

Low calcification in corals in the Great Barrier Reef

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Reef-building coral communities in the Great Barrier Reef—the world's largest coral reef—may now be calcifying at only about half the rate that they did during the 1970s, although live coral cover may not have changed over the past 40 years, a new study finds. In recent decades, coral reefs around the world, home to large numbers of fish and other marine species, have been threatened by human activities such as pollution, overfishing, global warming, and ocean acidification; the latter affects ambient water chemistry and availability of calcium ions, which are critical for coral communities to calcify, build, and maintain reefs.

Comparing data from reef surveys during the 1970s, 1980s, and 1990s with present-day (2009) measurements of calcification rates in One Tree Island, a coral reef covering 13 square kilometers (5 square miles) in the southern part of the Great Barrier Reef, Silverman et al. show that the total calcification rates, i.e., the rate of calcification minus the rate of dissolution, in these coral communities have decreased by 44 percent over the past 40 years; the decrease appears to stem from a threefold reduction in calcification rates during nighttime.

The authors suggest that reduced calcification, particularly during nighttime, could be caused by boring and other erosional activities brought about by a change in the type or the number of boring organisms (e.g., [sea cucumbers](#)) that live on these coral reefs. Another possibility is that warming water temperatures and ocean acidification could be causing increased dissolution of [coral reefs](#) over the past 40 years. The study is consistent with previous estimates and predictions of reduced

calcification rates of coral communities in the [Great Barrier Reef](#).

More information: Carbon turnover rates in the One Tree Island reef: A 40 year perspective, *Journal of Geophysical Research - Biogeosciences*, [doi:10.1029/2012JG001974](https://doi.org/10.1029/2012JG001974), 2012 dx.doi.org/10.1029/2012JG001974

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