All About Coral Reefs

By Christy Peterson

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By Christy Peterson
Illustrated by Paul J. Lopez

We respectfully acknowledge the Kanaāka Maoli, who have wisely stewarded the ocean and respect their infinite connectivity past, present, and future.

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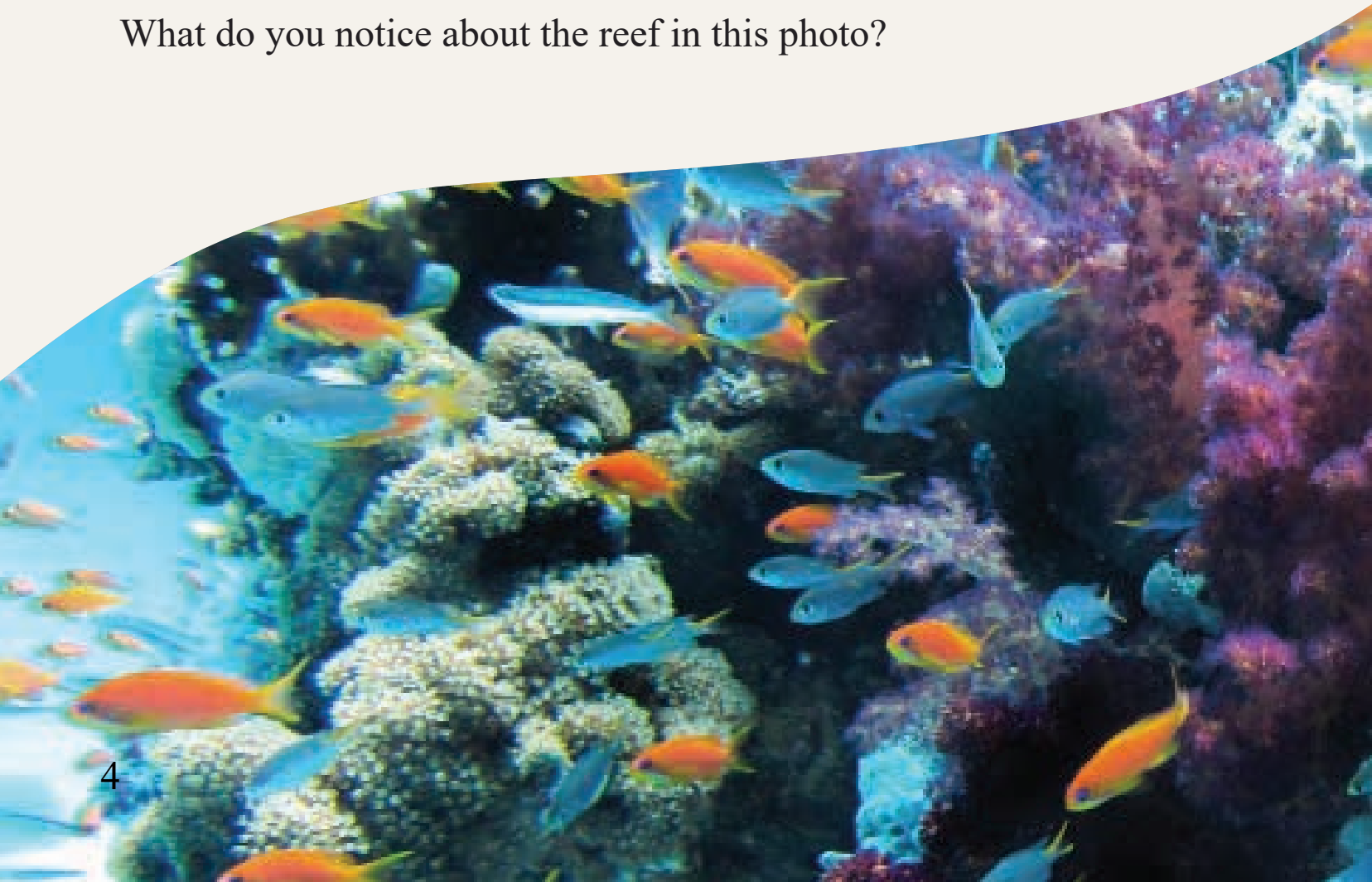
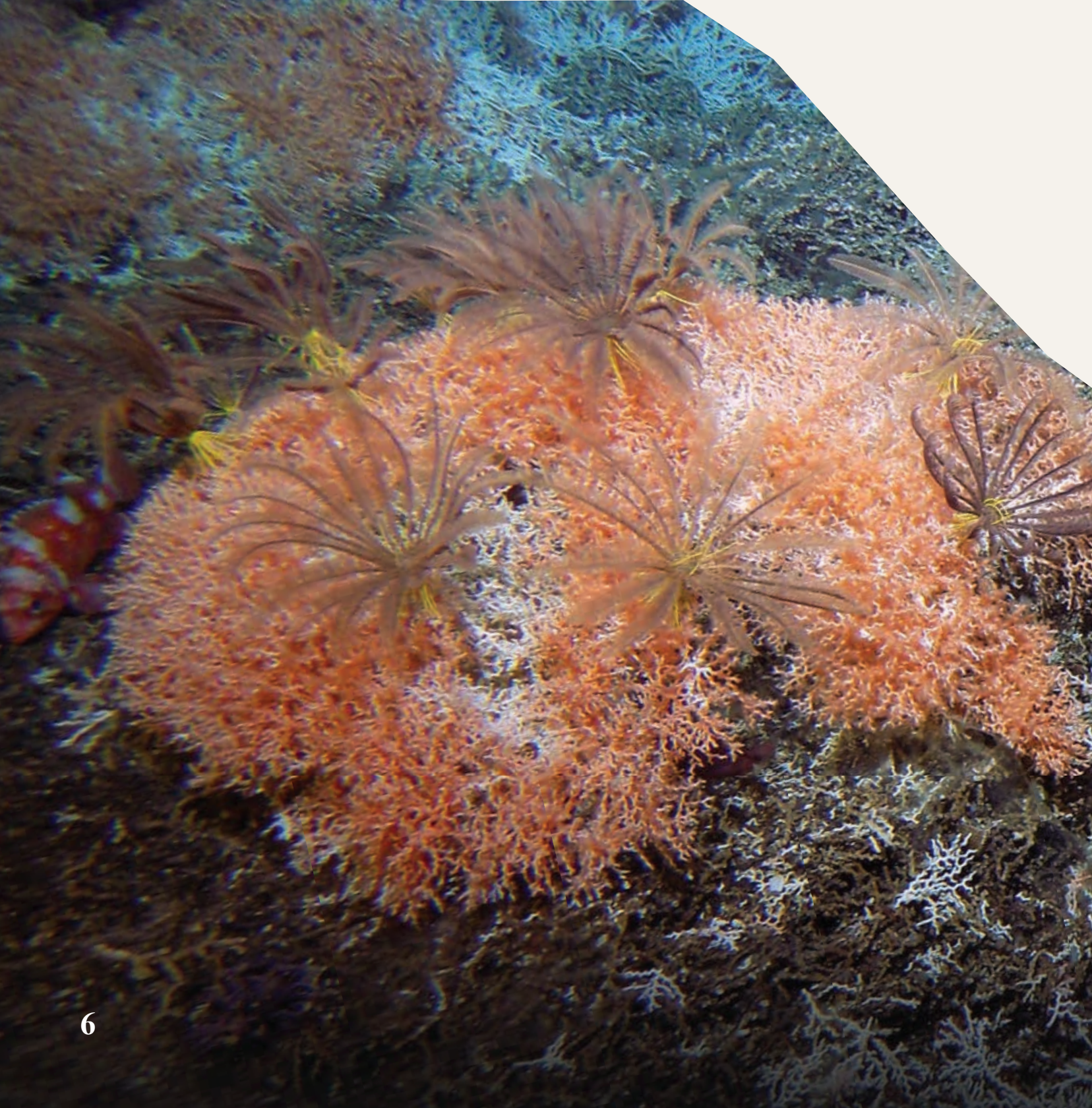
Table of Contents

Let’s Visit Two Coral Reefs

This is a coral reef. Tiny animals called coral build the reef.

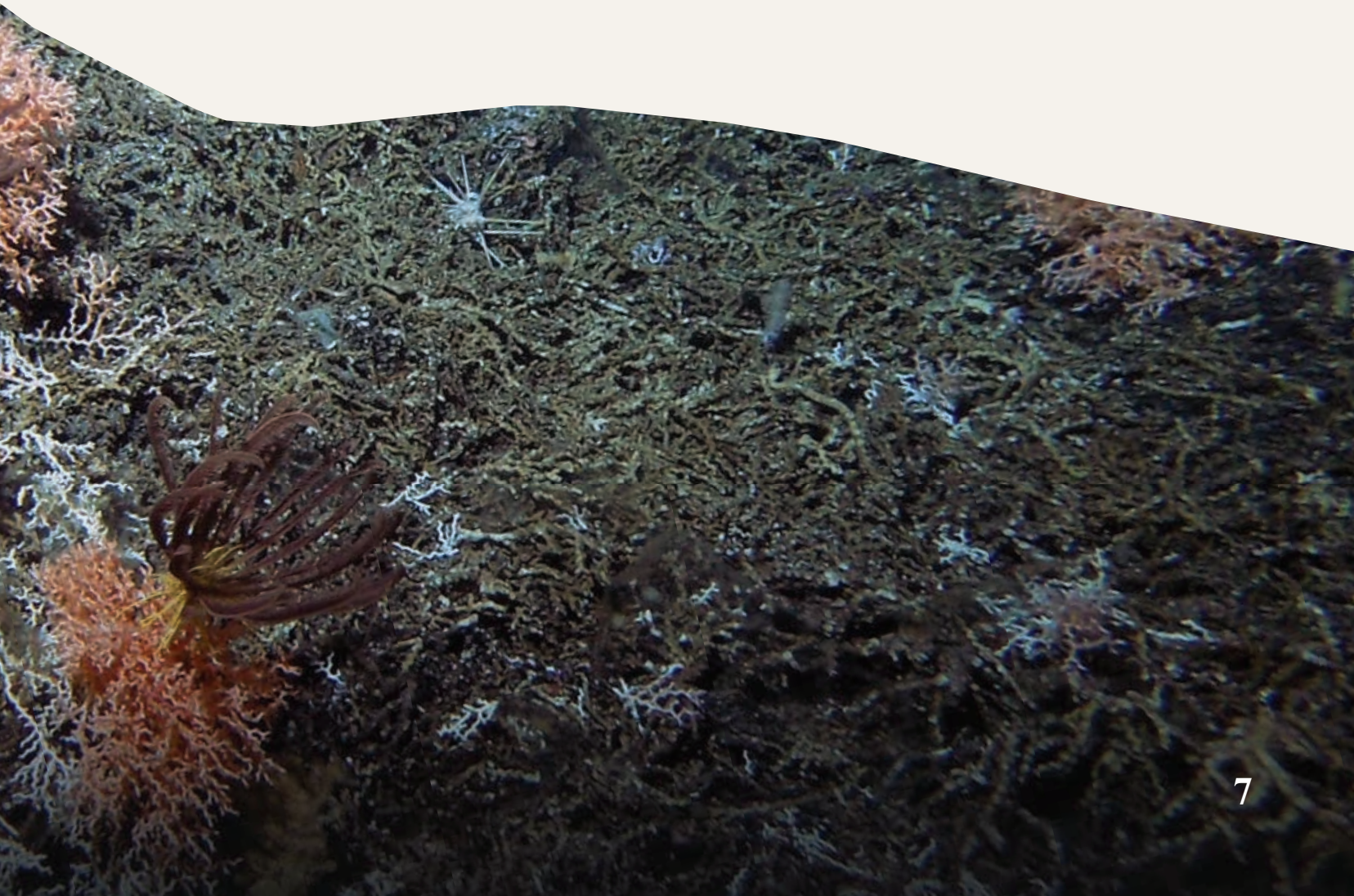
What do you notice about the reef in this photo?





This is also a coral reef.

What do you notice about the reef in this photo?



Shallow and Deep

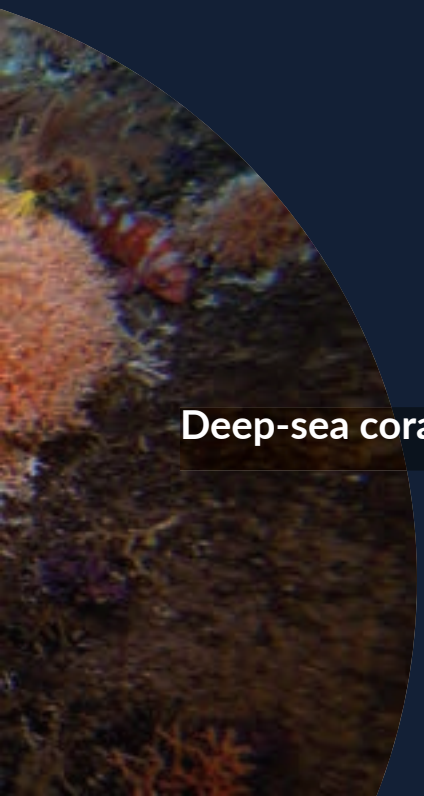
You probably noticed that the two reefs look different.

One reason they look different is because of where they live. The first reef is in shallow water. The second reef is found in deep water.

A shallow-water reef.

How Deep Does Coral Grow?

Shallow-water reefs can live in water up to 500 feet (150 m) deep. If you stacked two Statues of Liberty on top of each other and dropped them in the ocean, they'd reach a little deeper than that. Deep-sea reefs live as far down as 10,000 feet (3,000 m). That's 33 Statues of Liberty.



Deep-sea coral reef.

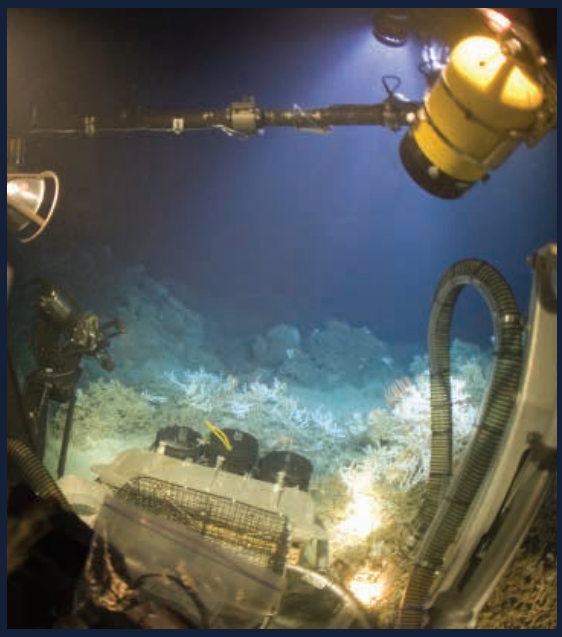
Did you know? The deepest part of the ocean is 25,842 feet (10,925 m). That's about 85 Statues of Liberty!

Light and Dark

A reef in shallow water is filled with sunlight. A person swimming near the reef can see many bright colors.

A reef in the deep sea is completely dark. No sunlight can reach that far. People cannot swim that deep.

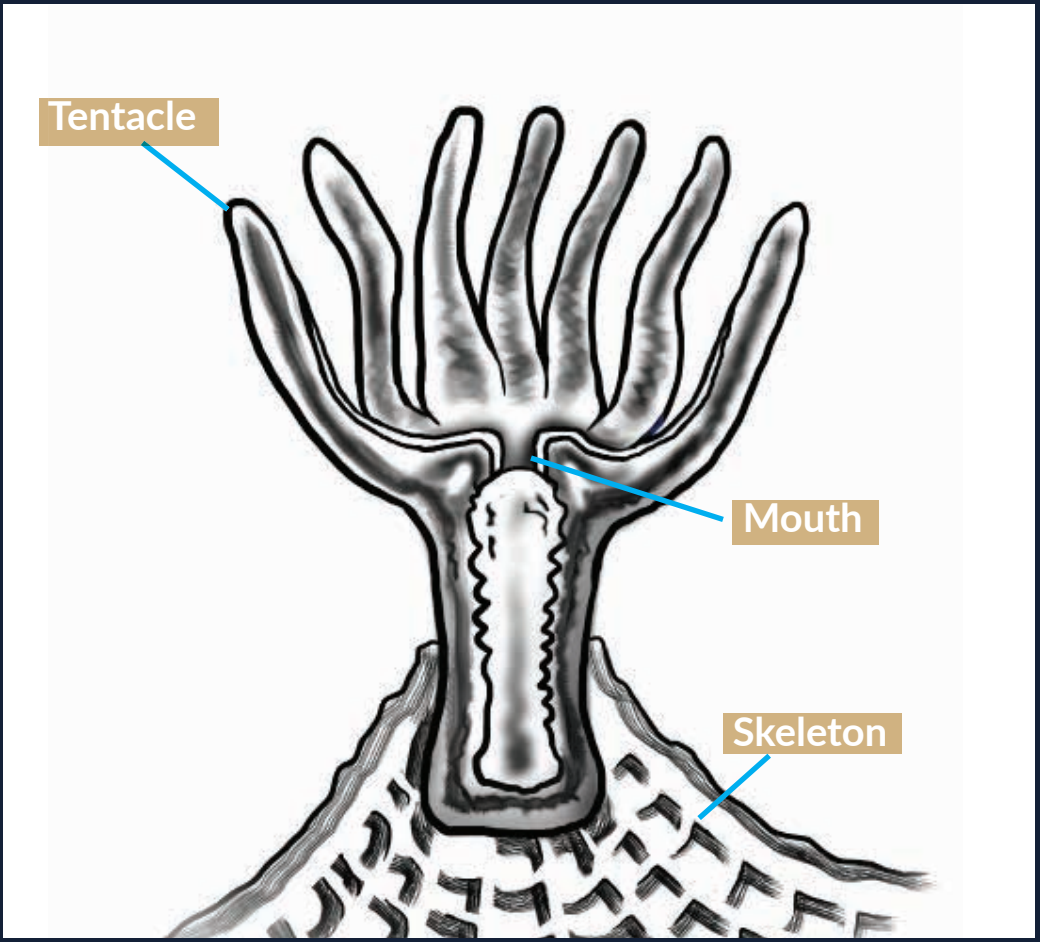
Shallow and deep, light and dark — some things are different about the reefs in two places. But some things are the same.



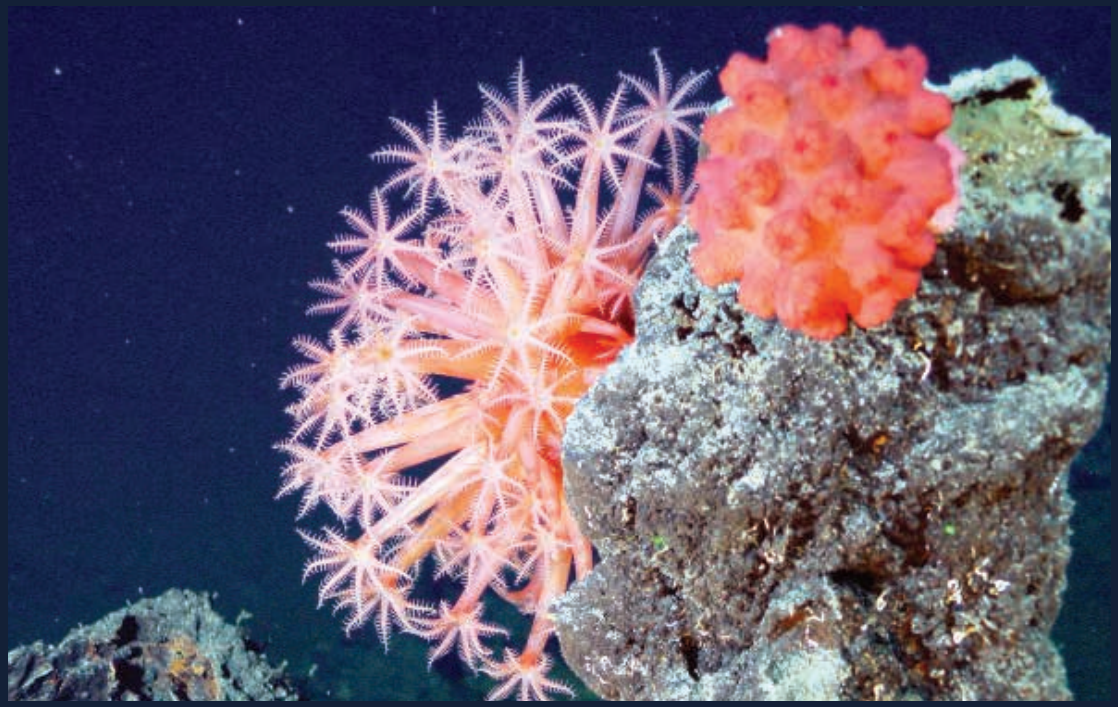
Imagine walking through the woods at night. You have a flashlight, but you can't see beyond its beam. Scientists who study deep-sea reefs also use lights. They can only see the lit-up area, just like in this photo.

What Corals Look Like

A coral reef is made up of thousands of tiny animals called coral polyps. A polyp has a circle of little tentacles around its mouth. It uses the tentacles to grab bits of food and for protection. Look very closely at the polyps below. Find some tentacles. Find a polyp's mouth.



This drawing shows parts of a reef-building coral. The mouth leads to where the coral digests its food.



Where Corals Grow

There are many kinds of coral in all shapes, sizes, and colors. Young coral polyps attach to a rock or old coral. There they begin to grow.

Corals Build the Reef

There are two kinds of coral — soft coral and hard coral. Hard corals build the reefs. Soft corals do not. But they live in the reefs, too. Soft corals often look like tree branches, grasses, or fans.

A hard coral polyp creates a skeleton. The skeleton is hard, like stone. New hard corals grow on top of old coral skeletons. That's how the reef gets bigger and bigger.

Visiting a Reef

If scientists want to study a reef in shallow water, they swim right up to it. They can observe it up close and collect samples to study.

People can’t swim to a deep-sea reef. Our bodies cannot live in such deep water. Scientists use vehicles to visit the reef. Tools on the vehicles take photos and collect samples.

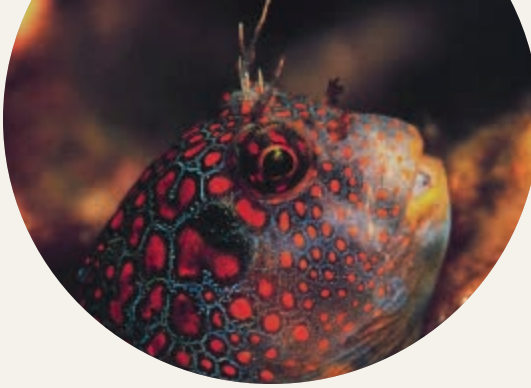
Machines in the Deep

Scientists use three kinds of vehicles to study the deep ocean.

A human-operated vehicle (HOV), also called a submersible, takes people to the deep ocean. Its thick walls keep passengers safe.

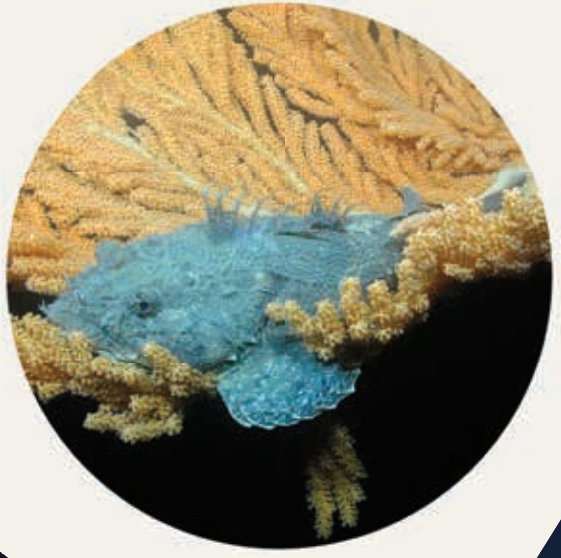
A remotely-operated vehicle (ROV) is driven by a pilot on a ship. The pilot uses the ROV's robotic arm to collect samples.

An autonomous underwater vehicle (AUV) doesn't need a pilot. A computer program tells it where to go.



Reefs are the Home for Many Animals

A coral reef has many cracks, holes and hidden places. These make good homes for many other animals. As a reef grows, more and more animals move in. A reef is like a big neighborhood!



Shallow-water reef neighbors

SURGEONFISH

MORAY EEL

Deep-sea reef neighbors

VENUS FLYTRAP ANEMONE

CRUSTACEANS

Busy and Quiet

A reef in shallow water is very busy. Fish swim in big groups. Sharks and turtles visit. There are crabs and shrimp and eels and octopuses—so many living things are moving all the time!

A reef in deep water might seem quieter. But it is also home to many living things such as brittle stars, rays, lobsters, fish, crabs, and more.

A shallow-water reef.

Scientists are still finding new animals in deep-sea reefs, like this brightly-colored sea star.

Reefs are Important to Protect

Animals need coral reefs. People need them, too. Reefs protect beaches and towns from big waves. Reefs give us food. And they are fun to visit!

That's why scientists want to study coral reefs. They want to learn all they can so we can protect these special places.

Meet the Scientists!

A few years ago, scientists discovered deep-sea coral reefs in the middle of the Pacific Ocean. They did not expect this, because the water there is not right for corals to build their skeletons. These scientists are leading a team to try to learn more.

Dr. Amy Baco-Taylor studies life in the deep sea. She wants to understand how these deep-sea corals she discovered can live in a place that seems all wrong for them.

Dr. Brendan Roark studies rocks and minerals on the ocean floor. He wants to understand what the climate of the earth was like in the past. This helps us know how to protect the earth now.

Dr. Katie Shamberger studies how water is the same and different in different parts of the ocean. On this project, she wants to know what the water is like where these deep-sea corals live.

Glossary

Autonomous Underwater Vehicle (AUV)

A machine that travels underwater and is guided by a computer program rather than direct control of people.

Coral

An animal related to jellyfish and sea anemones that attaches to rocks and other objects on the sea floor.

Deep Sea

The term used for the ocean below 656 feet (200 m).

Human-Operated Vehicle (HOV or Submersible)

A thick-walled ocean vessel that allows people to safely travel to the deep sea.

Remotely-Operated Vehicle (ROV)

A machine that can be operated by remote control from a distance.

Coral. Alone, it's a tiny delicate animal. Together, corals create reefs and build gigantic and essential habitats that are important to the health of the ocean. Discover how this tiny animal feeds, grows, and provides a home to other sea life. ALL ABOUT CORAL REEFS guides you through the intricate lives of shallow and deep-sea coral.

ALL ABOUT CORAL REEFS is part of WhaleTimes Inc's E*xploring Deep-sea Coral series* that highlights the important research of ocean experts **Dr. Baco-Taylor** (Florida State University), **Dr. Brendan Roark** (Texas A&M University), and **Dr. Katie Shamberger** (Texas A&M University).

Christy Peterson has written more than 50 books and articles for students. Her book, *Into the Deep: Science, Technology, and the Quest to Protect the Ocean* (Twenty First Century Books) was a Washington State Book Awards finalist. Christy and her family live in Vancouver, WA.

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WhaleTimes Inc., is a non-profit marine science organization with a mission to create a connection between the ocean, ocean research, the researchers, and students through formal and informal education programs. This connection ignites a passion for the ocean, inspires students to consider marine science as a career, and empowers kids to protect the ocean.

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