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Community-based management of near-shore fisheries in Vanuatu: What works?

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ABSTRACT

In the Pacific, coastal communities have compensated for chronically low capacity of governments to manage fisheries by implementing local regulations in their marine tenure areas. In order to investigate the performance of community-based fisheries management (CBFM) in Vanuatu, trajectories and factors of change in CBFM systems since the 1990s were analysed. Focal group interviews were conducted in seven villages on Efaté island in 2011 and supplemented by a review of supporting literature. Results reveal the increasing and excessive reliance of CBFM systems on external agencies that promoted overly complex management plans. Examination of trends in CBFM systems shows that community and national fishing rules that were highly acceptable by local societies were more likely to be enforced in the long run. In particular, the establishment of marine reserves was the most widespread and best enforced community rule for the purposes of conservation, ecotourism, and/or fisheries. Overall, the results challenge the current effectiveness of CBFM in achieving sustainability of reef fisheries in Vanuatu, and highlight the over-reliance on small marine reserves as a management tool. Community initiatives must be strengthened by new specific national regulations governing subsistence and commercial reef fisheries as part of a multi-scale co-management approach.

1. Introduction

Market-based factors have encouraged users of rival goods such as common pool marine resources to employ extraction strategies that have led to the general over-exploitation of world-wide fisheries. The decline of a large number of jointly-used fisheries that have been run by top-down government-based fisheries management (GBFM) further suggests that this governance strategy is not particularly effective [1]. Calls for a different approach emerged in the late 1980s based on the observation that under certain conditions, users can self-organize to achieve successful governance without individual appropriation of resources [2–4]. It is now well established that the knowledge of local stakeholders can aid in making decisions about the management and the conservation of marine resources (see e.g., in [5–7]).

An upsurge of interest in community-based natural resources management attempts to address this desirable change in governance and has produced considerable scientific debate (see e.g., in [8]). Community-based fisheries management (CBFM) has spread most rapidly in developing countries and particularly in the Pacific, where this system has grown upon a fertile cultural acceptability to reduce the general decline of coral reef resources [9,10]. Similar to GBFM, CBFM regimes may include different regulatory measures such as species and gear restrictions, closed seasons, access rights, and marine reserves (MR). A number of small-scale case studies have established that CBFM may improve the use of local social capital in terms of governance, communication, knowledge, enforcement, cooperation, reciprocity and adaptive capacity [11–16]. External governmental and/or non governmental agencies have also increasingly been associated with CBFM initiatives through collaborative or co-management arrangements [17], although the latter operate within the prescribed implementation periods of external projects. CBFM may therefore appear as a powerful, integrated approach to maintain natural ecosystems, benefits to fishers and community livelihoods.

However, biological evidence of the effectiveness of CBFM regulations on fisheries remains scarce. The outcomes of CBFM are context-dependent (see review in [18]) and inconclusive findings challenge the much vaunted intrinsic effectiveness of

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CBFM in the long term. Among other factors, multiple and often competitive expected outcomes (e.g., biodiversity conservation, local short-term socioeconomic needs, local livelihood improvement) and the lack of local capacity (e.g., social cohesion, leadership, financial resources, linkage with government policies) to control unsustainable uses determine the organization and success of community-based natural resource management [19]. These factors may eventually produce disenchantment with CBFM as a viable alternative for local fisheries if management measures do not produce perceived results [20,21]. Time was also found to be a major determinant of success or failure of CBFM because of the dynamics of the local socio-political relationships, fishing activities and environmental factors [22–24]. CBFM is highly sensitive to temporal change in the factors mentioned above and should therefore be perceived as a site-specific adaptive process.

The historical and socio-political context in Vanuatu (South Pacific) provides relevant conditions to analyze the functioning of CBFM, since the latter has been fully recognized by national legal and political frameworks. Since the country's independence in 1980, communities have been assisted by the Vanuatu Fisheries Department (VFD), which has provided support to CBFM through programs initially aimed to enhance trochus (*Trochus niloticus*) fisheries [25,26]. Owing to its limited staff number and financial capacities, the VFD has largely relied on communities and sea tenure to frame and to enforce coastal fisheries management. National fisheries regulations were established in 1982, 2005 and 2009 and mainly affect the commercial sector, i.e., high-value, export and world's flagship species (i.e., marine turtles and mammals). Communities are the legal owners of near-shore resources and generally manage their marine tenure at the community level using locally-specific regimes [27,28]. Across the archipelago, subsistence fisheries extend over about 3100 km^2 in waters from 0 to 100 m depth, and play a key role in this nation's protein supply [29]. The considerable financial resources invested by the national government through fisheries development programs have had relatively little impact [30]. Fishing for subsistence continues to dominate in terms of number of fishers and marine product consumption, and engages about 50% of Vanuatu's rural population [31]. As in other Pacific islands, coastal and urban population growth, technological innovation and improvements of commercial networks have raised near-shore resource sustainability issues and new challenges for CBFM [32].

Thirty-one years after Vanuatu's independence, this paper aims to investigate the effectiveness of CBFM and suggest practical management regulations based on community and national governance structures in light of current near-shore fishery challenges. Using empirical case studies and a review of the supporting literature spanning two decades, trajectories in CBFM systems since the early 1990s and factors that have contributed to their dynamics were analysed, including fishery management knowledge among community members and the influence of external agencies on local fishery management.

2. Material and methods

2.1. Study area

The study was conducted in seven rural coastal villages in Efaté island (Fig. 1). In most islands of the archipelago, the poorly developed transport network within and between islands strongly restricts seafood marketing and maintains inshore fishing activities at subsistence level. The context is different on Efaté island owing to the proximity of Port-Vila, Vanuatu's capital (57,000 inhabitants), whose population has more than doubled

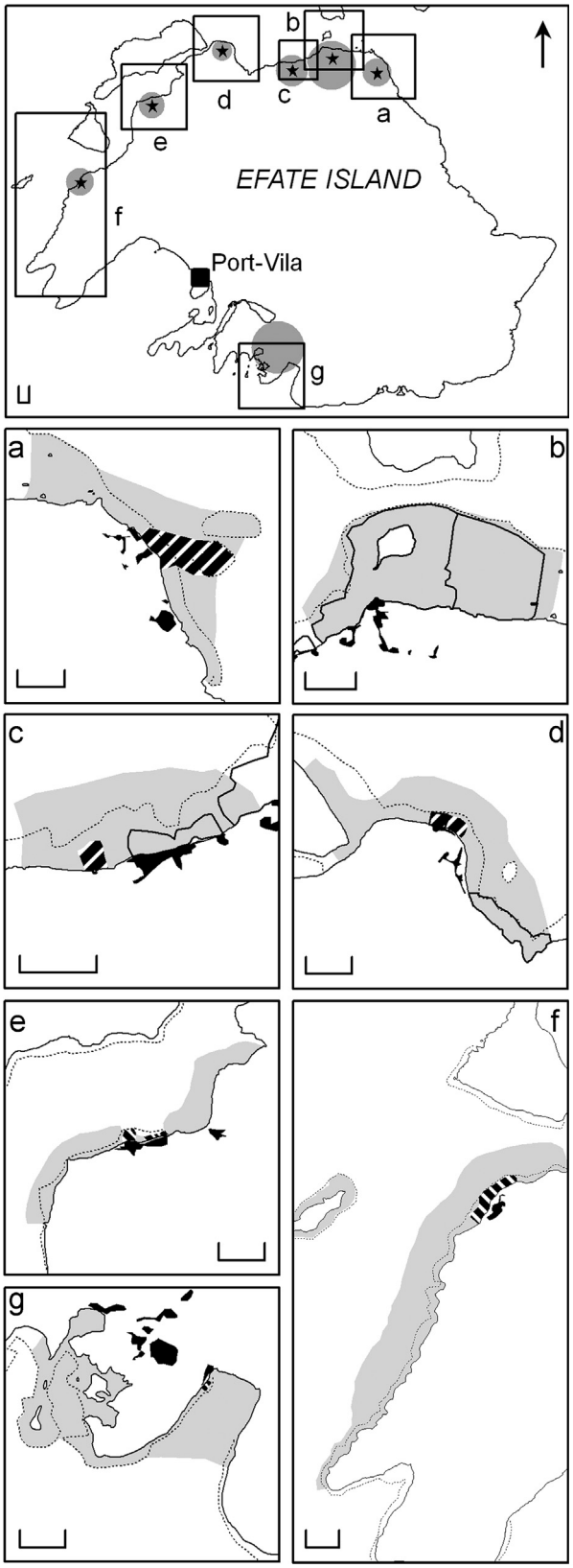

Fig. 1. Map of Efaté island (Vanuatu) showing the locations of the seven villages that were studied: Takara (a), Paunangisu (b), Emua (c), Siviri (d), Tanoliu (e), Mangaliliu (f) and Eratap (g). Stars indicate villages that had been assisted by external governmental and non-governmental agencies during the period 2000–2011 with the support of the Vanuatu Fisheries Department. Grey circle: population size (110 to 1350). ((b)–(g)) Black area: inhabited area. Grey area: community coastal fishing area. Striped area: marine reserve. Bold line: ex-marine reserve established between 1993 and 2010. Dotted line: reef. Scale bars represent 1 km.