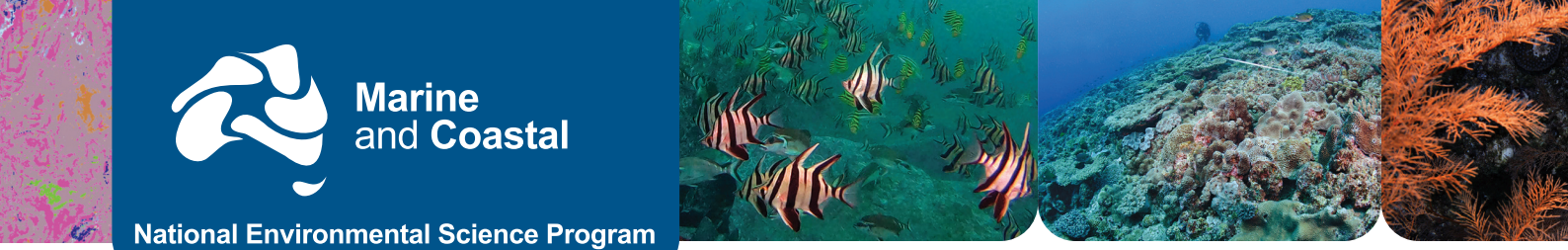

Marine and Coastal

National Environmental Science Program

RESEARCH OVERVIEW 5.

Partnerships for protected places

Collaborative research is needed to manage and care for protected places such as Australian Marine Parks, National Parks and Indigenous Protected Areas.

Traditional Owners, communities and governments need research strategies attuned to environmental, economic, cultural and social goals.

The Marine and Coastal Hub works with research users to design, conduct and apply research that brings tangible outcomes for marine protected places.

Hub projects deliver priority information, develop options for effective management and support Indigenous knowledge and science.

PRIORITY INFORMATION ON VALUES

Hub researchers conduct surveys of natural values such as fish and invertebrates associated with rocky reefs in selected Australian Marine Parks (AMPs).

They advise and report on these natural values, and improve the flow of information that supports AMP management effectiveness. This includes collaborative research with Indigenous communities.

The surveys use globally endorsed best practices for marine sampling developed by the hub that enable standardised assessment of AMP values and pressures.

Habitats are also being mapped along the coastlines of Kakadu National Park and Garig Gunak Barlu National Park, and on Yanyuwa sea Country in the Gulf of Carpentaria. This mapping supports monitoring and management by Traditional Owners.

Coastal habitats of the northern Great Barrier Reef (GBR) are being assessed for the impacts of extreme weather events such as cyclones and severe flooding.

Outcomes for research users

- A scientific evidence base and methods to identify and monitor AMP key natural values.
- Skills and knowledge to monitor and manage National Parks and Indigenous Protected Areas across the Northern Territory.
- Biodiversity surveys guided by Traditional Knowledge; Traditional Owners credentialled to survey fish and shark assemblages.
- Insights into the condition of coastal intertidal and subtidal habitats in the northern GBR to underpin reef management.

New mapping sharpens focus on functional reefs

New information on seafloor habitats has allowed the likely presence of 'functional reef' to be mapped across 10–200 metre ocean depths between Western Australia's Shark Bay and the Victoria-New South Wales border. Functional reefs are areas of seabed that support habitat-forming species. They add structure and complexity to the seafloor. The functional reef mapping incorporated data from hub surveys that help park managers assess how well AMPs meet management goals.

How do cyclones affect Great Barrier Reef ecosystems?

Understanding how cyclones affect coastal habitats is important to developing well-informed responses, including effective investments in recovery. In December 2023, Tropical Cyclone Jasper caused severe flooding in the northern Great Barrier Reef region, raising concerns for habitats such as seagrass meadows, mangroves, and coral reefs. A hub research team is using aerial and underwater surveys, historical data comparisons and imagery analysis to evaluate the cyclone's impact on these vital ecosystems.

Top images overleaf from left: Geoscience Australia, Geoscience Australia, NSW DPI, Antonia Cooper, Geoscience Australia

OPTIONS FOR EFFECTIVE MANAGEMENT

Hub researchers are helping to develop a common language to define the AMP management system, identify priority monitoring sites, and design protocols for a pilot monitoring process.

This includes collating and analysing natural values and pressures data to extend monitoring across the AMP networks and the Coral Sea Marine Park, and consolidating data on natural and socio-economic values.

Other projects have examined changes in awareness, attitudes to and use of AMPs, and surveyed recreational fishers to understand attitudes to zoning and sustainable fishing on the GBR. Pilot approaches to communicating management information have also been developed. Integrated pest management methods are being improved for crown-of-thorns starfish.

Outcomes for research users

- A conceptual and technical framework for AMP adaptive management, and data synthesis to underpin the statutory review of AMP management plans.
- Evidence-based understanding of how people use AMPs, and ways to optimise recreational fisher compliance with park zoning, to support AMP management.
- More effective control of crown-of thorns starfish and improved reef resilience on the GBR.

INDIGENOUS KNOWLEDGE AND SCIENCE

Hub researchers and Indigenous rangers studied the extent, ecology and blue carbon value of seagrass beds to establish knowledge and methods for Traditional Owners to monitor and manage the proposed Tayaritja Milaythina Muka Indigenous Protected Area (Tasmania).

Also in Tasmania, researchers are working with Tebrakunna Country community members to develop approaches to assessing the wellbeing benefits of connection with Country, including through Healthy Country Planning.

Baseline information is being collected to support sea Country planning and management for coastal areas of Kakadu National Park and Garig Gunak Barlu National Park.

Outcomes for research users

- Capacity for Aboriginal-led management of seagrass habitat in the Gulf of Carpentaria and Tayaritja sea Country, and knowledge for regional planning.
- Traditional Owners better equipped to advocate for and protect the health of marine habitats and people.
- Capacity for more effective sea Country planning and management by Traditional Owners and government partners in Kakadu National Park and Garig Gunak Barlu National Park.

Dave Guilfoyle

‘Best practice’ social surveys

Hub researchers have developed a ‘best practice’ for surveying recreational users of marine protected areas. Knowledge, attitude and practice surveys offer managers and Traditional Owners a consistent way of tracking what people know and feel about these areas, and how they use them. This best practice was developed with ecologists, park managers, social scientists and Indigenous knowledge holders and can be used and adapted by Traditional Owners and researchers to match local priorities.

Rachel Groom

Knowledge for Kakadu and Garig Gunak Barlu National Parks

Coastal regions of Kakadu National Park and Garig Gunak Barlu National Park on the Cobourg Peninsula face planning and management challenges due to limited data availability and rapid climate change. Hub researchers are working with Traditional Owners in these regions to improve baseline information on the extent, condition and biodiversity of coastal habitats. They are assessing the impact of sea-level rise and feral ungulates and exploring options for sea Country planning and management, including participation in emerging environmental markets.

Marine and Coastal
National Environmental Science Program

Contact
Damien Burrows (northern node leader)
damien.burrows@jcu.edu.au
Alan Jordan (southern node leader)
alan.jordan@utas.edu.au
www.nespmarinecoastal.edu.au

This research is supported with funding from the Australian Government under the National Environmental Science Program.