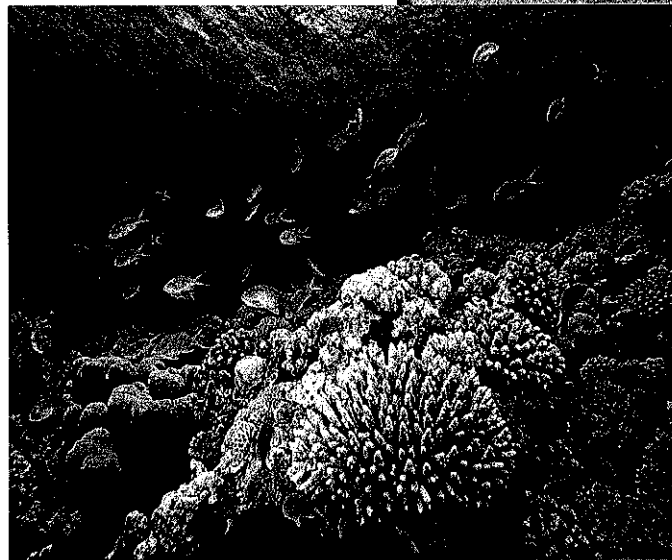


The ocean changes as you descend into it. It becomes colder, darker, home to fewer living things. Scientists consider the ocean as being made up of five different zones based on these factors. The zones of the ocean are the sunlight zone, the twilight zone, the midnight zone, the abyssal zone, and the hadal zone.

Sunlight Zone

The sunlight zone extends from the surface down to about 200 meters. Sunlight is able to illuminate the entire zone. It warms the water and provides light for plants and animals. Plants that need sunlight for photosynthesis are able to live in this zone. Coastal areas called estuaries are part of this zone. These are partly enclosed bodies of water where freshwater rivers meet the salty ocean. They are very important because many animals lay their eggs here. Farther out to sea, marine mammals, sea turtles, and fish can be found in the sunlight zone. Of all the ocean's layers, this layer is home to the most species.

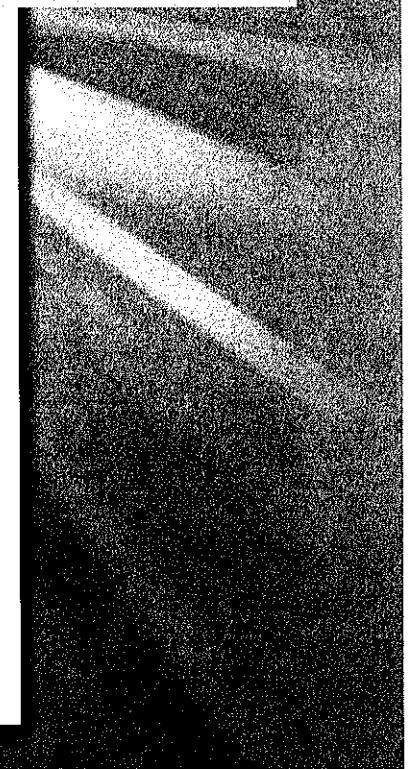


Coral reefs exist in the sunlight zone. Many plants and animals live here.

Twilight Zone

The **twilight zone** is directly below the sunlight zone. It extends from a depth of about 200 meters down to about 1000 meters. Some sunlight does travel this deep, but most is absorbed by water in the sunlight zone above. Most of the food source in this layer falls down from the sunlight zone.

The organisms that live here have adaptations that allow them to see as well as attract prey. Some animals in this zone are bioluminescent, which means that they can chemically make their own light. They twinkle as they swim, attracting other organisms they use as food. Other organisms that live in this zone include jellyfish and squid. Some whales visit this zone to hunt.



Midnight Zone

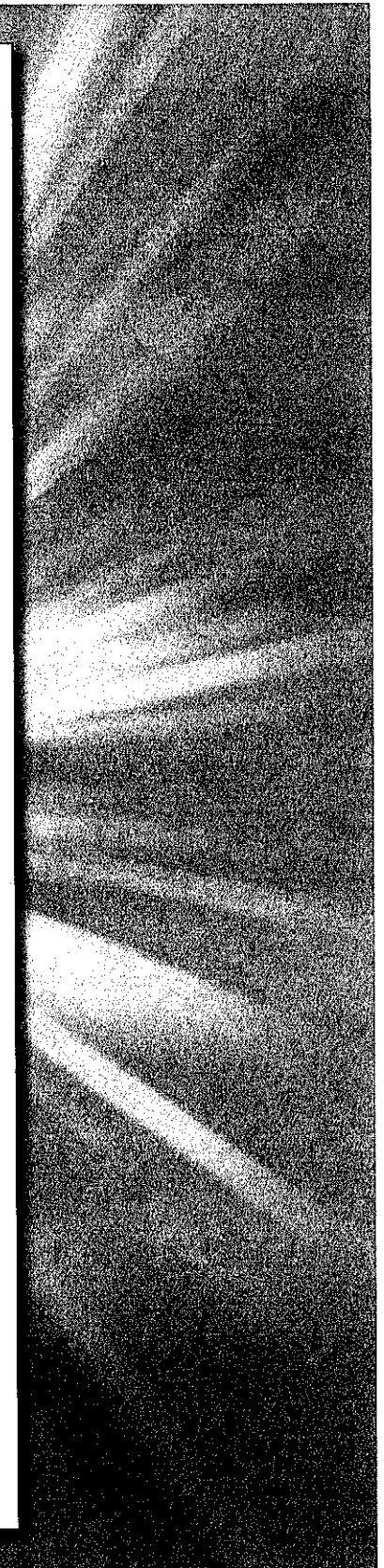
The **midnight zone** extends from a depth of about 1000 meters to about 4000 meters. Here, it is completely dark. The water above has absorbed all incoming sunlight. The only light visible in this zone is from the bioluminescence of the organisms that live here. This zone is cold and is under a lot of pressure from the weight of the water above. Many species of fish and squid live in this zone, even though the pressure is intense. Unlike the sunlit zone, where animals and plants are colorful, animals in the midnight zone are mostly black or red.

Abyssal Zone

The **abyssal zone** extends from 4000 meters to 6000 meters down. The pressure is even greater and the water is near freezing. Very few organisms can survive in this cold and dark place. Yet there are oases of life around the deep ocean vents here. At these vents, hot, chemical-rich water flows out from under the seafloor. Bacteria living near these vents convert the chemicals into energy to live. The bacteria form the basis of a unique food chain that includes giant tube worms and white crabs.

Hadal Zone

In the deepest ocean trenches, below 6000 meters, lies the hadal zone. It is one of the least-known and harshest environments on the planet. The Marianas Trench, the deepest trench in the world, is part of the hadal zone. It has been explored only twice by humans, first in 1960 and again in 2012. The 2012 expedition brought back sediment samples and film footage of the trench. Scientists will analyze the sediment and use the film to construct a map of this mysterious place.



Ocean Environments Change with Depth

SUNLIGHT ZONE

Surface Zone

- _____
- _____
- _____
- _____
- _____

Twilight Zone

- _____
- _____
- _____
- _____

Midnight Zone

- _____
- _____
- _____
- _____

Abyssal Zone

- _____
- _____
- _____
- _____
- _____

Hadal Zone

- _____
- _____
- _____
- _____

Technology (Who? What?)

Why?

- _____
- _____
- _____
- _____