



Cabrillo Marine Aquarium Lesson Plan

Grade Level: Seventh Grade

Title: Crazy Currents

Objective: Students will practice tracking pollution/marine debris by following oceanic currents.

California Science Standards: 7th: 7a, 7b

Time to Complete: 30 minutes

Materials Provided by CMA Ocean Discovery Kits: *Reading Handout: The Great Pacific Garbage Patch*, *Worksheet: Oceanic Surface Currents Map*, *Worksheet: Pacific Ocean Surface Currents Map*, *Graphic: Oceanic Surface Currents Map*, *Graphic: Pacific Ocean Surface Currents Map*, Examples of Marine Debris

Materials Provided by Teacher: Copies of oceanic surface currents maps. Teacher can add more examples of trash from around the classroom that could become marine debris.

Vocabulary: Current, point source pollution, non-point source pollution, marine debris

Background Information: Destructive or not, marine debris has provided human kind with priceless information regarding oceanic currents. We have followed glass bottles, rubber duckies, even Nike shoes to discover the more complex movements of our waters.

Lesson Procedures:

1. As a class, read aloud the *Reading Handout: The Great Pacific Garbage Patch*
2. Inform students that we will be using our knowledge of the ocean's currents to track pollution.
3. Divide class into small groups.
4. Give each student or group a copy of a map that shows the oceanic surface currents and an item that will represent the marine debris they will track.
5. Teacher or group can provide a country of origin for their debris and a destination.
6. Using the map, groups must plot a route the debris may take (many possibilities).
7. To make the lesson more interesting/challenging:
 - Use the version of the map with no currents named and have students follow directions from origin to destination (e.g., origin: Peru, south equatorial current, east Australian current...)

- Group chooses origin, # of currents entered, destination, and clues regarding where the debris has been (plastic bag with lei inside must have passed by Hawaii at some point).

Lesson Wrap-Up:

1. Have students present their marine debris, the country or origin, and which currents the marine debris followed.
2. The items you used for your lesson were most likely examples of point source pollution. Discuss the difference between point source pollution and non-point source pollution.

Lesson Extensions:

- What products and/or countries contribute most to marine debris? Is this an accurate representation/assessment? Why and why not?
- Have students research some of the major environmental impacts of their particular type of marine debris.
- Use the online computer model simulation program called Ocean Surface Current Simulator (or OSCURS) to compare students' predictions with a computer model's prediction. You can find instructions for OSCURS in Lesson 2: Geographical Distribution of the High School portion of your binder.
- Have students look-up natural disasters (i.e. Hurricane Katrina, Japanese tsunami, BP oil spill, etc.) and link the impacts to the marine environment and the associated marine debris.

References:

- Moody, S. *Washed Up: The Curious Journeys of Flotsam and Jetsam*
- http://education.nationalgeographic.com/education/encyclopedia/great-pacific-garbage-patch/?ar_a=1
- <http://science.howstuffworks.com/environmental/earth/oceanography/great-pacific-garbage-patch.htm>
- <http://www.algalita.org/education/school-assemblies.html>