

Back from the dead: Some corals regrow after 'fatal' warming

October 9 2019, by Issam Ahmed



In this undated photo released by Science Advances, *Cladocora caespitosa* coral polyps are seen underwater near the Columbretes Islands in the Mediterranean Sea

For the first time ever, scientists have found corals that were thought to have been killed by heat stress have recovered, a glimmer of hope for

the world's climate change-threatened reefs.

The chance discovery, made by Diego K. Kersting from the Freie University of Berlin and the University of Barcelona during diving expeditions in the Spanish Mediterranean, was reported in the journal *Science Advances* on Wednesday.

Kersting and co-author Cristina Linares have been carrying out long-term monitoring of 243 colonies of the endangered reef-builder coral *Cladocora caespitosa* since 2002, allowing them to describe in previous papers recurring warming-related mass mortalities.

"At some point, we saw living polyps in these colonies, which we thought were completely dead," Kersting told AFP, adding it was a "big surprise."

Coral are made up of hundreds to thousands of tiny creatures called polyps that secrete a hard outer skeleton of calcium carbonate (limestone) and attach themselves to the [ocean floor](#).

Heat waves kill these animals—by either essentially roasting them alive or causing them to eject the symbiotic algae that live within them and provide them nutrients, thus leading to coral bleaching.

A quarter of the coral cover of Spain's Columbretes Islands was lost to a particularly extreme heat wave in 2003.



3D computed tomography section of a rejuvenated *Cladocora caespitosa*

corallite. It can be seen how the rejuvenated polyp grew back to its original size after shrinking its dimensions and started budding. Credit: Diego K. Kersting



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Time running out

But the researchers found that in 38 percent of the impacted colonies, the polyps had devised a survival strategy: shrinking their dimensions, partly abandoning their original skeleton, and gradually, over a period of several years, growing back and starting a new skeleton.

They were then able to gradually re-colonize dead areas through budding.

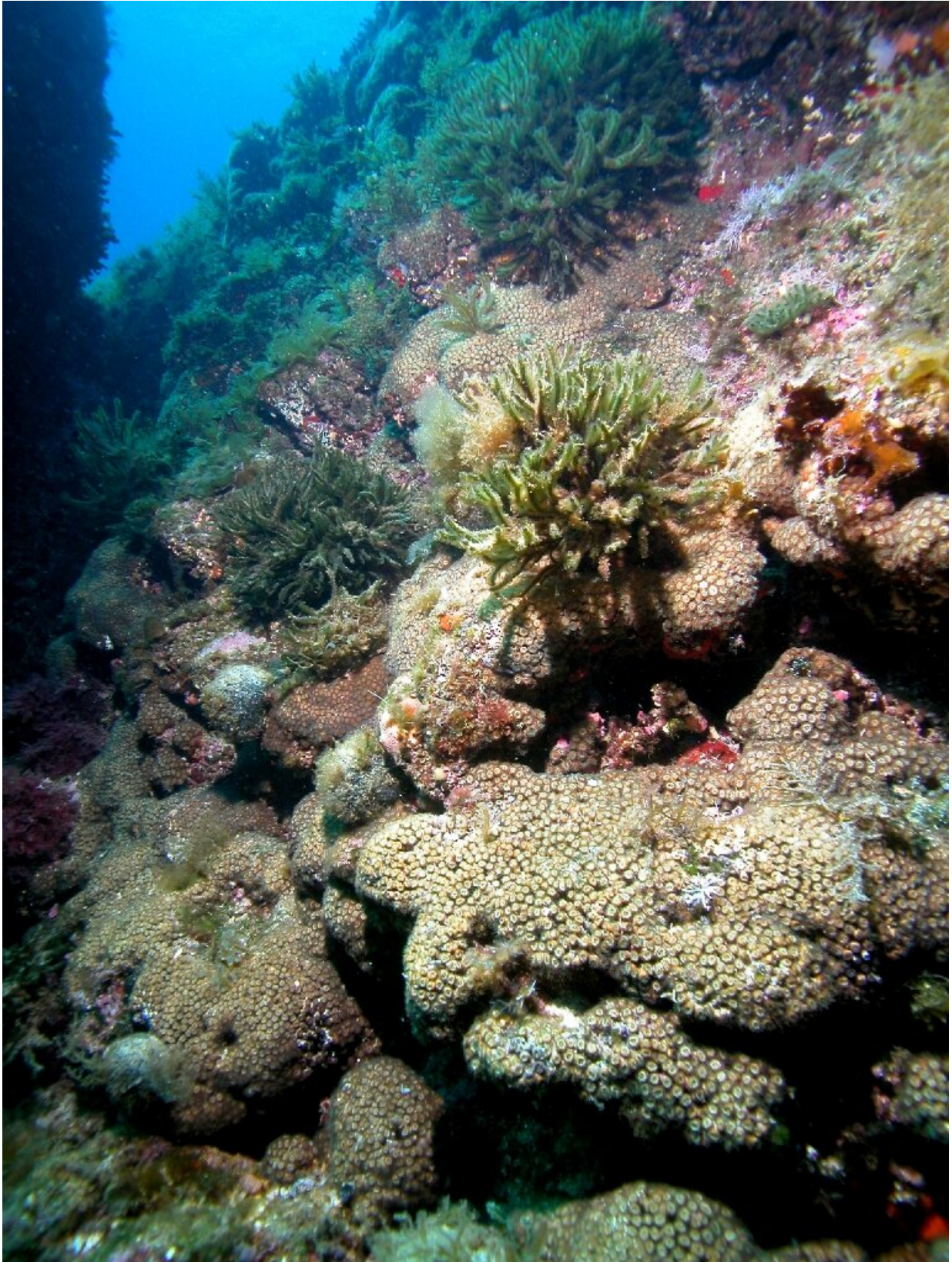
In order to be sure the polyps were in fact the same animals staging a comeback, rather than new coral created through sexual reproduction, the team used 3D computer imaging to confirm the old, abandoned skeleton was connected to the new structure.

This process of "rejuvenescence" was known to exist in the fossil record but had never before been observed in coral colonies that exist today.

Kersting said the finding opens up the intriguing possibility that other modern corals around the world—such as those in Australia's dying Great Barrier Reef—might be applying similar survival strategies, though further investigation is required.



In this undated photo released by Science Advances, a *Cladocora caespitosa* reef is seen underwater near the Columbretes Islands in the Mediterranean Sea



The discovery means there is a narrow window of opportunity to prevent coral reefs from going extinct as a result of climate change

It also meant that there was a narrow window of opportunity to prevent coral reefs, vital ecosystem engineers that provide shelter for hundreds of species of fish and plants, from going extinct as a result of climate change.

"For sure, it's good news, but what we are seeing now in the Mediterranean Sea and other parts of the world is that these marine heat waves are recurrent—happening every summer or every second summer," Kersting said.

These corals also grow very slowly—at a rate of about 3 millimeters a year—"so if you are having every second summer a heat wave, and it's killing 10 to 15 percent of the cover, I mean, the numbers are clear," he added.

"They actually need help from us. We need to stop [climate change](#), because it's not going to be enough."

More information: D.K. Kersting at Freie Universität Berlin in Berlin, Germany et al., "Living evidence of a fossil survival strategy raises hope for warming-impacted corals," *Science Advances* (2019). [DOI: 10.1126/sciadv.aax2950](https://doi.org/10.1126/sciadv.aax2950), advances.sciencemag.org/content/5/10/eaax2950

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Citation: Back from the dead: Some corals regrow after 'fatal' warming (2019, October 9)

retrieved 23 April 2024 from <https://phys.org/news/2019-10-dead-corals-regrow-fatal.html>

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