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Marine Environments

I must go down to the seas again, for the call of the running tide
Is a wild call and a clear call that may not be denied
Excerpt from a poem by John Masefield

Continents and islands in the ocean have thousands of miles of shoreline, also called coast or coastline. People enjoy spending time along the seashore, whether it is on sandy beaches, rocky cliffs and everything between. Besides being enjoyable for humans, these coastal areas provide wonderful habitat for a wide variety of sea creatures, aquatic birds and ocean plants. There are several different habitats along the coastline that are defined by the depth of the water and the distance from shore.

Intertidal Zone

The level of the water at a coastline changes with the ocean tides. The water reaches further inland at high tide and more of the shore is exposed at low tide. The area of land between high and low tide is called the intertidal zone. Sandy intertidal zones are home to burrowing animals like crabs and clams. Rocky intertidal zones feature small pools of water that harbor insects and other small creatures that provide food for shore birds. The intertidal zone is a harsh environment because creatures living there must adapt to daily changes in water depth and temperature.

Wetlands

Coastal wetlands are salt water marshes that are inland from the intertidal zone. Various species of fish and shellfish live in coastal wetlands and wetlands are home to various species of wading birds. Many coastal wetlands have been drained to make room for human development. Loosing these wetlands not only destroys the habitats of marine plants and animals, it also destroys the buffer zone between the land and the ocean. Coastal wetlands protect the land from erosion and other destruction when violent storms, especially hurricanes, bring the power of the ocean in contact with the shoreline.

Wetland areas called estuaries exist where a river empties into the ocean. The estuary environment is different from coastal wetlands because an estuary contains a continuous mixing of fresh water with salt water. Species of marine

creatures have adapted to life in estuaries and contribute to the biodiversity of earth. Every environmental niche is filled with specially adapted creatures.

Submerged Environment

The intertidal zone and coastal wetlands technically exist on land. The submerged environment is constantly under water and exists just off the coastline. In many areas the submerged environment is home to sea grasses and seaweeds that are attached to the ocean floor. Aquatic plants and seaweeds need sunlight for photosynthesis so they grow in shallow water. Seaweeds are not true plants but are algae. The most prevalent form of seaweed is kelp. Kelp grows in dense patches and can become 130 feet tall. Kelp is specially adapted to their aquatic environment. They have developed gas-filled floats that keep their tall fronds upright in the water so they can reach sunlight. Sea grasses and seaweeds provide a protected habitat for snails, crabs and many species of fish.

Coral Reefs

Coral reefs are composed of potentially millions of genetically identical animals called coral polyps. Corals are primitive animals that lack internal organs. Corals are composed of an outer layer of skin called the epidermis and an inner layer called the gastrodermis. The gastrodermis, roughly translated as "stomach skin," lines the area of the coral that handles digestion. Corals have tentacles with stinging cells that emit toxins for killing prey. Corals generally eat zooplankton. Corals achieve their brilliant colors through a symbiotic relationship with colorful algae called zooxanthellae. About one quarter of all marine species live in coral reefs. The top predator in corals reefs is the shark. Most coral reefs exist in warm shallow waters near shore but there are species of coral that have adapted to living in deep cold waters.

Mid- and Deep-Sea Levels

The average depth of the ocean is about 13,000 feet and the deepest spot in the ocean is the Mariana Trench in the Pacific Ocean that is 36,163 feet deep. The mid-sea level is below where sunlight can penetrate the water; this is called the aphotic zone, meaning without light. Many species of fish live in the aphotic zone because they can avoid predators in the darkness. Marine mammals like whales can live in the mid-level of the ocean but they return to the surface for air.

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The deepest levels of the sea are completely dark, yet many unusual species of animals inhabit this harsh environment. Some fish are bioluminescent; this means that they produce their own glowing light. Other creatures do not have vision because of the darkness while others have developed extremely large eyes. Creatures move slowly because of the cold temperatures and the high pressure of the deep water. Creatures of the deep ocean appear strange and ferocious to those of us who are accustomed to seeing birds, mammals and fish from higher levels of the ocean.

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Circle True or False after analyzing each of the following statements.

1. True False The area of land between high and low tide is called the intertidal zone.

2. True False Coastal wetlands protect the land from erosion and other destruction when violent storms, especially hurricanes.

3. True False In many areas the submerged environment is home to sea grasses and seaweeds that are attached to the ocean floor.

4. True False Estuaries exist where the intertidal zone meets with salt water marshes.

5. True False Sea grasses have developed gas-filled floats that keep their tall fronds upright in the water so they can reach sunlight.

6. True False Sea grasses and seaweeds provide a protected habitat for whales to nurture their young.

7. True False Coral reefs are composed of potentially millions of genetically identical animals called coral polyps.

8. True False Corals achieve their brilliant colors through a symbiotic relationship with colorful algae called zooplankton.

9. True False The mid-sea level is below where sunlight can penetrate the water; this is called the bioluminescent zone

10. True False The top predator in corals reefs is the shark.

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Answers

1. True
2. True
3. True
4. False
5. False
6. False
7. True
8. False
9. False
10. True