



LESSON 1: OCEAN DWELLERS

INTRODUCTION

The importance of ocean currents for marine life is clear. Ocean currents serve as nurseries for some animals while others spend their whole lives in them. There are a variety of plants and animals that live in and around the currents, and this biodiversity shows how important the ocean and its currents are for so many living things.

LESSON SUMMARY

In this lesson, small groups of students use card sets to learn about some of the plants and animals that live in the ocean. They explore where the living thing lives, what it looks like and where it gets its energy. They share information with classmates as they place picture cards on a chart to show the depth at which the living thing lives in the ocean.

OBJECTIVES

- Students will explore the living things that live in the ocean, including what they look like, where they live, and their predator-prey relationships.
- Students will learn that different living things primarily live at particular depths in the ocean.

ESTIMATED TIME

45 minutes. If you would like to complete this lesson over 2 days, complete steps 1-3 on day 1 and the remainder of the lesson on day 2.

STANDARDS ADDRESSED

Science (NGSS): 2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

OCEAN LITERACY PRINCIPLES

5a Ocean life ranges in size from the smallest living things, microbes, to the largest animal on Earth, blue whales.

5d Most of the major groups that exist on Earth are found exclusively in the ocean and the diversity of major groups of organisms is much greater in the ocean than on land.

5e The ocean provides a vast living space with diverse and unique ecosystems.

FOCUS QUESTION

How are living things that live in the ocean similar to and different from each other?

MATERIALS

- Ocean Dwellers card sets, see “Preparation”
- Ocean Depth Chart master, see “Preparation” for options on how to create the chart and the materials needed
- Tape
- Plain paper, one sheet per student
- Pencils, pens, markers, and/or crayons

PREPARATION

- Print and cut apart the Ocean Dwellers card sets. Each set should have 4 cards about the same living thing—a card about what it looks like, a card about where it gets its energy, a card about where it lives, and a card with a picture of it. Three of the cards have information and one is a picture of the plant or animal. Each group of 3 students should get 1 set of 4 cards about a living thing. Students will use these sets of cards and will place the picture of the living thing on a chart to show how deep in the ocean it lives.
- If you are not able to project the Ocean Depth Chart master attached to this lesson, or if you prefer to make a larger chart, you can create your own by using three colors of construction or butcher paper. Create a large rectangle of “ocean” with the bottom third of the rectangle made from black paper to represent the midnight zone of the ocean, the middle third made from dark blue paper to represent the twilight zone, and the top third made from paper that is a lighter blue color to represent the sunlight zone. Students will need to place 10 cards with pictures of living things on the chart to show the depth at which they live, so ensure that the overall rectangle is large enough for them to easily tape approximately 3-5 cards per depth level. Add water depth labels along the left side, as shown on the Ocean Depth Chart master.



FACILITATION

Step 1. Ask students if they know any plants or animals that live in the ocean. Have them brainstorm their ideas. They may come up with some ideas, such as sharks, whales, or jellyfish, depending on their experience with the ocean. The students may not have many ideas at this point. Even if that is the case, do not try to prompt them as they will have a chance to learn about different living things through this activity. Tell students that they are going to have a chance to learn about some different plants and animals that live in the ocean and to share what they learn with their classmates.

Step 2. Have students work in groups of 3. Give each group a set of Ocean Dweller cards about one living thing (see “Preparation” for more information). Tell them that one student will describe the plant or animal, one will describe what it eats and what eats it, and one will share where it lives. They will need to be able to place the card with the picture of the living thing on the class Ocean Depth Chart (see Preparation).

Step 3. Give students time to read their cards to their group and make sure they know what the information means. Your students may have different levels of understanding about the animals listed on the energy cards (1 of the 4 types of cards in the Ocean Dwellers card set), depending on their prior knowledge and experience.

Circulate around the room discussing their ideas about the cards and determining if they need additional information about any of the animals. The Monterey Bay Aquarium has an [Animals A to Z webpage](https://www.montereybayaquarium.org/animals/animals-a-to-z) (<https://www.montereybayaquarium.org/animals/animals-a-to-z>) that you can share with students to show them pictures and descriptions of animals with which they are not familiar.

Step 4. Have each group share what is on their cards and tape the plant or animal picture in the right level of the Ocean Depth Chart to show where the living thing lives. As students are putting their animals on the chart, share that there are three main zones in the ocean where animals live. You may wish to add labels with the name of the three zones that are represented on the chart.

- The **sunlight zone** is from the surface of the water to about 650 feet deep. This is the zone where sunlight can still reach. It also has warmer temperatures because of heat from the sun.
- The **twilight zone** reaches from about 650 feet deep to about 3,300 feet deep. In this depth zone, any sunlight is very faint. Plants would no longer be able to make food in this zone because there is not enough light.



- The **midnight zone** reaches from about 3,300 feet to a little over 13,000 feet deep. The only visible light at this depth is made by animals themselves because light cannot reach this depth.
- Beyond the midnight zone (and not represented on the chart in this lesson), there is the abyssal zone, or the abyss, where the water is near freezing and few animals can survive the pressure, and the hadal zone, which reaches into the deep trenches in the ocean.

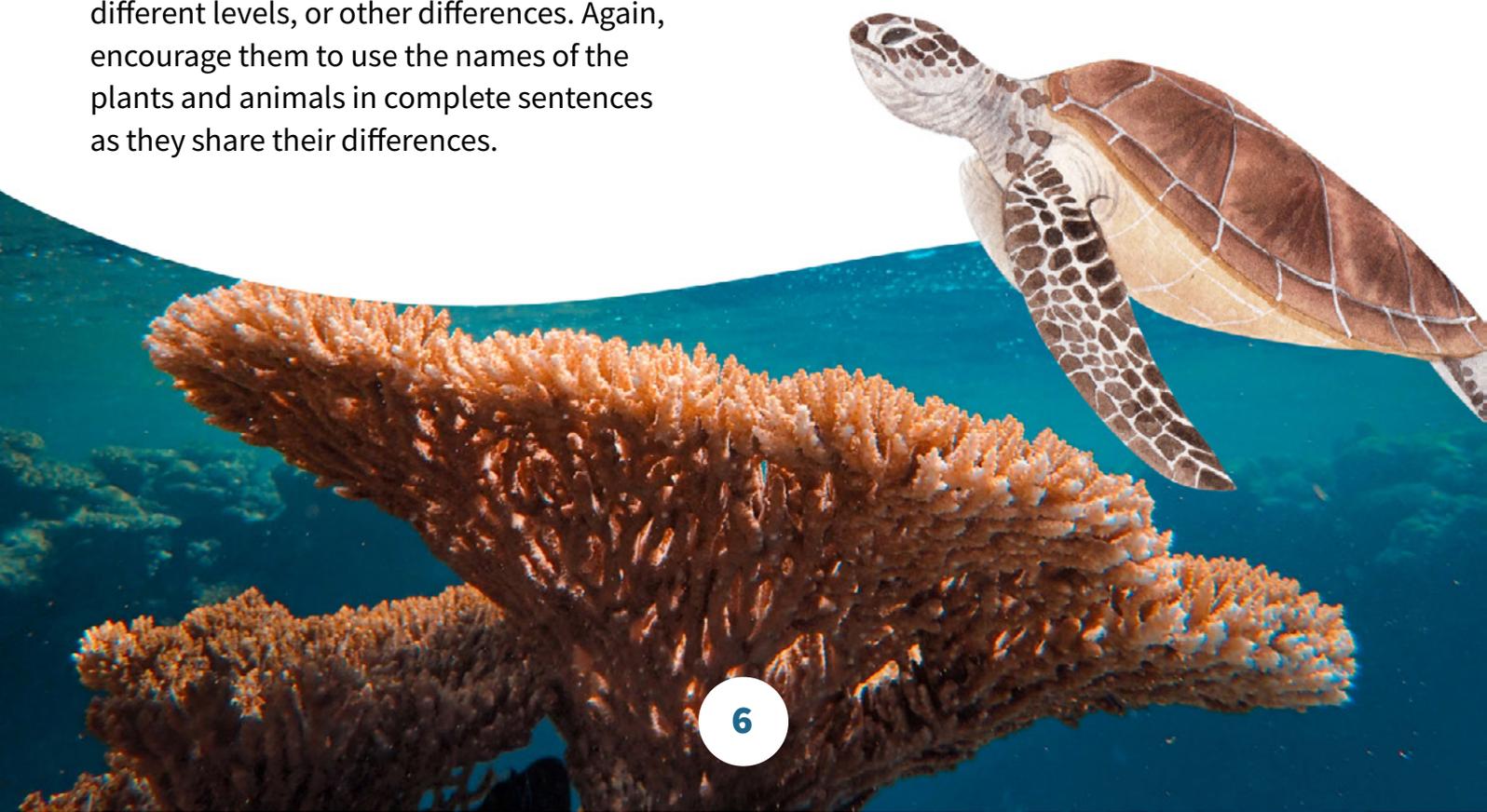
Step 5. Once all the animals are on the Ocean Depth Chart, ask students to look for similarities between some of the living things. They might choose 2-3 plants and animals that live in the same level of the ocean, animals that are similar colors, or other similar features. Encourage them to use the names of the plants and animals as much as possible and to share their similarities in a complete sentence.

Step 6. Next, have students find differences between some of the living things. They might find plants and animals that have different body shapes, that live in different levels, or other differences. Again, encourage them to use the names of the plants and animals in complete sentences as they share their differences.

Step 7. Ask students to draw 2 of the living things on a piece of paper and label them. At the bottom have students write a sentence that starts with one of the following stems.

- These living things are alike because _____.
- These living things are different because _____.

Step 8. Lesson Summary: Ask students to think of their favorite plant or animal. Then have them think of three ways that plant or animal is similar to or different from a plant or animal that they learned about in this lesson. You can ask the students to focus specifically on the plant or animal that the small group they were in learned about, or to simply pick one of the plants or animals they heard about during the lesson.





EXTENSION

Have students choose a plant or animal that lives in the ocean and do research to describe it, list what it eats and what eats it, and how deep in the ocean it lives. Discuss the diversity, or the many kinds of plants and animals that live in the ocean. Some NOAA resources that teachers may use to guide their student's research include the following.

- [Marine Life Resource Collections](https://www.noaa.gov/education/resource-collections/marine-life) (<https://www.noaa.gov/education/resource-collections/marine-life>)
- [Regional Activity Books](https://oceanservice.noaa.gov/education/regional-activity-books.html) (<https://oceanservice.noaa.gov/education/regional-activity-books.html>)
- [National Marine Sanctuaries Resources](https://sanctuaries.noaa.gov/education/students/) (<https://sanctuaries.noaa.gov/education/students/>)
- [Estuary Education Resources](https://coast.noaa.gov/estuaries/curriculum/index/students/) (<https://coast.noaa.gov/estuaries/curriculum/index/students/>)

OCEAN DEPTH CHART

250 feet

500 feet

750 feet

1000 feet

1250 feet

1500 feet

1750 feet

2000 feet

2250 feet

2500 feet

2750 feet

3000 feet

3250 feet

3500 feet

3750 feet

4000 feet

4250 feet

4500 feet

4750 feet

5000 feet

Kelp: What does it look like?

Kelp are large, brown algae, which are a type of seaweed. They make their own food, like land plants, and can form forests underground. The forests help to protect many animals. The animals can hide from rough storms or other animals.

Kelp: How does it get energy? What gets energy from it?

Kelp and other algae are like underwater plants because they get their energy from the Sun. It grows in shallow water so sunlight can reach it.

Some of the animals that eat kelp are sea urchins, sea otters, and spiny lobsters.

Kelp: Where does it live?

Kelp lives in shallow, cold, open water. They usually grow in the ocean between 49 and 131 feet deep.



Giant Pacific Octopus: What does it look like?

Giant Pacific Octopuses have very large heads and eight legs. They are usually a reddish-brown color.

They can change colors and textures to blend in with what is around them.

Giant Pacific Octopus: How does it get energy? What gets energy from it?

Giant Pacific Octopuses hunt at night. They mostly eat shrimp, clams, lobsters and fish.

Some animals that eat Giant Pacific Octopuses are seals, sea otters, sharks and large fish.

Giant Pacific Octopus: Where does it live?

Giant Pacific Octopuses get their name because they live in the Pacific Ocean. They live in shallow water to almost a mile deep. Most often, they live in water about 16 feet deep.



Anglerfish: What does it look like?

Anglerfish have large heads and sharp teeth that are see-through. These fish are dark gray or dark brown. They range in size from 1 foot to 3 ½ feet.

Anglerfish: How does it get energy? What gets energy from it?

Anglerfish eat shrimp, small squid, turtles, and small fish. They are not picky and will eat almost anything that will fit in their mouths.

In general, anglerfish do not have predators that eat them. Humans can catch and eat them.

Anglerfish: Where does it live?

Anglerfish live in the Atlantic and Antarctic Oceans. Some live in shallow water. Most of them live up to a mile (5,280 feet) deep in the ocean where no sunlight can reach.



Tube Worm: What does it look like?

There are different kinds of tube worms. The tube worms that live in the Gulf of Mexico can grow to be 10 feet long. They grow slowly and can live over 250 years. They live in clusters of hundreds of tube worms. The tube worms are white with red at the end. They do not have mouths, eyes, or stomachs.

Tube Worm: How does it get energy? What gets energy from it?

Tube worms get energy from bacteria that live within their bodies. The tube worms live in places where their bacteria get what they need to make energy. The tube worms and bacteria live together so both get what they need.

Many kinds of fish eat tube worms to get energy.

Tube Worm: Where does it live?

There are many different types of tube worms. One type of tube worm lives in the Gulf of Mexico. It stays at about 2,000 feet deep.



Jellies: What does it look like?

Jellyfish are dome-shaped bodies with tentacles. They do not have spines, so jellies are a better name for them than jellyfish. The smallest jellies are about half an inch wide. The largest can be 6 feet wide. The tentacles on these large jellies can be more than 49 feet long!

Jellies: How does it get energy? What gets energy from it?

Jellies eat almost anything they run into. Most eat plankton, which are tiny living things that drift along in the water. Larger jellies can also eat small fish and shrimp.

Sea turtles, fish, and even other jellies get their energy from eating them.

Jellies: Where does it live?

Jellies are found in all of the world's oceans. They are found in shallow and deep water, between 985 feet and 4,500 feet deep.



Horseshoe Crab: What does it look like?

Horseshoe crabs have a hard, rounded shell that is brownish-green. They have 10 legs and 10 eyes. Females can be 18-19 inches long while males are a little smaller.

They are tan to dark brown in color.

Horseshoe Crab: How does it get energy? What gets energy from it?

Horseshoe crabs eat small clams, worms, and algae. They do not have teeth, so they crush their food with their legs before they put it in their mouths.

Sharks, sea turtles, and seagulls eat horseshoe crabs. Horseshoe crab eggs are also an important food for these animals.

Horseshoe Crab: Where does it live?

Horseshoe crabs live in the Atlantic Ocean, Pacific Ocean, and Indian Ocean. Adults prefer shallower water, up to 90 feet deep.



Clownfish: What does it look like?

Clownfish are yellow, orange, or a reddish color. Many of them have white stripes. They are usually 3-6 inches long.

Clownfish: How does it get energy? What gets energy from it?

Clownfish mostly eat plankton and algae. They can eat other small foods in the ocean.

Clownfish are food for large fish, eels and sharks.

Clownfish: Where does it live?

Clownfish live in the Indian Ocean, Pacific Ocean, and along the Great Barrier Reef. They are usually found in shallow water, from about three feet to about 40 feet deep.



Sea Lion: What does it look like?

Sea lions are large animals. California Sea Lion males are up to 8 feet long and can weigh up to 660 pounds! They have short, thick hair and a big chest and belly. They can walk on all 4 flippers.

Sea Lion: How does it get energy? What gets energy from it?

Sea lions eat fish, squid, and octopus.

Sea lions are large animals. Their predators are orcas and sharks.

Sea Lion: Where does it live?

Sea lions live along the coasts of North and South America, Australia and Asia. They live in shallow water but can dive as deep as 600 feet to get fish and squid.



Orca Whale: What does it look like?

Orcas are very large. Males are 20 to 26 feet long and can weigh up to 12,000 pounds. They have black on the upper side of their bodies. They are white on the underside of their bodies.

Orca Whale: How does it get energy? What gets energy from it?

Orcas get energy from eating fish, birds, sea turtles and other animals.

Orcas are large and do not have any predators.

Orca Whale: Where does it live?

Orcas live all over the world. They can live in different temperatures of water. Scientists think that they mostly live between 850 to 1,500 feet deep in the water.



Blacktip Reef Shark: What does it look like?

Blacktip Reef Sharks have dark backs and white bellies. They also have black tips on their fins. They have short, round snouts and teeth that look like a saw.

Blacktip Reef Shark: How does it get energy? What gets energy from it?

Blacktip Reef Sharks mainly eat fish.

Other sharks and large grouper fish can eat the Blacktip Reef Sharks for energy.

Blacktip Reef Shark: Where does it live?

Blacktip Reef Sharks live in the Pacific Ocean along Thailand, Japan, the Philippines and Australia. They can also live in the Indian Ocean. These sharks live in water from about 65 to 250 feet deep.

