

# Indo-Pacific coral reefs disappearing more rapidly than expected

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Corals in the central and western Pacific ocean are dying faster than previously thought, University of North Carolina at Chapel Hill researchers have found. Nearly 600 square miles of reef have disappeared per year since the late 1960s, twice the rate of rainforest loss.

The reefs are disappearing at a rate of one percent per year, a decline that began decades earlier than expected, the researchers discovered. Historically, coral cover, a measure of reef health, hovered around 50 percent. Today, only about 2 percent of reefs in the Indo-Pacific have coral cover close to the historical baseline

“We have already lost half of the world’s reef-building corals,” said John Bruno, lead study author and associate professor of marine ecology and conservation in the department of marine sciences in UNC-Chapel Hill’s College of Arts and Sciences.

The results were published Aug. 8, 2007, in the online journal *PLoS One*. The study provides the first regional-scale and long-term analysis of coral loss in the region, where relatively little was known about patterns of reef loss.

The Indo-Pacific contains 75 percent of the world’s coral reefs and has the highest coral diversity in the world. High coral cover reefs in the Indo-Pacific ocean were common until a few decades ago, the researchers found.

Bruno and Elizabeth Selig, a graduate student in the College of Arts and Sciences' curriculum in ecology, compiled and analyzed a database of 6,000 quantitative surveys performed between 1968 and 2004 of more than 2,600 Indo-Pacific coral reefs. The surveys tallied coral cover, a measure of the ocean floor area covered by living corals. Scientists rely on coral cover as a key indicator of reef habitat quality and quantity, similar to measuring an area covered by tree canopy as a gauge of tropical forest loss.

Coral cover declined from 40 percent in the early 1980s to approximately 20 percent by 2003, the researchers found. But for Bruno and Selig, one of the most surprising results was that coral cover was similar between reefs maintained by conservationists and unprotected reefs. This consistent pattern of decline across the entire Indo-Pacific indicates that coral loss is a global phenomenon, likely due in part to large-scale stressors such as climate change. But for Bruno and Selig, one of the most surprising results was that coral loss was just as extensive on some of regions most intensely managed reefs.

The results of the study have significant implications for policy makers and resource managers searching for ways to reverse coral loss. "We can do a far better job of developing technologies and implementing smart policies that will offset climate change," Bruno said. "We can also work on mitigating the effects of other stressors to corals including nutrient pollution and destructive fishing practices."

Although reefs cover less than one percent of the ocean globally, they play an integral role in coastal communities, Bruno said. They provide economic benefits through fisheries and tourism and serve invaluable services like buffering from storms. When corals die, these benefits quickly disappear. Coral disease, predators, rising ocean temperatures due to climate change, nutrient pollution, destructive fishing practices and sediment run-off from coastal development can all destroy reef

communities.

“Indo-Pacific reefs have played an important economic and cultural role in the region for hundreds of years and their continued decline could mean the loss of millions of dollars in fisheries and tourism ,It’s like when everything in the forest is gone except for little twigs,a few lone trees” Selig said.

Source: University of North Carolina at Chapel Hill

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