LOGGERHEAD
MARINELIFE CENTER

Human Impact Lab: Ocean Zones

Loggerhead Marinelife Center

Loggerhead Marinelife Center is an ocean conservation organization and sea turtle hospital located adjacent to one of the most important sea turtle nesting beaches in the world. The Center features an on-site campus hospital, research laboratory, educational exhibits and aquariums, and also operates the Juno Beach Pier, which hosts world-class angling and sightseeing. The Center's conservation team works with 76 local and international organizations across six continents to form partnerships and share conservation initiatives and best practices that are core to its mission of ocean conservation. The Center is expanding and has launched its Waves of Progress capital expansion campaign, designed to accelerate and amplify LMC's conservation and education impact.

Our mission is to promote conservation of ocean ecosystems with a special focus on threatened and endangered sea turtles. Our vision is to be recognized locally and internationally as the leading authority in sea turtle education, research and rehabilitation.

Visit Marinelife.org to learn more about Loggerhead Marinelife Center!

Lesson Objectives

- I can describe the different zones of the ocean
- I can identify the animals that live in these ocean zones and adaptations they may have
- I can observe the different in light, temperature, oxygen, and pressure in the ocean zones.

Vocabulary

- **Abyssopelagic:** inhabiting the parts of the sea with no light and temperatures hover around freezing, approximately 9,800-19,700 feet below the surface.
- **Bathypelagic:** inhabiting the deep sea where the environment is dark and cold, approximately 3,300-9,800 feet below the surface.
- **Epipelagic:** of, relating to, or constituting the part of the oceanic zone into which enough light penetrates for photosynthesis.
- **Hadalpelagic**: inhabiting the ocean basin and below, approximately 19,700-36,100 feet below the surface. This zone consists of trenches and valleys.
- **Mesopelagic:** inhabiting the intermediate depths of the sea, approximately 650-3,300 feet below the surface.

Resources

Ocean Zones in a Jar

Materials:

- ¾ cup rubbing alcohol
- ¾ cup cooking oil
- ¾ cup water
- ¾ cup dish soap
- ¾ cup corn syrup
- Food coloring (green, blue, and red)
- Large clear jar
- Funnel
- 5 small bowls

Directions:

1. In one of the five bowls, add corn syrup and drops of all three colors of food coloring and mix them together until it turns black .
2. Use the funnel to add the corn syrup mixture to your large jar. This is your Hadalpelagic or Trench Zone of the ocean.
3. In another clean bowl, add dish soap and red and blue food coloring and mix them together until it turns purple.
4. Clean the funnel and use it to add the dish soap mixture to your large jar. This is your Abyssopelagic or Abyss Zone
5. In another clean bowl, add water and several drops of green food coloring and mix until it turns dark green.
6. Clean the funnel and use it to add the water mixture to your large jar. This is your Bathypelagic or Midnight Zone.
7. In another clean bowl, add cooking oil and several drops of blue food coloring and mix until it turns dark blue.
8. Clean the funnel and use it to add the cooking oil mixture to your large jar. This is your Mesopelagic or Twilight Zone
9. In your last clean bowl, add rubbing alcohol and only one drop of blue food coloring and mix until it turns light blue.
10. Add this rubbing alcohol layer very carefully so that the water and oil layers don't get mixed up. This is the Epipelagic or Sunlight Zone.
11. Label each zone and ask yourself the following questions:
    a. Write a list of marine organisms that might live in each zone!
    b. Can some marine organisms survive in multiple zones?
    c. What adaptations do organisms in the Abyss zone have compared to the Twilight zone?
    d. How does light, temperature, oxygen, and pressure change through each zone?