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Great Barrier Reef's future looks grim

Brittany Patterson, E&E News reporter

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Australia's iconic Great Barrier Reef is likely doomed without immediate action on climate change, according to a major study published yesterday in the journal *Nature*.

Coral reef managers have long focused on protecting the diverse marine ecosystems by trying to boost water quality and restricting fishing on reefs in order to build their resilience.

The new [study](#) — assembled by a cadre of highly respected coral reef researchers from Australia, the United Kingdom and the United States — finds those efforts were no match for the massive coral bleaching that began in 2015 and continued through last year.

"This event was just so overwhelming that any increased resistance was negligible compared to the amount of stress," said Mark Eakin, coordinator of the Coral Reef Watch program at the National Oceanic and Atmospheric Administration and a co-author on the paper.

The authors conducted a detailed assessment of three major bleaching events that hit the Great Barrier Reef in 1998, 2002 and 2016. To map the impact of the 2016 event, aerial surveys and underwater measurements were taken, and the results showed extreme ocean temperatures are the main driver of mass bleaching.

"The really scary thing is that this paper just came out just as another bleaching event is happening on the Great Barrier Reef," Eakin said.

Last week, the Great Barrier Reef Marine Park Authority, Australia's lead management agency for the almost 1,500-mile-long UNESCO World Heritage site, [confirmed](#) the mass coral bleaching is occurring yet again.

Coral bleaching occurs when corals become heat-stressed. As temperatures rise, corals expel the microscopic algae that live inside their tissue, leaving the white, calcium carbonate skeleton bare underneath. This doesn't necessarily kill the coral, but it does leave the creature vulnerable to disease and prolonged heat exposure that can cause death.

Surprisingly, the study also found corals previously bleached received no protective advantage from that experience.

Eakin said local management actions like reducing nutrient runoff and protecting productive reefs are still vital for helping reefs recover, as long as they are given the opportunity, which the Great Barrier Reef may not receive, at least not this year.

In the past, he said, there would be a break between bleaching events, but as the Great Barrier Reef enters its 33rd month of bleaching, scientists are entering uncharted territory, the results of which are likely to be devastating to corals and the billions of dollars they provide in tourism revenues, coastal protection against storm surges and major fisheries for millions of people around the world.

"This is unlike anything we've ever seen before," Eakin said.

Twitter: [@amusedbrit](#) | Email: bpatterson@eenews.net

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