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Dissolved domiciles. Corals exposed to ocean acidity lost their skeletal homes but eventually regenerated them.

Credit: Avinoam Brietstien

Reefs Pass the Acid Test

By Dave Mosher
*Science*NOW Daily News
29 March 2007

Coral has to worry about global warming for two reasons. Not only does carbon dioxide in the atmosphere make the oceans uncomfortably warm, it also enters the water and becomes carbonic acid, where it can dissolve a coral's external skeleton (*Science*NOW, 17 February). Yet new research shows the soft-bodied polyps can survive and regenerate their skeletons after a "naked" year. The finding suggests corals are more resilient than thought, but experts caution that this is still no insurance policy for the world's coral reef ecosystems.

Many species of coral polyps build protective skeletons throughout their lives by secreting aragonite, a mineralized form of calcium carbonate. Researchers had assumed that these polyps wouldn't last long in the harsh ocean environment without their armor. That's been a big concern for conservationists, because coral reefs support massive fish communities and protect islands from severe weather (*Science*NOW, 5 July 2006). Pharmaceutical companies have also taken an interest in coral for drug development.

To get a better idea of how corals respond to rising acidity, marine biologist Maoz Fine and biochemist Dan Tchernov of the Interuniversity Institute for Marine Science in Eilat, Israel, fast-forwarded to the year 2300, when oceanic acid is projected to be 10 times greater than it is now. They collected samples of a major reef-building group called scleractinian corals from the Mediterranean Sea and, back in the lab, bubbled carbon dioxide into their tank water. Within a month, the corals' skeletons completely dissolved. To the researchers' surprise, however, the now-naked coral polyps stuck around, eventually doubled in size, and were still alive a year later. When regular ocean water--lacking the high acid levels--was pumped back into their tanks, the polyps rebuilt their protective homes, the team reports tomorrow in *Science*.

Despite the hopeful results, coral reefs are still very much in danger, says Victoria Fabry, a biological oceanographer at California State University in San Marcos. For one, she says, the only reason the lab coral recovered is because carbon dioxide levels were quickly reduced. In reality, she says, "oceanic changes happen on time scales of thousands of years. ... By then it will be too late for coral reefs to recover." In addition, she notes, naked coral is likely to have a much easier time surviving in the lab than in the wild, where predators roam.

Related sites

- More on scleractinian corals
- Carbon dioxide and coral reefs