

Coastal carbon - Australia's blue forest future

Coastal “blue carbon” ecosystems can play an important role in mitigating climate change, and also provide multiple other benefits, like providing habitat, supporting fisheries and protecting coasts from damaging waves.

Background

Coastal blue carbon ecosystems — mangrove forests, tidal marshes and seagrass meadows — are particularly effective at capturing CO₂ and sequestering it as organic carbon. Much of this organic carbon is stored in the sediments that the plants grow in. Degrading or clearing the ecosystems causes much of this stored carbon to be released as damaging greenhouse gases into the atmosphere.

Australia has abundant blue carbon ecosystems, and there is significant potential for their carbon-capturing ability to be harnessed as a nature-based solution to help remove CO₂ from the atmosphere. Policies are now being implemented by national and state/territory governments that are based on this potential.

Climate-focussed policies tend to concentrate on two broad sets of actions relevant to blue carbon ecosystems. *Protecting* blue carbon ecosystems from degradation prevents greenhouse gases from being released. *Restoring* blue carbon ecosystems can increase the rate of carbon capture and sequestration, helping remove CO₂ from the atmosphere.



Mangrove forests are generally composed of trees and or shrubs that grow between the tides, and that have adaptations to grow in the salty, low-oxygen sediment. They are found around the world in tropical and subtropical climates, and can extend into temperate latitudes.



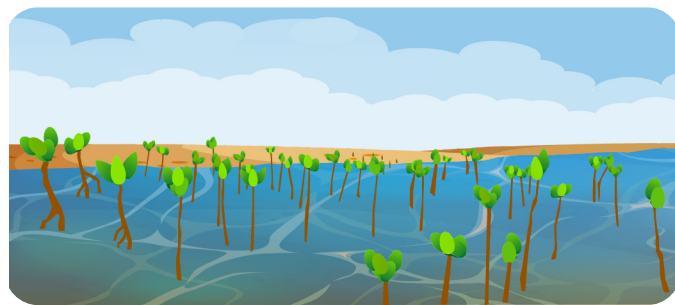
Tidal marshes (also known as saltmarshes) grow in the upper intertidal zone of many tropical, temperate and even polar coasts, sometimes on the landward side of mangroves. They are generally composed of salt-tolerant plants of many kinds including herbs, grasses, sedges and rushes, and small shrubs.



Seagrasses are taxonomically similar to grasses on land, but they grow under the water, or between the tides. They occur along shallow coasts of all continents except Antarctica, and can even be found on the High Seas in places that are shallow enough.



Mangroves are effective coastal protection.



Mangrove restoration builds habitat and helps carbon sequestration.

What Are We Doing?

We are using existing knowledge and doing new science to map how Australian blue carbon ecosystems could mitigate climate change. This kind of mitigation is known as abatement and could be an important part of Australia's climate response.

To do this we are taking advantage of national estimates of blue carbon stocks and sequestration rates developed during the CSIRO Coastal Carbon Cluster. We are also

using information on the location and type of vegetation types, land use (now and in the past), future sea level rise and more. We will ensure the resulting maps and the underlying information is freely available and accessible.

An additional aspect of the science being done is evaluating ways of estimating other benefits these ecosystems provide. We are examining benefits such as fish production and the catch

supported, biodiversity enhancement and coastal protection. These are measured in different ways — our work will explore whether we can develop simple consistent ways of measuring these benefits that can be adopted in a variety of situations.

The research is being led by CSIRO in collaboration with universities and other partners, and is financially supported by BHP.



Mangroves facing Hinchinbrook Island, Queensland.

For further information

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