

Case study 9: Joining forces; a collective approach to marine parks ecological monitoring

Background

Monitoring South Australia's marine parks presents significant challenges. The marine park network covers a total area of 26,937 km² and 44% of our state waters. One of the main aims of the ecological monitoring program is to collect data to answer the question "are marine parks protecting and conserving marine biodiversity and habitats?". With such an expansive network it is a challenge to undertake ecological monitoring across the park network, but with partnerships and through collaboration we can extend our reach further than by working alone. The Marine Parks are a whole-of-government initiative and the partnerships within, and external to the South Australian government are crucial to improving the efficiency and increasing the coverage of the ecological monitoring program.

This case study highlights the monitoring methods used in the marine parks Monitoring evaluation and reporting (MER) Program, the links with the management plan strategies, and some early ecological outcomes as a result of implementation of the 19 management plans.

Monitoring methods

A range of techniques are used to measure the health and condition of marine ecosystems within the marine park network. Seafloor habitats are mapped using aerial photography, drop videos, and side scan and multibeam sonar. Fish, macroinvertebrate and macroalgae communities are assessed using underwater visual census by divers and baited remote underwater video systems (BRUVS). Each of these techniques require specialist expertise and equipment.

Improving monitoring reach through partnerships

Marine monitoring is resource intensive, requires specialist skills and is limited by weather windows and availability of suitable vessels. The SA park network consists of 83 sanctuary zones of which around 25 have been identified as high priority for monitoring. Partnerships have been critical to improving the efficiency and effectiveness of the marine parks ecological monitoring program. Through our partnerships we have been able to monitor more sanctuary zones, gain access to the latest data analysis and sampling techniques, and learn from world leaders in their field.

Examples of key partnerships:

University of Tasmania: Research and monitoring partnership via shallow reef Australian Research Council (ARC) Linkage Grant – provides access to world leading scientists in the field of marine protected area research and management.

Reef Life Survey: Citizen science collaboration with international volunteer dive organisation that provides trained volunteers that help collect high quality ecological data and provide local advocacy regarding the benefits of marine parks.

Environment Protection Authority (EPA): The EPA has adopted the standard survey techniques used by the marine parks program and sites surveyed by them can be incorporated into the larger marine park monitoring network.

Management plan strategies

Strategies addressed						
5	7	8	10	11	12	13
✓	✓	✓	✓	✓	✓	✓

Strategies 5, 7: Monitoring activities and outcomes have been provided to the public through various forums to increase their appreciation, understanding and enjoyment of marine parks.

Strategies 8, 10, 11 and 13: Monitoring activities summarised in this case study demonstrate successful implementation of the MER Program and that a range of partnerships with varying stakeholders have been fostered.

Strategy 12: The outcomes of the study are being made publically available in the current Status Report and will be used to inform decision making on the direction of the MER Program. Longer term results will be made available in annual summary reports and the final evaluation report which will ultimately be used to inform the review of the management plans.



SARDI research vessel "Ngerin"



Current ecological monitoring partnerships



Ecological outcomes

Specific evaluation questions addressed:

- ✓ What biodiversity and habitats are included within the marine parks network?
- ✓ Have sanctuary zones maintained or enhanced biodiversity and habitats?
- ✓ Have habitat protection zones maintained biodiversity and habitats?
- ✓ Have sanctuary zones maintained or enhanced ecological processes?
- ✓ Have sanctuary zones enhanced ecosystem resilience?

Collaborations with stakeholders, universities and government agencies contributes to addressing all of the ecological specific evaluation questions by:

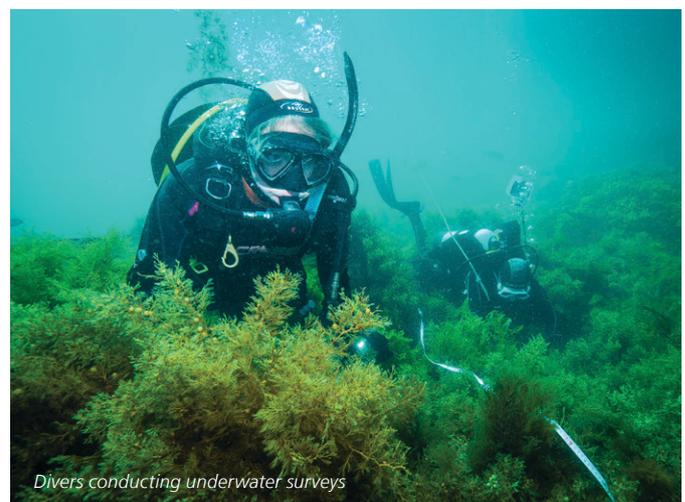
- Increasing the spatial and temporal resolution of our data.
- Continual improvement and innovation in monitoring methods.
- Increasing knowledge and capacity via relationships with leading scientists.
- Access to national and international datasets.
- Involving partners in marine research creating ownership and research custodians of our marine parks.
- Filling knowledge gaps and acquire baseline data.
- Increasing the ability to collect data across key sanctuary zone.
- SWATH mapping enables rapid assessment and detailed information collection of benthic habitats across large areas of unmapped seafloor (ranging from 5–50+ m). The mapping involves sending acoustic side scan sonar beams to the sea floor and analysing the reflecting signals to estimate bathymetry and acoustic backscatter. Outputs generate detailed 3D models of the seabed which can further be classified into habitat types such as sand, seagrass and reef.

- BRUVS is a method utilised for sampling fish communities across a broad range of depths and habitats. Cameras with bait are deployed in numerous locations inside and outside of the sanctuary zones. The resulting data provide information on fish abundance, diversity and size which will enable the MER Program to track any changes inside and outside of the sanctuary zone.
- Underwater dive surveys provide detailed information on reef communities, including abalone and rock lobster.

Degree of collaboration in current ecological monitoring program

Total dive surveys	120	Total no of BRUVS surveys	496
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Over 50% of all ecological monitoring has been undertaken in partnerships



Divers conducting underwater surveys