

Surveys reveal vast mangrove damage along Great Barrier Reef and restoration hotspots

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A James Cook University report has revealed severe damage in about

80% of mangroves along the Great Barrier Reef, from Cairns to Gladstone—and pinpointed 52 potential restoration hotspots over 17,255 hectares.

The findings bring hope and urgency for World Mangrove Day, offering a pathway to recovery and highlighting the critical need for conservation.

The [Great Barrier Reef Mangrove and Saltmarsh Condition Survey](#) report used 80,000 high-resolution geo-referenced photographs from helicopter surveys, revealing the profound impacts of sea level rises, cyclone damage, and pollutants on [mangrove](#) habitats.

JCU TropWATER researcher Professor Norm Duke said mangroves along the Great Barrier Reef coastline had not been surveyed to this extent before and results show vast damage.

"Our observations provide clear, unequivocal, and quantifiable evidence of changes to this increasingly dynamic shoreline," he said.

"You can see how sea level rises are eating at the mangrove shoreline, where mangroves are simply collapsing into the sea edge.

"The impact of severe tropical cyclones has battered the region over the past four decades, particularly Yasi in 2011 and Debbie in 2017. We can also see extensive shoreline tree loss from erosion, coupled with scouring erosion of salt pans, and retreat of terrestrial shorelines.

"This is widespread evidence of rising sea levels."

Professor Duke said the aerial observations align with local records of sea level rise over the past half-century, which indicate an increase of at least 4mm per year.

Mangroves are nature's blue carbon powerhouses—capable of capturing and storing significant amounts of carbon, making them a vital tool in mitigating the climate crisis. They are also [biodiversity hotspots](#) that provide essential breeding grounds for native fish, while stabilizing coastline ecosystems and reducing erosion.

The team also identified 17,255 hectares of coastal land for [restoration](#) across 52 potential sites. The findings offer opportunities and insight into challenges for localized recovery and [carbon sequestration](#), potentially funded by carbon markets. This is a critical step in preparing for coastline retreat and allowing mangroves to move landward as sea levels rise.

TropWATER's Dr. Adam Canning stated while maintaining the health of existing mangroves along the Great Barrier Reef coastline was critical, identifying potential restoration sites was also an essential step in the climate crisis for sequestering carbon and managing coastal retreat.

"Until now, beyond very limited desktop exercises, nobody knew if and where lost forests could be restored in the Great Barrier Reef, and what their capacity for carbon sequestration might be," he said.

"We used a combination of complementary methods to find the best spots for restoration, their potential for carbon storage and the specific restoration challenges one might face.

"We coupled our field surveys with detailed digital elevation models, essentially 3D images of the landscape, tidal ingress mapping, long-term satellite tracking of mangrove health, land tenure and regulatory triggers.

"We also identified likely risks for each potential project and the main factors driving changes, like pollution, access tracks, feral pigs, sediment deposition, shoreline erosion, and storm damage.

Greening Australia is already using the findings from this report to assess the potential for blue carbon ecosystem restoration for two projects in the Mulgrave and Mackay regions.

Greening Australia's Director of Reef Aid, Dr. Lynise Wearne, said the research contributes important data to the field of blue carbon restoration and highlights the need and urgency for scaling up investment into coastal restoration activities.

"The report highlights challenges involved in restoring blue carbon ecosystems, but there is also research showing that these systems can respond quickly to interventions such as active revegetation and tidal inundation and achieve carbon storage.

"These coastal ecosystems are vitally important for climate resilience and biodiversity, as well as being of deep cultural significance to First Nations communities. Greening Australia are committed to driving investment and working alongside First Nations communities to restore threatened coastal ecosystems."

More information: Report: [drive.google.com/file/d/1zQZ8X ...
v-83BYOtcu9i9eI/view](https://drive.google.com/file/d/1zQZ8X...v-83BYOtcu9i9eI/view)

Provided by James Cook University

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