

Deep sea reefs may provide refuge for Aussie marine life in a warming world

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A new study by researchers at The University of Western Australia has found deep reefs in Western Australia can be used as a refuge by marine

forests from the impacts of ocean warming.

The study, published today in *Proceedings of the Royal Society B*, found that deep marine forests in Western Australia, formed from large algae, were less affected by an extreme marine heatwave that severely affected shallow ones.

Marine forests are essential marine ecosystems in [temperate regions](#) that provide food and refuge for numerous fish and invertebrates, and sustain important Australian fisheries, such as the Western Rock lobster.

In 2011, the coast of Western Australia experienced an extreme marine heatwave, which caused temperature anomalies of up to 5 degrees centigrade.

The consequences of these high temperatures were devastating for the [marine environment](#), in particular coastal marine forests, where they significantly decreased in abundance.

The researchers, from UWA's School of Biological Sciences and UWA Oceans Institute, examined the deeper marine forests at depths of up to 40 meters in areas offshore from the Abrolhos Islands, Jurien Bay and Rottnest Island to assess if they had declined at the same rate as the shallow reefs.

They found the big changes observed in shallow sites were reduced or marginal in the deep areas at all three locations.

Lead researcher Ph.D. student Anita Giraldo Ospina, said identifying areas of refuge where organisms could survive periods of ocean warming, had become a research and conservation priority.

"We wanted to find out if deeper areas of the ocean offered some

protection against ocean warming events for marine forests," Ms Ospina said.

"We found that after the 2011 marine heatwave in Western Australia, the abundance and type of species that characterized shallow reefs at depths of 15 meters changed a lot.

"Deeper reefs at around 40 meters, had very minimal change after the marine heatwave, indicating they were less affected by this extreme warming event

"This provides hope that deep reefs may be areas where organisms can survive the impacts of [ocean](#) warming and possibly help the recovery of impacted shallow reefs."

More information: Ana Giraldo-Ospina et al. Depth moderates loss of marine foundation species after an extreme marine heatwave: could deep temperate reefs act as a refuge?, *Proceedings of the Royal Society B: Biological Sciences* (2020). [DOI: 10.1098/rspb.2020.0709](https://doi.org/10.1098/rspb.2020.0709)

Provided by University of Western Australia

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