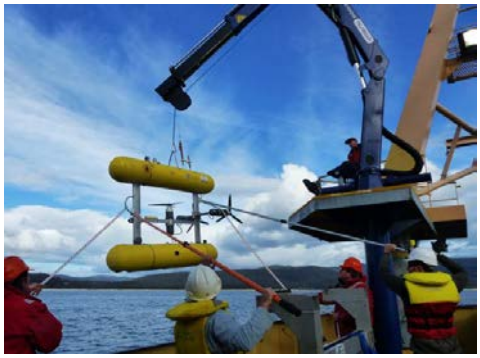
Marine Biodiversity Hub

National Environmental Science Programme

NESP Marine Biodiversity Hub Strategic Plan 2017-2021 (v2.2)



Australian Government | National Environmental Science Programme

Australian Government – Australian Institute of Marine Science

CSIRO

Australian Government – Geoscience Australia

IMOS Integrated Marine Observing System

Charles Darwin University

University of Tasmania

The University of Western Australia

NSW Government

Museum Victoria

VERSION CONTROL REVISION HISTORY			
Version	**Date revised**	**Reviewed by (Name, Position)**	**Comment (review/amendment type)**
V1.0	Oct 2015	Hub Director, Nic Bax	Tabled at Steering Committee
V2.0	25 May 2016	Hub Director, Nic Bax	Accommodating feedback from joint Partners Research Leadership Team meeting – edits on basis of meeting notes
V2.1	27 Oct 2016	Hub Director, Nic Bax	Accommodating Research Leadership Team feedback – minor edits to enhance pressures research and Indigenous engagement
V2.2	24 Nov 2016	Hub Director, Nic Bax	Accommodating Steering Committee feedback – minor edits on conservation of species and communities and addition of Hub research themes to Appendices

Cover images

Relict coral reef, Gulf of Carpentaria Commonwealth Marine Reserve, Graham Edgar.

Deployment of the Integrated Marine Observing System Autonomous Underwater Vehicle "Sirius" in the Flinders CMR by Hub researchers, Margot Delaporte.

Spotted handfish resting on a divers hand, Tim Lynch.

Grey nurse shark at key aggregation site on the east coast of Australia, David Harasti.

NESP Marine Biodiversity Hub Strategic Plan 2017-2021 (v2.2)

Purpose of strategic plan

This document articulates the Hub's strategy to enhance understanding of Australia's marine environment. This strategy, together with the National Environmental Science Program (NESP) research priorities, will inform the development and review of the Hub's research plans and investments.

Background

The NESP Marine Biodiversity Hub is a national collaboration of researchers formed to achieve the objectives and fulfil the outcomes of the NESP (see Attachment A). The national collaboration includes partners and collaborators that support the collection, analysis and interpretation of marine environmental data and information to enhance understanding of, and capacity to manage and conserve Australia's marine environment

The Hub's research is funded by NESP and by research partner contributions under a 50:50 funding arrangement. Research plans are developed to address the NESP research priorities (Attachment B) and to further the marine research interests of the Hub's partners. The NESP program emphasises the importance of engagement and participation of research users, stakeholders and Indigenous communities and traditional owners in developing and implementing research plans. This strategic plan articulates the strategic direction for the Hub's research efforts for the period 2015-2021.

The first version of the strategic plan was initiated in 2015 by the Steering Committee, developed by the Hub Leadership group (director, deputy director and chairperson) with input from the Partners Committee and Research Leadership Team. The second version of the plan was refined in 2016 to inform development of the 2017 and subsequent Research Plans. It will be periodically reviewed as required.

Strategic direction

This Plan provides direction for three primary delivery areas:

1. Conservation and recovery of EPBC listed species and communities

The Hub will develop improved and innovative approaches that increase the options available to managers and stakeholders to conserve and/or recover listed marine species and/or communities identified as priorities by the Australian Government and other stakeholders.

By 2021, the Hub's research will have led to:

- Piloting and operational use of a range of innovative tools for assessing the population status of high priority listed species and effectiveness of recovery efforts.
- Assessments of risks to inform decision-makers about current and future pressures to listed species and communities, and for high priority species provision of advice to inform the development of guidance for avoidance, mitigation or offsetting of impacts.
- Guidance and protocols, jointly developed with DoE and Indigenous communities, to design and implement monitoring to understand the status and trends of marine species, in particular to determine the success of management interventions for conservation and recovery.
- Transparent and rigorous decision frameworks, jointly developed with DoE and its stakeholders, to identify priorities for cost-effective investments in the conservation and recovery of EPBC listed

species and communities, including likelihood of project outputs supporting on-the-ground actions including delisting.

2. National marine baselines and monitoring to inform environmental reporting

The Hub will have championed a science-based approach to develop marine baselines and monitoring, in collaboration with DoE and other stakeholders, informing national environmental reporting commitments and in particular those for managing Commonwealth Marine Reserve networks.

By 2021, the Hub research will led to:

- Interim expert-based committee arrangements to support a sustained, coordinated and scientific approach to national marine monitoring, especially in the Commonwealth Marine Area, and including the identification of options for funding improved baselines and monitoring to meet agreed priorities.
- An agreed approach for monitoring and reporting to support implementation and review of Commonwealth Marine Reserve network management plans, including a list of survey and pressure priorities that will have been in use for at least two years and reviewed in the final year.
- An agreed approach for marine ecosystem health monitoring and reporting will have been adopted and used to inform decisions on environmental protection and biodiversity conservation, the 2021 National SoE report, including providing some or all of the marine Essential Environmental Measures.
- Standards for the collection, analysis, reporting and management of marine baseline and monitoring data from at least two platforms will have been adopted nationally and linked globally.
- Agreement on a process to develop IMCRA5 based on new national maps of additional taxa, refined national maps of geomorphic features and improved statistical methods developed by Hub researchers.

3. Science to support decision makers and their stakeholders

Improved mechanisms to support the use of evidence and repeatable scientific methods in the formulation and processing of marine environmental decisions.

By 2021, Hub research will have led to:

- Techniques and tools developed to improve rigour and transparency of decision-making for conservation and use of the marine environment, will be in use, with a focus on understanding values, pressures, evaluating risks and determining cost-effectiveness of investments
- Explicit procedures and processes will have been adopted by marine users including fisheries, oil & gas and renewable energy to collect and share information in a form that supports regional and inter-regional consistency and comparison.
- A portal providing access to data and maps of pressures on the Australian marine environment, will be used by industry and governments to assist understanding of potential impacts on MNES including cumulative impacts.
- Scientifically derived social and economic research and data, including Indigenous perspectives, will be used to inform decision making for managing Commonwealth Marine Reserve networks.
- Streamlined arrangements for discovery and access to the Hub's data and synthesis products.

Overarching considerations – National collaboration

The Marine Biodiversity Hub needs to collaborate broadly to successfully implement this strategic plan. Considerations that apply to all research areas and projects to varying degrees include:

- **Strategic research:** The Hub will prioritise research that leads to improved understanding, processes and opportunities beyond the specific problem it is designed to solve.
- **Indigenous engagement and participation**: All projects will need to identify how they will engage or seek to engage Indigenous communities or representative bodies. The level of engagement will depend on the maturity of the relationship and will range from information exchange to close collaboration on funded projects.
- **Capacity development**: All projects will need to consider how they can assist in developing the research and careers of students and early career researchers, with a particular focus on assisting minorities and promoting gender equity.
- **Collaboration between partners**: The MBH provides opportunities for national collaboration on projects, especially between partners. Projects limited to only one institution are unlikely to be supported. Communities of practice (CoP) for key research fields will be important to develop nationally coherent approaches to support efficient and effective marine environmental decision-making. Statistical design and analysis will be one of the first CoP developed and is expected to guide development and choice of a suite of suitable approaches that projects will be expected to draw on. Partner collaboration and research projects are organised by research themes (Attachment C)
- **Collaboration with DoE**: It is important that the projects enhance the capacity of DoE to use research results in their business and enhance the capacity of researchers to deliver results that are likely to be used. To support this capacity development, projects will be designed in collaboration with DoE, regularly reviewed in the context of evolving DoE needs, and key departmental contacts will be identified for each product to help ensure that results are relevant to the Department's needs.
- **Data sharing – discovery and access**: It is a condition of the NESP contract that all data collected under NESP are publically available. Metadata and data will be available online through AODN before each project ends. Future projects will be assessed on the project leader's performance in ensuring that data from earlier projects is available online.
- **National role**: Achieving MBH objectives will frequently require national collaboration beyond the Hub partners. The Hub will help develop and support national initiatives that lead to greater consistency in the collection, analysis and communication of data and scientific information in State and Commonwealth waters to managers and other end-users including targeted products for the public. One example of this will be contributing to the 8 recommendations, particularly 1, 3, 4, 6 and 7 of the National Marine Science Plan 2015-2025 (Attachment D).
- **International role**: The Hub has a national focus in its research, but with the expectation that this research will build on and support international developments and initiatives, both profiting from those initiatives and promoting the use of Australia's expertise regionally and globally.

Attachment A: NESP objectives and outcomes

The key objective of the NESP is to improve our understanding of Australia's environment through collaborative research that delivers accessible results and informs decisions.

The NESP seeks to achieve its objective by supporting research that:

- has a strong public-good focus
- is end-user focused and addresses the needs of the Australian Government and other stakeholders in developing evidence-based policy and improving management of the Australian environment
- is innovative and internationally recognised
- enhances Australia's environmental research capacity
- is collaborative and builds critical mass by drawing on multiple disciplines, research institutions and organisations to address challenging research questions
- produces meaningful results accessible to government, industry and the community
- includes synthesis and analysis of existing knowledge
- builds relationships between scientists and policy-makers to encourage collaborative problem solving on environmental issues.

NESP end-users will be a broad range of stakeholders whose decisions may impact on the environment, and include the Australian Government, state governments, industry, business and community groups.

The intended outcomes of the NESP are:

- enhanced understanding of, and capacity to manage and conserve Australia's environment
- improved climate and weather information for Australia through a greater understanding of the drivers of Australia's climate
- timely research that is used by policy and decision-makers to answer questions and provide solutions to problems
- research outcomes that are communicated clearly to end-users and the general public, and stored in a manner that is discoverable and accessible.

The NESP contributes to the Department's activities to provide a variety of environmental and economic benefits to Australia across the Department's outcomes identified in the Portfolio Budget Statements (http://www.environment.gov.au/about-us/accountability-reporting/budget-statements).

The NESP will generate research and scientific evidence that will support the Government in meeting its obligations under international conventions, such as the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change and the Ramsar Convention on Wetlands.

Attachment B: Research priorities for the NESP Marine Biodiversity Hub (provided by the Australian Government Department of the Environment)

Maximising the efficacy of managing Australia's marine environment

- **Identifying hot spots and management strategies for top order marine predators, including research to identify effective non-lethal measures to manage human-shark interactions.**
- Improve the management of marine and coastal biodiversity by evaluating and quantifying the results of management interventions.
- Identify key social and economic values of the marine environment to build better stakeholder support and engagement in the management of marine and coastal environments.
- Develop and trial decision making tools that will support policy makers and managers to identify options, and prioritise activities.
- Identify and trial methods to restore degraded habitats such as oyster and mussel beds, seagrass, and intertidal habitats to underpin on-ground management actions.

Improving our understanding of pressures on the marine environment

- **Define the impact of sewerage outfalls and stormwater runoff on Australia's marine environment to identify real actions to improve outcomes for marine water quality. This is to be informed on a national scale by the completion of a national ocean outfall database.**
- Identify past and current pressures on the marine environment, and understand their impact to better target policy and management actions. For example, identify the impact of cetacean ship strike.
- Determine the causes of, and relationships between, pressures on the marine and coastal environment to inform government investment
- Improve prediction of likely future pressures and their potential impacts on marine and coastal biodiversity and economic and social values to enable the mitigation of avoidable impacts

Improving our understanding of the marine environment including biophysical, economic and social aspects

- Determine and trial practical and repeatable methods for monitoring the status and trends of key coastal and marine species and environments.
- Meaningful and accessible information on the status and trends of key social and economic values associated with the marine environment
- Better understand issues that are common to the fishing industry and the environment including identifying solutions of mutual benefit.
- Improve our knowledge of key marine species and ecosystems to underpin their better management and protection.
- Identify key opportunities to collaborate and build Indigenous participation and knowledge into the management and protection of marine species.
- The role of citizen science in the management of marine biodiversity.

Attachment C: Research themes for the NESP Marine Biodiversity Hub.

Theme A - Improving the management of marine threatened and migratory species

This theme will provide the scientific foundation to protect and conserve Australia's threatened, migratory and marine listed species, informing their management and assessments of progress towards recovery. It will investigate species population status, trends, structure and connectivity to address critical information gaps, through research, Indigenous and industry partnerships. By enhancing national datasets and prioritisation processes, consistent scientific information will improve efficiency in national approaches to marine species management. Threatened and migratory species recovery and management objectives will be informed by frontier molecular, ecological and statistical approaches, across a range of marine fauna. Understanding the role of national protection and conservation instruments, including the Commonwealth Marine Reserve (CMR) network and their effectiveness in achieving species recovery will guide management across the marine environment. The theme will partially focus on elasmobranchs, which are a significant component of Australia's listed threatened marine species, while building techniques, capability and approaches that can be applied to other threatened marine taxa in later years.

Theme B - Supporting management decision making

This theme will build decision-making capacity within DoEE and provide tools to more effectively conserve biodiversity and protect the marine environment at a range of scales. The Hub will provide research and support in describing and prioritising environmental monitoring, matters of national environmental significance (MNES) and conservation values, and restoration of marine ecosystems. This theme will develop, test and deploy management support tools in a range of settings of relevance to marine biodiversity managers, including those aimed at equipping managers with an evidence base for future decision-making (monitoring), minimising exposure to losses (in matters of national environmental significance) and maximising exposure to gains (in restoration). Sound decision-making relies on the articulation of values as much as scientific understanding. This theme will develop methods in identifying and articulating values and trade-offs among managers, stakeholders and the broader public interest.

Theme C - Improving our understanding of pressures on the marine environment

The Theme will provide research and support in describing and prioritising pressures affecting matters of national environmental significance (MNES), conservation values, assessing likely impacts and future options on avoidance, mitigation, offsets and adaptive management measures, including further developing a data-driven SOE cycle. The Theme will work to support an understanding of the spatial and temporal distribution and intensity of pressure on the marine environment, why species and systems are threatened, what the current risks are and what actions can be taken to mitigate or avoid those pressures.

The Theme will work with the Department to improve understanding of MNES and conservation values, including their environmental and societal value. A framework to assess the risk and impact on MNES and conservation values will be developed. The Theme will support the Department and other research users through synthesis and delivery of knowledge and data on MNES and conservation values and the pressures on them. The Theme will work across agencies and

jurisdictions, enabling an integrated understanding of the impacts of different pressures on Australia's marine environment.

Theme D - Improving our understanding of the marine environment including biophysical, economic and social aspects

This theme will enhance the scientific knowledge base for the Commonwealth Marine Estate to better inform the management of this vast jurisdiction. Access to and the useability of marine data will be improved to better inform management and enhance public understanding and value of the biodiversity of the estate. Web interfaces will be used to enable data to be easily accessed, mapped and visualised to better address current and emerging industry and government information priorities, as well as identify critical information gaps. Models will be used to predict biodiversity in data poor areas and to generate synthesis products that encapsulate a range of values for priority areas of the estate. An important focus of the theme is building the capability to provide nationally consistent and cost-effective environmental baselines and monitoring that can be employed in the management of Commonwealth Marine Reserves. This will include developing national standards for marine biodiversity surveys and implementing and testing these approaches as part of a national CMR baselines and monitoring program. New baseline biodiversity data for the previously un-sampled deep-sea regions of the east coast CMR network will be provided to fill a significant data gap, improve understanding of the environmental and evolutionary drivers that structure biodiversity and identify key spatial distribution patterns of biodiversity that can inform future reviews of spatial management tools.

Attachment D: National Marine Science Plan 2015-2025

The National Marine Science Plan was developed to provide direction to help Australia realise the triple-bottom line benefits of our marine estate while protecting the values and natural assets we all hold so dearly. The plan outlines seven interconnected grand challenges facing Australia and the marine science needed to deliver solutions, eight recommendations are provided:

1. Fund national research vessels for full use and invest in increasing our coastal research vessel fleet.
2. Sustain the Integrated Marine Observing System to support critical climate change and coastal systems research, and expand it to include estuarine and coastal observations.
3. Establish and support a National Marine Environmental Baselines and Long-term Monitoring Program, to develop a comprehensive assessment of our estate, and form the basis for management of Commonwealth and State Marine Reserve networks.
4. Establish national coordination of studies on marine ecosystem processes and resilience to enable understanding of development (urban, industrial and agricultural) and climate change impacts on our marine estate.
5. Create a National Oceanographic Modelling System to support ocean state predictions required by defence, industry and government.
6. Develop a coordinated decision support science program for policymakers and marine industry.
7. Develop marine science research training at our universities that is more quantitative, cross-disciplinary and congruent with the needs of industry and government.
8. Create an explicit focus on the blue economy throughout the marine science system.