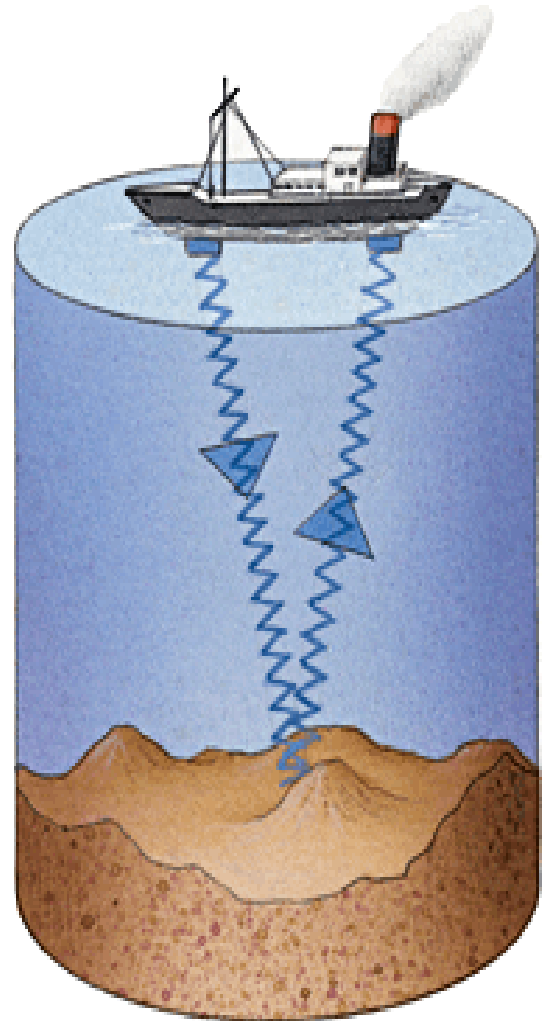


STATION 1: DEEP OCEAN EXPLORATION

Oceanography is the study of the physical properties of oceans. The four oceans differ from each other in size, depth, temperature, currents, and physical properties such as density, salinity and pH. Sonar, which stands for sound navigation and ranging, is a method used to determine the depth of the ocean using echoes.

Sonar equipment on a ship sends out a pulse which travels to the bottom of the ocean, bounces off the ocean floor, and returns to the ship. Scientists can use the time it takes the pulse to return to calculate the depth of the water. Scientists have used sonar technology to create a map of the ocean floor showing features such as underwater mountains, canyons (think of the Grand Canyon) and trenches. The maps also help scientists to understand tectonic plate processes (convergent, divergent, and transform boundaries).

1. In 3 sentences, explain why it is important for scientists to understand what the ocean floor looks like.
2. How do scientists gather information about the characteristics of the oceans?
3. Scientists are measuring 2 separate depths of the ocean using sonar. Point A takes 4 seconds to return to the ship. Point B takes 8 seconds to return. Knowing those two numbers, what could the scientists determine about the depth of the ocean in those two points? How do you know?



STATION 2: MARINE LIFE FORMS

Use the information in the passage below to fill in your chart.

What living organisms are found in any one place in the ocean is determined by the environment at that place: temperature, pressure, and the amount of light in the water. Marine biologists have classified ocean-dwelling organisms into 3 main types: plankton, those that do not swim, or swim weakly; nekton, those that swim, and benthos, those that are bottom-dwelling. Organisms living in the intertidal zone are adapted to being repeatedly exposed to air and to the action of waves. Most marine life is found in the neritic zone, where there is enough light for photosynthesis. In deeper zones there is little or no light. Animals in these zones have such adaptations as light-producing organism, high sensitivity to pressure and very sensitive eyes.

Plankton

These organisms are drifters, carried from place to place by wind, waves, and current. These organisms make their own food by photosynthesis.

Plankton includes a wide variety of microscopic organisms — protozoans, such as foraminifera and radiolarians; crustaceans such as copepods, cyclopods and water fleas, and rotifers.

Zooplankton also includes larger organisms. The eggs and larval forms of many animals, including sponges, tunicates and fish live as plankton for the first few weeks or months of their lives and then develop into nekton or benthos. Most plankton organisms obtain their food by filtering other plankton or organic debris from the water.

Nekton

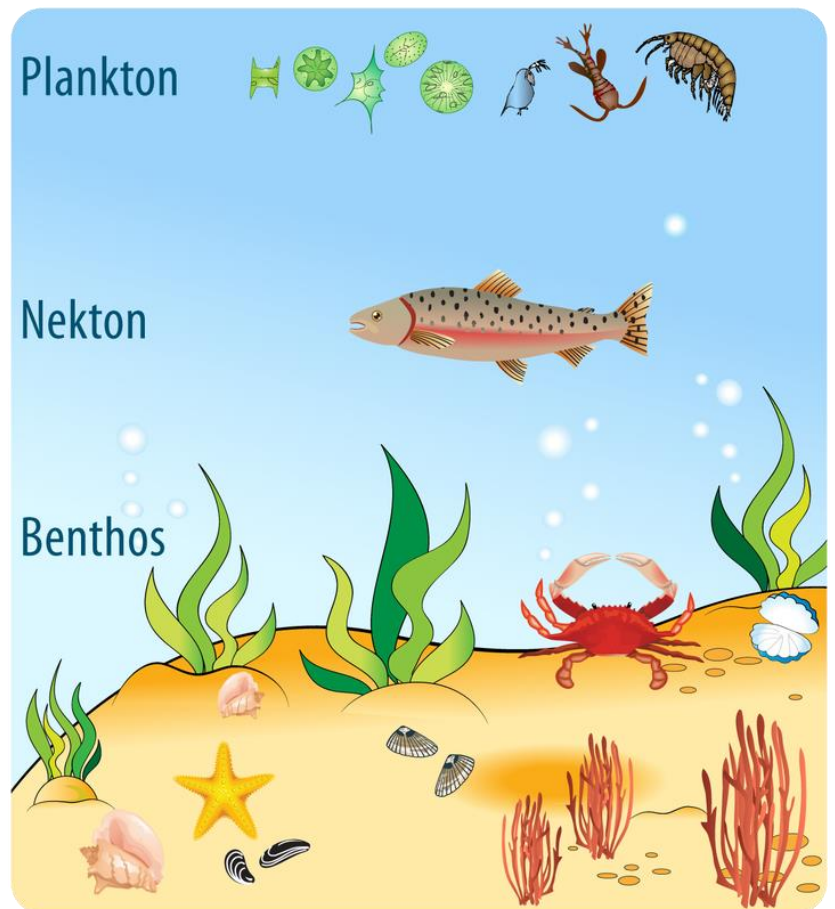
These organisms are freely swimming and do not rely on waves, current or wind to move them. Among the nekton are large, complex animals. Fish of all varieties are a major part of this group. Other members are reptiles, such as sea turtles and sea snakes; and mammals such as seals, whales, or porpoises. Invertebrates, such as jellyfish, sea worms, squids, shrimps and scallops complete the group. Animals of the nekton feed on other animals and seaweeds, plankton and floating organic matter.

Benthos

Bottom-dwelling organisms form the most varied group in the ocean. Because areas of rocky bottom provide a larger area of living places than flat, sandy areas of the ocean floor do, there are many more species living among rocks than in sandy places.

Many types of seaweeds are benthos. They are most commonly found in the shallow water, where the most sunlight and nutrients are found. Most seaweeds grow attached to rocks.

There are 4 main groups of benthic animals: burrowing animals, attached animals, crawling animals and swimming animals.



Station 3: Ocean/Marine Food Webs

PEARSON
Prentice Hall

Ocean Food Web

Ocean Food Webs
Every organism in a healthy ocean food web depends on every other organism for its survival. This is because each organism plays a unique role. Algae plankton use sunlight to make their food, so they are called producers. Animals that eat the algae plankton or other types of animals are called consumers. Some

Build a Food Web
See Complete Web

1. Visit this website:

<http://www.phschool.com/webcodes10/index.cfm?fuseaction=home.gotoWebCode&wcprefix=cfp&wcsuffix=3042>

2. Click the orange “Start” button to let the food web pop up.

3. Read the passage with your group members:

“Every organism in a healthy ocean food web depends on every other organism for its survival. This is because each organisms plays a unique role. Algae plankton use sunlight to make their food, so they are called producers. Animals that eat the algae plankton or other types of animals are called consumers. Some examples of consumers are animal plankton, Arctic cod, and polar bears. Decomposers are organisms that break down wastes and the remains of other organisms. Benthos, which are organisms that live on the ocean floor, are often decomposer. Roll your mouse over an organism to discover its role in the ocean food web. Blue arrows point to an organism from its food source. Red arrows point from an organism to the consumers that eat it.” – Pearson Prentice Hall

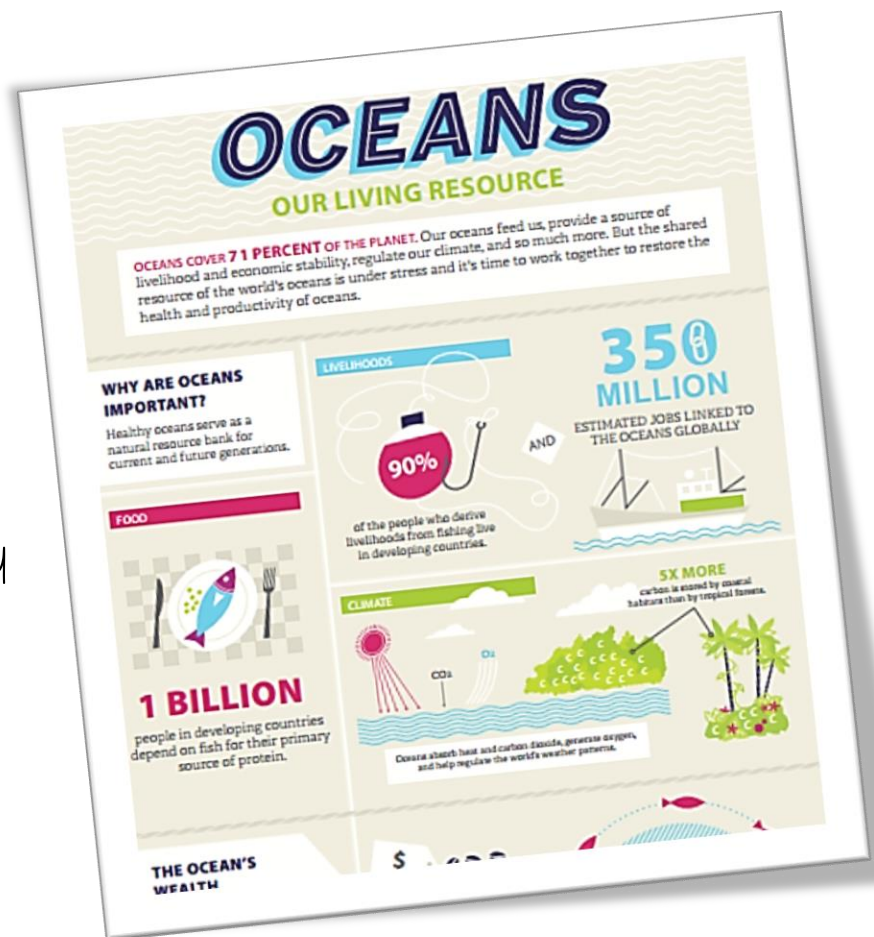
4. Navigate around the food web to answer the following questions:

1. From where does the algae plankton get its energy to make its food? Are algae plankton considered producers or consumers?
2. What do Silversides eat as their food source? List 3 organisms which eat the Silversides.
3. What would happen to the population of Arctic cod if the population of silversides greatly increased?
4. What does the Beluga whale depend on as its food sources?
5. Which 3 organisms depend ONLY on 1 primary source of food? What happens to the population of these 3 organisms if their source of food is wiped out?

Station 4: Oceans: Our Living Resource Infographic

Use the information in the infographic displayed on your iPad to answer the following questions. Need to see something in more depth? Use 2 fingers (your thumb and your index finger) and move your fingers apart from each other to make the image bigger or pinch them together to make the image smaller.

1. According to the infographic, why are oceans important?
2. One billion people in developing countries depend on fish for their primary source of protein. How can this protein from seafood, like fish, help an individual maintain good health?
3. Our oceans are under severe stress from what?
4. How many pieces of plastic are estimated to be afloat on every square mile of ocean?
5. Currently, what is a major source of ocean pollution? How much more pollution is occurring compared to 1960?
6. What are "Dead Zones"? How many exist and how many square miles do they cover?
7. Only 2% of oceans are protected compared to 12% of terrestrial (land) areas under protection. What are 2 recommendations you can make, based on this infographic, to better preserve the ocean and its resources?



Station 5: Ocean Zones: Estuary & Intertidal

Complete your chart as you read through the information in the Estuary & Intertidal Zone Passage

Station 6: Ocean Zones: Neritic

Complete your chart as you read through the information in the Neritic Zone Passage

Station 7: Ocean Zones: Oceanic

Complete your chart as you read through the information in the Oceanic Zone Passage

Station 8: Ocean Zones: Benthic

Complete your chart as you read through the information in the Benthic Zone Passage