

MarECAT (Marine and Estuarine Condition Assessment Tool)

The Marine and Estuarine Condition Assessment Tool (MarECAT) is being developed to measure the change in condition of marine and estuarine wetlands over time in response to management interventions or extreme events. For management interventions and offsets, this will provide valuable information on the success of investment, and whether interventions need modifying to increase the likelihood of success.

Background and Need

Marine and estuarine (intertidal and subtidal) ecosystems (wetlands) such as mangroves, saltmarsh, mudflats, sandflats, corals and seagrass are important, providing [services](#) that are valued by humans. These values include supporting fisheries, storing carbon, protecting life and property from extreme climatic events and supporting cultural heritage values, recreation and tourism activities.



Figure 1: Aerial view of the Coral Sea and outer barrier reef, looking south from Bligh Reef. Gary Cranitch © Queensland Museum

Development of coastal areas for residential, agricultural, industrial and transport purposes and the associated impacts from infrastructure, weeds and feral animals, litter and runoff can adversely affect marine and estuarine ecosystems.

When ecosystems are impacted directly or indirectly by development and/or extreme events such as flood or fire, they may lose their ability to deliver ecosystem services and management interventions may be required to maintain or rehabilitate the ecosystems.

There is a need for a tool to determine if investments (such as offsets) have achieved their intended outcomes over time, for example, has an intervention been able to maintain and/or improve the condition of an ecosystem and the ecosystem services provided? Although many estuarine and marine condition assessment tools have been developed, most are designed to assess specific ecosystem types (e.g., mangroves, corals or seagrass etc.), or are designed to operate at broader scales (e.g., estuaries), few can be used across different ecosystem types. MarECAT will apply to a diverse range of marine and estuarine ecosystems to provide condition assessments.



Figure 2: Marine and estuarine wetland habitat mosaic

Objectives

The objectives of this rapid condition assessment tool for marine and estuarine ecosystems are to:

- track ecosystem changes in response to management interventions or recovery from extreme events
- establish baseline condition and ecosystem quality for offsets during their management period
- demonstrate if projects have met their intended outcomes (e.g., within a given timeframe and funding cycle).

Principles and Concepts

The MarECAT is similar to the [WetCAT](#) condition assessment tool that was developed for freshwater wetlands. The assessment method will be habitat-based and informed by the Queensland [intertidal and subtidal ecosystem classification scheme](#).

The MarECAT condition assessment tool has been developed for use by a wide range of practitioners and is based on condition and threat indicators. The indicators and assessment metrics have been established from a mix of scientific literature, existing monitoring programs and input from subject matter experts.

The technique/s and metric/s used to score the indicators may vary depending on user-defined considerations such as project objectives, resourcing/funding, expertise, existing data and regional setting. Users must be able to justify the score assigned to each indicator explaining the causal links underpinning the scores.



Figure 3: Aerial view of seagrass meadows around Hammond Island, Torres Strait. Gary Cranitch © Queensland Museum

Who is involved?

The project is funded by the Department of Environment and Science (DES) and is being done in collaboration with scientists from Griffith University and James Cook University who are establishing condition and threat indicators for MarECAT.

A Reference Group oversees the project. A series of technical workshops focusing on structural macroflora, structural macrofauna and substrate dominated

habitat types were held with experts to explore the condition/threat indicators and metrics for the different marine and estuarine habitats.



Figure 4: Aerial view of saltmarsh behind mangroves, Round Bush Island, Great Sandy Strait. Gary Cranitch © Queensland Museum

Field trials will be conducted across a range of habitats to further refine the method. MarECAT will be peer reviewed.

End users will include State Government officers, Natural Resource Management Groups, local government, First Nations people and community groups.

The Queensland Wetlands Program supports projects and activities that result in long-term benefits to the sustainable management, wise use, and protection of wetlands in Queensland. The tools developed by the Program help wetlands landholders, managers and decisionmakers in government industry. The Queensland Wetlands Program is currently funded by the Queensland Government.

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