Establishing attitudes and perceptions of recreational boat users based in the River Hamble Estuary, UK, towards Marine Conservation Zones

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1. Introduction

Increased pressures on marine and coastal resources have led to their degradation [1]. Marine Protected Areas (MPAs) are an integral feature of marine conservation programmes globally to mitigate such degradation. The Fifth World Parks Congress [2] and the World Summit on Sustainable Development [3] both advocated for the creation of new MPAs. Marine Conservation Zones (MCZs) are a new type of MPA designated under the United Kingdom’s Marine and Coastal Access Act, 2009 and are designed to ensure the long term survival of wildlife and biodiversity in UK waters. They are being set up to safeguard sensitive species and habitats for the benefit of all users [4]. These marine sites will exist alongside European marine sites (Special Areas of Conservation [SACs] and Special Areas of Protection [SPAs]), to form an ecologically coherent network of MPAs [5]. In a partnership between the Department for Environment, Food and Rural Affairs (Defra), Natural England and the Joint Nature Conservation Committee (JNCC), four Regional MCZ Projects were created; Balanced Seas (south-east), Finding Sanctuary (south-west), Irish Sea Conservation Zones and Net Gain (North Sea).

Although MPAs have been recognised for their role in protecting marine biodiversity and supporting the recovery of degraded marine ecosystems [6], they have also proven to be a source of much contention. Fundamentally, MPAs are about managing users and the associated highly emotive issues invoked [6] particularly related to restrictions placed on users [7]. Any restrictions placed on users’ access rights to certain coastal areas can instigate conflict, and potentially have negative affects on the success of MCZ implementation and management [6].

Activities restricted within MCZs will vary depending on the conservation objectives of each site. Within more highly protected MCZs, certain activities associated with recreational boating may be restricted due to their incompatibility with sensitive species and habitats. For example, anchoring and mooring can physically disturb or destroy plants and animals living on the seabed. Both motor boating and non-motor boating activity can disturb feeding and breeding wildlife, such as birds, by scaring them away [8]. Such disturbances over time can result in long term deterioration of the health of populations [9].

Understanding stakeholders' perceptions and involving them in the establishment of MPAs is widely accepted as means to gain support and compliance [10]. It has been argued that data resulting from investigations of stakeholder perceptions is at least as useful as traditional monitoring of environmental quality [11]. Suman et al [12] recognised the importance of mitigating perceptions of 'top-down' decisions during planning stages, and adopting co-management strategies in order to achieve biological success of MPAs. Effective public outreach and integration of local resource users in the planning and implementation stages is imperative if success is to be achieved. Himes [13] stressed the importance of involving stakeholders from the beginning in major aspects of management, not only in the planning stages but also in the implementation stages of management actions. Without this involvement, MPA success would not be achieved.

It is therefore imperative that the views of recreational boaters be understood and taken into account during the planning stages as part of the collaborative process established for the MCZ Project to increase support for the location and objectives of MCZs. Towards this end, this study aims to establish the attitudes and perceptions of a population of recreational boaters with moorings on the River Hamble Estuary, United Kingdom (UK) with respect to MCZs. Specifically, this study set out to: (1) determine the demographic profile of the boating population in question, as well as the nature and intensity of their boating practice; (2) establish what the activities, preferences, and sources of perceived conflict are amongst RBUs based in the River Hamble, UK, and; (3) evaluate the understanding of and support for MCZs amongst RBUs, as well as establishing any opportunities for more effective stakeholder engagement. At the time of writing there was no current research available relating specifically to attitudes and perceptions of RBUs towards MCZs in the United Kingdom.

2. Case Study

The case study for this research was a population of recreational boaters with moorings on the River Hamble, UK. The River Hamble is recognised as the home of British yachting. Situated in the Solent, it is protected from the open sea by the Isle of Wight and is a major centre for recreational boating, home to thousands of yachts and motor boats [14]. As the Hamble is one of the largest recreational sailing centres in Europe, it provided an appropriate sub-sample of views across the wider sector. The river is managed by the River Hamble Harbour Authority (RHHA). Its role is to manage the river for the benefit of all users by providing a number of services and facilities. The RHHA administers

the Hamble Estuary Partnership (HEP), which was formed in 2003 in order to implement the River Hamble Estuary Management plan [15]. Today, the role of the HEP is to discuss issues and monitor and facilitate projects affecting the River Hamble.

Although the Hamble is not under consideration for a Draft MCZ or a 'Broad Area of Interest', other parts of the Solent are under consideration, such as Bembridge on the east coast of the Isle of Wight, and The Needles on the west coast. Yachtsmen from the Hamble regularly visit these areas and so MCZ designations will still affect them to some extent (personal communication, Graham Horton, Environment and Development Officer, Hamble River Harbour Authority, 25 March, 2011).

Insert Figure 1 here

3. Materials and Methods

3.1 Questionnaire design and administration

The main method of data collection used for this research was a web-based questionnaire. Electronic questionnaires have become increasingly popular tools for the collection of data due to their application in administering complex questions to a high volume of people quickly and at minimal cost in comparison to more conventional methods [16].

Survey questions covered boater demographics and expertise, vessel characteristics, boating activities, user conflicts, and understanding and perceptions of marine conservation and MCZs. The majority of the questions were closed, however where further explanation and more depth of information were required, open questions were incorporated. It was hoped that by employing both question styles, a more comprehensive understanding of recreational boaters' attitudes and perceptions of MCZs could be generated.

A pilot study was carried out on a representative sub-sample of the population accessed through the RHHA. The results from the pilot study were extremely useful in evaluating the validity and layout of the questionnaire. All feedback was taken into account and changes were made in order to improve the overall response rate, and obtain more useful information in order to achieve the projects' aims and objectives.

Participants were recruited with assistance of the HEP, which had a database of 441 recreational boaters. All 441 individuals received an introductory email from the HEP. In order to overcome any

1 issues of data protection, the HEP did not disclose any personal details of those on their database,
2 but sent out the questionnaire on behalf of the authors. A link to the online questionnaire was
3 emailed to each individual, and a cover letter was also included in order to notify potential
4 respondents as to the purpose of the research. A total of 76 completed questionnaires were
5 received, resulting in a 16% response rate. The response rate received was sufficient enough for
6 descriptive statistical analysis to be carried out and conclusions to be drawn. It was not thought
7 appropriate to go beyond descriptive statistics to more rigorous statistical analysis as the research is
8 exploratory in nature and does not seek to validate hypothesis empirically [17]. The survey could
9 have potentially achieved a higher response rate had reminders been sent out after initial contact.
10 However, it was deemed ill-advised by the HEP to press recreational boaters for a response due to
11 concerns over causing any inconvenience.
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19 In order to gain more insight into a number of key topics related to this research, five semi-
20 structured interviews were carried out. For privacy purposes, the identities of those who took part
21 are not disclosed. However, all interview respondents were either heavily involved in the MCZ
22 Project, or experts in one or more of the following areas: sustainable management of marine and
23 coastal systems; maritime studies; climate change and environmental policy. In depth discussion,
24 rather than statistical representativeness was sought. There was no set script created as it was
25 recognised that the agenda should be kept open. Questions defined the subject to be explored, but
26 the intention was to allow for divergence in order for interviewees to express their own views freely
27 [18, 19, 20, 21].
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38 Four general themes were established beforehand in order to inform the interviewee as to the
39 purpose of the interview, and to give some structure to the conversation, with the understanding
40 that the conversation was to be an open and flexible one. These themes were: (1) challenges and
41 successes of the MCZ Project to date; (2) the purpose of MCZs; (3) management tools for effective
42 stakeholder engagement; (4) the status of coastal and marine management in England. All views
43 expressed in the following sections are of the interviewees only.
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51 **3.2 Data analysis**

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53 Questionnaire data were analysed with descriptive statistics, particularly percentage distributions,
54 which do not indicate a statistically significant trend within the results. Descriptive statistics are
55 justified as academic research within this field seldom uses statistical significance testing. The
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reason for this is due to response types being inappropriate for more basic linear regression due to categorical, non-continuous data [22].

4. Questionnaire Results

4.1 Respondent characteristics

Although the age of respondents ranged from 31 to over 70, the majority of respondents were aged between 51 and 60 years (Figure 2). Ninety-five percent of respondents were male. The majority of respondents (65%) lived within a 25 mile radius of the River Hamble.

Insert Figure 2 here

Ninety-five percent of respondents used a sailboat with auxiliary power as their primary vessel. Vessel size ranged from 6 to 20 metres, the average being 10 metres. Eighty-six percent of respondents had over 20 years of sailing experience. Seventy-five percent of all respondents consider their boating skills to be at the advanced or expert level.

Insert Figure 3 here

Respondents spent an average of 42 days on the water in 2010, ranging from five days to 150 days. Although all respondents had moorings on the River Hamble, 56% of respondents regularly made multiday excursions in their boats throughout the Solent area and further afield. Their responses are therefore a reflection of their boating experiences throughout the Solent and the wider region. This has potential implications with respect to the control of certain boating practices in MCZs situated in close proximity to the Solent.

4.2 Boater setting preferences

Respondents identified safe anchorages, natural scenery, clean water, mooring buoys and access to supplies as most important to their boating experience (Table 1). Angling, being around other boaters, bird watching, social/entertainment opportunities and marinas were less important,

Insert Table 1 here

Gray et al [23] found very similar results in their study of recreational boaters in the Southern Strait of Georgia, British Columbia. In their study, boaters placed the most importance on safe anchorages, natural scenery, clean/unpolluted water, and being in a peaceful, quiet place.

Insert Figure 4 here

4.3 Sources of perceived conflict

Respondents were presented with a list of marine activities and asked to comment on whether these activities had a negative, positive or neutral effect on their general boating experience (Table 2).

The activities that evidently instigated the most negative responses were personal watercraft (PWC) (85.7%), motorboats (54.5%) and fishing boats (33.8%). However, many indicated that most of the activities neither detracted from nor enhanced their boating experience. Less than 4% of respondents viewed sailboats or human-powered boats as detracting, and less than 15% viewed scuba diving or angling as negatively affecting their experience. Sailboats and human-powered boats were viewed most as enhancing their experience by 58% and 31% of respondents respectively. It should of course be noted that 95% of respondents used sailboats as their primary vessel, and presumably would look for similar qualities in their boating experience; that is to say, boating in a calm and quiet environment, away from motorized vessels.

Insert Table 2 here

4.4 Nature of perceived conflict

In order to gain further insight into respondents' perceptions of conflict with other marine activities, an open-ended question was included. If respondents indicated that a certain activity detracted from their experience, they were asked to elaborate, in their own words, as to why this was so. There were three activities for which 30% or more of respondents felt negatively. Their comments were categorized into major themes of perceived conflict (Table 3).

Insert Table 3 here

*Percentages within a user group do not add up to 100 because some respondents gave several reasons as to why the activity detracted, and not all respondents gave a reason as to why an activity detracted.

Perceived conflict between recreational boaters and PWCs was predominantly due to noise (65%) and wake (38%) followed by disregard for other users on the water (32%) and disregard for on-the-water safety (24%). Issues of conflict between PWCs and other water-based recreational activities are well documented [24, 25, 26, 27, 28, 29] various attempts at addressing these issues have been made [30, 31].

Roe and Benson [31] attribute the prevalence of adverse attitudes to PWCs by sailors to speed and noise, results supported by this research. They suggest that the reason for this is likely due to the fact that sailors seek out quiet locations as sailing itself is a quiet recreational activity. Although local authorities in the UK can enforce local byelaws regarding speed limits and restricted areas for leisure boats [32], the strategy of self-regulation and peer-pressure has been discussed as an alternative to legislation, as the latter can often be impractical and costly to enforce [31]. This voluntary approach is often viewed as being more effective than the implementation of byelaws as byelaws can breed resentment, leading to non-compliance amongst recreational users.

Perceived conflict with motorboats was mainly due to wake (50%) followed by noise (36%), and a general disregard for others on the water (26%). A substantial amount of literature surrounds the issues of conflict between motorboats and other users of the coastal environment, including that of wildlife [26, 33, 34, 35, 36]. Reasons for this conflict are very similar to that of PWCs.

The user which instigated the third highest amount of negative responses was fishermen. The two main reasons given were disregard for others on the water (27%), carelessness when laying/marking lobster pots (15%). There is not a great deal of research focussing specifically on conflict between recreational boaters and fishing vessels, but evidently it is an existing issue. Heatwole and West [37] comment on the emergence of the exclusive economic zone (EEZ), and its influence on increasing the amount of commercial fishing traffic in the near shore marine environment, an area also used heavily by recreational boaters. As boat traffic increases, inevitably, so will conflict.

Many of the issues raised by respondents with regard to conflicting interests could potentially be addressed through the implementation of zoning. Zoning is a management tool employed in many coastal areas globally for separating conflicting uses [38, 39, 40, 41, 42] and has been proven to successfully provide for broad-area integrated management. However, it has been recognised that this tool is significantly more effective when used in conjunction with other management

approaches [43]. Furthermore, zoning can only resolve issues that have stemmed from direct interpersonal conflict. This type of conflict has been distinguished from conflict relating to social values, as noted by some researchers [45, 68]. A difference in social values is a more recent alternative to explaining conflict. For this to exist, contact between groups does not need to occur, whereas for interpersonal conflict, the physical presence or behaviour of an individual or a group must interfere with the goals of another [45]. Differences in social values were apparent in some of the responses, as shown in Table 3, however most of the conflict seemed to stem from direct contact with other users.

When answering questions on the nature of the conflict experienced, respondents were given the opportunity to expand on their answers in order to elaborate on their points of view. Over 30% of respondents made it clear that it was only a small proportion of PWC and motorboat users who conducted themselves in an irresponsible and inconsiderate manner on the water, and not all individuals. It has been argued that in order to address this conflict, it is the individual who should be targeted and not the activity in general. However, in practice, this can be very difficult to achieve due to lack of enforcement on the ground [31].

4.5 Awareness and understanding of the MCZ Project

In order to gain an understanding as to the overall awareness of national and international designations, respondents were asked to indicate their awareness of the existence of the following MPAs:

- Special Protection Areas
- Sites of Special Scientific Interest
- Special Areas of Conservation
- Ramsar Sites
- Marine Conservation Zones

The majority indicated that they were aware of SPAs (74%), SSSIs (81%) and SACs (65%). Ramsar sites were by far the least known; only 28% of respondents were aware of this international designation. Since the first Ramsar site in England was designated in 1976, much emphasis has been placed on designating small sites in the UK for the protection of water birds. As a consequence, many Ramsar sites are also SPAs [46], and therefore it is feasible that people associate a site as an SPA rather than a Ramsar site. The relatively small size of Ramsar sites could also contribute to the lack of awareness. Awareness of the MCZ Project was quite low (54%). The explanation for this may be due to the fact that at the time the survey was completed, MCZs had not yet been officially

designated. Of those 54%, 44% felt they had no understanding as to what their purpose would be, 41% felt they had some understanding, and only 15% felt that they had a good understanding. Furthermore, 62% of respondents were unaware as to the mechanisms by which MCZs were to be identified and 66% were unaware of how to find out more about them.

There is a wealth of literature supporting the notion that stakeholder participation is integral to the sustainable management of natural resources [47, 41, 48, 49, 50, 51, 52].

The amount of vested interest which a stakeholder might place on a particular resource will depend on a number of different criteria (such as whether they rely on the resource for their income or whether they are residents of the area in question) and may influence the extent to which they are willing to participate and, in turn, the success of the planning and management strategy [53]. In the case of this study, 65% of respondents lived within a 25 mile radius of the River Hamble, and over half of all respondents indicated that they often made day trips and multi-day voyages within and beyond the Solent (Figure 5). The regularity with which respondents navigate these waters suggests that they would have a keen interest in the management strategies being employed, and whether they would impact on their movement or activities whilst on the water. The subject of collaborative management in relation to the MCZ Project is explored in greater detail below.

Insert Figure 5 here

Respondents were presented with a number of statements and asked to what extent they agreed with them. These statements refer to perceptions of what MCZs represent, and what they will or will not achieve once in place (Table 4). Results show that the majority of respondents agreed that MCZs would protect marine wildlife and habitats, as well as increasing awareness of the marine environment. However, many respondents also indicated that MCZs would limit their freedom of movement and access to be difficult to enforce. Over half said that MCZs would provide clearer regulations for certain activities, but almost half of all respondents suggested that these regulations would have a bias towards certain activities. The majority of respondents indicated that MCZs represented over regulation. With regard to whether MCZs would reduce conflict amongst different users, whether people would comply with regulations, and whether it would improve their boating experience, the majority responded neutrally.

Insert Table 4 here

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4 Respondents were originally asked to choose one of five options; strongly agree, agree, neutral,
5 disagree and strongly disagree. In order to establish deviation from the mean, these options were
6 numbered one (strongly disagree) through five (strongly agree). The frequency of each was
7 calculated, and the mean response was established for each of the statements. There was a
8 considerable amount of deviation from the mean for many of the statements (Figure 6).
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19 Deviation was deemed significant enough to explore further, and so the data was observed for any
20 correlation between perceptions of MCZs, and a number of other variables which could potentially
21 have a bearing on responses. There have been numerous studies carried out exploring the
22 influences of socio-demographic characteristics on environmental attitudes and behaviours [54].
23 Factors such as gender [55, 56, 57], education and income [58] and political orientation [59] have all
24 been explored in order to establish whether they have an influence on environmental mind-sets.
25 Age has also been observed to have an influence on environmental concern. The 'age affect' states
26 that age and concern for the environment are negatively correlated [60]. Van Liere and Dunlap [61]
27 suggest that this relationship is due to changes in behaviour being more difficult amongst older age
28 groups.
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30 Results for recreational boater perceptions of MCZs were compared to age of respondents in order
31 to establish whether any relationships could be observed. The mean responses of the youngest age
32 group were compared to that of the oldest (Figure 7).
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48 These results show a correlation between age and perceptions of MCZs. Cottrell [62] also
49 investigated this relationship and found that environmental concern decreased as age increased.
50 Similarly, the results of this research showed that the older age group expressed greater concern for
51 the restrictions that would be placed on their boating activities, and did not feel that they would
52 have a good compliance rate. Conversely, the younger age group demonstrated a more positive and
53 supportive attitude towards MCZs.
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59 **4.6 Perceptions of MCZs**

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1 An open ended question was included in order to gain greater insight into the perceptions of MCZs
2 amongst recreational boaters. Twenty two out of the seventy six respondents took this opportunity
3 to express their perceptions. Forty-five percent of comments related to the purpose of MCZs being
4 to protect and restore the marine environment. Four main themes were recognised within the
5 remainder of responses: (1) Unbalanced approach; (2) Overregulation; (3) Threat to safe anchorages;
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7 (4) Money-making scheme.
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11 Sixty four percent of responses were related to an unbalanced approach to implementation; it was
12 felt that recreational boaters were being unduly targeted for damage to the marine environment
13 when the real offenders were industry (wind farms, commercial fishermen etc). One respondent
14 commented, 'I hope that when considering the Marine Conservation Zones it is noted that 99.9% of
15 pollution at sea has been caused by commercial operations, which in some cases has been most
16 severe. I do understand that recreational users do their tiny part, but we're far easier to target than
17 the commercial boys. Remember they're the ones cutting large corners to increase profits, i.e.
18 pumping out tanks at sea which will be a mix of oil and other nasty chemicals....and it all comes
19 ashore.' Another element of an unbalanced approach was expressed with reference to the process
20 being controlled by environmentalists with little regard for the needs of society.
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29 Fifty percent of comments related to the process representing over-regulation. It was suggested
30 that boaters would respond in a more positive manner to education and encouragement as opposed
31 to more legislation.
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35 Twenty-nine percent of responses related to concern over MCZs being a threat to safe anchorages,
36 and noted that small boats needed to be close to shore where they were protected, and that they
37 likely would not comply with anchoring restrictions if it meant they had too far to row to shore.
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41 Fourteen percent of responses voiced concern over the possibility of the MCZ Project simply being a
42 way for local authorities to make money and create more jobs.
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45 By understanding the sources of perceived conflict amongst this group of recreational boaters, and
46 also the underlying reasons for this conflict, managers may be better able to address these issues.
47 Some responses suggested that there was perhaps a lack of awareness regarding the intention of the
48 MCZ Project being a transparent and inclusive process. For example, one respondent commented
49 that 'compliance and support for the management tools being employed can only be achieved if
50 current users have a chance to voice their opinions and ask questions as to how they will be
51 effected. The MCZ Project set out to achieve this from the beginning of the planning process by
52 including representatives from all stakeholder groups in discussions throughout, by making these
53 'sector spokespersons' accessible to the general public online, and by sending out regular
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1 newsletters to update on progress. However, evidently not all stakeholders were clear on the
2 purpose of MCZs, and how they would impact upon them. Reasons for this, and suggestions as to
3 how best to move forwards, are discussed in the following sections.
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10 **5. Semi-structured interview results**

11 In order to gain more insight into a number of key topics related to this research, five semi-
12 structured interviews were carried out. There was no set script created as it was recognised that the
13 agenda should be kept flexible [18 - 21, 63].
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18 Four general themes were established beforehand in order to inform interviewees as to the purpose
19 of the discussion, and to give some structure to the conversation, with the understanding that it
20 would be an open and flexible one. These themes were: (1) challenges and successes of the MCZ
21 Project to date; (2) the purpose of MCZs; (3) management tools for effective stakeholder
22 engagement; (4) the status of coastal and marine management in England.
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27 For privacy purposes, the identities of those who took part are not disclosed. However, all interview
28 respondents were either heavily involved in the MCZ Project, or experts in one or more of the
29 following areas: sustainable management of marine and coastal systems; maritime studies; climate
30 change and policy. Statistical representativeness was not sought, but rather in depth discussions.
31 All views expressed in the following sections are of the interviewees only.
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40 **5.1 The MCZ Project: Challenges and successes**

41 There was a strong consensus amongst many interviewees that more could have been achieved had
42 there not been such challenging time constraints placed on the planning process. As one
43 interviewee pointed out, international best practice states that the planning and implementation of
44 MPAs can take approximately 10 years, whereas the MCZ planning process was squeezed into little
45 more than two years. The challenges experienced by some of those directly and indirectly involved
46 in the MCZ planning and implementation process are discussed in the following sections. It is
47 important to take into account, as one interviewee stated, that 'this is the first time in the UK that
48 stakeholders have been brought together from the beginning of the planning process. The success is
49 in the fact that this *has* happened, regardless of whether it has been done in the best way possible.'
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5.2 Stakeholder engagement: Lessons learned

One interviewee recognised that making strong connections with the local community early on in the process was vital if stakeholders were to understand and support environmental decision making processes. Those who perceive any significant threat to their livelihoods or lifestyles must be effectively engaged in discussions related to potential regulations being put on their activities.

It is imperative that stakeholders understand the rationale for MCZs, and do not see them as duplication of already existing MPAs, therefore diminishing their value. The public consultation process is an opportunity to address such issues. The results of this study showed that although fifty-four percent of respondents were aware of this new designation, forty-four percent of all respondents had no understanding as to their purpose. One interviewee involved in the planning process commented that there was a built-in problem with the current system of MPAs being designed and managed by marine scientists, in that they are generally unfamiliar with effective methods of stakeholder engagement. Another interviewee suggested that it was extremely challenging to get all stakeholders to understand an essentially scientific process, with many differing sets of values around the table resulting from different professional and social backgrounds. They went on to say that it would be impossible to avoid these challenges completely, and that the MCZ planning process sought to make them as un-antagonistic as possible.

5.3 Accessible data and information

Accessible data and information, and the flow of such information between those leading the MCZ process and stakeholders is key to effective stakeholder engagement and to a rigorous, scientific process in designating and planning MCZs.

One effect of the short timescale in which the planning process took place was that stakeholders were being asked to comment on how potential restrictions (e.g. no anchoring) might affect them, but the information on which restrictions would be implemented, and where, was not yet available. Due to this lack of information, some of the initial Regional Stakeholder Group (RSG) meetings did not achieve as much as they could have had they had that information to hand. Incidentally, there was a period of time when no information was available to feed back to stakeholders on the ground, causing confusion and frustration for many. In spite of this significant challenge, many interviewees commented on the success of the planning process to date. It was felt that meetings were facilitated extremely well, working within both an innovative and challenging framework.

An online Interactive Mapping System (IMS) was initially intended for all stakeholders, including boaters, to input information as to how they used the sea in order to help plan for MCZs.

Unfortunately, due to a lack of time and resources, the IMS could not reach its potential. One interviewee involved in the MCZ Project stated that no one, not the project members or the stakeholders, found this tool useful. It was recognised as an enormous waste of project resources as it turned out to be far too complex for anyone to use, and there was no decent sample from any particular stakeholder group. It was recognised that it could have been a very useful tool for those involved had it been developed in a more targeted manner with more time and resources available.

It was recognised that readily accessible environmental, social and economic data is key to engaging the public. Without such straightforward and pragmatic information, the likelihood of gaining the trust and support of the public is negligible. One interviewee commented that scenario modelling has proven to be an extremely effective tool in encouraging communities to adapt to change during the process of establishing MPAs by demonstrating an imagined potential future. They went on to say that such models could be constructed for MCZs in order for RBUs to clearly understand the conservation issues in a particular area, and what the designation would mean for them.

Throughout the planning process, RSG members have been responsible for both representing the interests of their particular sector, and for acting as a conduit for information to flow between their constituency and the relevant project team. RSG meetings were held regularly across the four project areas, and were provided with technical and administrative support by their relevant project teams in order develop MCZ recommendations [64]. Once this task was completed, the structure of the regional and local stakeholder groups was to come to an end. One interviewee commented that no indication had been given from NE or the JNCC as to how the group structures could be effectively maintained in order to support and maintain effective stakeholder engagement, and suggested that it would be advantageous to use the current structure of the groups to facilitate the process.

It was suggested that rather than let them dissolve, a mechanism should be developed to move beyond public consultation, using the structure of the stakeholder groups to more effectively engage the larger community of stakeholders in both the implementation and the management of MCZs. This could take the form of SGs helping to manage the sites to enable each sector to engage in a meaningful way rather than feeling like their views and opinions are going unheard as is so often the case in public consultation. This viewpoint is supported by research on different levels of participation. Arnstein [65] suggested that unless power is redistributed amongst those citizens who did not previously have any, then the status quo is maintained. Arnstein's 'Ladder of Citizen Participation' is an attempt to illustrate the various types of participation, from 'Manipulation' at the bottom (level one), to 'Citizen Control' at the top (level eight). One could argue that the level of

1 participation reached during the planning and implementation process of the MCZ Project was in
2 line with levels three and four on Arnstein's Ladder; Informing and Consultation respectively.
3 According to Arnstein, these levels of participation allow citizens to hear and to be heard, but lack
4 the power to ensure that their views are actually taken into account by those in power. Two
5 interviewees stressed the need for more meaningful stakeholder engagement, giving them more
6 control in the day to day management of MCZs once they are designated. This level of participation
7 is in line with level seven on Arnstein's Ladder; Delegated Power, where stakeholders hold a
8 significant amount of the decision making power. Arnstein goes on to recognise the limitations of
9 such a simplistic typology, but it is a useful context within which to analyse different levels of
10 stakeholder participation.
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21 **5.4 Integrated Coastal Zone Management and Marine Planning**

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23 Many interviewees were of the opinion that the UK is moving in the right direction with Integrated
24 Coastal Zone Management, albeit slowly. One reason suggested for this slow pace was insufficient
25 support from stakeholders due to inefficient engagement methods.
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28 It was recognised that industry powers are putting a greater pressure on marine and coastal
29 resources, making it even more important that the Marine Planning (MP) process, a new concept for
30 the UK, moves ahead. MP in English waters has been created in order to put the Marine Policy
31 Statement into action for all of its marine area, highlighting areas for sustainable development,
32 whilst taking into account social, environmental and economic factors. These plans serve to inform
33 and guide marine users and regulators. MCZs are one of many factors taken into account within
34 marine plans.
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41 One interviewee suggested that MP is bringing with it a more streamlined process, making it easier
42 for the development and exploitation of the marine environment to take place, and that MCZs act as
43 a trade-off. They recognised a strong connection between ICZM and MP, with reference made to
44 the pragmatic and practical relationship between the two. MP builds upon existing networks and
45 communication mechanisms established by ICZM. It has been suggested that MP will be a more
46 effective and efficient means of coastal management, provided it takes into account existing
47 information on key areas requiring protection, and supports sustainable development. Frameworks
48 such as ICZM and ecosystem-based management are essential considerations upon which MP should
49 build [66].
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6. Discussion

6.1 Management implications

One outcome of this study has been the identification of some alternative mechanisms for the planning and implementation of MPAs. Five recommendations are explored in the following sections.

Meaningful stakeholder engagement

In order to broach the issues of mistrust and fear voiced by many recreational boaters regarding government motives for creating MCZs ('...another expensive drain on the taxpayer...another job creation scheme') and the resulting increase in regulations ('we are already over regulated, we do not need more laws'), a mechanism of moving beyond public consultation was proposed by two of the interviewees. One suggestion was that stakeholder groups could help to manage MCZs on the ground, so that each sector was involved in a meaningful way, rather than feeling as though their views and opinions were going unheard. It was noted that although the Department for Environment, Food and Rural Affairs had committed to involving stakeholders, they had not yet specified how this was to happen.

Dissemination of information concerning restrictions placed on recreational boaters

This study has identified support for and opposition to MCZs, and three main concerns were voiced by recreational boaters: (1) overregulation; (2) loss of freedom of movement and access; (3) negative impacts on boating experience.

A number of solutions to address these concerns were also voiced. The following comment sums up these concerns:

It must be made absolutely clear what is being protected and why. Just saying that the area is this sort of zone or that sort of zone does not help the many who don't spend all their time thinking about such matters.

One interviewee was asked to comment on methods of effectively communicating with stakeholders regarding coastal management. They emphasised the importance of encouraging stakeholders to adapt to change. Scenario modelling was described as a way of demonstrating an imagined

1 potential future, helping stakeholders to understand how they might be impacted. For MCZs and
2 boaters, this might take the form of putting various scenarios together to show outcomes for
3 boaters in different areas to help them to understand the environmental issues in a designated area
4 and what it will mean for them. This interviewee also suggested that once an MPA is established,
5 effective methods of engagement will depend on location and who it is you are trying to
6 communicate with. Such methods could take the form of information leaflets, websites and online
7 forums, and face to face communication, e.g. harbour wardens interacting with people on the water
8 to directly influence behaviour. They also recommended that methods must be flexible and
9 adaptable in order to remain effective in the long term.

16 **Building connections early with stakeholders on the ground**

20 One interviewee learnt, through their involvement with the MCZ Project, the importance of making
21 strong connections early on in the process with the local community by, for example, actively
22 involving them in the process of site recommendation. It was recognised that local people often
23 have considerable depth of knowledge as to what is happening on the ground, and can contribute by
24 sharing this knowledge and therefore making the planning and implementation process more
25 efficient and effective. This was seen by one interviewee as being an invaluable way of nurturing
26 good working relationships and increasing awareness of differing backgrounds and values. Such
27 knowledge can prove to be indispensable in MPA planning and management [50, 51].

36 **Striking a balance between conservation and access**

39 The majority of those who took part in this study owned sailboats as their primary vessel. They
40 indicated that the most important settings for boating were: (1) access to safe anchorages; (2)
41 boating in clean water and; (3) viewing natural scenery. The latter two are likely to be more
42 prevalent in less developed areas of coastline, and therefore more likely to support healthy marine
43 ecosystems which, in turn, are more attractive for the implementation of conservation measures
44 such as restricted anchoring and seasonal closures of some areas. This potential clash in values is an
45 issue worthy of consideration when planning MPAs. There must be a balance between protection
46 and access. Such issues, however, could be overcome by the provision of mooring buoys and a ban
47 on discharging in such areas.

55 Other comments from respondents related to the reasonable consideration of all those contributing
56 to the degradation of the marine environment. Many recreational boaters expressed serious
57 concern over placing undeserving emphasis on the responsibility of recreational boaters, and not
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1 enough on commercial industries, such as dredging, bottom trawling and marine wind farms which,
2 it was argued, cause significantly more damage and disturbance.

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4 The challenge of striking a balance between the needs of all those with a vested interest in
5 conservation and development at the coast is well researched and remains a major contemporary
6 issue [7, 36, 67].
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9 The MMO is responsible for bringing in MP as a new approach for the management of coastal and
10 offshore waters in the UK, which should aid in achieving the balance required for managing
11 activities, resources and assets in the UK marine environment [68]. While MP may aid in finding a
12 balance, one could argue that MCZs, which are focussed on conservation, need not strive for such
13 balance. While much of the coast favours development or balance at best, perhaps it is right that
14 some areas favour conservation as an alternative.
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22 **Zoning**

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24 Although many of the sections above relate in some form to conflict resolution, there were some
25 specific sources of conflict which were made apparent in this study. The three activities which
26 instigated the highest number of negative comments were PWCs, motorboats and fishing boats.
27 Reasons for this perceived conflict were based on personal encounters on the water, and therefore
28 spatial separation was suggested by more than one respondent as a means of addressing this
29 conflict. Zoning is a management tool used in many MPAs [69]. Although its limitations have been
30 acknowledged [43, 44], it can be effective in the spatial management of some activities [42].
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40 **7. Further Research**

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42 During the course of this research a substantial amount of information was acquired, but it is by no
43 means exhaustive.
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46 A very similar study carried out in British Columbia, Canada [23] gathered sufficient data to
47 investigate the differences in attitudes and perceptions between sailboat and motorboat owners.
48 Results showed that boat type affected the setting preferences. For example, sailboat operators
49 were found to place a statistically greater importance on both 'environment/nature' and 'quiet and
50 solitude' factors, whilst motorboat operators placed a significantly greater importance on 'extractive
51 activities' (e.g. fishing) and 'built facilities' (e.g. marinas and access to supplies).
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57 It was suggested that these results could have an effect on zoning considerations. It could be of
58 interest to carry out such research within the Solent, however more data would be required in order
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to represent the larger population of both sail and motorboat operators, and their distribution. For the same reasons, it would be of considerable value to research the attitudes and perceptions of those individuals using primarily human-powered vessels, e.g. canoes, kayaks and rowboats.

Another line of research which could prove useful is that of spatial analysis of boating in the Solent. By collecting data on vessel routes, and studying it in combination with maps of marine habitats and wildlife of national importance, one could get a clearer picture of areas of particular interest for monitoring and zoning [23].

Should Natural England and Joint Nature Conservation Committee choose to engage representatives from the relevant sectors in MCZ management, it would be of great value to monitor and evaluate the challenges and successes experienced by those individuals in achieving effective stakeholder engagement.

8. Conclusions

This data gathered during the course of this research has helped to build a picture of the demographic profile, activities, boater setting preferences, and sources of perceived conflict amongst those using the same marine space. Taking into account that this population does not necessarily represent the views of all sailors, or recreational boaters, this information has nevertheless contributed to creating a coherent list of recommendations relating to stakeholder engagement and MPA planning and management. Perhaps the most important of these at this stage of the MCZ Project is the meaningful involvement of stakeholders in MCZ implementation and management. Further areas of research should look at the larger boating community, taking into account more activity types, and carrying out in depth spatial analysis.

It is important when considering the political and socio-economic factors related to MPAs, to remember the underlying obligation to protect the marine and coastal environment; one must not lose sight of the original conservation goals [70]. As we begin to understand more clearly the extent to which society depends on healthy, diverse ecosystems, we begin to adjust our behaviours affecting those ecosystems. Directly or indirectly, it is for economic reasons that the degradation occurs in the first place [11].

It is anticipated that by establishing perceptions of recreational boaters, and also the knowledge and experience of individuals involved in stakeholder engagement for environmental management, this

study has made some well-substantiated recommendations for improving understanding and support for MCZs.

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