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Co-management and adaptive co-management: Two modes of governance in a Honduran marine protected area

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ABSTRACT

Selecting the best mode of governance for marine protected areas (MPAs) especially in developing countries has generated considerable controversy in the academic and policy literature during the last 20 years. In this article, two modes – co-management (CM) and adaptive co-management (ACM) – are analysed in detail, and an examination is made of an attempt to put these modes sequentially into practice in the first (2003–2009) and second (2008–2013) management plans, respectively, of the Cayos Cochinos MPA (CCMPA) in Honduras. Extensive fieldwork was carried out during 2006–2010 in three communities dependent on the CCMPA (Rio Esteban, Nueva Armenia, and Chachahuate) including key informant interviews, focus group meetings, household surveys, and participant observation. The paper's findings are (1) that while the first plan implemented some CM principles (such as sharing responsibility between government, stakeholders and NGOs) it failed to deliver other CM principles (such as transparency and accountability); and (2) that while the second plan increased participation and transparency, and used a more adaptive approach, it still left many stakeholders out of the decision-making process, and its processes of experimentation, monitoring and social learning were very limited. The fact is that CM and ACM are laudable objectives, but very difficult to implement in full.

1. Introduction

Marine protected areas (MPAs) have become de rigueur throughout the world as the preferred policy solution to the highly publicized problems of overfishing and degradation of marine habitats especially in coastal areas [1]. There are now nearly 7000 MPAs globally [2], but they vary considerably in their effectiveness, generating considerable controversy over the best way in which they can be managed. In recent years, two modes of governance have been much trumpeted—co-management (CM) and adaptive co-management (ACM). CM means sharing decision-making between government (whether national and/or local) and other stakeholders (which may include resource users, local communities, environmental non-governmental organizations (NGOs), and scientists). CM is advocated because it brings stakeholder participation and therefore legitimacy and accountability to management, and (hopefully) fairness and transparency [3]. However, even if CM meets these criteria of good governance, it may fail to achieve the goals of ecological health and socio-economic well-being because the decision-making processes are insufficiently flexible in their responses to ecosystem change. In other words, there is insufficient adaptive capacity in the decision-making system. The concept of ACM is designed to remedy this deficiency by adding the principle of adaptive management (AM) to the principle of CM. AM brings a realization that marine ecosystems are such complicated phenomena that we have to live with uncertainty rather than vainly try to remove it. This means a strategy of 'learning by doing', which involves experimentation with different measures to see what works and to adapt policy in the light of the lessons learned. So ACM is a hybrid approach which combines the value of AM with CM.

This article explains the concepts of CM, AM and ACM, which are then applied to the Cayos Cochinos MPA in Honduras, where the first management plan (2004–2009) was based on the concept of CM, and the second management plan (2008–2013) was based on the concept of ACM. It was found that while both plans fell short of the ideals of their respective concepts, the second plan was an improvement on the first in that it enhanced the quality of governance and introduced an adaptive approach which led to improved local livelihoods, though the health of the ecosystem was more compromised. In the conclusion, four recommendations are made to strike a better balance between MPA objectives by enhancing the quality of ACM in both its CM and AM principles. But achieving such a balance is no easy task.

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2. Modes of governance

2.1. Co-management (CM)

As a concept, CM originated in the 1970s [4], though as a practice it has existed for centuries [5]. CM has often been [re-]introduced in marine resource management when conventional or top-down management has failed [6,7], but it also owes its [re-]emergence to the 'hollowing out' of the state since the 1980s and the hiving off of many governmental functions to decentralized bodies, the voluntary sector, and private enterprise [8]. In this process, the idea of stakeholder participation became ubiquitous and pervasive, and evidence of CM's [re-]introduction can be found across the world [9]. CM is usually portrayed as a mixture of top-down and bottom-up elements [10], in which the top-down element is the state [11] – though in some instances NGOs take the place of the state [12] – and the bottom-up element may include community leaders, resource users [13], conservation groups, academics, consumers, citizens, and/or other stakeholders [14]. The balance between the top-down and bottom-up elements may be struck differently in different situations: Wilson et al. [15] describe a continuum of CM from the most top-down version ('instructive' CM) to the most bottom-up version ('delegated' CM), reflecting Pomeroy [16: p257]'s view that there is not a single '"best" form of co-management'.

Writers who advocate CM refer to both its intrinsic value and its instrumental value [4]. Its intrinsic value lies in its endorsement of the right that people have to be involved in decisions that deeply affect their livelihoods [17]; in its empowering quality [18–20]]; and in its reinforcement of self-esteem [21]. Its instrumental value lies in enhancement of the legitimacy of management [5,22]; improvement in transparency and accountability of decision-making [23]; greater compliance with rules [6]; more extensive knowledge base for decisions [24]; lower cost of obtaining data [25]; smoother dispute settlement processes [13]; increased social capital [26]; and greater awareness of environmental issues [20].

However, several writers point out that CM is not a silver bullet that will solve all the problems of marine resource management, but rather a process within which solutions are likely to emerge [27]·[14]. Whether or not CM has actually delivered such solutions is a matter of controversy, because the relevant information is sparse and ambiguous [12]·[28]. Whilst some writers claim that there is evidence of positive ecological and socio-economic effects of CM [29], others argue that there are very few examples of successful CM [16]·[21].

According to the literature, the success of CM depends on the coincidence of several factors. For example, there has to be a trigger, such as a resource crisis, to stimulate a shift towards CM [16]. CM also needs political will [14], both initially and in the long-term [30], and this entails a mindset shift especially among government officials [21]·[32]. Also, there must be an external agent, as well as local leaders, to guide the change to CM [20]·[31], and many writers claim that CM has to have a legislative basis [34,15]. Others point to the need for financial support to strengthen stakeholder capacity for taking part in decision-making [32], and a significant degree of social capital is also required [26] including equity in the distribution of resources [27]. Consequently, CM may take a long time – perhaps a decade – to become established [10,14,18,22,33]. Where many of the above factors are not present, CM may not be practicable [22]: several writers assert that we cannot expect CM to work in every situation [4,19,20], and Pomeroy et al. [32] listed seven factors which have impeded the application of CM in the Caribbean region: rigidity of management stances; poor leadership of fishers; limited solidarity in fishers' groups; lack of trust in government; little organizational skill of fishers; no property rights to natural resources; and stakeholders' dependency on government. Many of these factors are relevant to the CCMPA.

2.2. Adaptive management (AM)

The concept of adaptive management (AM) was conceived as an antidote to two assumptions of conventional top-down national management of natural resources—(1) that the ecosystem can be perfectly comprehended; and (2) that the ecosystem will respond predictably to management intervention to prevent its instability. Both assumptions are contested by writers who claim that we cannot control the ecosystem, and that any attempt to do so will reduce its natural resilience and undermine its stability [35]. The only rational course is to accept uncertainty as a permanent condition rather than see it as an obstacle to be overcome, and use an adaptive strategy to assist the ecosystem to maintain or recover its natural resilience as a means of coping with uncertainty [36–38]. Originating in the 1950s, the idea of AM was elaborated by Holling, Hilborn and Walters during the 1970s, and although it has been interpreted in many different ways, it seems to have several basic elements. It is founded on the notion of complexity of socio-ecological systems (SESs): they are too uncertain, and unpredictable ('chaotic') to be controlled by computer-modelled top-down management regulations [39–45]. AM prescribes adapting to, rather than trying to manipulate, SESs [46]. Another basic element of AM is diversity, since a variety of resources is necessary for AM to draw on to respond to changes in the SES [47]. Not only diversity of biological or genetic resources, but also diversity of economic and social resources, as well as political and cultural diversity, are needed to help SESs deal with disturbances [48,49].

Resilience is also a foundation stone of AM [39], signifying the capacity of a SES to withstand fluctuation and still maintain its identity [35]. Resilience does not mean that the SES's identity lies in a single, fixed or steady-state equilibrium [50]. This is the assumption held by conventional top-down national management, which aims to keep the SES at this equilibrium point by removing any threat to its stability, but such a strategy is self-defeating because in forcing the SES into a straitjacket (e.g., by imposing the goal of maximum sustainable yield (MSY) on fisheries) it risks distorting the system and producing a disequilibrium of crisis proportions [35]. By contrast, AM seeks to manage change rather than resist it, and sees many possible equilibrium points, not just one [51], or even no steady state at all but only a perpetual oscillation [52]. Resilience may be interpreted in ecological, economic, social, or even political terms, raising the possibility that some forms of resilience may be achieved without others [47]. Resilience is not a purely technical term, but carries normative overtones: AM seeks to promote resilience in a SES because it is judged to be worth supporting [53,46], and if an SES is judged not to be worth supporting, AM would not promote it. For example, the resilience of an ecologically degrading or politically tyrannous system would not be promoted by AM [54].

The notion of the adaptive cycle is another basic element of AM. Notwithstanding the uncertainty surrounding SESs, it is possible to detect a four-stage pattern in the changes they undergo: growth; consolidation; collapse; and reorganization [55]. For some writers, however, this pattern is more metaphorical than real [56,57], which raises the question of what practical purpose the cycle serves. Of more obvious practical use is the related notion of adaptive capacity, which signifies that the degree of resilience depends on the extent of the capacity of the SES to adapt to changes [58]. This capacity may be ecological