



# Prioritising management actions for the southern Great Barrier Reef islands

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## Background

Managers of the Great Barrier Reef's (GBR's) 1100 islands and cays face difficult decisions when it comes to investing in conservation management. The islands contain a wide variety of natural, cultural and recreational values, that face multiple and dynamic threats. These threats have to be managed within a finite budget, using actions with varying levels of effectiveness and with different costs.



Figure 1. Seabird breeding, feeding and resting are some of the high values on GBR islands

## Decision making tool

To assist in prioritising management of the islands, a transparent yet flexible decision-support tool is being developed. Using spatial data, programming using quantitative objectives, and a user-friendly software interface, managers will be able to update information on values, threats, budgets or completed management actions to identify and revise management priorities. To this purpose, data on features (values), threats, objectives, contribution of various management actions, and their effectiveness and costs is needed (Figure 2). This project focuses on the islands of the Mackay-Capricorn Management Area (Figure 3).

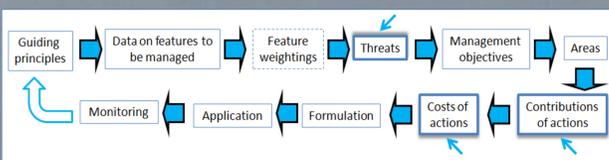
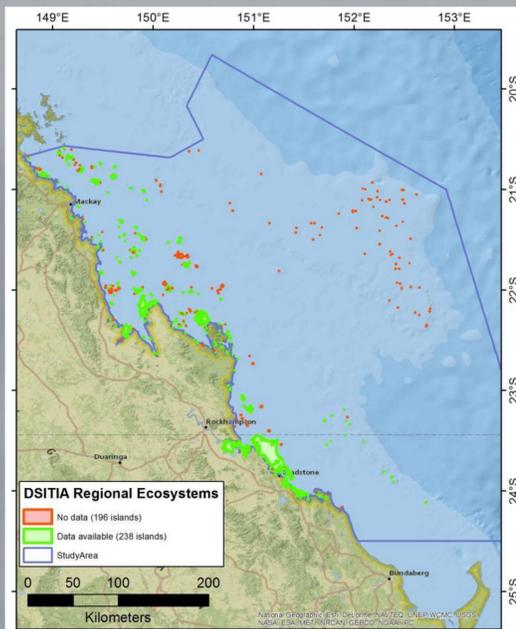


Figure 2. Conceptual model of decision making tool

Figure 3. Map of study area, and the number of islands without regional ecosystem mapping. Some of the unmapped islands were too small for the Queensland Government methodology, others might be sand cays without vegetation.



## Data collation

Published spatial data was collected for the >400 islands in the southern GBR, and supplemented by unpublished ranger reports and other data where needed. The large number of islands, travel time and travel costs are some of the reasons why some of the islands have limited or no data. While data collection is ongoing, initial analysis shows 196 islands lack vegetation data (Figure 3), although some of those islands simply have no vegetation. Point record data from Wildnet and Atlas of Living Australia cover 219 of 434 islands.

## Spatial data challenges

Some data gaps might simply be a case of spatial "mismatches". As you can see from Figure 4, island boundaries differ between datasets. Reasons include:

- The scale of the data, 1:100k data being more detailed than 1:500k data;
- The source of the data, the 30m pixel size from Landsat imagery vs highly detailed aerial photography vs surveying
- The year of data collection, sand cays will naturally move within their reef flat
- Definition of an island: are intertidal areas and mangrove forests included in the island boundary?

This adds a level of complexity to the data analysis.

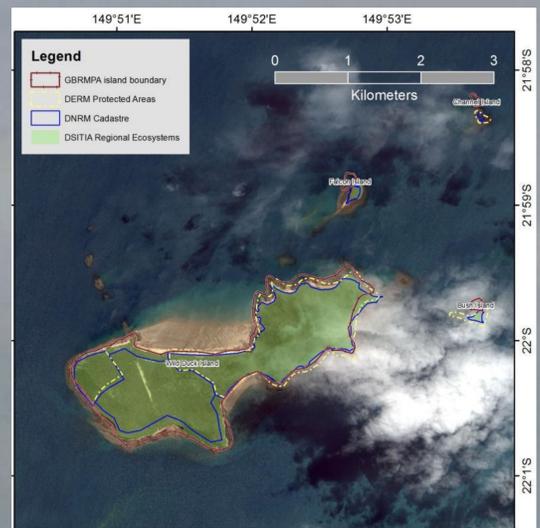


Figure 4. Spatial mismatches in the datasets

## Filling data gaps

Once data on all variables have been collected, a subset of islands will be identified with a complete dataset. This dataset will be used to test the methodology, and to perform a sensitivity analysis. Imperative datasets will be identified and strategies developed to fill the data gaps for those themes, for example through satellite image analysis, expert opinion or both. Expert elicitation workshops will then be organised, and rangers and other experts with hands-on experience from the southern GBR islands will be invited to form a consensus on the presence, abundance or extent of features & threats on the less well-known islands. Information on the contribution of management actions to threats on each island will also be collected.

## Pathway to impact & deliverables

- Regular meetings with GBRMPA and NPRSR staff
- Identification and data compilation of key values and threats on southern GBR islands
- Identification of data gaps and strategies to fill those
- Collection of expert knowledge through workshops to fill important data gaps
- Journal article on technical framework for the decision support system
- Journal article on biosecurity strategy for GBR islands
- Journal article on sensitivity analysis
- Delivery of completed decision support tool system and user manual to GBRMPA and NPRSR
- Adoption of tool in ongoing field management by State and Federal government

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