

With Climate Change, Some Win, Some Lose, in Great Barrier Reef

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A variety of corals form an outcrop on Flynn Reef, part of the Great Barrier Reef near Cairns, Queensland, Australia. (Photo: [Toby Hudson](#) ^[1]/[CC-by-3.0](#) ^[2])

Thousands of species make their home in coral reefs, relying on them for food, shelter, and protection. But unlike most habitats, coral reefs can die. With rising water temperatures brought on by global climate change, the corals' food can become heat-stressed and perish. In this process, entire reefs turn white and grey, their vibrant hues faded. While climate change may mean the demise of some reefs through this "bleaching," a new study suggests that a few corals will succeed in warmer temperatures — at the other species' expense.

To better understand future impacts of rising ocean temperatures, researchers in Australia and the U.S. examined the coral composition of reefs along nearly 1,200 miles of the Great Barrier Reef where temperatures vary significantly. The reef's corals — some 350 species — were very flexible, and were distributed widely across temperature gradients up to 41° F.

"Some species, the losers, are much more vulnerable than others, while others are less susceptible to thermal stress and ocean acidification," explains the study's lead author Terry Hughes of James Cook University. The study, published April 12 in *Current Biology*, is the first

of its magnitude investigating climate effects on corals.

In total, Hughes and his colleagues identified and measured more than 35,000 coral colonies on 33 reefs. The overall abundance of corals along the Great Barrier Reef didn't respond to temperature because, as some species declined, others increased.

"The inference for climate change is that coral composition will change — we know it is changing — but reefs won't disappear entirely if we can control greenhouse emissions quickly enough," he says.

Though the study might seem the first piece of good news about climate change, Hughes notes the success of coral species could be limited to the Great Barrier Reef.

"The Great Barrier Reef may be less vulnerable than other reefs because of its sheer size, diversity and its interconnections between adjacent individual reefs," says Hughes. "Isolated reefs are more vulnerable because if something goes wrong and the loose their coral cover, it's harder for them to be rescued from afar by larval dispersal."

Though Hughes says climate change skeptics will misrepresent studies showing the positive impacts of warming temperatures, it doesn't mean these effects should be simplified.

"The impacts are huge, and the combined effects of pollution, overfishing and coral bleaching have already destroyed one-third of the world's reefs," he says.



A blue starfish resting on hard acropora coral in the Great Barrier Reef. (Photo: Copyright © 2004 [Richard Ling](#) ^[3])

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var gaJsHost = (("https:" == document.location.protocol) ? "https://ssl." : "http://www.");
document.write(unescape("%3Cscript src=" + gaJsHost + "google-analytics.com/ga.js'
type='text/javascript'%3E%3C/script%3E")); var pageTracker = _gat._getTracker("UA-
6149536-1"); pageTracker._trackPageview();
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