mystery science

Grades K-5
Mini-Lesson: “Why are coral reefs so colorful?”

VIDEO TRANSCRIPT

VIDEO 1

Hi, it's Danni! This is the Great Barrier Reef. The Great Barrier Reef is the world's largest coral reef. It stretches across the northeast coast of Australia, and it's so big, you can actually see it from space! While the Great Barrier Reef is the biggest, you can find coral reefs in tropical ocean waters around the globe. Someone named Joycelan has a question about these amazing places. Let's call Joycelan now.

[Video Call]

- Hi, Danni!

- Hi, Joycelan!

- I have a question for you. Why are coral reefs so colorful?

- That's a great question.

Coral reefs are super colorful. I see clear blue water—a yellow fish over there. How many other colors can you spot in this part of the reef? What are those colors coming from? If you want an extra challenge, see how quickly you can spot at least two things of each color of the rainbow.

VIDEO 2

You may have noticed that a lot of the bright, colorful things in coral reefs are also living things. Coral reefs provide a home where tons of sea creatures and plants can thrive. Thousands of different kinds of plants and animals can live on a single reef, from parrotfish to seagrass, to tiny plankton. In fact, some scientists think reefs may be home to more different kinds of life than anywhere else on the planet. You can think of a coral reef like a lively underwater city of sea creatures. There's even colorful fish traffic. But maybe you're wondering, what even are corals anyway? Well, see these? They look like big colorful rock formations, but take a closer look. Check it out. There's something alive in there—these are corals! They might not look like it, but corals are actually animals, animals related to jellyfish. Like jellies, they have soft bodies, and many have stinging tentacles that help them catch food in the water. Corals usually live attached to rocks on the sea floor. As they grow, some types of corals create hard skeletons under their bodies. As the corals add more to their skeletons over time, the skeletons form bigger and more elaborate shapes, like this and this. When many coral skeletons become big enough in one place, that makes coral reef. Corals are another thing that add color to a coral reef. Some corals' bodies are blue, red, green, or other colors. But what if I told you that some of these corals aren't colorful on their own? Up close, some coral bodies are actually clear and colorless, and their skeletons are plain white. It turns out that the color we see in many corals has to do with yet another living thing. If you zoom in really close to see this coral, you'll see this. This is the coral's body, but these patches of color

are something else, a collection of tiny living creatures called algae. Millions of algae can live inside a single coral. Algae are brightly colored. Because this coral's body is clear, you can see the colorful algae living inside of it from the outside, kind of like looking at a glass jar with brightly colored jelly beans in it. As they live, these algae naturally produce a special kind of sugar which corals use as food. Though some corals catch some food using tentacles, corals actually get most of the food they need to survive from algae. Algae and corals both benefit from living closely together. Corals get food, and algae get a place to live. So from tiny algae to huge fish, the many colors in a coral reef are signs that the reef is bursting with life, a healthy undersea city. But hang on, here's a coral reef that doesn't look like a thriving city at all. Actually, it looks kind of like a ghost town—hardly a fish or a crab in sight. And even weirder, the corals' color is gone. The partnership between algae and corals which makes corals colorful only works if the coral is healthy. When a coral is unhealthy, it pushes the algae out of its body like this. When the algae leave, all you see is the coral's white skeleton. And the effect on the coral is even bigger. Without their partnership with algae, corals can't get enough food to survive. And when corals die, eventually the other creatures that depend on coral reefs won't be able to find what they need to survive there, either. So keeping corals healthy is really important to so many creatures. But what can make corals unhealthy enough to remove the algae from their bodies? You might think it would take something dramatic, like a hurricane to hurt something as solid and sturdy as a coral reef. But even changes that seem small can have a big impact on coral reefs, too. If the water around a coral reef gets just a little warmer, that can make these corals unhealthy

enough to push out the algae inside of them. And these days, warmer waters happen more and more often. Many things humans do, like using lots of gasoline for cars and airplanes, making too much trash, or cutting down too many trees can create harmful chemicals in the air called pollution. Over time, pollution can cause many different changes to our planet, including making ocean waters warmer, warm enough to hurt corals. But there is hope. If conditions improve quickly, corals will let their algae back in again, turning from colorless and unhealthy back a colorful and healthy again. And even coral reefs that have been destroyed can slowly regrow if they can stay healthy long enough to build back up again. And we can help. If people around the world take steps to reduce pollution and care for the planet, then healthy reefs will be more likely to stay healthy, and damaged reefs will be more likely to regrow. And check this out. These scientists are working on something called a coral nursery. They're protecting and caring for young corals, then introducing them into the wild in places where reefs have been damaged. This helps the reefs regrow. So in summary, the color in coral reefs comes from the many interconnected colorful creatures who call those reefs home. Coral reefs are in danger of disappearing because of human impact on their ocean home. But if people learn to care for our planet, we can help these colorful underwater cities stick around for a long time. That's all for this week's question. Thanks, Joyce Lynn, for asking it!