

Global warming and coral bleaching

Science-based analyses of America's key environmental issues

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Claim: *Delicate coral reefs are being "bleached to death" in the wake of a warmer ocean.*

This is another example of the **false paradigm** concerning the fragility of nature — how small environmental changes upset the delicate balance between ecosystems.

Sen. John McCain (R-AZ) led a Senate debate on global warming on October 30, 2003 and worried about the destruction of "70% of the heat-sensitive coral reefs in the world due to increases in water temperatures—[that] place reef fisheries in jeopardy. I don't know what happens when the beginning of the food chain disappears."

But as one might expect, the subject is much more complicated than that. Corals enjoy a symbiotic relationship with certain photosynthetic algae of the genus *Symbiodinium*. The algae get their nutrients from the coral and the coral acquire photosynthetic products from the algae. There are different groups (or clades) of *Symbiodinium* that vary genetically and benefit corals in different ways.

Bleaching is evidence corals have rejected the *Symbiodinium*. They lose their color and when bleaching occurs, large numbers of corals die. But some corals manage to survive bleaching events. They acquire new *Symbiodinium* potentially better adapted to the new environment.

In a paper that appeared in *Nature* three years ago, Andrew Baker proposed that bleaching may be an excellent strategy employed by corals to sacrifice short-term benefits for longer-term gains. This line of thinking accounts for corals' ability to survive over millions of years and through *much harsher climate changes than those experienced over the last few decades*.

Two recent investigations into the health of the Great Barrier Reef (GRB) have been presented in Australia by the Queensland Chief Scientist and the Productivity Commission. Despite an exhaustive listing of the literature, neither of these reports was able to instance a single substantiated example of substantive damage to the GRB from an anthropogenic cause.

The Productivity Commission report (2003) concluded that there is "no conclusive evidence" of water quality decline within the GRB lagoon or of "any resulting damage to ecosystems..." But even more important, there is **abundant evidence that the GRB remains in excellent health** within the bounds of the variations which occur within its natural environment. In this context, coral bleaching outbreaks are entirely par for the course. **Natural** bleaching outbreaks have probably been occurring on the GRB for thousands of years in the past, and will continue to occur in the future.

References:

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