

Chapter 2

The Rise and Rise of the Marine Reserves 'Bandwagon'

2.1 Introduction

In this chapter, we investigate how and why the nature protectionist (NP) paradigm of marine reserves (MRs) became so prominent in the scientific literature during the 1990s and 2000s. The fact that the NP paradigm of MRs became dominant is demonstrated in Chap. 3 and is not in much dispute: What is less clear is how and why it did so. We argue that the key to its extraordinary rise in popularity is threefold: (1) it benefitted from a widespread perception that conventional fisheries management (CFM) had failed to prevent declines in fish stocks and in marine biodiversity around the world, and that a radical new approach was needed; (2) it owed much of its momentum to an elite group of marine ecologists who formed themselves into an epistemic community dedicated to the idea of MRs; and (3) it was taken up with enthusiasm by the international environmental movement who saw it as a worthy cause to prioritise and developed an advocacy coalition to promote it. We have already discussed the first factor in Chap. 1. In the present chapter, we discuss the second and third factors. On the third factor, we note that the pro-MR advocacy coalition was belatedly challenged by an anti-MR advocacy coalition, which has eventually succeeded in slowing down the progress of the MR bandwagon.

2.2 Policy Networks

The second factor (epistemic community—EpC) and the third factor (advocacy coalition—AC) are both examples of policy networks. Policy networks are aggregations of people who interact because of their common adherence to a set of views that impels them to seek policy change. Table 2.1 lists the characteristics which differentiate the EpC policy network from the AC policy network. We shall examine these characteristics in detail in the next two sections.

Table 2.1 Characteristics of the two networks

	Epistemic community	Advocacy coalition
Membership	Scientists/experts, and senior bureaucrats	Scientists, bureaucrats, elected officials, lobbyists, grassroots activists, industry, wider civil society
What binds members together?	Common body of knowledge	Principled beliefs
Decision-making model	Consensus	Compromise
Science-policy model	Linear model	Deliberative model
How does policy change occur?	Integration of experts of the international regime into their respective national governments, holding those governments to account	Policy change reflects the influence of competing advocacy coalitions, and unless one coalition is overwhelmingly dominant, a policy compromise usually results
Influence of the scientist	Scientists are central to policy change; they analyse the problem and set the policy agenda	Scientists align themselves with their preferred interest groups and offer their expertise in policy debate
Examples	Mediterranean pollution control; control of chlorofluorocarbons (CFCs)	MPAs in California; tropical deforestation

2.2.1 *Epistemic Community*

According to Sundstrom (2000), the concept of epistemic community (EpC) is a way of making sense of the fact that hard-to-grasp decisions may move actual, although not necessarily formal, power from elected representatives to elites acquainted with the subject in a transnational setting. Peter Haas (1989) first coined the term ‘epistemic community’ to describe the emergence of some international environmental regimes. An important feature of such regimes, in addition to their embodiment of rules and norms (Krasner 1983), is that they facilitate international learning and produce convergent state policies (Haas 1989). The notion of an EpC has been used to explain the coordinated response of states to many collective action problems at both the regional level (e.g. pollution control in the Mediterranean) and the global level (e.g. the regulation of CFCs) (Haas 1989, 1991). On the latter, Haas convincingly emphasised the role of scientific learning in the success of the Montreal Protocol, though critics like Sarewitz (2004) and Pielke (2007) have suggested that the ozone story was less of controversy resolved by science than of positive feedback from convergent scientific, political, diplomatic, and technological trends (including the fact that the main commercial interest—DuPont—eventually aligned itself with the main objective of the policy, that of phasing out CFCs, after it had developed CFC alternatives).

At the heart of the EpC is a group of experts who form around consensual knowledge, and share a policy enterprise (the action that needs to be taken to resolve an issue; e.g. the regulation of a hazardous chemical). The EpC is a useful theory for explaining policy responses to highly technical international problems where official decision-makers are unfamiliar with the technical details, and thereby unable to define state interests and develop viable solutions (Haas 1992b). This opens the door for a group of motivated individuals who through their expert understanding of the problem area, technical credentials, and common policy enterprise can offer potential solutions. The members of the EpC who are initially responsible for bringing states together to negotiate the international regime often have sufficient influence within their own governments to introduce regulation to their own domestic policy agenda (Haas 1989). The EpC is a good demonstration of the so-called 'linear model' of science-policy interaction, in that science is its fundamental bed-rock, bringing to light new environmental problems and helping decision-makers to grasp their underlying causes; EpCs set the policy agenda. It is also a top-down model—the EpC is an elite group of scientists who tell truth to government on the problem that exists and the measures needed to overcome it. However, EpCs have had mixed success in practice: For example, while the Montreal Protocol has been viewed by some as very successful in limiting CFC emissions, the Kyoto Protocol has failed to curb global carbon dioxide (CO₂) emissions.

Evidence of the existence of an EpC committed to the cause of MRs comes from the fact that in the processes of getting provisions for MRs written into international regimes and agreements, leading roles were taken by a group of like-minded individuals in the United Nations Environment Programme (UNEP), Food and Agriculture Organisation (FAO), International Union for Conservation of Nature (IUCN), marine scientists, and MR planners and managers (Kelleher and Kenchington 1991; Salm et al. 2000; IUCN 2008). This community was united in its recognition of the MR as the best approach to protect marine biodiversity, and aimed at establishing MR networks to systematically protect representative habitats across each of the major marine provinces (OSPAR 2003b; Toropova et al. 2010). The policy recommendations of this EpC have been extensive: a number of guidelines and best practices have been provided by academics, ENGOs, research consultancies, and individual governments for the planning, development, management and evaluation of such MPA networks (Pomeroy et al. 2004).

Until 1985, only about 430 MPAs had been created, mainly covering relatively small coastal areas (De Silva et al. 1986; Bjorklund 1974), and few of these were MRs, mostly established for the purpose of scientific research—for example, Leigh Island, New Zealand (1975), Las Cruces, Chile (1982), and Apo Island, Philippines (1982). However, during the 1990s, the EpC became increasingly influential on the direction of international marine policy, and in 1992 the IUCN's Fourth World Congress on National Parks recommended that a global system of MPAs representing all major biogeographic types and ecosystems should be established. Later that year, the UN's Earth Summit in Rio called on coastal states to maintain biological diversity and productivity of marine species and habitats through the establishment and management of protected areas through the CBD. The ratification of the

CBD in 1994 placed a duty on signatory states to encourage 'projects that promote the conservation and sustainable use of biological diversity of coastal and marine resources under threat' (CBD 1994: 34(k)) implying the establishment of MPAs. However, explicit provisions for MPAs were not made in the CBD until 2006, when a target was adopted that stated that 10% of each marine and coastal ecological region should be conserved in MPAs by 2010. In 1995, the IUCN elaborated the idea of creating a representative system of MPAs for each of the world's major coastal biogeographic regions, identifying priorities for both regional and national authorities for establishing new MPAs or for improving management in those which already existed but were poorly managed or not managed at all (Kelleher et al. 1995). In 2003, the 12 coastal European nations of the Oslo Paris (OSPAR) Commission agreed to set up an 'ecologically coherent' network of MPAs in the North-east Atlantic by 2010, though no definition of ecological coherence was provided (Ardron 2008a).

By 1995 there were, globally, more than 1300 subtidal MPAs with a median size of 1548 ha (Kelleher et al. 1995). Towards the late 1990s and early 2000s, the norms and worldview of the EpC became institutionalised in high level policy guidance and international agreements such as the World Summit on Sustainable Development (WSSD) in 2002. In addition to their role in conserving marine biodiversity, MPAs were becoming increasingly recognised as a way to help rebuild the productivity of the oceans (Kelleher 1999). The policy enterprise of the EpC set the precedent for a pattern of decision-making that is largely top-down, with conservation goals for the planning area decided by experts. Some scholars argue that this has led to the dominance of the worldview of marine ecologists in the planning process (Christie 2011). Blount and Pitchon (2007) pointed out that in 1995, the World Bank, the Great Barrier Reef Marine Protected Area (GBRMPA), and the IUCN published a four-volume work on a global representative system of MPAs; in 1999, the University of Washington initiated *MPA News*, a monthly newsletter reporting developments in the theory and practice of MPAs worldwide; in 2001, the US Natural Research Council published a comprehensive history of MPAs; and in 2000, the US government established a national MPA centre to maintain a website database and library of publications on MPAs. North America Marine Protected Area Network (NAMPAN) was founded, and the first International Marine Protected Areas Congress was held in Geelong, Victoria, Australia in 2005.

Christie (2011, p. 177) stated that the 'MPA advocacy epistemic community has become remarkably influential and created a well-defined policy agenda which has diffused through influential conservation, resource management and donor institutions (and some government institutions)'. An illustration of the rising importance of the MPA EpC was the appointment of Dr Jane Lubchenco—an MR enthusiast—to be head of the US National Oceanographic and Atmospheric Administration (NOAA). As members of the MPA, EpC became integrated into advisory committees in their own governments, the domestic policies of these countries began to reflect the policies of the initial group of experts, for example through designing networks of MPAs to conserve nature by adopting ecological criteria (Airame et al. 2003; Roberts et al. 2003a, b). This was exemplified in England through the

adoption of Natural England's (England's statutory conservation agency) Ecological Network Guidance (ENG) (Ashworth et al. 2010; see Chap. 6). According to Jones (2012, p. 249), the debate had moved on from 'whether MPAs are needed to how many MPAs are required, where they should be and how to design MPA networks'. By 2013 there were more than 10,000 MPAs in existence worldwide (Spalding et al. 2013).

However, behind the scientific credentials of the EpC's case for MRs to protect marine biodiversity lie several normative roots (Christie 2011). One normative root is the moral imperative of protecting species for their intrinsic value, an imperative that glossed over the trade-off between the protection of biodiversity and maintaining or increasing food supplies from the sea (Peterson and Lipcius 2003; Brander 2010). There were some divisions of opinion between scientists on the normative issue of the intrinsic value of biodiversity, and a significant fraction of the scientific community began to frame the empirical debate around what MRs could achieve for fisheries (Roberts 1997; NCEAS 2001), with the emergence of the American consensus statement on the fisheries benefits of MRs published in 2001 (NCEAS 2001). Another normative root was the scientists' understanding of how concepts such as biodiversity, ecosystem resilience and ecosystem productivity should be interpreted, which raised the questions of what value an ecosystem state has over another; who/what benefits from protecting an ecosystem in a certain state by imposing an MPA on it; and how we are to calculate the value of ecosystem's goods and services. A further source of division within the EpC opened up over the scientific justification of percentage targets for MRs based on the findings of abstract modelling studies. Several researchers tried to prove through modelling exercises that 10–50 % (modal value of 30 %) of the oceans should be designated as MRs to sustain fisheries. Roberts claimed that 'The consensus of scientists is that 30 % of our oceans should be dedicated fishing exclusion zones' (Hastings 2009). However, Agardy et al. (2003) pointed out that this 'rule of thumb' originated from modelling studies that were principally focused on tropical coral reefs (Bohnsack et al. 2000), which did not offer much support to the scientific case for MRs as a preferred tool in the management of temperate marine resources. Jones (2006, p. 144) alluded to further divisions between scientists over the effectiveness of MRs in delivering fish stock protection, and concluded that 'the consensus on the need for NTZs may actually be confined to quite a narrow constituency'. It may be, therefore, that while MR advocates have aspired to form an EpC, they are more aptly described as an AC, using science to justify their differing value preferences.

2.2.2 *Advocacy Coalitions*

Epistemic communities are successful when their core policy enterprise remains unchallenged at all levels of government and little significant opposition within the scientific community exists to refute their causal and normative assumptions. They are less successful where the problem area is more opaque in its causal underpinnings

or where irreconcilable differences exist in actors' fundamental normative beliefs. In such cases, the AC (Sabatier 1988; Keck and Sikkink 1998)¹ is likely to be more effective (Sabatier 1998; Weible and Sabatier 2005). Unlike EpCs, ACs are not limited to 'knowledge experts' (i.e. academics and public servants), but also include non-governmental organisations (NGOs), think tanks, journalists, celebrities and members of civil society. Whereas the norms of the EpC manifest themselves in a 'regime' that tries to impose its rules and regulations on its members, the norms of the AC are manifested in a less formal 'cluster' of people with a common cause. Nevertheless, actors belonging to the AC are bound together by common values, extensive exchanges of information and services, and a shared discourse (Stone 2002), and the coordinated action of all these actors can be a powerful stimulus to policy change.

The origin of the MR advocacy coalition can be traced back to the late 1970s when Bill Ballantine (widely regarded as the founding father of marine reserves) campaigned for several years to establish New Zealand's first MR at Leigh (see Table 3.1) and continued to lobby the New Zealand government until more were established. The New Zealand experience is often cited by advocates of MRs as the ideal to be achieved and has captured the attention of high profile journalists (e.g. Clover 2004). The campaign efforts of this AC also became more transnational in scope. For instance, in the late 1990s, there was a growing advocacy literature for MRs from scientists (e.g. Roberts 1997; Lauck et al. 1998; see Sect. 2.3.4), including Jane Lubchenco (later head of NOAA) who in 1997 called for the protection of 20% of the ocean as no-fishing zones by 2020. In 1998, the US Marine Conservation Biology Institute (MCBI) issued *Troubled Waters: A Call for Action*, a statement signed by 1605 scientists across the globe bringing to the world's attention the damage being caused to the oceans. One of its five recommendations was to increase the number and effectiveness of MRs so that 20% of EEZs and the high seas were protected from threats by the year 2020 (restating Lubchenco's plea 1 year previously). Another recommendation was to restrict or stop fishing methods that undermined sustainability by harming the habitats of economically valuable marine species and the species they used for food and shelter. This statement coincided with a highly influential research paper funded by the MCBI that documented the global impact of bottom trawling on seabed habitats (Watling and Norse 1998).

Another significant element of the MR advocacy coalition during the later 2000s was the popularisation of the MR idea within wider society, and the key role that scientists took in this popularisation. For example, the marine conservation scientist Callum Roberts devoted a chapter to MRs in his highly influential² book *The Unnatural History of the Sea*, in which he argued that marine reserves must be

¹ The term 'advocacy coalition' has been used by Sabatier (1988) and other authors to explain the actions of advocacy networks operating solely at the domestic level. However, we use the term to explain the actions of international advocacy groups that are named elsewhere as 'transnational advocacy networks' (TANs; Keck and Sikkink 1998).

² An illustration of the book's influence is that it was mentioned during the House of Lords debates on the UK Marine and Coastal Access Act.

extensive, covering between 20 and 40 per cent of the sea, in order to sustain ecological processes and services—like fisheries—that are vital to humanity’ (Roberts 2007b, p. 382). The MCBI along with the Pew environmental group in 2006 and 2009 persuaded President George Bush Jr. to establish three large MRs in the tropical Pacific Ocean. The Pew Trust also championed the MR protection of the Chagos archipelago (for which the Blue Marine Foundation³, a UK-based environmental group, secured financing for the first 5 years; Roberts 2012), Australia’s Coral Sea, and New Zealand’s Kermadec Islands.

Another difference between EpC and AC is that there may be several ACs within the policy community competing to get their voices recognised by government, and policy change may be a result of shifts in power between competing ACs (Schlager 1995). The relationship between knowledge and power in such an AC configuration is an example of ‘interest group pluralism’ whereby scientists best serve society by aligning themselves with their favoured faction or interest group, offering their expertise as an asset in political engagement (Stone 2002; Pielke 2007). Evidence of the existence of one AC *for* MRs, and another AC *against* MRs, can be found at the international level. The pro-MR AC exists in the highly coordinated network that has developed within the global environmental movement (e.g. IUCN, World Wildlife Fund—WWF, Pew Trust). It has had especial impact through the Pew Environmental Trust’s global ocean legacy scheme which aims to establish a worldwide system of very large (300,000 km²) MRs, four of which have now been established. Another powerful influence on framing MPA policy debates is the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO), which has run a campaign for MRs, producing a series of educational booklets showing their positive ecological effects (PISCO 2011). Hilborn et al. (2004, p. 198) referred to this pro-MR advocacy coalition as ‘Globally...a wave of environmental groups, politicians and ecologists pushing for the large-scale implementation of MPAs, with many calls for protecting 20–30% of the oceans’.

Pajaro et al. (2010) described the pro-MR AC as a transnational advocacy network (TAN), which originated in the 1960s when many social networks which shared common ideas about the deficiencies of society were formed to lobby policymakers. Examples of TANs that espouse the MR cause include the IUCN, the Global Coral Reef Monitoring Network, and the International Coral Reef Action Network. ‘TANs have a tendency to be dominated by international NGOs with established ties to the UN system and thus tend to have better access to resources for networking and lobbying when compared to national or local MPA organisations’ (Pajaro et al. 2010, p. 948).

The anti-MR AC exists in the more recent network formed by the global fishing industry manifested, for example, in the International Coalition of Fisheries Associations which assembled in November 2007 to identify and address issues of common interest in international fisheries and called on their governments to recognise the limitation of MRs as a fish stock protection measure. This challenging anti-MR AC reflected growing scepticism among some scientists regarding the

³ This group was initially conceived by the people who were behind the film *The End of the Line*.

value of MRs for fisheries (Hilborn et al. 2004; Kaiser 2005; Jones 2007). Worries about advocacy for MRs highlighted six concerns: (1) that MRs would not meet their objectives unless scientists had a good understanding of the local ecological and socio-economic context (Christie 2004); (2) that the assumption that MRs would bring more benefits than MPAs made stakeholders suspicious that scientists had normative motivations for establishing them (Jones 2002; Agardy et al. 2003); (3) that claims for MRs may be based on overgeneralised science regarding their fisheries effects (Hilborn et al. 2004; Kaiser 2005); (4) that claims for MRs may not be backed by robust empirical evidence (Willis et al. 2003a); (5) that alternative management options may be more appropriate to achieve certain objectives (Steele and Hoagland 2004; McClanahan 2011; Jones 2007); and (6) that targets for percentages of MRs in global oceans were counterproductive, focusing too heavily on means (percentage of area covered by MPAs) rather than ends (improved conservation outcomes) (Pressey 2013).

The pro- and anti-MR AC framework has been used to explain the decision-making process during the establishment of a network of MRs in California (Weible 2007)⁴. In England, both pro- and anti-MR ACs have had influence on government during the planning of the MCZ network (see Chap. 6). The pro-MR AC was represented by environmentalists (including the Marine Conservation Society—MCS, the Marine Network of Friends of the Earth Local Groups (Marinet), the Wildlife Trusts, WWF, Royal Society for the Protection of Birds (RSPB), Natural England (NE), and committed scientists), while the anti-MR AC was represented by the fishing industry, centred mainly on the MPA Fishing Coalition (MPAC), headed by Dr Stephen Lockwood, an ex-CEFAS (Centre for Environment, Fisheries and Aquaculture Science) fisheries scientist. From a science-policy perspective, the pro-MR AC emphasised the scientific credentials of MRs, while the anti-MR AC criticised the policy recommendations of the environmentalists, pointing to the adverse ecological impacts and socioeconomic costs of the displacement of fishing effort after an MR is established (see Chap. 6). In both ACs, science was viewed by their proponents as a resource for enhancing their ability to advocate, bargain, and negotiate in pursuit of their special interests.

⁴ It is important to state that the words 'pro-MR' and 'anti-MR' are shorthand terms for, respectively, 'favouring widespread networks of no-take MPAs across the oceans' (pro-MR); and 'opposing the unselective establishment of MRs' (anti-MR). The anti-MR AC is not opposed to all MRs, but only to those that have insufficient scientific and/or socio-economic justification. Indeed, many members of the anti-MR AC are enthusiastic supporters of MRs in the right places, and would be classified as 'social conservationists' (see Chap. 1). As we will see in Chap. 5, the anti-MR coalition in the English case fully recognised the value of MPAs in protecting vulnerable species and seabed features: 'The issue is not whether there should or should not be MPAs. It is about a rational, fair and balanced process in their establishment...against a sometimes irrational push by naive enthusiasts, who see MPAs as an all-embracing solution for overfishing—and all the other ills of the marine environment' (*Fishing News* 28.2.14, p. 5).

2.3 Conclusion

This chapter has traced the progress of the MR ‘bandwagon’, showing how it developed its overwhelming momentum through the efforts of marine ecologists forming themselves into an EpC committed to the establishment of a global network of MRs, and exerting considerable pressure on policy makers. The MR cause was also taken up enthusiastically by international ENGOs and other environmentalists who formed an AC to promote it. However, the opponents of MRs belatedly responded to these pro-MR networks and established an anti-MR AC to challenge what appeared to be an inexorable move to impose MRs across the world’s oceans, and this challenge seems to have slowed down the MR juggernaut, at least temporarily.

The Controversy over Marine Protected Areas

Science meets Policy

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