

HOW TO MAKE NEW ZEALAND A WORLD LEADER IN MARINE CONSERVATION

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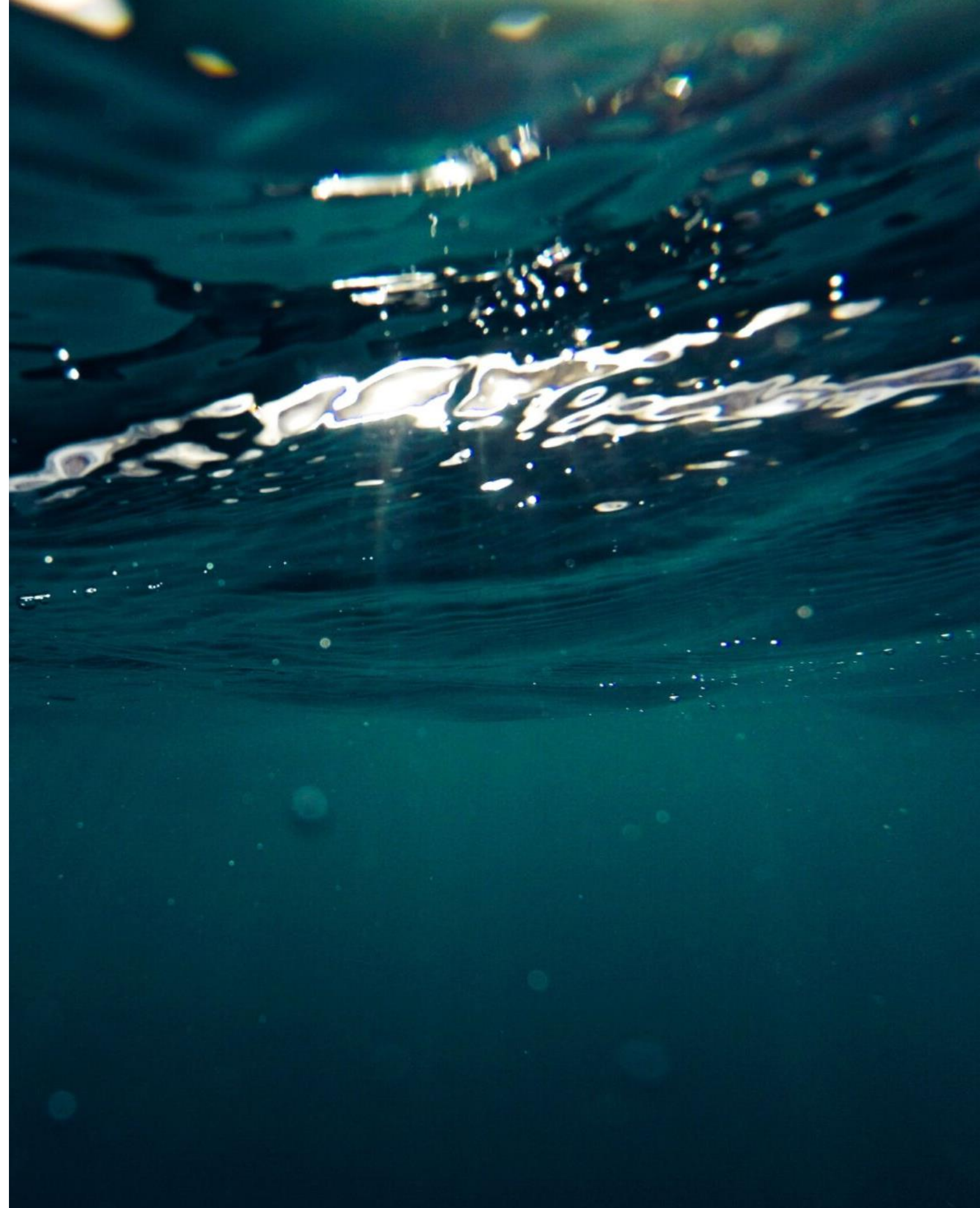
GLOBAL OVERVIEW

Worldwide attention to the conservation of marine resources.

- Annual UN Oceans Conference.
- Convention on Biological Diversity (1992, 150 countries).
- Primary approach, Marine Protected Areas, MPAs.
- Objective: 10% of Ocean Surface in MPAs by 2020 and 30% by 2030.

Current status of MPAs globally.

- 14,688 MPAs, covering 23,000,000 km² (10x increase since 2000).
- Huge range in sizes from <1 km² to 1,500,000 km²
- Pressure from external NGOs and internal constituencies on national governments to “just add water” to make MPA set-aside goals.



GLOBAL OVERVIEW

- MPAs often involve No-take or highly-restricted access.
- Contentious, polarizing.
- Leads to political solutions to a conservation issue.
- Is this durable over the long-term?
- There is a continuum across the marine resource:
Sustainable Management – Protection of habitat –
Conservation – Viable Fisheries.
- A more flexible, incentive-based, inclusive approach
could achieve more lasting conservation.

2017: MPAs cover about 6% of the ocean

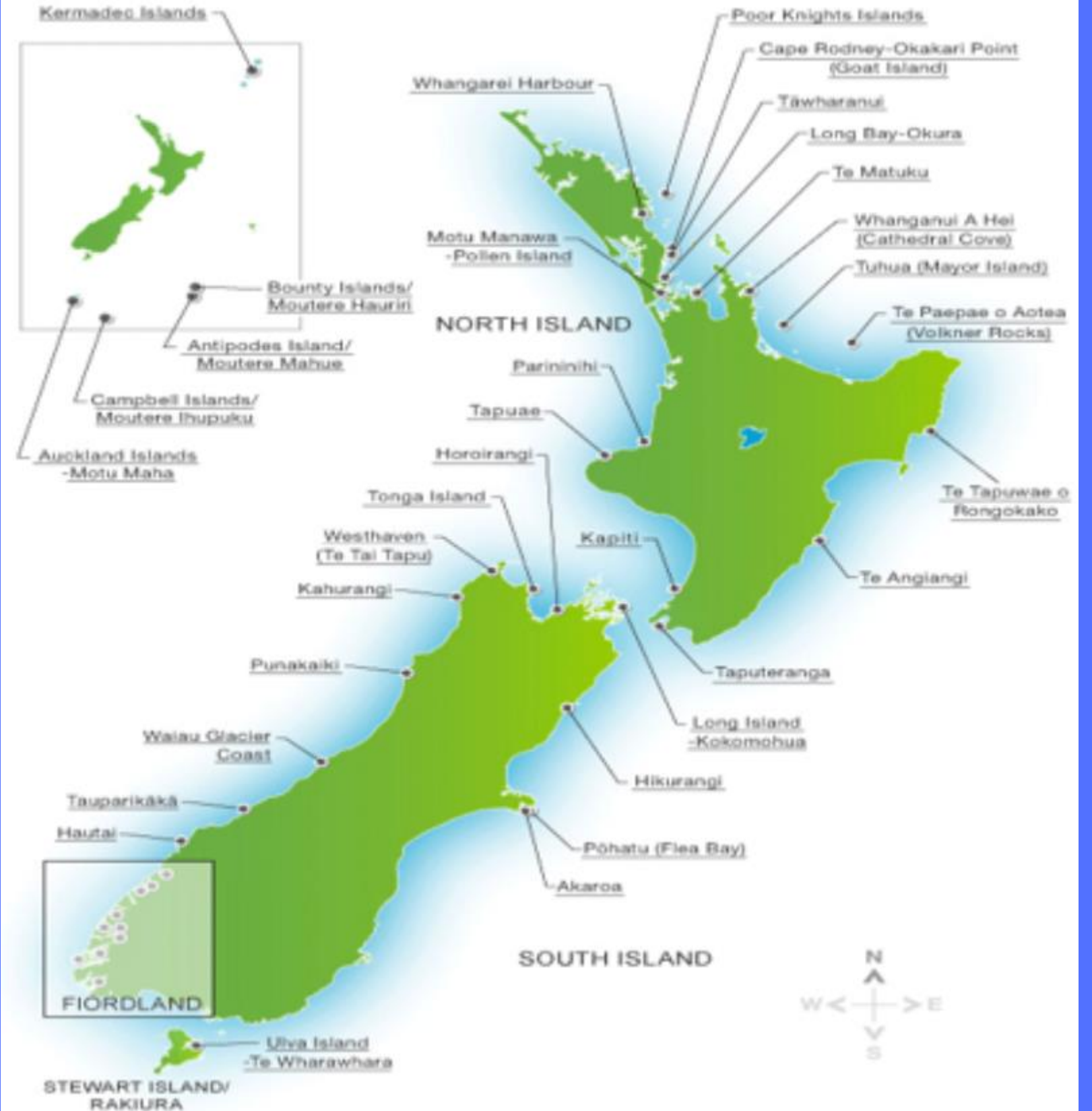
Targets: 10% in 2020 and at least 30% in 2030



International
Marine Protected Areas
Congress Chile 2017



MPAs





PROPOSED KERMADEC MPA

QUESTIONS



Are MPAs the only or even the best approach to conserving the marine environment?

Can MPAs that neglect meaningful collaboration and trust with local populations achieve long-term conservation?

- “Us versus them.”
- Top down.

How long will governments commit? How many generations and political cycles if local buy in is not achieved?

Can MPAs that emphasize tools, not measurable outcomes, generate robust conservation?

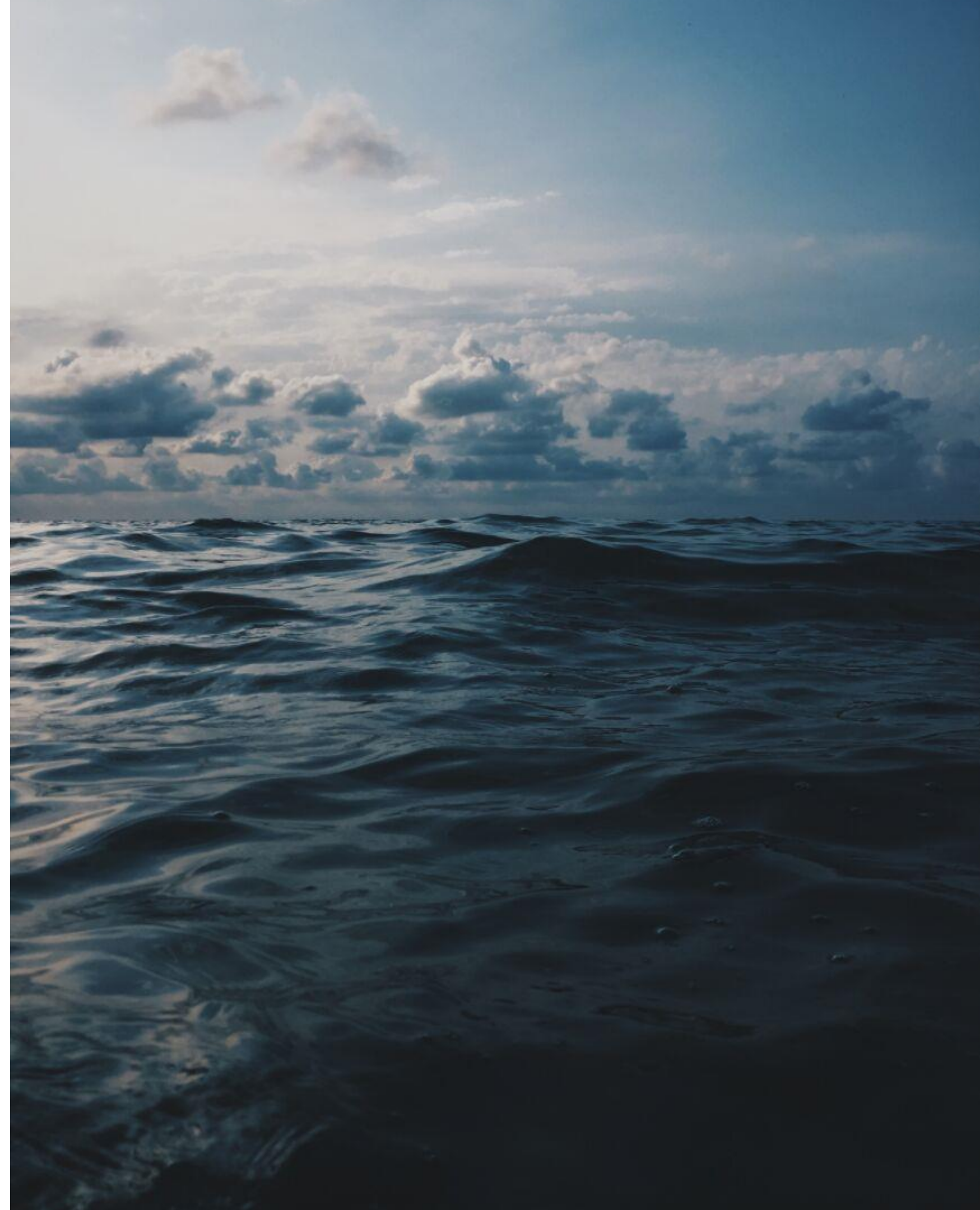
What are alternative approaches to enlist the support of indigenous groups, fishers, and other citizens in lasting commitment for conservation goals?

Is it possible to build upon existing, incentive-based, successful institutions?

Is there an opportunity for New Zealand to lead the way through delivering 100% sustainably-managed fisheries/ocean resources with less contentious, collaborative support?

NEW ZEALAND OVERVIEW

- New Zealand has 44, generally small MPAs, no-take areas under the Marine Reserves Act.
- Adding the proposed Kermadec MPA of 620,000 km² would place 15% of NZ waters in no-take zones.
- Other MPA proposals under consideration.



CONCLUSION

Marine species and ecosystem conservation are joint objectives.

The MPA approach is not the most effective way to achieve them.

Major opportunity for New Zealand to lead the way.

Builds upon existing, successful, incentive-based institutions in the QMS for sustainable ocean resource management.

Draw upon examples in Canada, US where measurable, ecosystem objectives are included in annual TACs. NZ has advantages over the quota systems used in both countries, so could be more effective.

Move away from contentious, polarizing MPA conservation efforts to more collaborative, long-lasting arrangements.

METHODS

Assessment and Recommendations based on:

- 40 years of academic research on the management of common-pool resources.
- Review of ~100 peer-reviewed journal papers, background documents, and related materials, colleagues at the University of California, Santa Barbara, Bren School of Environmental Science and Management, University of Washington and University of California, San Diego.
- Case studies of MPAs in the Pacific Ocean.
- Examination of joint fishery/ecosystem management via TACs and quota systems in Canada and US.

EXPLORING THE EFFECTIVENESS OF MPA'S

- MPAs: Tool-based, one-size-fits-all.
Some cases, areas of threat.
Some cases, no existing threat.
- Lack measures of objectives, effectiveness, time lines, baselines for comparison, causality.
- Unidentified extent of species habitats and spatial set asides. What if they need to be larger or smaller?
- Role of exogenous factors over time. Natural *and* socio-economic.
- Fish migration and other marine ecosystem changes that draw fishers to the region.
- Contingent updates? When and on what basis? Natural systems only? Socio-economic?

EXPLORING THE EFFECTIVENESS OF MPA'S

- Proposed Kermadec Ocean Sanctuary objective “preserve the Kermadec region in its natural state now and in the future.”
 - Success—long-term “natural state”?
 - Calls for assessing fish abundance, biodiversity.
 - No similar calls for monitoring socio-economic indicators.
- Success in conservation requires lasting, costly monitoring, enforcement, re-evaluation.
- Budget and political support over time if costs/benefits change?
- How many political cycles? Generations?
- Indicates why it is important to have local buy in with incentive-based arrangements.
- Want to pass a general Benefit/Cost ratio to insure that the effort expands social welfare.

EXPLORING THE EFFECTIVENESS OF MPA'S

1. Some MPAs placed with no evidence of threat, perceived future ones. What is the test of success or failure over time? Spatial extent?
2. MPAs may have model-based simulations with no follow-up analysis of observational data. Data may not be consistent with simulated predictions.
 - Example: The Channel Island Marine Reserves, Santa Barbara.
 - Prohibited lobster fishing to control sea urchin, improve kelp stands.
 - Data from 5 years before/after MPA by a PhD student found kelp/sea urchins affected more by reef character, tides than fishing.
 - No take led to a 28% loss in CPUE. No compensation.
 - Opposition against planned MPA designations along US west coast.

EXPLORING THE EFFECTIVENESS OF MPA'S

- Failing efforts to save vaquitas, porpoises in Gulf of California are characterized as a *battle* with local, poor, unsympathetic fishers.
 - A setting that cannot lead to optimism regarding success.
3. Lack meaningful inclusion of locals and indigenous populations:
- Only .5% of MPAs involved indigenous populations (Ban and Frid, 2018).
 - Decision to go forward.
 - Design.
 - Implementation.
 - Management, including contingent updates.
 - Enforcement.
4. MPA approach misses the key findings of Elinor Ostrom, 2009 Nobel Prize.
- Trust.
 - Proportionate distribution of benefits and costs.

EXPLORING THE EFFECTIVENESS OF MPA'S

- Rely upon local enforcement, commitment.
5. Neglect studies of long-term budget allocations across political cycles, logrolling.
- Generalized benefits, focused costs.
 - Distribution of benefits and costs not uniform.
 - Fishing and tourism benefits differ.
 - Opposition raises enforcement, management costs.
 - Defeats conservation goals.
6. Absent consideration of current/future socio-economic factors.
- Compensation to parties who bear costs, is rare.
 - If the benefits as public goods are as large as claimed, then compensation to achieve the permanent goal.
7. Result is: Contentious MPA efforts.

EXPLORING THE EFFECTIVENESS OF MPA'S

8. Do not build on existing management institutions.
 - Top-down, counter to modern, incentive-based approaches.
 - Most effective fishery/ecological management, bottom up.
9. National legal obligations neglected.
 - Kermadec and impact on Maori/Crown agreements.
 - Potentially in conflict with Maori fishing rights and QMS.
 - Treaty of Waitangi.
 - 1992 Fishery Claims Settlement.
 - Unilateral no-take designation of 620,000 km², potential for fish migration. Other proposed MPAs.
 - Could undermine all QMS quotas.

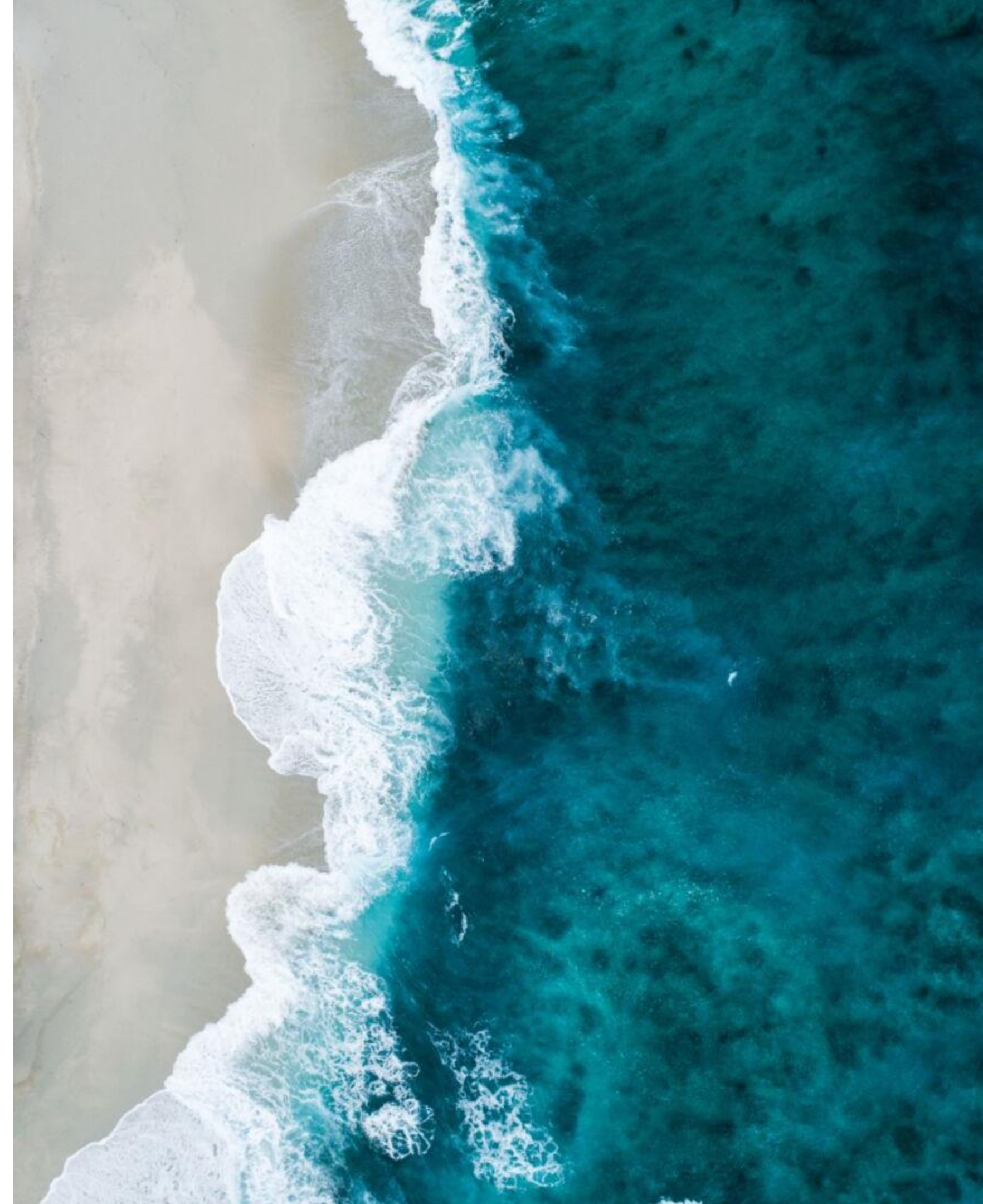
EXPLORING THE EFFECTIVENESS OF MPA'S

10. Lack trade-off, cost/benefit analysis.
 - Benefits difficult to measure.
 - Failure to measure → infinite value. Unlikely correct. No tradeoffs, ever?
 - Contingent valuation, time-value, hedonic, benefit transfer.
 - Cost measurement → value benefits must equal to achieve $B/C = 1$.
 - Uncertainty. Ecosystem response, socio-economic factors across time.
 - Discount long-term benefits and costs. Absent.
 - Provide a series of scenarios with different assumptions and B/C estimates.

OPPORTUNITY FOR NEW ZEALAND

INDIVIDUAL VESSEL QUOTAS WITHIN A TAC AS A TOOL TO MANAGE HABITAT IMPACTS.

- British Columbia bottom trawl fishery, incentive-based multispecies since 1997 (Wallace et al, 2015).
 - Non-traded species in 2012 joint between industry and ENGOs.
 - Built on existing tradable TACs and quota holders.
 - Added vessel, tradable quotas within an overall Industry TAC for benthic habitats—cold water sponges and corals.
 - Take advantage of knowledge held by fishers.
 - Measureable milestones.
 - Flexible responses.
 - Agreement on boundary definition.
 - High-risk areas identified.
 - On-board and dock monitoring.
 - Self-enforcing.
 - Habitat damage at lowest levels of 17 years, below targets.



- Reimer and Haynie (2018), Alaska Steller Sea Lion enclosures and TACs.
 - Flexibility leads to reduced average compliance costs.
 - Heterogeneous vessel impacts, some made worse off.
 - Compensation seemingly would be appropriate.

- Holland (2018) describes other bycatch, ecosystem protection.
 - Around existing TAC/ITQs.
 - Tradable bycatch ITQs.
 - Risk pools of pooled quota.

OPPORTUNITY FOR NEW ZEALAND



- Build on the existing QMS system to realize its combined potential.
 - 100% of marine environment managed sustainably.
 - Direct involvement of QMS participants.
 - Incentives differ from imposed, top-down management.
- Worldwide trend of incentive-based management.
 - TAC to control harvest and catch shares as use right or privilege.
 - More effective than top-down (Costello, et al 2008 *Science*).
 - Isaksen, Richter (2019) identify characteristics that are most effective.
- Ecosystem and Fishery Conservation.

OPPORTUNITY FOR NEW ZEALAND

- QMS: Among most effective worldwide (Pitcher, et al 2009).
 - Stocks above levels set down in law.
 - Quota has value, exceeds that of US and Canada.
- Changes incentives, long-term commitments, designates who can fish, bargain to change group behavior.
- Quota holders reduce damage to sensitive ecosystems.
- Approximately 30% of New Zealand's EEZ designated as Benthic Protected Areas, no bottom trawling or dredging (Holland 2018).
- Joint efforts of fishers and government to develop Precision Seafood Harvesting technology to lower bycatch.
- Such collaboration rare in command-and-control effort controls.

OPPORTUNITY FOR NEW ZEALAND

- Kermadec: Alternative template for conservation.
 - Restart with meaningful inclusion of Maori, other QMS quota holders, and additional parties:
 - Decision whether or not to go forward, how, and when.
 - Define objectives in measurable ways.
 - Planning: Area, evaluation, contingent updates, timelines.
 - No-take areas?
 - Cost/benefit analysis.
 - Potential compensation.
 - Build on QMS.

OPPORTUNITY FOR NEW ZEALAND

- Define a TAC for key ecosystem attributes, boundaries, timelines.
 - Distribute shares among QMS holders.
 - Tradable, long-term, secure.
 - Fisheries could be curtailed if TAC exceeded in any year.
- Fishers innovate to respond to meet TAC.
- Those who respond easily, trade quota to those that cannot.
- Create risk pools.
- Incentives to collaborate in ecosystem protection as part of marine fishery controls.
- Creates a constituency for long-term political support.
- Maintain existing obligations to Maori.
- Maintain the QMS quota system values and incentives.
- A less contentious, more durable, and more effective long-term approach that other countries can turn to.

OPPORTUNITY FOR NEW ZEALAND

Need for Alternative Approaches

- Luiz A. Rocha, California Academy of Sciences, New York Times editorial March 20, 2018, Bigger Is Not Better for Ocean Conservation
- Argues that countries should create MPAs only where they can make a real difference in safeguarding marine life.
- Requires specific objectives and measurement.
- Critical of the “just add water” approach to marine protection.
- Calls for more science-based action, but need social science and local involvement and institutions for conservation success.

Conclusion

- General concern about protection of the marine environment—fisheries and ecosystems.
- MPAs are unlikely to be the most effective approach.
 - Lack measurable objectives. Causality.
 - Top down.
 - Consideration of tradeoffs.
 - Lack meaningful coordination with indigenous and other local parties.
 - Key for success—Ostrom. Proportionate distribution of benefits and costs, trust, collaboration.
 - Key for success across time and political cycles.
- Build upon incentive-based systems, QMS.