

Enabling a broad knowledge base for marine management decisions

Marine management decisions deal with complex biological and human political systems and are made in the context of competing demands for space and resources. Increasing the information base for marine management decision-making will improve the quality of those decisions.

The necessary information to make good decisions is often thought to be lacking, but this thinking is partially due to an over-reliance on quantitative data collected by standard methods. While mātauranga Māori is increasingly sought and citizen science is welcomed, narrative analysis and local knowledge are rarely used in decisions. Enabling a broader knowledge base is essential for fit-for-purpose, robust, and place-based outcomes.

About this document

This summary:

- recommends new processes and skills to involve a full range of knowledge as evidence in marine decision-making processes
- explains what sources of information can be used to broaden the knowledge base
- considers the barriers to using broader knowledge.

The advice is based on Sustainable Seas National Science Challenge research.

Recommendations

For marine management decisions and advice to be supported by different types of knowledge, we recommend the following.

- » Acknowledge high quality advice as advice informed by a range of relevant research and local knowledge, and that enables te ao Māori.
- » Include qualitative and quantitative information from a range of sources.
- » Engage with iwi/hapū and locals using participatory processes, to understand what knowledge there is and where it's held.
- » Use established and effective methods of gathering and analysing knowledge from various sources.
- » Document processes and the results of seeking out and using different types of knowledge.
- » Bring legal advisors alongside early on to ensure relevant legal considerations are met when developing content that will go in front of decision-makers.
- » Resource in-house capability to seek out and use a broad range of knowledge, and value strengths to connect and span boundaries
- » Investigate processes that enable the diversity of knowledge collected to be bought forward and given weight in decisions.





What knowledge types are there?

Knowledge types that support marine management decisions can be thought of as quantitative or qualitative.

Quantitative or numeric data

Quantitative data is deliberately collected by standard methods or created by numeric models. Production of these types of data are costly and frequently place-specific, for example state of the environment attribute monitoring.

Qualitative information

Mātauranga Māori, local, and disciplinary knowledge are three broad types of knowledge that help people and communities understand the natural world and their place in it. While much of this knowledge is qualitative, it can still be used as evidence, analysed robustly, or form part of scenario decision models.

- Mātauranga Māori includes place-based knowledge generated using techniques consistent with the scientific method but explained according to a Māori world view. Mātauranga Māori may be in the form of narratives, carvings, or song and generally provides the longest time record.
- Local knowledge is place-based but over shorter time frames than mātauranga Māori. Local knowledge may be narrative, but may increasingly be backed up by visual, time-stamped images.
- Disciplinary knowledge is frequently obtained as expert opinion derived from general theoretical concepts or from observations of cause and effect in other locations and placed in a local context. Disciplinary knowledge can be expressed as principles, narratives, and guidelines.

Broader knowledge can help with system interactions

Broadening knowledge sources helps decision-makers understand the variety of interactions between people and marine ecosystems, resulting in more fit-for-purpose, robust, and place-based outcomes.

Aotearoa New Zealand's law and policy guidance gives central and local government staff wide scope to use all available relevant data. Using a restricted range of numeric data can lead to decisions with unexpected outcomes and people being left out of the process.

Information is available, but underutilised

There's an emerging trend of seeking multiple types of knowledge in marine management processes. Guidance under New Zealand law and policy allows central and local government staff wide scope to investigate and use multiple knowledge sources in statutory and non-statutory processes such as ki uta ki tai catchment plans and regional coastal plans. The Resource Management Act 1991 (RMA) and New Zealand Coastal Policy Statement 2010 direct councils to work within Te Tiriti o Waitangi partnership and demonstrate social, environmental, and economic outcomes, and the RMA and Local Government Act set out robust processes to engage and track community input.

In many places, an abundance of information is available, but underutilised. People making decisions on consents and regional plans are supportive of finding ways to bring in a greater range of knowledge as the basis of consent and plan decisions, but this has been challenging due to:

- a perception that quantitative data best meets the definition of 'best available' under legislation and so will be considered more robust in Environment Court or council hearings
- a lack of understanding about how different worldviews connect to these different knowledge types and about what groups are being left out in consent, permit, and plan decisions
- inexperience with where to get other types of knowledge from, the methods to analyse it, and how to give effect to it in decisions.



Definitions

In the context of this document, evidence is knowledge that is ordered and presented in a way that different audiences can digest.

Mātauranga is knowledge, wisdom, understanding, skill. Mātauranga Māori spans Māori knowledge, culture, values and world view (Hikuroa 2016).

References

- Clark D, Gladstone-Gallagher R, Hewitt J, Stephenson F, & Ellis J (2022). **Risk assessment for marine Ecosystem-Based Management (EBM)**. *Conservation Science and Practice* 4(3): 12636
- Hikuroa D (2016). **Mātauranga Māori – the Ūkaipō of knowledge in New Zealand**. *Journal of the Royal Society of New Zealand* 47(1), 5–10
- Le Heron E (2019). **It's not a recipe... but there are ingredients: Navigating negotiated change through participatory processes in multi-use/r marine spaces**. *Planning Quarterly* 213, 32–37
- Le Heron E, Allen W, Le Heron R, Logie J, Glavovic B, Greenaway A, Hikuroa D, Davies K, & Blackett P (2021). **What does success look like? An indicative rubric to assess and guide the performance of marine participatory processes**. *Ecology and Society* 26(1): 29
- Ministry for the Environment (2017). **A guide to section 32 of the Resource Management Act: Incorporating changes as a result of the Resource Legislation Amendment Act 2017**
- Sustainable Seas National Science Challenge (2020). **Ingredients to catalyse participation in marine decision-making**. sustainableseaschallenge.co.nz/tools-and-resources/ingredients-tool
- Sustainable Seas National Science Challenge (2023). **Quick guide: Navigating risk and uncertainty in marine management**. sustainableseaschallenge.co.nz/tools-and-resources/quick-guides-risk-and-uncertainty
- Sustainable Seas National Science Challenge (2024). **Enabling effective marine spatial planning for ecological and economic wellbeing**¹. sustainableseaschallenge.co.nz/tools-and-resources/enabling-effective-marine-spatial-planning
- Sustainable Seas National Science Challenge (2024). **Addressing cumulative effects in marine management decisions**². sustainableseaschallenge.co.nz/tools-and-resources/addressing-cumulative-effects-in-marine-management-decisions
- Sustainable Seas National Science Challenge (2024). **Addressing risk and uncertainty in decision-making**³. sustainableseaschallenge.co.nz/tools-and-resources/addressing-risk-and-uncertainty-in-decision-making
- Sustainable Seas National Science Challenge (2024). **Marine governance – sustaining ocean outcomes for future generations**⁴. sustainableseaschallenge.co.nz/tools-and-resources/marine-governance-sustaining-ocean-outcomes-for-future-generations
- Sustainable Seas National Science Challenge (2024). **Empowering Māori knowledge in marine decision-making**⁵. sustainableseaschallenge.co.nz/tools-and-resources/empowering-māori-knowledge-in-marine-decision-making
- Wedderburn E, & Coffin A (2016). **Integrated Assessment of Healthy Rivers Wai Ora: Baseline and Scenarios for Technical Leaders Group**. Waikato Regional Council



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For more information and support with marine management decisions, please see our other synthesis project summaries and guidance documents in this series.