Global Environmental Change 29 (2014) 105–117

Contents lists available at ScienceDirect

Global Environmental Change

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

Measuring good governance for complex ecosystems: Perceptions of coral reef-dependent communities in the Caribbean

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ARTICLE INFO

Article history:
Received 23 March 2014
Received in revised form 25 August 2014
Accepted 26 August 2014
Available online

Keywords:
Good governance
Coral reefs
Community perceptions
Institutional acceptance
Engagement

ABSTRACT

Good governance is widely seen as a prerequisite for effective natural resources management in the context of environmental decline and increasing anthropogenic pressures. Few studies quantitatively examine governance principles, or explore links between perceptions of community members and the governance that shapes their behaviour. Comparative work, spanning multiple sites and contexts, is rare. This paper measures community members' perceptions of governance in twelve coral reef-dependent communities across four countries in the Wider Caribbean Region. In relation to established principles of 'good governance', multiple correspondence analysis indicates that perceptions can be reliably described using two themes, institutional acceptance and engagement. These explain over 50% of variation in individual perceptions. These measurable themes provide an indication of the social fit of governance arrangements, and have implications for expected outcomes, including support for management and compliance with regulations. Cluster analysis provides unique empirical evidence linking structural characteristics of governance to community perceptions; four of five good governance indicators were present in communities with positive perceptions. Results suggest a combination of supportive structures and processes are necessary to achieve governance systems positively perceived by community members. Findings are relevant to those seeking to design management systems and governance structures that are appropriate to local circumstances and will engender stakeholder support.

1. Introduction

Globally, increasing pressures on natural resources present management challenges, particularly for complex and dynamic social-ecological systems. Many symptoms of environmental decline have been ultimately attributed to poor governance. This has failed to limit anthropogenic impacts and constrained effective management (Hughes et al., 2010; Mora et al., 2009). With environmental pressures exacerbated by the threat of climate change, there is demand for improved governance solutions (Cash et al., 2006). Governance is defined here as the structures and processes that determine how decisions are made, power is exercised and responsibilities allocated (Graham et al., 2003). Contemporary thinking recognises resource governance as broader than government, involving both formal and informal processes (Mahon et al., 2009). Governance not only comprises rules and regulations; it also includes interactions among many actors in society beyond government, including civil society and the private sector (Kooiman et al., 2005).

Governance 'quality' can be measured against articulated standards of 'good governance'. This is important if areas for improvement are to be identified (Chuenpagdee, 2011). To date, effectiveness has commonly only been inferred via measurement of ecological, social, or economic outcomes under particular governance arrangements (Cinner et al., 2012a; Evans et al., 2011; Gutiérrez et al., 2011). However, there are compelling reasons to assess governance process as well as outcomes, as these are expected to improve the quality of decision-making and implementation (Mahon et al., 2009; Rauschmayer et al., 2009). A range of procedural principles expected to support more effective management have been proposed (Armitage et al., 2007; Biermann, 2007; Graham et al., 2003; Kooiman et al., 2005; Lockwood, 2010; Ostrom, 1990), and empirical studies have shown how particular governance principles influence outcomes of

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http://dx.doi.org/10.1016/j.gloenvcha.2014.08.004
0959-3780/

resource management (e.g. transparency, Mora et al., 2009; participation, Persha et al., 2011). Developments in the fields of common pool resource governance, co-management and institutional analysis have also contributed to an understanding of the structural characteristics of governance systems likely to facilitate or inhibit the application of good governance principles (Agrawal, 2001; Anderies et al., 2004; Armitage et al., 2007; Fanning et al., 2013; Imperial and Yandle, 2005; Ostrom, 1990).

Despite increasing interest in natural resource governance, few studies assess how those being governed perceive the application of governance principles. These perceptions are important, as governance success relies to a high degree on the perceived fit and acceptance of institutions by resource users and the public (DeCaro and Stokes, 2013). Community perceptions of governance and management arrangements can influence resource use behaviour (Gelcich et al., 2008, 2005; McClanahan et al., 2005; Warner and Pomeroy, 2012). Perceptions have potential implications for willingness to engage in decision-making, levels of support for management, and compliance with regulations (Mora et al., 2009; Raakjær Nielsen and Mathiesen, 2003). Measuring perceptions can indicate the degree to which governance systems are endorsed by community members (DeCaro and Stokes, 2013). A number of studies explore community perceptions of particular governance principles (e.g. participation or legitimacy) and their implications for resource management (Dalton et al., 2012; Pita et al., 2010; Raakjær Nielsen and Mathiesen, 2003). However, no studies to date have examined community members' perceptions in relation to a wide range of procedural principles. Furthermore, none have explored links between these perceptions and structural arrangements across multiple sites and social-ecological contexts. Such studies are needed to further understand the role of governance structures and processes in shaping relationships between governing systems and those governed.

While methods for evaluating the health of ecological, social or economic systems are relatively well established, on-going monitoring of governance structures and processes is comparatively rare, inhibiting proactive improvement (Dale et al., 2013; Plummer and Armitage, 2007). Qualitative research remains essential to the understanding of complex governance systems, but quantitative indicators of governance quality can support monitoring and aid diagnosis of governance weaknesses (Kaufmann et al., 2000). Previous studies largely comprise either comparative assessments at national scale, which may mask local differences, or detailed case studies, which make generalisation difficult (Engle and Lemos, 2010). Recent work suggests that context is critical, requiring examination of combinations of variables associated with positive or negative outcomes (Armitage et al., 2007; Basurto et al., 2013). This paper seeks to capture both local and national differences. By studying three communities within each of four countries in the Wider Caribbean Region, we explore differences within and between countries in a diverse region, highlighting important implications for coral reef managers. This knowledge can help design institutions appropriate to both the environmental problems to be addressed and the local circumstances (DeCaro and Stokes, 2013; Ostrom, 2007).

The aim of this study is to measure community perceptions of good governance principles and assess their relationship to governance structures in twelve coral reef-dependent sites across four countries. The specific objectives were to: (1) assess perceptions of reef governance in relation to established 'good governance' principles; (2) identify any underlying themes driving differences in perceptions of principles; and (3) characterise governance structures associated with different perceptions.

1.1. Conceptual framework

A wide variety of frameworks informing the design of natural resource governance arrangements have been proposed. These fall into three broad categories. First, 'substantial' principles such as efficiency, equity, and sustainability direct the development of governance goals and outcomes (Agrawal, 2001; Bavinck and Chuenpagdee, 2005; Mahon et al., 2005; Ostrom, 2007). Second, procedural principles encompass the rules, norms and values that guide decision-making processes (Bavinck et al., 2005). Third, a number of frameworks provide recommendations for structural characteristics of institutional arrangements (Agrawal, 2001; Fanning et al., 2007; Ostrom, 1990; Pomeroy, 2007). The latter two are the focus of this paper, which explores perceptions of procedural principles (hereafter 'principles'), and the structural characteristics that may facilitate their implementation. Relevant developments in governance theory are reviewed in the following sections, and concepts underpinning the metrics used in this study are discussed.

1.1.1. Procedural principles

Effective governance is ultimately judged on environmental and social outcomes, but the considerable time lag between governance processes and their outcomes means 'good governance' indicators are required in the early stages. Though the correspondence between good governance and good outcomes is an active area of research, this relationship is complex and remains largely undefined. Good governance principles provide a normative basis to guide the processes through which governance goals are developed and achieved (Kooiman et al., 2005; Lockwood, 2010). In doing so, they provide a 'conceptual yardstick' against which to evaluate the quality of governance (Kooiman et al., 2005). The application of these principles is expected to lead to improved management of marine resources. Procedural principles are particularly critical to contemporary theories of governance, which focus on interactions and processes rather than prescribing goals (Kooiman et al., 2005; Ostrom, 2007). Principles set standards for how interactions among components of the governance system, i.e. within and between the 'governing system' and the social 'system-to-be-governed', are undertaken. Measurement of their application in different governance systems must therefore consider the perspective of those being governed.

Research has increasingly examined good governance principles, both in general (e.g. Kaufmann et al., 2010), and specifically in relation to natural resources management and protected areas (Graham et al., 2003; Kooiman et al., 2005; Jentoft et al., 2007; Biermann et al., 2010; Lockwood, 2010; Lockwood et al., 2012). Such principles are thought to be relevant across the broad range of circumstances and diverse governance arrangements under which natural resources are managed (Graham et al., 2003). This study draws on seven principles of good governance outlined specifically in relation to natural resources management: legitimacy, transparency, accountability, inclusiveness, fairness, connectivity and resilience (Lockwood, 2010; Table 1). This framework is based on literature review, expert panel exercises and field trials, thus it shares common principles with many other governance frameworks (e.g. Armitage et al., 2007; Biermann, 2007; Graham et al., 2003; Kooiman et al., 2005). For each principle, Lockwood (2010) proposes a series of corresponding 'performance outcomes' that can be used to identify good governance. In this study we consider one performance outcome for each principle (Table 1), selecting those likely to be observable and easily understood by community members.

1.1.2. Structural characteristics

In recent decades, efforts to identify governance structures that support sustainable, adaptive management of marine ecosystems have intensified (Agrawal, 2001; Anderies et al., 2004; Armitage et al., 2007; Fanning et al., 2013; Imperial and Yandle, 2005; Ostrom, 1990). Conventional approaches are perceived as having