The Controversy over Marine Protected Areas

Science meets policy
Very Large Marine Protected Areas

- **Marine Conservation Institute**
- **MPATLAS.org**

1. **Marine Parks of the Glorieuses and Mayotte**
   - France, 2012, 2010
   - 110,000 km²

2. **Chagos Protected Area**
   - UK, 2010
   - 640,000 km²

3. **Great Barrier Reef Marine Park**
   - Australia, 1975
   - 345,400 km²

4. **Palau Marine Protected Area**
   - Palau
   - 500,000 km²

5. **New Caledonia Marine Protected Area**
   - New Caledonia
   - 1,369,000 km²

6. **Marianas Trench Marine National Monument**
   - USA, 2005
   - 246,608 km²

7. **Papahānaumokuākea Marine National Monument**
   - USA, 2006
   - 362,074 km²

8. **Pacific Remote Islands Marine National Monument**
   - USA, 2000, 2013
   - 1,270,000 km²

9. **Galapagos Marine Reserve**
   - Ecuador, 1998
   - 333,000 km²

10. **Motu Motiro Hiva Marine Park**
    - Chile, 2010
    - 150,000 km²

11. **South Georgia & South Sandwich Islands Marine Protected Area**
    - UK, 2010
    - 1,000,700 km²

12. **South Orkney Islands Southern Shelf MPA**
    - ICAMLR, 2019
    - 94,000 km²

13. **Northeast Atlantic High Seas Areas**
    - OSPAR, 2010
    - Crozet-Glénans: 145,420 km²
    - North of Azores: 93,568 km²

14. **Pelagos Marine Sanctuary**
    - France, Italy, Monaco, 2006
    - 87,192 km²

- MPAs greater than 75,000 km²
Chile plans world's biggest marine park to protect Easter Island fish stocks
Talk outline

• Part 1 – concepts from political theory

• Part 2 – contextualising the science

• Part 3 – the evidence (up to 2010)

• Part 4 – roles of advocacy, evidence, and pragmatism in the planning of English Marine Conservation Zones
Key questions

- What factors have driven policy on MPAs?
- What values lie behind the science?
- How robust is the evidence base for MPA ecological effects?
- How was science used in the planning of Marine Conservation Zones?
- How should scientists engage with the policy process?
Part 1 - Political theory

How can we explain policy change?

• Opposing viewpoints on humans’ relationship with the environment, summed up as Nature Protectionists (NPs) vs Social Conservationists (SCs) (Miller et al 2011)

• Interaction of actors/ institutions in policy networks:
  o Epistemic communities (Haas 1989)
  o Advocacy coalitions (Sabatier 1988)
<table>
<thead>
<tr>
<th>Characteristics of policy networks</th>
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<tbody>
<tr>
<td><strong>Membership</strong></td>
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<tr>
<td>Scientists/experts, and senior bureaucrats</td>
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<td><strong>What binds members together?</strong></td>
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<td><strong>Decision-making model</strong></td>
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<td><strong>Science-policy model</strong></td>
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<td><strong>How does policy change occur?</strong></td>
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<td><strong>Influence of the scientist</strong></td>
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<td><strong>Examples</strong></td>
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Part 2 – contextualising the science

Most highly cited studies on MPAs.
Paper citation networks of the top 20 papers from searches:

a. Marine and fisher (threshold 100 citations).

b. Marine and conservation (threshold 50 citations).

c. Marine and management (threshold 86 citations).

d. Marine and policy (threshold 6 citations).

The node size denotes relative number of citations that a paper has in its respective database. Shaded nodes indicate papers that are also present from the original search (i.e. marine and ‘marine reserve’).
Coauthor network of the most productive authors in MPA science from 1970 to 2010 \((n = 48)\)
Authors are coloured red according to whether the scientist was a signatory to the North American, European, and Australian consensus statements on MRs. (NCEAS 2001; Roberts 2007a; AMSA 2008)
Part 3 – The evidence (up to 2010)
• As of 2010, around 170 MPAs had been studied.

• Eighty-seven percent of the empirical literature had focused on effects of MRs.

• Twenty-five percent of the empirical literature had come from the 10 MRs.

• Reef-type habitats had been most studied with only 16 % of studies being carried out over soft habitats. no-trawl areas.
Evidence post-2010 (UK relevant)

Ecological recovery
• Recovery of a temperate reef assemblage (Sheehan et al 2013)
• Increased recruitment of scallops (Howarth et al 2015)

Risk mitigation
• Fishery footprints (Jennings et al 2012)

Fisheries benefits???
• Reserves in jurisdictions with well-managed fisheries are unlikely to provide a net spillover benefit (Buxton et al 2014)
• Though are all UK fisheries well-managed?
Part 4 – planning of English MCZs

Undertook a desk-based study supplemented by key-informant interviews in an attempt to explain how MPA policy in England developed, with a focus on the Marine Act and planning of MCZs.
Advocacy role of scientists?

• Unsubstantiated claims made on the benefits of marine reserve networks in documents that shaped policy (e.g. Turning the Tide, 2004, p 205, para 8.96)

• Positive economic assessments of £16.8 million made on broad assumptions (Defra 2008)

• Advocacy implicit in high-level ecological guidance, and calls for an ecologically coherent MPA network?

• Science Advisory Panel composed of mainly marine ecologists
Role of discourse and policy networks
NPs vs SCs

<table>
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<tr>
<th>Nature protectionists</th>
<th>Social conservationists</th>
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<tr>
<td>Objectives of MCZs</td>
<td>To systematically protect representative habitats and species through networks</td>
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<tr>
<td>Main criteria for MCZ designation</td>
<td>To protect habitats and species vulnerable to fishing</td>
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<tr>
<td>Approach</td>
<td>Representative habitats</td>
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<tr>
<td>Governance process to set MCZ objectives</td>
<td>Systematic conservation planning</td>
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<tr>
<td>Attitude towards science-policy</td>
<td>Top-down decision making with some input from stakeholders</td>
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<td>Attitude towards science and the precautionary approach</td>
<td>Natural science criteria to lead process; socioeconomic evidence to choose between similar sites</td>
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<tr>
<td>Attitude towards conservation</td>
<td>Decisions based on 'best available science'. Burden of proof on the fishing industry to show that activities don’t cause damage to a conservation feature</td>
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<td>Scale</td>
<td>Ecosystem preservation necessary for sustainable use</td>
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<tr>
<td>Time frame for decision</td>
<td>National/regional</td>
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<tr>
<td>Narratives from scientific literature</td>
<td>Relatively short</td>
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<td>Criticisms from opposing discourse</td>
<td>Preservationist, inhumane, ignores the needs of local people</td>
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- Opposing views on conservation baselines
- Contrasting attitudes to risk management (including planning of network, and use of evidence to inform management)
- Initial narratives polarised: SCs criticised as short-termist, and NPs as eco-fascists.
Realities of planning and controversies up to 2012

• Data deficiencies

• Time-scales to recommend sites

• Adequacy of consultations

• Equity
Where next?

• 27 MCZs designated in November 2013.

• 7 offshore areas being considered for designation in 2015.

• Management still being decided.
Individual chapters can be downloaded from https://newcastle.academia.edu/AlexCaveen

And thanks for listening