

Case study 7: Jewels in the crown – monitoring offshore island sanctuary zones

Background

The Nuyts Archipelago Marine Park (NAMP) and Investigator Marine Park (IMP) encompass a network of remote island sanctuary zones, including St Francis and Pearson Isles. These sanctuary zones are some of the 'jewels in the crown' of South Australia's marine parks network. These areas are biologically diverse due to the geographical isolation and remoteness of the islands, combined with the influence of the subtropical Leeuwin Current mixing with the temperate Flinders Current.

The Isles of St Francis Sanctuary Zone in the NAMP is located in the remote waters off the far west coast of Eyre Peninsula. Pearson Isles Sanctuary Zone is located around an iconic group of islands about 30 nautical miles offshore from Eyre Peninsula within the IMP. The spectacular Pearson Island rises sharply to 200m above sea level. The ISFSZ forms part of the NAMP management plan while the PISZ forms part of the IMP management plan.

A biodiversity hotspot for South Australia, Pearson and St Francis sanctuary zones are an important refuge for Australian sea lions, sharks, seabirds and migratory birds, as well as the abundant and diverse reef fish such as western blue groper, southern blue devil, harlequin fish and southern Maori wrasse. The mix of subtropical and temperate waters has resulted in an abundance of invertebrates such as soft corals and sponges, offering a biologically unique area for South Australia.

Monitoring offshore island sanctuary zones is important but also difficult due to their remoteness. In March 2015 a 14-day expedition to the Nuyts Archipelago and Investigator



Marine Parks was undertaken on the SARDI research vessel Ngerin. The expedition also visited the Cape du Couedic Sanctuary Zone on Kangaroo Island,. During the expedition the vessel steamed 1500 nautical miles, and conducted 60 seafloor video, 35 BRUVS and 32 dive surveys.

This case study highlights the key findings of the offshore expedition, the links with the NAMP and IMP management plan strategies, and some socio-economic and ecological outcomes as a result of implementation of the management plans.

Key findings

- Pearson Isles has the highest fish diversity of all Marine Park sanctuary zones surveyed statewide and Isles of St Francis has the third highest.
- Offshore island SZs have the highest abundance of large fish
- Confirmation that offshore island SZs are biodiversity hotspots and important reference areas
- High abundance of the colourful Maori wrasse and blue groper
- No incidences of non-compliance (illegal fishing) recorded
- Long-term ecological monitoring sites established which will form the basis to assess potential changes at the iconic locations.

Management plan strategies

The expedition addressed multiple strategies of the NAMP and IMP management plans:

Strategies addressed						
5	7	10	11	12	13	15
✓	✓	✓	✓	✓	✓	✓

Strategies 5 and 7: Education materials were developed to promote offshore islands and the results of the monitoring program.

Strategies 10, 11, 12 and 13: Conducted marine habitat surveys and prepared habitat maps for priority sanctuary zones; conducted ecological monitoring to establish a baseline of the marine parks; Conducted collaborative research.

Strategy 15: Coordinated compliance activity at key monitoring locations.



Ecological outcomes

Specific evaluation questions addressed:

- ✓ What biodiversity is included within the marine parks network?
 - ✓ Have sanctuary zones maintained or enhanced biodiversity and habitats?
- The expedition confirmed the importance of isolated offshore islands by demonstrating the high biodiversity values of the Pearson Isles and Isles of St Francis Sanctuary Zones.
 - Healthy marine ecosystems were observed as evidenced by the large average size of the fish communities at the islands indicating the minimal impacts from human harvesting. Bigger fish increase the productivity of the ecosystems, as they can produce an order of magnitude more and healthier offspring than smaller fish.
 - This was the first time that fish communities were captured by BRUVS, and previously unmapped areas of the sea floor were mapped helping to increase our understanding of these ecosystems.
 - Offshore islands are important reference sites by which to measure the effectiveness of other marine parks.

Socioc-economic outcomes

Specific evaluation questions addressed:

- ✓ Have local businesses and communities changed due to marine park management plans?
- The expedition raised community awareness about the importance of remote offshore Islands.
 - The splendour and beauty of these islands was captured by a photojournalist who accompanied DEWNR scientists on the expedition. These stills and videos are an important outreach tool and have been used in various fora to showcase the beauty of the remote locations (e.g. Marine Park Monitoring Expedition 2015 - Enjoy life in our marine parks www.environment.sa.gov.au/marineparks/Learn/understanding-effectiveness/monitoring/marine-park-monitoring-expedition-2015).



Offshore Islands are biodiversity hotspots