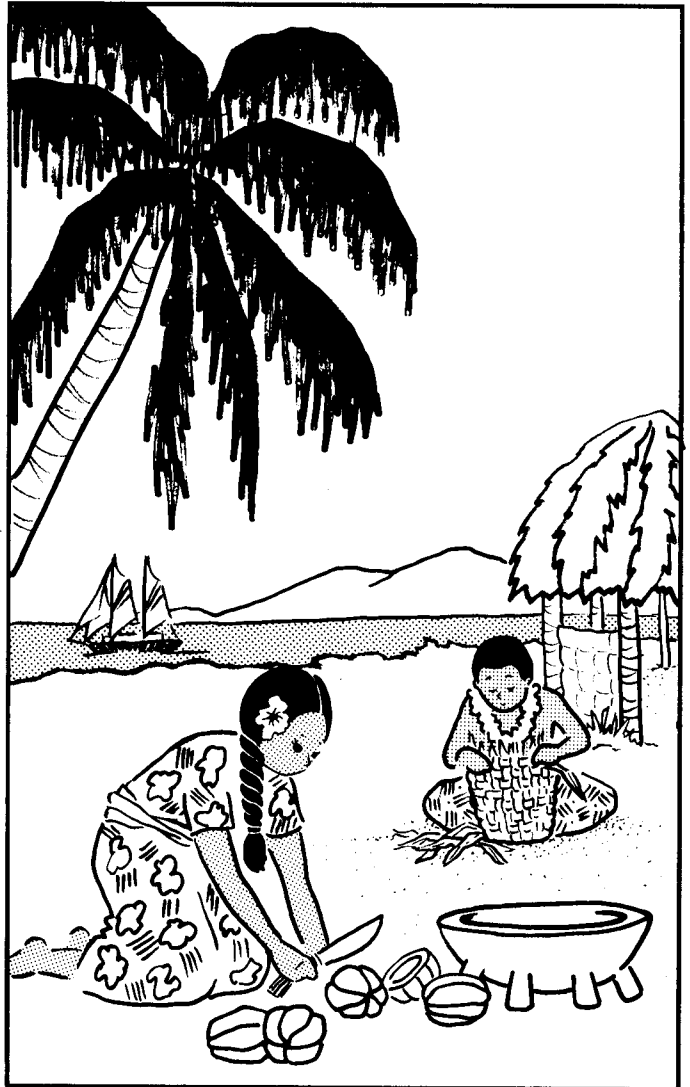


Are All Neighborhoods the Same?

Student Introduction

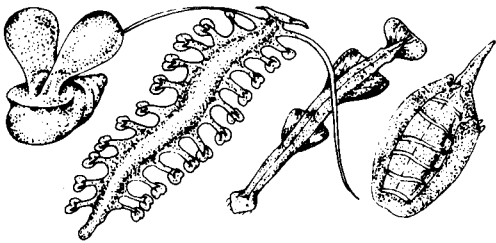
Where you live may affect the type of house you live in, how you move from one place to another, and the kind of food you eat. Where you live may affect the kinds of activities in which you are involved. Look at the pictures below and compare where and how the people in them live. What are some needs that the people in both environments have in common? Name some problems caused by each kind of environment.

Ecology is the study of how plants and animals relate to one another and to their surroundings, or **environment**. Just as people live in different environments, marine animals also live in different environments.



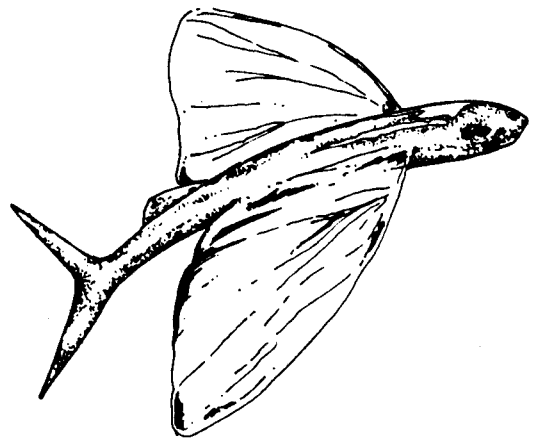
The ocean contains different “life zones,” one on top of the other. An animal that is adapted to live in the top zone of the sea may not be able to survive in the bottom zone of the ocean. An animal that is used to conditions at the bottom might die in the top zone. And yet the needs of these different types of animals—such as food and protection from enemies—are the same.

Surface waters receive a great deal of sunlight, which helps the growth of plant life. Thus, many kinds of marine animals that live near the surface are well supplied with food. Because their food is easy to acquire and swallow, many of these surface animals do not need large, sharp teeth. Marine animals that live near the surface include many types, from zooplankton, which are tiny, hard-to-see water animals, to whales, the earth’s largest creatures.



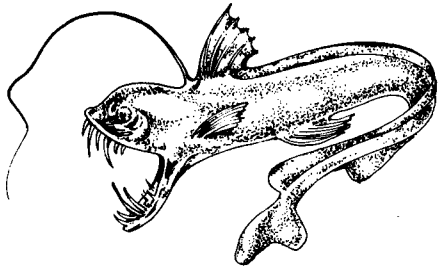
Because many surface marine animals also feed on one another, nature has given them various means of protecting themselves. Color is one way that certain fish avoid a predator. Their colors allow the fish to blend in with their surroundings. This is called **camouflage**. For example, zooplankton are usually colorless or light blue or green. They blend in with the sky

when an animal that would eat them looks up from below. Other marine animals, like some kinds of fish, have silvery undersides. They are nearly invisible to predators looking upward. Their backs are darkly colored, often brown or blue. This protects them from the sharp eyes of predators—like sea gulls—that attack from above. Can you think of other animals whose camouflage protects them from enemies?



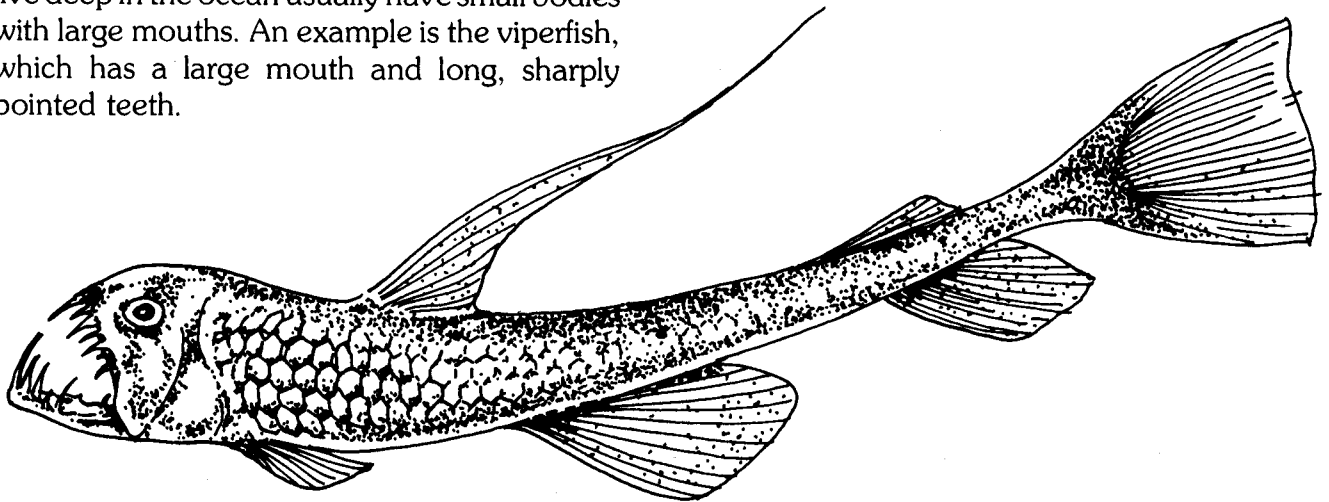
Many surface fish are fast swimmers. Their streamlined bodies allow them to escape quickly from enemies. Some fish even fly. As they leap from the water, special fins allow them to glide through the air, sometimes as far as 200 meters.

Marine animals that live in the middle zone of the ocean’s depths have a very different kind of environment. Sunlight cannot easily reach the depths of the ocean and so these animals live in constant darkness. They have very sensitive eyes. Some even have the ability to produce their own light. This is called living light, or **bioluminescence**. These animals use their light to find food, to frighten away enemies, or



to attract mates. For example, the angler fish, which lives about 800 meters under water, has its own glowing “fishing pole” attached to its head. The light from this stalk lures other fish close enough so that the angler can grab them with its sharp teeth.

Because the ocean’s depths are so dark, there is little plant life and food is scarce. Most of the food—such as plant and animal remains—sinks downward from surface waters. The animals’ only other way of getting food is eating other marine animals. Because of this, fish that live deep in the ocean usually have small bodies with large mouths. An example is the viperfish, which has a large mouth and long, sharply pointed teeth.



Most marine animals in the deeper zones are dark in color. They blend in with the darkness of the ocean around them and, thus, hide from enemies.

In the very deepest zone of the ocean, marine creatures have adapted in special ways to life on or near the bottom. Some shrimp-like animals have small bodies and long legs to support them in soft bottom mud. There are only a few species of fish that live deeper than 10,000 meters. These fish are smaller and lighter in weight than those at the surface. Many are blind and some walk about on the bottom on long, slender stilt-like fins. Many of them have long feelers for finding food. It is said that the bottom of the ocean is lighted by a soft, eerie glow. This is actually because many bottom animals produce living light (bioluminescence), just as the animals in the middle zone do.

Food at the bottom consists mainly of dead plant and animal material that sinks from the surface waters. Sharks’ teeth and whale ear-bones are very common in the bottom mud.

Thus, marine animals that live in different depths of the ocean live very different kinds of lives. They are all faced with the same problems of survival—getting food, finding mates, and avoiding enemies. But the ways in which they respond to these problems are controlled by their environment.

Student Activity

Purpose

1. To identify the common needs of all animals.
2. To identify environmental differences between the surface waters and ocean depths.
3. To list the characteristics of both surface animals and those that live in the ocean's depths.

Procedure

- A. Compare the picture of the deep sea angler fish with the shallow water grouper. Think about what you have read when answering these questions.
 1. List three differences in the physical structure of the fishes.
 2. What colors could the shallow water fish be? What color do you suppose the deep sea angler would be?
 3. What are some common needs these fish share?
 4. Identify some environmental problems each fish might face.
 5. Are there any structural adaptations either fish has made because of its environment?

