

Great Barrier Reef: Two-thirds damaged in 'unprecedented' bleaching



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Image caption

Bleaching occurs when warmer temperatures drive out colour-giving algae

Unprecedented coral bleaching in consecutive years has damaged two-thirds of Australia's Great Barrier Reef, aerial surveys have shown.

The bleaching - or loss of algae - affects a 1,500km (932 miles) area of the reef, according to scientists.

The latest damage is concentrated in the middle section, whereas **last year's bleaching** hit mainly the north.

Experts fear the proximity of the two events will give damaged coral little chance to recover.

Prof Terry Hughes, from James Cook University, said governments must urgently address climate change.

"Since 1998, we have seen four of these events and the gap between them has varied substantially, but this is the shortest gap we have seen," Prof Hughes told the BBC.

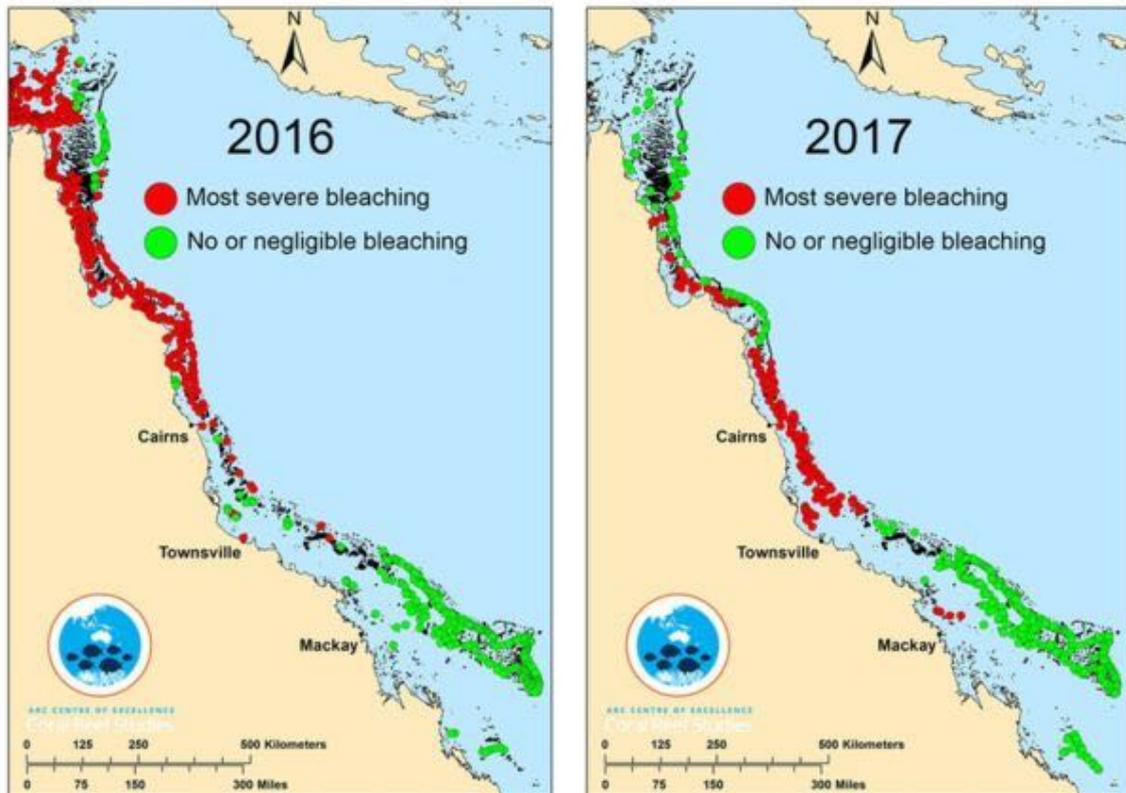


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"The sooner we take action on global greenhouse gas emissions and transition away from fossil fuels to renewables, the better."

Almost 800 coral reefs over an 8,000km area were assessed in the surveys by the Australian Research Council's Centre of Excellence for Coral Reef Studies.

The findings showed only the southern section was relatively unscathed.

Pheromones could foil reef-killing starfish

Great Barrier Reef storm damage 'likely'

Researcher Dr James Kerry said the damage was unprecedented.

"The central third this year, I would say, was as severe in terms of bleaching as what we saw as the northern third last year," he told the BBC.

"For those reefs that were hit two years in a row, it's effectively a double whammy. They have had no chance to recover from last year's events."

Mass coral bleaching

Media caption

What causes coral bleaching?

Coral bleaching is caused by rising water temperatures resulting from two natural warm currents.

It is exacerbated by man-made climate change, as the oceans are absorbing about 93% of the increase in the Earth's heat.

Bleaching happens when corals under stress drive out the algae known as zooxanthellae that give them colour.

If normal conditions return, the corals can recover, but it can take decades, and if the stress continues the corals can die.

The latest damage happened without the assistance of El Niño, a weather pattern previously associated with bleaching events.

The reef - a vast collection of thousands of smaller coral reefs stretching from the northern tip of Queensland to the state's southern city of Bundaberg - was given World Heritage status in 1981.

The UN says it is the "most biodiverse" of all the World Heritage sites, and of "enormous scientific and intrinsic importance".

Corals Are Dying on the Great Barrier Reef

Australian government issues emergency response level and warns that bleaching may be linked to climate change.



VIEW IMAGES

This panoramic image reveals coral bleaching at Lizard Island on the Great Barrier Reef in March 2016.

PHOTOGRAPH BY XL CATLIN SEAVIEW SURVEY

By Brian Clark Howard

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Scientists have discovered an unprecedented die-off in the world's largest reef, the Great Barrier Reef, prompting the Australian government to issue its highest response level.

Diver surveys based off Cape York, Australia's northeastern tip, found up to 50 percent mortality in the reef from coral bleaching. Death among the organisms that build the reef's structure is most likely linked to rising temperatures in the ocean, the government announced.

"The corals in the remote far north of the reef experienced extremely hot and still conditions this summer, and were effectively bathed in warm water for months, creating heat stress that they could no longer cope with," Russell Reichelt, the chairman of the Great

Barrier Reef Marine Park Authority, said in a statement.

Bleaching occurs when warm ocean water stresses corals to the point that they expel the tiny algae, known as zooxanthellae, that normally live inside their tissues. The algae provide the corals with most of their food, as well as their color. If the heat stress is lessened soon enough, the coral can recover. If not the, organisms will die.

What's happening in Australia is part of a global trend. Over the last year, about 12 percent of the world's reefs have bleached, due to El Niño and climate change. Scientists have predicted that nearly half of these reefs (more than 4,600 square miles or 12,000 square kilometers, or more than five percent of reefs) could disappear forever. That warming trend is expected to continue through the year, leading to what may be the longest global coral bleaching event in history.







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Watch: Learn more about the Great Barrier Reef, from Explorer-in-Residence Sylvia Earle.

The Australian government's new level-three response will mean increased surveying of the massive Great Barrier Reef system, which covers 133,000 square miles (344,400 square kilometers) and stretches 1,200 miles (2,000 kilometers) along Australia's northeast coast. A popular diving and tourist destination, the reef contributes more than \$3 billion annually to the

country's economy.

This latest observed bleaching event is the worst to hit this area of the reef, which has long been considered one of the most pristine sections of the system. The majority of the reef remains intact, in part because heavy rain and cloud cover over recent months have helped cool much of the area.

But scientists have increasingly worried about the reef's future, as the ocean warms and becomes more acidic.

As the concentration of carbon dioxide in the atmosphere rises due to emissions of fossil fuels, more of the gas is dissolving in the ocean. That is lowering the pH of the water, or making it more acidic, which can make it harder for reef-building organisms to construct their hard skeletons.

VIEW IMAGES

A scientist examines healthy coral on the Great Barrier Reef.

PHOTOGRAPH BY DAVID DOUBILET, NATIONAL GEOGRAPHIC

Reefs are also threatened by nutrient runoff from farms and lawns and from industrial chemicals, as well as

overfishing of the wildlife that call the reefs home.

"The health and future of the Great Barrier Reef is a priority for us," said Reichelt. "Bleaching reinforces the need for us to continue working with our partners to improve the reef's resilience to give it the best possible chance of dealing with climate change impacts."