

Reef Evidence Puzzle

Synthesize scientific sources about coral bleaching.

CCSS.ELA-Literacy.RST.11-12.9 "Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline evidence from each source type, then write 1, 2, and 3 beside evidence that works together to explain the bleaching. Circle words that resolve the competing explanation.

Why Did the Reef Bleach?

- ① In 2016, unusually warm water caused severe coral bleaching on Australia's Great Barrier Reef. Satellite records showed that sea-surface temperatures stayed high across much of the reef. A NOAA heat-stress index tracks accumulated temperatures above the usual seasonal maximum and signaled intense stress. Satellites cannot inspect individual coral colonies, but they showed where prolonged heat made bleaching likely. Researchers used these broad maps to choose sites on the water for field surveys.
- ② Field evidence tested the map-based warning. Teams flying over reefs and divers at selected sites found bleaching on most surveyed reefs, with the northern section hit especially hard. Their observations supported the satellite pattern, yet also showed differences that a broad temperature map could miss. Some colonies in deeper water or shaded places appeared less affected than nearby colonies. The surveys turned a regional heat signal into evidence about living corals.
- ③ Laboratory experiments help explain why heat matters. Corals depend on tiny algae for much of their food and color; heat can disrupt that partnership, leaving corals pale. Pollution and disease can also damage corals, so observers sometimes proposed other causes. Yet the 2016 bleaching pattern matched prolonged heat across even remote reefs, and experiments supplied a mechanism. Together, the sources identify heat as the main trigger while recognizing that local conditions can affect damage and recovery.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 How did satellite records and field surveys provide different, connected evidence?

2 What other explanations for coral damage does the passage name, and how does it address them?

3 Why do the less-affected deep or shaded colonies matter to the overall explanation?

4 State the passage's synthesized conclusion about the 2016 event.

3 YOUR TURN _____ Your own words

Write exactly three sentences that synthesize the satellite record, field surveys, and laboratory experiments. State the main cause of the 2016 bleaching and explain how local variation or another possible cause fits your conclusion.

PART 1 • READ AND MARK

Underline evidence from each source type, then write 1, 2, and 3 beside evidence that works together to explain the bleaching. Circle words that resolve the competing explanation. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	How did satellite records and field surveys provide different, connected evidence?	Satellites identified widespread, prolonged heat, while surveys confirmed bleaching in living corals and showed local differences.
2	What other explanations for coral damage does the passage name, and how does it address them?	Pollution and disease can damage corals, but bleaching across remote reefs matched prolonged heat, and experiments explained how heat causes bleaching.
3	Why do the less-affected deep or shaded colonies matter to the overall explanation?	They show that local conditions can change the amount of damage even when heat is the main trigger.
4	State the passage's synthesized conclusion about the 2016 event.	Prolonged heat was the main trigger for bleaching, while local conditions affected damage and recovery.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Satellite data showed prolonged heat across much of the reef, while surveys confirmed widespread bleaching and local differences. Laboratory experiments explain how heat disrupts coral-algae partnerships. Although pollution and disease can harm corals, the remote-reef pattern supports heat as the main trigger, with local conditions affecting damage and recovery.

Accept equivalent claims that connect all three source types rather than listing them separately. Students should identify heat as the main trigger while recognizing pollution, disease, depth, shade, or other local conditions as relevant factors.