencil or pen (if activity sheets are printed).

Procedure

1. Discuss oceanographic research and the topic of plastic marine debris with your students. Provide students with some background on the research voyage they will be viewing. Much of this information is contained within the text of the voyage- more detail can be found at http://algalita.org/
2. Students can work individually or in groups. The worksheet provides detailed directions that assume Google Earth is already open and the .kml file of the voyage is already loaded for student use.
3. The amount of text and the vocabulary provided in each vessel communication may be challenging for the fourth grade level. If this is the case, encourage students to use the images provided by the crew to find the organisms they are looking for. Students may need to follow web links or conduct internet searches to find more information about the organisms they choose.
4. Discuss the student's answers to question #3. This is a new area of research and much about the effects of plastic ingestion on organisms is still unknown. Ask students what they can do to prevent plastic from entering the ocean. This is a good opportunity to talk about the distance of your school from the ocean and your connections to the ocean.

Extensions

Observation vs. Inference

The "Caught in the Web: Plastic Pollution in the Pacific Ocean" activity centered on the students recording observations of organisms made by the research vessel crew. In their daily diary, the crew record their observations along with inferences they make from their observations. After an introduction to inferences and observations, have the students fold their papers in half and write "Observations" on one side and "Inferences" on the other. Give the students time to read the daily diary of the crew and make a list of inferences and observations made by the crew. At the end, discuss any difficulties students had in differentiating between the two.