



**Marine
and Coastal**

National Environmental Science Program

A roadmap for Coordinated Landscape-scale Coastal and Marine Ecosystem Restoration

Project 1.6

Project Summary

This project will develop a roadmap to guide research and investment into landscape-scale coastal and marine restoration. The project brings together interdisciplinary expertise in coastal engineering, decision theory, marine ecology, modelling and ecosystem services to examine decision support needs and opportunities to restore coastal marine ecosystems at scale. The research will focus on the ecosystem services of coastal protection and climate resilience with the recognition that this Nature-based Solution (NbS) approach provides co-benefits such as biodiversity, fisheries production, carbon sequestration, and nutrient cycling. The research will be accomplished through surveys and workshops/meetings with input from key end user groups in industry, NGO, Indigenous and Governmental organisations.

Problem

Large-scale restoration in marine and coastal systems is essential and prominent in high level declarations such as CITES, the UN Sustainable Development Goals (2030), and UN Decade of Ocean Science for Sustainable Development (2020-2031). Marine restoration projects in Australia, as in most countries, have typically been small scale, experimental, and lacking coordination. Uncoordinated approaches to restoration can result in inefficient use of resources with poor social and environmental outcomes, such as lack of confidence and support for restoration, or low delivery of ecosystem services. At present, there is currently little coordinated long-term planning for coastal marine restoration nationally, nor in terms of what is possible now or in future as the climate changes.

How Research Addresses the Problem

Structured decision making has been used extensively in the discipline of Conservation Science to make evidence-based and cost-effective decisions, such as the implementation of the Commonwealth Marine Protected Area network. Structured decision support models have several common features: 1) clearly stated objectives; 2) fixed budget and timeline; 3) realistic model(s) of the system, and 4) estimates of the costs, benefits, and feasibility of different actions. This project will use this lens to assess research needs and opportunities for coordinated restoration across multiple scales focussing on the ecosystem service of coastal protection.

General Project Information

The proposed research will bring together experts in decision science, modelling, restoration, engineering, and coastal Nature-based Solutions. The project will consist of three components. 1) Design and dissemination of a national scale survey distributed through our networks of restoration practitioners and decision makers that will elicit information on how decisions are currently made, how research could help that decision making be improved, and what is needed to achieve landscape scale coastal restoration. 2) Project workshops to discuss how to and what data will be required to apply principles of structured decision making to landscape scale coastal marine restoration for shoreline protection and coastal resilience; 3) A targeted approach to Indigenous Engagement achieved through virtual meetings.

The research will examine questions such as “what information is currently used to inform decision making in coastal restoration”, and “what do we want to achieve in restoration?”; deciding on what the minimal level of complexity that would be acceptable in a model of a restoration system, and identifying suitable candidate systems, models, and data availability required to address those objectives. Consideration will be given to the role of restoration in Australian Marine Parks and other assets such as Ramsar sites. The research will be grounded in established international frameworks such as the Society for Ecological Restoration “International Principles & Standards for the Practice of Ecological Restoration” and the IUNC “Guidance for using the IUCN Global Standard for Nature-based Solutions”.

Project Lead

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ABOVE, TOP TO BOTTOM: Broadwater Parklands
Mangroves; Coastal Erosion Noosa; Cleveland Image;
Norfolk Beach Coochiemudlo Island.