

Solving the seagrass crisis

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The world's seagrass meadows are in diabolical trouble – but Australian scientists say we can still save them if we act early, even as sea levels rise.

"We're currently losing around 7 per cent of the global seagrass area every year due to a combination of human impacts – and those losses are likely to accelerate as sea levels rise," says Dr Megan Saunders a University of Queensland Global Change Institute researcher collaborating with the ARC Centre of Excellence for Environmental Decisions (CEED)

A big threat to seagrass is loss of sunlight, she says. As waters deepen due to [sea level rise](#) and become murkier due to human activities on land, seagrass meadows in [deeper waters](#) are deprived of the light they need to stay alive.

In new research reported in the journal *Global Change Biology*, Dr Saunders and colleagues used Moreton Bay in Australia, a Ramsar wetland area, as a laboratory to investigate the fate of seagrass meadows generally as sea levels rise by an expected 1.1 metres during this century.

"Compared to [coral reefs](#), seagrasses are the ugly duckling of [marine ecosystems](#). They get nowhere near the publicity they deserve – yet they are vital both to the oceans and to humanity," Dr Saunders says.

"They are major nurseries for fish and prawns, and so support our food supply. They trap huge amounts of carbon – and could sequester even

more if we look after them. They cleanse the oceans by trapping sediment and nutrients."

The team's research indicates that a 1.1 metre rise in sea level would result in a 17 per cent decline in seagrass cover in Moreton Bay due to the loss of light alone. Equivalent losses could occur globally, although exact numbers would depend on the location, she adds.

Seagrasses are a vital factor in the battle against climate change, Dr Saunders says. They trap an estimated 48-112 million tonnes of carbon every year. Their loss means this carbon will be re-released into the atmosphere, accelerating global warming.

"Equally, if we can stabilise or even expand the area of seagrass beds globally, they can lock up an awful lot of carbon and help slow climate change – as well as restoring degraded fisheries."

Dr Saunders says the keys to saving and regenerating the world's seagrass beds are:

- Controlling erosion and runoff in river catchments on land by revegetating bare areas of farmland, river banks etc and better managing nutrient and soil runoff from cities
- Local authorities adopting much more flexible coastal planning for development which allows for future seagrass meadows to expand as sea levels rise.

"This probably means preventing new developments and the construction of sea walls and levees in the coastal zone. And potentially removing things like houses and roads from newly flooded areas, as sea levels rise, so that salt marshes, mangroves and seagrasses can colonise the area."

The Moreton Bay research indicates that such a "coastal retreat" strategy

could reduce the decline in seagrass cover from 17 to 5 per cent.

The success of the plan depends on creating light conditions at the 'deep edge' of [seagrass meadows](#) which allow seagrass species to continue to flourish.

"This is the sort of information our coastal planners will need as we seek to cope with the changes imposed by [sea level](#) rise and other impacts of [climate change](#)," she explains. "It also means we can think further ahead about what is needed to keep these essential ecosystems alive and thriving by allowing them to move to occupy new niches as they emerge."

Her article appears in Issue 72 of Decision Point at: www.decision-point.com.au/

More information: Saunders, M. et al. Coastal retreat and improved water quality mitigate losses of seagrass from sea level rise, *Global Change Biology*. onlinelibrary.wiley.com/doi/10.1111/gcb.12218/full

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