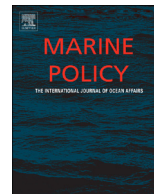




ELSEVIER

Contents lists available at ScienceDirect

Marine Policy

journal homepage: www.elsevier.com/locate/marpol

Recreational fishers' support for no-take marine reserves is high and increases with reserve age



Matthew Navarro^{a,*}, Marit E. Kragt^a, Atakelty Hailu^a, Tim J. Langlois^b

^a UWA School of Agriculture and Environment, The University of Western Australia, Crawley, WA 6009, Australia

^b UWA School of Biological Sciences and UWA Oceans Institute, The University of Western Australia, Crawley, WA 6009, Australia

ARTICLE INFO

Keywords:

Marine protected area
Marine park
Attitudes
Angler
Australia

ABSTRACT

No-take marine reserves are essential for scientific monitoring, likely to contribute to the sustainability of targeted species, help to buffer biodiversity loss due to climate change impacts, and provide public education, tourism and diverse economic benefits to local communities. However, the establishment of no-take marine reserves has been a contentious policy in several countries because of a perception that recreational fishers are opposed to reserves. Nevertheless, it is unclear whether negative perceptions about reserves are widespread amongst recreational fishers, and whether perceptions change after the reserve has been created. In this study, recreational fishers were surveyed in ten Australian marine parks to determine levels of support and beliefs about the benefits and costs of no-take marine reserves. A 'space-for-time' approach was used to explore whether support is higher in older reserves. The results suggest that most recreational fishers who fish in established marine parks are supportive of the no-take marine reserves within them. On average, 63.3% of fishers support no-take marine reserves in their marine park, and 17.8% are opposed. Further, recreational fishers' support for no-take marine reserves increases markedly with reserve age. This research indicates that most recreational fishers are supportive of no-take marine reserves within marine parks and that support increases over time.

1. Introduction

No-take marine reserves (NTRs) are areas of the sea set aside from all fishing, removal, and disturbance. NTRs have been demonstrated to be essential for scientific monitoring [1], likely to contribute to the sustainability of targeted species [2,3], help to buffer biodiversity loss due to anthropogenic impacts [4], and provide public education, tourism and diverse economic benefits to local communities [5]. However, despite international commitments to protect 10% of the world's oceans by 2020, just 0.59% of the global ocean area is currently protected by NTRs [6,7].

Failure to gain the support of key stakeholders has been a major factor limiting the establishment of NTRs [8–13]. In particular, recreational fishers and their representative interest groups have often opposed NTR proposals [9,12,13]. The resulting perception that recreational fishers are opposed to NTRs has led policy makers to limit or delay the use of NTRs. Examples include: failure of initial attempts to create a NTR network in California [13], concessions allowing some recreational fishing in reserves in New Zealand [14] and a recent reduction in the use of NTRs in Australia's Commonwealth Marine Reserve network [15,16].

Fishing is an important recreational activity; it is estimated that—across the developed world—10.5% of the population engage in recreational fishing [17]. Recreational fishing also has considerable associated health, social, and cultural benefits [18]. As such, it is not surprising that the opinions of recreational fishers should be given due weight in the decisions about the implementation of NTRs [8,19].

However, accurately gauging the preferences of recreational fishers on NTR policies is challenging. Policy makers often go to great lengths to engage recreational fishers in NTR decisions. For example, the creation of the Great Barrier Reef Marine Park (GBRMP) in Australia involved over 600 consultation meetings [20]. However, there are at least two reasons why the feedback received in community consultations during NTR planning could be misleading. First, fishers participating in these consultations may not represent the interests of the wider fishing community. For example, fishers who attended meetings during the formation of the GBRMP were more likely to oppose NTRs compared to the wider recreational fishing community [21]. Second, by definition, consultations take place before fishers have had the chance to experience or understand the true consequences of the NTRs, meaning that fishers' opinions could change over time, and the outcomes of these consultations may not represent the long-run opinions of

* Corresponding author.

E-mail addresses: matthew.navarro@research.uwa.edu.au (M. Navarro), marit.kragt@uwa.edu.au (M.E. Kragt).

<https://doi.org/10.1016/j.marpol.2018.06.021>

Received 3 March 2018; Received in revised form 4 June 2018; Accepted 25 June 2018

0308-597X/ © 2018 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

the group they are trying to gauge.

While there are studies aimed at understanding recreational fishers' attitudes to NTRs [22–30] two key research gaps remain. First, there is a lack of conclusive evidence at national levels about recreational fishers' attitudes to established no-take marine reserves specifically. Many studies assess attitudes to hypothetical NTRs, or attitudes to broader spatial management policies such as Marine Parks (MP) —which often include NTRs but also contain other forms of spatial zoning [22–25,28,29]. Further, all previous studies have focused on single case studies, making their results of limited use in informing a nation-wide NTR debate. Secondly, only one study has examined whether fishers' support for MPs increases over time [31]; however, their findings are unreliable as fishers were asked to recall previous level of support, a task subject to strong recall bias [32].

This study focuses on the case of Australian recreational fishers' attitudes towards NTRs. The Australian case study is of interest because of its high fishing participation rates [17], and the level of controversy that has accompanied NTR proposals [8,12]. Australia also has a suite of NTRs in which to study fishers' attitudes, most of which are implemented in state-managed MPs.

This paper presents the outcomes of surveys with recreational fishers in ten Australian MPs, gauging their opinions and attitudes about the NTRs in their MP. This is the first multi-state study of recreational fishers' attitudes to NTRs in Australia, and as such provides three major contributions over previous literature. First, by considering a range of MP contexts, the study contributes to the NTR policy debate in a way that previous single MP and single state studies could not. Second, it addresses a lack of studies examining fishers' attitudes to established NTRs. Third, considering multiple MPs allows tests of whether support for NTRs increases over time. Specifically, a 'space-for-time' approach is used, testing whether support for NTRs is higher in older MPs, and therefore whether support is likely to grow over time.

2. Methods

2.1. Study sites

Ten MPs of varying ages were selected for inclusion in this study: four MPs greater than ten years old, two MPs between 5 and 10 years, two MPs less than 5 years, one MP with an unenforced but completed zoning plan (Ngari Capes MP), and one proposed MP (Sydney). There is currently no MP formally planned in Sydney. However, in 2014, the NSW labour party promised to create a Sydney MP if elected in the

2015 state elections [33]. For this study, the outer boundaries of that Sydney MP promise (Pittwater to Port Hacking) and a scenario in which 20% of the MP area would be allocated to NTRs was used (Fig. 1).

To increase comparability across the sample, the selected MPs are all relatively large (greater than 200 km²), multi-use (i.e. NTRs accompanied by other zoning measure), have a significant proportion of their area allocated to NTRs (more than 9%), and are near population centres. These criteria excluded MPs in Victoria, Tasmania, and the Northern Territory. Together the ten selected MPs include four Australian states and span ages from early stages of planning to 14 years old (Table 1).

2.2. Survey design and administration

A survey was designed to elicit fishers' opinions about NTRs. Fishers were first asked about the number of days they spent fishing in the last year, and the number of years they had fished in the MP area. To measure perceived threats to bio-physical health of the MP, fishers were then asked to classify seven potential threats as 'no threat', 'minor threat', or 'major threat'. Following [31], the threats were: coastal development, climate change, invasive species, marine tourism, commercial fishing, recreational fishing and pollution

The second section asked for fishers' attitudes about the NTRs in the MP. Fishers were presented with a map of the MP and reminded that the NTRs referred to the MP zones where all forms of fishing are prohibited. The potential benefits and costs of the NTRs were not described so as not to influence fishers' attitudes. Fishers were asked to rate their support for the NTRs in the MP on a five-point scale—from strongly opposed to strongly supportive. Following previous research [31], fishers' beliefs and perceptions about the NTRs were also measured. This was done across two dimensions: (i) fishers' beliefs about the environmental benefits of the NTRs, and (ii) the perceived impacts of the NTRs on the fishing experience. Belief in environmental benefits were investigated using six questions based on [31] with responses recorded on a five-point scale from strongly disagree (1) to strongly agree (5). The wording of these questions can be found in the [Supplementary material](#). Also following [31], perceived impacts on fishing were measured by asking if the NTRs had increased or decreased four aspects of respondent's fishing experience: satisfaction with catch, overall satisfaction with recreational fishing, amount of time spent fishing, and ability to access quality fishing sites. Responses were recorded on a five-point scale from strongly decreased (1) to strongly increased (5). For both dimensions, a single index was constructed by taking the average



Fig. 1. Surveyed locations. Marine Parks are detailed in Table 1.

Download English Version:

<https://daneshyari.com/en/article/7487552>

Download Persian Version:

<https://daneshyari.com/article/7487552>

[Daneshyari.com](https://daneshyari.com)