

NERP Tropical Ecosystems Hub Project Factsheet

Vulnerability of seagrass habitats in the Great Barrier Reef to changing coastal environments

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Project summary

Seagrass meadows are a vital habitat in tropical marine ecosystems. Along the coast they trap sediments and absorb contaminants which would otherwise pollute the Great Barrier Reef (GBR). Seagrasses are highly affected by water clarity and so are negatively impacted by run-off and other factors that increase turbidity (water cloudiness). This project will provide information about how seagrass responds to the interactive effects of different levels of light, nutrients and salinity and will contribute to the development of thresholds for the water quality parameters most likely to affect seagrasses.

Why this research is needed

Apart from the direct impact of tropical cyclones, declines in seagrass abundance and distribution can be attributed to decreasing water quality, particularly caused by the direct and indirect effect of sediments carried by flood plumes. Research on the interactive effects of changing light, nutrients and salinity levels on seagrasses is required to establish water quality thresholds in order to effectively manage and conserve these essential GBR habitats. The outcomes of the research will also help with the interpretation of the cause of changes in seagrass abundance, and therefore, management priorities.

Research-user focus

The outcomes of the project will be useful for state and Australian Government agencies, NRM bodies, NGOs, local government and industry, including fishing, mining and agriculture. Research users include the Great Barrier Reef Marine Park Authority (GBRMPA), the Department of Sustainability, Environment, Water, Population and Communities (particularly the Reef Rescue initiative), the Queensland Department of Environment and Heritage Protection, Queensland Department of Agriculture, Fisheries and Forestry, Reef Plan and Terrain NRM.

Research Provider:



Find this project at www.nerptropical.edu.au

Theme 2: Understanding ecosystem function and cumulative pressures

Program 5: Cumulative impacts on benthic biodiversity

Project: 5.3



Seagrass meadow at Green Island in the northern GBR.



Aquaria system used to experimentally test water quality impacts on seagrasses.

Outcomes

- Quantified level of exposure of seagrass meadows to broad-scale changes in water quality associated with flood plumes in GBR coastal regions.
- Improved knowledge of seagrass responses to the interactive effects of light, nutrients and salinity.
- Refined thresholds of concern for seagrass health, contributing to the development of water quality guidelines in relation to light, nutrients and salinity.
- Experimentally tested indicators of seagrass status adopted by the Reef Rescue Marine Monitoring Program (RRMMP) in response to changes in water quality.
- Improved understanding of likely future trends for GBR ecosystems, which will contribute to risk assessment reports for the GBR.
- Experimental verification of water quality response models.

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