

Some coral reefs less vulnerable to rising sea temperatures

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New research highlighting coastal locations where coral can better withstand rising sea temperatures, a leading cause of stress to coral reefs, may guide efforts to conserve the largest living structures on Earth.

The findings hold promise for an estimated 100 million people living along the coasts of tropical developing countries whose livelihoods and welfare depend directly on [coral reefs](#), but are currently under threat from [climate change](#).

In a report published in an online edition of [Ecology Letters](#), scientists from Australia, the UK, Mexico and the US, mapped coral stress across the Bahamas in the Caribbean and found that sea temperatures, which strongly influence coral health, caused less stress to reefs in certain areas.

This discovery was borne out in the second half of the study, during which the researchers designed marine reserves best-suited to four possible scenarios of how coral would respond to further sea temperature rises.

In each hypothetical scenario, 15 per cent of the locations in the Bahamas were consistently selected.

The study's lead author is Professor Peter J. Mumby, from The University of Queensland's Global Change Institute and the UQ School of Biological Sciences.

He said while the research complicated current understanding of marine reserve design, the findings could help make the best use of the limited resources available for coral reef conservation.

“Designing marine reserves for the long-term is more difficult than we thought,” Professor Mumby said.

“The responses of coral to the impacts of climate change are relatively unknown at this stage.

“Yet the good news is that some geographic locations were consistently selected in the generated scenarios, regardless of how corals might adapt to warmer temperatures.

“These areas are great contenders for early conservation no matter what the future holds.”

Professor Mumby said that the research found good locations for protecting corals.

“We are providing this information to conservation partners in the Bahamas to help them in their efforts to work with local communities and establish new reserves.”

Professor Mumby says the response of coral to climate change is an ongoing focus for scientists and conservation advice will be updated regularly to reflect new research findings.

He says the world's oceans are becoming warmer due to the increasing concentration of atmospheric carbon dioxide produced by the burning of fossil fuels.

A rise in sea temperature by as little as 1°C caused stress to corals and

could lead to coral bleaching, where corals lost their internal symbiotic algae that helped them grow, and could result in vast areas of dead coral.

Scientists expect that warming [sea temperatures](#) could cause coral to die in large numbers.

The destruction of coral reef ecosystems will expose people in coastal areas of developing countries to flooding, coastal erosion and the loss of food and income from reef-based fisheries and tourism.

Provided by University of Queensland

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