



New study warns on coral reef diversity

By **Matthew Knight** for CNN

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STORY HIGHLIGHTS

- New two-year field study says destruction of coral reefs may have been underestimated
- Study which included nearly 2000 reef systems found reef biomass is non-saturating
- Coral destruction likely to increase due to growth of human coastal populations

(CNN) -- The world's most diverse coral reef regions may be under greater threat from human populations than previously thought, according to a new global scientific field study.

Researchers reporting in the journal *PlosBiology* say that the diverse reef fish systems are the most impaired by human populations -- which runs counter to previous experimental findings which have suggested that these areas were best equipped to deal with biodiversity loss.

"Before, we thought diversity was an insurance against human stressors but it is actually a weakness," said Camilo Mora from Canada's Dalhousie University, and lead author of the study.

The study, which involved researchers from 49 countries, is the first global analysis which tries to link production of coral fish biomass with human population density.

Over a two-year period, researchers gathered biological field data from nearly 2000 reef sites worldwide detailing fish species' weight, size and abundance, enabling them to calculate the cumulative weight of individual reefs (standing biomass). These results were then compared against demographic data.

The hampering effects of human activities -- fishing, coastal development, pollution and tourism -- on reef diversity are well known, but the damage to the ones with most biodiversity -- many of which are situated in Southeast Asia --alarmed the scientists.

Unfortunately, we find again and again that our global population cannot be sustainably supported with the deterioration of the world's natural resources
--Camilo Mora, Dalhousie University

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They don't yet understand why these diverse ecosystems are so adversely affected, but they suggest it could be because of the depletion of larger fish species -- which are more efficient at turning food into biomass.

What is clear though, say the scientists, is that the results of the global survey suggest that biodiversity loss in diverse reef areas has been "considerably underestimated" and that they are more vulnerable to human expansion.

With 75% of the world's reefs situated near human settlements -- whose populations are expected to double over the coming century -- the situation can only deteriorate if no action is taken, which poses some uncomfortable questions, Mora thinks.

"Human overpopulation is a very sensitive topic across endeavors from science to religion and politics. Unfortunately, we find again and again that our global population cannot be sustainably supported with the deterioration of the world's natural resources..." Mora said.

"Thus, identifying socially and politically acceptable solutions to curb human population growth is at the core of finding ultimate solutions for the protection of biodiversity and the prevention of unnecessary hardship," he added.

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While the continuing depletion of reef fish systems is a cause for great concern, on a slightly more positive note, the scientists also found there are no limits to the beneficial effects biodiversity can have on the functioning of reef fish systems.

Previous results based on experimental studies have led scientists to conclude that the functioning of coral reefs -- as measured by the standing biomass -- stabilizes once a certain number of species is reached.

But the survey data contradicted these findings, showing instead that reef ecosystems have no saturation point, and continue to increase in their efficiency as species' numbers rise.

"If you look at all the information we have so far it has been found that the number of species usually doesn't have an additional effect on how well the system functions," Mora said.

"In coral reefs we found the complete opposite. Ecosystems work much better if they have more biodiversity. Every single species has a unique contribution to how well an ecosystem functions."