



CAT-021-Heat Resistant Corals-Worlds Oceans

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One of the most important threats to coral reefs is climate change, as it would make the oceans warmer and more acidic. The rise in Ocean temperatures harm corals as the new temperatures are often outside their normal ranges. The symptoms of declining coral health due to a rise in Ocean temperatures are coral bleaching and slower growth. **Why?**

Because changes make the corals become stressed, so they will expel the symbiotic algae that live within them, called zooxanthellae. The zooxanthellae undergo photosynthesis, a process plants undergo as well, so corals can take energy from the sun; also, this algae helps corals to form their skeletons. **Now, thanks to a [new study](#) we know that the solution could live in the same corals.**



Researchers from Stanford University tested how corals grew in various temperatures. They compared known heat resistant corals to heat sensitive corals under extreme heat conditions and monitored their genes (not “jeans”) to identify



which genes were responsible for providing the heat resistant corals with the ability to survive in extreme temperatures (extreme bleaching conditions). The researchers found 60 gene behaviour differences between the two types of corals. The genes of the heat sensitive corals acted faster to kill cells as a response to increased temperature whereas the heat tolerant coral species did not kill cells, but grew in the same temperatures. It remains

unclear if these differences in genes is only for short-term adaptations, or if it will help heat resistant corals to survive and change the seascape of coral reefs as we know it (i.e. moving from heat sensitive corals, which currently dominate coral reefs to reefs dominated by heat resistant corals) to a more than



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plausible rise in the ocean temperature.

Do you think heat tolerant corals reefs will be the answer to coral reefs surviving climate change?

- [Is Australia's Heat Wave Linked to ENSO?](#)
- [Ocean Conservation: Can The Past Help The Future?](#)
- [Ocean Acidification: A Growing Problem](#)
- [Greenhouse gases at record high – Oceans and Forests can't take much more](#)
- [Exploring Ocean Acidification](#)

[Sonia Doblado](#) is a biologist and I'm an intern with SUFB. She's here because the general public needs more information to understand why we need to protect our oceans. We depend on our Oceans way more than we think we do, so it is important that we understand everything we can about them.

1. **Posted by [Hector R. Leta](#) on February 20th, 2013, 13:18**

No doubt heat tolerant coral reefs is now the answer to coral reef surviving climate change. Genetic differences seem to be a short-term adaptation if we consider climate warming started less than two hundred years ago due to human industrial activity. It lead the humans to treat the oceans as a vast disposal container. Industrial activity ruined the oceans and now we are making other species to pay the price. There are still countries which has done nothing to diminish their greenhouse gases.

2. **Posted by [Clarice Brough](#) on February 25th, 2013, 00:28**

That is a very interesting study. I've had the opportunity to research many corals, and as I hear about global warming, I often wonder how the ocean's corals and other life will adapt.

From the opposite side of the temperature spectrum, there is an interesting example a coral that thrived at a time when the seas were warmer than they are now. This is the Blue Coral *Heliopora coerulea*. A beautiful species of soft coral that can actually calcify an external "blue" skeleton.

Today it is the only remaining species of its family, Helioporidae. Yet at one time this family was a dominant coral group in the world's oceans. This was before the earth experienced a massive cooling of the seas during the last ice age.

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