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Small-scale managed marine areas over time: Developments and challenges in a local Fijian reef fishery

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ABSTRACT

This paper investigates the Locally Managed Marine Area (LMMA) approach through looking at developments and challenges of community-based marine resource management over time, with a particular focus on Fiji in the South Pacific region. A diachronic perspective, based on two multi-method empirical studies, is used to exemplify the social complexities of the implementation of this LMMA approach in a specific island setting. This perspective connects local stakeholders' establishment and management of a LMMA covering their entire customary fishing rights area (*iqoliqoli*) with the national context articulated around the Fiji Locally Managed Marine Area (FLMMA) network, as well as with regional networking and international conservation dynamics. It especially explores the impacts of a small-scale marine closure (so-called *tabu* area) on the harvesting patterns in a portion of this LMMA, related aspects of formal and informal enforcement, and villagers' views of the health of their reef fishery. This case study reveals a lack of consensus on the current management of this closure as a conditionally-opened no-take area, whose temporary openings (re)produce social tensions, as well as a lack of consensus on the effects of this closure on the reef fishery, which is subject to poaching. The paper highlights that the articulation between conservation and extraction of marine resources, as well as between short-term and longer-term objectives of the community-based marine resource management in place, is a complex socio-political process even at the most local level. The discussion also points out that local observations and interpretations of coastal resource dynamics, and of the interplay between fishery and community changes, might be instrumental in addressing the limits of the area-based system of management inherent in the LMMA approach. These insights into both the development process of the LMMA approach and the challenges of its local implementation and maintenance efforts can be useful to consider the adjustments necessary for Fiji's achievement of its national coastal fisheries management strategy and its international ocean governance commitments.

1. Introduction

In the 1970s, Robert Johannes (1978) drew attention to a fast erosion – and even predicted the soon demise – of traditional marine conservation methods in Oceania. He connected this erosion with the impacts of colonization and westernization processes. Yet, in the 1980s and 1990s, a ‘renaissance’ of community-based marine resource management occurred in this same region (Johannes, 2002). This ‘renaissance’ gave momentum to the establishment of a large number and a wide variety of locally managed and protected areas throughout the Pacific Ocean, or what Bartlett et al. (2009) called a ‘marine reserve phenomenon’.

Most of these Pacific areas are small-scale and loosely based (1) on customary marine tenure systems which regulate access to and use of

marine resources (e.g., Hviding and Baines, 1994 for the Solomon Islands; Calamia, 2003 for Fiji), and (2) on the traditional concept of temporary marine closure (or fishing taboo/*tabu*) having primarily social and cultural functions (Foale et al., 2011). They particularly focus on the management and sustainable use of coral reef ecosystems, to which they apply a mix of mitigation, protection, repair, and adaptation strategies (Comte and Pendleton, 2018). These managed areas now exist side by side with large-scale, officially gazetted marine protected areas (MPAs) that cover 100,000 square kilometers or more (Bambridge and D'Arcy, 2014) and that reflect the implementation of ‘bigger is better’ approaches to marine conservation in the Pacific Ocean (De Santo, 2013). Despite these initiatives, the negative ecological impacts of overfishing are still increasing in the South Pacific region (e.g., Gillett, 2014); hence, a critical need exists for “creative policy solutions

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that increase fishers' access to fisheries without causing overfishing", based on the deep place-based knowledge of leaders (i.e., "actors who purposefully forward solutions that are intended to improve the social-ecological conditions of their communities") (Stoll, 2017: 81 and 74). In some places, recreational uses (such as boating, fishing, scuba-diving, kite-surfing) represent an additional pressure on coastal habitats and species, including within marine protected areas (e.g., Gonson et al., 2017 for New Caledonia). Indeed, both ecological and socio-economic outcomes from Pacific locally managed and protected areas might vary widely, depending on the specific context as well as on governance, management, and local development inputs (Bennett and Dearden, 2014).

Since the early 2000s, the Locally Managed Marine Area (LMMA) network is federating the efforts of diverse practitioners (communities, local leaders, researchers, NGOs, donors, governments, etc.), around the globe but primarily in the Asia-Pacific, to address overfishing and other issues threatening the sustainability of coastal fisheries (including climate change, Bell et al., 2011). A LMMA is a well-defined or designated area of coastal waters, actively managed by resource-owning and resource-using residential groups, often with the support of government agencies and partner organizations, with various explicit and implicit objectives. In the South Pacific region, the main driver for establishing LMMAs is usually "a community desire to maintain or improve livelihoods, often related to perceived threats to food security or local economic revenue" (Govan et al., 2009: 3). Coastal fisheries indeed contribute significantly to the livelihoods, food security, and economy in Pacific Islands (e.g., Bell et al., 2011). In the framework of Community-Based Adaptive Management (CBAM), LMMAs also seem to be increasingly considered and used as building blocks, not only for coastal fisheries management, but also for integrated island management, as recommended by Govan et al. (2009). Yet, in most Pacific contexts, the development and rapid expansion of LMMAs proceeded "without a basis in legislation¹ or government policy" (Govan et al., 2012: 11).

This paper looks at these circumstances with a case study perspective from Fiji, a country that makes a crucial contribution to the marine managed and no-take area coverage in the South Pacific region (Govan et al., 2009: 4), and that appears as a leader and model within the LMMA network. At present, this network has seven member countries – Fiji, Indonesia, Palau, Papua New Guinea, Philippines, Pohnpei and the Solomon Islands – and also supports many more affiliate member countries (see <http://lmmanetwork.org/>). It works as an overall umbrella gathering several LMMA country networks, including the Fiji Locally Managed Marine Area (FLMMA) network which aims to "promote and encourage the preservation, protection and sustainable use of marine resources in Fiji by the owners of marine resources" (Govan and Meo, 2011: 6). By 2011, more than 150 LMMAs had been established in Fiji and were managed by about 400 communities as part of the FLMMA network (Govan et al., 2012). In particular, a LMMA was established in 2001 in the coastal waters of Tikina Vanuaso, one of the three districts of Gau Island, in the Lomaiviti Province (see Figs. 1 and 2). This initiative involved the five villages (Lamiti, Malawai, Nacavanadi, Vanuaso, Lekanai) and one settlement (Naovuka) included in Tikina Vanuaso, in partnership with the University of the South Pacific (USP) and the International Ocean Institute-Pacific Islands (more details on this partnership are presented below). This joint effort aimed to "protect marine resources and support better lives into the future" within Tikina Vanuaso (Veitayaki et al., 2007: 289).²

This paper connects two time- and discipline-contrasted studies for an analysis of the developments and challenges regarding the

implementation of Tikina Vanuaso's LMMA. Through a particular focus on the first marine closure established within this LMMA (thereafter, the Lamiti/Malawai *tabu* area), it gives a diachronic perspective of some of the management and enforcement arrangements implemented in Gau's coastal waters. It also provides some insights into Gau islanders' views of the impacts of such arrangements on the reef fishery on which they remain highly dependent in terms of nutrition and income. Instead of frontally tackling these matters, we first unpack some of the national-level, closely intertwined legal, institutional, and conceptual principles that have greatly influenced the shape and characteristics of this local case study. In return, the discussions emerging from the analysis of the latter would be worth being considered for the ongoing adjustment and long-term sustainability of the LMMA initiatives developed since the late 1990s in Fiji and beyond.

1.1. A Fijian case study

Fiji (or the Republic of the Fiji Islands) is an archipelago located in Melanesia, with a total land area of 18,272 km² and an Exclusive Economic Zone (EEZ) of more than 1.2 million km². It includes more than 300 islands, of which only about one-third are inhabited. In 2007, it counted 837,271 inhabitants, of which about 57% were indigenous Fijians (*iTaukei*), 37% Indo-Fijians (descendants of the Indians transferred under British colonial rule as sugar plantation workers), and 6% were Rotumans, other Pacific Islanders, Europeans or part-Europeans, Chinese people, or others.³

Gau is Fiji's fifth biggest island, around 80 km offshore from Suva, with a land area of about 136 km² and a total shoreline of 66 km. It includes 16 villages and a few settlements, all located in coastal areas, and gathering a total of about 2500 people, who mainly live off agriculture and fishing. As elsewhere in Fiji (Gillett et al., 2014: 2), a wide range of living marine resources are found in Gau's coastal waters, including finfish, invertebrates (such as sea cucumbers and various shellfish), and edible seaweeds (e.g., *Caulerpa* spp., *Gracilaria* spp., *Codium* spp.). The villagers' most prevalent finfish fishing methods are handlining, netting (with handheld or larger nets), and spearing (with wooden spears or spearguns), sometimes from small crafts (i.e., bamboo rafts called *bilibili*, mainly used by women, or small open fibreglass boats, mainly used by men), but mostly standing, sitting or swimming directly in the water.

Gau is divided into three districts (*tikina*): Tikina Vanuaso, Tikina Sawaieke, Tikina Navukailagi (see Fig. 3 below). More than 10 years apart, both authors undertook field research in Tikina Vanuaso, with a particular focus on Malawai village, in which both of them were based, and the neighboring village, Lamiti, which respectively counted 132 and 226 inhabitants in May 2016.⁴

1.2. Methodological perspectives

As a marine biologist, A. Breckwoldt spent 18 months in Fiji in 2003–2004, of which she spent close to three months on Gau, using an interdisciplinary lens to look at the community-based marine resource management in place. She worked with four villages in Tikina Vanuaso, using a mixed-method approach with fishing logbooks, semi-structured face-to-face interviews, key-stakeholder and life history interviews, focus group discussions with women fishers, and participant observation. The information generated by each method complemented that generated by the others to result in a comprehensive picture of the specific community settings, local fishing activities, community-based marine resource management strategies, and local perceptions of these.

¹ For instance, the primary legislation regulating coastal fisheries in Fiji, the *Fisheries Act 1942*, "does not include provisions for declaring MPAs, Locally Managed Marine Areas, or networks of them" (Sloan and Chand, 2015: 6).

² Later on, LMMAs were also established in Tikina Navukailagi's *iqoliqoli* (14.4 km²) through a partnership with USP's Institute of Applied Sciences, and in Tikina Sawaieke's *iqoliqoli* (about 150 km²) through a partnership with WWF (Tawake et al., 2003: 4–6).

³ Fiji Islands Bureau of Statistics, <http://www.statsfiji.gov.fj/statistics/social-statistics/population-and-demographic-indicators> (Accessed 06 September 2017).

⁴ According to a census realized in Tikina Vanuaso by the nurse based at the Nacavanadi nursing station in collaboration with the 'health worker' or '*nasi ni koro*' of each village. The author E. Fache assisted Malawai's 'health worker' in this task.

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