



## Understanding audiences: Making public perceptions research matter to marine conservation



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### ABSTRACT

There is increasing awareness of the need to meaningfully engage society in efforts to tackle marine conservation challenges. Public perceptions research (PPR) in a marine conservation context provides tools to see the sea through the multiple lenses with which society interprets both the marine environment and marine conservation efforts. Traditionally, PPR is predominantly a social science which has considerable interdisciplinarity, owing to the variety of disciplines which contribute to its delivery and benefit from its outputs. Similarly, the subjects of a marine application of PPR are diverse, and relate to public perceptions of any marine component or activity. Evidence shows this is a growing area of science, and the paper presents a qualitative approach to addressing key questions to inform the continuing development of this field through a workshop held at the Third International Marine Conservation Congress 2014. Key findings are discussed under the themes of 1) the benefits of PPR to marine conservation; 2) priorities for PPR to support marine conservation; 3) making PPR accessible to marine practitioners and policy makers; and 4) interdisciplinary research collaboration to deliver PPR. The workshop supported the development of a framework which illustrates: the key conditions which can support PPR to take place; the types of research which PPR can be used to address; the applications of PPR findings for marine conservation; and the types of marine conservation benefits which can be delivered. As PPR gains an increasing presence in marine conservation, it is hoped that this discussion and framework will support researchers and practitioners to identify opportunities for PPR to deliver benefits, and to work together to achieve these.

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### 1. Introduction

Increasingly, there is a recognised awareness of the need to meaningfully engage society in efforts to tackle marine conservation challenges (e.g. Lotze et al., 2011), with at least three main reasons underpinning this. Firstly, societal behaviour change has the potential to significantly reduce certain pressures on marine

systems (e.g. through exercising consumer choice, to reduce demands on fisheries or lowering energy consumption to reduce carbon emissions) (Vincent, 2011). Secondly, participatory governance of coastal and marine environments is increasingly common, providing opportunities for society to be a force to support management which protects and restores marine ecosystems (McKinley and Fletcher, 2012). Thirdly, the increasing designation of Marine Protected Areas (MPAs), which are a key tool for marine conservation, require public engagement and acceptability to achieve success (Voyer et al., 2015). This context of increasing recognition and infrastructure to mobilise societal engagement with marine conservation is an opportunity to develop a hitherto under-

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exploited policy channel to deliver marine conservation benefits.

### 1.1. Public perceptions research for marine conservation

Public perceptions research (PPR) in a marine conservation context provides tools to view the sea through the multiple lenses with which audiences interpret both the marine environment and marine conservation efforts (Thomas et al., 2015; Jefferson, 2010). "Perceptions" is an umbrella term which includes components such as knowledge, interest, social values, attitudes or behaviours. The types of research being conducted are extensive and can include qualitative and quantitative approaches such as questionnaires, interviews and focus groups. Public perceptions are rarely homogenous, with influencing variables including age, gender, social values, or proximity to the coast (Jefferson et al., 2014; Rose et al., 2008; Ocean Project, 1999). It is essential to recognise the heterogeneity in society's connection with the sea and to incorporate this into conservation engagement efforts (Jefferson et al., 2014). By understanding public perceptions of the sea, particularly the ways in which people value and connect with the marine environment and the issues which affect it, engagement can be developed to resonate with the target audience and generate the greatest marine conservation outcome.

At an international scale, perceptions may differ or even diverge between countries, possibly as a result of the complex interplay of environmental or cultural factors. For instance, in a survey carried out in 2008 ( $n = 1,579$ , aged 5–13 years), children and teenagers from Italy were more likely to associate seas with positive feelings (e.g. "the sea is funny", "the sea gives me dreams") while children and teenagers from the UK were more likely to associate them with negative ones (e.g. "the sea has dangerous animals in it", "the sea is dark", "the sea scares me"), whilst respondents from Poland and Ukraine held intermediate positions (Milanese et al., 2014; 4SEAS, 2010). This study reveals the need to understand how age influences perceptions, with children and teenagers tending to associate seas with positive feelings more than adults. Awareness of such differences can be used to help design tailored marine engagement campaigns.

PPR is predominantly a social science incorporating insights from psychology, sociology and human geography disciplines. However, it often includes expertise from natural sciences to inform the development of research questions and approaches; this interdisciplinarity is a considerable strength of PPR for marine conservation (Jefferson, 2010). In this vein, PPR has in many cases adopted a 'risk perception' framework, so as to examine the factors affecting people's judgements about natural or human-caused hazards. In particular, the differing influences of emotional and cognitive processes on risk perception have been stressed by researchers such as Slovic et al. (2004) when assessing public attitudes towards subjects such as nanotechnology (Lee et al., 2005) and climate change (Sundblad et al., 2007). Identifying the ways in which the public and experts diverge in their knowledge and attitudes has also been a focus of risk perception research (e.g. Savadori et al., 2004; Reynolds et al., 2010). For example, Thomas et al. (2015) have observed that public perceptions of sea-level rise due to climate change vary in subtle but important ways from expert assessments. These researchers found that in many cases there was alignment between the public and experts in their perspectives, for example concerning the risks of erosion, flooding and ecological change resulting from sea-level rise. However, whereas experts stressed thermal expansion of water and land-based ice melt as factors critical to sea-level rise, there was relatively limited awareness or recognition of these causes among the public. This manner of pinpointing differences in understanding between the public and experts has been argued to be a critical step in the

design of effective communication and science education programs (de Bruin and Bostrom, 2013). Pidgeon and Fischhoff (2011) have likewise stressed that careful attention to the information needs and pre-existing understanding of an audience can form part of a process of 'strategic listening' able to bring about improved science communication.

The subjects of marine PPR are diverse, and relate to public perceptions of any marine component or activity. PPR can focus on the negative elements of marine conservation (such as what issues people are concerned about, how fear of the sea manifests itself) or identify feelings of hopelessness (such as problems being 'too big to fix') (e.g. Trenouth et al., 2012; Morgan et al., 2010; Pendleton et al., 2001). Equally, however, these tools can be used to delve into the optimistic elements of marine conservation, such as the positive connections people have with the sea, memories of coasts and marine spaces, the marine elements which people are interested in, and the issues which people are passionate about supporting (Jefferson et al., 2014; WWF, 2012; Nordstrom and Mitteager, 2001).

In other fields, there have been examples of PPR being used to investigate public engagement with a particular issue. This can be in relation to issues which are salient to people in a local or practical context (e.g. Morgan et al., 2010) or topics which are more global or less visible in nature. One such topic is ocean acidification arising from anthropogenic carbon emissions (Doney et al., 2009). Research in the natural sciences examining ocean acidification has proliferated in recent years (Gattuso and Hansson, 2011) and has been increasingly considered in the work of the Intergovernmental Panel on Climate Change (Pörtner et al., 2014). Authors such as Turley and Boot (2011) have drawn attention to the relevance of ocean acidification for individuals and societies, including economic impacts on fisheries and consequences for recreation and well-being. Others have stressed that it is critical that awareness of the problem of ocean acidification be raised among the public and measures required to address it (Zeebe et al., 2008). However, there has, to date, been very little research which has examined public perceptions in this area (though see Gelcich et al., 2014). Recent research has started to fill this gap, examining public perceptions of ocean acidification across a representative sample of the British public during 2013 and 2014 ( $n = 2,500$ ) (Capstick et al., 2014; see also Corner et al., 2014). Although less than 20% of survey participants stated that they had heard of ocean acidification, the research found that the subject tended to be associated with negative emotional imagery suggestive of deleterious effects on the marine environment: examples in research participants' own words include 'poisoned fish', 'the sea being destroyed' and 'destruction of marine habitat'. A conclusion drawn from the study was that those seeking to generate accurate understanding of ocean acidification should seek to counter the plausible but misleading notion of localised pollution as having an important causal role. In addition, the research noted something of a mismatch between expert and public perceptions in this area. Whereas it is not generally controversial among experts that carbon emissions are a principal driver of acidification, there is less certainty about the effects upon organisms and ecosystems (cf. Gattuso et al., 2013). By contrast, among public research participants, there was perceived to be a greater degree of controversy concerning the underlying cause of ocean acidification. Again, these findings and this example of the use of PPR in a marine context help to point the way towards areas for emphasis in science communication, so as to effectively raise awareness of the current state of knowledge in this area.

As previously mentioned, public audiences are not homogenous in their perceptions and this can lead to multiple public audiences within society. For this paper we interpret 'public' broadly to include audiences which are not represented within sector-specific studies, such as studies of communities or the general public. This is

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