# Isolated reefs regenerate faster: study

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A recent study published in CSIRO's Marine & Freshwater Research reveals isolated reefs may have a better ability to regenerate compared to those closer to human activity.

The study focussed on WA's Ashmore Reef, located on the north-west shelf, which is home to 275 species, making it one of the most diverse coral systems in the region.

Like many reefs in the Indian Ocean, it experienced severe bleaching in 1998 and 2003, resulting in extensive damage to its coral cover.

Researchers approached the study expecting to find little change between field results from 2006 and 2009, hypothesising that isolated coral systems would recover more slowly due to limited opportunities for larval replenishment from nearby reefs.

Counter to expectations, however, recovery at Ashmore Reef has been robust. From 2005 to 2009, the per cent cover of live hard coral tripled, while soft corals doubled, showing consistent replenishment at all six sites surveyed. These included exposed, sheltered and lagoonal habitats.

Explaining the original hypothesis, study co-author Dr Daniela Ceccarelli says, "When coral populations on a reef become severely depleted, that reef is unlikely to provide enough larvae for successful recovery."

"The reef will rely on larval supply from elsewhere. [But] the findings of

our study imply that a well-protected reef has a good chance of recovering from disturbances."

The reason for this growth is tied to a combination of factors, including the reef's structure, biodiversity and a reduction in stress from human activities.

"The resilience of Ashmore's coral community is enhanced by isolation because it is far away from human pressures such as fishing, pollution and run-off from land," says Dr Ceccarelli.

Ashmore was able to recover by self-recruitment and regrowth of fragments or colonies that suffered only partial mortality.

These included fast-growing pioneer coral such as Acropora and Montipora and surviving robust species such as Porites, which took longer to come back.

More generally, Dr Ceccarelli notes the complexity of a reef's structure helps in recovery, as in theory, the more nooks and crannies it offers for different species to live in, the more biodiversity it can host and contribute to a reef's recovery.

As to the application of her findings, Dr Ceccarelli offers a simple conclusion.

"If we want reefs to stay coral-dominated in the face of global climate change, we need to reduce the other things that have detrimental effects on reefs, especially extractive activities like fishing and activities that cause water quality to deteriorate."

Provided by CSIRO