

Oceans and Aquatic Biology Unit Review

Key Points:

- The ocean can be divided into three zones—the intertidal, the neritic, and the oceanic zones.
- Organisms in the ocean are either benthos, plankton, or nekton.
- Humans get many resources from the ocean.
- Energy is passed from producer to consumer to decomposers in a food chain. Many aquatic (water) food chains are found in the ocean.

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The Structure of the Ocean

The ocean is composed of three different zones: the intertidal zone, the neritic zone, and the oceanic zone. These zones are created as scientists consider water depth and distance from the shore.

The **intertidal zone** is the area that falls between high tide and low tide. Sometimes it is covered by water, but at other times it is exposed to the air. Many of the organisms that live here are adapted to changes in the salinity and to sometimes being underwater. They also have developed ways to “hold on” to the shore to keep from being washed into the ocean.

The **neritic zone** is the ocean area that slopes down from the edge of the shoreline towards the ocean floor. Because the neritic zone is fairly shallow,



low, light can penetrate to the ocean floor and temperature stays fairly constant. As a result, many animals live in the neritic zone, especially in **coral reefs** (limestone deposits made of coral shells) and **kelp forests** (large brown algae that grow from the ocean floor toward the surface).

The **oceanic zone** is made

of the ocean's open waters. The zone extends from the ocean surface to the deepest waters of the ocean. Sunlight can only penetrate the top 200 meters of this zone, so many organisms live in the surface waters. **Upwelling** occurs here as the wind blows warm surface waters away from the shore, causing cold, nutrient-rich water to rise in its place. Upwelling enables many fish to live.

The Organisms in the Ocean

Organisms in the ocean can be divided into three groups: benthos, plankton, and nekton.

Benthos are organisms that live on the bottom of the ocean floor. Kelp, sponges, worms, clams, and starfish are all benthos.

Plankton are all organisms that float with the ocean's current. Some examples include krill, algae, jellyfish, and some mollusks.

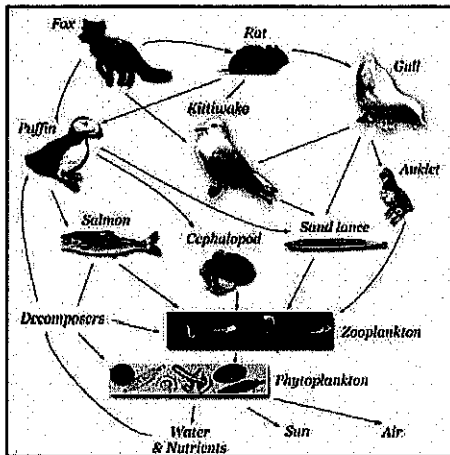
Finally, organisms that swim are called **nekton**. Examples of nekton include fish, whales, seals, eels,

squid, and octopus.



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The Food Chain: Oceans are a Habitat!



Many organisms make their homes in the ocean. Of course, these organisms form a **food web** as organisms feed off each other to stay alive.

In the oceanic food web, we can find producers, consumers, and decomposers.

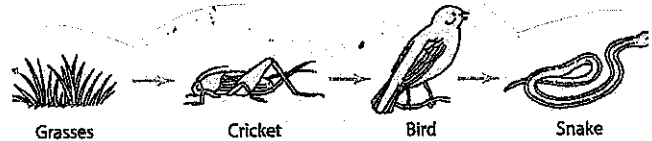
Producers are organisms that can make their own food using photosynthesis. These are plants and algae, as well as some bacteria.

Consumers are organisms that get their energy by feeding off other organisms. All animals and many protists are consumers. A **primary consumer** feeds off producers; a **secondary consumer** feeds off primary consumers, and a **tertiary consumer** feeds off secondary consumers.

Finally, ocean habitats also contain **decomposers**, or organisms that break down the remains of dead organisms to get their energy. Decomposers return chemical materials to their environment so that other organ-

isms can use them.

As we consider ocean food webs, it's important to remember a couple vocabulary words. **Aquatic** food chains are food chains that are found in water. **Terrestrial** food chains are food chains that are found on land. Of course, there are times when organisms can be found in both types of food chains or food webs. On the EOG, you might see questions about links between aquatic (water) and terrestrial (land) food webs.



Estuaries



The Estuary

Estuaries are unique habitats for organisms where salty ocean water mixes with fresh water from rivers. This makes a great habitat for many different types of organisms.

Estuaries are usually protected from the ocean's waves by some sort of bar-

rier island or reef. Their **salinity** (how salty they are) can change constantly, depending on the amount of rain and the number of coastal storms in the area.

However, in spite of these changes, estuaries have calm waters that have quite a bit of dissolved oxygen,

and nutrients, and minerals supplied by river water. Seagrasses provided great shelter and food, and many organisms make their homes in estuaries as a result. In fact, estuaries oftentimes serve as nurseries for many aquatic animals before they spend their adult lives in the ocean.

Resources from the Ocean

Humans get many important resources, including freshwater, food, and salt, from the oceans.

Humans get many resources from the ocean. As we've discussed previously, many organisms that humans use for food live in the ocean. Think about lobster, shrimp, oysters, mussels, and other shellfish!

However, humans can get freshwater from the ocean through the process of **desalination**. Desalination is actually just taking the salt

out of water. During this process, ocean water is boiled until the water evaporates, leaving behind only the salt, which humans can use. The evaporated water is captured and placed into a container, where it is cooled so it will condense back into liquid. Using this process, humans can obtain both salt and water to use for everyday purposes.



"To combat the rising sea levels we construct thousands of desalination plants to suck up the water."