## Progress Report SP 2012-008

# The DBCA Marine Monitoring Program

### Marine Science

### Project Core Team

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### Project status as of Aug. 10, 2018, 3:27 p.m.

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### Document endorsements and approvals as of Aug. 10, 2018, 3:27 p.m.

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| **Project Team** | granted |
| **Program Leader** | granted |
| **Directorate** | required |

# The DBCA Marine Monitoring Program

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## Context

A state-wide system of marine protected areas is being established in Western Australia as part of Australia's National Representative System of Marine Protected Areas. Long-term monitoring of the condition of environmental assets and social values is recognised as an integral aspect of adaptive management. The Department's marine monitoring program is a state-wide, long-term, marine monitoring, evaluation and reporting program that is being developed and implemented to increase the efficiency and effectiveness of marine reserve and threatened marine fauna conservation and management.

## Aims

- Develop and implement a long-term monitoring program for Western Australia's marine parks and reserves and threatened and specially protected marine fauna to facilitate and promote management effectiveness in the protection and conservation of marine biodiversity and related social values.

## Progress

- Updated monitoring data was collected for fish, coral, seagrass, macroalgae, mangroves, macro-invertebrates, little penguins, Australian sea lions and water quality during fieldwork conducted across 11 marine reserves from Walpole and Nornalup Inlets Marine Park in the south to North Kimberley Marine Park in the north.
- Monitoring advice was provided to marine park coordinators on the condition of biodiversity assets and the significance of pressures acting on them to inform adaptive management strategies and Departmental marine reserve audit processes.
- Marine monitoring data sets continued to be added to the CKAN data catalogue.
- Marine monitoring data sets have been tested for use with the Biosys database.
- The first document in the new Marine Science Program monitoring report series was published as *Ecological monitoring in the Ningaloo marine reserves 2017*. Subsequent reports for the Shark Bay marine reserves, Jurien Bay Marine Park, Shoalwater Islands Marine Park and Montebello/Barrow Islands marine conservation reserves are currently in preparation.
- Staff attended and presented monitoring work at national/international conferences at Exmouth (Australian Coral Reef Society conference), Sydney (Australian Mangrove and Saltmarsh Network conference) and Singapore (World Seagrass Conference).
- Staff have been invited to attend and become active participants in a number of national workshops and working groups, including the National BRUV Synthesis working group, National MPA Science/Management Network forum, National Marine Parks MER workshop, and Essential Environmental Measures working groups.
- Monitoring staff are collaborating on two ARC Linkage projects relating to temperate rocky reefs (led by the University of Tasmania) and coral biodiversity in the Kimberley (led by Curtin University)
- Training continued for Departmental staff, interns and volunteers on laboratory and field protocols for collecting and analysing monitoring data for coral, fish, seagrass, mangroves and little penguins.
- Four scientific papers incorporating Departmental monitoring data were published in the journals *Ecological Indicators*, *Ecology and Evolution*, *Diversity and Distributions*, and *Nature Climate Change*. These papers were on the effects of climatic forcing and larval dispersal capabilities on the replenishment of tropical corals, the role of disturbance events and environmental conditions on the structure of coral communities throughout the south-eastern Indian Ocean, the loss of seagrass in Shark Bay as a result of a marine heat wave, and a conversion technique for comparing fish community data sets collected using differing methods.
- Work continues on a publication that describes the aims and structure of the Department's marine monitoring program.

## Management implications

- The long-term marine monitoring program provides data that informs the evidence-based adaptive management of Western Australia's marine parks and reserves and threatened and specially protected marine fauna.
- Monitoring data is collected on key ecological assets, the pressures acting on those assets and the management response. This performance assessment and adaptive management framework allows conservation managers to respond appropriately to changes as they become apparent, and to refine approaches to managing ecological assets based on rigorous scientific evidence.

## Future directions

- Finalise and publish supporting documentation that describes the aims and structure of the marine monitoring program, including rationale for the selection of monitoring indicators and methods for key ecological assets.
- Continue the design and implementation of ecological asset monitoring across the marine reserve system, including at recently created reserves in Western Australia's Kimberley region.
- Continue to provide marine park managers with evidence-based knowledge of the condition of key ecological assets and the pressures acting on them to inform and assist the delivery of adaptive management.
- Continue to provide the scientific knowledge required for the Department's marine parks and reserves reporting process.