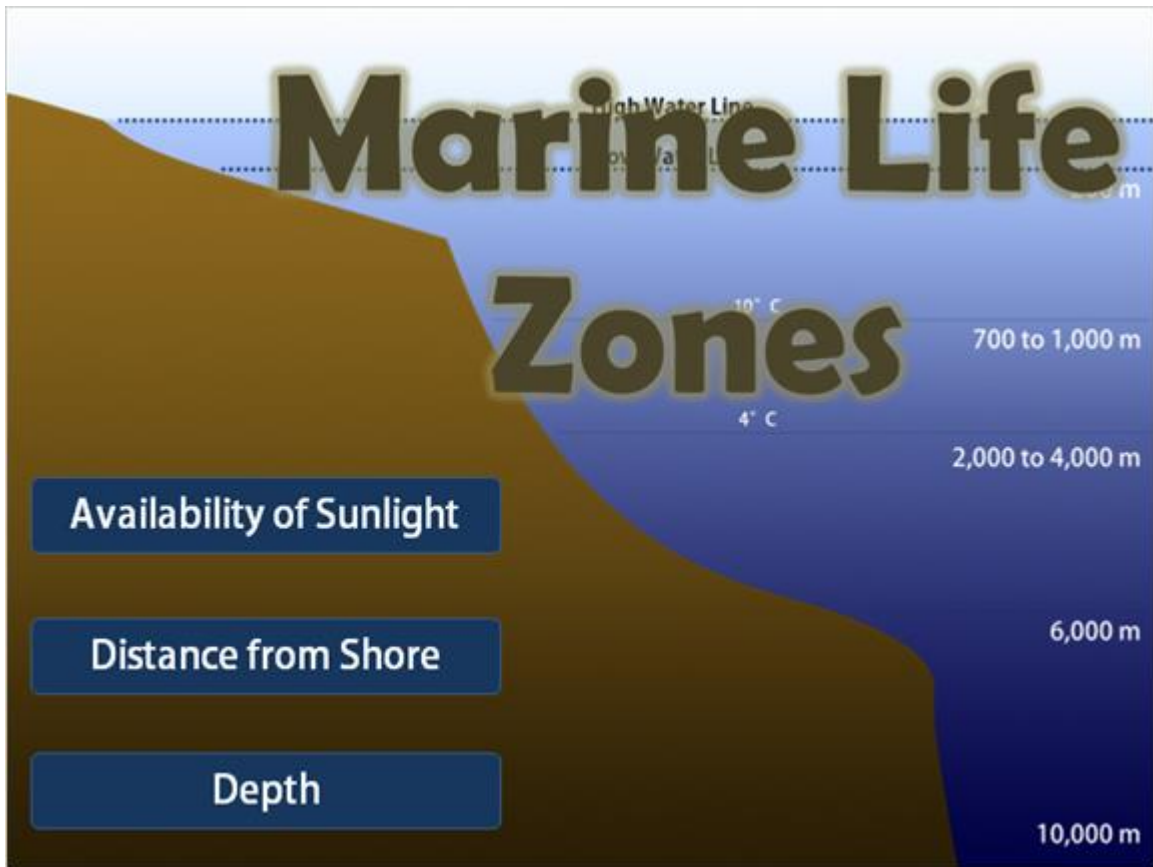


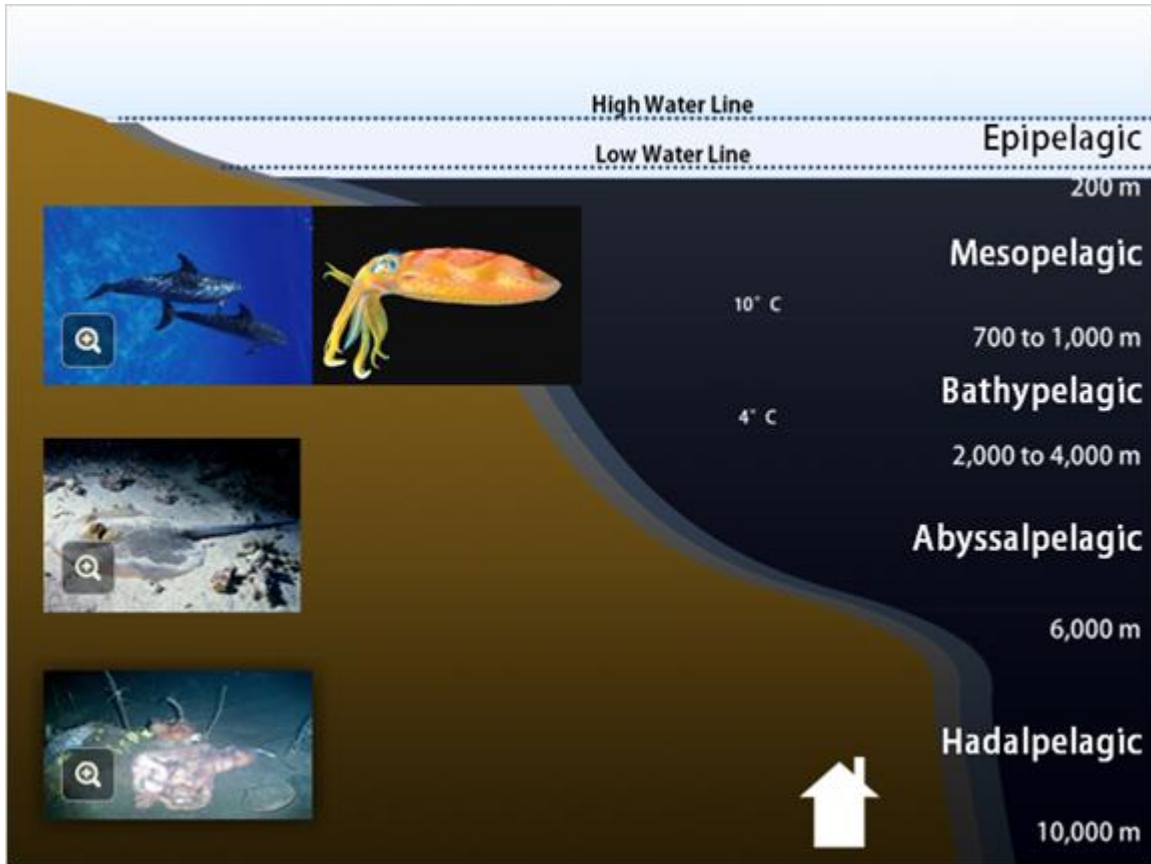
Module 12: Oceanography
Topic 5 Content: Marine Life Zones Notes



How marine life is distributed in the oceans depends on physical factors. These factors include the availability of sunlight, the distance from the shore, and the water depth. In this interactivity, explore each of the physical factors that determine where and how marine organisms live. Click any of the different factors to begin. Make sure to view all of the different factors.

Module 12: Oceanography

Topic 5 Content: Marine Life Zones Notes



Life exists from the shallowest shores to the deepest parts of the ocean. Ocean depth can be divided into three main categories: the pelagic zone, the demersal zone, and the benthic zone.

The pelagic zone includes the open ocean where animals swim or float freely. In the photic, or light receiving, portion of this zone, you may find plankton, dolphins, and many species of game fish. The aphotic part of the pelagic zone is home to organisms that are adapted to living without light, such as squid. The pelagic zone is further classified into zones based upon depth, light availability and temperature, and includes the epipelagic, mesopelagic, bathypelagic, abyssalpelagic, and hadalpelagic. The abyssal zone and the hadal zone represent the deepest portions of the zone where there is no light, cold temperatures, and extreme living conditions. Organisms in the abyssal zone live on the abyssal plains. Organisms in the hadal zone live in the deep ocean trenches.

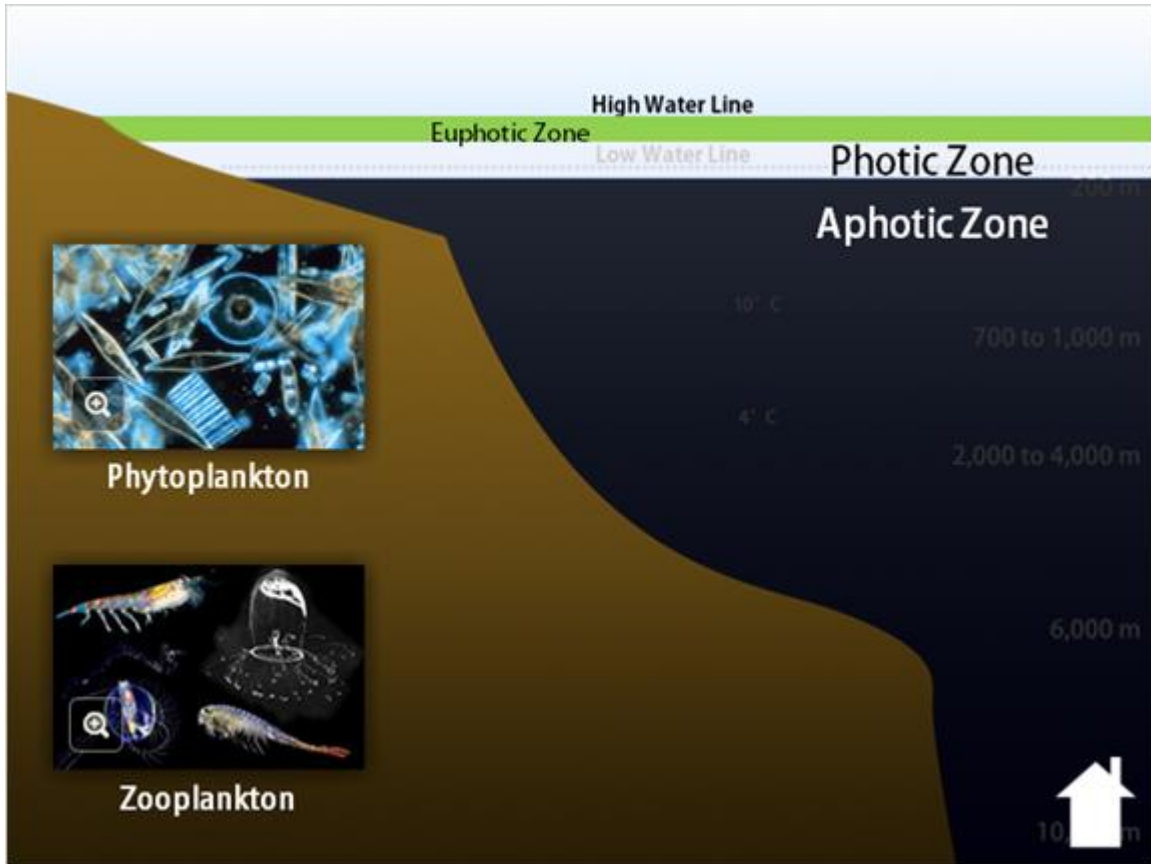
The demersal zone is the part of the water column directly above the benthic zone. Species in these zones survive by living near hydrothermal vents or from eating dead and decaying matter falling from the upper ocean zones.

The benthic zone includes the entire ocean floor, whether it is shallow or deep. It also includes some the sediments and several layers down. Crabs, marine worms, corals and many other species call the ocean floor home. Fish such as grenadier, tripodfish, and hagfish rely solely on decaying organisms that fall from the surface for their food source.

Take a moment to view a few examples of organisms that live in each zone. Once you have viewed each of the images, click the Home button to return to the main menu.

Module 12: Oceanography

Topic 5 Content: Marine Life Zones Notes



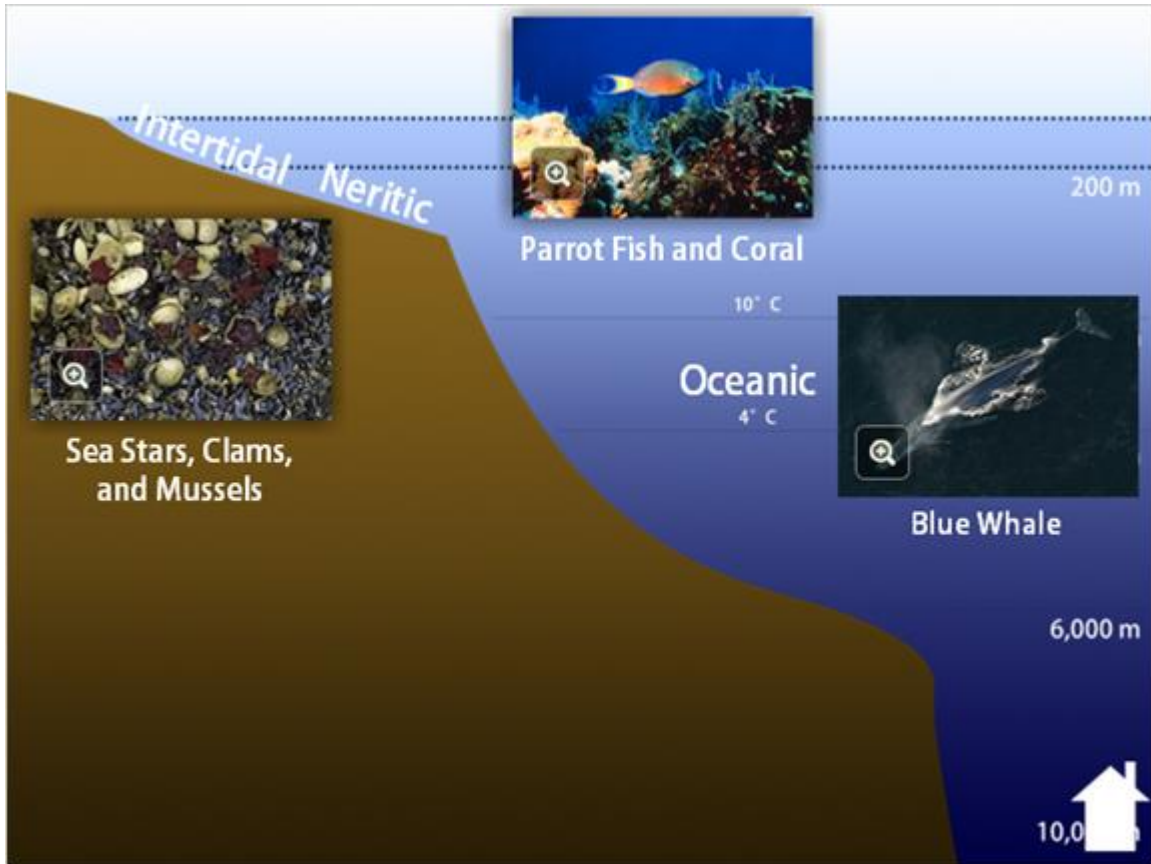
One way to classify the ocean into living zones uses sunlight. Using sunlight, oceanographers have defined two zones: the photic zone and aphotic zone.

The photic zone is the upper region of the ocean where sunlight penetrates. The amount of sunlight in the photic zone is affected by many factors, such as the clarity of the water, the amount of plankton, and the amount of suspended sediment. Part of the photic zone is called the euphotic zone. The light is strong enough in this zone for photosynthesis to occur. There are two types of plankton living in the photic zone that provide food for the vast majority of ocean life. Phytoplankton are a type of plant plankton that undergoes the process of photosynthesis. Phytoplankton produce a large quantity of oxygen that enters the atmosphere while removing carbon dioxide. These are very important ocean organisms. Zooplankton are animal plankton. Take a moment to view examples of both phytoplankton and zooplankton.

The aphotic zone is all of the water below the photic zone. There is little or no light in this zone. By definition, less than 1% of the Sun's light reaches the aphotic zone. Organisms living in this zone have adaptations that allow them to survive in a deep, cold environment.

Module 12: Oceanography

Topic 5 Content: Marine Life Zones Notes



Marine life zones are classified based on the organisms' distance from the shore. Drag and drop the submersible into each of the zones to learn more about the conditions that exist in each.

The intertidal zone, also referred to as the littoral zone, includes the areas where land and water meet and are affected by tidal changes. The organisms that live here must be adapted to changes in salinity, oxygen, and temperature. They also must be able to withstand drying out and wave action. Organisms that live in this zone must adapt to both wet and dry conditions.

Further away from shore is the neritic zone, also known as the sublittoral zone. This zone is located between the low tideline and the end of the continental shelf. Though it is not a very large area relative to the size of the ocean, this zone is often shallow enough to be a completely photic zone, which makes it a rich habitat for many marine species and an important resource for commercial fishing.

The oceanic zone is the area beyond the continental shelf. This zone is very deep, but not very productive due to a lack of light. Most of the ocean species live near the surface where nutrients are available. There is much less species diversity in the oceanic zone when compared to the neritic zone.

Take a moment to view a few examples of organisms that live in each zone. Once you have viewed each of the images, click the Home button to return to the main menu.

Sea stars, mussels, and clams live in the intertidal zone.

Parrot fish and coral reefs reside in the neritic zone.

The blue whale is the largest organism in the ocean. This whale roams the oceanic zone.