

# Dying coral reefs threaten the livelihood of millions

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Coral reefs with healthy structural complexity provide numerous hiding places for reef fish.

Declining coral reef health is threatening the food security and livelihoods of millions of people living in the coastal tropics, according to a study by University of Queensland researchers.

Lead author Dr Alice Rogers said coral reefs were dying due to pollution, climate change and overfishing and further decline would impact on reef fisheries.

"We studied coral reefs in the Caribbean where many people rely on reef fisheries for food and income," said Dr Rogers from UQ's School of Biological Sciences and University of Exeter's College of Life and Environmental Sciences.

"We found the continued declines in reef health could lead to a considerable reduction in fishery catches and negative impacts on the livelihoods of these people."

The researchers studied [coral reefs](#) in the Exuma Cays Land and Sea Park in The Bahamas, one of the best-protected marine parks in the Caribbean.

Dr Rogers said they measured the abundance and type of fish in areas of high and low complexity reef.

"Corals create an amazingly complex habitat with lots of holes, cracks and crevices that serve as hiding places and homes for a huge abundance and diversity of organisms," she said.

"As corals die the reef becomes flatter and less complex, which changes the interactions between reef organisms and affects the abundance of fish.

"We conducted our research in the marine park to understand the difference between these environments in the absence of fishing, then we used the results to create a tool for analysing [reef fisheries](#)."

Using the tool they developed, the research team found that a complete loss of reef complexity would lead to more than a three-fold decrease in the production of large-bodied reef fish.

"That means three-times less potential catch for a fishery, which would

have a huge impact on [food security](#) and peoples' livelihoods", said Dr Rogers.

The researchers showed that more complex reef habitats provided refuge to vulnerable prey organisms, including juvenile and small-bodied species of fish.

When this complexity is lost the dynamics of the reef community change, leading to fewer small and medium-bodied fish, and fewer fish overall.

UQ's Professor Peter Mumby, a co-author on the study, said much of the loss of [reef](#) habitat complexity can be averted if significant steps were taken to manage our ecosystem and climate.

"There are practical steps we can take to manage reefs, such as not harvesting parrotfish, which eat algae and help corals grow, and taking care to prevent fertiliser run-off," he said.

"Such management is vital in order to help fishers maintain a sustainable and productive livelihood."

The research was conducted by The University of Queensland, University of Exeter and University of Sheffield and published in *Current Biology* this month.

Provided by University of Queensland

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