

Hope for recovery of coral reefs hit by cyclone Yasi

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(Phys.org) —Coral reefs on Australia's Great Barrier Reef devastated by cyclone Yasi were replenished by large numbers of coral larvae nine months after the cyclone.

This finding by scientists at the ARC Centre of Excellence for Coral [Reef Studies](#) (CoECRS) provides fresh hope for the ability of the world's [coral reefs](#) to recover from destructive storms.

When Cyclone [Yasi](#) hit Queensland's Palm Islands in February 2011, its 10 metre waves and 285km/h gales all but obliterated the corals on exposed reefs, says Dr Vimoksalehi Lukoschek of CoECRS and James Cook University.

Over the past two years she and fellow [marine scientists](#) have dived on the devastated region to study the extent of the damage and the potential for recovery of the corals.

"Before the storm exposed reefs were covered in hard corals like the branching Acropora, arguably the most important group of reef-building corals on the [Great Barrier Reef](#)" she says.

"The [destructive effects](#) of the cyclone reduced overall coral cover on exposed reefs to less than 2 percent and Acropora accounted for less than 1 percent of coral cover."

"Basically, cyclone Yasi removed all adult colonies of Acropora and only

a few very small [juveniles](#) survived the cyclone. What we witnessed was absolute devastation, previously healthy reefs almost completely devoid of any live coral."

However, the sheltered reefs of the Palm Islands largely escaped [storm damage](#) and coral cover was around 25 percent, which was similar to before the cyclone. Importantly, sheltered reefs had high numbers of adult colonies of Acropora following the cyclone, which can produce larvae to replenish devastated reefs.

In addition, a year after the cyclone, the scientists found that the areas devastated by cyclone Yasi had been partly overgrown with algae – but the areas that had escaped undamaged remained coral-dominated and were free of algae.

The key new finding of the study, however, was that there was high coral larval recruitment on exposed reefs hit by the cyclone following the first mass-spawning event after it. Dr Lukoschek thinks this is good news because "it essentially means that reefs that were completely devoid of reproductively mature adult corals, which are needed to produce larvae, were being replenished by coral larvae from reefs that had not been impacted by the cyclone".

Ongoing genetic research by Dr Lukoschek aims to determine which reefs these coral larvae came from. "Nonetheless, regardless of where they came from, the rapid replenishment of devastated reefs by large numbers of new recruits, combined with the juvenile corals that survived the cyclone, suggests that the recovery process is underway."

"The take home message from our study for the GBR is that although cyclones can have a major destructive impact on coral cover, these impacts tend to be patchy and coral [larvae](#) coming in from less impacted sites has the potential to reseed impacted reefs leading to their recovery."

"Our research indicates that corals can recover if given a chance to do so. Nonetheless, if the recovery process is disrupted by cyclones occurring in quick succession, or by other disturbances, such as coral bleaching or starfish outbreaks, or hindered by chronic stressors, such as poor water quality, pollution or disease, then coral populations may fail to recover."

The team's paper "The importance of coral larval recruitment for the recovery of reefs impacted by [cyclone](#) Yasi in the central Great Barrier Reef" appears in the scientific journal *PLOS ONE*.
[dx.plos.org/10.1371/journal.pone.0065363](https://doi.org/10.1371/journal.pone.0065363)

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