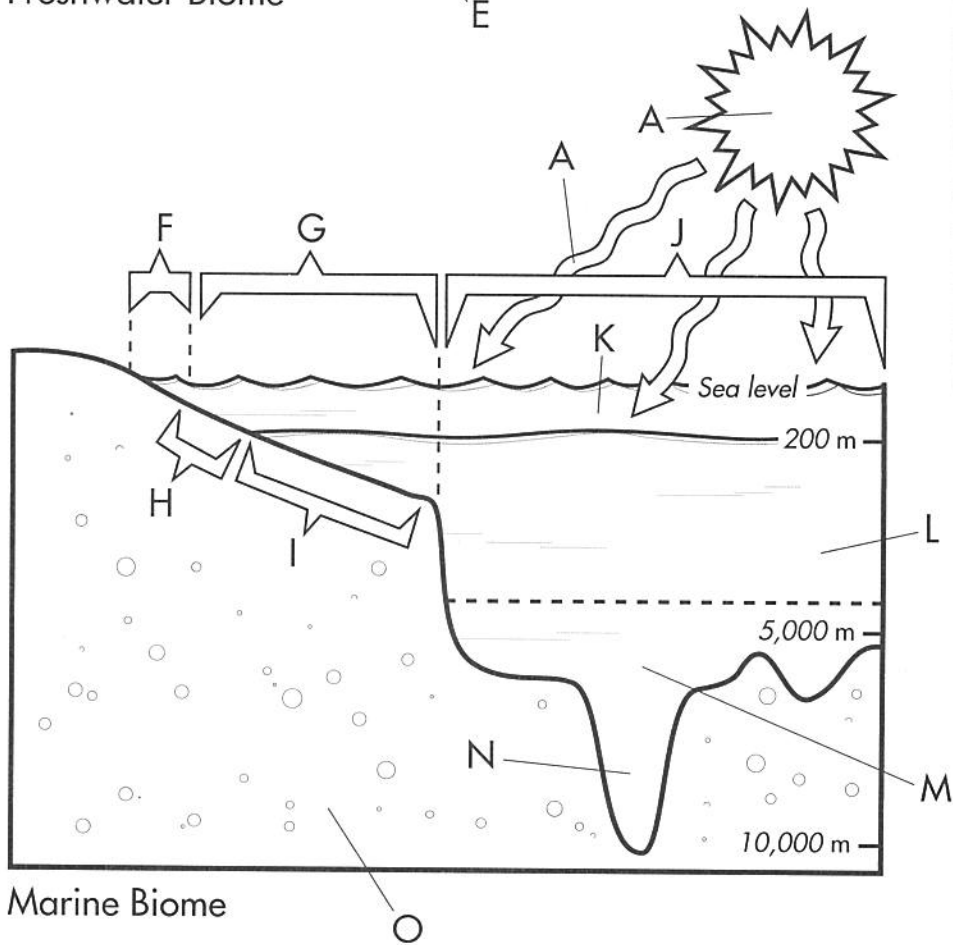


Freshwater Biome



Marine Biome

- Aquatic Biomes**
- SunlightA
 - Littoral ZoneB
 - Limnetic ZoneC
 - Profundal ZoneD
 - SedimentE
 - Sand.....E₁
 - Intertidal ZoneF
 - Neritic ZoneG
 - Continental Slope ..H
 - Continental Shelf ..I
 - Oceanic ZoneJ
 - Euphotic ZoneK
 - Aphotic ZoneL
 - Abyssal ZoneM
 - Oceanic TrenchesN

Chapter 11-5: Aquatic Biomes

The biosphere is the thin layer of the Earth in which life exists. In the biosphere, communities of plants, animals, and microorganisms living within distinct geographic areas are referred to as biomes. Biomes share distinctive climatic conditions and are identified primarily by their plant populations. Several communities may exist within a biome.

Both terrestrial (land-based) and aquatic (water-based) biomes exist in the biosphere. In the previous plate, we examined terrestrial biomes. In this plate, our attention is on aquatic biomes.

This plate consists of two diagrams: one displays a freshwater biome such as is found in a lake or pond; the second diagram is of a marine biome. Your work should begin with the top diagram.

Ecologists generally recognize two types of aquatic biomes: the freshwater biome and the marine biome.

In comparison to terrestrial biomes, aquatic biomes only undergo slight temperature changes. In a lake or pond, the slow motion of water leads to stratification, in which oxygen levels decrease with depth. In this view of the lake, we see **sunlight (A)** providing energy to the biome. At the shore of the lake is the **littoral zone (B)**. In this zone, light reaches all the way to the lake's bottom, and plants take root there. Many consumers such as worms, insects, and snails feed on the plants.

Further from the water's edge is the **limnetic zone (C)**. A light color should be used for this area. This zone extends vertically as far down as light penetrates; turbid water has a shallower limnetic zone. Producing organisms such as algae and plankton exist here.

The area of depth that light does not reach is the called the **profundal zone (D)**. Photosynthesis does not take place here, but nutrients float down from the littoral and limnetic zones. The profundal zone is inhabited by primary consumers. Within the **sediment (E)** is a population of microorganisms, including bacteria and fungi. These organisms act as decomposers to break down organic matter that sinks to the bottom. Below the sediment is the **sand (E₁)**, as well as the rock of the Earth's mantle.

Having examined a freshwater biome, we now move on to the marine biome. About three-quarters of the Earth's water exists in the oceans, and water temperatures vary considerably depending upon their depth. Continue your study by focusing on the marine biome at the bottom of the plate.

As is the case with ponds and lakes, there are various zones in the marine biome. At the margin of the ocean is the **intertidal zone (F)**. Sand beaches and estuaries where rivers empty into the oceans are found in this zone. This environment is subject to tides and is inhabited by organisms that have adapted to wide ranges of environmental conditions. Nutrients are plentiful, and breeding grounds for many types of organisms are found here.

The next zone is the **neritic zone (G)**. This zone extends from near the shoreline to where the **continental slope (H)** ends—beyond the **continental shelf (I)**. In the neritic zone, phytoplankton produce large amounts of carbohydrate through photosynthesis, and zooplankton feed on this carbohydrate. Animals and plants are adapted for clinging to rocks and kelps and seaweeds form extensive beds. In many shallow areas, light reaches to the ocean bottom, and nutrients are suspended by waves, winds, and tides. The next major zone is the **oceanic zone (J)**. In this area, the net productivity is comparable to that of a desert; there are few organic nutrients.

The marine biome can also be subdivided according to how far light penetrates the waters. The upper region is the **euphotic zone (K)**, and reaches from sea level to a depth of approximately 200 meters. Light penetrates this zone, and the organic matter is rich.

Below this level is the **aphotic zone (L)**. This area begins at the edge of the continental slope (I) and extends from 200 meters to 5000 meters below the surface. This zone is in perpetual darkness and supports a limited variety of life. Nutrients descend from the euphotic zone and permit life to exist in this region.

The deepest part of the ocean constitutes the **abyssal zone (M)** and extending down from this zone are the **oceanic trenches (N)**, some of which are five miles deep. Light cannot reach this area, but nevertheless living forms exist here; there are sparse populations of decomposers that depend on organic matter that drift down from above. Cracks in the ocean floor also release sulfur compounds that permit certain species of bacteria to thrive. Abyssal regions are characterized by tremendous pressure and numbing cold, and the organisms that live there are known as benthic scavengers.

11.5 Aquatic Biomes

1. The thin layer of the Earth in which life exists is the _____.
2. How are biomes primarily identified?
3. What are the two types of aquatic biomes that ecologists generally recognize?
4. What does not change as much in a aquatic biome compared to a terrestrial biome?
5. Complete the chart for the three zones of a lake or pond

Zone	How far does light penetrate?	What lives there:

6. What is the job of the bacteria & fungi in the sediment?
7. Although nutrients are plentiful there, to what type of conditions do organisms in the intertidal zone need to be adapted?
8. In the neritic zone, how does the zooplankton depend on the phytoplankton?
9. What are there few of in the oceanic zone?
10. The marine biomes can also be subdivided according to how _____ penetrates the waters
11. What is the deepest zone in the ocean?
12. Describe the deepest zone in the ocean: