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Bridge over troubled waters: A synthesis session to connect scientific and decision making sectors

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ABSTRACT

Lack of access to relevant scientific data has limited decision makers from incorporating scientific information into their management and policy schemes. Yet, there is increasing interest among decision makers and scientists to integrate coastal and marine science into the policy and management process. Strategies designed to build communication between decision makers and scientists can be an effective means to disseminate and/or generate policy relevant scientific information. Here researchers develop, test, and present a workshop model designed to bridge the gap between coastal and marine decision makers and scientists. Researchers identify successful components of such a workshop as well as areas for improvement and recommendations to design and conduct similar workshops in the future. This novel workshop format can be used in other fora to effectively connect decision makers and scientists, and to initiate an iterative process to generate and transfer policy relevant scientific information into evidence-based decisions, an important element in protecting coastal and marine resources.

1. Introduction

When decision makers are involved in defining scientific research project goals there is an increased likelihood of uptake and use of the research findings in policy and management decisions [6,13,15]. However, the majority of research planning, design, and execution occur outside of and in isolation from the decision making realm [21]. There is a lack of dialogue between decision makers and scientists, resulting in the currently inadequate use of research findings in decisions [23]. Yet, there is increasing recognition by both decision makers and scientists of the need for more effective inter-sectoral communication and knowledge transfer [16,19]. Promoting tools that enhance the use of scientific data in decision making processes, i.e., devices or mechanisms that promote sharing of information, will enhance society's ability to address pressing problems including, but not limited to, marine and coastal environment issues [21]. However, despite the widely recognized benefits of evidence-based decision making [3], producing and disseminating science that informs decisions remains a challenge [2]. One tool is to raise awareness among researchers of the scientific data needs of decision makers [13]. A second tool is to connect academic or agency scientists that work on particular issues with decision makers with relevant data needs [2,13]. Using interpersonal strategies that bring decision makers and academic scientists together to transmit knowledge and define more specific goals and projects may lead to more integrated scientific research [2,19].

In-person interactions provide decision makers and scientists the opportunity to connect and relate to each other [10,19]. Davis et al. [4] found that workshops in which face-to-face interactions connected natural resource scientists and decision makers provide an important opportunity for meaningful dialogue. Workshops can provide the opportunity (1) for decision makers to express to scientists the types of information they need and (2) to inform decision makers of scientific advances [16]. Thus, an approach that first identifies and communicates data gaps and then connects decision makers and researchers may be the most effective strategy to generate evidence-based policy and management practices [13]. Using this approach, the researcher team planned, tested, and reflect upon a novel method for establishing this connection. The team designed and conducted a "synthesis session" (SS) – a workshop to build communication between decision makers and researchers based on previously identified data gaps [8]. The researchers suggest that the SS functions as an appropriate networking opportunity [12], a means of increasing knowledge of data gaps among the scientific community, as a tool for improving communication between relevant researchers and decision makers [16], and a means to foster relationships and connections.

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This approach can ultimately lead to increased scientific data use in policy and management [13], and thus enhance the effectiveness of policy and management schemes [7].

In this paper the research team has developed and presents a model for increasing collaboration between scientists and decision makers to promote evidence based decisions. Successes and areas for improvement in the tested model are discussed. This novel workshop model is intended to build and sustain connections, with the ultimate goal of creating better policy and management practices. In a recent study, 89% of decision makers in the Pacific Northwest thought that outreach programs to decision makers were needed to inform policy and management decisions regarding climate change impacts [14]. Thus, the model presented here is one possible tool for bridging data gaps through increasing connections and fostering communication between siloed sectors that often lack interaction and communication. Research conducted by Davis et al. [4] revealed that similar models of interaction with fire science researchers and managers increased the efficient use of limited time and resources by preventing duplicative research and streamlining data collecting efforts. The SS presented here also sought to identify the utility of ecosystem services as a framework for cross-sector communication; differences in defining ecosystem services made this objective difficult to achieve. This synthesis session model can be applied in other case studies to promote more effective creation and completion of scientific studies geared towards specific policy and management questions to improve ocean and coastal health.

2. Coastal and marine ecosystem services synthesis session: a case study

2.1. Synthesis session background

The SS was preceded by an interviewing phase in which 26 decision makers[1] identified marine and coastal data gaps and the types of communication with researchers that were perceived as most effective. Decision makers for the interviewing phase were key coastal and ocean decision makers in state, local, and federal agencies and NGOs as identified by the research team and other researchers whom are knowledgeable about and engaged in the topic (see Goldsmith et al., 2015 [8] for details on interviewing phase). This interviewing phase also sought to determine the ecosystem services most important to decision makers [8], as using ecosystem services in management decisions can balance competing interests and determine best practices for natural resource management [24]. Research has shown that designing a workshop around current issues and concerns generates enthusiasm from participants [18]. Thus, this initial interviewing process was used to conduct the SS in a more efficient manner with data gaps and other pertinent information being shared prior to convening the SS (see Goldsmith et al., 2015 [8] for open ended interview questions). A pre-event data gap identification period is important for the model presented here, though this could take the form of a mail, email or online survey given time and/or monetary constraints. That being said, interviews are the optimal method for this type of need/gap assessment as they provide rich detail and prevent self-selection survey bias [5].

The interviews revealed that formal partnerships and informal networks with knowledgeable individuals were beneficial means of increasing scientific data use in natural resource management

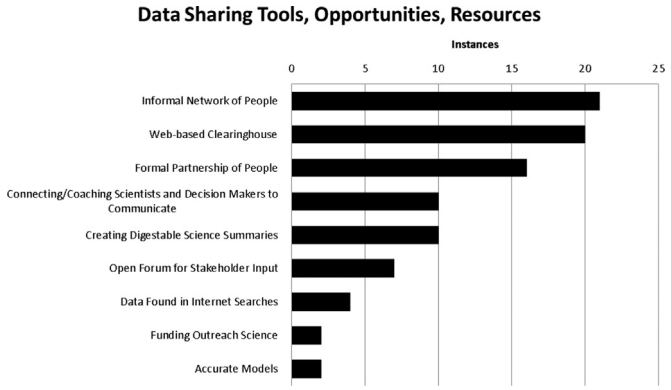

Fig. 1. Tools, opportunities, and resources decision makers identified as fostering increased use of scientific data in decision making [8].

decision making [Fig. 1]. The SS was designed in response to these findings. SS participants included both scientific researchers and decision makers. SS participants were presented the analyzed results of the interviews [8] including tools, opportunities and resources for data sharing [Fig. 1], challenges for decision makers working with scientists [Fig. 2], and priority data gaps. The SS agenda [Appendix A] was based on these results with a focus on building connections and identifying additional tools and opportunities to increase scientific data use in policy and management.

Interview findings determined that by bringing decision makers into the research project design phase, the results could speak more directly to the existing decision maker data needs, while still meeting the goals of the researcher [Fig. 2]. Thus, the SS was designed to directly address this finding. Furthermore, language barriers due to scientific terminology and a lack of communication about existing research findings were identified as barriers to using research in decision making [Fig. 2], thus the SS aimed to address these challenges.

The SS design aims to engage stakeholders from the beginning of the research process to increase 'buy-in' of the end products [6,17]. In turn, an improved understanding of decision maker needs can promote more relevant research that directly addresses those needs [17]. When research directly fulfills decision makers' needs, it is more likely to be used in policy [6] and can result in better policy enactment based on the best available science [17]. Research has recognized that cross-sector knowledge production between decision makers and scientists can be an important element in more reflective and deliberative natural resource management [20]. Thus, the SS was designed to establish mutually beneficial connections between decision makers and scientific researchers to eventually increase the creation and use of policy and management relevant research [6].

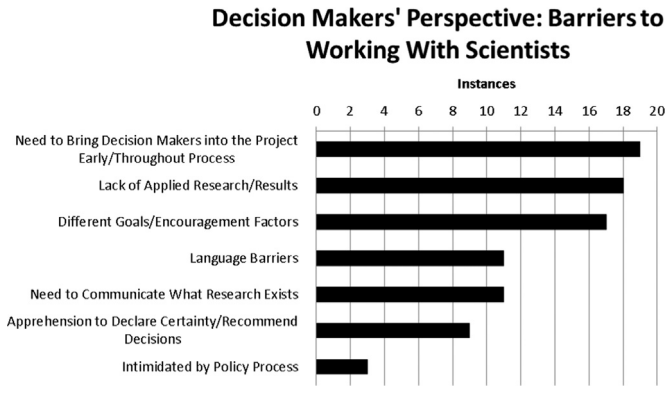

Fig. 2. Decision makers' barriers in working with scientists to increase the use of scientific data [8].

[1] Here "decision maker" refers to those individuals actively involved in designing and/or implementing legislative policy, procedures and protocols, and management programs. For more information regarding decision maker selection see Ref. [8].