

Challenges to achieving greater and fairer stakeholder involvement in marine spatial planning as illustrated by the Lyme Bay scallop dredging closure

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ABSTRACT

The statutory closure of 60 square miles of Lyme Bay to towed fishing gear in 2008 marked the culmination of nearly 20 years of discussions between conservationists and fishermen. Prior to the 2008 decision, voluntary, bottom-up led agreements resulted in inadequate protection of the bay's biological resources and significant erosion of social capital. Lyme Bay provides an excellent case study of the challenges likely to be posed by wider stakeholder involvement imposed under the new Marine Act. This paper examines a broad range of perspectives in relation to the Lyme Bay consultation and subsequent closure, via semi-structured interviews with 25 representatives of different interest groups in Lyme Bay. All respondents acknowledged significant flaws in the process leading to the Lyme Bay decision and felt the Marine Act was well placed to tackle many of these criticisms. However, while the Marine Act should provide a framework for resolving conflicts, it will not prevent them. Success will depend on collaboration between different marine interests, and also on the government acknowledging that outcomes are unlikely to favour everyone in the short-term and that top-down interventions are inevitable.

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1. Introduction

The last 50 years have witnessed a significant change in attitude towards terrestrial conservation. A proliferation of national and international treaties has resulted in over 12% of the world's terrestrial area designated as protected areas [1]. In addition, during the latter part of this period the collaborative management paradigm has dominated terrestrial conservation policy-making and practice. By contrast the world's oceans are poorly protected, with only 1.17% of the marine area designated as marine protected areas (MPAs) [2]. Similarly a truly participative approach to marine management and planning has been largely absent, with fishermen and their representatives enjoying a position of significant power [3,4]. In the UK, institutions with a mandate to manage the maritime waters are largely composed of members with an active interest in the fishing industry. It is no surprise therefore that these organisations are often reluctant to make byelaws that serve against the welfare of their members [5,6].

More recently, though, the lobby for a fairer and more effective management of the oceans has intensified [3,7–11]. This is seemingly a consequence of three factors:

- greater awareness of the extent to which our marine habitats have become degraded [3,12–20], highlighting the failure of fishers and their regulators to protect them.

- the widening of interests in—and users of—the marine space [10], including the general public.
- increased governmental commitment to a wider stakeholder participation in marine decision-making [4,21].

The UK Marine and Coastal Access Act (2009)—hereafter referred to as the Marine Act—is a pioneering piece of legislation. It seeks, *inter alia*, to strengthen protection of the UK's marine environment via Marine Conservation Zones (MCZs), and, critically, sets out a process to ensure "stakeholders have a genuine opportunity to inform and influence the Government's decisions on sites to be designated and how they should be managed to achieve the conservation goals...[to include]... sea-users, environmental bodies and other interested parties".¹ While this is a welcome and timely piece of marine legislation, such a dramatic change in tide is unlikely to be accomplished without significant pain. The conflict that arose during the Lyme Bay scallop dredging consultation in 2007 and 2008 provided an excellent demonstration of the difficulties faced by marine legislators. While this episode pre-dates the Marine Act, decision-makers were certainly aware of its content and conscious of the need for a change in direction.

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¹ <http://www.defra.gov.uk/environment/biodiversity/marine/documents/guidance-note1.pdf>.

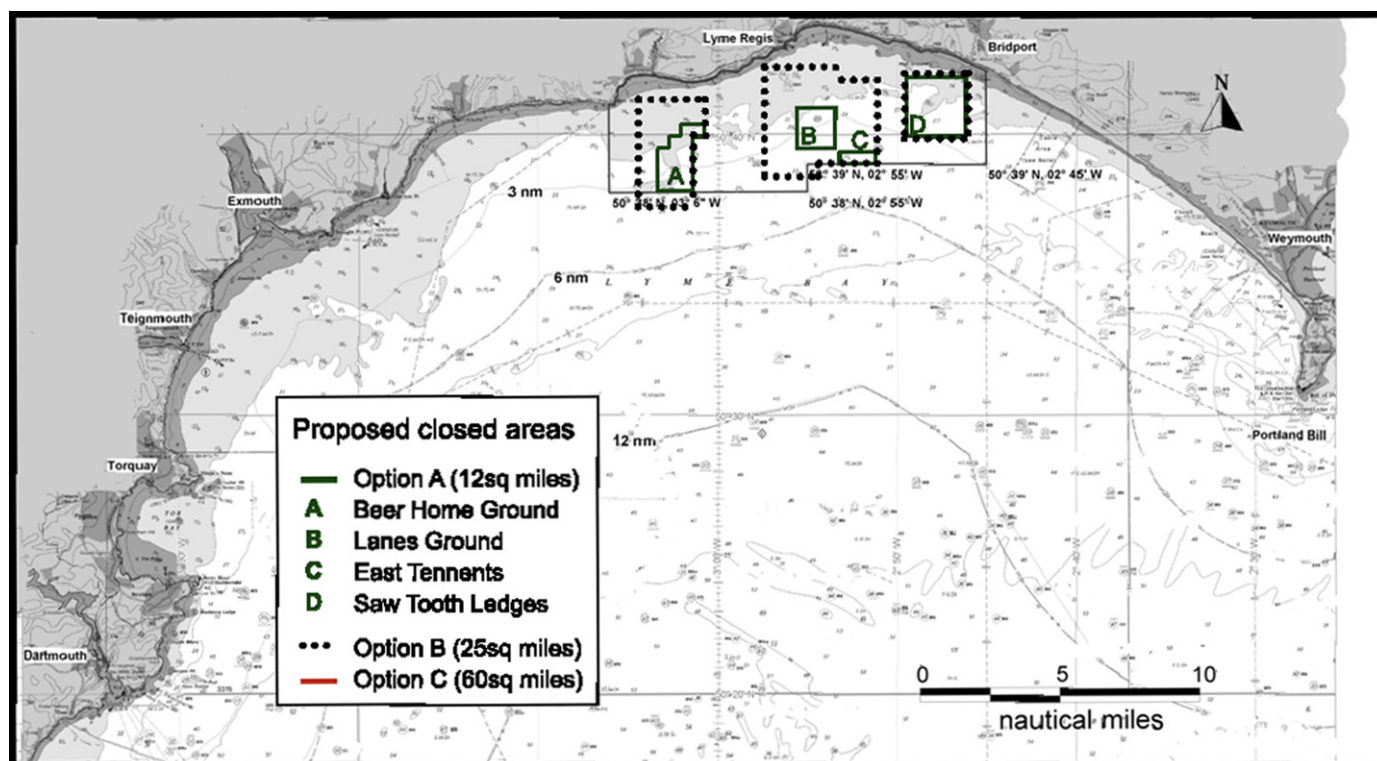


Fig. 1. Proposed closed area options.

Source: Defra (2007).

1.1. Lyme Bay

Lyme Bay, situated in the English Channel in South West England, is considered as one of England's top five most important areas for marine biodiversity [15], containing an extensive network of mudstone reefs. The iconic pink sea fan (*Eunicella verrucosa*), widespread across the bay, provided the legal basis for much of the dispute [22]. It is an important indicator species [23], vulnerable to the impacts of mobile gears [24,25], protected under the Wildlife and Countryside Act 1981 and included in the UK Biodiversity Action Plan. The marine resources of Lyme Bay offer significant social and economic capital in addition to its ecological value [4]. The bay supports a significant fishing industry. Demersal trawls and scallop dredges are among the most common types of fishing gear used. In 2005 £18.3 m of fish was landed in Brixham alone, of which 27% was scallops (Fishing News 24/11/06), an indeterminate but significant proportion of which was landed in Lyme Bay. A dramatic increase in scallop fishing effort has been noted in the last decade and this has been attributed to a combination of factors, including good recruitment; high market prices; increasing fuel prices; the refurbishment of West Bay port; and perhaps most significantly, a reduction in quotas for other species [24,26]. In addition Lyme Bay contains a number of sea angling clubs and dive charters, both known to contribute significantly to coastal economies [27,28].

Environmental campaign group, the Devon Wildlife Trust (DWT), together with Natural England² (NE), has been campaigning since 1991 for greater protection of the mudstone reefs in Lyme Bay. Reports from dive surveys, underwater photographs and video footage documented the detrimental impact of scallop dredging on the fragile reefs [15,29]. Initially, local fishermen collaborated and

cooperated with the environmental campaigners and agreed in 2001 to the voluntary closure to mobile gear of approximately 2 square miles at Lanes Ground and Sawtooth ledges (Fig. 1). However in 2006 greatly increased fishing effort put strain on the voluntary agreements, and DWT started to receive reports of infringements. This resulted in meetings among DWT, NE, the Sea Fisheries Committees³ (SFCs) and fishermen to discuss ways forward, but no mutually acceptable solutions were found. At a subsequent meeting in May 2006 among Defra, the SFCs, NE and the Wildlife Trusts (WTs) it was argued that the SFCs were not in a position to take action [29]. Feeling that there were few other options available to them, NE applied for a stop order under the Sea Fisheries Act 1967 to prohibit demersal fishing across an area of 60 square miles. In response the recently formed South West Inshore Scallop's Association put forward a compromise proposal to increase the number of voluntarily closed areas to four, increasing the protected area to approximately twelve square miles. This proposal was accepted by the then Fisheries Minister, Ben Bradshaw, under the condition that a full consultation be undertaken at a later date to explore other options. A consultation duly took place in September 2006 with three options presented (Table 1) [30].

In July 2008, Defra announced that the government had taken the decision to close the full 60 square miles to mobile fishing gear, creating one of the largest MPAs in the country [30].

2. Methodology

This paper seeks to explore the different perspectives held by individuals and groups with an interest in Lyme Bay's marine environment. In July 2008, immediately following Defra's decision

² For the sake of consistency any references to English Nature are documented throughout as Natural England.

³ Lyme Bay comes under the responsibility of two SFCs: The Devon Sea Fisheries Committee (DSFC) and the Southern Sea Fisheries Committee (SSFC).

Table 1
Responses to Defra's public consultation in 2007.

	No. of unique responses
Exclude the use of towed gear in area originally proposed by NE in May 2006 (60 square miles)	80
Exclude the use of towed gear in area proposed by South West Inshore Scallopers' Association in 2006 (12 square miles)	24
Exclude use of towed gear in revised proposed by NE in August 2006 (25 square miles)	2

Table 2
Range of marine interests interviewed.

Fishing industry	
Fisheries representatives	1
Static gear fishermen	2
Mobile gear fishermen	2
Scallop diver	1
Fisheries management and enforcement	2
Relevant authorities	
Government	2
Government advisors on MPA networks	1
Conservationists	
Environmental lobby	3
Government advisors on nature conservation	1
Recreational users	
Dive company	1
Sea angler	1
Scientists	
Marine scientists	4

to close the full 60 square miles in Lyme Bay, a total of 25 semi-structured interviews were conducted covering the entire range of marine interests (Table 2).

Interviewees could be divided into 5 broad groups, representing the fishing industry, recreational users, the environmental lobby, scientists and relevant authorities. Since views from within the fishing industry are far from uniform [31], the interests of mobile and static gear fishermen, fisheries representatives and enforcement officers were included. While a number of biological and socio-economic studies have been produced in response to the Lyme Bay consultation [4,15,26,32,33], this research is by far the broadest examination of the different interest groups involved. The general public is the only significant stakeholder whose views are not included. While their opinions are undoubtedly important, they are considered too heterogeneous to be represented via such a small number of interviews.

Purposeful sampling [34,35], whereby the focus was on key representatives of the main interest groups, was used in order to seek information rich cases, rather than attempting a statistically representative sample amongst different sectors and wider society. Fourteen of those interviewed had strong involvement in Lyme Bay meetings and debates, and eight of those interviewed were direct users of the area being disputed. It should be noted that this study represents a qualitative analysis of respondents' perspectives.⁴

When talking with respondents about the Lyme Bay consultation, four key themes evolved:

- Which stakeholders should be involved in MPA discussions?
- What roles should different stakeholders play?
- What is the role of science in the debate?
- The requirement for a holistic planning process to underpin stakeholder processes.

3. Which stakeholders should participate in MPA discussions?

In order to recognise the rights of all marine users, there is a need to include more people in the decision making process. The inclusion of a wider stakeholder community is considered a key element in the adoption of the ecosystem approach [4,36], underpinning the Marine Act. For Lyme Bay the main question did not concern whether or not the peer community should be extended, but rather by how much. Nearly all those interviewed, including fishermen and their representatives, recognised the right to share the marine 'resource' with other actors. This contrasts with Jones [37], where fishermen were seemingly resentful of the involvement of NGOs. This may be a result of the change in government tack towards marine management and the realisation by the fishing industry that sharing the marine resource with other interests is inevitable.

However, in line with Jones [36], fishermen were much less happy to see the public involved. Principal objections concerned the public's limited knowledge of the marine environment, and their susceptibility to influence from conservation organisations: "*Devon Wildlife Trust have lied through their back teeth, through the website, and through the media. The public are not being told the truth. It's an one-sided story*"; "*The problem with public consultation is that you are consulting people who do not have a full understanding of what they are being consulted about*". Broadening the set of stakeholders in the Lyme Bay consultation almost certainly influenced its outcome. While the fishing industry supported the option of statutory closures for the four existing areas, the most popular option among all consultees was the closure of the full 60 square miles. This included a significant number of responses from the public. Since the Draught Marine Bill⁵ endorsed the public's involvement in stakeholder participation, the fishing industry urgently needs to re-engage with the public.

4. What roles should different stakeholders play?

The vast majority of respondents supported the principle of stakeholder participation as a means of decision-making in the marine environment. However, Jones and Burgess [10] note that there are a number of different models that stakeholder participation can follow and argue that neither wholly top-down nor bottom-up approaches work by themselves. Therefore, the critical issue with a collaborative management approach is how power is allocated and shared between stakeholders. Jones [21] states that the question as to what constitutes an appropriate balance of power in order to fairly consider both the achievement of conservation goals and the fulfilment of more local economic and social properties is a critical but neglected area of research. One of the difficulties in broadening the stakeholder forum is arriving at a meaningful consensus [38,39]. The fact that views of different stakeholders in Lyme Bay were heavily polarised should not be a surprise to anyone. Stevens et al. [39] acknowledge that in marine environments, where there are a large number of interests,

⁴ Percentages are based on the number of respondents who talked about a particular issue and not necessarily on the total sample. The actual number of responses is shown in brackets alongside any percentage.

⁵ Paragraphs 20, 24, 97, 223.

consensus can rarely be achieved at the operational level. Rees et al. [4] noted the huge diversity of values held by individuals with an interest in Lyme Bay, and the unlikely outcome of finding a 'win-win' solution. The difficulty of reaching consensus in the marine environment coupled with the need to meet statutory obligations may result in a shift from the decentralisation ideal to one of an instrumental reality. Jones [36,40], Rydin and Pennington [41], Stevens et al. [39] and Rees et al. [4] all advise against bottom up led approaches, rather promoting a combination of top down and bottom up models. Arriving at an appropriate balance between approaches has historically proved difficult and requires strong leadership. In the case of Lyme Bay, throughout the vast majority of the debate, leadership was entirely absent. Despite a clear marine management remit, the SFCs failed to act on evidence provided to them by NE and took the decision to abscond from the debate. Many respondents pointed to this withdrawal from the debate by the SFC, and the subsequent delay by Defra to assume control, as hugely significant: *"In terms of the process, it has taken far too long... It would be much better for all concerned if people were told if it's happening, or it's not. That way people can sort out their future"; "it was the conservationists versus fishermen with particularly weak management"; "We gave these (areas) up voluntarily and said to the fisheries committee and to the MFA [Marine Fisheries Association] you can legislate for them if you like, but no-one really wanted to know"*.

In situations where a final decision rests with an executive authority it is critical that all stakeholders feel that they have been included in the process. This does not necessarily imply that everyone should be in agreement with decisions made, but rather feel that they have been consulted and respect the decision made. Situations where interventions from RAs are considered heavy-handed, or where participants feel excluded from the process, can destroy trust between stakeholders [39,42,43]. For Lyme Bay most of the *fishing lobby* felt that they were not fairly engaged, nor was any attempt made to reach a compromise: *"As far as we were concerned the Wildlife Trusts had managed to get all that they had ever requested and more. Yet they then decided they wanted the whole 60 square miles and wouldn't settle for anything less"; "NE and the NGOs are always talking about stakeholder engagement, but if this never actually results in you compromising your situation, then that is not a negotiation, it's a dictatorship"; "They [environmental lobby] are not prepared to compromise. They are their own worst enemies, and as a result the worst enemies we have got."*

Jones [21] also notes a general feeling of disempowerment among fishermen, very much in contrast to the surge towards the co-management paradigm, as well as objections to increasing interference by NGOs. Fishermen were left feeling that a swing in governmental and public attention towards marine conservation has resulted in a marginalisation of their industry.

The fishing industry, however, cannot lay the blame squarely at the door of the environmental movement. To warrant a seat at the table the fishing industry must display professional maturity and a willingness to collaborate. It is suggested that the decision to sever contact with conservationists and the marine planning initiative, Finding Sanctuary,⁶ in response to the Lyme Bay decision in June 2008 is not a sensible way to proceed: *"If the industry is talking about MSC accreditation and want to be taken seriously, when the ministers decision doesn't go as they wish it doesn't mean you can go and throw your toys out of the cot, that doesn't make you look very credible"*. Realising they have little legal grounds for an appeal, fishermen reinitiated contact and agreed to take part in a three-year monitoring survey of the bay. Sadly, in January 2009, the scallop fishing industry chose to fall out once again with conservationists, this time threatening to cut communication with NE as a result of the unfortunate

comments made by Helen Philips, their Chief Executive, at a national marine conference.⁷ This is a timely reminder of the extremely delicate nature of the relationship that exists between conservationists and the fishing industry, and the ease with which trust can be undermined by misguided comments and decisions on either side.

A further challenge facing the fishing industry is provided by the diversity of the industry itself. Fishermen in Lyme Bay talked openly about conflict between different fishing practices, particularly between static and mobile gear. Such gear conflicts are likely to worsen as suitable fishing grounds become squeezed through effort displacement from areas set aside as MPAs, wind farms, etc. The importance of the fishing industry providing a strong and united voice in stakeholder discussions cannot be underestimated. SWIFA, which formed in response to the threat of the closure of Lyme Bay, represented the interests of a small number of affected scallop fishermen in the bay but the views of other sectors of the industry went largely unnoticed. Interestingly, worried by the impact of displacement, static gear fishermen interviewed were largely against the closure of the larger area at Lyme Bay. Yet while this group's views were neglected, conservationists were quick to promote the potential for disunity within the fishing industry and suggest how the larger closed area may benefit static gear fishermen, divers and sea anglers. Jones [21] highlights the challenge of trying to democratically represent the broad range of fishing interests in discussions whilst keeping negotiations manageable in terms of numbers of representatives involved whilst Stevens et al. [39] advise that MPAs should avoid being drawn into conflicts between fishermen.

The deterioration of trust in Lyme Bay was disappointing since the stakeholder participation approach initially worked very well. Voluntary codes of practice were developed locally and afforded the most sensitive areas of Lyme Bay some protection. However one of the problems with voluntary agreements is the threat posed by freeriders, defined as people who lack commitment and cooperation with other stakeholders and who use the resource in an opportunistic way for their personal and short-term gain [10]. Members of the *fishing lobby* themselves admitted that a small number of fishermen, largely those who were not members of SWIFA and subject to their codes of conduct, were breaking the voluntary agreements. It was quite understandable that the environmental lobby was unhappy to sit back while damage was being done. Yet there was willingness from within the fishing industry to make existing voluntary agreements statutory and many felt that this would have gone a considerable way to addressing the conservationist concerns. It certainly would have provided legitimate protection for the most sensitive sites and provided a basis for stakeholders to negotiate any requirement for further protection.

Jones and Burgess [10] argue that voluntary agreements risk being undermined if they are not backed up by statutory legislation. Conversely current UK government policy states that the voluntary principle should apply as far as possible in securing the compliance of MPA users, and statutory mechanisms should only be used as a last resort [9]. It is argued that the voluntary approach has been unsuccessful at Lyme Bay, as it has in similar cases at Strangford Lough and the Fal estuary, Gubbay and Welton [44] considering this approach to offer the 'worst of both worlds'. This case highlights the need to reinforce voluntary agreements through statutory measures in order to ensure cooperation amongst all users, i.e., decisions reached voluntarily that rely solely on voluntary cooperation risk being undermined by the

⁶ www.finding-sanctuary.org.

⁷ UK Scallop Association—"In describing their legitimate activities as 'rape and pillage', Helen Philips has exposed deep-seated prejudice and has insulted the scallopers and their families, whose livelihoods have been decimated by the closure last August of the Lyme Bay scallop fishery" <www.thefishsite.com/fishnews/8968/uk-scallop-industry-shunned-by-prejudice>.

non-compliance of a 'freeriding' minority [10], which soon leads to a breakdown of the voluntary agreement, as happened in Lyme Bay.

5. What role should science play?

The marine environment is extremely complex and variable, and despite significant advances in marine conservation science [10,40] our understanding remains relatively poor [45,46]. A common concern among conservationists is that a lack of information surrounding the impact of fishing activity on the marine environment may result in damaging practices continuing unabated. As a means of protecting the environment in the face of scientific uncertainty, the use of the 'precautionary principle' was incorporated in the 1991 EU Maastricht Treaty as a legally required objective for environmental policy [47].

Decision making in the absence of conclusive data and the use of the precautionary principle is, by its very nature, a subjective exercise. Unsurprisingly, therefore, scientific uncertainty is frequently a source of conflict in the marine environment [39,48] and scientific information must be used with caution when attempting to resolve stakeholder disputes. However, all those interviewed recognised the important role marine scientists had to play in the debate. There was, however, divergence between different interest groups on exactly how much data is sufficient and how other information sources should be incorporated with scientific data. Conservationists argued that the Lyme Bay reefs are one of the most extensively studied marine environments in UK [30] with upward of £750,000 invested in monitoring and research in the bay to date.⁸ Many expressed concerns that an onus on very detailed science in arriving at a decision will provide a major barrier to achieving an effective network of MPAs at a national level, substantiating concerns by Jones [37]: *"If we have to go through these sort of hoops every time we wish to designate a MPA, then we are not going to be able to resource it"; "The information we have in the UK is probably better than any other place in the world and many other places in the world have gone ahead and made decisions."* The fishing lobby, who collaborated with conservationists in the early stages of the project, felt that their local knowledge had been largely overlooked or misused: *"Things were better in the past. But they (DWT) have used the information from fishermen that have worked with them years ago, to stab them in the back. And those fishermen are very hurt"; "Two years of hard work on our behalf, and it looks like it's all out of the window. We haven't been listened to."* It is certainly true that decisions in Lyme Bay were primarily based on data provided by the conservation organisations, but it could be counter argued that the fishing industry was not proactive enough in providing data of their own.

Interestingly, one of the most contentious issues concerning the Lyme Bay consultation has been the valuation of its fisheries. The economic impact of the MPA proposals was estimated via four independent reports, the estimates differing by an order of magnitude [4]. A paucity of accurate information pertaining to the areas of the sea where non-quota fish are being landed from makes such economic assessments particularly difficult. A recent study into the socio-economic value of sea angling [49] also generated significant dispute over figures and provides an interesting parallel. The failure of scientists, including economists, to reach consensus makes decision-making particularly difficult and only exacerbates feelings of mistrust by the fishing industry towards scientists.

Moving toward a proper collaboration between scientists, fishermen and conservationists is going to be the key and collective learning approaches should be encouraged [21]. Rees et al. [4] argue the need to consider socio-economic and biological values mutually, and for a clear and transparent valuation methodology together with an acknowledgment of its limitations.

6. Need for a holistic planning process to underpin stakeholder processes

Without a clear, transparent and overarching marine planning process it is extremely unlikely that stakeholder discussions will lead to a positive outcome. A number of those interviewed concurred with this: *"I do think it helps people to know they are part of a process. Whereas sometimes I think they feel that they have just been dumped upon"; "The problem is that there is no adequate statutory process until the Marine Bill is finalised, on which to act. It ends up with the conservationists and regulators against the scallop fisherman."* One major criticism of UK marine policy is that it lacks a co-ordinated and systematic vision [50–52]. Stevens et al. [39] state that one of the prerequisites of effective MPA management is "unambiguous, detailed and measurable objectives." A failure to clearly communicate desired outcomes was cited by many respondents as a major factor in the breakdown in trust in this case: *"There hasn't been an overt statement on precisely what the future view of Lyme Bay is, which is something we have been advocating at the meetings for some time now. If we look at Lyme Bay, what do we want it to look like?"* While it is now clear that the Lyme Bay closure was enforced to protect rare and vulnerable habitats, this was not so transparent earlier in the debate.

The environmental lobby has unquestionably pushed the fisheries benefits of the closure at certain stages of the debate despite a lack of temperate studies with conclusive evidence in favour of fisheries benefits of MPAs [4]. Jones [53], Hiscock [54] and Kareiva [55] all question the need to try sell MPAs on a win-win basis. In accordance with Jones [37] interviewees asked that RAs be open and transparent about MPA objectives: *"They [the fishermen] are asking us to be honest and 'if it's about biodiversity, tell us that. If it's going to be about fisheries, tell us that.'" There was similar confusion surrounding the role of the pink sea fan in the debate. Initially the conservation agencies pursued a more species-specific argument, using the pink sea fan as a flagship for their campaign. Consequently at least half of the fishing lobby interviewed felt that protection of the pink sea fan was a key issue in the debate. This led to frustration on two fronts. Firstly, fishermen argue that the existing voluntary zones already cover the main areas of highest pink sea fan density. Secondly, they consider that the pink sea fans seem to be widespread in great abundance and thus fail to appreciate the urgent need for their protection. Expanding this argument to the national scale, what all parties seemingly crave is a clear strategic vision for the UK's maritime area. The area to be set aside for conservation purposes is one area that certainly needs clarifying. Conservationists would like to see a duty on the government to set aside a minimum percentage area for protection of marine habitats and species. Likewise, fishermen would like to have a more concrete idea of government intention so they can better prepare themselves as an industry for what may come: "The current system is almost like fire fighting. We need an overall plan to say what we are trying to do here... and it gives people the opportunity of having a business plan. At the moment how can the fishermen make a business plan?"*

Another significant concern is that marine policy has historically been developed sectorally [56]. Many respondents were understandably alarmed by recent government proposals for potential wind farms off Lyme Bay. While the need to pursue

⁸ Estimate obtained from DWT, University of Plymouth and University of Bangor.

renewable energy was understood, the timing of this announcement on the back of the decision to close sixty square miles to mobile gear indicates a lack in joined-up thinking. A representative of the fishing industry notes: *“my concern is that they talk about integrated planning, but we are seeing wind farm planning and MCZs going ahead regardless, so there is not integrated planning. We are seeing the individual industries being planned separately. It is a piecemeal approach of closing areas to mobile gear. We need a more strategic approach”*. Even more recently further tension arose when NE announced that the area closed to mobile gear in Lyme Bay may yet be further increased, since a large area of the bay is being put forward as a Special Area for Conservation under the EC Habitats and Species Directive (1992). Having twice voluntarily agreed areas for closure with the government and then see them overruled shortly afterward is not a platform for building trust and cooperation. Jones [21] advocates the need for a fairer allocation of the seas, which should include ensured adequate areas of fishing grounds to allow the fishing industry to continue in a sustainable manner, rather than politically and geographically marginalising fishers. Many respondents talked of the need for a zoned management approach, including areas of complete no takes and areas where fishing rights are protected. The Joint Committee Report⁹ concurs, noting that adequate marine spatial planning is urgently required since the seas are becoming ‘increasingly busy’.

It is hoped that the provisions in the Marine Act for a Marine Management Organisation and marine spatial planning should help address these concerns. However, there are criticisms, mainly from the conservationists, that the Marine Management Organisation will not be overarching enough. Commenting on the Marine Act, Mr. Richardson from the EC Commission on MG Maritime Affairs and Fisheries suggests: *“It is not a single planning system. It is a very fragmented planning system with a lot of need for co-ordination. It excludes oil and gas, it excludes shipping, it excludes ports, it excludes wind farms... is it a single authority? No, it certainly is not”*.¹⁰

There is also a clear requirement to look beyond site-specific approaches. Both Hiscock [54] and Agardy [7] argue that *ad hoc* development of MPAs is ineffective, and Bradshaw et al. [57] argue that any closures must be part of a wider fisheries management programme taking care not to displace problems to elsewhere. At Lyme Bay, static gear fishermen repeatedly expressed concern about the displacement of mobile gear fishermen into areas largely controlled by static gear fishermen. This was undoubtedly a significant factor in their lack of support for the larger closed area. One passive gear fisherman worries: *“What will happen to the lost effort in Lyme Bay? They are going to come down here [Start Point] and then we have one hell of a battle on our hands. They are going to go where they can stay in business.”* Indeed fishermen who had previously worked in Lyme Bay have been found working in other sensitive sites such as that at Cardigan Bay, South Wales as Mark Williams, Welsh MP notes: *“The action in Lyme Bay is welcome, but in effect the problem has been shunted elsewhere”*.

With regard to wider fisheries management, the vast majority of those interviewed felt existing conventional fisheries management approaches, such as quotas and technical measures, to be inadequate. Jones [21] reports that shortages of quotas are causing a major crisis for the inshore fleet. Over 60% of species caught in Lyme Bay are off quota (Fishing News 16/6/06), including scallops. This is perceived by many to have encouraged fishermen into Lyme Bay’s scallop fishery [58], and is only likely to worsen as

quotas are reduced: *“There are a lot of fish out there that we are not allowed to catch because of our quota system. That is one of the main reasons why so many boats chop and change between trawling and scallop dredging”*. Controls on by catch were also met with widespread disapproval. Jones [37] notes that streamlining conventional fisheries management approaches in non-protected areas could make fishermen more willing to collaborate and cooperate with MPA designations.

7. Discussion

The stakeholder participation process at Lyme Bay has arguably been a total failure. Similar disputes between fishermen and environmentalists at Cardigan Bay and the Fal estuary illustrate that this is by no means an isolated case. Under the Marine Act the UK government is committed to implementing a network of MPAs via stakeholder participation processes, through projects such as Finding Sanctuary. For such projects to be successful all stakeholders must be willing to cooperate. Whilst the Lyme Bay result was undoubtedly a significant victory for conservationists, one respondent worried that: *“The danger of the Lyme Bay case was that it shifted things back in terms of dialogue for Finding Sanctuary, which is the real end game for this.”* Indeed, the Lyme Bay closure is still frequently cited by fishing industry representatives involved in the Finding Sanctuary initiative as an example of why Natural England cannot be trusted.

It is particularly unfortunate that this breakdown in trust and dialogue has come at a time when the fishing industry is seemingly aware of changes in the political climate and has been trying to engage. John Harman (Fishing News 4/7/08) of Seafish laments: *“the refusal to recognise the value of voluntary and well-supported measures to protect areas of the seabed not only jeopardises future industry engagement in local marine conservation initiatives, but also contradicts the direction in which fisheries governance is going, which is to encourage fishermen to become environmental stewards.”* Given the sensitivity of the subject and the potential economic, social and political losses fisherman may incur, conservationists must work hard to collaborate with the fishing industry and demonstrate willingness to compromise. Insensitive comments such as those by the chief executive of Natural England will do little to build trust and encourage cooperation. Likewise it is critical that the fishing industry organises itself collectively and learns how to participate effectively in stakeholder discussions, as it subsequently has done through the National MPA Coalition and related regional fora, such as the South West Fishing Industry MCZ Planning Group.

Jones [21] reiterates the importance of the fishing industry selecting good advocates able to counter the increasing influence of the green lobby. In this greener political climate, threats by SWIFA to pull out of stakeholder forums such as Finding Sanctuary seem ill-advised [31]. One of the government representatives commented: *“We don’t want an approach where we impose an MPA approach. We want an approach where stakeholders play a key role. Hopefully they will come back to the table. To be blunt, then if they don’t, and they are not in the game, then they don’t get to influence the outcomes. Economically it is not sensible for them not to be involved”*. These sentiments were echoed by another respondent: *“In a marine spatial planning context the industry has to engage to safeguard their fishing grounds”; “the types of people that don’t engage won’t be in the industry in 5 years time. Natural selection will remove them.”* With the increasing prominence of the precautionary principle in environmental legislation it may also become necessary for the fishing lobby to invest in research to prove non-damaging effects.

⁹ Para. 74 [28].

¹⁰ Para. 25 [28].

It is hoped that the Marine Act will offer a much better framework for stakeholder participation processes to progress. However, it will only provide a framework to predict and deal with conflict. It will not prevent it. Rees et al. [4] conclude that 'win-win' outcomes for marine conservation are unlikely in the short term and mechanisms for conflict resolution are critical. For the Marine Act to succeed, the onus will be on the government and the new marine management organisation to make bold strategic decisions. It will therefore be critical that the new marine management organisations are adequately funded and staff recruited from a range of backgrounds, reflecting the widening interests in the marine space. There is concern among some conservationists that the new Inshore Fisheries and Conservation Authorities (IFCAs) membership would not change sufficiently from the SFCs, a matter also highlighted in the Joint Committee Report.¹¹ The marine arbitrators must seek to involve as many stakeholders as possible in decision making, share out meaningful tasks and build on existing institutions where possible. It is hoped that the presence of an arbitrator with the power to enforce decisions should provide the necessary encouragement for stakeholders to reach their own compromises rather than have decisions imposed upon them [31]. There is also the need for the development of an independent scientific advisory panel, something The Joint Committee Report¹² concurred on, and such a panel of marine ecology experts has since been established. Whilst considerable scientific data for Lyme Bay exists, it has mainly been *ad hoc* and reactive, and with a largely ecological focus [4]. Moving forward, scientific advice and research must be proactive/strategic, consider the socio-economic impacts of MPAs in addition to ecological ones and should actively seek to incorporate local knowledge. The award of a three-year monitoring contract to Plymouth University to study the socio-economic impacts of the Lyme Bay MPA is a step in the right direction, especially since local fishermen have been invited to take part. It is critical that those involved are seen to be truly neutral and work hard to promote collective learning and the building of trust with all actors.

It is also imperative that the government provides a clear marine vision and holistic planning framework under which stakeholder discussions can take place. This includes the need to revisit conventional fisheries management approaches and ensure that MSP presides overall marine users. It would be a disaster if Finding Sanctuary highlighted acceptable zones for fishing only to be overridden two years down the line by another government department for the development of a wind farm. Given that the MMO's remit excludes wind farms, oil and gas developments, and shipping and ports, this is a real and worrying prospect. The NFFO also stresses the need to take a national and international picture of marine management and advocates the need for a national group of stakeholders to complement regional initiatives like Finding Sanctuary. The Marine Policy Statement, Marine Spatial Plans and MCZ framework being developed under the Marine Act should provide a much clearer indication of site-specific objectives. It is argued, however, that a failure to set a clear area target for national MPA designations does not help the fishing industry or conservationists set long term business plans.

8. Conclusions

There has been a dramatic surge in both the numbers and diversity of marine users and subsequent pressure on the marine

environment. This has led to increasing international scrutiny surrounding maritime affairs and pressure on countries to protect their oceans and seas. A number of authors have alluded to the difficulties of reaching consensus among different marine user groups and of getting the balance right between top down and bottom up management approaches. However, given the international requirements for countries to include stakeholders in the decision making processes, and considering that conclusive data for marine ecosystems does not exist in even the most scientifically advanced countries, decisions are increasingly going to have to be reached under uncertainty via collaborative management approaches. The prerequisite for a strong, fair and respected marine management organisation overseeing and guiding the stakeholder process is noted. The UK Marine Act is one of the first attempts by a government to bring forward many of these new paradigms into a single piece of legislation. Approaches like Finding Sanctuary, which aims to mix scientific data, stakeholder knowledge through both bottom-up and top-down approaches, will be a real test of the ability of government to designate MPAs on a nationwide scale. One respondent noted that: "*Jonathan Shaw [the then UK fisheries minister] has made a revolutionary decision for Lyme Bay, but on the basis of quite a lot of science. The next revolutionary decision is going to be to endorse something like Finding Sanctuary on the basis of less science. If we are going to do things pragmatically this is the only option we have.*"

On reflection, it is clear that the process leading to the verdict at Lyme Bay has been far from ideal, and has led to significant conflict. However it has resulted in valuable marine habitats being protected and, perhaps more importantly, sets a useful precedent. The Marine Act is rightly heralded as a landmark piece of legislation.¹³ While problems observed at Lyme Bay highlight a number of potential weaknesses, it is only the start of a new journey and should provide the framework for adaptive learning and policy development.

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¹¹ Para. 141 (see note 8)

¹² Para. 64 (see note 8)

¹³ <http://www.jonathanshaw.org.uk/4e779be3-6120-0e04-0910-e7802ccf96af>.

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