



**Marine
and Coastal**

National Environmental Science Program

Scoping Study: New approaches to marine monitoring

Project 1.29

Project Summary

Australia's has the third largest marine estate of any country in the world. Much of our marine and coastal resources are in offshore or sparsely populated areas meaning that our ability to monitor and assess our environmental resources and values is particularly challenging. To maximise our understanding of our marine and coastal environment, we need to take advantage of emerging technologies and approaches. This includes citizen science, community monitoring and Indigenous Rangers. In particular, it is expected that these groups will utilise the same technologies as mainstream science, thus these emerging technologies can bridge the gaps between science and community science to operate in unity. This project provides a series of workshops and engagement processes to best explore how to most effectively deploy technologies and community science programs to achieve maximum benefit and synergy in environmental monitoring.

Problem

There are numerous new technologies that have the ability to transform the way and efficiency with which we monitor our marine and coastal environments. There is no doubt they offer much promise. The issue isn't the lack of technology, for this is abundant, it's choosing between the large range of technologies, the numerous research groups offering such capabilities and the ability to match this technological capability with required and priority end-user needs, that is the challenge.

How Research Addresses the Problem

It is not the intent of the NESP MAC Hub to further develop certain technologies or approaches and then look for an application for them. Rather, the preferred approach is to determine the key monitoring/assessment needs and then how they are best met through the astute application of technology and approaches. Thus, this intended scoping study, will necessarily be run in parallel and partly dependent upon, outcomes from proposed Hub scoping studies on Threatened Species, Protected Areas and Indigenous Participation that will identify key issues in monitoring and assessment. This project will provide guidance on how to adopt technology and approaches to monitoring and the pro's and con's of doing so. It should be noted here that this project covers both new technology and new approaches. The latter covers the use of citizen science, community participation and Indigenous participation, especially Indigenous Rangers. Community science (including all of those just listed and more) has been utilised in broad-scale monitoring and assessment for many years. Outcomes have been mixed and overall, community science has only succeeded in certain limited fields and topics. However, with the advent of new technologies, community science participants will, in many situations, likely be using the same technology and field collection methods as mainstream scientists.

General Project Information

This scoping study will coordinate a series of workshops/engagements with a range of experts and potential end-users on key areas of technology including eDNA/genomics, drones and camera technologies. These workshops will range from low-profile technical discussions to broader, higher profile events that allow a wider range of providers to demonstrate their utilisation of technology in affecting practical change in monitoring programs. In our experience, a lot of end-users don't fully appreciate all the requirements of adopting new technology, leading to numerous projects being commissioned but not adopted in formal monitoring. Utilisation of new approaches requires a lot more than just incorporating new technologies into field data collection. We will focus especially on back-end processing and data handling issues in our scoping work to provide guidance (in written format) to potential end-users on all the issues that must be considered before adopting new technology-based approaches. In addition to technology itself, the project will examine the applications of technology in community science. At the end of the scoping study, it is intended that the MAC Hub will be in a position to put forward in its future research plans, several larger, substantive, well planned, application-oriented studies that demonstrate the transformative application of new technologies and integrated community science approaches in marine and coastal monitoring.



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