Learning Objectives

1) Understand that a habitat is a place where plants and animals naturally live. A habitat provides food, water, and shelter.

2) Know that the ocean habitat is the largest of all the habitats; in fact, the ocean covers about 70% of the earth. Also, the salty ocean is home to over 250,000 kinds of living things.

3) Realize that the ocean bottom is not flat. There are plains, mountains, volcanoes, and trenches. This different terrain is responsible for the two major zones in the ocean, the light and dark zones.

4) Know that ocean water contains minerals and elements, which are necessary to the survival of ocean organisms.

5) Understand that the light and dark zones of the ocean habitat are different in at least six different ways: movement of the water, amount of sunlight, temperature, pressure, availability of food, and the salinity of the water.

6) Know the characteristics of the light zone.

   a) In the light zone the sunlight reaches down about 100-200 meters below the water.
   b) The light zone is divided into two parts, the continental shelf and the open ocean.

      i) Along the edges of the continents, there are parts of land close to the shore that slope down gradually from the beach; these parts are collectively called the continental shelf. The continental shelf is usually about 40 miles wide and contains most of the life in the light zone. River drainage, kelp forests, and sea grass meadows provide an abundance of nutrients in the shelf waters.
      ii) Farther out from the continental shelf is the open ocean. In the open ocean, light can penetrate very deep because of the water clarity. These open regions contain less food than the shelf waters and, therefore, less life, requiring the animals that live there to be hearty.

7) Understand the importance of plant life in the ocean. Plants provide food for a variety of ocean animals and produce oxygen that is used by all sorts of animals. In fact, aquatic plants are responsible for producing over half the oxygen in the atmosphere and most of the oxygen used by fish.

8) Realize that organisms in the ocean habitats must adapt to their environment. Fish have adapted in many ways to survive in their habitats. They vary in size and shape, consume a lot of water, breathe through gills, have internal ears, secrete mucous, have special behavioral patterns, and some are camouflaged.

9) Know the characteristics of the dark zone habitat. The dark zone is a harsh environment, having no sunlight, little food, cold water, and extreme water pressure. Also, the dark zone is divided into two layers, the mid-water layer and the deep-sea layer.

   a) The mid-water layer of the dark zone is located where the continental shelf ends and the land of the continental slope plummets down. There is very little light in this layer. Many of the animals here feed off of the dead organic material that washes down the continental slope from the light zone.
   b) The deep-sea layer of the dark zone can be as deep as 1-3 miles below the surface. The water pressure in the deep-sea layer is 1000 times greater than at the surface and the water is very cold, just above freezing. These conditions cause animals in this layer to move very slowly.

10) Realize that dark zone creatures have made special adaptations in order to live in their harsh environment. Some fish, like the lantern fish and the flashlight fish, make their own light through chemical reactions. Many fish migrate up to the light zone at night in order to hunt and feed.

Suggested Activities

1) Before watching the video:

   a) Make a list of everything the students know about the ocean and print the information on the board. Save it for after viewing the video.

2) After viewing the video:

   a) How a baleen works: To demonstrate how a baleen functions, sprinkle pepper in a large, shallow pan of water that is wider than a fine-toothed comb. Run one finger through the water and examine the result. Some pepper will adhere to the finger. Now move a fine-toothed comb through the water in one direction. The teeth of the comb will filter the pepper in the same manner that the baleen filters the krill for the whale's food. Very little is lost.
   b) Making a light and dark zone ocean bulletin board: Discuss how the surface under the ocean is much the same as on land with valleys, plains, and volcanoes. Find the outline of the ocean floor on the video and press pause. Have the students each make a drawing of the outline to save. Select a student to recreate it on a large sheet of paper for the bulletin board. Each student decides if he/she wants to draw an animal in the light zone or dark zone. Review the video and provide reference books with pictures of sea life so that the students can sketch their ocean animals and place them on the bulletin board in the proper zone.
   c) Making an ocean habitat to take home: Using his/her original drawing of the ocean floor, each student copies the bulletin board, making the smaller drawing a model of the larger class effort. Next, fold the paper in half and then lay it flat. Fold one half of each side inward to make a cover opening in the middle. Have each student draw a picture of the house shown in the beginning of the video. The students are free to take their project home to share with their families.

Vocabulary

Algae – mainly aquatic plants that lack true stems, roots, and leaves

Adaptation – something that is changed or changes in order to become suitable for an environment

Baleen – a special filter in the mouth of certain ocean animals that can strain large amounts of plankton from the ocean waters

Photosynthesis – a process in which plants convert light energy into food

Plankton – a collection of plants (microscopic algae) and small sea animals that float through the light zone

School – a large grouping of fish