



Public awareness and attitudes towards marine protection in the United Kingdom

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ABSTRACT

Public perception research evaluating awareness and attitudes towards marine protection is limited in the United Kingdom (UK) and worldwide. Given public opinion can help drive policy and affect its successful delivery we conducted nationwide surveys in 2005, 2010 and 2015 to assess public knowledge of UK (England, Scotland and Wales) sea 'health' and management. Respondents from all three surveys were relatively pessimistic about sea 'health', perceiving this as poor-fair and largely in decline. Enthusiasm for marine conservation was high with almost two-thirds of respondents in each survey wanting >40% of UK seas highly protected from fishing and damaging activities. In 2015 there was considerable dissatisfaction with the rate of progress in Marine Conservation Zone designation and over three-quarters of respondents considered dredging and trawling to be inappropriate in protected areas, contrary to management. The UK government and devolved administrations need to better align future conservation and management with public expectations.

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1. Introduction

UK seas cover more than three-and-a-half times the country's land area (JNCC, 2014) and support a wealth of habitats and species, many of which are important both nationally and internationally for a variety of environmental, societal and economic reasons. The UK government estimates that the marine economy generates around £49 billion annually (DEFRA, 2014) through diverse industries that include oil and gas, offshore wind farms, fishing, tourism and recreation (Pugh, 2008; Morrissey, 2014). As all these compete for space among themselves and with nature (Smith et al., 2012) there is a need to ensure that UK waters are managed fairly and sustainably.

The marine environment around the UK is managed under a plethora of national and international legislation (Boyes and Elliott, 2014). Implementation of the 2009 Marine and Coastal Access Act (the Marine Act) in England and Wales, the 2010 Marine (Scotland) Act, and the 2013 Marine Act (Northern Ireland) provided a fundamental change in framework for the management of marine activities and the sustainable use and protection of marine resources (DEFRA, 2011; Potts et al., 2012; Rodwell et al., 2014). In particular, these Acts established an opportunity to develop a network of marine protected areas (MPAs), referred to as Marine Conservation Zones (MCZs) in England, Wales and Northern Ireland and Nature Conservation MPAs in Scotland. The devolved administrations have therefore each initiated a

process for establishing a protected area network within their respective waters (DEFRA, 2011).

MCZs are intended to complement existing UK MPAs, namely Special Areas of Conservation, Special Protection Areas, Sites of Special Scientific Interest, and Ramsar sites. In England, candidate MCZs were identified through a process of extensive stakeholder engagement and expert knowledge (Lieberknecht and Jones, in press). In 2011, 127 MCZs were recommended for establishment of which 27 were designated in November 2013 and 23 in January 2016. A third tranche will proceed to consultation in 2017 for designation in 2018.¹ To date only one MCZ in Wales has been designated (the long standing Marine Nature Reserve at Skomer) following the withdrawal of 10 proposed MCZs after extensive comments from the public consultation were received.² The Welsh Government is currently assessing the existing MPA network to determine whether additional protection in the form of MCZs will be given. In 2014, the Scottish Government designated 30 Nature Conservation MPAs following public consultations³ and is currently considering an additional four sites.⁴ Northern Ireland also

¹ JNCC. Marine Conservation Zones and subsequent pages. Available at: <http://jncc.defra.gov.uk/page-4525> [accessed 18/02/2016].

² JNCC. MCZ Project Wales. Available at: <http://jncc.defra.gov.uk/page-4164> [accessed 18/02/2016].

³ JNCC. Nature Conservation Marine Protected Areas (MPAs). Available at: <http://jncc.defra.gov.uk/page-5269> [accessed 18/02/2016].

⁴ The Scottish Government (2014). New protection for Scotland's seas. Available at: <http://news.scotland.gov.uk/News/New-protection-for-Scotland-s-seas-f1e.aspx> [accessed 18/02/2016].

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only has one existing MCZ (again a former Marine Nature Reserve) and has recently closed public consultations on the designation of four additional sites.⁵ Collectively, as of February 2016, approximately 17% of UK seas were designated under some form of conservation designation.⁶ In Scotland management plans have been implemented in several inshore Nature Conservation MCZs. By contrast no additional management in England's MCZs has yet been applied.

Surveys of public awareness and attitudes allow an appreciation of wider social knowledge and interests which can positively contribute to achieving conservation objectives (Jefferson et al., 2015). However, research to examine public awareness of coastal and marine protection in the UK is very limited. Interviews conducted in 2009 at the National Maritime Museum, Greenwich (N = 138) found their visitors to have a 'general interest' in the marine environment, but with knowledge gaps of marine environmental issues (Fletcher et al., 2009); although these results likely over-represent general awareness due to the location of the interviews. Jefferson et al. (2014) found the UK public to have poor knowledge of subtidal species and marine health. While respondents showed considerable interest in charismatic species such as puffins and seahorses, many were unaware that these lived in UK waters. Respondents also perceived "less colourful" or "less impressive-species" as more likely to exist in UK seas and had a largely pessimistic view about the UK marine environment, corroborating previous public surveys by Natural England (2008) and Rose et al. (2008). Elsewhere in the world, other studies have identified gaps in public knowledge about ocean issues and marine protection (e.g. Steel et al., 2005; Eddy, 2014; Guest et al., 2015), with this ascribed to an 'out-of-sight, out-of-mind' mentality (Rose et al., 2008; Jefferson et al., 2014).

To date, public perception research findings suggest a lack of positive connections between UK society and the sea. As public awareness of environmental issues is important for marine conservation strategies to succeed (Horwich and Lyon, 2007), a good appreciation of the former within the UK is required. Using data collected from three surveys across ten years this study aims to explore changes in public awareness and attitudes to marine protection in the UK over a period of substantial change in marine management and protection.

2. Methods

Survey packs consisting of a cover letter, a questionnaire (Table 1 and Table S1), and a stamped return envelope were mailed to 2000 UK citizens in 2005 and 2015, and 2500 in 2010. In each case, participants were randomly selected by Data HQ Ltd. (www.datahq.co.uk) to represent in proportion all social and economic segments of UK society as defined by the Cameo UK Classification™ profiling system (<http://cameo.bvdep.com/help/classifications1.htm>) with samples independent of previous years.

Survey questions varied slightly among years to reflect changes in marine legislation and progress in marine conservation initiatives, but key questions were common to examine trends over time. Each survey consisted of between 13 and 17 closed questions although many invited further elaboration on reasoning. Socio-demographic questions were optional in all surveys. Respondents were asked to complete and return the questionnaire within four weeks with surveys accepted 11 days after this deadline to allow for postal delays and to minimise response bias from those most motivated to respond (Berg, 2005). This meant that survey responses were obtained in December 2005 and January 2006 for the first, December 2009 and January 2010 for the second, and in March and April 2016 for the last.

Descriptive statistics were used to summarise results from each survey and make comparisons among surveys. Chi squared tests examined

relations between respondents' awareness of MPAs and the Marine Act and (1) the distance they lived from the coast, (2) whether they took part in sea related activities, and (3) whether they were a member of an environmental organisation.

While every effort was made to obtain a representative sample of the UK public, respondents to our questionnaires are nonetheless self-selecting. Respondents to postal questionnaires inevitably deviate from representativity for a number of reasons, notably: people who tend to hold strong views on an issue may be more likely to respond to a questionnaire which addresses these than people who don't; or the questionnaire may be completed by someone other than the addressee (Blair et al., 2013). All findings from our study assume that respondents answered their questionnaire honestly.

3. Results

3.1. Number of responses and respondent characteristics

Response rates of 24.9% (N = 498) in 2005, 23.9% (N = 598) in 2010, and 11.7% (N = 234) in 2015 were obtained. These sample sizes produce error margins of approximately ± 3 –6% on responses to questions (95% confidence intervals). Despite a low response rate in 2015, respondent demographics remained representative of the UK population in terms of gender and age⁷ (Table S2), although other factors that could bias it such as economic or employment status couldn't be explored.

Survey respondent demographics were similar across all survey years; gender was relatively equally represented and the modal group of respondents' ages was 51–70 in each survey (Fig. S1a, b). Across all surveys the 18–30 and 71+ age group were the least represented. A high proportion of respondents (40.8% in 2010 and 41.9% in 2015, question not asked in 2005) reported living within 20 miles of the sea or >40 miles from it (39.5% in 2010 and 34.6% in 2015) (Fig. S1c). The proportion of respondents who said they belonged to at least one environmental organisation increased from 22.1% in 2005 to 26.5% in 2010 to 30.8% in 2015. However, the proportion who said they used the seas for an activity (e.g. swimming, sea kayaking, fishing, etc.) remained consistent at 45.6% in 2005, 44.0% in 2010, and 44.4% in 2015 (Fig. S1d, e).

3.2. Public perception of marine environmental health

The majority of respondents perceived the UK marine environment to be in 'fair' or 'poor' health (Table 1 Q1, Fig. 1a), although the proportion who considered this to be in 'good' health increased over the survey period from 4.4% in 2005 to 7.7% in 2015. When asked to rate how the health of the sea had changed in the preceding 10 years, the 2005 and 2015 surveys showed similar results, with respondents almost equally divided between those that considered this to have 'improved', 'stayed the same' or 'deteriorated' (Table 1 Q2, Fig. 1b). In 2010 fewer respondents considered the health of the sea to have 'improved' over the previous ten years, with the figure being 9.4% as opposed to 29.7% in 2005 and 34.2% in 2015. In all surveys, more than a third of respondents perceived that health of the sea in the UK had declined (36.1% in 2005, 43.8% in 2010, and 38.0% in 2015; Fig. 1b).

3.3. Public awareness of UK marine legislation and protection

A steady increase in awareness of MPAs was seen across the period of study with the percentage of respondents affirming they were familiar with the concept being 47.6% in 2005, 61.7% in 2010, and 72.2% in 2015 (Table 1 Q3). However no similar improvement in knowledge about the Marine Act occurred with similar results obtained between

⁵ Department of the Environment. Marine conservation zones consultation. Available at: <https://www.doeni.gov.uk/consultations/marine-conservation-zones-consultation> [accessed 18/02/2016].

⁶ JNCC. Contributing to a Marine Protected Area Network. Available at: <http://jncc.defra.gov.uk/page-4549> [accessed 18/02/2016].

⁷ Data extrapolated from the UK Office for National Statistics, 2014 UK demographics, available from: <http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/february2016> [accessed 7th June 2016].

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