

California Science Content Standards

8. All objects experience a buoyant force when immersed in a fluid. As a basis for understanding this concept, students know:

8.c. The buoyant force on an object in a fluid is an upward force equal to the weight of the fluid the object has displaced.

8.d. How to predict whether an object will float or sink.

Objectives

Students will:

- Understand that different types of plastics float, sink, or stay neutrally buoyant.
- Learn where ten marine species feed in the water column.
- Make connections between where a marine organism lives and feeds and the types of debris to which it is exposed.

Time to complete

One hour, including video

Mode of instruction

Watch video, then group or individual work with worksheet, chart, and cards, followed by presentation of results and whole class discussion.

Materials

1. Video—*Synthetic Sea: Plastics in the Ocean*. Borrow from California Coastal Commission education web site: www.coastforyou.org
2. "You Are What You Eat" worksheet
3. "Marine Animal Feeding Habits and Plastic Risk" chart
4. "Marine Animal Cards"
5. "Plastics and Their Uses" handout



Activity

1. Watch the video *Synthetic Sea: Plastics in the Ocean* with your class. Conduct a whole class discussion on what students think about plastics in the ocean. Does plastic just go away? What types of animals are most affected?

2. Next, conduct a whole class discussion on the many ways we use plastics in our daily lives.

3. Hand out "Plastics and Their Uses" and discuss the different types of plastics. Note that most cities only accept SPI 1 and 2 for recycling; though many of the other types of plastic are labeled as "recyclable," in reality, this does not occur and the majority of plastics end up in landfills.

4. From water bottles to computers, we rely on the convenience and availability of plastics to provide many of today's necessities. List on the board the shapes that plastic can come in, and have students give examples of what they are used for:

One-dimensional objects (line, rope, strapping bands)

Two-dimensional objects (sheets, bags)

Reticulated (netting, six-pack rings)

Hollow-bodied (bottles, fishing floats)

Small particles (Styrofoam, pellets used in making plastic objects)

Angular (boxes, crates)

5. Discuss the marine zones in which animals feed (surface, pelagic, and benthic). Have students brainstorm what types of animals might live and feed in each of these zones.

6. Either divide the class into small groups (3-4 students) or distribute materials to individuals. Distribute copies of the "You Are What You Eat" worksheet, "Marine Animal Feeding Habits and Plastic Risk" chart, and the "Marine Animal Cards" to groups or individuals.

7. Have students complete the worksheet activity. Keep in mind that there are many different possible "right" answers. What is important is that students have a rationale for their choices.

Results and reflection

1. After the groups or individuals have completed the activity, draw the chart on the board. Have each group or student choose one form of plastic (i.e., one-dimensional, two-dimensional, small particles, etc.) and present to the class their results and rationale of what species would be most affected.

2. Allow time to propose different answers, discuss them, and wrestle with different conclusions.

3. Conduct a whole class discussion on how to reduce the amount of plastics in the marine environment. (Refer to activity CA1: Marine Debris, It's Everywhere! for waste reduction ideas.)