

Grade Level: 4th

Length of Time: 1 hour

Essential Questions:

- What are some examples of how plastic may get into the ocean?
- What impacts does plastic have on ocean ecosystems?
- What are some commonly found plastics in the ocean?
- What are ways we can reduce, reuse, and recycle our plastics?
- What are examples of ways to prevent plastic from getting into the ocean?

Standards:

- Next Generation Science Standards
 - **4-ESS3-2.** Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.

Materials:

- Plastics in the Ocean reading handout (see below lesson directions)
- Internet access for YouTube videos
- Projector
- Dry erase board
- Poster paper
- Coloring utensils

Introduction:

- On a blank sheet of paper, have students answer the following questions:
 - What are some examples of how plastic may get into the ocean?
 - What are some commonly found plastics in the ocean?
 - What are ways we can reduce, reuse, and recycle our plastics?
- Show one of the following YouTube videos.
 - How We Can Keep Plastic Out of the Ocean from National Geographic (3:10 minutes)
 - <https://www.youtube.com/watch?v=HQTUWK7CM-Y>



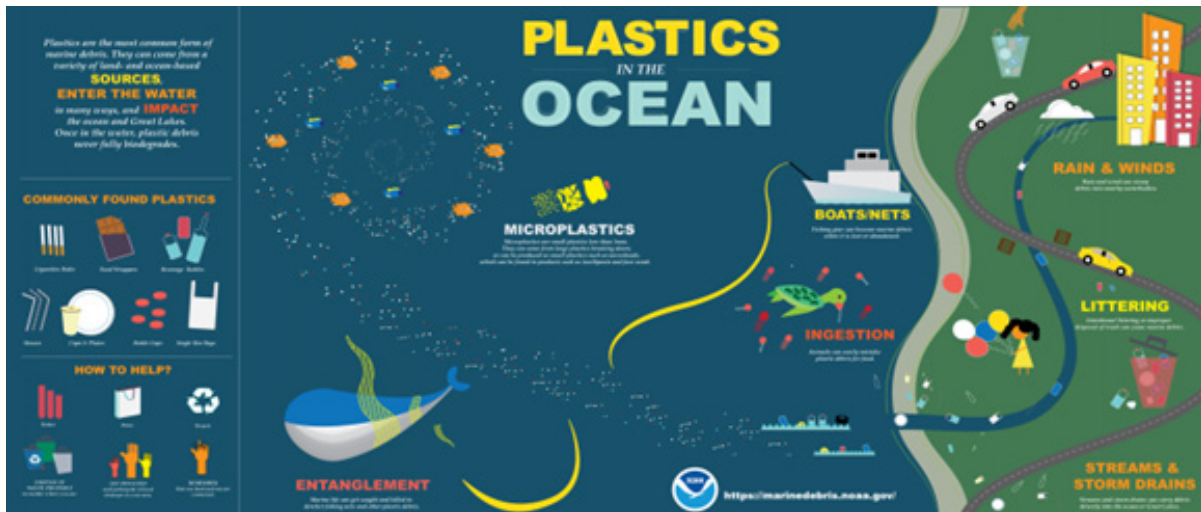
- Power Video: Why We Need to Keep Plastic Out of the Ocean from Oceania (4:35 minutes)

O <https://www.youtube.com/watch?v=Yomf5pBN8dY>

- After the video have students share with a neighbor their ideas of how plastic may get into the ocean.
- Share the ideas out as a whole class and write them on the board.

Activity:

- Let students know that they are going to read and pull out some facts about how plastics get into the ocean.



- Pass out the “Plastics in the Ocean” worksheet (see document below lesson directions). The worksheet can be used for a shared reading, individual, or can be read as a class.
- The poster “Plastics in the Ocean” from NOAA is a great visual for the students to see and talk about how microplastics happen.
- After the worksheet is complete, have a class discussion.
 - Ask the students: What are some commonly found plastics in the ocean?
- Call to Action!
 - Using poster paper, ask students to generate ideas. Create an informational poster to spread the word how we can reduce, reuse, and recycle plastics so they do not end up in the ocean.
 - Allow time for creativity. If students do not want to draw, they could use their computers and create a poster using clip art and public domain images.
 - Have a way to share and display the posters – could be around your school or asking a local library.



Wrap-Up:

- On a blank sheet of paper, have students answer the same questions from earlier.
 - What are some examples of how plastic may get into the ocean?
 - What are some commonly found plastics in the ocean?
 - What are ways we can reduce, reuse, and recycle our plastics?

Background Info:

- Plastics floating in the ocean do a huge amount of damage to marine life. From causing coral death, to killing sea turtles and whales. The mental image that we have of giant floating garbage patches in the oceans isn't a complete picture. It is complicated but at least 11 million metric tons of trash ends up in our oceans yearly, according to research by Pew Trust, from packaging to bags, to ropes, nets, and clothing.
- A gyre is a large system of rotating ocean currents. They are located in the northwest and southeast Pacific, north Atlantic, and central Indian oceans.
- Plastic spirals downward in these gyres, like in a whirlpool - the plastic can take ten years to cycle through, getting trapped on the ocean floor or being consumed by marine life. These trash vortices are filled with disintegrating plastic that gets into food webs. Tiny grains of microplastic can take hundreds to thousands of years to decompose, and are everywhere, even in our food and water. We do know that they have negative impacts when taken internally by marine life, including poor growth, liver damage, altered feeding behavior in marine organisms, reproductive effects, and bioaccumulation of chemicals. We are not sure what they do to humans.
- Efforts are being made to create more sustainable and biodegradable plastics as well as finding ways to clean the ocean of plastics.
- NOAA has put out a series of YouTube videos called Trash Talk for educators
 - <https://oceantoday.noaa.gov/every-full-moon/full-moon-trashtalk.html>

Vocabulary:

- **Dead zones:** areas of water where there are low levels of nutrients and oxygen for life to live.
- **Nutrient pollution:** where too many nutrients, mainly nitrogen and phosphorus, are added to the bodies of the water which can lead to less oxygen and healthy ecosystems.
- **Microplastics:** when the ocean breaks plastics into small particles
- **Littering:** the act of leaving trash, paper, bottles, etc. in an open or public area.

Lesson Plan Development funded by the Resource Enhancement and Protection Conservation Education Program (REAP CEP)



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Additional Resources:

- A Guide to Plastic in the Ocean <https://oceanservice.noaa.gov/hazards/marinedebris/plastics-in-the-ocean.html>
- Marine Debris Program <https://marinedebris.noaa.gov/our-work/education/students>
- Infographics <https://marinedebris.noaa.gov/our-work/education/students>

Credits and Use

Passage and writing prompts written by My Differentiated Classroom. Free for personal/classroom use. All images credited below.

This material is appropriate for students in Grades 4-5. May also be appropriate for Grades 3-6, depending on student reading levels. Aligned to Common Core ELA Standards.

Image Credits

Plastic Trash in Deep Ocean Image courtesy of the NOAA Office of Ocean Exploration and Research, Gulf of Mexico 2018

Plastic trash on surface. <https://unsplash.com/photos/BJUoZu0mpt0> (Naja Bertolt Jensen)

Plastic on shore <https://unsplash.com/photos/RUqoVelx59I> (Dustan Woodhouse)

Marine Plant Life <https://unsplash.com/photos/tWWCqIMiUmg> (Marek Okon)

Seabirds <https://unsplash.com/photos/5FkWowAowA4> (the Bialons)

Sea Turtle <https://unsplash.com/photos/iRgblpf50IE> (Olga ga)

Companies <https://unsplash.com/photos/cW4ILTavU80> (Smartworks Coworking)

Plastic Items <https://unsplash.com/photos/ym3BWQgpquA> (Kevin Lehtla)

Reusable Items <https://unsplash.com/photos/2qk6Y3VFHzk> (Good Soul Shop)

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PLASTIC IN THE OCEAN

Name: _____

Date: _____



Plastic trash in the deep ocean.



Plastic trash floats to the surface.



Plastic washed up on shore.

Did you know there are 5.25 trillion pieces of plastic in the ocean? Plastic litters the deep ocean and floats to the surface, washing up on shores. Plastic trash in the ocean kills seabirds, fish, marine animals, and plant life.



Marine plant life.



Seabirds live near the ocean.

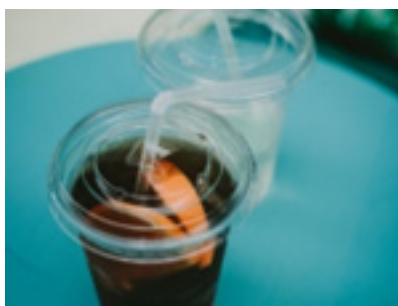


Fish and marine animals.

Many companies continue to make plastic items that get thrown away and end up in the ocean. People can make a difference by refusing to use plastic. Things like plastic forks, spoons, straws, or wrappers are unnecessary because reusable items can be used instead. The next time you are offered plastic, think about the harm it could cause...and don't use plastic!



Companies make plastic items.



Plastic items.



Reusable (non-plastic) items.



What is the author's purpose? Circle one

To inform

To entertain

To persuade

The author's purpose is to _____ because _____

How do you think the author feels about plastic trash in the ocean? I think the author feels

_____ because _____

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