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Perceptions regarding the need for broad sustainability assessments of Australian fisheries

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ABSTRACT

Demonstration of fishery sustainability has expanded from a relatively narrow biological focus to one that includes a wide range of issues in response to environmental legislation, social factors, and demands from markets and consumers. The Healthcheck for Australian Fisheries Sustainability (Healthcheck) is a new initiative designed to be comprehensive with regard to ecological, economic, social and governance aspects, presenting available information about a fishery for easy access and use. Here we report on the framework development process, including engagement with fishery managers, environmental non-government organisations, and fishery participants. All participants emphasized the need for a broad sustainability assessment with timely reporting, easy availability, and wider coverage of seafood sustainability information than is currently accessible, and expressed the importance of trustworthy and transparent information. Differences were found when comparing sustainability issues generally reported and issues of main concern to stakeholders. Subsequent refinement of the Healthcheck extended coverage into issues that are on the horizon for fishery reporting, but may soon be of interest to a wide range of stakeholders.

1. Introduction

The traditional focus of fisheries management on ensuring biologically sustainable harvest of target species has broadened to an ecosystem-based approach over recent decades (Link et al., 2002, 2017; Pikitch et al., 2004; Smith et al., 2007, 2017). This has resulted in the need for research and information on sustainability issues associated with bycatch species, protected species, habitats, and ecological communities (Hiddink et al., 2007; Hobday et al., 2011; Heupel and Auster, 2013). Eco-certification programs have endorsed this environmental focus (Kaiser and Edward-Jones, 2006), as have more general seafood assessment programs (Jacquet and Pauly, 2007; Roheim, 2009; Anderson et al., 2015), which, due to market opportunities may have strong effects on industry activities (Ziegler et al., 2016). In addition to environmental issues, there are a range of economic and social sustainability concerns, as well as linkages between policy, governance and community decision-makers that have only recently been considered as part of fisheries sustainability assessment and reporting (van Holt et al., 2016; Benson and Stephenson, 2017; Anderson et al., 2015; but see Pitcher and Preikshot, 2001). Attention to integrating information from many sources (e.g., economic, social, cultural/political and ecological) has increased the complexity of fishery management (Smith et al., 2007; Anderson et al., 2015; Rindorf et al., 2017), as fisheries assessments require new sources of information, types of data and analysis, and ways of integrating results to guide science-based policy in addition to traditional biological information (Link et al., 2002; Smith et al., 2007). Fishery managers also have to grapple with different data scales, temporal ranges, descriptions and interpretations, and different levels of uncertainty (Link et al., 2018).

At the same time, there has been a trend for more inclusive and participatory processes to shape fishery objectives and performance (Pita et al., 2012; Pascoe et al., 2016; Link et al., 2018). This discussion of a wider set of indicators with diverse stakeholders also needs to be integrated rather than sector-specific (Pascoe et al., 2009; Stephenson

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et al., 2017). Demand from a range of public sector stakeholders for a more comprehensive suite of information on sustainability (including public access to this information) can exert considerable influence. Events such as the Australian public backlash in 2012-13 against the arrival of the supertrawler *FV Margiris* (Tracey et al., 2013; Haward et al., 2013) have shown that biological information about target species is no longer sufficient and exposed the lack of information, misinformation, widespread confusion and distrust amongst the Australian public with regard to fisheries (Brookes, 2009; Sparks, 2013; Mazur and Curtis, 2014; Cullen-Knox et al., 2017), despite Australian fisheries being recognized as world leading with regard to stock status, research and management (Pitcher et al., 2009; Alder et al., 2010; Costello et al., 2012).

Public interest and media attention now consider a range of fishery issues beyond stock levels, from bycatch and economic performance, to social and governance concerns such as work standards, distribution of benefits, global issues including ethical employment and slavery, and climate change (van Holt et al., 2016; Mazur and Curtis, 2014; Fleming et al., 2014). Thus, for many fisheries, claiming sustainability now requires a suitable accounting format for more holistic reporting on all aspects of fisheries to meet the social expectations of consumers and a wider array of stakeholders (Barclay, 2012; Anderson et al., 2015; Stephenson et al., 2018a). The need for a broader view of fishery sustainability has been widely recognised, including by the United Nations (UN, 2017; UNESCO, 2017; Visbeck, 2018). This need also aligns with a trend towards interdisciplinary research in fisheries (Hollowed et al., 2013; van Putten et al., 2013; Frusher et al., 2014; Alexander et al., 2018) and environmental science in general (Markus et al., 2018). Fishery managers are often aware of social and economic objectives, yet environmental issues are still given primary focus (Barclay, 2012; Hobday et al., 2016; Stephenson et al., 2018a). Social and governance performance measures remain underdeveloped, despite rising awareness of the importance of community attitudes and "social licence" (Clarke, 2010; Barclay, 2012; Mazur and Curtis, 2014; Kelly et al., 2017), and especially relative to metrics describing the status of target species and overall economic performance (e.g., ABARES, 2013).

There are two related, but distinct challenges with this increased scope (i) lack of collated verified, and trusted information across ecological, economic, social and governance aspects of a fishery available for management decisions (Hobday et al., 2016) and (ii) lack of an appropriate form of that information available to the public (FAO, 2016, pp 40–41; McClenachan et al., 2016). Importantly, aligning societal demand for (and availability of) a broader suite of sustainability indicators while also achieving public consideration and debate associated with sustainability issues is difficult (Tracey et al., 2013). There are also limited opportunities for engaging the public in discussions around the trade-offs between issues that are inevitable in any type of food production (Brander, 2010; Rice and Garcia, 2011; Hobday et al., 2015). There is a general societal interest in sustainability assurance of food, and seafood is no exception, as seen in the increased initiatives by various actors to inform consumers (FAO, 2016). Paramount are ease of access and reliability of information (trust in the source). Since fishery conditions vary between years, up-to-date delivery is also required – web-based technology now supports frequent updates of information, including summaries of the annual reports that are common in fisheries (such as stock assessment reports; e.g., Flood et al., 2014) or apps to support individuals to make decisions on the food they purchase (Sustainable Seafood Guide; Seafood Watch; Best Fish Guide). Despite this, there is a demonstrated need for a source of collated, verified and trusted information across the ecological, economic, governance and social aspects of a fishery in Australia and elsewhere, which can be used by fisheries managers and other stakeholders. The question of how this information is best made available to all the sectors who might benefit remains open and is an area for future investigation.

Here we describe engagement with stakeholders regarding broad sustainability reporting of Australian fisheries to ascertain the level of interest in particular aspects of this reporting, and the types of information desired. Our aim was to investigate the perceptions of various stakeholder groups related to the reporting, availability, and relevance of ecological, economic, social and governance information on seafood sustainability and to determine whether there are gaps in their current information needs which a broad assessment framework (notably broader than existing assessments) could fill. The results informed the development of a reporting framework, termed the 'Healthcheck for Australian Fisheries and Stocks', as a companion to single stock status reporting (Flood et al., 2014). This broad assessment framework considers sustainability with respect to biological, economic, governance and social categories (overarching fishery objectives), each composed of a number of sub-categories (performance areas), each with suggested indicators. Both the approach and the outcome may be applied in other regions seeking broader seafood and environmental sustainability reporting.

2. Methods

Our approach had three main steps. We first reviewed existing assessments of marine resource status and use (Step 1), to scope a reporting framework, then identified potential stakeholders based on potential contributors of information or as end users of a broad sustainability assessment framework for Australian commercial fisheries. Broader sustainability assessments that include social, economic and governance factors go beyond species assessments, and thus it was necessary to engage with a wider array of stakeholders compared with other issue-specific assessments (e.g., habitat assessments) (Step 2). We sought information on 'trustworthiness', which emerges from salience, legitimacy, credibility (after Cash et al., 2003) to provide insight into how/if new assessments might be considered trustworthy. We were interested in similarities and differences among three groups expected to be primary users of fishery information: 1) fishery managers, 2) environmental non-government organisations (eNGOs), and 3) fishery participants (fishers). We describe the engagement approach with each group in the sections below. The general public represent a very large and diverse stakeholder group, with diverse perceptions based on a range of factors, and were not included in this initial engagement. Finally (Step 3), refinement and adjustment of the initial framework in response to feedback by a wider array of stakeholders and domain experts was undertaken in recognition of the adaptive learning cycle and co-produced dimensions of learning processes which Armitage et al. (2008) argue are required to support governance of complex socio-ecological systems.

2.1. Comparison with existing sustainability assessments

We used four categories (representing overarching objectives) and 16 subcategories (representing specific performance areas) based on an extensive review of 54 seafood assessment and reporting schemes from around the world (Hobday et al., 2016) (Fig.1A). The development of these sub-categories and categories drew on existing frameworks elsewhere, and aligned with Australia's National Ecologically Sustainable Development (ESD) framework for wild-capture fisheries (Fletcher et al., 2002), which has informed the design of management goals and objectives for Australian fisheries. A total of 27 of these existing assessments were based on clearly-defined indicators. For example, stock status (e.g., overfished, not overfished) was one indicator used to assess the sustainability of target species. The number of indicators in each sub-category across all the existing assessments reviewed was used as an estimate of the perceived importance of each sub-category in seafood assessments (Hobday et al., 2016; Online Appendix 3). While importance is not directly a result of the number of indicators in the category, where there are a greater number of 'simpler' indicators in a particular category these tended to get a stronger weighting in terms of monitoring and reporting. Long lists of specific biological indicators