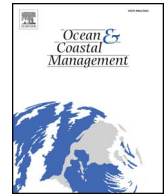




ELSEVIER

Contents lists available at ScienceDirect

Ocean and Coastal Management

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

The role of stakeholder perceptions and institutions for marine reserve efficacy in the Midriff Islands Region, Gulf of California, Mexico

Maria del Mar Mancha-Cisneros^{a,*}, Alvin N. Suárez-Castillo^b, Jorge Torre^b, John M. Anderies^c, Leah R. Gerber^a

^a Ecology, Evolution and Environmental Science, School of Life Sciences, Arizona State University, PO Box 874501, Tempe, AZ 85287-4601, USA

^b Comunidad y Biodiversidad, A.C., Calle Isla del Peruano No. 215 Col. Lomas de Miramar, Guaymas, Sonora 85448, Mexico

^c School of Human Evolution and Social Change, Arizona State University, Tempe, AZ 85287-2402, USA

ARTICLE INFO

Keywords:

No-take areas
Stakeholder perceptions
Governance of marine resources
Fisheries management
Institutions
Non-compliance

ABSTRACT

Governance of marine resources underscores the role of social, economic, and political objectives in achieving conservation outcomes. Marine protected areas, specifically no-take areas (NTAs) where all extractive uses are prohibited, are now widely-used to promote sustainable fisheries and protect marine biodiversity. However, no-take areas have had mixed success, and the governance structures that determine success are not well understood. The institutional, social, economic, and political context of the no-take areas and the response of resource users to their establishment are rarely considered in establishing marine reserves. In developing countries with high levels of poverty and low enforcement capacity, harvest practices rarely adhere to formal laws and regulations. As a consequence, many no-take areas have become “paper parks” that fail to provide ecological and social benefits. In this paper, we use the Coupled-Infrastructure System (CIS) framework to explore the problem of “paper parks” by assessing stakeholder perceptions, preferences, and levels of knowledge on NTAs within a regional system of three no-take areas in the Gulf of California, Mexico. Using structured interviews, we found differences in perceptions about the use of NTAs for conservation of biodiversity and management of fisheries, misconceptions about the location of current NTAs, and problems of non-compliance behavior. We identify a weak relationship between the perception of NTAs by the resource users and the way in which current NTA tools operate in Mexico. Consequently, anticipated success based on the mere presence of the NTA and its regulations is hindered by how the resource users interact with the resource itself, but more importantly by what leads up to this hindrance. A focus on this weakness in the CIS system is critical to achieving NTA objectives.

1. Introduction

The governance complexities of marine resources exemplify how ecological objectives for the conservation and protection of species and ecosystems can conflict with social, economic, and political objectives for maximum employment yield, economic efficiency, and livelihood support in small communities. Marine protected areas, specifically no-take areas (NTAs) designed to restrict all extractive uses, are now widely-used to promote sustainable fisheries and protect marine biodiversity (Boonzaier and Pauly, 2016). NTAs have met various levels of success on different countries and under different governance and institutional contexts. In many cases, traditional cultural practices and livelihood dependence on marine resources preclude harvest practices from adhering to the formal laws established, especially in developing countries with high levels of poverty and low enforcement capacities. Consequently, many NTAs become “paper parks” in which established

NTAs fail to effectively restrict access and exploitation and do not contribute to the recovery of the protected resource (Rife et al., 2013; White and Courtney, 2004).

An understanding of the importance of institutions (i.e., rules, norms, and strategies that humans use to dictate their interactions) to engage in collective action and avoid resource overexploitation (Basurto and Coleman, 2010; Becker and Ostrom, 1995), as well as the infrastructure through which humans act on the environment (Anderies, 2015) is essential to effective resource management. NTAs regulate fishers directly by restricting their access to designated areas of no-harvesting (Fujitani et al., 2012). NTAs can be established to achieve conservation of biodiversity, recovery fish stocks, or both, and their effectiveness can be measured by whether NTAs have achieved the objectives stated at the time of implementation. However, different stakeholder groups are likely to have different perceptions towards whether existing NTAs are achieving their objectives and the quality of

* Corresponding author.

E-mail address: mar.mancha@asu.edu (M.d.M. Mancha-Cisneros).

<https://doi.org/10.1016/j.ocecoaman.2018.01.024>

Received 6 January 2017; Received in revised form 8 December 2017; Accepted 21 January 2018
0964-5691/ © 2018 Elsevier Ltd. All rights reserved.

management policies and processes in place. These perceptions can influence support for NTAs (Bennett and Dearden, 2014a) and should be considered when assessing their effectiveness (Webb et al., 2004).

Establishing NTAs without consideration of the institutional, social, economic, and political context and governance structure of the region can undermine its objectives and give a false sense of security that such areas will be enough to sustain marine resources (Rife et al., 2013; Fujitani et al., 2012). Regional NTA systems are likely to be more successful when considering the cultural, institutional, and socio-political processes operating in the region (Cudney-Bueno et al., 2009). Understanding these operating conditions calls for a more holistic view of the process through which NTAs are socially perceived, legitimately implemented, and locally accepted by the resource users. In this paper, we explore the problem of “paper parks” by assessing stakeholder perceptions, preferences, and levels of knowledge on NTAs within a regional case study in the Midriff Islands Region (hereafter “Midriffs”) in the Gulf of California, Mexico. This paper also addresses the question of whether the perceptions from the different stakeholders with regards to NTAs matches the expectations of what NTAs are expected to achieve in the Gulf. We apply the Coupled-Infrastructure Systems (CIS) framework (Anderies et al., 2016) to identify weak interactions between key social and institutional components within existing NTA systems in the Midriffs, and suggest how the interactions of fishers with areas within NTAs can be influenced to increase NTA effectiveness in Mexico.

Over the last decade, there have been multiple studies on the knowledge and perceptions of fishers in the Gulf towards formal fisheries management policies exclusively regulating harvesting activity. These studies have shared important lessons to improve stewardship of fishery resources (Cudney-Bueno et al., 2009; Basurto et al., 2012; Cinti et al., 2010a, 2014). The need to formally recognize fishers as key stakeholders in local fisheries and include them in the cooperative design of management strategies and regulations has been shown to be critical for effective fisheries management (Cinti et al., 2010b). However, the formal institutional structure of Mexican fishing regulations may not be the most effective strategy to promote responsible fishing behavior (Cinti et al., 2010a). Insufficient government support for the provision of secure fishing rights, lack of effective enforcement and sanctioning mechanisms, and the lack of recognition and incorporation of local arrangements and capacities into management actions has all been shown to undermine sustainable fishing practices in the Gulf (Cinti et al., 2014). More importantly, the disconnection between higher levels of governance and the local practices, realities, and needs have been a major impediment to sustainable fishing practices among small-scale fishers (Cinti et al., 2014). Our results contribute to the understanding of how NTAs are perceived as fisheries management tools within the Mexican policy context.

2. Materials and methods

2.1. Theoretical framework

We explore the perceptions of NTAs as a fisheries management tool through the Coupled-Infrastructure-Systems (CIS) framework, which was introduced as an extension of the Institutional Analysis and Development (IAD) framework (Kiser and Ostrom, 1982) and the Robustness framework (Anderies et al., 2004). The IAD framework is designed as a conceptual map that identifies a common set of structural variables that are present but variable in different types of institutional arrangement (Ostrom, 2011), but which can be extremely useful when evaluating the role of institutions in shaping decision-making processes and social interactions.

The CIS framework goes one step further by highlighting the complex web of interactions between the exogenous variables identified in the IAD framework (i.e. the biophysical context, the actors, and the rules in use) and the feedbacks generated by linked components within it. The framework emphasizes the interactions between the operational

(i.e. actors interacting and implementing practical day-to-day decision) and collective-choice (i.e. institutions are constructed and decisions are taken among a set of authorized actors) levels of a system over time (Anderies et al., 2004). The framework also emphasizes the importance of three types of *infrastructure* (Anderies et al., 2016) for addressing governance of shared resources: *Hard human-made infrastructure* (e.g. private infrastructure such as the boats and fishing gear for harvesting, public infrastructure such as boats for patrolling NTAs), *Soft human-made infrastructure* (e.g. fishing regulations or procedures for the establishment of a NTA, official federal decrees of NTAs and their management programs, or unofficial agreements among fishers to avoid certain practices or not using certain gear to fish for a specified amount of time) and *Human infrastructure* (e.g. knowledge on where to fish or NTA boundaries). Our paper focuses on the latter two types of infrastructure.

In assessing the problem of paper park NTAs through the lens of the CIS framework, we first characterized the NTA system of the Midriffs based on participant observation and literature review, including legal documents and reports elaborated by various federal institutions and civil society organizations, and presidential decrees for NTAs and their management programs. The framework was also used to inform an empirical study (described in section 2.3) on stakeholder perceptions through structured interviews with different stakeholder groups to obtain specific insights into where the main barriers to NTA efficacy lie from an institutional perspective. The use of the framework allowed us to dissect the components of the system, identify weaknesses, and understand what components or interactions need improvement to achieve NTA effectiveness within a system. Fig. 1 shows a description of each of the components of the CIS framework within the context of NTAs in the Gulf (Fig. 1).

The CIS framework also considers the different types of interactions or links among all components of the system (numbered 1–6 in Fig. 1). This way we can identify where weaknesses or strengths are occurring in the system and what consequences it can bring to the long-term robustness of the system. The purpose of these links is to allow the exploration of how different possible policy processes might function in a dynamic policy context, and assess the fit between the biophysical context, the actors, and the rules and regulations in the system (Anderies and Janssen, 2013). The present study takes a closer look at some of these interactions between NTA-type tools within the Mexican context, direct resource users (e.g. fishers) and public infrastructure providers (e.g. resource managers) through a study of levels of knowledge, preferences, and perceptions on NTA-type tools that can or have been implemented in the region. Specifically, we address two research questions (highlighted in red in Fig. 1). First, does the relationship between direct resource users and existing NTA-type tools (i.e. link 6 within the CIS framework) present noticeable weaknesses? High levels of knowledge about the existing NTAs in the region and constructive monitoring and sanctioning mechanisms for compliance with NTA regulations are likely indicators of a strong link 6. Strengthening this relationship can be beneficial by empowering direct resource users about the appropriate use of existing management options for their natural resource as well as further compliance with these regulations. Second, are current strategies for NTA implementation perceived as effective for achieving biodiversity and/or fisheries management objectives? Shared positive perceptions by both fishers and resource managers about whether existing NTAs contribute to biodiversity and fisheries management can have an influence in shaping expectations these tools and what they can accomplish. They can also foster positive relationships between these two stakeholder groups. These two questions shed light on whether existing and future NTAs in the Midriffs (operating via link 5) can become effective at spatially restricting harvesting activities (link 1), thus being effective fisheries and biodiversity management tools.

Download English Version:

<https://daneshyari.com/en/article/8060597>

Download Persian Version:

<https://daneshyari.com/article/8060597>

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