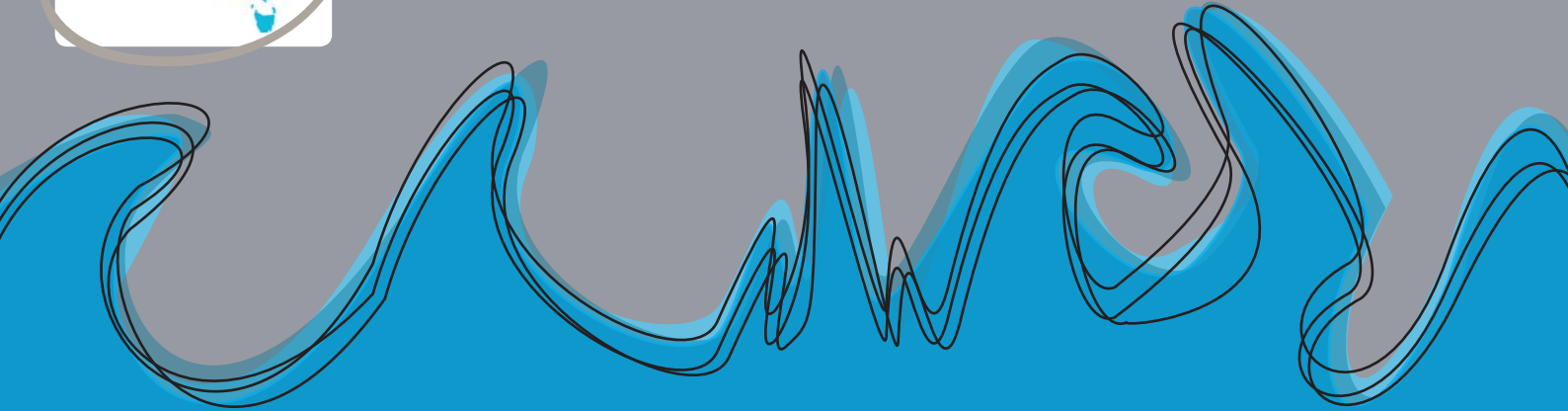


Developing adaptation options for seabirds and marine mammals impacted by climate change



Project Background

Climate change is already impacting Australia's oceans. Responses by marine life to both climate variability and change have been documented for lower trophic (food chain) levels, however, Australia's iconic higher trophic level marine animals, including conservation-dependent seabirds and marine mammals, are poorly understood. These species are protected throughout Australia and in some cases populations are recovering from

previous human exploitation. Improved understanding of climate change impacts versus other non-climate threats is needed to implement appropriate and timely adaptive management responses. In addition, monitoring approaches for some species may need to be reassessed and modified to better detect the impacts of climate change, and assess effectiveness of management actions.



Project Outline

This national project evaluates impacts and adaptation options for seabirds and marine mammals, including the development of climate indicators over large regions via regional multi-species indices. It

will develop monitoring protocols to increase the detection of climate-related effects. Overall, this project will support adaptation efforts by those managing these iconic animals.



Outcomes

- 1 Connect researchers, managers and policy makers to focus on climate monitoring and adaptation options for seabirds and marine mammals.
- 2 Link ongoing seabirds and marine mammal monitoring programs with relevant wildlife and conservation management agencies.
- 3 Determine climate influence on selected seabird bird and mammal populations around Australia.
- 4 Develop protocols for monitoring impacts of environmental variation on indicator species.
- 5 Develop multi-species productivity indicators for Australian regions.
- 6 Provide practical adaptation guidelines for science and management, including on-ground monitoring protocols.



Benefit to the Community



Improved management and conservation of an important component of the marine ecosystem. These species are often seen as iconic and of cultural value. They can also have significant economic value, particularly for tourism (e.g. Little Penguins of Phillip Island, Australian Sea Lions of Seal Bay, Kangaroos Island, and bird-watching associated

tourism), and are important in the ecosystem for nutrient transfer, seed dispersal and as movers of organic matter through soil layers. Development of appropriate adaptation options and monitoring protocols for seabirds and marine mammals based on improved knowledge and consultation with researchers, managers and policy makers.

More Info

Marine Report Card (including seabird chapter) <http://www.oceanclimatechange.org.au/content/index.php/site/welcome/>

Climate Change and the Great Barrier Reef: A Vulnerability Assessment: http://www.gbrmpa.gov.au/corp_site/info_services/publications/misc_pub/climate_change_vulnerability_assessment/climate_change_vulnerability_assessment

Chambers LE, Devney CA, Congdon BC, et al (2011) Observed and predicted effects of climate on Australian seabirds. *Emu*, 111, 235-251.



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Images

1. Australian fur seal female exposing flippers to facilitate cooling in high ambient temperatures ; 2. Protection of seabird habitat through human exclusion; 3. Juvenile Bridled Tern at Penguin Island, WA; 4. Noddy on a beach, Lord Howe Island; 5. Nesting box planted over with vegetation provides added insulation for nesting penguins; 6. Sea level rise and storms may make low elevation haulout areas unsuitable in future; 7. Supplemental feeding of chicks may improve survival ; 8. Boardwalk over Short-tailed Shearwater colony reduces human impact; 9. Improving the availability of nest material in wet years may improve breeding success of some seabirds; 10. Feral cat hunting in seabird colony. Photo credits: Lynda E. Chambers & Alistair Hobday.



The National Climate Change Adaptation Research Plan (NARP) for Marine Biodiversity & Resources identifies research priorities in five sectoral areas: marine aquaculture, commercial & recreational fishing, conservation management, tourism & recreational uses, and cross-cutting issues.

