



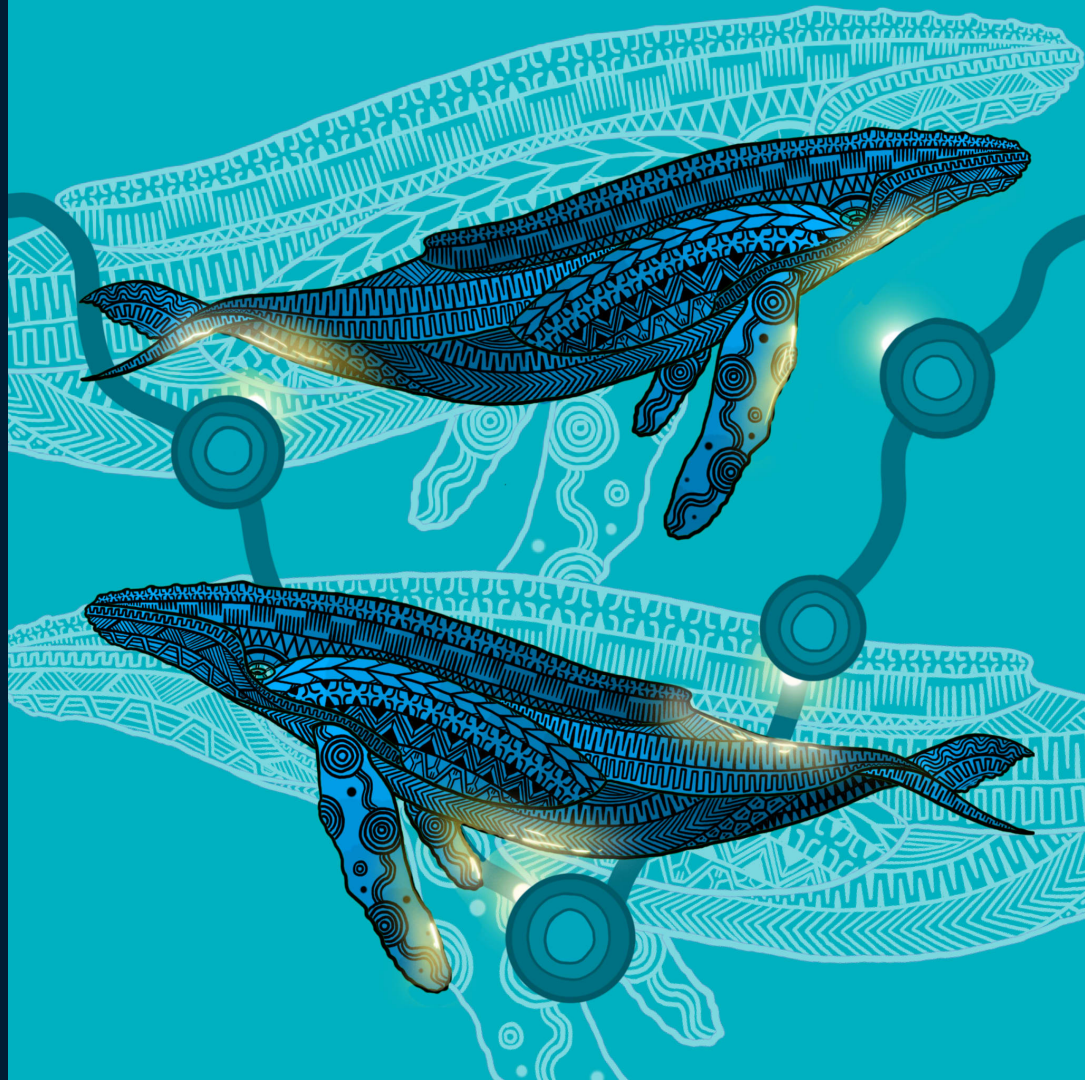
Integrated system assessment and reporting for marine ecosystem- based management

MSEAS 2024

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System assessment and reporting for marine ecosystem-based management: The need



Commissioned by
 HIGH LEVEL PANEL OF A SUSTAINABLE OCEAN ECONOMY

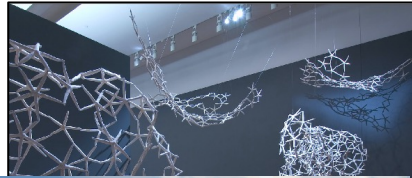
The Ocean as a Solution to Climate Change

Five Opportunities for Action

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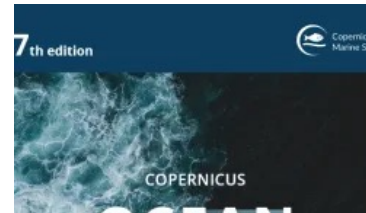
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Ocean Solutions That Benefit People, Nature and the Economy

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System of Environmental-Economic Accounting

Ecosystem Accounting



4SD

September 2020
A Global Goal for Nature: Nature Positive by 2030
 Establishing a goal for nature-positive societies

- Human activity is pushing the natural world into such steep decline that we are at risk of destabilizing the very life-support systems on which we all depend
- We need a Global Goal for Nature that delivers a carbon neutral, nature-positive world where we give back to nature more than we take
- That means that by 2030, nature must be on a clear path to recovery towards a thriving planet where we are living in harmony with nature by 2050

Restoring nature for human prosperity and equity
 The COVID-19 pandemic is a warning sign that the decline of nature is destabilizing society. A continued loss of nature threatens global GDP, human lives and wellbeing, with the poorest and most vulnerable hit first and hardest. As the climate crisis is deeply linked to the nature crisis, both need to be addressed simultaneously to drive a swift transition to a nature-positive, carbon-neutral future.

Why a 'Global Goal for Nature'?
 If we continue to drive ecological destruction, we undermine the resilience of Earth's life-support systems. This pathway leads to irreversible tipping points. We need to define a nature goal so that we can map a clear, timebound pathway to halt and reverse nature loss, linked to climate action.

Stop losing, start restoring
 A Global Goal for Nature will create a shared understanding of the level of action needed from governments, business and wider society to stop the decline of natural habitats and the loss of species.

- We must reset the global compass to **halt and reverse nature-loss** to avoid dangerous consequences for the stability of the planet's life-support systems, and for human health.
- A **'global goal for nature'** – in parallel to the UNFCCC's 'net zero' goal for climate change – would commit the world to taking action now to halt the loss and degradation of nature and ensure a **nature-positive world** by the end of this decade. That means that by 2030, we must have more nature than we do now.
- Actions for nature cannot be achieved without addressing both the **climate emergency and social justice**, and vice versa, for both current and future generations. We must strive to achieve an **equitable, carbon-neutral, nature-positive world**.
- Governments need to **act now for nature**.
- We need more nature by 2030 than there is today through recovery of the health, abundance, diversity and resilience of species, populations and ecosystems.
- By 2050, nature must recover and that thriving ecosystems and nature-based solutions support future generations, the diversity of life and play a critical role in halting climate change.

1



Australia's State of the Environment Report

What?

- An independent, evidence-based and comprehensive assessment of the health of Australia's environment
- Developed through collaborative partnerships with industry, government, NGOs and Indigenous groups to draw from the latest scientific, traditional and local knowledge systems
- Legislated under the *Environment Protection and Biodiversity Conservation Act 1999* and released by the Australian Government every five years (moving to 2 year cycle).

soe.dcceew.gov.au

Why?

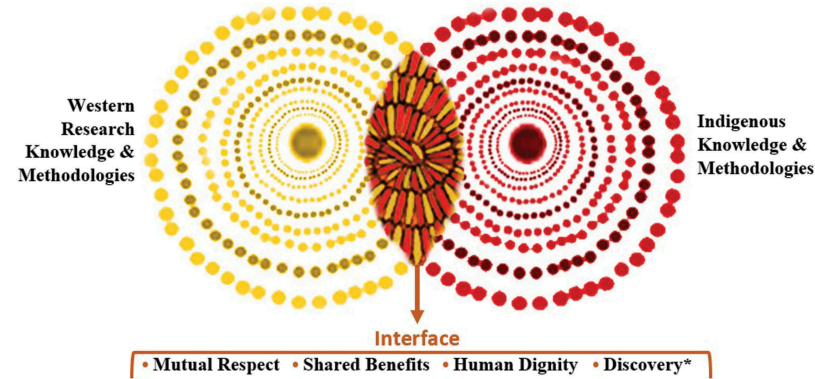
- Help shape policy and action
- Influence behaviour
- Assists in assessing our interventions as stewards of the Australian environment.

Australia 
State of the Environment

The logo graphic consists of a stylized blue wave or landscape shape on the right side of the text.

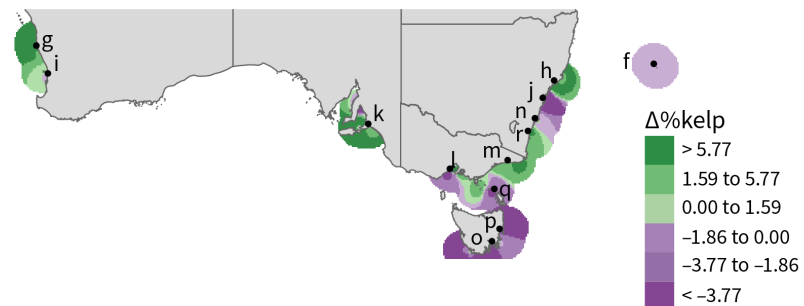
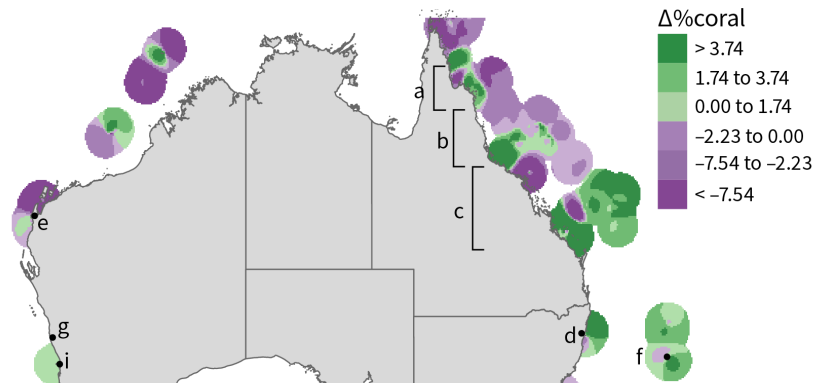
Read the report. Make an impact. Heal Country.
Our future wellbeing and prosperity depend on it.

- **Transparent and repeatable** assessment process (consistent and comparable with SoE 2016 Marine thematic report).
 - Assessments and case studies by invited experts (guided by templates)
 - Assessments and case studies peer reviewed
 - Metadata records for assessment and case studies open access on the Australian Ocean Data Network with DOIs (citeable)
- **Weaving Indigenous knowledge with “western science”**
 - Indigenous co-authors collaborated in developing all content, and
 - Indigenous-led assessments and case studies
 - Yarning circles based on assessments



From: Durie, M. (2004). Exploring the interface between science and indigenous knowledge. 5th APEC Research and Development Leaders Forum, Christchurch, New Zealand.

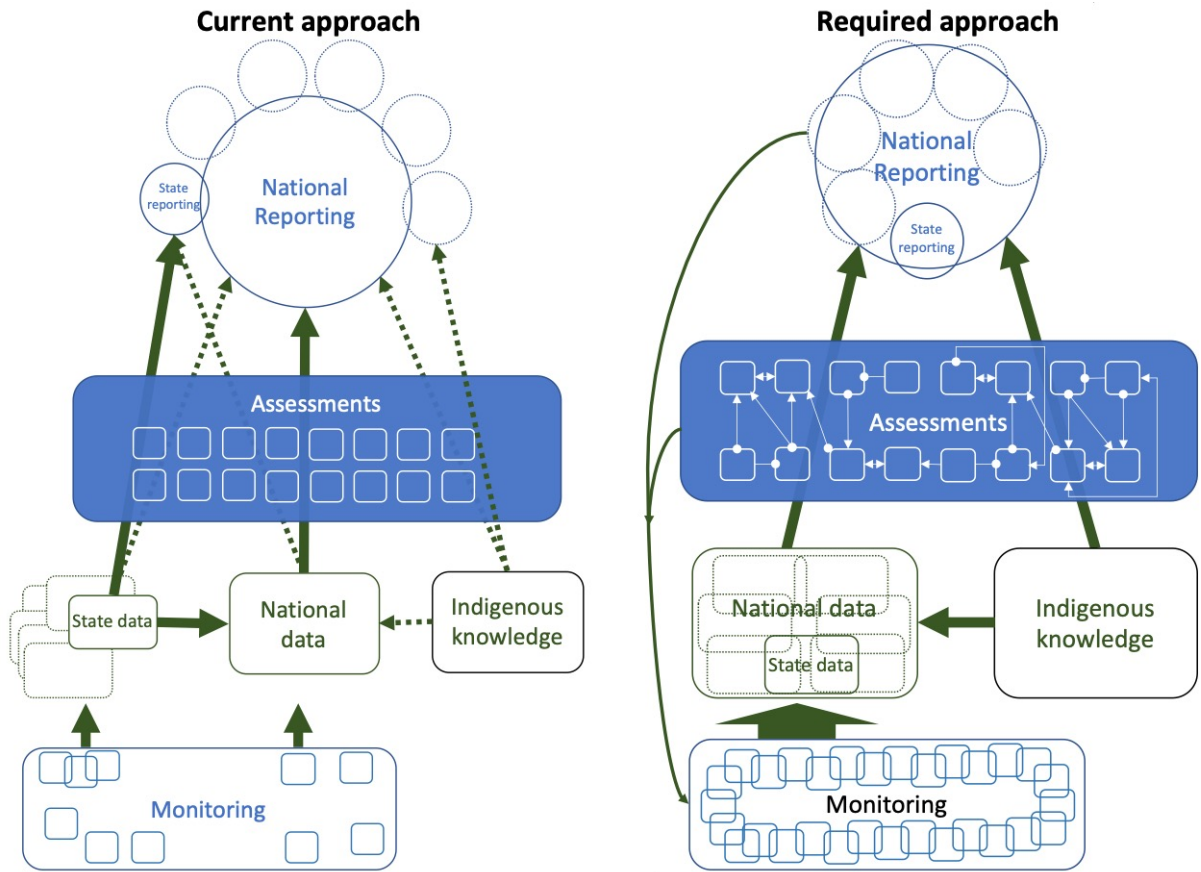
1. Climate change is affecting fundamental aspects of our oceans and increasing the impact of other pressures
2. Many Australian marine habitats are healthy, but our reefs are declining
3. Indigenous experts generally assessed state to be poorer than ‘western science’ assessments
4. More comprehensive and better integrated and inclusive monitoring and marine management are needed
5. Even the best management will not stop environmental decline if climate change and cumulative effects aren’t addressed
6. If 4. and 5. aren’t addressed, substantial continued and increasingly widespread degradation of Australia’s marine environment is expected





Key needs/future directions:

- A **national integrated strategy** and system for baselines and monitoring – quantifying and addressing cumulative effects
- **Improved data assimilation, assessment and reporting** pipelines – to facilitate forecasting and frequent updating based on changing conditions
- **New system-level methodologies** for assessing overall environmental health that are ‘scalable’ – from local/regional to national assessments, allowing cross jurisdictional standardisation, capture of system interactions and feedbacks
- **Integrated stewardship** – sustainable and inclusive monitoring and management that strengthens partnerships across sectors and acknowledges Indigenous leadership, decision-making, connections and rights





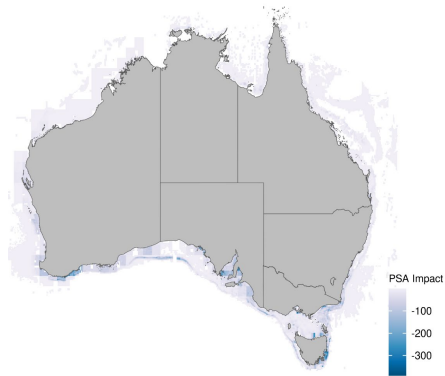
Six principles for holistic and integrated state of the environment reporting - CITRIS

Principle	Why	How (enablers)
Coordination	<ul style="list-style-type: none"> - Enables buy-in and uptake across jurisdictions and sectors - Supports comparable and compatible data streams - Supports Equity 	<ul style="list-style-type: none"> - Collaboration and communication - Presence of mandates and peak bodies - Adequate investment/resourcing - Infrastructure for data sharing across jurisdictions
Integration	<ul style="list-style-type: none"> - Ensures assessments are fit for purpose in supporting integrated management - Helps avoid unintended adverse consequences 	<ul style="list-style-type: none"> - Cross-sector engagements and commitments - Removing silos - Weaving knowledge systems - Identifying cross-cutting themes - Collaboration and communication
Transparency and repeatability	<ul style="list-style-type: none"> - Enhances broader utility of products produced in reporting - Fosters continuous improvement in reporting performance - Consistent with FAIR principles 	Assessment processes that can be easily traced back to underpinning information and readily repeated/updated.
Responsiveness and adaptiveness	Ensures reporting remains fit for purpose in the face of change	<ul style="list-style-type: none"> - Processes that are responsive to new knowledge and changing conditions - Reporting arrangements that continually supported, rather than short-lived 'taskforces' to report in discrete 'rounds' - feedbacks between reporting and monitoring/assessment approaches
Inclusiveness	<ul style="list-style-type: none"> - Priority actions identified in reporting are more likely to gain traction if they reflect a shared vision, developed with an inclusive process. - Consistent with CARE principles 	<ul style="list-style-type: none"> - Respecting different knowledge systems and knowledge holders - Open consultative processes
System-orientation	Enables understanding of cumulative impacts, feedbacks and tipping points and supports adaptive policy and management.	Frameworks and methods for system-level analysis and assessment

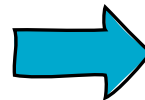
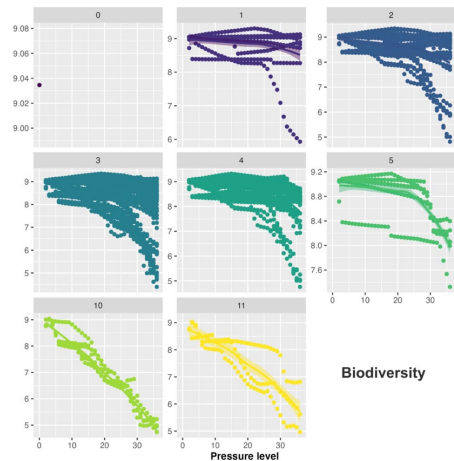


System-oriented assessment - How?

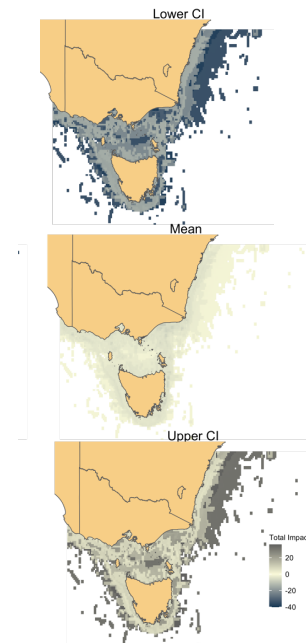
Values and vulnerability



Non-linear response functions
(from ecosystem model)



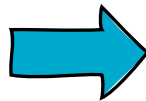
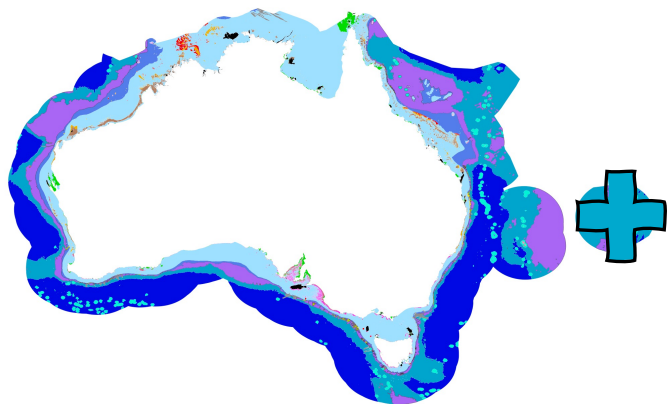
Estimate of cumulative impact accounting for system responses



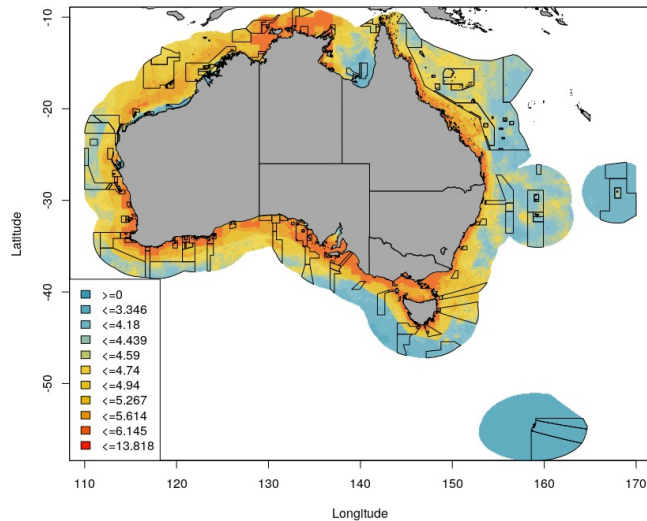
System-oriented assessment - How?

Regional system models

Values and exposure



Estimate of overall system condition and risk





System-oriented assessment - How?





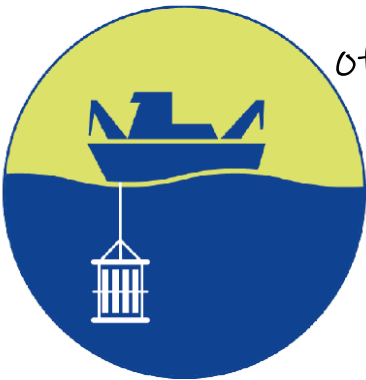
The Marine Science Supply Chain

(simplified)

Demand for Understanding



Supply of Data



Synthesis and Analysis



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Thank you

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Sustainable Marine Futures
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