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Forming shared values in conservation management: an interpretive-deliberative-democratic approach to including community voices

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Abstract
Global recognition of the decline of marine ecosystems and their services has led to rapid designation of Marine Protected Areas (MPAs) in recent decades. The complexity of effectively managing protected areas within the context of densely populated, highly used and contested coastlines points to the need for decision-support processes that effectively engage users and incorporate social, cultural and economic considerations alongside ecological objectives. Multi-Criteria Approaches (MCA) are established tools for complex decision-making involving uncertain, multi-scale environmental issues and multiple actors. Working closely with decision-makers, we develop a novel approach that draws on the strengths of MCA, but focuses less on arithmetic outcomes, instead presenting a deliberative-democratic process to facilitate emergence of shared values around effective conservation management. We nest these deliberations within the Community Voice Method (CVM), an interpretive film-based approach. CVM enables reflection on deeper-held values, stepping back from polarized policy debates and fostering conversation around shared values connecting people to place. We discuss how the integrated interpretive-deliberative methodology by a transdisciplinary team improved participation and engagement and provided outputs that supported improved decision-making. The approach made diverse impacts and benefits explicit and highlighted shared values amongst participants as a critical part of establishing robust management.

Keywords
Deliberative value formation; values based approach; cultural ecosystem services; marine protected areas; post-normal science; transdisciplinarity; relational values

1. Introduction
There are currently over 13,000 designated MPAs in the world (MPA Atlas, 2015). The last decade has witnessed the designation of 24 very large Marine Protected Areas of over 100,000 square miles, accounting for over 60% of the global MPA coverage (Toropova et al. 2010). The overall influence of these massive, remote sites on global MPA statistics masks a disproportionate lack of protection in other areas, notably where human population densities are high, pressures are more intense and spatial management is arguably most challenging because of diverse competing interests. The territorial waters of the United Kingdom are amongst the most heavily used in the world, delivering a range of economically important ecosystem services that directly benefit industries and local livelihoods, such as tourism and recreation, fisheries and aggregate extraction (Halpern et al. 2008). These seas also provide important cultural ecosystem service benefits such as place identity and intrinsic and existence values of biodiversity for wider society (McVittie and Moran 2010; Jobstvogt et al. 2014a, b; Bryce et al. this issue; Kenter et al. 2013; this issue, b).

Many decades of use have adversely impacted on marine ecosystems and it is considered particularly important for highly used spaces to be sustainably managed for the benefit of future generations (Toropova et al. 2010). Global trends show a decline in the quality of coastal regions (Garmendia et al. 2010) and in the UK, a range of historic and current pressures are recognised to have resulted in the degradation of the marine environment. These include fishing and other extractive industries such as aggregate extraction and

capital dredging, high levels of development and pollution (Cooper et al. 2007; Moffat, 2015; Hall-Spencer and Moore, 2000; Turner et al. 1998). MPAs are promoted as a key tool in allowing marine ecosystems to recover and become more resilient (Gray, 2010).

Among a suite of measures to bring improvements in the marine environment, the UK and its devolved governments are committed to establishing a network of MPAs (Defra, 2015). There are time-bound requirements under both domestic and European legislation not only to establish protected sites but also to ensure that these sites are well managed. Driven by these legal requirements, changes to the way UK seas are managed are occurring rapidly. The number of designated MPAs in UK waters rose from 59 in 2000 to 165 in 2015. Despite these recent designations, there is evidence that adequate protection and ecological coherence across the MPA network in the UK has not yet been achieved (Lieberknecht et al. 2014). Driven by the limitations of a finite policy window within which the opportunity exists to achieve ecological coherence and adequate protection for species and habitats in UK seas, conservation advocates continue to push for more designations.

Simultaneously, there is lively, ongoing debate about the ecological, social and economic impacts of MPAs and how they should be designed and governed (Gray, 2010; Jones, 2001; Solandt et al. 2014). Disagreements about what should be protected are evident in the protected area literature when biodiversity, livelihoods and cultural practices are all at stake (Blaustein, 2007). While MPAs are advocated as tools to protect wild species and habitats, they are primarily about spatially regulating human behaviour and inevitably have impacts on individuals and communities, especially in busy, inshore sea areas. Understanding these impacts and considering them when planning and implementing MPAs can mitigate impacts on stakeholders, improve social acceptance, reduce conflict and ensure conservation outcomes are met (Voyer et al. 2012; Blaustein, 2007).

Aligning the need for protected areas with social and economic considerations is a compelling challenge for conservation (Agrawal and Chhatre, 2011; Morin et al. 2012; Negi and Nautiyal, 2003) and one that is reflected in the policy underpinning MPA management in the UK. Marine Conservation Zones (MCZs) are multi-use MPAs being established in England under the UK Marine and Coastal Access Act (2008). At the point of writing, fifty of these sites have already been designated and a further tranche are expected to be designated in 2017. In the implementation phase of inshore MCZs, the responsible agencies are 10 regional Inshore Fishery and Conservation Authorities (IFCAs) who are tasked with the sustainable management of inshore sea fisheries resources up to 6 nautical miles off the coast. Their governing committees include local councilors and people from across the different sectors that use or are knowledgeable about the inshore marine area, all of whom offer their time voluntarily. Their stated vision is to "*lead, champion and manage a sustainable marine environment and inshore fisheries, by successfully securing the right balance between social, environmental and economic benefits to ensure healthy seas, sustainable fisheries and a viable industry*." (Association of IFCAs, 2014, p.1). In achieving this balancing act, the IFCAs are legally bound to ensure that the conservation objectives of MCZs are met and that stakeholders are included throughout the decision-making process, including in the development of management measures. Recognising the challenges of effective enforcement in the marine environment with limited human and financial resources, 'manageability' is also a key consideration. IFCAs need to be mindful of developing and implementing management measures in a way that maximises voluntary compliance and in turn supports realisation of environmental benefits (Defra, 2010).

A further challenge for both resource users and regulators in MPA management is uncertainty. Scientific evidence about the natural environment, and particularly the marine environment, is incomplete and often contested by users with substantial local ecological knowledge. The government's marine conservation advice, which is a cornerstone of MPA management in England, frames this uncertainty. It acknowledges that marine resource use decisions need to be made despite imperfect knowledge (Moffat 2015). For example, there is uncertainty about the distribution and extent of some marine habitats and species, broad

rather than detailed and specific understanding of the functioning of marine ecosystems and an incomplete understanding of the ecosystem services offered by different habitats (Beaumont et al. 2008), and likely climate change effects (Burrows et al. 2014). There is also uncertainty around the distribution of some human activities in UK seas (Kenter et al. 2013), the impact of existing and new activities, and of cumulative impacts.

An important consequence of this uncertainty is that expert-based and analytical approaches can be contested, leading to multiple legitimate perspectives in terms of knowledge and value claims (Garmendia and Stagl, 2010; Kenter 2016b in this issue). This raises the need for processes that open up both expert and local knowledge to discussion, allowing evaluation of policy and management options on the basis of these plural and potentially conflicting claims. Such processes can generate social learning (Reed et al. 2010) and provide a forum for deliberative democracy (Habermas, 1984). Such forums aim to approximate the ideal of decision-making on the basis of communicative rationality, where deliberation is non-coercive and the process emphasises inclusivity in terms of knowledge and value claims (Orchard-Webb et al. 2016 in this issue). This 'deliberative turn' in environmental decision-making (Rodela, 2012) shifts the emphasis from the outcomes to the process, and the challenge of forming novel democratic institutions that can give rise to shared values in response to shared problems (Kenter 2016a in this issue; Irvine et al. 2016 in this issue; Stagl, 2004).

Shared values have been conceived of as both the shared values that underpin our valuations and the value outcomes of group-based deliberative processes (Kenter et al. 2015). The former involve values that transcend specific contexts, comprising our principles and broader life goals. Kenter et al. (2015) called these transcendental values, which can be expressed by communities, cultures and societies as a whole as well as by individuals. The contextual, group-deliberated shared values that express the outcomes of a deliberative evaluation may be guided by these transcendental values to a lesser or greater degree, depending on the extent to which transcendental values have been made explicit in the process of forming contextual values (Kenter, Reed and Fazey, 2016 in this issue).

This paper presents and discusses a novel methodology that integrates the Community Voice Method (CVM), a structured, film-based interpretive methodology (Cumming and Norwood, 2012), with a qualitative, deliberative Multi-Criteria Approach (MCA) to inform the management of two MPAs on the Sussex coast in the southeast of England. The study involved a transdisciplinary collaboration between decision-makers from Sussex IFCA, conservation practitioners from the Marine Conservation Society (a UK environmental NGO) and Community Voice Consulting, and academic researchers who acted as independent facilitators in the process.

Through integration of MCA and CVM, we took a values based approach to develop an interpretive-deliberative methodology that facilitated democratic participation, knowledge exchange, social learning and in-depth dialogue, and developed an understanding of shared values, both in terms of transcendental values and group-deliberated values across the coastal stakeholder community, to inform MPA management decisions. While there have been many studies that have used some form of MCA for considering environmental issues, few MCA studies have built on a rigorous qualitative methodology for 1) making explicit the shared values and views that connect people to places and natural resources, and 2) grounding deliberation in those values and views. Furthermore, we are not aware of any studies that have done this in a marine context.

We first present the approach as it was applied in the Sussex case study, and the outcomes. We then reflect on how the integration of analytical-deliberative with interpretive processes enabled people to consider the complexity and uncertainty around the evidence that was used to justify potential management measures, and how it enhanced inclusion and democratic participation, helping address many key concerns around

knowledge and power associated with conventional deliberative methods. We also report on how the process influenced actual decision-making outcomes.

2. Methods

2.1 Study site

The Sussex IFCA district is located on the south-east coast of England. It consists of the combined area of three local councils roughly between Chichester in the west and Rye in the east and the adjacent area of sea out to six nautical miles. The focus of the project was two MCZs at Kingmere and Beachy Head West (Figure 1), which were designated in November 2013.
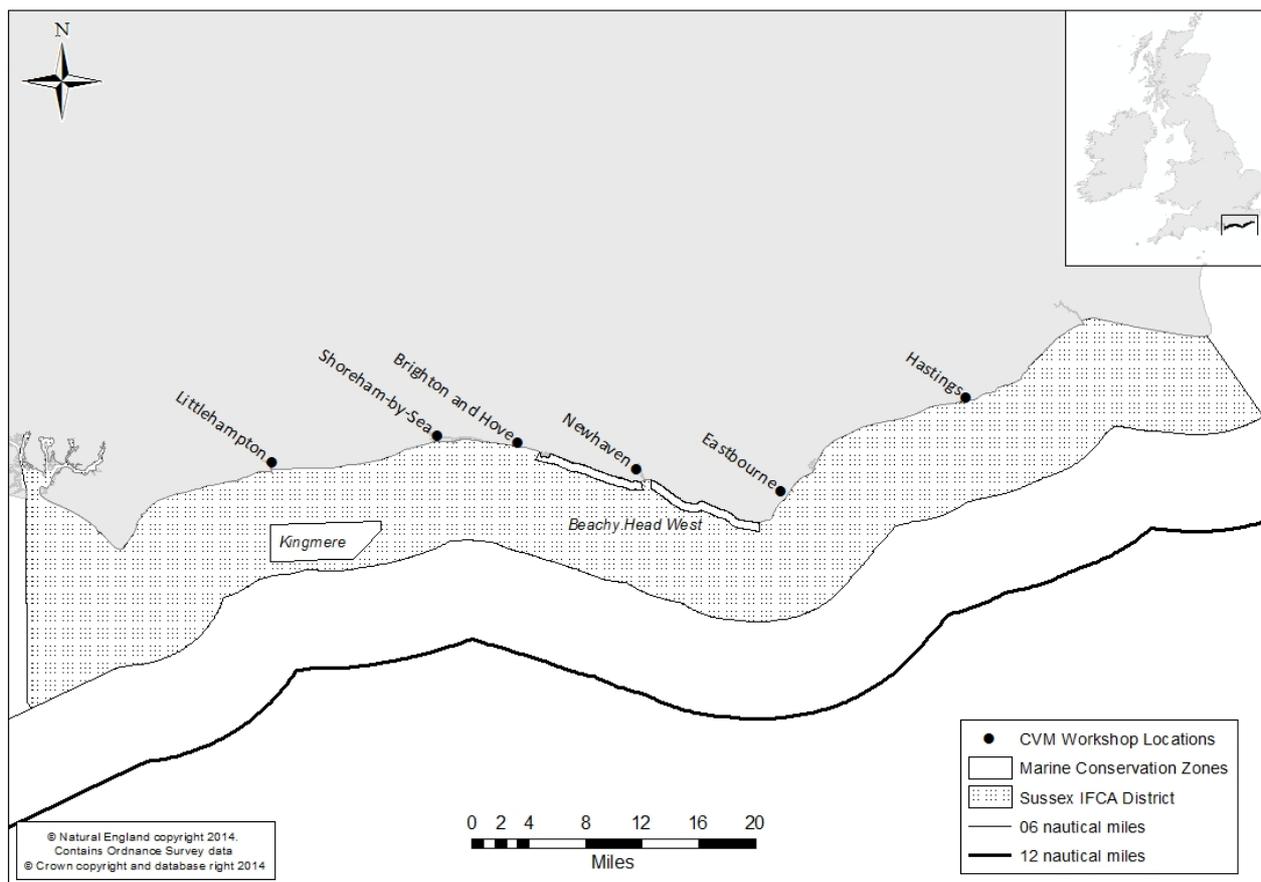
Figure 1. Map of the Sussex IFCA district showing the location of Kingmere and Beachy Head West MCZs and the location of the deliberative CVM/MCA workshops.

2.1.1. Kingmere MCZ

Kingmere MCZ is in the English Channel, between 5 and 10km off the West Sussex coast to the South of Littlehampton and Worthing. It covers an area of around 47 km². The site was designated to protect subtidal chalk habitats, infralittoral rock covered by a thin layer of mixed sediment and spawning black seabream (*Spondyliosoma cantharus*) (Sussex IFCA, 2015). The government conservation advice indicates that features within the site are currently vulnerable to damage from the current level of human activities within the site, as well as from a potential increase in intensity of activities. Thus all designated features have a 'recover' general management approach in order to restore a favourable ecological condition. This advice was based on best available evidence on the sensitivity of the protected features to human activities that might damage them (Natural England, 2015a). Ecosystem services derived from Kingmere MCZ contribute to the local economy primarily through fisheries and tourism and recreation. The site is widely recognized as an iconic angling site, attracting recreational anglers from across the UK and further afield. It is used by anglers

all year round, with April to June, the black bream breeding season, being a key period. Charters launched from Littlehampton have a maximum radius of activity of 10 miles from their home port due to the conditions needed to enter and exit Littlehampton harbour, which makes the Kingmere area particularly important for them. The site also encompasses an important area for commercial fishermen and is heavily fished by trawlers, netters and potters using lobster pots, whelk pots and cuttlefish traps. Some parts of the site were also licensed for aggregate extraction prior to designation (Department for Food, Environment and Rural Affairs [Defra], Joint Nature Conservation Committee [JNCC] and Natural England, 2013). The MCZ is also used by recreational SCUBA divers as it is one of a relatively small number of reef features in the area that can be dived.

2.1.2. Beachy Head West MCZ

Beachy Head West MCZ consists of two spatially separate areas that run parallel to the East Sussex coastline extending from the Brighton to the Beachy Head Cliffs near Eastbourne, protecting a total area of approximately 24 km^2. The site was designated as such to exclude Newhaven Port. Beachy Head West was designated to protect a range of chalk, sandy, muddy sediment habitats and blue mussel (*Mytilus edulis*) beds, as well as native oysters (*Ostrea edulis*) and short snouted seahorses (*Hippocampus hippocampus*) (Defra, JNCC and Natural England, 2013). Parts of the site are accessible from the shore, and its location near the large urban area of Brighton and Hove make it popular with people who enjoy shoreline activities like rock pooling and coast walking. The site delivers substantial cultural ecosystem service benefits to the local and visiting population including a strong sense of place (Ranger et al. 2011). It is popular with recreational sailors, including many from Brighton Marina which lies just west of the MCZ, and for wildlife watching both on land and on charter wildlife watching trips out of nearby ports. Its location adjoining the South Downs National Park, including the iconic white chalk cliffs, underlines that the landscape/seascape is widely recognised and appreciated. The site is fished commercially. As it is partially intertidal and an existing Sussex IFCA byelaw already restricts trawling within part of this site already, there is primarily net and very limited towed gear activity within the site. There are however a number of boats that fish with static gear including nets and pots in the site. The site is also relatively popular for shore angling and private boat angling throughout. English Heritage has indicated that this site is likely to be of interest for future archaeological excavation (Natural England, 2012a).

2.2 Methodological approach

The research process discussed here consisted of three stages, which are outlined in Figure 2. Stage 1 followed the CVM approach to understand the decision-making context, community values and perspectives, culminating in production of a documentary film. Stage 2 used outputs from Stage 1 to inform management options and criteria, which fed into MCA workshops in Stage 3. As depicted there, prior to these three stages, a separate, larger-scale participatory regional process identified potential MCZ sites in the region (Natural England, 2012b), which informed site designation by the UK Government in 2013. Following the three stages, Sussex IFCA undertook a formal consultation process on management measures, leading to formal management measures proposed as byelaws.

2010-2013	2013-14	2014	2014	2015-16
Site selection and designation	**Stage 1:** Community Voice Method film production	**Stage 2:** Establishing management options and criteria	**Stage 3:** MCA workshops	Formal consultation and adoption of byelaws

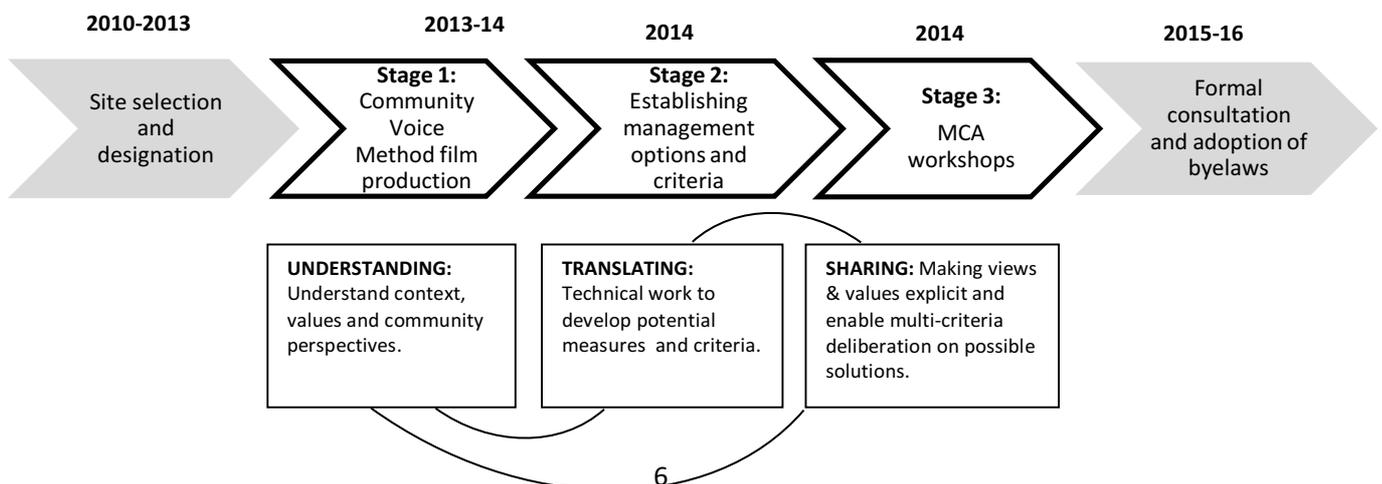| **UNDERSTANDING:** Understand context, values and community perspectives.	**TRANSLATING:** Technical work to develop potential measures and criteria.	**SHARING:** Making views & values explicit and enable multi-criteria deliberation on possible solutions.

Figure 2: Diagram showing the feedback between the three stages of the project within the broader context of the MPA site selection, designation and management process in England.

2.2.1 Community Voice Method

While there has been a widespread acceptance and promotion of participation as a means to achieving higher quality and more durable decisions around environmental resources, there is growing disillusionment among stakeholders, including both managers and resource users, who have failed to see these claims realised (Reed, 2008). Recognising that traditional methods of public participation, such as drop-in sessions, public hearings and online consultations routinely fail to engage a broad spectrum of people or effectively address local environmental management issues, CVM was designed to test the premise that a different kind of public participation process could yield better results (Cumming and Norwood, 2012). Its originators identified a need to step back from narrow, polarized policy debates and foster a conversation around the shared values that connect people to places and nature. Through grounding in local values and discourses, CVM seeks to foster more inclusive, informed and ongoing dialogue in communities, especially where stakeholders may feel uncomfortable participating in traditional public meetings and consultations.

CVM precedes public meetings with participatory research, and in so doing is able to establish more effective spaces for inclusive dialogue, provide participants with more accessible information, and help build enduring community capacity to address resource management issues. The method takes an iterative approach; successive opportunities for participation are followed by successive rounds of data analysis (Cumming and Norwood, 2012). Since 2001, CVM has been implemented in a range of locations and diverse contexts (www.communityvoicemethod.com). This breadth of practice has demonstrated that the method is highly adaptable and effective at facilitating impactful stakeholder participation in decision-making regarding environmental resource use. Though originally designed to address issues of land use change, more recent projects have successfully applied CVM to other resource management issues, including fisheries management, and local food system development (Cumming and Holland, 2013). The method was successfully used in the Turks and Caicos Islands to develop fishery legislation with resource users and Government which led to democratically developed legislation being enacted in 2014 (Christie et al. 2014).

2.2.2 Multi-Criteria Approach

In past projects, CVM has relied primarily on facilitated, small group discussions to prompt deliberation about management options. However, we wanted to harness an analytical-deliberative approach, combining deliberation with structured analytical tools to help generate learning and provide more formal outputs to support decision-makers (Kenter, 2016c). MCA incorporates a suite of decision support tools that have been employed in complex decision-making situations with multiple and often conflicting objectives that stakeholder groups and/or decision-makers value differently (Saarikoski et al. 2015). The general aim of MCA is to evaluate the potential of different courses of action against criteria that capture key considerations around a decision-making problem. MCA usually involves numeric ranking or weighting of criteria and scoring of options in order to support development and evaluation of a preferred option. MCA has often been used by individuals to make an expert or technical evaluation of evidence but the approach is also effective in a participatory context where evidence for the scoring of options is deliberated prior to evaluations made either by individual group members or by consensus. Deliberative MCA has been used to inform decision making in relation to both terrestrial and marine management planning, for example in comparing the views of diverse stakeholders and assessing the impact of manageability criteria on voluntary compliance in MPAs (Read et al. 2011) and facilitating integration and mutual learning to define relevant policy options in the context of complex Integrated Coastal Zone Management (Garmendia et al. 2010). Davies et al. (2013) argue that participatory or deliberative MCA has the potential to address several of the challenges related to conflicts in conservation management by employing a more transparent process which overcomes feelings of mistrust and tension between stakeholders. It is recognised as a means for a more

plural form of evaluation than purely economic valuation, as it can break down complex problems and allow comparison of ecological objectives with economic as well as socio-cultural ones in a shared framework. However, others have pointed out that most deliberative MCA approaches are still implemented on the basis of an arithmetic utilitarian aggregation mechanism, which means it could be subjected to some of the same critiques as monetary cost-benefit analysis approaches, namely that value plurality is restricted and that the aggregation mechanism is arbitrary (Raymond et al. 2014; Kenter, 2016a in this issue; 2016c; Kenter et al. 2016b in this issue). In response, our approach to MCA did not use scoring of criteria but deliberation, negotiation and majority voting both to assess the degree to which management options met different criteria, and which were participants' overall preferred options.

The overall flow of the process reflected the Deliberative Value Formation model described by Kenter, Reed and Fazey (2016 in this issue), with value formation conceived of as a 'translation' of transcendental values, i.e. guiding principles and life goals (Kenter et al. 2015; Raymond and Kenter, 2016 in this issue), to a specific context. Reflection on individual and communal transcendental values was expressed through the film and its discussion at the start of the workshops. This was followed by deliberation on beliefs around the degree to which different management options met different criteria, and finally the translation of this process into forming contextual values and shared value indicators in terms of votes for different options.

2.3 Stage 1: Understanding – Community Voice Method film production
The first stage of the process allowed the project team to develop their understanding of the historical, institutional and cultural context in Sussex by conducting a series of in depth interviews to gather stakeholder views, deepening understanding of peoples' values and their perceptions of the coast and sea, and management of marine resources. In late 2013 and early 2014, 41 filmed stakeholder interviews were carried out in Sussex and London. The sample, summarized in Table 1, was shaped to gather a range of views on and interests in marine resource use and conservation. Sampling for the CVM film was purposive, rather than random. People were intentionally selected where they were known to be engaged in, care about, or be impacted by MCZ management. Interviewees were identified through known networks and 'snowball' sampling. The goal was to ensure that as many views as possible were represented and that no group identified as 'having a stake' or point of view pertinent to the remit of the Sussex IFCA in managing fisheries activities within MCZs was omitted or over-represented. Given the geographic scope of the project it was also important to ensure not only sectoral/interest group representation, but also geographic representation. Care was taken to ensure that participants' primary occupation did not define the scope of their views and values. The interview guide (Appendix 1 in Online Supplementary Material) was developed collaboratively by project partners and was specifically designed to explore commonalities beyond occupation. For example, most participants were local residents and shared their views from that perspective. Many also had secondary links and associated views, for example a regulator was also an angler, a fisher was a partner in a local coffee shop business and an 'environment' participant was also involved in tourism and education.

Table 1: Number of interviewees who participated in the Community Voice Method filmed interviews, by primary sector and location where relevant. (**Be** – Bexhill **Br**=Brighton **H** = Hastings **L**=Littlehampton **N**=Newhaven **R**=Rye **Se**=Selsey **Sh**=Shoreham **W**=Worthing)

Sector and location	Number
Angling Charter (**B L**)	3
Angling – Recreational (**Be Br H**)	4
Angling - Commercial (**H**)	1
Commercial fishing – static (**E H L Se Sh W**)	8
Commercial fishing – mobile (**N R Sh**)	5
Commercial fishing – mixed (**Sh H**)	2
Fishing organization (**H**)	1
Supply chain (*Restaurant, fishmonger*) (**H L**)	2

Local regulators(*Sussex IFCA, Harbourmaster* **L**)	2
Academic specialist in MPA governance (*London*)	1
National regulatory bodies (*Natural England, Environment Agency*)	2
Aggregate industry	1
Marine Archeology	1
Environment & tourism (*eNGO's, National Park, Independent*)	3
Recreation (*Sailing, Diving*)	5
Total number of interviewees	**41**

Approximately 50 hours of footage from these filmed interviews was imported to a qualitative analysis software program, NViVO 9 (QSR International), manually transcribed and thematically coded based on grounded theory (i.e. codes were not predefined but established from the data) using similar protocols to those applied in previous CVM studies (Cumming and Norwood, 2012; Cumming and Holland, 2013). This process enabled researchers to analyse the data and develop a model to guide the film narrative. This was divided into 6 sections reflecting the sections in the interview guide: *People and the sea*, *Change*, *Management*, *MPAs*, *Specific sites* and *The future*. This guided the editing of two films, each about 35 minutes long, which were identical up to the point where participants were asked for their views on management measures for the two specific sites (these *Specific sites* sections were each about 5 minutes long). All interviewees appeared in the films.

2.4 Stage 2: Translating - Establishing management options and criteria
The second stage of the process was to work within the legislative and regulatory context, reflecting on the deeper understanding of the socio-cultural context developed in Stage 1, to develop a range of possible management measures and criteria against which to evaluate them. Management options for different gear types (i.e. mobile gear, static gear and angling) developed by the IFCA in discussion with Natural England, the statutory government nature conservation advisors, had to meet certain pre-existing legal and policy requirements including taking account of NE conservation advice which includes details of activities which are considered to have a potentially detrimental impact on the conservation features of the sites and which would therefore require management of some kind (Natural England, 2015a; 2015b). A set of criteria, against which the potential management options would be measured, were developed. They were based on the regulators' knowledge of the local area and fishing activity, potential for compliance and the capacity for enforcement, as well as key tensions and themes that had emerged from the filmed stakeholder interviews conducted in Stage 1 (e.g. gear conflict; displacement; trade-offs between short and long-term ecosystem service sustainability).

2.5 Stage 3: Sharing - Workshops
Workshops were widely promoted via a variety of channels including direct communications, social media, posters and fliers. They were open to attend by anyone through expressing an interest with Sussex IFCA. Almost all of those who were interviewed in Stage 1 attended. They were held at six locations (Figure 1). Each workshop was four hours in duration, with three workshops in the west of the district—in Littlehampton (pilot), Shoreham and Brighton—focusing on Kingmere MCZ, and three in the east—in Newhaven, Eastbourne and Hastings—focusing on Beachy Head West MCZ. Following some adjustments made in response to participants' feedback regarding the pilot workshop at Littlehampton, the remaining workshops all followed the same revised structure.

The workshops were introduced as part of the informal consultation on management options feeding into the IFCA decision-making process. It was clearly stated that the workshops would not identify and develop fine-detail management measures or replace existing statutory consultation processes to develop IFCA management. The scope of the workshops was limited to the legal competency of the IFCA - fisheries and conservation – with management considerations of other sector activity, such as aggregate extraction, not discussed. The small number of concerns raised that were out of scope were listed by facilitators on a

separate 'parking' sheet noting that these would be passed on to the competent authority for the relevant issue.

a. Information sharing and film screening: Details of the policy and decision-making context and the conservation objectives for the site in question were explained in short presentations by IFCA and Natural England representatives. Maps of site features and recorded fishing activity were presented and discussed. This was followed by a screening of the CVM film and a dinner break, which allowed participants to informally reflect on the film and the other information that had been shared.

b. Likes and dislikes: Participants were given a short amount of time to review, discuss and become more familiar with details of management options (Table 3&4). They then recorded their most liked (or least disliked) and most disliked management measure. This orientation exercise allowed rapid familiarization with the management options and provided participants with a snapshot of each other's views.

c. Management option carousel: In small mixed groups, participants moved around the room to a series of stations with large paper sheets; at each station, they discussed one of the criteria for 8-10 minutes. Facilitators encouraged participants to consider each others' unique views and find agreement, but consensus was not required on which management option they thought best met the criterion under consideration. Facilitators recorded responses in the form of a vote tally and keywords on post-it notes with motivations. Participants might also decide that there would be 'no difference', or opt not to provide an answer. It was made clear that this exercise was not about indicating their preferences for different management options, and that the results for particular criteria would not be considered in isolation.

d. Plenary voting on management options: The results of the first two exercises were collated and presented back to participants. They were then asked to vote for the management option they thought should be enacted per gear type, considering both the outcomes of the deliberative exercises they had participated in and the different views, transcendental values and information that had been expressed throughout the workshop process. Votes were treated equally and were not weighted. Abstentions were allowed.

e. Plenary discussion: The 'winning' combination of management options by gear type was presented back to participants; where there were draws in number of votes, both options would be presented. Any remaining time was devoted to an open plenary discussion and provided an opportunity for participants to register any concerns, caveats and provisos, suggested amendments or other suggestions based on the votes that had been cast.

Workshop outputs were reported in full to all participants, made available on the IFCA website, and presented to the IFCA Committee to consider in the subsequent decision making process.

f. Feedback and follow up interviews: Written feedback was gathered at the end of each workshop. A short printed questionnaire was distributed to all participants who were asked to return it to a member of the facilitation team. Questions included feedback on the workshop, practical arrangements, and group work, as well as capturing information on participants' use of the marine environment and previous involvement in fisheries management consultations. In addition, more detailed qualitative feedback was gathered from three participants during filmed conversations with an independent filmmaking company; these were used in the production of an informational film about the method.

3. Results

3.1 Stage 1: Community Voice Method Film Production

Table 2 summarises the key themes explored in the interviews along with key threads, prevalent participant views and alternate or dissenting views.

Table 2: CVM Film narrative model and summary of key themes and participant perceptions, including concerns and alternate views.

Key themes explored	1 ➔ People & the sea	2 ➔ Change	3 ➔ Management	4 ➔ MPAs	5 ➔ Specific sites	6 ➔ Participatory decision-making	7 The future
	Relationship between people and the sea and coast; unique and varied perspectives of sea users.	Reflection on linear and non-linear (constant) change, changes, in the environment and community in general, and the fishing industry in particular.	Need for management in the marine environment and views on which activities need to be managed.	Understanding of MPAs and views on the need for MPAs and their role as a management tool.	Site description, how sites are used; views on need for management and type of management needed.	Views on how decision-making should happen and specifically on stakeholder engagement and participation in decision-making.	
Key participant response threads	-What people value about the coast and sea in Sussex -Connection to the coast and sea in Sussex. -Favourite places -The importance of living and working by the sea -Importance to community	**General** -Coastal change -Development -Environmental change -Changes in use -Drivers of change **Fisheries change** -Fleet composition -Effort -Species targeted -Regulatory environment -Technological change	**General** Need for management **Activities that should be managed** -Commercial fishing -Aggregate extraction -Recreational use -Wind energy development	-General views of MPAs -MPA benefits -Importance of a network (ecological coherence) -MPAs as fishery management tools	-Site description - How the site is used -Changes to the site over time -Need for management at the site -Appropriate management approaches	Local engagement in identifying priorities and decision-making Previous experiences of participation.	Vision for the future.
Prevalent perspective	**Individual** -Description of direct use relationship -Emotional connection -Sense of community (long term connection) -Aesthetic: landscape/seascape -Sense of place -No other employment desired/possible -social and ecological knowledge **Community** -Socio-cultural value -Economic value	**General** -Significant, directional change to the coastal environment is taking place -Changes are mostly unwelcome **Fisheries change** -Fishing and the fishing industry are undergoing profound changes	**General** Fisheries management needed to protect the environment and the rights of all users	-MPAs are valuable for protecting marine habitat -MPAs improve the long-term viability of fisheries -MPAs impact on use of the sea and some of these impacts are a threat to local users	-Connection with the site (direct use/emotional) - Ecological/aesthetic features of the site . -Use/experience of the site -Activities that could negatively impact the site -Management needed to ensure future (use and non-use)	-Positive views of local engagement - participation and local engagement only part f the story -Need for engagement at different scales (local, national, international) -Importance of relationship between local regulator and users	Hopeful Positive/appropriate approaches to management of MPAs

Alternate/dissenting perspective	-Professional responsibility	General -No significant changes are taking place -Non-directional change takes place continually -Change is inevitable/natural **Fisheries change** -Fishing is essentially as it has always been	General -Nature as manager – no need for human intervention -Challenges of monitoring and enforcement -Importance of sound evidence – uncertainty **Fisheries** -Commercial fisheries are already managed enough	-MPAs as yet another threat to practices of sea users -MPAs not proven as fishery management tools, benefits to users unlikely. -MPAs cause negative environmental impacts. -MPAs cause displacement and gear conflict -Uncertainty about future use and about impacts of MPAs -Equity concerns around some users being excluded while others are not.	-Designation as MPA will have negative impacts -There has been no change at the site -No management is needed	-negative experiences of previous participation	-Inappropriate management -Uncertainty

3.2 Stage 2: Translating - Establishing management options and criteria

The criteria against which the management options were considered (Table 3) included conservation, management and social and economic criteria and reflected the legislative imperative established by the designation orders for the sites. For the Kingmere workshops an additional question relating to impacts on the charter fishing sector was included, in recognition of the importance of the site to this sector.

Table 3: Conservation, management and socio-economic criteria against which the management options would be considered.

Conservation	Q1	Which management option will best meet the **conservation objectives** of the MCZ?
Management	Q2	Which management option will be easiest to **enforce**?
	Q3	Which management option will best limit **displacement** related pressures on habitats, and **conflicts** between users in areas outside the MCZ?
Socio-economic	Q4	Which management option will have the least negative impacts on **static gear fishing income** in the short term?
	Q5	Which management scenario will have the least negative impact on **mobile gear fishing income** in the short term?
	Q6	Which management option will have the least negative impacts on **charter angling income** in the short term? (*Kingmere workshops only*)
	Q7	Which management option will have the least negative impacts on **recreational activities**?
	Q8	Which management option will increase **long term sustainability** of fishing and recreational activities?

The management options developed (Tables 4&5) encompassed a range of measures, from the most precautionary and least complex with regards to enforcement and compliance (e.g. exclusion of all mobile fishing gear from the whole site), to measures that were much more adaptive, requiring more management complexity and community involvement (e.g. Community-led and developed voluntary code of conduct promoting highly sustainable fishing practices within the MCZ). The measures were roughly grouped so that the most precautionary measures were in the first option while the more adaptive measures were in options 2 and 3. The prerequisite for all management options was that they would allow the Sussex IFCA to fulfill its duty to safeguard marine resources while taking account of manageability and social and economic implications; thus only options that were seen as, in principle, feasible by the IFCA and Natural England were maintained. Distinct management measures were developed for the three main fishing gear groupings known to be used at the sites (i.e. mobile, static and angling/gathering) in order to reflect the different ways that gear types would be likely to interact with the features of the site.

Table 4: Proposed management options developed for consideration at Kingmere workshops. Mobile gear is moved across the seabed or through the water column by a vessel e.g. trawl or dredge. Static gear refers to any gear which is set to allow fish or shellfish to swim into it, or to attract them by bait, e.g. lobster or crab pots or tangle nets.

	Feature	Mobile gear measures	Static gear measures	Angling measures
Option 1	**Whole site**	1M1 Prohibited year round 1M2 Appropriate buffer	1S1 Seasonal prohibition 1S2 iVMS* fitted	1A1 Seasonal prohibition
	Rock & sediment features		1S3 Prohibited year round 1S4 Appropriate buffer	1A2 Out of season code of conduct – anchoring restriction
	Bream nesting sites			

	Feature	Mobile gear measures	Static gear measures	Angling measures
Option 2	**Whole site**	2M1 Seasonal* prohibition 2M2 iVMS* fitted	2S1 Seasonal prohibition on nets 2S2 Out of season control on effort 2S3 iVMS fitted	2A1 Seasonal prohibition on retaining bream (catch & release) 2A2 Out of season control on fishing effort
	Rock & sediment features	2M3 Prohibited year round 2M4 Appropriate buffer	2S4 Seasonal prohibition on pots/traps over bream nesting habitat (equate to habitat protected features) 2S5 Appropriate buffer	2A3 Seasonal prohibition on anchoring over bream nesting habitat (equate to habitat protected features).
	Bream nesting sites			

	Feature	Mobile gear measures	Static gear measures	Angling measures
Option 3	**Whole site**	3M1 Seasonal prohibition 3M2 iVMS fitted	3S1 Seasonal prohibition of targeted net fishery 3S2 Out of season control on effort	3A1 Seasonal bag limit on bream retained 3A2 Mechanism for controlling fishing effort.
	Rock & sediment features	3M3 Prohibited year round 3M4 Out of season control on fishing effort		
	Bream nesting sites		3S3 Seasonal prohibition on pots/traps over known bream nesting sites 3S4 Appropriate seasonal buffer around known nesting sites	3A3 Voluntary seasonal prohibition on anchoring over bream nesting areas.

*iVMS: Inshore Vessel Monitoring System, which provides real time updates on vessel positions
**Definition of season: April 1st-June 31st

Table 5: Proposed management options developed for consideration at Beachy Head West workshops.

	Mobile gear measures	Static gear measures	Angling measures
Option 1	**1M1 Whole MCZ site, year round trawling restriction –** modify existing seasonal trawling exclusion byelaw area to encompass the whole MCZ and to be year round. **1M2** Appropriate buffer around whole site	**1S1** Under pending Shellfish Permit byelaw cap potting effort at current levels, and develop mechanism to manage netting effort in the future to cap at current levels **1S2** Requirement to supply static gear catch and fishing activity information **1S3** IFCA-led voluntary code of conduct promoting highly sustainable fishing practices within the MCZ, to be developed with the community[2]	**1A1** Prohibition of activities which cause physical damage to rock features, in the process of intertidal gathering of fisheries resources (including bait) **1A2** IFCA-led education and voluntary code of conduct promoting sustainable angling and intertidal fisheries resources gathering within the MCZ, to be developed with the community[3]

Option 2	**2M1 Whole MCZ site, spatial management over protected rock features** - modify existing seasonal trawling exclusion byelaw area to be encompass the whole MCZ and to be year round over protected rock features and remain seasonal (May-Oct) over sediment features [1] **2M2** Appropriate buffer around protected rock features **2M3** iVMS system fitted **2M4** Requirement to supply catch and fishing activity information	**2S1** Review status of static gear fishery and features, and in future set appropriate static gear effort limits **2S2** Requirement to supply static gear catch and fishing activity information **2S3** Community-led and developed voluntary code of conduct promoting highly sustainable fishing practices within the MCZ[2]	**2A1** Community-led education and voluntary code of conduct promoting sustainable angling and intertidal fisheries resources gathering within the MCZ

[1]**To assess feasibility need to consider:** Size of isolated sediment feature areas and ability to fish within these without interacting with protected rock features; if sufficient confidence in features location and extent; and compliance complexity
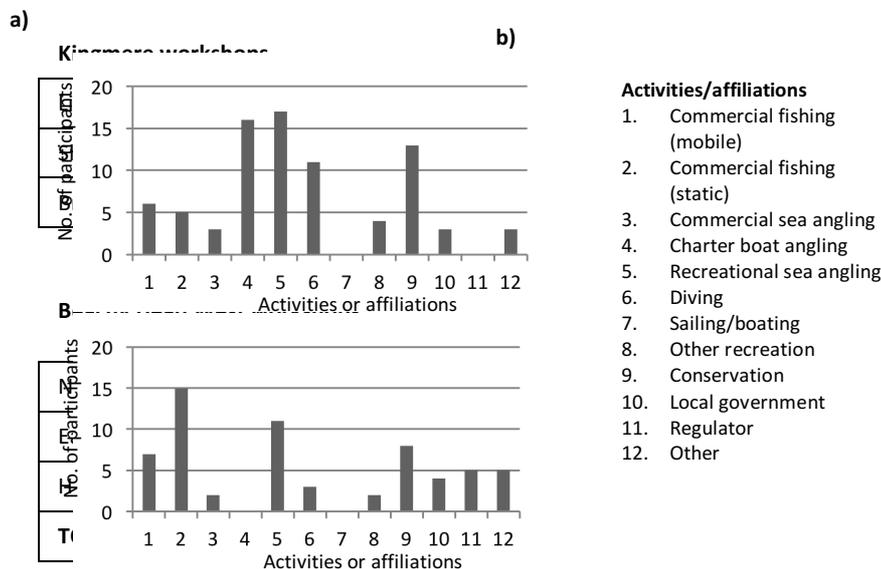
[2]**Examples of what could be included as a starting point for discussions:** Anchoring management – use of non hooked anchors, reef avoidance; Seahorses management - return directly if caught, report information to NE (location, species, photograph), avoid areas where high seahorse bycatch; Voluntary no take area within part of the site; Maximum / increased minimum sizes

[3]**Examples of what could be included as a starting point for discussions:** Voluntary ban on intertidal fisheries resources gathering activities which cause physical damage to rock features (if not regulated under measure 1A1); Anchoring management – use of sacrificial anchors, reef avoidance; Seahorses management - return directly if caught, report information to NE (location, species, photograph), avoid areas where high seahorse bycatch; Voluntary no take area within part of the site; Trampling - avoid sensitive rocky reef habitat; Catch and fishing activity information

3.3 Stage 3: Sharing – Workshops

Ninety people attended the workshops across the district. Stakeholders were encouraged to attend a workshop for each MCZ if they had an interest in both. Eight people took up this offer. Stakeholders were asked to indicate all relevant activities/affiliations from a list on the feedback forms distributed at the end of the workshops to describe their use of the marine environment in Sussex.

Figure 3: Participation profile for workshops. a) Indicates the number of participants at each workshop. Eight participants attended more than one workshop. b) Participants were asked to indicate all relevant activities/affiliations from a list on the feedback forms distributed at the end of the workshops to describe their use of the marine environment in Sussex. 86% of participants (n=85) completed a feedback form.

Activities/affiliations
1. Commercial fishing (mobile)
2. Commercial fishing (static)
3. Commercial sea angling
4. Charter boat angling
5. Recreational sea angling
6. Diving
7. Sailing/boating
8. Other recreation
9. Conservation
10. Local government
11. Regulator
12. Other

Results from Kingmere workshops: Most participants felt that the **conservation criteria** for Kingmere MCZ would be best met through option 1 across all gear types. There was a broader spread of votes across options for the static gear measures. In terms of the **management criteria** option 1 performed well in terms of enforceability across all gear types, but the precautionary measures were seen as a potential cause of displacement and conflict. Participants felt option 3 would better limit these impacts. A number of people

felt that it made no difference which management option was adopted as all could give rise to displacement and conflict impacts. In considering the **socio-economic criteria**, the choice of management option reflects deliberation about the likely trade offs between meeting criteria for different sea user groups. A pattern emerged of the impacts to a particular gear type being limited by adoption of Option 1 (more precautionary) measures for all other gear types. While adopting option 1 for mobile gear was seen as the best way to achieve long term sustainability, there was little difference between the three options against this criterion for static gear and option 3 was seen as the set of measures for angling most likely to deliver long term sustainability. Comments and questions were recorded during the carousel exercise, and the key threads included concerns about a lack of evidence and questions about evidence of the impact of commercial fishing and angling on features; concerns about anchoring restrictions, comments about less damaging anchors and remarks suggesting that commercial fishing should not be excluded from the whole site, only over conservation features.

Results from Beachy Head West workshops: Most participants felt that the **conservation criteria** for Beachy Head West MCZ would be best met through option 1 across all gear types. In terms of the **management criteria,** option 1 measures for mobile gear were deemed to be more enforceable, there was little difference between option 1 and 2 for static gear and option 2 was thought to be easier to enforce with regard to angling and inter-tidal resource gathering. Participants felt option 2, which would allow some access for mobile gear and would not immediately impose any limit on static gear fishing effort, would best limit displacement and conflict impacts. A number of people felt that whichever management option was adopted some displacement and conflict impacts would be felt, particularly for static gear fishers. In considering the **socio-economic criteria** there is a strong indication that participants felt complete exclusion of mobile gear from the MCZ would have the greatest impact on this sector. Option 1 for mobile gear did however perform well across the other criteria. Option 2 performed slightly better in terms of limiting impacts on the static gear sector and significantly better for limiting impacts on angling and gathering. Option 1 was most frequently selected as most likely to secure long-term sustainability. Comments and questions were recorded during the carousel exercise, and the key threads included questions around the capacity of the IFCA for monitoring and enforcement; concerns about taking a voluntary approach and the efficacy of a voluntary over a statutory approach. There were suggestions that the nature of the site and the way that it is currently used mean that there is currently little conflict.

Results of plenary voting: Participants were asked to vote for the management option they thought should be enacted per gear type, considering both the outcomes of the deliberative exercises they had participated in and the different views, transcendental values and information that had been expressed throughout all stages of the workshop process. For Kingmere, most votes were cast for option 1 for mobile gear, votes were split between option 1 and 2 for static gear and option 3 received the most votes for angling. For Beachy Head West option 1 for mobile gear received the most votes but there were an almost equal number of abstentions. While Option 1 measures for static gear and angling and gathering got more votes in this exercise, there was little difference in the number of votes between options 1 and 2.

Results of feedback questionnaires: Feedback about the workshops was gathered from 86 workshop participants (88% of the total). The majority of participants agreed or strongly agreed that their views had been heard and considered (80%, n=69) and that they had been able to give useful input on management measures for the site under consideration (62%, n=53). The film was well received by participants with 74% (n=64) reporting that they agreed or strongly agreed that it represented the range of community views. Participants were also specifically asked about small group working and deliberation. The majority reported that this approach had increased their knowledge (79%, n=68) and understanding of others' points of view (86%, n=74) and had been personally useful (77%, n=66).

4. Discussion

Our results demonstrate that a rigorous process of understanding, translating and sharing community views, values and knowledge improve not only the level of stakeholder engagement, but also the participant experience and the potential for more widely understood and accepted management outcomes. The CVM process constituted a concentrated listening exercise which surfaced deeply held values and enabled greater shared understanding of the local context. The management options and criteria presented during the workshops enabled real world knowledge exchange and in-depth dialogue, both in terms of transcendental values and group-deliberated values across the coastal stakeholder community. We will reflect on how this integrated interpretive-deliberative-democratic approach enhanced inclusion and participation and facilitated knowledge exchange and social learning by enabling participants to consider the complexity and uncertainty around the evidence and making key tensions around knowledge and power explicit. Finally, we also report on how the process influenced actual decision-making outcomes.

4.1 The role of the Community Voice Method in revealing common ground for marine management

Stakeholder participation needs to be underpinned by a philosophy that emphasises empowerment, equity, trust, and learning (Reed, 2008). Key to achieving this here was the rigorous ex-ante assessment of different stakeholders' views and values on an equal basis by the interpretive CVM methodology, before using an analytical-deliberative approach to evaluate potential management options. A hallmark of CVM is the extensive fieldwork and analysis that precedes the evaluation and sharing phases of the process: one-on-one consultation with stakeholders and detailed analysis of their input, resulting in the development of the film that is presented in the workshops. This expenditure of effort, while certainly time and resource intensive, helped in itself to build stakeholders' trust in the process.

The importance of the film to the process cannot be overestimated. It allowed wider community access to the safe, considered dynamic of a frank and personal interview.The process demonstrated to stakeholders, a commitment to considering all views and understanding a broad range of values, culminating in an engaging and accessible film reflecting a qualitative analysis of the interviews, which revealed some common ground between stakeholders. This was particularly striking in the opening section of the interviews and consequently the film, where participants were encouraged to explore and express their transcendental values and deeply held connection to place and to marine resources. Interviewees' responses in this section brought to light that different stakeholders, despite having divergent perspectives on management, shared many transcendental values around their relation to the environment, such as the importance of protecting the environment for future generations to use and enjoy. They also shared many contextual values in relation to marine cultural ecosystem services though the experiences, identities and capabilities arising from their profound place connection (see Fish, Church and Winter 2016 in this issue for conceptual discussion of these relational aspects of cultural services). For example, diverse stakeholders expressed how important the sites were to their wellbeing, expressed a love of the sea and an appreciation of the beauty of sites, and shared a sense of belonging. (see Bryce et al. 2016 and Kenter et al. 2016a in this issue for comparable findings with other marine users). One of the follow up interviewees, an environmentalist, reflected on the benefits of allowing a broader range of values to be considered in decision-making: *"When we're talking about MPAs, a really substantial proportion of what they can actually deliver are social and environmental benefits which may also have some short term impacts on business …I think that methods like CVM go far beyond just simple economic decision-making tool and incorporate the views of people in a much more holistic way."*

Opening a meeting with a film that reflects these deeply held shared values gathered during an extensive process of listening encourages participants to approach the workshop in a similar way – people are open and ready to listen and to engage, they are contemplating the views and values of others, and how certain transcendental values are held in common, and they have a better shared understanding of what may be at stake when considering management of sites. By having this effect, the film-based ethnographic approach proved beneficial to the initial stages of deliberative value formation (Kenter, Reed and Fazey this issue), in

terms of its potential to build trust, integrate knowledge and enhance capacity to deliberate. In this issue, Edwards, Collins and Goto make similar observations around their use of Arts-based Dialogue, highlighting the potential of linking interpretive, creative methods to deliberative approaches and thereby deal with many of the institutional issues deliberation faces in terms of representation, inclusivity, knowledge and power (Kenter, Reed and Fazey, 2016 and Orchard-Webb et al. 2016 in this issue).

In addition to reflecting and enabling holistic consideration of values, the film served another function within the project: by its very existence, it was a testament to the extensive work that had already gone into understanding stakeholders' perspectives, thereby reassuring sceptical stakeholders who doubted the sincerity of the process or the degree to which management agencies truly understood their worldview and experiences. The film evidenced the project's epistemological approach of moving away from primarily depending on expert based knowledge to incorporating local knowledge. A commercial fisherman, one of the participants who provided feedback during a filmed follow-up interview, described the way in which the filmed interview enabled him to communicate openly and confidently share his knowledge and perspective. *""… if you go into a room to talk to someone and you have your preconceived position and they have theirs, when you meet, if they disagree and you argue you can't have a level conversation. You can't talk to that person because you're defensive, or aggressive …when you're in front of a camera and you're sat talking to the person filming you, they're impartial. You're able to put across what you want without thinking about other people. And without having to make yours into an argument. Just relating how you feel."*

With contributions from both regulators and resource users the film grounds the deliberation in both expert and local knowledge allowing deliberation and evaluation of policy and management options on the basis of these plural and potentially conflicting claims. For example, the film was able to present change both as a linear and cyclical phenomenon. Resource users were more likely to be attuned to living and working in a constantly changing context where they portrayed themselves simply as part of a natural system, adapting to change. In contrast, regulators, as is often the case, were working in linear processes, charged with looking for effective interventions to try and control or stop change. Made explicit, these plural roles or perspectives could be openly drawn into the deliberation that followed around management measures rather than acting as an invisible barrier to meaningful dialogue.

The same participant also said that the participatory, film based approach also changed the dynamic during the face to face deliberative workshops. He describes a shift from a starting point of combative positioning to one conducive to positive discussion and exchange of ideas. *"When we were there, at the meeting, people were one way with me at the beginning because I'm a fisherman and they are maybe from the National Park or the National Trust or the Conservation Society and there were people from Natural England. And when they then seen the film and they've heard what you've got to say, they treat you differently. Because they then understand, a lot like I did afterwards, that you probably have a very similar stance, you just have different things you want to protect in that stance. In particular for me, fishing. It did make it a lot easier to talk to people. Before we had an argument. We watched the film. Afterwards, we got on a lot better."* This experience reflects the potential for the film to validate plural and potentially conflicting views and generate an atmosphere which is conducive to social learning.

The structured, purposive sample design combined with the rigorous analysis of interview data ensured that a broad array of voices and views would be equitably represented in the ensuing policymaking dialogue. This approach was welcomed by previously marginalized stakeholders and stakeholder groups because it provided them with a rhetorical platform. The process engaged a new audience with half of participants having not previously taken part in marine management consultation, A second participant, a recreational angler, who took part in a follow up interview expressed how he had felt disempowered and marginalised in previous public conversations and felt that the film gave him the opportunity to have his say: *"Over the years I've been involved in meetings to do with fishing and angling with committees, I sit on various committees now and what I've found is that the more powerful people, the people with bigger voices are always the*

people that get heard. In previous times I was quite quiet and used to sit in the meeting and not say my piece. I believed that I had a good point to put over but I couldn't because of my lack of confidence… I believe that as an angler I have to have a say, but other people also need to have a say and I think it's a fair method of giving everybody a shout at what they want to say." By the same token, the approach was threatening to groups whose voices have tended to dominate less structured public forums; these more empowered/resourced stakeholders accurately perceived that CVM required them to share the stage with those who were less frequently heard. It appeared to us that for this reason, some stakeholders initially questioned the value of the interview/film phase. The combination of the interviews with subsequent participation opportunities during the workshops, however, eventually satisfied most participants that their views had been adequately taken into account. The commercial fisher reflected on the balance the film was able to achieve: *"After doing the filming and going to the workshop, the actual meeting with everyone else there, and seeing the footage when it was all put together with everyone else's' viewpoints and mine, I think it came across a lot better than I had imagined because my worries of potentially being edited down to sound like something I wasn't – they weren't completely unfounded because my opinion needs to be condensed down into a short film, it might not come across exactly how I wanted because I haven't got all the time to put the words in – but I do think that in general it was a very good representation of what I felt."*

4.2 Qualitative MCA as a deliberative-democratic process

A qualitative multi-criteria approach was nested in the Community Voice Method. This allowed participants to move forward from considering the range of perspectives and values presented in the film to reflecting on these as an integrated part of deliberations to evaluate how potential management measures would deliver specific criteria. Feeding back the results to participants, a picture could then built up of the overall perceived performance of management options, and the feedbacks and trade-offs involved. This, alongside the wider workshop deliberations, then informed participants' final votes on preferred management options.

The workshops built on the foundation of the film and maintained the space for expert information to be shared and for participants to challenge and better understand both the policy and evidence underpinning decisions about these sites within the supportive framing of the range of community views that had been expressed in the film. Participants were able to raise concerns directly with staff from the IFCA and NE about equity, uncertainty and potential impacts of management including displacement and conflict. While some of the data was validated by participants, other data was challenged.

The initial familiarisation exercise quickly brought to light measures that could present challenges to some participants and made the different interests of represented stakeholder groups explicit. For example, the most precautionary and least complex management measures with regards to enforcement and compliance were selected as most disliked but were also the most liked (or least disliked). The perspectives of different stakeholder groups, which were expressed in the film, were therefore brought into the exercises, established and acknowledged from the outset and participants moved into deliberation with plural views in mind enabling them to consider other's perspectives alongside their own.

The deliberative methodology of the workshops was developed to integrate with the CVM and draw on the strengths of MCA in managing the cognitive burden on time-constrained workshop participants. At the same time, it aimed to reflect the democratic deliberative focus of the workshops and the fact that a significant amount of supporting qualitative analysis had already been undertaken as part of the CVM and shared with participants. While traditional MCA would have required participants to evaluate the relative importance of the criteria themselves and the extent to which each management option would deliver each criterion, here each of the criteria had already been discussed from different perspectives by several stakeholders during the filmed CVM interviews, generating a subjective evaluation. Following the pilot, we considered it

inappropriate to try and create some kind of mean score of the importance of different criteria, as this would negate the plurality and subjectivity of perspectives; thus participants were asked to simply identify which option would best deliver each criterion for each gear type.

Despite these adaptations, the transition from the CVM film screening to the MCA in the workshops was not seamless – the methodical nature of MCA interrupted the flow of discussion and felt foreign and over-structured to some of the participants, some of whom mistrusted it due to the lack of opportunity to discuss their views in a less constrained way. However, participants rapidly familiarised themselves with the approach and engaged with the exercises. As participants discussed how well specific sets of measures would deliver each criterion in turn, it became evident that the structured approach did in fact help to increase shared understanding and reduce complexity by breaking down the multi-faceted problems into smaller and simpler components. This reduced conflict and polarisation during the deliberations, as participants focussed on the evidence and information available to answer the questions, and needed to make explicit to one another any assumptions they were making.

The process required participants to work in unfamiliar, mixed groups and approach each question from angles they may not previously have considered, including the perspective of the regulator. All combinations of management options and criteria were considered in turn, which led participants to reveal relationships or feedbacks that may not have been considered before. For example, while participants favoured some of the voluntary measures proposed for Beachy Head West which would allow for greater engagement and flexibility, they also expressed concerns about whether the IFCAs current capacity and resource was sufficient to provide effective support for compliance. The deliberation around 'manageability' could then be taken into account alongside plenary voting outcomes.

Recognition of both shared transcendental values and better understanding of the potential impacts of different options appeared to lead to more appreciation for adaptive management options among participants, as the participants' capacity to consider the issue from perspectives other than their own was enhanced. For example, during the plenary voting on measures for Beachy Head West, option 1 for mobile gear received 18 votes, but there were also 16 abstentions, the greatest number of abstentions recorded in this process. This reflected participants' deliberation around the conservation benefits vs. socio-economic implications of mobile gear exclusion. Specifically, while those that abstained likely recognised the environmental benefits of Option 1, they did not want to be seen to be supporting measures that would adversely affect their fellow fishers in the community. In some cases, there were fierce discussions and occasional disruptions, and the experienced facilitators pro-actively managed issues of power to enable equal participation, for example by actively inviting less vocal participants to express their views, and by not tolerating aggressive communication. In some cases, views converged as a result of deliberation within the group as they worked around the management option carousel and differences of opinion that emerged during the early management option vs criteria evaluations were re-visited as the group moved through the criteria. With acknowledgments by fishers, recreationalists and conservationists that a particular option that they disliked nonetheless might be more effective than others at meeting a particular criterion, a common understanding of recurring trade-offs and synergies began to emerge. Thus, this structure helped to approximate deliberative-democratic ideals of communicative rationality and reasoned discourse (Lo, 2013; Orchard-Webb et al. 2016 in this issue).

The site-based nature of the process was highly conducive to exchanging and incorporating local values and knowledge. Participants expressed that many of the conversations they were having had not been possible before, as opportunities for interaction between sectors had been limited despite the fact that they regularly use the same spaces at sea. The social deliberative nature of the MCA appeared to be effective in bringing together the diverse knowledge and expertise present in each group and allowed people to make choices based on this enhanced or group knowledge. Although consensus was not required, there was regularly agreement within groups on how management options might perform against criteria.

The contextual values expressed by stakeholders through voting as to which management option they thought should be enacted (by gear type) at the end of the workshop reflected the choices that were made on the basis of performance of options against the criteria in the MCA, which suggests that this process yielded information that were used in deciding on their final management preferences. Ultimately, there was no single negotiated outcome but rather an agreement to disagree (Lo, 2013), built on increased recognition of and respect for others' perspectives. This was reflected in the IFCA's commitment to acknowledge the majorities and minorities for particular management options, and recognising that vote counts were influenced by both the relative proportions of the different stakeholder represented and the effective deliberations between them.

The process described here effectively supported local regulators in developing a management intervention that was locally grounded and understood. Stakeholders' positive experience of the process was clearly expressed in their feedback where the vast majority indicated it had been a convincing opportunity for being heard, better understanding others' perspectives and inputting into decisions. Following the workshops in Sussex, the IFCA developed and consulted on a sophisticated, spatially zoned and seasonal site management plan for Kingmere MCZ. The measures proposed both meet the ecological requirements of the site, but also reflect key views expressed during the workshops. Mobile gear is now broadly excluded from the site but has been allowed access to one area where conservation features are not present. Nuanced, adaptive management measures have been proposed for static gear and angling. A formal consultation process for a proposed management byelaw for the Beachy Head West MCZ is expected in the near future.

5. Conclusions

Protected areas are a well established tool for ecosystem conservation and restoration. Pomeroy and Douvere (2008) argue that successful implementation of ecosystem based management depends on the identification and understanding of different stakeholders, their practices, expectations and interests, and this requires a balancing of conservation objectives with social considerations. Yet the capacity of competent authorites, such as IFCAs in England, to achieve this through deliberative-democratic participatory processes is compromised by limited resources and experience. Thus both the value and complexity of such processes is often not integrated into policy processes, which often rely on more conventional means of consultation such as public meetings and written responses to consultation documents.

Transdisciplinarity has been advocated by post-normal science as a way to better deal with complexity and uncertainty in decision making (Funtowicz and Ravetz, 1993; Jahn et al. 2012; Kay and Regier, 2000). Balmford and Cowling (2006) are among many who identify a particular need for approaches that break out of disciplinary silos to tackle what they see as perhaps the most pervasive underlying threat to the environment by reconnecting people and nature. This is a narrative that is gaining momentum in many parts of the world, including the UK, reflecting a sense that the solutions to the emerging biophysical problems are entwined with the relationship people have with nature (Ritchie and Ellis, 2010; Fish, Church and Winter 2016 in this issue). A recent interdisciplinary review finds that the Western 'disconnect from nature' is central to the convergent social-ecological crises and is primarily a problem in consciousness (Zylstra et.al. 2014). While biological knowledge is extremely important to understanding systems, social factors are often the primary determinants of conservation success or failure (Mascia et al. 2003). If we want to move beyond documenting losses or identifying specific causes of decline to understanding their underlying drivers and implementing interventions on anything other than a piecemeal basis, we need to undergo what has been described as a significant discovery for natural scientists; the realization that conservation is primarily not about biology but about people and the choices they make (Balmford and Cowling 2006).

Given the number of MPAs being designated in the UK and elsewhere, the number of sea users who are active in these spaces, and the pressing drivers for good management, there is a clear need to explore

effective consultative approaches. Further participatory research and ongoing stakeholder engagement within communities using the sites in this case study will determine the impact of this process on the long term management and recovery of these sites. This study, which demonstrated an innovative approach integrating a film-based interpretive approach with a deliberative-democratic multicriteria evaluation, highlights the power of film-based interpretation in building trust between conflicting interests by highlighting shared transcendental values and enabling more equal representation and participation, helping to address some of the key challenges of deliberative methods. It also addresses some of the key emerging themes in the cultural ecosystem services literature around the importance of interpretation, creative approaches, relational values and identities in grounding interventions in people's connection to place (in this issue: Bryce et al. 2016; Edwards, Collins and Goto 2016; Fish, Church and Winter 2016; Fish et al. 2016; Kenter, 2016b). Combined with a deliberative-democratic rather than arithmetic approach to MCA, this provides an effective template for participatory management of MPAs and Ecosystem Approaches to conservation management more broadly, to help ensure the effective conservation of biodiversity and ecosystem services in a way that is equitable, inclusive and effective.

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