

## Create Your Own Plankton

**Guiding Question:** How do plankton adapt to their environment?

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|--|--------------------------------------|
| <b>Grades: 2-8</b>   | <b>Subjects: Science, Art, STEAM</b> |
| <b>Length: 45 min</b>  | <b>Site: Classroom</b>               |
| <b>Summary: Student will identify the ways plankton adapt to their environment and use this to design their own plankton.</b>  |                                      |
| <b>Objectives</b> <ul style="list-style-type: none"> <li>• Student will recognize how animals adapt to their environment</li> <li>• Students will understand the difference between phytoplankton and zooplankton</li> </ul> |                                      |
| <b>Materials</b> <ul style="list-style-type: none"> <li>• Paper</li> <li>• Art Supplies</li> <li>• Photos of plankton</li> </ul>   |                                      |

### Background

Plankton are small animals and plants that float and drift in the water. They are generally microscopic and can live in both salt and fresh water. Many animals such as fish and whales rely on plankton as their food source.

Phytoplankton (plant plankton) use the energy from the sun as their food source and thrive on nutrients in the water. Zooplankton (animal plankton) eat other plankton and have adapted to survive in the open water. Many zooplankton are larval stages of familiar animals.

The following conditions help plant and animal plankton to thrive in the Gulf of Maine:

- nutrients carried in by river runoff
- cold water from Nova Scotia shelf (cold water holds more dissolved gases like Oxygen and CO<sub>2</sub>)
- circulation of nutrients by the gyre, other currents, winds, strong tidal mixing, and seasonal overturn of deep and surface waters (called upwelling)
- shallow continental shelf and banks ideal for photosynthesis

### Procedure

1. Show students the photos of plankton and explain that they are the basis of the food chain in the sea, on which all other life depends.

2. Although plankton are not strong swimmers, many do have adaptations for:

- keeping afloat
- catching the wind
- wriggling toward prey
- capturing prey
- and other survival strategies.

Explain that plants use the sun's energy; zooplankton eat phytoplankton and other zooplankton.

3. Ask students to invent their own plankton by drawing on their **Create your Own Plankton: Student Sheet**.

- Students will make decisions about plankton adaptation and life style.
- Students make a drawing of their plankton and describe how it survives.

### Assessment

Use student's completed work to demonstrate their understanding of plankton and how they adapt to their environment.

### Extensions

1. Provide students with materials and ask them to construct their plankton. You can use common materials such as clay, straws, pipe cleaners, etc
2. Ask students to write a story about their plankton and the travels it takes through the watershed
3. Have students make a list of organisms that live in the Gulf of Maine. Then draw pictures of the organisms, cut them out, and attach the pictures to strings to make "food chain" mobiles. Put the phytoplankton at the bottom and the carnivores, such as sharks and seals, at the top. (There should be many more phytoplankton than seals.) Be sure students include both phytoplankton (plant plankton) and zooplankton (animal plankton).

### Resources

#### Create your Own Plankton: Student Sheet (attached)

Blue Planter Society: The Importance of Plankton:

<http://blueplanetociety.blogspot.com/2015/03/the-importance-of-plankton.html>

The Secret Life of Plankton: [https://www.youtube.com/watch?v=xFQ\\_f02D7f0](https://www.youtube.com/watch?v=xFQ_f02D7f0)



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## Standards

### Next Generation Science Standards

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

5-PS3-1. Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

MS-LS1-5. Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.



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### Create Your Own Plankton: Student Sheet

**Draw a Plankton in the space below. How has your plankton adapted to:**

Stay afloat    Catch the wind    wriggle toward prey    capture prey  
Collect energy from the sun    avoid predators    survive



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