

# Conservation of Ocean Ecosystem Resources: Use of Strong User Rights and Markets rather than Centralized Marine Protected Areas (MPAs)

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Conference on Advantages and Disadvantages of Strong User Rights in Fisheries

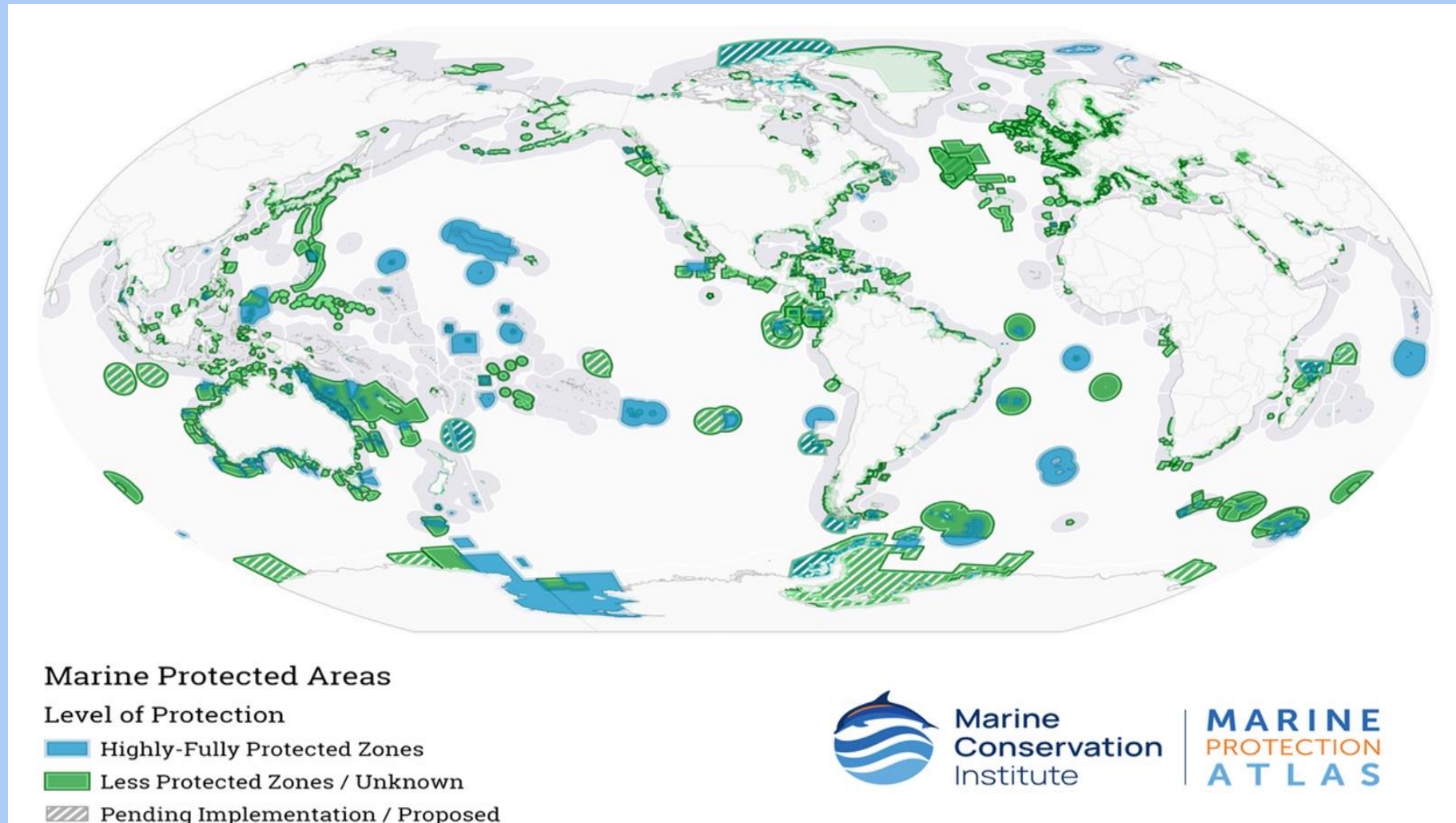
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# Background

- 7.6% of world oceans, up to 30% in 2030, are to protect at-risk ecosystems/species.
- Range from small MPAs to large, remote. Area > Europe, Africa, and Asia combined.
- International conventions, NGOs, politicians, agencies, consultants, academics.
- Centralized Pigouvian-style mandates.

# Marine Protected Areas



# Marine Protected Areas (MPAs)

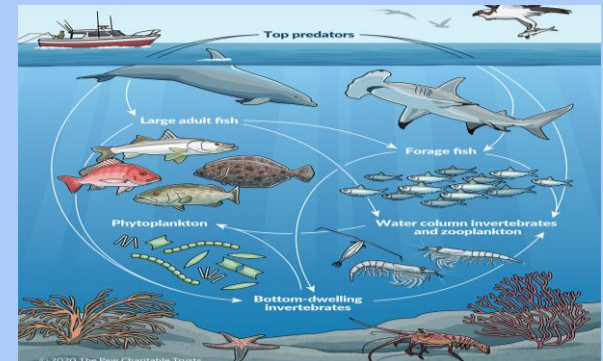
## *What is the Problem?*

- Limited user involvement in designation and definition.
- Restrictions on entry and use, no-take.
- No or incorrect (small) compensation.
- No *ex ante* or *ex post* benefit/cost analyses of trade offs or periodic readjustments.
- Imbalance in benefit/cost distributions.
- Undermine successful collective action (Ostrom 1990, Cox et al 2010).
- MPAs too extensive, restrictive, and inflexible.
- Very controversial. Lack political support.
- Lack use of successful RBM.
- Unlikely to meet conservation goals.



# Ocean Ecosystem Protection via User Rights

- MPAs threaten existing/potential users. Made worse off. Not Pareto improving.
- Ecological/endangered species increasingly valuable. Potential assets. Monetize.
- Alternative:
- Assign ownership.
- Cooperation from those who adjust/bear costs.
- Ecosystem Markets.
- Bargaining leads MPA advocates to confront opportunity costs.
- Weigh marginal costs/benefits in MPA designation/design/operation.
- Bargaining leads users to consider biological objectives.
- Adjustment via exchange.
- Costs and benefits uniformly distributed.
- Conservation becomes a joint effort.



# How: User Rights-Based Alternative for Ecosystem Protection

- Expand catch share systems.
  - Tradable quotas/non-target species: Coase (1960), Wallace, S., Turris, B., Driscoll, J., Bodtker, K., Mose, B., & Munro, G. (2015); Holland (2018); Reimer and Haynie (2018).
  - TURFS: Cancino et al (2007), Costello and Kaffine (2017), Holland (2018).
- Areas/fisheries with no existing catch shares but biological benefits.
  - Biological TAC, grandfather adjacent users, negotiate with NGOs/agencies.
- Vessel/fishing license buybacks (Squires 2010, Holland et al 2017).
  - Central California groundfish trawl fishery. Environmental Defense/Nature Conservancy.
  - 2022 WWF-Australia. Northern Great Barrier Reef area (100,000 km<sup>2</sup>).





# How: Rights-Based Alternative for Ecosystem Protection

- Areas of no current exploitation.
  - Map and auction for ecological benefits.
  - US offshore oil and gas leasing (Hendricks et al 1993, Mead 1994).
- Existing MPAs.
  - Reassess compensation to affected users.
  - Compensation: Share of public goods provided. Not adjustment costs.
  - Housing market example.
  - Approximate WTA in a market.
  - Advocates' WTP requirements: Adjust MPA design/area/restrictions.
- Market provides framework for species/ecosystem protection that is equitable/ incentive compatible.

# Road Map

- Overview of MPAs.
- Proponents.
  - Arguments.
  - Conventions.
- Problems.
  - No. Benefit/Cost Analysis. Trade-off Analysis. Program Review.
  - Disproportionate costs/users. Advocates/desired objectives at lower cost.
  - Do not draw on successful RBM.
- Results of the mismatch between benefits and costs.
  - Excessive MPAs.
  - Impose uncompensated welfare losses on users.
- Great Barrier Reef/Australian experience.
- Property Rights Alternative.





# Public Good Provision? Very Controversial. Why?



# Key Arguments

Marine Protected Areas (MPAs) are a flawed approach, relative to User Rights and Markets.

- Driven by natural science objectives.
- Neglect direct human impacts.
- Disproportionate costs and benefits.
- Violate Ostrom's (1990), Cox et al (2010) conditions for successful collective action.
- MPAs are too extensive, restrictive, and inflexible.
- They are economically inefficient to achieve conservation, relative to user rights and markets.
- Generate long-term political reaction, raise enforcement costs, limit benefits.

# MPA Advocates

Advocates achieve desired outcomes at relatively low cost.

- International NGOs/national politicians/agencies (US NOAA, USFWS).
- International Union for the Conservation of Nature (IUCN).
- The United Nations Framework Convention on Climate Change.
- 1992 UN Conference on Environment and Development (UNCED).
- Convention on Biological Diversity (CBD).
- 2002 World Summit on Sustainable Development (WSSD).
- 2017 United Nations Ocean Conference.
- Ecosystem-based management of fisheries (EBM).



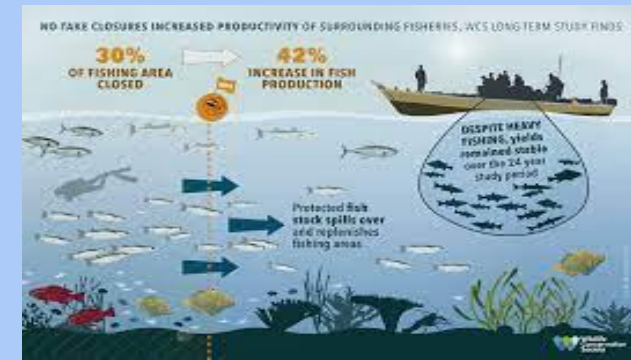
# MPA Advocates

- NOAA defines an MPA as: “a clearly defined geographical space, recognised, dedicated, and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.”
- Generalizations: Opening for mandates without specificity. Public Goods.
  - Advocates: Higher incomes, education, and more active politically.
  - Lobby national politicians/agencies.
  - Collective action: Advocates have a single objective.
  - Users more heterogeneous. Multiple objectives. Less effective.
  - Fishers—differences across vessels, equipment, species, location, commercial, sports.
  - Result: Natural science emphasis without human costs/trade offs.



# Current MPA Design/Implementation

- *Ex ante* and *ex post* benefit/cost analyses missing.
  - Claim: Broad public goods through ecosystem preservation.
  - Claim: Local benefits via spill-over stock improvements, tourism.
    - MPA objectives, response mechanisms vague.
    - Simulated benefits. Depend upon stocks, congestion, time, natural factors.
    - Global benefits are difficult to measure.
- Compensation is rare.
  - Small relative/asserted local/international gains.
  - Share of public goods provided. Not adjustment costs offsets.
- Restricted users worse off. MPAs  $\neq$  welfare improving.
- Conservation objective at risk.



# Empirical Evidence

- Lack rigorous program evaluation (Ferraro et al 2014).
- Santa Barbara channel MPA. No take for kelp response. Spiny lobster fishery.
  - Natural conditions likely more important.
  - Fishers search/shift species.
  - Bear costs, uncompensated.
- Great Barrier Reef Marine Reserve. 28% no take. Too large? Too restrictive?
  - Compensation contentious. A\$250 million.
  - Small relative to benefits provided. A\$56 billion.
  - Market trade would approximate WTA and WTP.
- Australia's MPA experiences in Fitzsimons and Wescott (2016).
  - 36% of Australia's waters.
  - Biological objectives, roles of IUCN, environmental NGO framing.
  - Controversies stall MPA expansion, fluctuating political support.
  - Fitzsimmons and Wescott (2016) evaluation: 30 authors, 1 industry.



# Australia's MPAs



# Key Arguments

- User rights alternative:
  - Individual or Group.
  - Target areas **assets**.
  - Coasean bargaining. Users/owners and MPA advocates.
    - Area and restrictions.
    - Marginal willingness-to-pay and marginal willingness-to-accept.
    - Flexible adjustments with new information.
  - Costs and benefits distributed more proportionately.
  - Contracts are incentive-compatible.
  - Type of property right depends on transaction costs.
  - Compare institutional alternatives. Trade offs.
  - MPAs more politically stable for the long-term, necessary conservation.

# Property Rights Improvements

- Property rights/markets: Joint ecosystem protection users and advocates.
- Can select cost-effect approaches.
- Bargaining avoids disproportionate costs/benefit distributions.
- Equate marginal costs and benefits.
- More effective conservation in the most promising areas, size, restrictions.
- Pareto improving.



# User Rights for Ecosystem Protection

