Reef Connections

How coral reefs support life and respond to human activity

ZOO.2.9 "Describe the ecological importance of and human impacts on coral reefs."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline two ways reefs support living things or shorelines, circle three human activities that can damage reefs, and number two actions people can take to reduce harm.

A Living Barrier

1 At low tide, a coral reef can look like a wall of stone. It is actually built by colonies of tiny animals called coral polyps. Many reef-building corals host algae that use sunlight to make food, sharing some of it with their hosts. Over many generations, the polyps leave behind hard calcium carbonate skeletons that form a complex structure. Small fish shelter in its cracks, while larger predators hunt nearby. Reefs also provide places where young fish can grow before moving to other habitats. Waves lose energy as they break over reefs, so nearby shorelines face less erosion and storm damage.

2 Those living structures are vulnerable to changes far beyond the reef. When ocean water stays unusually warm, corals may expel the algae that feed them. The pale coral is then called bleached; it is not necessarily dead, but it can starve if the stress lasts too long. Burning fossil fuels adds greenhouse gases to the atmosphere, driving ocean warming. The ocean also absorbs some of the added carbon dioxide, making it harder for many corals to build their skeletons. If living coral declines, fish lose shelter, and the reef's ability to slow waves may weaken as its structure breaks down.

3 Local decisions matter too. Rain washing soil from cleared land into the sea can cloud the water, reducing the light that coral's algae need. Fertilizer runoff can fuel algal growth that competes with corals for space. Heavy fishing can remove fish that graze on algae, allowing algae to spread across reef surfaces. Boat anchors can snap coral branches that took years to grow. Communities can limit sediment and fertilizer runoff, protect grazing fish, and use mooring buoys instead of dropping anchors. These steps cannot stop global warming, but they can reduce local stress while broader emissions cuts address warming.

2 ANSWER WITH EVIDENCE

Use the passage

1. How does the reef's physical structure help fish and nearby shorelines?

2. Trace how burning fossil fuels can lead to coral bleaching and affect reef fish.

3. How can clearing land near the coast harm corals, and why might that matter to fish?

4. Why could limiting fertilizer runoff and protecting grazing fish both help keep corals from losing space?

3 YOUR TURN

Your own words

A town plans to clear a hillside for a waterfront parking lot and allow more boats to visit a nearby reef. Write 4 to 5 sentences advising the town: explain one reef benefit, predict a different harm from each part of the plan, and recommend one practical change.

ANSWER KEY

Reef Connections

HIGH SCHOOL · ZOO.2.9

PART 1 · READ AND MARK

Underline two ways reefs support living things or shorelines, circle three human activities that can damage reefs, and number two actions people can take to reduce harm. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How does the reef's physical structure help fish and nearby shorelines?	**Its cracks shelter fish and provide places for young fish to grow. It also weakens waves, reducing shoreline erosion and storm damage.**
2	Trace how burning fossil fuels can lead to coral bleaching and affect reef fish.	**Burning fossil fuels adds greenhouse gases that warm the ocean. Prolonged warmth can cause corals to expel their algae and bleach; if corals decline, reef fish lose shelter.**
3	How can clearing land near the coast harm corals, and why might that matter to fish?	**Soil washed from cleared land can cloud the water and block light needed by the algae that feed corals. If corals decline, fish can lose shelter.**
4	Why could limiting fertilizer runoff and protecting grazing fish both help keep corals from losing space?	**Less fertilizer runoff can limit algal growth, while grazing fish eat algae. Both can reduce the algae competing with corals for space.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

The reef shelters young fish and helps reduce wave damage to the shore. Clearing the hillside for parking could send soil into the water, blocking light needed by the algae living in coral. More boats could mean more dropped anchors, which can break coral branches and reduce fish shelter. Require visiting boats to use mooring buoys instead of anchors to prevent that damage.

Accept accurate cause-and-effect explanations supported by the passage. For the open task, accept a different practical change if it addresses soil runoff or boat damage.