



Emergence of co-management governance for Hawai'i coral reef fisheries



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ABSTRACT

Governance failures associated with top-down management have spawned a myriad of institutional arrangements to engage resource users in decision-making through co-management. Although co-management can take many forms and may not always lead to positive outcomes, it has emerged as a promising governance option available to meet social and ecological goals. Recent research on co-management of small-scale fisheries has used comparative approaches to test factors associated with social and ecological success. Less is known however, about how co-management institutional arrangements emerge and persist in the face of socioeconomic and environmental change. Here, we examine the emergence of co-management governance using a case study from coral reef fisheries in the Hawaiian Islands. We used a mixed methods approach, combining a robust policy analysis and a set of key respondent interviews to trace the evolution of this co-management arrangement. Our research uncovers a set of linked drivers and social responses, which together comprise the emergence phase for the evolution of co-management in this case study. Drivers include resource depletion and conflict, and social responses comprise self-organization, consensus building, and collective action. We share insights on key factors that affect these phases of emergence, drawing on empirical findings from our policy review and key respondent interviews. We conclude by describing ways that our findings can directly inform policy and planning in practice, including the importance of documenting the 'creation story' that spawned the new institutional arrangement, ensuring that enabling conditions are present, the complexity of defining community, the connection between process legitimacy and outcomes, and understanding the costs and timelines associated with co-management governance transitions.

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1. Introduction

Failures in natural resource management that take top-down, centralized governance approaches have inspired considerable research on ways to involve communities and resource users in co-management. Co-management can take many forms, but generally involves shared management authority and responsibility between resource users or community groups at the local level and governmental agencies (Berkes, 2010). Co-management can be conceptualized as a spectrum of institutional arrangements and bundling of property rights in which management responsibilities are shared between local-level resource user communities and state-level institutions (Yandle, 2008). Some

investigators have characterized co-management as an adaptive, iterative learning process where all involved parties share costs and benefits, rather than a strategy or management tool (Pomeroy and Rivera-Guieb, 2006).

Recent scholarship on co-management has focused on small-scale fisheries, which have become increasingly recognized as globally significant in food security, livelihoods, and fisheries landings (Berkes et al., 2001; Chuenpagdee et al., 2006; Costello et al., 2012). Early research on co-management of small-scale fisheries focused primarily on descriptive assessments of these approaches (e.g., McGoodwin, 1980; Jentoft, 1989; Pinkerton, 1989), while more recently, researchers have turned their attention to identifying the factors associated with different social and ecological outcomes, primarily through comparative approaches (e.g., Gutiérrez et al., 2011; Cinner et al., 2012). This growing literature associates co-management with several advantages, including increased collaboration and learning among

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partners, higher compliance with regulations, community empowerment, and increased stakeholder buy-in and stewardship (Acheson, 2003; Jentoft et al., 1998; Jentoft, 2005; Gelcich et al., 2010). But co-management can also lead to undesirable outcomes such as increased social conflict, elite capture of benefits, and perverse incentives for resource overexploitation (Castro and Nielsen, 2001; Gelcich et al., 2006; MacNeil and Cinner, 2013; Pomeroy et al., 2007; Singleton, 2000).

While considerable and justifiable attention has been paid to these outcomes, there is an increased need to understand how co-management arrangements emerge and persist in the face of socioeconomic and environmental change. Emergence theory describes many related concepts and draws on a diversity of disciplinary fields (de Haan, 2006). Accordingly, the concept of emergence has a diverse set of meanings, theories, and frameworks. In its simplest terms, emergence describes a process by which much system complexity may result from a small set of enabling conditions and constraints or rules (Holland, 1999). The most fundamental attribute of which are the observation of some non-linear system behavior, usually described as a function of complexity, evolution, and interaction of several factors (Rotmans et al., 2001; de Haan, 2006). Scholars have employed several analytical approaches to better understand and map the emergence process, including theoretical and conceptual models (Margolis and Salafsky, 1998; Salafsky et al., 2002), agent-based computational modeling (Holland, 1999; Epstein, 1999), the emergence and diffusion of new ideas (Rogers, 2003), the policy process (Sabatier, 2007), and institutional analysis at different levels (McGinnis, 2011).

In environmental governance literature, emergence has been used to describe the development of new institutional arrangements (e.g., Basurto et al., 2012), and the ability of such arrangements to persist is referred to as ‘robustness’ (Anderies et al., 2003, 2004). This literature also characterizes the transitions between governance regimes in terms of transformations, with emerging empirical evidence on the factors key to these transformations (Olsson et al., 2006; Gelcich et al., 2010; Westley et al., 2011). In resilience scholarship, transformability is used to describe the capacity of a complex system (e.g. social, economic or ecological) to transform into a new system, leaving the old system behind (Folke et al., 2010). Emergent transformation is conceived as a bottom-up transition pathway characterized by less coordinated, externally driven regime change (Berkhout et al., 2004; Westley et al., 2011). Emergent transformations can be operationalized in terms of actors, interactions, and events (Geels and Schot, 2007).

In relation to governance systems, recent research on co-management has focused on emergence of new governance arrangements and the key factors associated with these transformations (Gelcich et al., 2010; Basurto et al., 2012; Cudney-Bueno and Basurto, 2009). These examples from recent literature demonstrate the growing interest in this field, particularly as this scholarship relates to policy development and conservation actions on the ground. With a few exceptions (e.g., the Maine Lobster fishery in the US – Acheson, 1988, 2003; fishery management in New Zealand – Yandle, 2003, 2008; McGinnis, 2012; the Pacific Northwest fisheries – Singleton, 2000), most of this literature derives from research in the developing world. As such, less is known about emergence of co-management in developed world contexts. Further, little attention has been given to the important processes of integrating community-based and state-level planning into robust co-management governance.

Here, we examine the emergence of co-management for natural resource governance, using a case study approach from coral reef fisheries in the Hawaiian Islands. As a case study, Hawai'i possesses some unique characteristics that provide opportunities for novel

insights. Hawai'i straddles the developed–developing dichotomy in terms of its ethnic and cultural diversity, the intersection between western-based and legally recognized traditional management institutions, and economic development that varies from high density urban to isolated, rural agrarian areas. In Hawai'i, fishing and gathering remain a central aspect of communities due to their sociocultural significance and for food security, yet centralized approaches to managing fisheries resources and habitats have proven largely unsuccessful, prompting calls for increased engagement of local fishers and communities in management. Although Hawai'i has been part of the United States since 1959, the islands have a legacy of traditional management based on its Polynesian cultural heritage. Marine resources were historically governed through a sophisticated watershed-based tenure system (the *ahupua'a* system) (Kaneshiro et al., 2005; Kittinger et al., 2011). The past success of this system and the recent failures of bureaucracy-based management since statehood are often used as justification for a return to traditional management in areas across the state. In response to calls for more local autonomy in management of coral reefs, one alternative that has gained traction in Hawai'i is community-based subsistence fishing areas (CBSFAs) (Levine and Richmond, 2014). CBSFAs are spatial management measures that allow communities to propose rules to manage nearshore areas for “subsistence” purposes, defined as “the customary and traditional Native Hawaiian uses of renewable ocean resources for direct personal or family consumption or sharing” (Higuchi, 2008; Richmond, 2013). CBSFAs allow for the development of co-management partnerships between state resource management agencies and community groups. Below, we document the ‘creation story’ behind this co-management arrangement and evaluate the emergence process of this co-management governance system, drawing on a robust policy analysis, archival data sources, and a set of key respondent interviews. We relate our findings to broader theories on emergence of governance arrangements for social–ecological systems and conclude by describing ways that our findings can directly inform policy and planning in practice.

2. Methods

This research employed a mixed method approach. We conducted a series of in-depth interviews and a policy analysis of archival documents, plans and legislative testimony. Archival data sources included legislation, testimony, management plans, government evaluations, publications and reports. Testimony submitted for the enabling legislation and the three successfully legislated CBSFAs (in the communities of Mo'omomi, Miloli'i, and Hā'ena) were also gathered from the Hawai'i State Archives. A content analysis noting patterns or themes was performed on 44 pieces of submitted testimony heard during Senate or House committee hearings for bills that eventually became one of the State's three legislated co-management areas. In some cases, citizens or stakeholder groups submitted testimony multiple times, but their testimony was only counted once in the analysis since most, if not all of the testimony submitted multiple times went unchanged. These data were used to supplement and confirm data gathered from key respondent interviews. We also draw on a rigorous legal and institutional analysis of the State of Hawai'i administrative rulemaking process previously conducted (Kittinger et al., 2012).

2.1. Sampling approach

Individuals selected for in-depth, semi-structured interviews were identified based upon a series of informal conversations occurring between May 2010 and March, 2012. A purposive

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