

Marine plants provide defence against climate change

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Seagrass, mangroves and salt-marsh ecosystems are able to develop strategies for climate change adaptation and mitigation, according to a new study by researchers at The University of Western Australia.

Winthrop Professor Carlos Duarte, Director of UWA's Oceans Institute said seagrass, mangrove and salt-marsh ecosystems ranked among the world's most intense carbon sinks while offering effective coastal defences against [climate change](#), such as the ability to raise the seafloor, dissipate wave energy and prevent flooding.

The study, published in *Nature Climate Change*, was led by Professor Duarte and included an interdisciplinary team of marine ecologists and

coastal engineers.

"These coastal habitats rank among the most valuable because of the range of ecosystem services they provide," Professor Duarte said. "Even so, these ecosystems formed by macroalgae, seagrass beds, mangroves and marshes have seen their global spread decrease between 25 and 50 per cent in the last 50 years due to several factors, such as deteriorating water quality or coastal development."

The researchers showed the ecosystems acted as intense CO₂ sinks, sequestering large amounts of carbon, which they could hold for millennia in marine sediments, removing this CO₂ from contributing to the climate change.

The article is a contribution to the national Coastal Carbon Cluster funded by the CSIRO, which Professor Duarte co-leads, with the aim of improving understanding of carbon cycling and the role [coastal ecosystems](#) play as carbon sinks in Australia's massive coastal area.

Later this month, Professor Duarte will attend a meeting of the UN Secretariat of the United Nations Framework Convention on Climate Change in Bonn, Germany, to share the evidence on the role marine plants play in [climate change mitigation](#) and adaptation to formulate new strategies involving the conservation and restoration of these key [ecosystems](#).

"Sea level has increased between 1.6 and 0.2mm per year since 1901 and moderate emission scenarios project a further [sea level](#) rise between 0.21 and 0.48m by 2100," Professor Duarte said. "The impacts this may have on coastal flooding and the damage it could cause to coastal infrastructures can be huge, which means a major capital investment will be required to provide adequate defence - something that will challenge the capacity of even the wealthiest nations."

Professor Duarte said the recently released IPCC report had highlighted that climate change was a real threat.

"Events such as the recent flooding in Queensland, where damage affected a significant percentage of Australia's GDP or the current national emergency due to wildfires prompted by very warm temperatures, should serve as a reminder of the impact climate change, if not faced, can have on our economy," he said.

More information: www.nature.com/nclimate/journal/nclimate1970.html

Provided by University of Western Australia

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