Climate Change Adaptation Research Grants Program
- Marine Biodiversity and Resources Projects

Project title:
Changing currents in marine biodiversity governance and management responding to climate change

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Objectives:
1. To identify the requirements for adaptive marine biodiversity conservation governance and management in the context of climate change
2. To assess how well current regimes, with a particular focus on marine protected areas, meet these requirements, and determine any necessary changes
3. To identify alternatives to current regimes that are likely to enhance adaptivity and assess their governance and management effectiveness
4. To offer advice to governance and management authorities on how regime reform might be achieved

Methods:
In this section, we specifically indicate how our methods, to be deployed in five phases, will enable achievement of the project objectives. The Research Team has extensive experience with, and competence in, managing large research projects, as well as with the qualitative techniques and analyses to be used in this project, including deployment of assessment frameworks, the Delphi method, stakeholder participation, document analysis and scenario planning (see attached CVs). The team will work with an Agency Advisory Panel, comprising representatives from the partner organisations, and a Technical Advisory Panel, comprising scientists with expertise in specific aspects of climate change and marine biodiversity conservation.

In the EOI, we proposed to convene a 'stakeholder' panel to comment on the focus, progress and outcomes of the research, with invitations extended to representatives from Indigenous communities with marine interests, fishing industries, recreational fishers, and conservation NGOs. Given the substantially reduced budget under which we have been asked to operate, we have removed this component from our core methodology. Nonetheless, we will include engagement with these stakeholders in our communications plan.

The spatial scope of the work (study area) is defined by marine protected areas and their connectivity between each other and surrounding waters in:
• the state marine jurisdictions of Queensland (between Cape York and the NSW border), NSW and Tasmania (between the Kent Group and Southeast Cape); and
• that part of the Commonwealth jurisdiction adjoining these state waters.

Given the complexity of the systems under consideration, it is not practicable to undertake the detailed scenario planning and regime assessments, described in Phases 3 and 4 below, for the whole of this study area. One case study bioregion within each of the four jurisdictions will be selected for analysis, based on criteria established with the advice of the Agency Advisory Panel. Nonetheless, in Phase 5, findings from the case analyses will be interpreted across the eastern seaboard study area. The outcomes are also likely to be of value to other Australian and international marine locations.

Phase 1: Confirmation of approach and methodology
A joint meeting will be held between the Research Team, Agency and Technical Advisory Panels to confirm details of the project approach and methodology, with a particular emphasis on Phases 3 and 4. At this meeting, the procedure for selecting case study bioregions will also be established.

Phase 2: Identify the requirements for adaptive marine biodiversity conservation governance and management in the context of climate change.

Requirements for effective marine biodiversity conservation governance and management in the context of climate change will be identified, in the first instance, through the deployment of two frameworks previously developed by the investigators. The governance quality and effectiveness framework developed by Lockwood (2010) will be used to guide the development of standards for good practice governance of marine biodiversity. The management effectiveness framework developed by Hockings et al. (2006) will be used to identify the elements of good practice management of marine biodiversity. As well as principles of legitimacy, transparency, accountability, inclusion, fairness, connectedness and efficiency, particular emphasis will be given to standards for adaptive governance and management that are directed towards enhancing system resilience. Other important elements to be incorporated into the work will include processes and structures for governing and managing conflict between sectoral interests, adaptive planning and management, ecosystem-based management, marine spatial planning and zoning strategies, and trans-boundary considerations (Haward & Vince 2008). The Research Team will integrate findings from our previous work with those from the literature to develop a set of draft condition indicators of system resilience and policy adaptivity with respect to marine biodiversity, marine protected areas and climate change. This draft will be reviewed by our Agency and Technical Advisory Panels, and modified as needed to produce a final specification of system requirements

In the EOI, we proposed to test this initial specification of system requirements using a Delphi Process, but given the need to complete the work within a substantially reduced budget, we have now dropped this step. While our original methodology would have imparted more rigour, we are confident that this output will still be a useful contribution and an important foundational step for the research.

Phase 3: Assess how well current regimes meet these requirements and determine any necessary changes.

Assessment of current regimes will be predicated on three or four plausible scenarios that describe how marine biodiversity may change over the period 2010 to 2100. Scenario planning offers a structured method framework for developing more resilient (adaptive) conservation policies in the context of complex and uncertain futures. A scenario is an account of a plausible future, which can incorporate a variety of quantitative and qualitative social, institutional, economic, and environmental data (Peterson et al. 2003). Scenario planning has been applied at local, regional, national and international scales, for developing possible futures in which alternative policies and decisions may be examined (Schoemaker 1995), and is a powerful tool for exploring the consequences of uncertainty and building shared understandings at the interface between science and policy (Brook 2008). Working with multiple scenarios allows consequences and appropriate responses to climate change to be examined under different policy environments (Turnpenny et al. 2005). Scenarios can serve the needs of risk management, where scenarios enable strategies to be tested against possible futures, as well as generating innovative possibilities and solutions (Duinker & Greg 2007).

Phase 4: Identify alternatives to current regimes that are likely to enhance adaptivity and assess their governance and management effectiveness.

The Delphi Method will be used to generate up to three innovative solutions to the limitations and deficiencies of the current regimes. This method involves eliciting individual contributions from an expert panel, feedback of these to panel members, opportunity for individuals to revise views, and presentation of a group judgment or view. Key steps in the Delphi process are design by the researchers of an initial problem specification and potential solutions; selection of an appropriate group of experts; survey administration and analysis of responses; design of another survey based on the responses; administration of the second survey and revision of the original responses; and the reiteration of the process until respondents reach a satisfactory degree of consensus. Typically three rounds are used. We have previously used this method to develop principles for good environmental governance. In this project, panel members will be selected on the basis of their expertise and experience in marine governance and management; theories of governance, resilience and adaptivity; and institutional design.

The scenarios developed in Phase 3 will then be adjusted to reflect the anticipated results of implementing these alternative regimes of governance and management. These new scenarios will be constructed using the same steps as indicated for the original scenario set. The assessment of these alternative regimes will also proceed by the same method as that adopted for the current regimes. In addition, a summative workshop will be held between the Research Team, Agency and Technical Advisory Panels to confirm the scenarios and evaluations, and reflect on their implications.
As indicated in the EOI, we originally intended to utilise key informant interviews to underpin the assessment – given the reduced budget we have been asked to meet, we have replaced this approach with the cheaper alternative described above. While interviews would have enabled us to capture a wider body of opinion, and in more depth, the revised methodology will still produce credible and useful outcomes.

Note that the objective is to identify a regime that will perform well against good governance and management effectiveness indicators across all four plausible scenarios. In this way, the regime will be shown to possess the required degree of adaptivity.

Phase 5. Offer advice to governance and management authorities on how regime reform might be achieved.
This final phase of the project will focus on how the best-performing alternative regime identified in Phase 4 might be implemented. Practical strategies for reform of current regimes will be devised in a 2-day workshop session to be held with the Research Team and Agency Advisory Panel. Detailed recommendations will be made for adaptive governance and management regimes, tailored to suit the various jurisdictional, resource and environmental contexts pertaining to Australian east coast oceans, which are likely to meet the current and emergent challenges posed by climate change for biodiversity conservation.

In the EIO, we indicated that particular emphasis would be given to identifying and addressing barriers, limits and costs to implementing adaptive policy responses. We will still address these matters in the Phase 5 workshops, but again the more limited budget now available for the work will mean that these considerations, and our associated recommendations, will be less fully developed than we originally intended.