Minimizing the Effects of Ocean Acidification on Coral Reef Health

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Coral reefs are a critical part of the ocean’s ecology, being home to 4,000 species of fish and 700 species of coral. Increasing levels of greenhouse gases, notably CO2 , cause acidification of the oceans. This in turn causes damage and death to the reefs. This experiment sought to observe the effects of ocean acidification on coral reef health and to determine possible ways to naturally minimize the harmful effects of OA. It was predicted that if coral reefs are exposed to excess carbon dioxide, then the corals will start to decrease in health. In addition, if the effects of ocean acidification can be ameliorated by using mangroves or by limestone, then the combination of the limestone and the mangroves should do a better job at minimizing the degradation of the coral health. To conduct this experiment, five identical reef aquaria were set up and allowed to cycle for five weeks. After initial cycling, baseline pH levels of each aquarium were measured for two weeks, and carbon dioxide was then diffused into four of the five aquaria at 100 psi for a month. After the month was over, carbon dioxide diffusion ceased and the zooxanthellea of the Duncan corals in each aquarium were counted. The collected data suggests that while carbon dioxide has adverse effects on coral health, and while mangroves and limestone do work for minimizing the effects of ocean acidification, a combination of mangroves and limestone works best for ameliorating the effects that carbon dioxide has on corals.

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