Bed-fellows or fellow-travellers?: The relationship between ecosystem-based management and stakeholder participation in marine fisheries

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Abstract

The relationship between ecosystem-based management of marine fisheries and stakeholder participation, is often taken for granted, but is actually very complicated. The literature reveals five possible interpretations of this relationship: that they are 1) logically linked; 2) ethically linked; 3) instrumentally linked; 4) complementarily linked; and 5) antagonistically linked. We examine these four formulations in the light of recent research on interactions between fisheries and their environment. We conclude that the ‘Stakeholder participation–Ecosystem-based management’ relationship manifests itself as predominantly instrumental in character. Within this mutually beneficial, but uneven, relationship, ecosystem-based management benefits particularly from stakeholder participation in terms of knowledge, practical roles played by stakeholders and added systemic legitimacy.

Keywords: Stakeholder, Participation, Ecosystem-based management

Introduction

This paper is one output of the ‘IBEFish’ project: Interaction Between Fisheries and Environment – A challenge to management, which aims to share results and theoretical understandings gained in 5th and 6th Framework projects about the ecosystem-based approach to fisheries management and governance issues, such as legitimacy and trust.1

The authors of this paper were involved in facilitating stakeholder participation in one such project: the European-funded European Fisheries Ecosystem Plan (EFEP) project. The purpose of the project was to develop a Fisheries Ecosystem Plan for the North Sea, critical to which was an iterative process of stakeholder engagement (Hatchard 2005). This paper is the result of further deliberation on this issue, taking into account the experiences of other European projects which have touched on the ecosystem-based approach to fisheries management (EBAFM), on the one hand, and stakeholder participation (SP), on the other.

In this paper, we, first, detail the ambiguity of these two key terms in marine fisheries. Second, we describe five theoretical interpretations of the relationship between SP and EBAFM: logical, ethical, instrumental, complementary and antagonistic. Third, we explore the instrumental interpretation in more depth in the light of experiences of European fisheries research projects aimed at developing EBAFM in European waters. Finally, we conclude with some implications of our findings for fisheries management policy.

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Definitions

The terms ‘stakeholder participation’ and ‘ecosystem-based approach to fisheries management’ are ambiguous. SP can generally be understood to mean involvement in making political decisions by members of the public who have a stake in the outcomes of those decisions. However, SP raises a number of questions (Degnbol et al. 2003:45-6). First, why is SP justified? Is it a right; or is it to improve the quality of decision-making; or to confer legitimacy on the decisions reached; or to ensure compliance with those decisions? Second, what is the aim of SP? Is it to reach consensus; or to reach the right decision (Peterson et al. 2005)? Third, who are the stakeholders? The general public or people with a pecuniary interest or an ideational-emotional-ethical interest in decisions (Mikalsen and Jentoft 2001)? Fourth, what constitutes participation? Being kept informed; or being consulted; or being represented; or being present; or having a vote in decision-making meetings (EPAP 1999)?

EBAFM incorporates the idea that fisheries management should not be confined to the goal of maximising sustainable yield (MSY) of targeted fish stocks, but be expanded to the goal of protecting the health of the whole ecosystem, with all its species of fish, sea mammals and benthic organisms, together with their natural habitats (de la Mare 2005). But EBAFM also raises questions (Counsell 2004). First, is its objective to preserve the existing ecosystem, or to restore an earlier or pristine ecosystem (Pitcher and Pauly 1998)? Second, does it seek to manage change, or to adapt to change (Walker and Salt 2006)? Third, does it set out to protect every species, or only those species deemed necessary to maintain ecosystem health or integrity? Fourth, is humanity included in its list of species to be protected? And, fifth, is EBAFM’s overall aim anthropocentric (sustainable development) or ecocentric (conservation) (Stanley 1995; Tudela and Short 2005)?

Despite their ambiguity, a common assumption is that SP and EBAFM are natural bedfellows and, indeed, the two appear together too often for the connection to be ignored (Gislason et al. 2000:474). In the subsequent section we explore the nature of that connection.

Theory: Five Interpretations of the Relationship between SP and EBAFM

![Figure 1 – Five theoretical relationships between SP and EBAFM](image)

We have identified five theoretical interpretations of the relationship between stakeholder participation (SP) and the ecosystem-based approach to fisheries management (EBAFM). These are derived from the available literature on this subject. In rank order of closeness (the closest first) they are: 1) logical link; 2)
ethical link; 3) instrumental link; 4) complementary link; and 5) antagonistic link. In this section we describe these interpretations. Figure 1 provides a visual picture of these relationships.

A Logical Relationship
SP and EBAFM are logically linked. In this understanding of the relationship between the two, the definition of each concept entails the other, and so they are logically inseparable. Support in the literature for the view that EBAFM logically entails SP comes from Frid et al. (2005:468; 2006:1571), who see the ecosystem approach as ‘inherently participatory’; from Sherman (2003:202), who asserts that EBAFM is ‘centred around…participative processes’; and from de la Mare (2005:66), who claims that ‘Some of the doubts about ecosystem-based management arise from trying to address it from a top-down perspective’. Support in the literature for the converse view, that SP logically entails EBAFM, can be found in the argument that broad stakeholder participation – going beyond the level of SP in co-management regimes (Mikalsen and Jentoft 2001) – inevitably widens the scope of issues being addressed in fisheries management to include ecological impacts Symes (2005:95).

An Ethical Relationship
SP and EBAFM are ethically linked. On this view, the moral value judgments that are incorporated within EBAFM ought to be made by ‘a broad array of stakeholders’ (EPAP 1999:35), because the sea is a public resource, and we are all entitled to participate in determining how public resources are managed and what uses they are put to (Coffey 2005). Conversely, EBAFM imposes an ethical duty on stakeholders to act as stewards of the sea. More accurately, it extends the existing obligation of stakeholders to safeguard the future of target stocks, to an additional obligation to protect the future of non-target species and natural habitats. However, the ethical link between SP and EBAFM is not unique to ecosystem-based management approaches: participation is regarded as ethically essential to fisheries governance in general, exemplified by resource user co-management systems and the FAO (2003:401) extends the ethical link to single species management.

An Instrumental Relationship
SP and EBAFM are instrumentally linked. On this view, SP enhances EBAFM, and EBAFM enhances SP. SP enhances EBAFM by providing the opportunity to draw on the widest possible range of expertise and knowledge (Galaz et al. forthcoming:6; Pitcher 2000:100-1; 2001:601) and can help to manage the uncertainty inherent in the ecosystem approach (Laffoley et al. 2004:39; Degnbol 2002:4). Also, EBAFM benefits from a shared consensus on objectives achieved via SP (Keough & Blahna 2006:1379; Frid et al 2006:1571, 2005:468; Laffoley et al. 2004:39; Clewell and Aronson 2006:426; O’Boyle and Jamieson 2006:10). And EBAFM enhances SP by widening stakeholder access to the decision-making process, thereby empowering stakeholders (Granek and Brown 2005) and stakeholders improve their understanding of the marine ecosystem by being involved in EBAFM (Sainsbury et al. 2000:739).

A Complementary Relationship
SP and EBAFM are complementarily linked. On this view, SP and EBAFM are separate principles that independently work to improve fisheries governance: ‘Participation is a desirable tool but not integral to an ecosystem approach which has a scientific core’ (Counsell 2004:8). They pull in the same direction rather than in opposite directions – there is no contradiction or tension between them – but they are not interdependent. Good governance of fisheries requires both EBAFM and SP. This relationship is demonstrated by the 2002 CFP Reform, which includes both EBAFM and SP (Coffey 2005:42-3; Symes 2005), but does not link the two together per se.

An Antagonistic Relationship
The fifth interpretation is negative: SP and EBAFM are antagonistically related and, therefore, in conflict with each other. This rejectionist interpretation argues that SP undermines EBAFM. For example, Grafton et al. (2006:703) claim that the participative approach allows special interests to block conservation measures. Moreover, the high cost of participation (in terms of time and logistical resources) drains funds that could be better used to implement EBAFM.

Our preliminary evaluation of the five theoretical relationships is that the logical linkage is too strong; the ethical and instrumental linkages are an essential part of a credible explanation of the relationship between
SP and EBAFM; the complementary link is too weak; and the antagonistic link is too extreme. In the next section, we focus on just one of these theoretical interpretations in the context of the experiences of research projects which have incorporated both SP and EBAFM: the instrumental relationship.

The Instrumental Relationship: European Research Projects involving EBAFM and SP

In this section, we present findings relating to a number of European projects which touch on the interactions between fisheries and their environment. Table 1 presents an overview of the implied relationships between SP and EBAFM we found in the 22 projects which were analysed. The projects range from social science explorations of management institutions to natural science projects, with multi-disciplinary projects in between. Although very few of them explicitly tackle the relationship between SP and EBAFM, all the projects referred to in this paper do touch on the relationship in some way, and offer us scope to better understand the varied perceptions of this critical relationship within the European fisheries research community. However, evidence was strongest with regard to the instrumental relationship between the two and it is this link which is focused upon here.

<table>
<thead>
<tr>
<th>PROJECT ACRONYM</th>
<th>PROJECT FULL TITLE</th>
<th>SP-EBAFM RELATIONSHIP</th>
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</thead>
<tbody>
<tr>
<td>EFEP</td>
<td>European fisheries ecosystem plan</td>
<td>Logical/Ethical/Instrumental</td>
</tr>
<tr>
<td>EFIMAS</td>
<td>Operational evaluation tools for fisheries management options</td>
<td>Ethical/Instrumental</td>
</tr>
<tr>
<td>KNOWFISH</td>
<td>Knowledge base for fisheries management</td>
<td>Ethical/Instrumental</td>
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<tr>
<td>INDECO</td>
<td>Developing indicators of environmental performance of the CFP</td>
<td>Ethical/Instrumental</td>
</tr>
<tr>
<td>BIOMEX</td>
<td>Assessment of biomass export from MPAs</td>
<td>Instrumental</td>
</tr>
<tr>
<td>EMPAFISH</td>
<td>European MPAs as tools for fisheries management and conservation</td>
<td>Instrumental</td>
</tr>
<tr>
<td>COST-IMPACT</td>
<td>Costing the impact of Demersal fishing on marine ecosystem process and biodiversity</td>
<td>Instrumental</td>
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<tr>
<td>DEGREE</td>
<td>Development of fishing gears with reduced effects on the environment</td>
<td>Instrumental</td>
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<tr>
<td>FRAP</td>
<td>Framework for biodiversity action plans</td>
<td>Instrumental</td>
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<tr>
<td>NEECESSITY</td>
<td>Nephrops and cetacean species selection information and technology</td>
<td>Instrumental</td>
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<tr>
<td>PROTECT</td>
<td>MPAs as a tool for ecosystem conservation and fisheries management</td>
<td>Instrumental</td>
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<tr>
<td>REDUCE</td>
<td>Reduction of adverse environmental impact of demersal trawls</td>
<td>Instrumental</td>
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<tr>
<td>PKFM</td>
<td>Policy and knowledge in fisheries management</td>
<td>Instrumental</td>
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<tr>
<td>SAFMAMS</td>
<td>Scientific advice for fisheries management and multiple scales</td>
<td>Instrumental</td>
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<tr>
<td>MOFISH</td>
<td>Multiple objectives in the management of EU fisheries</td>
<td>Instrumental/Complementary</td>
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<tr>
<td>RESPONSIBLE</td>
<td>Sharing responsibilities in fisheries management</td>
<td>Complementary</td>
</tr>
<tr>
<td>COMMIT</td>
<td>Creation of multi-annual management plans for commitment</td>
<td>Complementary</td>
</tr>
<tr>
<td>RESPONSE</td>
<td>Response of benthic communities and sediment to different regimes of fishing disturbance</td>
<td>N/A</td>
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<tr>
<td>IMPRESS</td>
<td>Interactions between the marine environment, predators and prey</td>
<td>N/A</td>
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<tr>
<td>DISCBIRD</td>
<td>Effects of changes in fishery discard rates on seabird communities</td>
<td>N/A</td>
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<tr>
<td>MAFCONS</td>
<td>Managing fisheries to conserve groundfish and benthic invertebrate species diversity</td>
<td>N/A</td>
</tr>
<tr>
<td>TECTAC</td>
<td>Technical developments and tactical adaptations of important EU fleets</td>
<td>N/A</td>
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</table>
EFEP is the only project among those we looked at to have explicitly sought an ecosystem-based approach to fisheries management: other projects involve research into various aspects of fisheries management that could form part of an ecosystem approach. Stakeholder consultations, which formed the main part of SP within the project, used two phases of semi-structured interviews to gather North Sea stakeholders’ views about the health of fish stocks and the ecosystem and regarding acceptable and effective fisheries management mechanisms (Hatchard et al. 2003), feed this information into an ecological modelling process and seek secondary feedback from stakeholders regarding the acceptability, legitimacy and likely effectiveness of modelled outcomes of the management scenarios they had helped to construct (Hatchard et al. 2004).

The project’s conclusions, (EFEP 2004; Paramor et al. 2004) reflected both ethical and instrumental interpretations of the relationship between EBAFM and SP. With regard to instrumentalism, EFEP (2004:15) concluded that ‘Stakeholders can help to assess the state of the ecosystem by supplying local knowledge and information to managers and scientists.’ This speaks to the gains to be had from SP by EBAFM in terms of widening the knowledge base of fisheries management. In addition, EFEP (2004:8-11) found that stakeholders are also very useful for problem-identification, prioritisation of objectives and providing detailed technical advice. Conversely, EFEP also concluded that SP has something to gain from EBAFM, because: ‘A FEP empowers stakeholders by providing them with information to make decisions and a framework in which to achieve agreement’ (EFEP 2004:3).

An instrumental relationship between SP and EBAFM was also found in other projects. For the most part, examples referred to the benefits that can accrue to EBAFM from SP. Larsen et al. (2006:31) maintained that: ‘No change toward sustainable marine resource use can be carried out without the direct and open cooperation with stakeholders at all levels.’ These benefits relate to four sorts of contribution: knowledge; practical roles; engagement; and adaptive management.

First, with regard to knowledge, SP can facilitate improved ecological, technical and socio-economic knowledge. van Hoof et al. (2005:138) stated that: ‘The pursuit of sustainable fisheries requires sensitivity to and intelligence on wider ecosystem interactions, and so the involvement of environmental interests in some capacity is especially important.’ Resource users were regarded by SAFMAMS as holding ecological knowledge and unique access to that knowledge (Hawkins 2007:42). KNOWFISH held that local ecological knowledge (LEK) could be used to inform fisheries management and that some degree of interaction with stakeholders was necessary to access that knowledge (Wilson et al. 2006:794). PKFM found that ‘Fishers assert that considering their experience-based knowledge of fish, the fishery and the ecosystem would improve the knowledge base of the management process’ (Schwach et al. 2007:802). REDUCE supported the view that stakeholder participation can contribute technical knowledge: Linnane et al. (2000:23) stated that gear design ‘should involve consultation with the fishing industry in order to avail of the practical knowledge and experience on offer.’ As a result, a better picture of the ecosystem could be built up. PKFM reported that, ‘Given the inherent uncertainty of the marine world and its far-reaching consequences for an ecosystem-based approach to fisheries management’, working with stakeholders can facilitate the building of ‘an accurate common picture of the marine environment’ (Schwach et al. 2007:803).

Second, stakeholders can play practical roles in the development and management of policy instruments. MOFISH invited stakeholders to propose economic, political and ecological fisheries management objectives (Nielsen and Mathiesen 2006), while FRAP found that such participatory processes can ‘create decision options, such as new or adapted policy instruments’, which may have lower costs (Rauschmayer 2006:74). Monitoring programmes can be best implemented by cooperation between stakeholders and managers (PROTECT – Diekmann and St John 2006:90,93), perhaps via fishery-science partnerships (SAFMAMS – Larsen et al. 2006:15,23). Projects working on analysis and evaluation tools have found stakeholder and manager involvement to be useful: for example, COST-IMPACT’s cost-benefit analysis tool (Plymouth Marine Laboratory n.d.:1) and EFIMAS’s scenario-evaluation framework (Hatchard and Stead 2006). Further, according to PKFM, stakeholders are increasingly regarded as having a role to play in the formal scientific advisory process: ‘A growing group feels that advice needs to be produced in a much more interactive manner with managers and other stakeholders’ (Schwach et al. 2007:801).
Another practical role for SP is in conflict management. FRAP found that stakeholders can help to manage the conflict provoked by interactions between ecosystem components and fisheries, under such circumstances as ecological or human change. SP ‘can create or support positive social dynamics between stakeholders and public administration’ (Rauschmayer 2006:74). EMPAPISH also stressed the value of conflict resolution: ‘…local communities have to be effectively involved in their [MPAs’] management;…public participation and awareness are essential if proper management is to be implemented and…[participation] is probably the only way to prevent and solve conflicts of interest’ (Alban et al. 2006:Foreword).

Third, engagement by stakeholders in EBAFM is helpful because, as Rauschmayer (2006:74), of FRAP, explained, participatory processes can endow decisions with ‘higher legitimacy and, thus, with higher acceptance’. PROTECT stated that stakeholder acceptability was critical to the viability of MPAs (Diekmann and St John 2006:90,93). Indeed, achieving consensus on management objectives was regarded as ‘the major challenge for the implementation of an ecosystem approach within fisheries management’ (Tserpes et al. 2006:288). KNOWFISH found that in case studies which featured co-management systems, ‘more knowledgeable people making decisions create greater legitimacy than an abstract representation of various putative categories of stakeholders’ (Wilson et al. 2006:800).

Fourth, SP is necessary to contribute to adaptive management, which is an essential feature of many conceptions of EBAFM. Explaining that participatory systems are more adaptive than are command-and-control regimes, Wilson and Pascoe (2006:330), of the EFIMAS project stated that ‘it is hard to imagine how a management system could be truly adaptive to changing environments without a broad base of participation providing that system with information of different types.’

The instrumental relationship from the opposite direction – that SP benefits from EBAFM – was evident in a recommendation from a variety of projects that stakeholder participation should be broadened to accommodate the needs of EBAFM, particularly with regard to knowledge requirements and setting balanced objectives, suggesting that SP may become more substantive under EBAFM than under other management systems. As well as offering participatory opportunities in the form of monitoring and research programmes, EBAFM also presented the opportunity to participate in priority-setting in local management (Larsen et al. 2006:23).

Discussion of Results

Having outlined the five alternative theoretical interpretations of the relationship between SP and EBAFM – logical, ethical, instrumental, complementary and antagonistic – and examined evidence from a range of European research projects, which touch on ecological and participatory aspects of fisheries management, about the instrumental relationship, we now discuss the implications of that evidence for our understanding of the relationship between these two key concepts.

The instrumental interpretation, which perceives EAFBM and SP as mutually beneficial, predominated within the projects – featuring in fifteen of the seventeen that drew a link between SP and EBAFM. This finding ties in with our review of the literature, where there was more evidence of instrumental arguments than arguments for any other interpretation of the SP-EBAFM relationship, and we found those arguments to be very convincing. And, where there was more than one understanding of the SP-EBAFM relationship present in a project, instrumentality was always a feature: all the examples of logical and ethical links, and one of the three examples of complementary links, were also tied to an instrumental interpretation. This reinforces our finding of the greatest importance of the instrumental link, compared to the four alternative interpretations. Indeed, the instrumental connection between SP and EBAFM was by far the most frequent common denominator in the projects.

Moreover, as in the literature, so in the projects, one side of the instrumental relationship was more heavily weighted than the other: in the fifteen projects, EBAFM benefited far more from SP than SP benefited from EBAFM. EBAFM gained from SP in terms of stakeholder knowledge; stakeholder performance of practical roles; stakeholder engagement; and stakeholder contributions to adaptive management. In
In contrast, the projects confined the gains to SP to a widening of stakeholder participation under EBAFM, due to greater knowledge demands and the need for a balance of ecological, social and economic objectives. However, we predict that EBAFM will, in the long-term, entail a strengthening of democratic decision-making in fisheries management, thereby balancing the benefits more evenly between SP and EBAFM. Figure 2 illustrates the instrumental relationship between SP and EBAFM based on our findings.

![Instrumental Relationship Diagram](image)

*Figure 2 – A redrawing of the instrumental relationship*

The instrumental benefits for EBAFM of SP reflect four characteristics of participation in fisheries management, which form a common IBEFish analytical framework: information management, legitimacy, social dynamics and costs. EBAFM gains, first, in terms of knowledge or information – technical, ecological and socio-economic. Second, this management approach benefits from the take-up of practical roles – such as research, monitoring and management – by stakeholders. Third, EBM also benefits from the added systemic stability – in terms of legitimacy, acceptance and improved social dynamics, such as effective conflict management – that is brought by having stakeholders involved in the management system. Finally, while SP may require high commitment and the devotion of significant capacity by stakeholders, which has inherent costs, SP may also reduce costs by producing more effective measures and improving compliance.

**Conclusions**

In conclusion, we have found that these two parallel developments in European Fisheries management – SP and EBAFM – are linked in unexpectedly complex ways. The most important link in the theoretical literature, as well as in the 22 projects, and in our own evaluation, is the instrumental relationship – i.e. that each benefits from the other. Although, at present, EBAFM benefits more from SP than vice versa, we suspect that the tide is turning, and that in coming years, EBAFM will significantly extend the reach of democratic culture into the marine environment. Policy-makers can draw comfort from the fact that the strongest argument for linking SP to EBAFM was instrumental in character, because this is the easiest argument to defend. If stakeholders can be persuaded that SP can have an impact on EBAFM, improving both the quality of fisheries management and the benefits to them – for example, empowering them by ensuring that they have a say – then stakeholders will be more likely to engage in EBAFM.

Nevertheless, our analysis has led us to the view that we should be cautious about the pace with which EBAFM is introduced, with or without SP endorsement. The danger of moving too fast is twofold. First, there is a risk of stakeholder alienation: participatory processes are delicate, and can easily be undermined by precipitant or extremist decisions. Second, there is a risk of unintended consequences: our understanding of the complexity of the marine ecosystem is at such an early stage that rash measures could cause unexpected damage. SP and EBAFM are neither bed-fellows (logical) or fellow-travellers (complementary), but instead enjoy a mutually beneficial relationship which seems likely to be self-perpetuating.
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