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Editor

Kenneth Ruddle
Asahigaoka-cho 7-22-511
Ashiya-shi
Hyogo-ken
Japan 659-0012
Email: mb5k-rddl@asahi-net.or.jp

Production

Fisheries Information Section
SPC, BP D5, 98848 Noumea Cedex
New Caledonia
Fax: +687 263818
Email: cfpinfo@spc.int
www.spc.int/coastfish

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Editor's note

This edition contains four contributions, all of which concern Melanesia.

The first, “Spreading community-based resource management: Testing the “lite-touch” approach in Solomon Islands”, was prepared by Grace Orirana and five co-authors. In Solomon Islands, community-based resource management (CBRM) is a main strategy for marine conservation and managing coastal fisheries, although most communities do not yet implement CBRM. As a consequence, it is not realistic for either NGOs or government agencies to diffuse CBRM by operating as partners of individual communities. In this article, the authors describe a “lite-touch” approach that was used successfully to support the Mararo community in east Are’are on the weather coast of Malaita, in implementing CBRM, and to serve as an example for leading neighbouring communities. The approach helped build community ownership and pride of its own CBRM programme. Although in this test case the lite-touch approach worked well, partly because the selected community was small, well-organized and experienced relatively few conflicts over resources, nevertheless, the authors demonstrate clearly that some rural communities can support themselves and nearby communities in implementing CBRM activities with relatively few inputs from external CBRM partners.

The second article is “Management over ownership: Modern community cooperation in Langalanga Lagoon, Solomon Islands” by Meshach Sukulu and seven co-authors. In many Pacific Islands the foundations for CBRM have been weakened. In this article the authors describe a cooperative process among six communities in Langalanga Lagoon to examine how collective efforts for management can evolve where natural resources are degraded and highly contested, and both traditional and centralised mechanisms to control use have been either weakened or are missing. The collective action described was initiated and driven by community members, and over five years has attained a level of association that was formalised as a community-based organisation. The long process of developing cooperation in Langalanga demonstrates that in some cases the role of a management partner is to support emerging processes. Although sustainable fishing has not been achieved in Langalanga, the re-invented community cooperation suggests that degrading trajectories can be altered through community-driven processes, even when suitable conditions for CBRM are absent.

The third article also examines an aspect of fisheries management in Vanuatu. “What influences the form that community-based fisheries management takes in Vanuatu?” by Rolenas Baereleo Tavue and four co-authors,

examines the last 25 years of Vanuatu's efforts to manage coastal fisheries by demonstrating how the experiences and lessons during that quarter of a century have shaped the CBRM model used at present. The article describes how activities and management measures are designed with communities, how arrangements are recorded in management plans, and the formal links made with the national government through nominated wardens and monitoring activities. A virtue of the CBRM model is its ability to adapt to the different contexts of provinces and communities, which is illustrated in this article from experiences in three islands.

The fourth article, "Sustaining appropriate community-based coastal resources management: Experiences and lessons from Vanuatu" is by Graham Nimoho and three co-authors. This article is based on the results of the "Project for Promotion of Grace of the Sea in the Coastal Villages of Vanuatu (Phase II)", supported by the Japan International Cooperation Agency. The project sought to establish community-based coastal resources management (CBCRM) and simultaneously to improve community livelihoods to ensure its sustainability. The project was conducted from January 2012 to January 2015, with local activities undertaken in northwestern Efate, northeastern Malakula, and Aneityum. The goals were to enhance conservation of the coastal environment and the sustainable use of coastal resources in the project areas, and to disseminate CBCRM to areas around the project sites. This article examines the design and implementation of project activities, beginning with a brief summary of the baseline surveys and pilot projects in each project area (described in detail in Nimoho et al. 2013), and the development of activities. The common components of pilot projects (community-based collection and analysis of fishing activity data, FAD fishing management, and shell craft production), and projects implemented in individual areas are analysed. There follows a discussion of the making of community-formulated resource management implementation plans. Project achievements are examined.

We take pleasure in having Philippa Cohen join this issue as a guest co-editor. She is employed by WorldFish and based in Townsville, Australia as an Adjunct Research Fellow at the Australian Research Council Centre of Excellence for Coral Reef Studies at James Cook University. Dr. Cohen's research provides critical appraisals of community-based approaches to small-scale fisheries management through which she provides guidance to environmental and fisheries management policy and practice, particularly via interactions with regional agencies, national governments and NGOs.

Kenneth Ruddle and Philippa Cohen

Note from the editorial board

In line with a worldwide trend to limit the impact of producing printed publications on the environment, SPC has decided to stop the production and distribution of printed copies of this and its other fisheries-related information bulletins. The bulletins will now be produced only in digital format and remain accessible from SPC's website at:

<http://www.spc.int/coastfish/en/publications/bulletins.html>

Spreading community-based resource management: Testing the “lite-touch” approach in Solomon Islands

Grace Orirana,¹ Faye Siota,¹ Philippa Cohen,^{1,2} Tony Atitete,³ Anne Maree Schwarz¹ and Hugh Govan⁴

Abstract

In Solomon Islands, community-based resource management (CBRM) is the main strategy for managing coastal fisheries. Although hundreds of communities have implemented CBRM already, the majority of Solomon Islands communities have not, and it is not realistic for partner organisations such as non-governmental organisations and government agencies to spread the concept of CBRM by engaging communities individually. More efficient and cost effective approaches, such as the “lite-touch” that uses relatively few, infrequent visits and appreciative facilitation methods, are required to build on community strengths and capacities. In this article we describe how the lite-touch approach was used to support the Mararo community to successfully implement CBRM, and to act as a “core” community to inspire and guide surrounding communities to follow suit. A community resource person or “champion” was supported to lead activities in Mararo; this person maintained momentum within the community, even in the absence of a partner organisation. Training workshops designed to accelerate CBRM spread were also provided to the community, and these increased community confidence to be better CBRM advocates in their visits to adjacent villages. The approach helped build community ownership of and pride in their own CBRM programme. In this test case we found the lite-touch approach worked well, in part because this community was well-organised, with relatively few apparent conflicts over resources. We found that the use of the community’s informal networks was effective for spreading CBRM information, and helped to overcome challenges of geographic isolation and high costs of logistics. Mararo went on to register itself as a community-based organisation, which means it is eligible for small grants and shows signs of being self-sustained. Our findings highlight that rural communities, in certain contexts, are able to support themselves and nearby communities in implementing CBRM activities to achieve their community visions, with relatively little support from external CBRM partners.

Introduction

People from developing coastal nations across the Pacific have depended on marine resources for food and livelihoods for many centuries. As populations grow and become increasingly connected to global markets, more pressure is applied to these coastal resources. In many cases, coastal resource decline and environmental degradation is placing livelihoods and food security at risk (Bell et al. 2009). The challenge of managing coastal marine resources has captured the attention of governments, inter-governmental agencies, and environmental groups throughout the region (e.g. as illustrated in relatively recent initiatives such as Coral Triangle Initiative Secretariat 2009; Pacific Community 2015).

To address coastal resource decline, a dominant response in practice (Govan et al. 2009; Jupiter et al. 2014) and a proposed solution in policy

(Melanesian Spearhead Group 2014; Pacific Community 2015) has been to encourage and support coastal communities to establish community-based resource management (CBRM). The popularity of CBRM can be attributed to the recognition that: 1) those using the resources should be part of decisions to manage the resources (Johannes et al. 2000); 2) there are strong local and customary foundations in the Pacific on which to build contemporary management measures (Hviding and Ruddle 1991; Johannes 1982); and 3) centralised governments (national fisheries agencies) have been challenged to manage small-scale and rurally operating fisheries (Ruddle 1998; World Bank 2004). Much work describes the potential of CBRM and what CBRM has achieved in specific cases (see reviews by Cohen et al. 2014; Govan et al. 2009; Jupiter et al. 2014), and the particular strategies and models that have been employed for establishing CBRM (e.g. Govan et al. 2008; WorldFish 2013). A common

¹ WorldFish, PO Box 438, Honiara, Solomon Islands. Tel: 677-25090, Fax: 677-23296, email: p.cohen@cgiar.org

² ARC Centre of Excellence for Coral Reef Studies, James Cook University, Townsville, Australia

³ Mararo community-based organisation, east Are’are, Malaita Province, Solomon Islands

⁴ Locally Managed Marine Area Network, Suva, Fiji

element of most of these CBRM approaches is that they aim to integrate scientific information and modern principles with traditional and local knowledge and management systems.

In Solomon Islands, CBRM is recognised by the government as the principal resource management strategy (Cohen et al. 2015; MECDM/MFMR 2009; MFMR 2010). CBRM is implemented with the support of a variety non-governmental organisations (NGOs), research agencies and government ministries (Cohen et al. 2012; Govan et al. 2009). To date, it is estimated that 350 communities have carried out some sort of CBRM in Solomon Islands (Govan et al. 2015). Despite the intention of CBRM as a largely bottom-up, and community driven process, the different approaches proposed and employed by these partners tend towards relatively intensive and long-term engagements with communities. Consequently, using the current intense CBRM model of engagement with communities is slow, expensive and unlikely to ever reach the approximately 4,000 coastal communities in Solomon Islands. Resources and capacity limit the spread of CBRM across the relatively vast and remote geography of Solomon Islands.

Both government and NGO sectors have recognised the need to identify and test more cost-effective approaches that can promote and enhance the spread of CBRM (Govan et al. 2011; Orirana et al. 2015). Govan and colleagues (2011) proposed an approach to CBRM that is less resource demanding, but still provides sufficient support to communities so that they are able to: 1) identify a resource issue on which they wish to take action; 2) implement sustainable and effective CBRM in their own community; and 3) act as a source of information

and inspiration for other communities to implement CBRM (see also Govan 2013). The aim of this so called “lite-touch” approach (WorldFish 2013) is to establish “core” sites (referred to by others as seed sites or learning sites) that can serve as examples and inspiration for neighbouring communities (Govan et al. 2011; Orirana et al. 2015). In this model, Govan and colleagues (2011) also describe the use of provincial centres and other central points to disseminate information en masse to communities (Fig. 1); however, in this paper we focus only on the role of core communities in facilitating the spread of CBRM.

The objective of this paper is to test the effectiveness of this lite-touch approach in Mararo village, a remote village in the eastern region of Malaita where people are highly reliant on coastal resources.

The lite-touch approach

The lite-touch approach involves a collaborative process between a CBRM partner (e.g. NGO, government or research agency) and communities to design, customise and implement CBRM. This approach is similar to other models, but requires much less intense or frequent engagements than in more mainstream models (WorldFish 2013). The lite-touch approach is viewed as helpful in situations where CBRM partners have only rare opportunities to visit a particular community, and as a means to promote local ownership of the CBRM process and outcomes. This approach is hypothesised to improve the cost effectiveness in delivering support to communities and promote community ownership (rather than dependence on partners) of CBRM. The lite-touch approach enables communities to implement some steps in the CBRM process independently and to move forward in developing their management plans

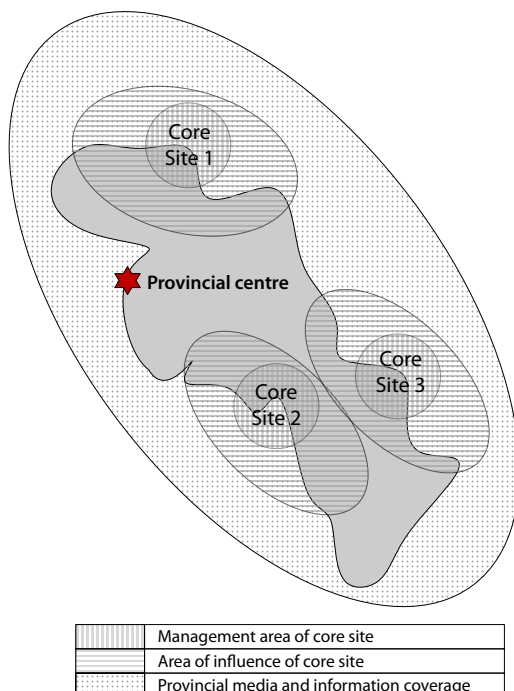


Figure 1. Proposed nested model of community-based resource management spread within a province (in Solomon Islands) through core communities. Vertical lines represent core sites and horizontal lines represent the area influenced by the core sites. The dotted area represents national media or provincial information dissemination, the aspect of information spread that we do not discuss in this paper (reproduced from Govan et al. 2011:54).

with only minimal guidance from a CBRM partner. In most cases, a local volunteer takes the lead in community activities, and is formally assigned the role of “community champion”. A community champion — also referred to as a “local resource person” — is an innovative, active, resourceful individual who is determined to carry out community activities through her/his own initiative. Figure 2 outlines the sequence of trips and activities when using the lite-touch approach to CBRM.

Govan et al. (2011) proposed a range of criteria to determine the suitability of the lite-touch approach for a particular situation. First, the approach is suggested to be best suited to a small, well-organised community with an intact governance structure that is respected by community members (e.g. relatively undisputed marine tenure arrangements, and respected local leadership). Second, the community must have expressed its motivation to address any concerns over natural resources and there is evidence of a need to address these concerns. Third, the site should be feasible for support agencies to

access. Fourth, for communities to be effective as a core site they should be broadly representative of the physical, ecological or social situation in adjacent communities (to which CBRM might diffuse). Although it is recognised that “every community is different”, for this model to be effective there must be some generalisable lessons that can apply to adjacent communities. Fifth, the community should also be within “reach” geographically, and through social or economic relations, with surrounding communities that also display some of these criteria, and to which it is hoped that CBRM might diffuse. In addition, our experience suggests that a prior history of natural resource management or development projects is also important, because in many areas, projects have fostered “project dependencies” or raised unrealistic community expectations; in these contexts, it will be difficult for the lite-touch approach to gain traction given such a prior history.

It is suggested in CBRM guidance (WorldFish 2013) that if a community meets the criteria described above, it will likely be successful in CBRM. Of

Scoping (before first visit)

- find out relevant information available (talk to key people and draw on local knowledge)
- build understanding of what is known about resource status, nature of fisheries, leadership arrangements
- find out if any related activities have been done previously in the community
- compile all available information with your team

Scoping and awareness (visit #1)

- first community meeting to explain and agree on the purpose and extent of your role in the CBRM process
- discussions with community leaders and resource owners to better understand concerns, strengths and goals of management
- identify what additional information they require and what specific activities might be able to be offered
- provide information and awareness on marine resource management from other places in Solomon Islands

Subsequent activities may include

- arrange exchange visits to nearby communities practicing CBRM
- source and provide targeted information
- provide support to writing a management plan
- ensure the community is linked in to SILMMA so that it can be aware of opportunities for capacity building

SILMMA= Solomon Islands Locally Managed Marine Area; CBRM = community-based resource management

Figure 2. Sequence of activities proposed when using the “lite-touch” approach to CBRM in Solomon Islands; scoping and awareness during the first visit to the core site; and subsequent activities related to outreach. From: WorldFish 2013:42

course, many of these criteria are highly subjective and situations within communities are dynamic. Nonetheless, these criteria provide useful points for reflection and some guidance regarding the decisions or strategies to engage. A community's likelihood of success depends on how it prioritises CBRM relative to other interests and issues within the community (WorldFish 2013). This also includes the degree of motivation and enthusiasm expressed by community champions, the severity of resource decline, and the need to address these issues.

Methods

Mararo is a small community comprising 10 households situated in east 'Are'are on the weather coast of Malaita (Fig. 3). There are no roads connecting the region to the provincial capital of Auki, and so it is accessible only by sea; it is an eight-hour journey in an open boat with a 40 hp outboard motor.

In the past, people in Mararo respected rules and tabus set by chiefs and resource owners. As the population of the village and surrounding areas grew and became modernised, people's beliefs and values have changed. Traditional management began to weaken as people no longer respect those rules. The demand for consumption and income has increased, leading to overharvesting of marine resources. Additionally, the people of Mararo feel that their community's knowledge about the importance of resource management is limited, which results in poor management and continued declines of marine resources. Realising that their traditional

management practices have begun to disappear, the community decided to look for other ways to sustain their resources.

In 2012, a community-nominated spokesperson contacted ministries and NGOs in Auki and Honiara to request assistance with resource management. With the support of government ministries, this request was taken up by WorldFish¹ as part of an Asian Development Bank Coral Triangle Initiative-funded project. Based on the information on hand, we determined that Mararo met some of the criteria for the lite-touch approach.

Figure 4 describes our engagement with the Mararo community. Data were collected during each visit, with the first visit in 2012. We used focus group discussions (FGD), semi-structured interviews and informal storytelling to collect data. The FGDs and semi-structured interviews were conducted mainly in Solomon Islands Pidgin and 'Are'are (the local language). FGDs were conducted separately with women, men, male youth and female youth at different spots in the village, and at different times during the day (depending on peoples' availability and preference). People who attended the FGDs were mainly residents of Mararo village; but on occasion some interested persons from nearby villages also attended. Semi-structured interviews were undertaken with chiefs, village elders and other volunteers, who wanted to share their insights about the CBRM programme in Mararo. We also include in this paper information provided by the community champion in his updates to the WorldFish office in Auki. Data

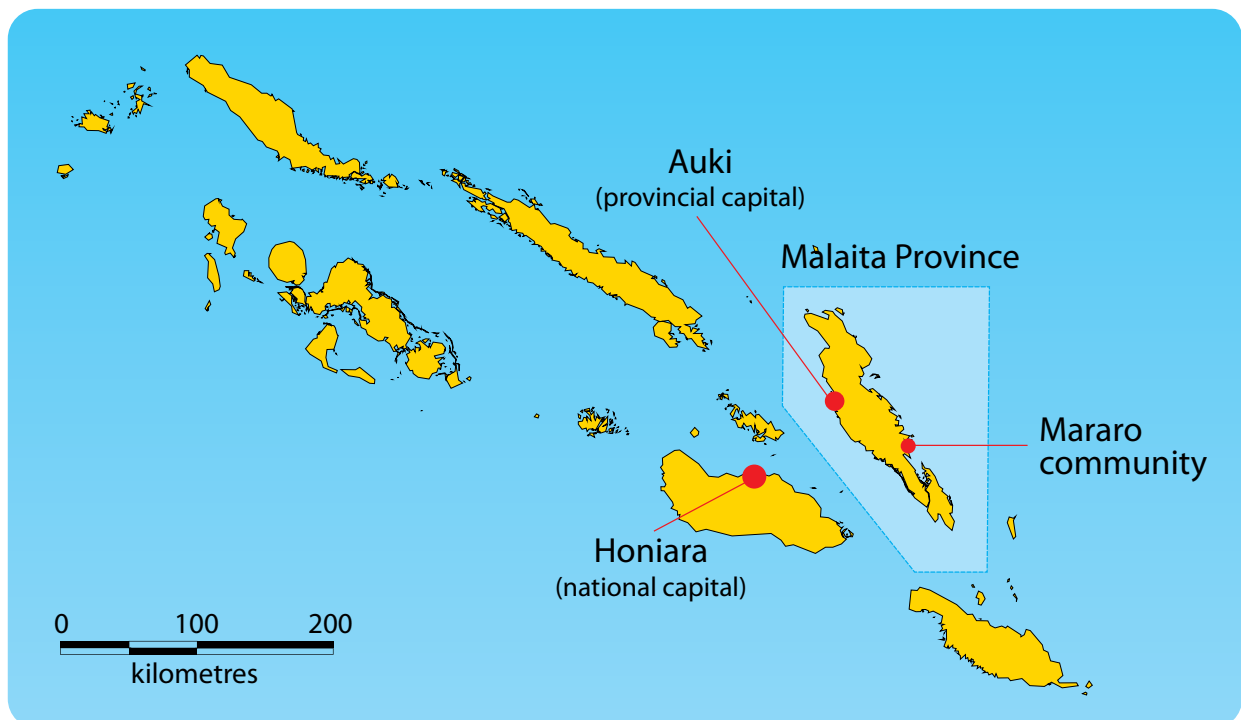


Figure 3. Location of the Mararo community, Malaita Province, Solomon Islands where the lite-touch approach to diffusion was tested.

were supplemented with our own observations, and these were recorded mainly by hand in notebooks, some of which were included in an internal report that was written after every field visit.

Lessons from implementing the lite-touch approach

The lite-touch approach has been proposed as a more efficient and cost-effective way to establish and spread CBRM, with the potential to promote local ownership (rather than project dependency) of the process and outcomes. Most research on CBRM has come from intense and resource-heavy engagements between partner organisations and communities. By contrast, we share our insights from testing a lite-touch approach. First, we reflect on whether the

lite-touch approach is adequate to establish CBRM. Second we reflect on the potential and limitations of using community champions to maintain momentum of CBRM implementation. Finally, we identify lessons about how, and in which contexts, CBRM might spread from a core community to surrounding villages. We acknowledge that our generalisable lessons may be limited, given that they draw only on experiences with one community. For this reason, we reflect on our experiences and findings alongside those of other researchers working on CBRM with other communities in Solomon Islands and within the Pacific Islands region more broadly. For this case we are also able to draw on an independent evaluation that was undertaken after the completion of our engagement (Govan et al. 2015).

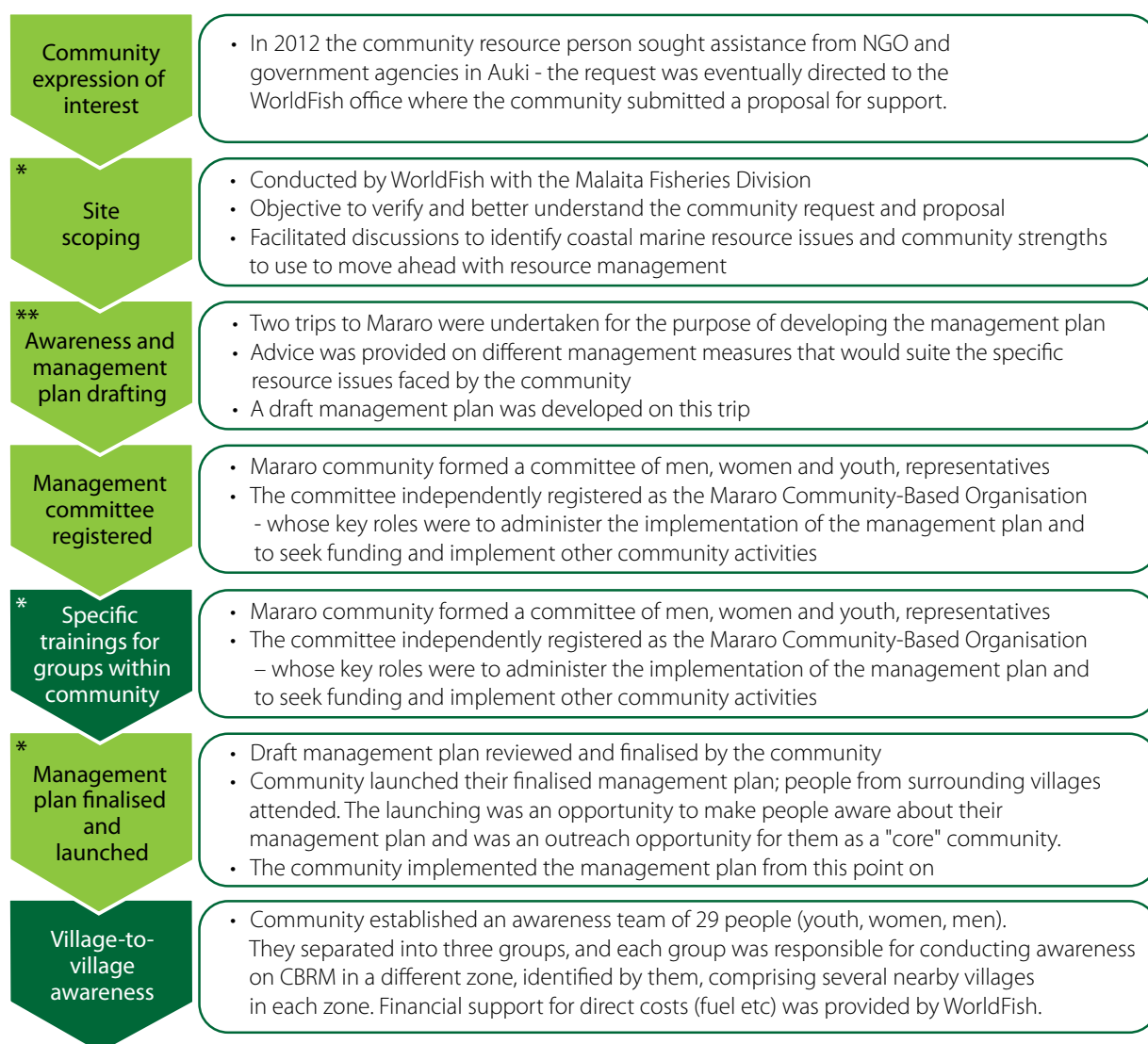


Figure 4. A timeline of key moments in the establishment of community-based resource management (CBRM) in Mararō Village, Solomon Islands (indicated by light green arrows), and of key activities designed to facilitate CBRM spread from Mararō to surrounding communities (indicated by dark green arrows). The five visits that WorldFish made to the community are indicated by *.

Conditions suitable for the lite-touch approach

Community size, heterogeneity, and the presence and efficacy of local or customary governance influence the success a community might experience in taking up CBRM. More specifically, Govan et al. (2011) suggest that the success of the lite-touch approach will depend mainly on how organised a community is in terms of self-governance. The community in Mararo navigated the management process with relative ease compared with others that WorldFish has supported (unpublished data). Discussions with community members, and our observations of community meetings, suggested that clan chiefs and elected community chiefs were relatively strong and effective leaders in Mararo. Community members told us that everyone in the village was kin by descent or intermarriage; the community reflected that these close social ties made it easy for them to negotiate issues and arrangements relating to resource management. This is not always the case, however, and in some instances failure to navigate these negotiations means that progress towards CBRM stalls or ceases completely. Further, there were only three resource-owning tribes within the community (Daokalia et al. 2015). Many experiences with CBRM in Solomon Islands reiterate the critical importance of consulting with resource owners and respecting customary rights so as to avoid disagreements when implementing management. Nonetheless, the effort of external agencies to clarify these systems of rights, can in itself, catalyse contention (McDougall 2005). In the case of Mararo no rights disputes arose. This was perhaps in part because, rather than making explicit efforts to clarify rights, our efforts sought to ensure that the land owners were present and involved in the discussions to plan management arrangements. In many Solomon Islands situations, the idea of a “community” is a more recent construct, and in reality social units are formed between people according to clan and religious denomination. It is common that not all members of a community are considered to be legitimate rights-holders or decision-makers for one particular area, and that rights-holders may reside in different communities. Because rights are associated with clans, for this reason, Govan et al. (2015) suggested that in some cases there should be a transition in terminology from “community-based management”, to “tribal management” or “clan management”.

The community was registered as the “Mararo community-based organisation” (MCBO), under the Charitable Act of the “Company Haus”, on 19 November 2013. The MCBO’s responsibilities included implementing the community’s management plan. Since its registration, the MCBO has created new linkages and partnerships with NGOs, government ministries and other organisations,

such as the Solomon Islands Locally Managed Marine Area network and the Solomon Islands Community Conservation Partnership. Further, the MCBO has secured a CBRM grant under the Coral Triangle Initiative national work programme from the Ministry of Environment, Climate Change, Disaster Management and Meteorology, and secured funds from the Global Environment Facility small grants programme under the United Nations Development Programme. The management committee felt that being registered as a CBO was a critical element of its success in implementing the management plan. The potential value for communities in pursuing CBO recognition has long been recognised (Alexander et al. 2011).

In sum, the lite-touch approach realised some successes with this small, well-organised community. However, with larger communities, where there are more tribes and where tenure is contested, the lite-touch approach might not gain traction. For example, Govan et al. (2015) found that villages that have a larger number of tribes than Mararo or where tribal land owners are spread across several different villages found it difficult to move forward through the CBRM process. And in the case of Mararo, the community champion successfully led his tribe, but was less successful in leading or including the voices of other tribes (Govan et al. 2015). It has yet to be determined whether the lite-touch approach will be successful in larger communities, even if those communities are well-organised and can maintain sufficient common understanding to continue implementing. This will be an interesting area for future research.

The facilitation process and the role of community champions

The sustainability and continuity of CBRM is a major concern given that in many cases CBRM ceases to continue when donors are no longer present and investing. It is, therefore, essential that communities are invested in and feel ownership over the CBRM process (Douthwaite et al. 2015; Govan et al. 2011). This has important implications for the processes used to facilitate CBRM. In 2012, in an attempt to reduce the reliance and emphasis on our role as a driving partner, we adjusted our engagement approaches, and invested more in building our capacity as facilitators of appreciative and strength-based approaches that recognise and build on existing community capacities (WorldFish 2013). We reinforce community strengths and capacities as the foundation on which to build so that the community is empowered and feels a greater sense of ownership of the CBRM programme and management plan (Douthwaite et al. 2015).

We suggest that this contributed to the strong sense of ownership and pride the Mararo community

took in the process, and their achievements. For example, people reflected in FGDs that: “WorldFish no kam weitem eniting, everi risosis long hia nao so WorldFish kam fo bildim kapasiti blo iumi fo openem wei fo iumi.” (translation: “WorldFish did not come with anything, we have all the resources, WorldFish came to build our capacity to open a way for us.”). The MCBO chair and community chief stated that “Mararo being new in doing resource management we see this as a step forward in building our capacity and also our hopes to continue with the programme.” It is clear from these examples that communities need to take ownership in order to sustain management.

In total, we conducted five trips to Mararo to conduct the “subsequent” activities as shown in Figure 2 (WorldFish 2013). In these trips we provided support with: 1) writing the management plan; 2) delivering the requested training sessions to build the capacity of youth, women, men and the management committee; and 3) working with each of these groups to design and deliver management messages for the purpose of their extension activities to communities in the region. While our initial interpretation was that the lite-touch approach might take only two or three trips, we think that five trips are necessary to facilitate with implementing CBRM even where there is strong local support from the community champion.

Community champions or resource persons play an important role in the process of establishing and maintaining CBRM (Abernethy et al. 2014). Mararo has an active and culturally knowledgeable community champion who, throughout the process, played an important role as the programme coordinator and as a trusted contact point between the community and WorldFish. As stated in the “Guiding Principles for Best Practice of Community Based Management” (Alexander et al. 2011), effective communication between the community and the partner organisation is important to build trust and create a shared understanding of objectives and process. In Mararo, the community champion took the lead in planning and implementing activities at the village level; a role that in more intense engagements might be played by NGO staff. Govan et al. (2015) state that the activities of local champions or resource persons are in most cases more appropriate (or contextualised) than those of NGOs. We think that in this case, having a local individual taking the lead, led to trust and community ownership of the CBRM process. However, the deeper and independent exploration conducted by Govan and colleagues (2015) found that there were tensions and dissatisfaction among some people residing in and near Mararo. These people belonged to a different clan or were not primary rights-holders and had been

excluded (to differing degrees) from decision-making around CBRM; simultaneously, they recognised the legitimacy of primary rights-holders to make those decisions and were willing to abide with these, at least for the time being.

Having a community champion meant that the management process could continue without the physical presence of an external partner in the community. This allowed the community to work at its own pace, and the pressures that NGO visits place on a community were avoided. The success of the champion or resource person, however, depends greatly on his/her commitment, among other factors. Even the simplest aspects of communication or facilitation, if not carried out properly (e.g. passing on messages to the broader community), can halt community progress towards CBRM (Cohen et al. 2014). Our previous experience has shown, however, that the use of a community champion charged with the responsibility of being a contact point, does not guarantee that communication will be effective. Working through community champions is cost effective but requires much more input by the community (Orirana et al. 2015). The effect may be that pressure and reliance might rest on one particular community member. For example, a Mararo community member felt that: “The management committee is not active [enough]; they rely very much on [the community champion or resource person] for everything, nothing will happen when [he] is out from the village.” Govan et al. (2015) reflected that through design or default, the community champion had fostered dependency on himself for progress.

There may also be perverse effects from working with one community champion. NGOs should critically assess how this could potentially play out, as an example, sometimes local leaders “capture” the benefits of projects or natural resources for themselves or their kin, which may accentuate existing power imbalances in the community (Cohen and Steenbergen 2015). In the case of Mararo, we found that the leaders and community champions (or resource people) were highly “community minded”, and ensured that their access to knowledge and opportunities helped the entire community, and that this was likely due to their close kin ties. As stated by the community champion in Mararo, only those who “understand better how NGOs and government ministries work, and also have a heart for development of their community, can work effectively as a community resource person” (Orirana et al. 2015:14). Whether a community champion or resource person will be effective at organising and implementing activities depends very much on their personal motivations and characteristics, the type of role they are required (by the community and NGO) to play,

and the physical and social characteristics of the community they represent.

CBRM spread from a core site

One of the main strategies employed in Solomon Islands to spread CBRM has been “look-and-learn” trips, where representatives from communities that are not currently implementing management visit a community that is successfully implementing CBRM. In most cases these trips are funded and supported logistically by a CBRM partner. Research that sought to understand CBRM diffusion found that these look-and-learn trips were influential on the uptake of CBRM (Abernethy et al. 2014). However, the role and rate of success (i.e. translation from “seeing” management, to “doing” management) of look-and-learn trips has yet to be determined.

Govan et al. (2011) proposed creating the “core” site as a source of learning and inspiration for other communities. To facilitate this type of learning, the core community should be empowered, not only to conduct their own management, but also to share lessons (Govan et al. 2011; Schwarz et al. 2014). With this in mind, we also invested in building the capacity of the Mararo community through various specific training sessions to increase their knowledge of resource management and to make them more effective communicators. For example, we trained youth in marine resource monitoring. They first used this knowledge to monitor their own managed area and later used it as a basis for crafting messages they wished to share with youth from other communities. At their request, women were trained to act as spokespersons on resource management in their own community and other neighbouring communities. People in the community became more knowledgeable about CBRM, which broadened the information they could share with surrounding communities. In preparation for their visits to other communities, all of these different groups practiced sharing their messages among themselves to ensure they were delivered in ways appropriate to the local context. Subsequently, we provided funds for fuel, boat hire and food for the trip that delivered one-day training sessions in each of the 14 nearby villages. In addition to the more organised “awareness raising sessions”, CBRM ideas are also likely to spread via relatives and informal social exchanges. In follow up interviews in Mararo, Govan et al. (2015) found that community members had been proud to share their success with and new knowledge about resource management.

Follow up research was conducted by Govan et al. (2015) in the 14 villages in east Are’are that had received awareness presentations from women, men or youth representatives from Mararo. This research found that two of these villages had since established their own community-based

organisations, and had initiated CBRM (Govan et al. 2015). A community leader from one of the two communities explained that they had decided to move ahead with CBRM because, “I want my community to be like Mararo in managing our resources”. Mararo is now viewed as the “expert” community in marine resource management in east Are’are, and students from nearby high schools come to Mararo to seek information for their science research on marine resource management. One representative from a nearby community expressed that “Mararo is like a star now” in terms of their knowledge and success with CBRM. Meaning Mararo community is now a CBRM expert and other communities can learn from it.

Despite these successes, 12 of the 14 communities had not progressed from increased awareness and access to information towards implementing CBRM. This may reflect that communities did not feel the need or urgency to implement new forms of management. However, if they were enticed by the idea of CBRM, there may have been a variety of reasons that CBRM did not progress. Further, the community champion and representatives from Mararo had the skills and influence to lead management among their tribe and in their area, but perhaps these capabilities were not enough to support communities through the next stage of implementation elsewhere. Members from some of these 12 communities reported that they did not know how to take the next step towards designing and implementing CBRM (Govan et al. 2015). It may be that a further lite-touch by the Mararo Community Based Organisation may be sufficient to progress CBRM. However, it is also likely that these communities have circumstances that mean implementing CBRM is not a priority or faces obstacles not encountered in Mararo.

Conclusion

A significant body of research explores how to sustainably manage natural resources across the Pacific (Govan et al. 2009; Jupiter et al. 2015). Towards this cause, CBRM has become a common approach supported by NGOs and governments throughout the region. Yet, despite localised successes, it has become clear that there is not yet a cost-effective approach to implementing and spreading CBRM, particularly in diverse and remote contexts. This paper tested the effectiveness of the lite-touch approach in Solomon Islands, which aimed at accelerating the spread of CBRM with minimal external inputs.

Our experiences in Mararo demonstrate that the lite-touch approach can lead to the implementation of CBRM with minimal support from a partner organisation. The success of this case can be credited largely to the community and the community

champion. Mararo was effective as a core site in terms of providing an example and sharing experiences that surrounding communities could benefit from. The message about CBRM appeared to resonate with other villages, and led to CBRM establishment in two additional cases. Yet, it is also clear that other villages were less able to implement CBRM. Ultimately, our results suggest that in some communities, if coastal resource decline is a concern, some additional impetus or support from an external partner may be necessary to facilitate implementation of CBRM. Govan et al (2015) recommended that in moving forward, more partners should place greater emphasis on dynamics around customary ownership and how associated rights influence who can “speak for the land”. It is these people that should be involved in discussions and planning. This encourages more explicit acknowledgement of what constitutes community-based management and clan-based management.

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“Management over ownership”: Modern community cooperation in Langalanga Lagoon, Solomon Islands

Meshach Sukulu,¹ Grace Orirana,¹ Dominique Oduagalo,² Benjamin Waleilia,² Reuben Sulu,^{1,2} Anne-Maree Schwarz,¹ Jan van der Ploeg¹ and Hampus Eriksson^{1,3}

Abstract

In many Pacific Island countries, modernity has weakened the foundation of community-based resource management. In this article we describe a cooperative process among six communities in Langalanga Lagoon in order to explore how collective efforts to improve natural resource management can evolve in situations where natural resources are degraded and contested, and where both traditional and centralised mechanisms to control use have either been weakened or are missing. For over five years, communities in Langalanga Lagoon have gone through several phases of increasing cooperation initiated and driven by community members to reach a level of association that has been formalised as a community-based organisation. A management plan for a locally managed marine area has been developed, but has not yet been fully implemented. Although community cooperation has been predominantly an internal negotiation, activities by non-governmental organisations have facilitated its development. This case study in Langalanga Lagoon demonstrates that, in some situations, the role of a management partner is to support emerging processes that may only be part of a longer journey. Although sustainable fishing has not been achieved in Langalanga Lagoon, the re-invented community cooperation suggests that degrading trajectories can be altered through community-driven processes, even when suitable conditions for community-based resource management are absent.

Introduction

Pacific Island communities must negotiate an uncertain future under the impact of rapid social and environmental change (Bell et al. 2009; UNEP 2016; Watson et al. 2016). The degradation of coastal ecosystems is particularly worrying because about half of Pacific Island households derive their food and income from coastal fisheries (SPC 2015). A central challenge for managing Pacific Island coastal fisheries for food security and livelihoods is how to respond to a range of modern social and ecological drivers of change (Bell et al. 2016; Sulu et al. 2015).

National government agencies in Pacific Island countries and territories often lack the capacity to effectively manage coastal fisheries (Govan 2014). Therefore, community-based resource management (CBRM) has become a dominant policy approach in the region (Govan et al. 2009; Cohen et al. 2014; Jupiter et al. 2014; SPC 2015). In Solomon Islands, for example, CBRM is identified as the national strategy to improve food security, adapt to climate change, and conserve threatened species (MECM/MFMR 2010). This community-based approach builds on customary marine tenure, traditional

ecological knowledge, and existing leadership structures as the foundations of communal efforts to safeguard resources (Johannes 2002). How CBRM is formed and institutionalised varies, but seems to benefit from clear system boundaries and aspects of legitimacy (Abernethy et al. 2014) — attributes that appear increasingly challenging as populations grow and urbanise. Understanding how community-based approaches can develop in these settings is a central problem for policies and strategies seeking to spread CBRM.

In this article, we draw on a case study from Langalanga Lagoon in Malaita Province, Solomon Islands (Fig. 1), where several communities of different tribal origins have settled over a long time. The lagoon is adjacent to the provincial capital, Auki, which influences daily life in the lagoon, including through providing access to markets. Six communities in the lagoon are working together to improve resource management. We use this case to explore how community-based resource management can evolve in contemporary Pacific Island situations where natural resources are degraded and highly contested, and both traditional and centralised mechanisms to control use are either weakened or

¹ WorldFish, PO Box 438, Honiara, Solomon Islands

² OKRONUS Resource Management and Development Trust, Malaita Province, Solomon Islands

³ Australian National Centre for Ocean Resources and Security (ANCORS), University of Wollongong, NSW 2522, Australia

missing. We draw on participatory action research documentation to describe events as they unfolded over five years: from small scattered initiatives to the formalisation of a community-based organisation and the development of a management plan for a locally managed marine area (LMMA).

Langalanga Lagoon

Langalanga Lagoon is one of the most densely populated regions of Malaita Province (SINSO 2009). The narrow lagoon is fringed by mangrove forests and sago wetlands. The lagoon is inhabited by two ethnic groups: the Langalanga and the Kwara'ae. According to oral history, the Langalanga people are originally migrants from different parts of Malaita who settled in the mangroves and on artificial islands built from coral rubble, approximately 15 generations ago (Goto 1996). Over time these newcomers merged into a distinct cultural group with their own language and culture. They are called, and refer to themselves, as *solwata pipol*, reflecting the fact that their livelihoods principally revolve around the sea (Sulu et al. 2015). The Kwara'ae, in contrast, are known as the *bush pipol*. Historically, they relied on shifting cultivation on the forested slopes, and bartered root crops for fish with the *solwata pipol* (Burt 1982). From the 1920s, the Kwara'ae settled in villages in the lowlands, and started clearing land for cocoa and coconut plantations. Most land is under customary ownership by the Kwara'ae (Burt 1994). But the people of Langalanga Lagoon have ancestral fishing rights in the lagoon.

Until the 1940s, the main form of resource management in Langalanga Lagoon was the establishment of closed areas, in which fishing on a reef was periodically banned, usually in preparation for a feast. The closing of a reef was ritually sanctioned by traditional priests (*fataabu*), most often sacrificing pigs to the gods. In addition, there were gender-specific taboos that prevented women from entering certain reefs. Furthermore, there was a prohibition on eating certain marine species, such as sharks and sea cucumbers (Sulu et al. 2015). Christianisation resulted in the demise of these traditional management practices. Most people in the lagoon no longer consider the violation of traditional taboos as dangerous. Nowadays reefs are open to everyone, and sea cucumbers and shark fins are commonly sold to generate income. The use of destructive fishing practices, particularly dynamite fishing (Mauli 2009), has led to a significant decline in reef fish catches (Roeger et al. 2015)

Increasing population, food insecurity, livelihood demands, market pressures, destructive fishing practices, and weakened governance regimes have contributed to the decline of marine resources. There have been several attempts to establish LMMAs in Langalanga Lagoon (e.g. CRISP/FSPI 2005), but these have been unsuccessful. The reasons for these failures have not been systematically evaluated, but are generally attributed to high livelihood demands, misuse of funds among officials undermining credibility, and a lack of effective community-based governance structures.

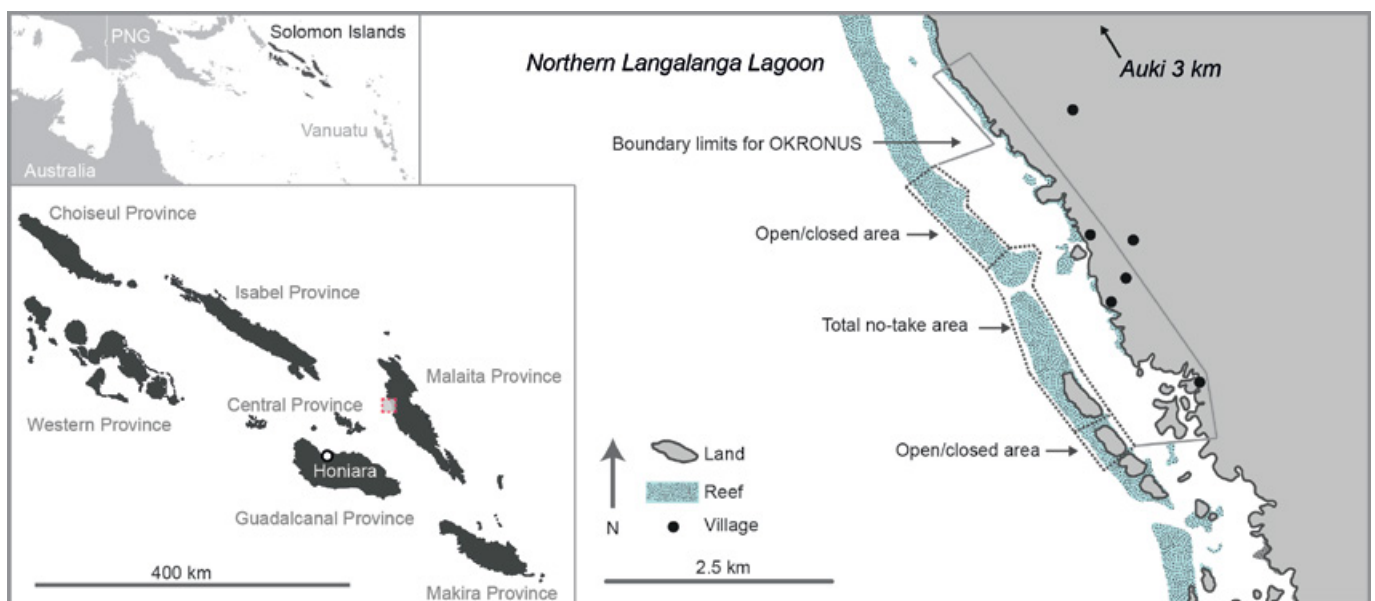


Figure 1. Langalanga Lagoon on the west coast of Malaita Province in Solomon Islands. The approximate locations of villages are shown by black circles and the boundaries of the locally managed marine area are outlined.

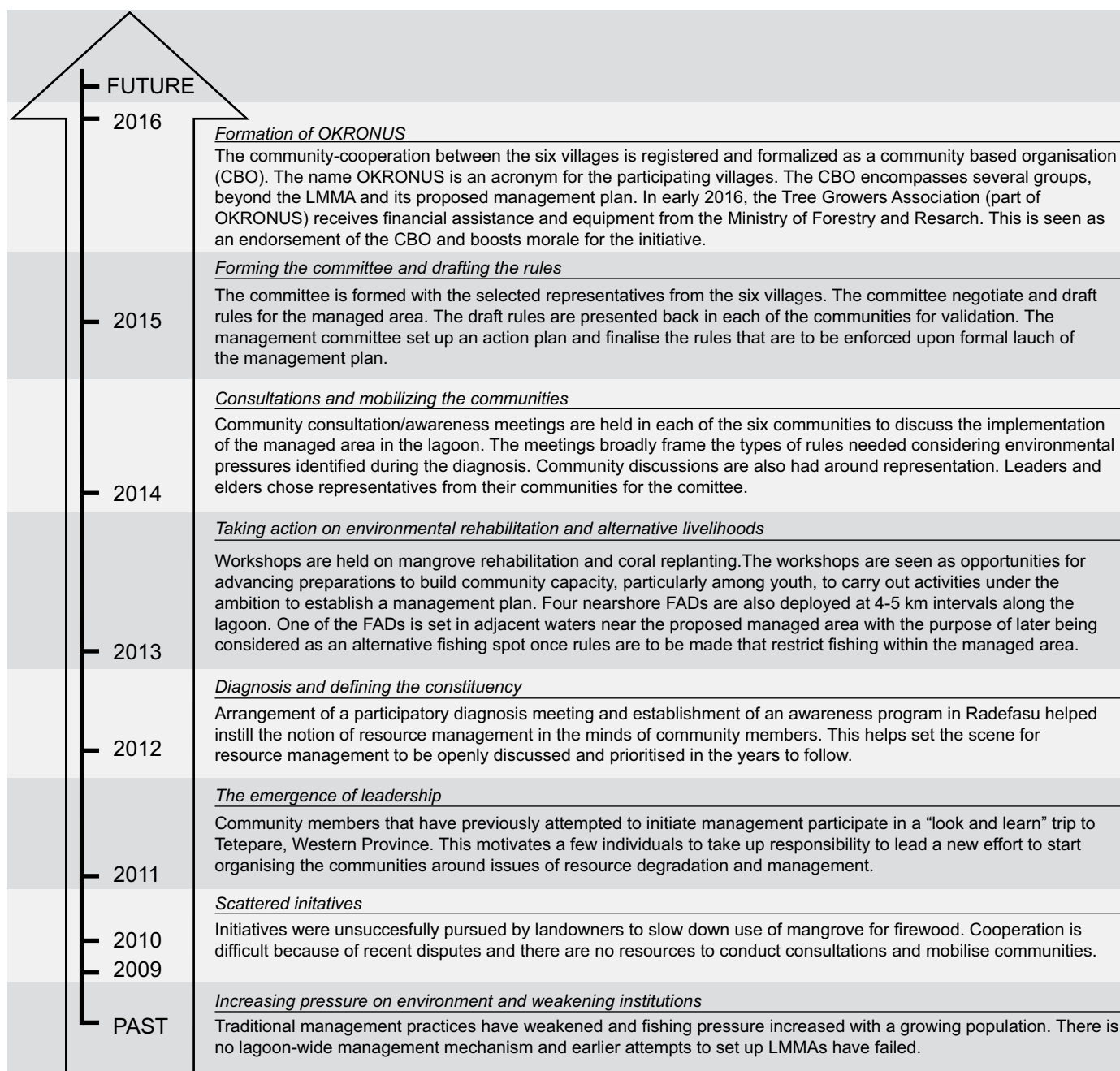


Figure 2. Timeline illustrating the processes leading to the formalisation of the community-based organisation.



Figure 3. Photos from Langalanga during the community cooperation process: A. Participatory diagnosis meeting; B. Mangrove replanting training; C. Coral replanting training; D. FAD deployment near the LMMA; E. Kiko stove training. (Photo A: Reuben Sulu; Photos B-D: Wade Fairley; Photo E: Meshach Sukulu)

Against the background of lagoon-wide uncertainty around governance and continued impacts on coastal environment, six communities (Oibola, Kona, Radefasu, Oneoneabu, Ura, and Sita) — comprising both Kwara'e and Langalanga people — are now working together to improve resource management. Here, we present a narrative of the community cooperation process that resulted in the creation of a management committee for the proposed Rarata/Sulialaga LMMA, and ultimately to the formalisation of a community-based organisation, illustrated in a timeline in Figure 2.

Description of the community cooperation process

Scattered initiatives and the emergence of leadership

The communal efforts to improve resource management were initiated and driven by two of the authors of this paper (DO and BW). These two men represent what is commonly referred to as “resource people” in Solomon Islands – community members who initiate communal activities.

Their parents were leading figures in the community and have instilled in them the importance of managing marine resources. Growing up with this mind-set and witnessing the degradation of the marine resources they aimed at improving resource management.

At first their efforts focused on the conservation of mangroves in two villages. In 2009–2010, they made several unsuccessful attempts to ban the use of mangroves as fuel wood. This failure was due to limited resources and capacity to conduct consultation meetings and awareness programmes in neighbouring villages that were also exploiting mangroves, and the lack of alternative fuel sources (Albert and Schwarz 2013).

In 2011 the resource people visited Tetepare Island, in Western Province, for a “look and learn” trip (arranged by the Australian People for Health, Education and Development Abroad and WorldFish), where an LMMA is implemented as part of an island-wide conservation initiative. This trip helped provide a glimpse of what might be achieved, and motivated the resource people to

mobilise communities around marine resource management. They started engaging neighbouring communities in dialogues on the degraded state of coastal fisheries.

Diagnosis and defining the constituency

In 2011, discussions on marine resource management started to gain momentum. The Provincial Fisheries Division was approached to inquire about the possibility of establishing a marine managed area, and to seek awareness materials that could be used to facilitate community meetings.

Recognising these local efforts, WorldFish in 2012 arranged a workshop in Auki for interested people to design a project based on the ecosystem approach to fisheries management (EAFM) (Fig. 3A). The workshop brought together participants from different villages and followed a participatory diagnosis structure (Eriksson et al. 2016), where participants identify, prioritise and mobilise around shared issues.

Community members drew on their observations and experience to develop a suitable management model. They suggested that engaging six communities in negotiations on a proposed LMMA would be required. The resource people presented the LMMA to the communities for approval or consent, which offered people in these communities the chance to express their views on any implications and costs. The main reason for this inclusive approach was to avoid triggering disputes or conflicts.

Taking action on environmental rehabilitation

The 2012 diagnosis workshop identified key issues to be addressed, including: habitat rehabilitation, enhanced livelihoods to help reduce pressure on reef and mangrove resources, alternatives to the heavy use of mangrove firewood, development of awareness raising material, and addressing governance issues.

Habitat rehabilitation had already begun in 2010, when some people voluntarily tested ways to improve the marine environment, one of which was mangrove replanting. Following the diagnosis workshop in 2012, mangrove rehabilitation and coral replanting workshops were arranged by non-governmental organisations (i.e. WorldFish, World Wildlife Fund, and Save the Children; Fig. 3B, C). These workshops enabled community members to take action and to further raise awareness and community capacity to carry out rehabilitation activities. This was seen as an important outcome, ensuring that community members, particularly youth, can implement these activities on their own.

Under the EAFM project, support was provided for the development and deployment of nearshore fish aggregating devices (FADs) as a response to the diagnosis priority of enhanced livelihoods (Fig. 3D). Four FADs were constructed, which involved training community members in how to build and maintain them by WorldFish staff, with the support of the Provincial Fisheries Division and MFMR. The FADs were deployed outside of the reef and were designed to attract pelagic fish. One FAD deployed near the proposed managed area was meant to be an alternative fishing location once rules were applied to the managed area. The project also supported the production of a DVD as a response to the diagnosis priority to produce awareness materials. The DVD was later used in community consultations to attract participants, and to generate a starting point for discussion when addressing cooperative management mechanisms.

Consultations and mobilising communities

In July 2014, having felt that there was support for a marine managed area, resource people arranged meetings in each of the six communities. Again, it is important to note that these meetings were facilitated and led by the resource people themselves. A WorldFish staff member from one of the participating communities assisted, but there was otherwise no involvement of external people. In total, 522 participants attended these meetings, which were arranged with assistance from chiefs, land-owner representatives, elders and church leaders.

At the meetings, it was explained that the establishment of an LMMA is a community-driven initiative, and that those taking the lead do so voluntarily. WorldFish provided funds for transport to the meetings, and the production of awareness materials and equipment, but there were no personal payments. This was clarified for all communities in order to avoid the suspicion that leading figures were engaging in activities to secure funds for personal gain. In the past, community representatives or fisheries officers have misused donor funds, which led to community members developing a cynical view of people who associated themselves with NGOs.

The meetings called for immediate actions to address the rate at which marine resources were declining. Discussions stressed the importance of taking action to manage resources without getting distracted by conflicts over tenure: the so-called “management over ownership” approach. A draft management plan, including proposed boundaries for a managed area (Fig. 1), was developed, highlighting the need for shared responsibility and cooperation among the six communities. The

approach was meant to be adaptive and so could be amended to accommodate the interest of members of respective communities, regardless of an individual's status in them.

The meetings emphasised objectives to rehabilitate habitats and ensure sustainability of fisheries-associated livelihoods and food security. Sensitive issues, such as ownership and economic benefits, which could trigger conflict among the different individuals and communities, were avoided. Cooperation among the different communities had always been to be a complex issue, primarily due to conflicts over land and marine resources. But in this case, despite the differences and challenges, the communities agreed to work together and acknowledge the need for cooperation to address this common issue. Everyone could see for themselves the degradation of the marine environment, which helped in reaching an agreement and mobilising involvement. Communities were also informed of plans to register the management plan under appropriate legal provision so that enforcement could be tackled even beyond local levels.

Forming the committee and drafting the rules

Having gained the assurance and consent from all leaders and tribes within the six communities to work together towards the shared management plan for the LMMA, a committee was formed. The management committee consisted of representatives from the six villages who were chosen by tribal leaders, village chiefs, church leaders, women's group leaders, youth leaders and elders. The aspiration was to assure a fair selection of representatives in the interest of the entire community.

The selected committee developed an action plan to establish the LMMA. The purpose of the committee was to make management decisions as well as take the lead in implementing activities that were outlined in their action plan.

Upon establishing the management committee (with 19 representatives from the six communities), a meeting was organised in August 2014 to draft rules and regulations. The committee agreed on the boundaries limits of the management area, and then returned to each community to discuss these rules. Being aware of the need for broad involvement, everyone was encouraged to voice their views, including women, who are usually left out of decision-making in this region (Lawless and Teioli 2015). Women's views and suggestions were encouraged in an effort to ensure their voices were reflected in the final rules. In April 2015, the committee met again to finalise the rules.

Formation of the community-based organisation

In 2015, the committee planned to register as a community-based organisation (CBO). In Solomon Islands, registering as a CBO means empowering a community to become self-competent in trying to address its own challenges with little support from partners. The process of registering a CBO in Solomon Islands involves submitting a registration form, a common seal and a constitution to the Company House's Registrar, under the Ministry of Commerce, Industries, Labour and Immigration. This process was carried out with financial support from WorldFish.

By 2015, mangrove replanting had become a considerable activity in the area. The reforestation division under the Ministry of Forestry and Research conducted awareness talks in some of these communities, promoting the incentive to support tree growers through registered associations. This triggered initial discussion around the CBO structure: whether to register an association specifically for tree growers, or a broader umbrella body that would represent all the communities, covering broad objectives under which all other sectors or initiatives (e.g. tree growers association) would reside. The latter was agreed on and the CBO was registered towards the end of 2015 as the OKRONUS Resource Management and Development Trust, with broad objectives that cater for any community group that might form now or in the future.⁴

A central aim of registering a CBO was to provide a platform upon which community cooperation could be harnessed to strengthen governance. Although it has been a long-time ambition of resource people to establish a formal entity to try and encourage cooperation in the absence of traditional governance systems, it was seen as impossible until having gone through the lengthy process.

OKRONUS offers a new and formal entry point to engage with for ministries and NGOs. In November 2015, WorldFish and Kastom Gaden Association arranged a training workshop in making a clay stove (known as a kiko stove) in all six villages, attracting 89 men and 137 women (Fig. 3E). This is more than six times as many participants as past habitat rehabilitation workshops had attracted, showcasing increasing participation rates in communal activities. The stoves are meant to increase fuel wood efficiency and reduce pressure on mangroves for fire wood, responding to one of the diagnosis priorities from 2012. In early 2016, the tree growers association received financial support and equipment from the Ministry of Forestry and Research to further its work on mangrove rehabilitation. This is seen as an endorsement within the communities and boosts morale around the CBO.

⁴ OKRONUS is an acronym for the six participating villages: Oibola, Kona, Radefasu, Oneoneabu, Ura and Sita

Discussion

The ability of communities to self-govern coastal ecosystems and resources depends on clear system boundaries, such as places with a clearly defined area under management and a distinct set of resources users can agree on (Govan et al. 2009). In many modern Pacific Island situations, these conditions seem arduous because populations increase, migrate, urbanise and compete for declining resources. In Langalanga Lagoon, traditional institutions have weakened, which has led to land disputes (Sulu et al. 2015). Although there is still a long way to go to achieve the goal of sustainable fishing practices in Langalanga Lagoon, the “management over ownership” approach suggests that degrading trajectories can be altered through a community-driven process, even when suitable conditions for CBRM appear absent.

The longevity and positive outcomes of community-based initiatives depend on internal community processes (Abernethy et al. 2014). For example, social norms, perceptions and historical dynamics of how access to resources has been controlled can, at least in part, explain variable outcomes from CBRM (Blythe et al. in prep.). Here, we have tried to identify milestones in the journey towards community-based resource management in Langalanga Lagoon. Organisation emerged as an internal process, meaning that it was initiated and driven by community members and not a co-management partner with a set project start and end date. These community members were catalysts and led the work towards the LMMA management plan and establishment of a CBO, allowing time for the conversation to mature and find neutrality.

Leadership is important in developing new governance institutions (Gutierrez et al. 2011), and its legitimacy can determine how marine tenure conflicts emerge and are resolved in modern situations (Adhuri 2004). In Langalanga Lagoon, leadership seems to have emerged through a combination of traditional resource ownership, disappointment of past failures of external interventions, a strong connection with land and sea, and a frustration with ongoing environmental degradation. However, leadership seems also to have emerged as an obligation, responding to expectation from the community for resource people and traditional leaders to “step up”. At the same time, the history of disputes means that leadership was a sensitive issue. Of the six communities involved, some had never been in conflict with each other, and having mediators from these neutral communities involved in the initial consultation phases helped to promote neutrality of the initiative and the attempted neutral position of local traditional leaders.

Defining the management constituency is now widely accepted as an integral part of fisheries management (Andrew et al. 2007). Although community cooperation has been predominantly an internal negotiation, activities by NGOs have facilitated its development. The lengthy participatory diagnosis convened by WorldFish during 2011–2012, followed by regular and deliberate internal consultations led by traditional leaders and community members, seems to have mobilised community cooperation (van der Ploeg et al. 2015). The diagnosis process facilitated the identification, prioritisation and mobilisation around issues. The activities that followed (e.g. mangrove replanting workshop, coral replanting workshop, deployment of FADs, recording and presentation of awareness raising DVD) helped convene communities around their prioritised actions, and facilitated conversations around shared resources and their management.

In situations like Langalanga Lagoon with different ethnic groups and tribes with histories of disputes over land boundaries and resource ownership, external partners must be sensitive to the social fabric within and among communities. The process that we have described has taken five years and the LMMA is not yet implemented. Allowing the process to take time for consultations and sensitivities was critical, considering the fragile ground for cooperation from the history of land disputes. This serves as a lesson that, in some situations, the role of a management partner is not to rush through the internal processes seen as necessary to achieve a management plan or an implemented LMMA, but rather to identify and support emerging processes that may only be part of a longer journey.

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What influences the form that community-based fisheries management takes in Vanuatu?

Rolenas Baereleo Tavue,^{1,2} Pita Neihapi,^{1,2} Philippa Jane Cohen,^{3,4} Jason Raubani,² Ian Bertram¹

Abstract

Vanuatu has a long history of efforts to manage coastal fisheries, from customary practices to various forms of contemporary community-based fisheries management (CBFM) promoted by non-governmental organisations and government projects. In this article we summarise how the experiences and lessons over the last 25 years have shaped the CBFM model Vanuatu now uses. The process of CBFM with communities commences with a diagnosis across four pillars: environment and resources, economy and production, socioculture, and institutions and governance. Activities and management measures are then designed with communities and with consideration to these four pillars. Management arrangements are recorded in written management plans, and at this stage formal links are made with the national government through nominated wardens and monitoring activities. The strength of the CBFM model is that it can adapt to different contexts and so differs among provinces and communities. We illustrate these differences in experiences in three islands in Vanuatu. These three islands were provided with support through an Australian Centre for International Agricultural Research-funded project that was delivered by the Vanuatu Fisheries Department, the Pacific Community and WorldFish. Long, consultative processes arrived at agreed on management plans in some sites, whereas in others there were external shocks that meant CBFM was not achieved despite the processes we followed. The lessons we present here are valuable for assessing and refining the form and potential of CBFM for addressing coastal fisheries concerns in Vanuatu and other Pacific Island countries.

Introduction

As Johannes (1998) noted, if fisheries management means regulating who may fish, when, where and how they may fish, and what they can catch, then fisheries management has been widespread and longstanding in the Pacific Islands region. The region is well known for its traditional fisheries resource management systems that still function in many nations today (Amos 2007; Ruddle 1998). These customary foundations for controlling resource use have been harnessed by communities, non-governmental organisations (NGOs) and governments for application within contemporary community-based fisheries management (CBFM) (Govan 2009). Attention to CBFM has recently stepped up a notch in the Pacific, with the recent Heads of Fisheries endorsement of “A new song for coastal fisheries – pathways to change: The Noumea strategy” (Anon. 2015), which proposes CBFM as the principle strategy that should be employed to address small-scale fisheries concerns within the region.

In Vanuatu, a range of terms is used to describe community-based or local forms of fisheries, marine and coastal resource management. These include:

tabu area, marine protected area, community-based coastal resource management, community-based resource management, and community conservation area. In this paper we use the term CBFM in a broad sense (i.e. one that captures many of the ideas and strategies captured in the terms above) because this is consistent with project documentation, and is broadly used (but not exclusively) in Vanuatu and the Pacific Islands region.

Contemporary forms of CBFM often involve partnerships between communities and governments, NGOs or research organisations that draw together different knowledge, expertise and institutions. There is, however, no single objective, set process or design for CBFM (Cohen et al. 2014; Jupiter et al. 2014). This is a strength of CBFM; it can be designed to fit different local ecological and social contexts, and can be responsive and adaptive to local change. One of the first steps in improving our understanding of the performance and potential of CBFM for addressing coastal fisheries concerns is to clarify the logic behind the processes that have been followed to design CBFM with communities, and to share experiences and lessons from implementation.

¹ Fisheries, Aquaculture and Marine Ecosystems Division, Pacific Community. Email: rolenasb@spc.int

² Management and Policy Section, Vanuatu Fisheries Department, PMB 9045, Nambatu Maritime Wing, Port Vila, Vanuatu

³ WorldFish, PO Box 438, Honiara, Solomon Islands

⁴ Australian Research Council Centre of Excellence for Coral Reef Studies, James Cook University, Australia

This paper describes the processes followed, the engagement tools employed, and the local contexts that interacted to influence the way CBFM arrangements developed. The paper has two overarching objectives: 1) to describe the current model for CBFM used in Vanuatu, and to touch on the factors and history that have influenced its form; and 2) to describe the application of this model in three sites in Vanuatu. In doing so we illustrate how the engagement between the Department of Fisheries (and partners) and communities:

- collectively developed an understanding of local resource management concerns and their causes;
- integrated local knowledge and practices with contemporary science and management to formulate rules and activities to be applied locally to address concerns;
- strengthened governance (leadership, decision-making, enforcement) locally and built links to external support; and
- promoted broad participation in and local ownership of CBFM.

We discuss our experiences with each of these in the four corresponding sections under Results and discussions.

CBFM in Vanuatu — then and now

Customary rules and controls over fisheries resources have been practiced in Vanuatu long before settlement by Europeans (Raubani 2006). Customary marine tenure was a fundamental component of these institutions (Johannes and Hickey 2004). One well-described example of a particular management measure (e.g., see Govan 2009) is the historical use of tabu areas; where a village would declare an area tabu (forbidden) by erecting a 'Namele' leaf (the local name for the cycad *Cycas seamanii*) on the coastline showing that the area is

out of bounds to all fishing or for specified species. A chief from Pelongk Village, on Uliveo Island (a site where we worked), stated that: "our chiefs for a long time have used tabu areas for each fishery species; if the area is tabu for trochus, they will erect a wood with a Namele leaf and the trochus shell on it. Anyone who sees this knows it's tabu to collect trochus". Many studies explain that customary tabus are still practiced by communities in Vanuatu, and tabus are arguably the most common management measure used in contemporary CBFM in Vanuatu (Bartlett et al. 2009; Léopold et al. 2013, and throughout the Pacific (Cohen and Foale 2011).

Although centralised, government-led management of fisheries has been the principle model formally promoted in Vanuatu in recent decades, the model was found to be challenged by geographical and financial constraints. This encouraged the emergence of more collaborative forms of fisheries management during the 1980s and 1990s. In 1988, Johannes promoted a type of cooperative management where the government, through the Fisheries Department should work more closely with communities and their local knowledge and customary practices to improve coastal fisheries management. Since then, a range of coastal fisheries projects have been undertaken in Vanuatu, and each of them have had a different approach to and influence on the way in which communities were engaged in management (Table 1). These approaches - focused particularly on endangered species, species of commercial value in the 1990s (e.g. turtles, trochus), turned towards priority fisheries resource management in the 2000s, and moved on to coastal ecosystem management in more recent years. For a detailed account of the history of coastal fisheries management and CBFM in Vanuatu see Raubani et al. (forthcoming).

Table 1. Some milestones in the history of community-based fisheries management in Vanuatu.

1606	Colonisation by first Europeans contributed to weakness and demise of CBFM. This was attributed to a Western belief system and modern fisheries management regime, which gave rise to an autocratic and centralised system.
Vanuatu Independence 1980	
1990	Moses Amos (Research Officer, Vanuatu Fisheries Department) announced on national radio that communities interested in managing their trochus fishery could receive assistance to reseed juvenile trochus. Communities bolstered their customary rights, and some communities established tabu areas for trochus.
1995	Vanuatu turtle monitors carry out countrywide awareness on the protection of sea turtles, and awareness on the importance of marine resource protection and management. This project was led by Wan Small Bag, where the Pacific Regional Environment Programme (SPREP) was the implementing agency.
2000-2009	Global Environment Facility funded the "International Waters Program" where fisheries and environment departments throughout the region collaboratively implemented activities.
Environmental Protection and Conservation Act 2010	
2010-2014	Mangrove Ecosystems for Climate Change Adaptation and Livelihoods Project where fisheries and environment departments continued IWP collaboration into the Japanese-funded "Promotion of the Grace of the Sea project", which was implemented by the Vanuatu Fisheries Department.
Fisheries Act 2014	
2014	Improving community-based fisheries management project "PacFish", which was funded by the Australian Centre for International Agricultural Research and WorldFish.

Raubani (2006) states that the reasons that Vanuatu increasingly turned to CBFM are two-fold: 1) growing difficulty that governments face in successfully managing fisheries, particularly in rural areas; and 2) that communities hold *pro forma* property rights, enshrined in Chapter 12 Article 73 of the Vanuatu Constitution (i.e. "...all land in the republic belongs to the indigenous custom owners and their descendents"). The Vanuatu Department of Environmental Protection and Conservation (DEPC) and the Vanuatu Fisheries Department (VFD) now see CBFM as a key strategy to improve management of coastal resources (as indicated by policies and the National Biodiversity Strategy and Action Plan, 1999). These departments also recognise that their role is to provide communities with advice and information, enforcement support, and legal backing. There are two legal instruments available to these departments that can be used to back community management efforts: 1) the Environmental Protection and Conservation Act (Cap 283) section 37 "registration of community conservation areas", and 2) the Fisheries Regulation Order No. 28 of 2009.

The most recent, relatively large-scale CBFM project ("Grace of the Sea", funded by the Japanese International Cooperation Agency) supported CBFM implementation on Efate, Lelepa, Malakula and Aneityum islands (Nimoho et al. 2013). Subsequent to this, VFD and DEPC received an additional 12 requests from communities for management assistance in 2014, 11 in 2015, and so far 7 requests in 2016. This stream of requests indicates that willingness and demand to undertake CBFM is spreading throughout Vanuatu. Most recent estimates of the number of communities carrying out CBFM activities in 2016 is 105, which is a substantial increase from the 44 community-managed areas that Govan estimated were active in 2009. Despite these successes, CBFM still faces several challenges: 1) where CBFM has been implemented, the improvements for fisheries are not known; 2) some communities have not felt a strong sense of ownership over CBFM that they implemented with project support; 3) in some cases, CBFM ceases after projects end or only a few management measures are sustained (Léopold et al. 2013); and 4) many communities' requests for assistance with CBFM are unmet, owing to capacity limitations of support partners (NGOs and government departments). It is important to reflect on these four challenges as Vanuatu moves forward with its commitment to its "new song", and attempts to address the challenges facing coastal and inshore fisheries,

and the communities that rely on those resources.

Study site and methods

This paper is based on case studies from three islands in Vanuatu: Aniwa, Santo and Uliveo (Fig. 1). Site selection followed the formal processes agreed to by the government (i.e. there must be a request from a village chief for assistance to manage marine resources). Because these requests are numerous, if sites are selected for a project, consultations are conducted between VFD and DEPC to determine if there are already activities ongoing in sites, but also to identify opportunities for cross-agency collaboration. Sites are also selected based on project objectives and priorities. For example, Santo was identified as a priority site because lobsters and coconut crabs provide an important source of income for the people of Santo, yet these resources were in decline, owing to the high demand from the tourism industry. Uliveo was selected because it has one of the largest reef areas in Vanuatu and the island has recently shifted from agriculture to fisheries as a main source of income, largely as a result

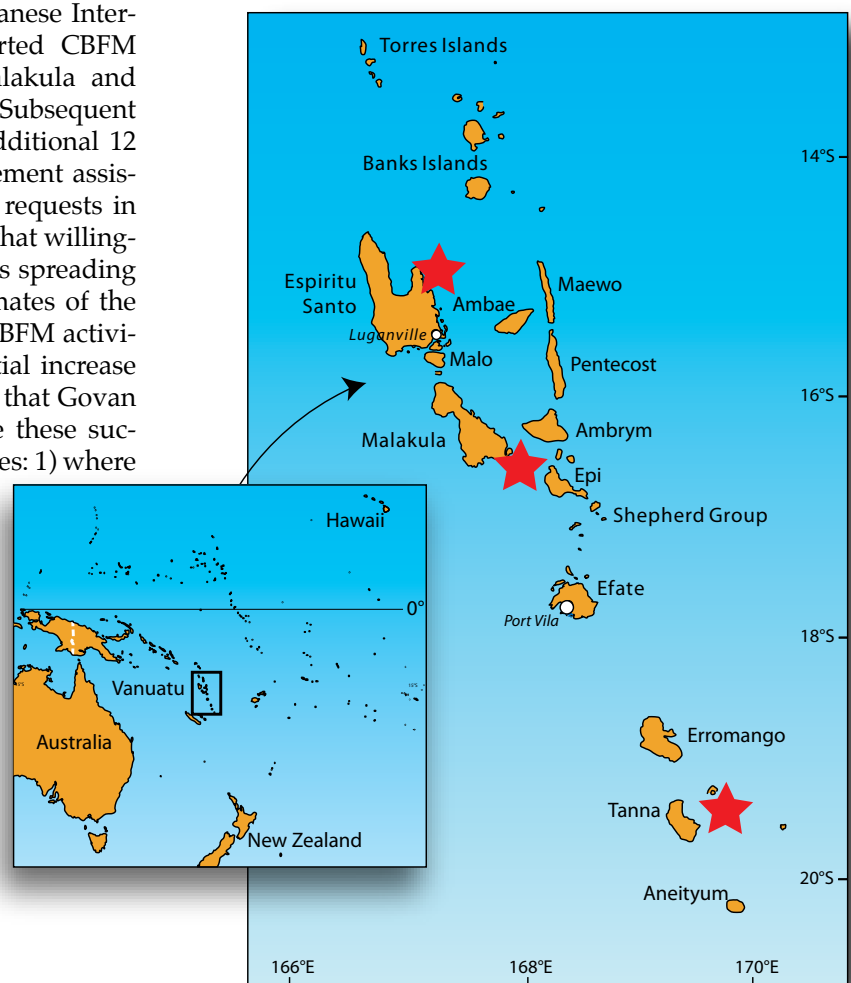


Figure 1. The islands and villages in Vanuatu that formed project sites for the Australian Centre for International Agricultural Research-funded "PacFish" project sites.

of fluctuation in copra and cocoa prices. Aniwa was chosen because it is a small island where people have few livelihood options and are highly dependent on fisheries for income. All three islands have experienced declines in fisheries resources, report weak local governance, and have received relatively little national management support.

As part of Vanuatu's Decentralisation Act (1994), implementation of all new projects must be presented to the respective provincial government to ensure their priorities are being addressed, and that they are involved in a working collaboration. In our case, the project was well received and approved by the provincial government. A project officer in Tafea Province said:

On behalf of the province and Secretary General I would like to express our gratitude to you project officers for taking the right approach to visit the province as the province is the gateway to Aniwa Island. Many projects do not come through the province and when they got into issues with the communities, it's hard for the province to assist them as we do not know how or what they are doing with the communities.

We then visited each site to confirm their interest and their approval to commence.

The data used in this paper are from a series of community meetings and workshops held during 2014–2016, and commencing with the project introduction meeting. Meetings and workshops

followed a participatory learning and action approach (PLA; Govan et al. 2008) where communities reflect on resource trends, identify challenges experienced locally, and clarify their objectives and intentions for establishing management. Where a high number of women and youth were present they would form their own group discussions; however, there were occasions where few young people and women attended, and in these instances discussion groups were mixed. Data were also collected through unstructured methods such as observation and informal *storians* (a Bislama word meaning informal discussions) with key informants such as a village chief, women leaders or resource monitors. These data were recorded in field notes and included in trip reports filed with the VFD subsequent to field trips.

The process we used to examine issues and design solutions with communities was influenced by the Grace of the Sea project. The main insight from

this project was that we should not focus narrowly on a single species, or even just on fisheries resource issues, but to identify threats and solutions according to four pillars (below). Each of these pillars should be discussed, analysed and addressed separately to ensure the project team has a thorough understanding of the community situation, and that project activities are designed and implemented in a way that is sensitive to this context.

1. "Resource and Environment" refers to the environmental status of a community's resources, especially fisheries resources and the environment.
2. "Economic and Production" deals with the economic and production aspect of resources.
3. "Institution and Governance" deals with the village's rules, national regulations and governance system in place.
4. "Sociocultural" deals with the social and cultural aspect of the community.

Project implementation was also influenced by experiences with CBRM elsewhere (e.g. Albert et al. 2013) that in turn were influenced by frameworks that suggested breadth and participation in diagnosis (e.g. Andrew et al. 2007). In summary, we followed a simple process (Fig. 2) to design and implement activities with communities.

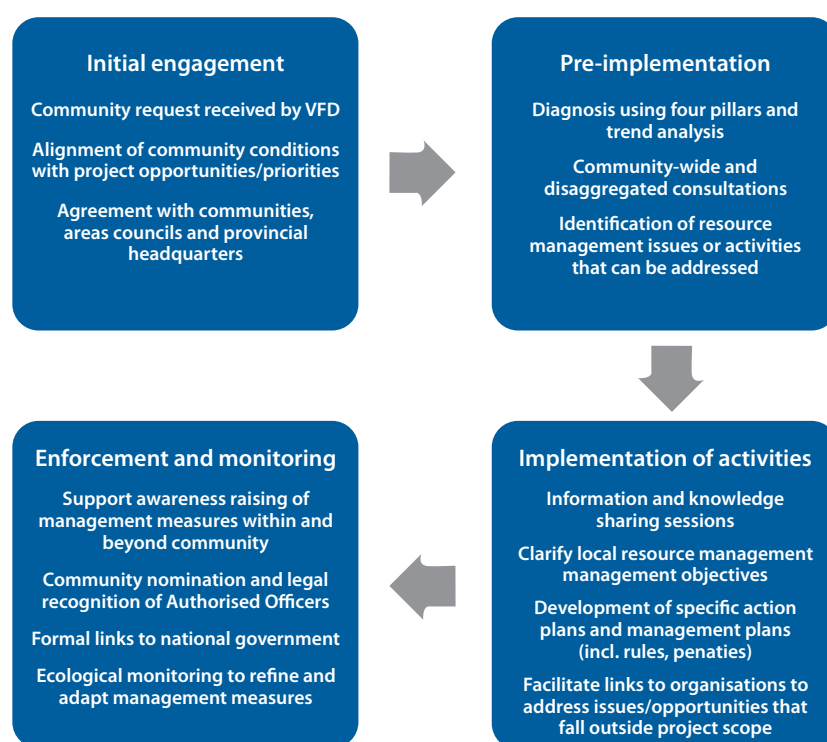


Figure 2. The process employed in community workshops in Vanuatu to identify management issues, provide support measures, address issues, and develop monitoring and enforcement strategies.

Results and discussions

a/ Pre-implementation – Community diagnosis

The three communities we worked with identified and articulated resource issues and a desire to establish resource management in their initial requests for support. Nonetheless, they sought assistance to progress, design and formalise management. Johannes (1998) stated that villagers may not have adequate awareness of the full range of management solutions they might need to address contemporary fisheries concerns, or the ability to independently implement them and formalise them into written plans. These are common reasons why communities seek assistance from external NGOs or government agencies. For example:

We are happy that the project chose us as a potential community to work with to help support and improve community based resource management in the rural areas. Our resources have greatly decreased since the population started increasing, therefore it is right timing that the project has come to rescue us to save our resources. We heavily depend on our resources, such as coconut crab and lobster for our tourism sector; however, we have now started importing these resources from the Banks group and South Santo. Therefore, it is important that our chiefs as resource owners agree to this idea for the project to help us protect and manage our resources. Chief, Hog Harbour Village

When we talk about something but did not see it, it does not make sense, but a [fieldtrip] makes more sense, its helps us to understand what is in the area and to see clearly the problems that we were talking about during the workshop. Thank you VFD for responding to my request which was lodged 10 years ago. We will work together with Vatthe Conservation Area to ensure there is a sustainable management of our fishery resources. Chief and land owner, Lolathe

Our initial workshop was for “community diagnosis”, which aimed at introducing some scientific explanation for the status and reasons for management of fisheries resources such as species life cycles, anthropogenic impacts on fisheries resources, and management options. We also discussed the role that government can play in helping communities manage their fisheries resources. At these times we also encouraged discussion of local perceptions and knowledge. Some of these discussions illustrate that people believe that abundance of fish was supernaturally controlled. For example a youth in Uliveo said: “I never knew that fish can swim far away. I thought if God blessed this village with this fish, it will be here until we die, it never moves to other villages.”

We facilitated a trend analysis exercise to understand the status of various marine resources for communities’ priority fisheries; comparing the current status to that of pre-independence (i.e. before 1980). The view across all sites was that resources had declined. Aman from Hog Harbour Village recalled that: “One day I went fishing for lobster in the sea in 1972. I collected 25 lobsters under one stone only, but now you can spend almost a half day and come back with only 10 lobsters”. Similarly, a participant on Peskarus stressed that: “The sizes of fish are different from what they used to be 20 years ago and also today it takes longer to catch the same amount of fish as we caught 20 years ago”. In Hog Harbour, one participant made a link between resource decline and tourism: “We stated in our graph that in 1980 many of our resources started to decrease, in the case of deep sea fish, around that period. The owner of a business has a commercial fishing boat that fishes outside here, it can stay here for close to a week; the graphs illustrations are correct because after 1980 our fishery dramatically dropped, that’s because that was when we started receiving cruise ships.” The ultimate purpose of these “diagnostic” activities was not to simply confirm resource decline or the causes; the purpose was to start to identify solutions that will fit the issues and the local situation.

To design pathways forward, discussions spanned the four pillars (i.e. resource and environment, economy and production, institutions and governance, and social culture) (Table 2). For example, information collected on institutions and governance helped to demonstrate how management can be designed to fit best with existing governance structures. Participants found this a useful process, and a former chief in Hog Harbour Village said: “I think this is the right timing for this project to help us develop a community structure together with the provincial area secretary so he can take it back to his high village and tell other projects this is how we operate in the village”. It became clear that the common issue across all project sites was weak enforcement, and that enforcement was generally considered to be the role of village chiefs. A chief from South Malakula stressed that “Chiefs have too many things to do in one full year, and they are responsible for the governance of the village; therefore, delegating too many activities to them will be unrealistic”. Issues that spanned the pillars included a lack of understanding of natural resource laws, lack of diversification in fishing methods, and a lack of management plans. One of the most important issues raised was the need for money, given that people in communities need to provide for their family by finding resources to fund school fees and basic needs. The result was that they put heavy pressure on their fishery resources for cash.

Table 2. Issues identified by communities and action plans showing similarity and differences between issues across project sites.
 Site 1 = Aniwa, Site 2 = Peskarus, Site 3 = Pelongk, Site 4 = Lutes, Site 5 = Hog Harbour, Site 6 = Port Olry, Site 7 = Lolathe

Issue	Aniwa			Uliveo			Santo			Actions
	1	2	3	4	5	6	7			
Sociocultural	Limited knowledge on gear management	X								Improve knowledge on gear management
	Limited traditional fishing knowledge	X								Increase knowledge on traditional boundaries; Improve traditional fishing methods
	Limited cooperation between chiefs	X		X	X					Improve cooperation between village chiefs by involving everyone in project
	Poaching in tabu areas	X	X	X	X					Develop community management plans/rules, including suitable penalties and enforcement, and enforce fisheries regulations
	High population		X		X	X	X	X		Awareness by health department of family planning issues and involve everyone in project
	Lack of diversity in fishing techniques		X	X		X	X			Provide training on new fishing techniques for encouraging people to diversify fishing methods, encourage traditional fishing methods
	Land disputes		X			X	X			Involve customary landowners in workshops and increase awareness and importance of conservation
	Community does not understand role of tabu areas			X	X	X	X			Produce and distribute awareness materials on the role of tabu areas, their benefits and challenges
	Lack of cooperation between chiefs and people to enforce rules in tabu areas		X			X	X			Involve chiefs, youth and women in project activities, workshops and awareness raising workshops
	Lack of respect for each other			X	X	X	X			Involve everybody in workshops and wider awareness workshops on importance of conservation
	Influence from people from other islands settling in the village				X					Involve settlers in project activities
	No cooperation between environment committee and chiefs		X							Encourage chiefs and environmental networks, such as Vanua'tai resource monitors, to work together
Governance and institutions	Fishermen's association	X	X	X	X					Strengthened fishermen's association
	People in village do not know much about natural resource laws	X	X	X	X	X	X			Awareness on the Fisheries and EPC Act and a half-day workshop session with communities in all sectors about laws
	Limited institutional cooperation	X						X		Encourage and increase involvement and informing all institutions about the work of the project in each site
	Conflict of interest	X								Improve mainstreaming between government departments and institutions
	Lack of island development plan	X								Develop island development plan
	Weak resource monitors in the village				X					Build capacity of resource monitors in the village
	Lack of documented community structure			X	X	X	X			Document community structure to identify roles of different institutions within the village and understand governance system
	Weak attendance at awareness workshops that focus on resource management		X							Chiefs and community leaders should encourage participation of everyone in project activities
	Lack of documented management plan		X	X	X	X	X	X		Document community management plan/rules for all three communities

Table 2. continued

Issue	Aniwa		Uliveo				Santo			Actions
	1	2	3	4	5	6	7	8		
Economy and Production										
No central fish market in urban centres					X	X	X	X	X	Liaise with the Fisheries Department on a way forward for this
No fish market facility	X									Purchase a solar freezer for fish preservation for transport to main market on Tanna
Limited knowledge of resource value-adding	X	X			X	X	X	X	X	Increase capacity for resource value-adding (e.g. Fish Café and shell craft for tourism)
Poor management of fish market infrastructure (e.g. ice machine)	X							X		Improve infrastructure management through basic management and finance training
Buyers buy undersize fish		X	X	X	X					Increase price of fish per kilo
Weak finance management skills to manage fish markets and income		X		X						Use fisheries department networks with cooperative to provide basic financial training for small-scale fishing businesses
Too many buyers		X	X	X						Charge an access fee for all buyers and increase the price of fish per kilo
Lack of training on other fishing techniques		X	X	X	X	X	X	X	X	Fishing technique training
Poor fish quality due to poor market facilities					X	X	X	X	X	Provide fish handling training
Lack of understanding on safety measures for fishing around FADs								X		Liaise with VFD North and Central region to address communities' concerns for a better fish market for fishers
Lack of understanding on importance of fisheries resource life cycles and management		X				X				Awareness raising as part of every workshop in the village and special awareness raising workshop on the life cycles of priority species
Lack of information on and understanding of ecological status	X	X	X	X	X	X	X	X	X	Improve information on ecological status
Poor waste management	X	X						X		Promote waste management in all sites
Crown-of-thorns damaging reef	X	X	X	X	X	X	X	X	X	Conduct regular clean up campaigns
Coastal erosion increasing		X								Rehabilitate coastal areas, where necessary
Increased deforestation	X									Raise awareness and encourage replanting of other trees
Limited protein source	X	X	X	X	X					Promote small-scale farming, such as poultry and piggy projects
Decrease of fisheries resources (based on catch and effort data)	X	X	X	X	X	X	X	X	X	Establish a total ban on collecting clam shells within tabu areas
No tabu area	X					X	X	X	X	Establish tabu areas
Decrease numbers of lobsters and coconut crabs (based on catch and effort data)						X	X	X	X	Observe fisheries regulation (coconut crab closed season, rock lobster size limits). Conduct coconut crab assessment to update quota
Tabu areas are periodic; add permanent tabu areas		X	X	X						Tabu areas remain periodic for some communities but rules are added for gear types, size limits, fishing periods
Climate change		X								Protection of coastline for climate change adaptation
Size of tabu area is too small		X	X	X						Extend tabu areas
Resource and Environment										

b) CBFM activities — Designing management measures and providing support measures

The next stage of the process was to work with communities to clarify their specific objectives for implementing management measures and to refine the actions they wanted to take. For example, in Peskarus Village on Uliveo Island, women and men separately identified four objectives of their management measures, which focussed primarily on establishing a tabu area. Both men and women sought to increase fishery stocks to enable them to earn more money in the future; their reasoning, however, was different. The women wished to protect their resources for future generations, whereas the men wished to attract tourists to their villages for income, and stressed that their managed area should be used as a study site for students to develop their knowledge about marine resources and management.

Some rules and management measures were designed based on local contexts and locally designed solutions. The export of fish from Uliveo Island (roughly 100 kg of fish every week to Port Vila) is an important way for residents to earn income. People harvest every week during the open season (April and October) each year in the hope of earning an income. However, communities were concerned that this was becoming a sustainability issue. During the village diagnosis it was decided that there was a need to put some control measures on the buyers who bought fish from Uliveo fishers. The decision made by the community was to increase the price of fish per kilogram from 300 vatu/kg to 350 vatu/kg. Their logic was that this would decrease the amount exported. They also enforced a buyers' fee or annual entry fee of 5,000 vatu to limit the number of buyers operating on Uliveo Island.

We have increased the fish price on the island because we think that the number of fish that is being exported from this island is very high. Although the money is good, it's getting harder for us to find fish now compared to what it was like 30 years ago. Resource monitor, Peskarus Village

Some of the buyers have stopped buying fish from us, because we asked them to pay 5000 vatu for an annual fee for importing fish from Uliveo. But it's a good thing because that means that less fish will be coming out of from our reef each week, this also made some buyers decide not to import fish from us anymore. Chief, Pelongk Village

Rule selection and design was also influenced by scientific knowledge and increased awareness of national fisheries and environment regulations.

In all sites, "awareness raising" was an important element of our project and included presentations, videos and school quizzes that comprised information on life cycle of marine resources, the importance of habitat and ecosystem conservation and management, relevant requirements of the Fisheries Acts, fisheries regulations and the Environmental Protection Act, and information from the Community Conservation Area handbook. In addition, we shared information that each community had specifically requested.

We do not know about the life cycle of some of the marine resources. Is the project willing to make awareness workshops that will help us understand this? Because if we know about the life cycles it will make us think about how long it takes for the animal to mature when we go fishing. Participant, Hog Harbour

We do not know much about the fisheries and environmental laws because we are in villages. We do not always get good radio transmission, so most of the time we do not know that we are harvesting undersize fish; We do not know as well that certain resources are banned by the laws, therefore we need continuous awareness on the laws. Female participant, Port Olry

Once a range of management measures had been decided on (see Table 3 for example from Pelongk), the arrangements were developed into community management plans that detailed where people can fish, when they cannot fish, gear restrictions, what can be harvested, and what cannot be harvested. In sum, some rules reinforced existing fisheries and environmental regulations (e.g. trochus size limits). Some rules related to cultural management measures (e.g. use of tabu areas). The design of certain rules was influenced by quantitative habitat assessments carried out by VFD and the resource trend analysis which, for example, influenced the closure of and the position and extent of coverage of tabu areas.

Fines were also detailed in these plans, and in the case of Pelongk, for example, fines varied for infringements, ranging between 5,000 and 20,000 vatu. The management plan stipulated that infringements would be dealt with through village court processes, and ultimately through state legislation, if necessary. Once rules were established we organised further awareness-raising activities that explained the different rules, how they were enforced via the village court system and fines, and how rules might affect women, children and men. These awareness-raising activities were conducted within the project communities and with surrounding communities, to ensure there was a good understanding of the new arrangements and their purpose.

Table 3. Pelongk Village management measures, including locally designed management measures, measures that are customary practices adapted for community-based fisheries management, and national fisheries regulations reinforced in local management plans.

Area or temporal closure	Gear restrictions	Species restriction
Total ban on harvesting in tabu area during close season	Do not use traditional/natural fish poison in tabu area	Do not disturb or harvest eggs from birds
No harvesting of or destroying mangroves	Do not use undersize hooks in tabu area	Do not harvest mud crabs during their breeding season
No harvesting of mud crabs during their breeding season	Use spear only in tabu area	Only harvest crabs that are a harvestable size (according to national fisheries regulations), which can be cross-checked by placing your four fingers over crab; if your fingers do not cover crab, do not harvest it
All other shell fish must not be harvested from tabu area	Only catch enough fish for family; do not over harvest	
No harvesting of small oysters	Only use 2-inch mesh size nets during open season	Only catch enough fish for family; do not over harvest
No harvesting of parrotfish and Napoleon wrasse in tabu area	Use bow and arrow only in tabu area	Follow national legal size of 9-13 cm for trochus shell
No harvesting of juvenile species outside of tabu area	Do not use iron bars to harvest octopus	Harvest only mature giant clam shells
Total ban on harvesting sea cucumbers in tabu area		Turtles are only harvested after permission is sought from the Director of Fisheries for annual cultural ceremonies
Total ban on harvesting trochus in tabu area		Do not harvest rock lobster in daytime; do not use an iron bar to destroy their habitats; only harvest at night as per legal size
Total ban on harvesting giant clams in tabu area		Do not disturb or capture any mammals in the sea as stated in the fisheries regulations
Total ban on harvesting shellfish in tabu area		Do not disturb, kill or capture dugongs anywhere
Total ban on harvesting triton shells in tabu area		Only collect dead coral from the reef; do not harvest live coral; do not drop anchors on coral

In giving advice to communities about the design of their management measures, we stressed that the performance of management was not assured and that some of the management measures should be monitored and potentially adjusted later (i.e. consistent with adaptive management principles). Many of these adjustments are pending, but there were some more immediate changes made to management measures. For example, on Uliveo Island a habitat status assessment was carried out by VFD's research section with community-based Vanua'tai resource monitors and members of the Reef Check Committee on Uliveo. The results were discussed with the communities two weeks later. Before this assessment, the communities' tabu area was small and extended only 20 meters out from the mangrove fringes. However, the results of the assessment helped to add weight to the communities' own observations (i.e. that when fish move out from mangrove habitats it is likely they are immediately susceptible to capture in the open areas, and that this did not allow sufficient opportunity

for them to reproduce). This assessment, and the discussions that followed, guided the community in adjusting their management arrangements and ultimately to extend the size of their traditional tabu areas.

We did not realise that we are only protecting our nursery; maybe that is why the sizes of our fish are smaller. From the presentations on the results of the habitat assessment, I think we need to extend out tabu areas and instead of having five-month periods we will now close it for three-to-four years before we open it again. This is to cover some reefs to protect our fish, trochus and green snails. Chief, Pelongk Village

While designing the plan, we were sensitive to the feasibility of the activities in the village. Community concerns frequently extended beyond marine resource-related issues (see Table 2 for example). As a result, some concerns and the activities the community proposed were outside the scope of the support we could provide, given that our project had a

fisheries and CBFM focus. In these situations, we played more of a connecting role to help identify appropriate government or NGO stakeholders who might be able to support the community in realising its broader visions. This was possible because we had some flexibility in our project that allowed us to dedicate some time and resources to make these connections. In some cases, we were able to adapt our plans to account for community requests. An example of this was that we were able to support the deployment of a fish aggregating device (FAD) off of Santo. The aim of deploying the FAD was to increase fisher catches and to reduce fishing pressure from coastal fisheries by encouraging fishers to switch from fishing in coastal areas into deeper waters. In total, the project deployed four FADs (one in Uliveo, two on Santo, one in Hog Harbour and one for Lolathe) and provided fishing technology training to give fishers the skills to fish around FADs. Notably, this training and the FADs benefited only men directly, due to gender norms associated with fishing practices. This new technology and training was well received.

For a long time since independence until today, we only hear about FADs, but today I am happy and a proud chief to say that we are happy that the project has deployed a FAD in the bay, which will help our young people to fish out of the coast to relieve the pressure on our reef fish.
Chief, Matantas Village

I would like to make a trial on the FAD, so I went fishing at the FAD to get some fish for the school closing. To my surprise within 1 hour between 7am and 8am I caught one barracuda and four wahoo altogether weighing in at 32 kg.
Chairman, Big Bay Fisherman Association

c) Monitoring, wardens and linking to government to support implementation and enforcement

Amos (2007) stated that the responsibility for management, development and control of fisheries resources ultimately lies with the Department of Fisheries. Although the government supports CBFM, the current Fisheries Act (2014) does not provide any mechanism to back community management plans per se and, therefore, the development and implementation of community management plans are the responsibility of communities. The Fisheries Act does, however, contain a provision (Section 108 subsection A) to declare a community member as an Authorised Officer (AO), who is delegated responsibilities to help enforce fisheries regulations in remote areas. The AO will be given an identity card and provided with training to understand their role. We supported communities to develop management plans that meet the requirements of both the Fisheries and Environmental

Protection and Conservation acts and associated regulations so that both avenues (registering a community conservation area, or having AOs) were open to them. Many communities expressed concern about their ability to enforce their management plans on their own, and so making communities aware of these options for legal backing is a vital part of our role.

In addition to AOs, communities may rely on more local enforcement. Pelongk Village on Uliveo Island has a community governance structure that includes a committee responsible for marine resource management. If anyone is found breaching the community's management rules, the infringement will be dealt with following the village court system. When the offender is caught on his or her first offence a chief will issue them a fine that has been stipulated in the management plan. In this situation, all fines collected are managed by the local committee. The village Council of Chiefs is the secondary avenue for enforcement, and the police are the third.

A third and common element of a CBFM enforcement strategy is the use of resource monitors. Resource monitors assist with enforcement of the rules and promote compliance and understanding of management objectives. This was an important strategy to promote local ownership of CBFM. For example, a Vanua'tai resource monitor from Lutes Village said: "I am glad about the outcomes of the participants. There's a feeling of ownership and opportunities from the participants which is positive to manage our resources. I know most of the villagers are eager to harvest the sea cucumber but I urge them to think of the future generation."

Despite these three strategies there remain enforcement and sanctioning challenges, and community success with enforcing their management plans needs to be critically assessed through time. Providing centralised enforcement and sanctioning support to communities remains a challenge, and we found there to be difficulties because officers are based in Port Vila and the project sites accessible only by planes.

d) Promoting broad participation

It is the norm in many village contexts in Vanuatu that only chiefs and other male leaders in the village attend meetings with government or NGO visitors. In addition, at times, meetings are called when women are occupied with managing home affairs and have no time to attend. Youth these days think that chiefs are the ones making the decision and that they have no voice. This was the case during our first and second visits to the communities. As a result, in our early engagements in 2014, the participation of women and youth was relatively low (Fig. 3). However, our project had an emphasis on encouraging wider participation and consultation

with women, youth and people with disabilities. In the first consultation meeting in Port Olry on Santo, the president of the women's association said: "As representative of women in this village, I would like to say that this project will help us women and our children, therefore I am in full support of the project to be implemented in this area". In Port Olry, women's participation in project activities increased substantially as the project went on, where initially only the president of the women's association attended. We found that in Port Olry, once women's attendance had increased, the women were quite vocal in meetings (i.e. more so than at Uliveo) and we attribute this to the higher levels of women's education and their prior experience with external project activities.

Schwarz et al. (2014) stress that involving men and women in CBFM may require deliberate strategies to ensure all people are involved in sharing perspectives and receiving information. This is particularly important for CBFM because men and women often perform different roles in fisheries and rely on different zones and species to different extents (Kronen and Vunisea 2009). If there are no explicit strategies to include more marginalised voices in decision-making, management decisions can impose a burden on some resources users (more than others) or may not address issues that those resource users are experiencing (Vunisea 2008). Therefore, in our facilitation of workshops and consultations we encouraged

participation of women and youth through a number of deliberate strategies. This included clearly articulating in our community invitation letters and phone calls that women and youth were invited and that their attendance was valued. When hosting workshops we were flexible with start times and waited until there was a satisfactory number of women and youth present before we commenced, and we considered women's availability in the times and venues we selected for meetings. Further, in most of our workshops we had at least two facilitators, one male and one female, where the female facilitator spent more time with the women in their separate group. An important, but more informal, strategy was that the female facilitator would make the most of break times, meal times and evenings to engage women in discussions and hear their perspectives. The participation of women and youth had been increasing since the project commenced on Uliveo Island, and in a relatively recent meeting called to revise the management plan, a substantial proportion of attendees were women. In this forum their voice was heard and their ideas about management were accepted by men.

We women use resources differently, and we collect more species from the reef compared to the men. We spend so long in the water to try our best to get fish for our meals. Female participant, Peskarus Village

While the original management plan focussed on fish and resources of economic value, once the women had shared this view the men agreed to include other invertebrates (i.e. those important to women) in their community management rules. For example, on Uliveo, common equipment used by women for gleaning is an iron rod, which is used to break reefs to collect octopus. The women requested this practice be banned in the

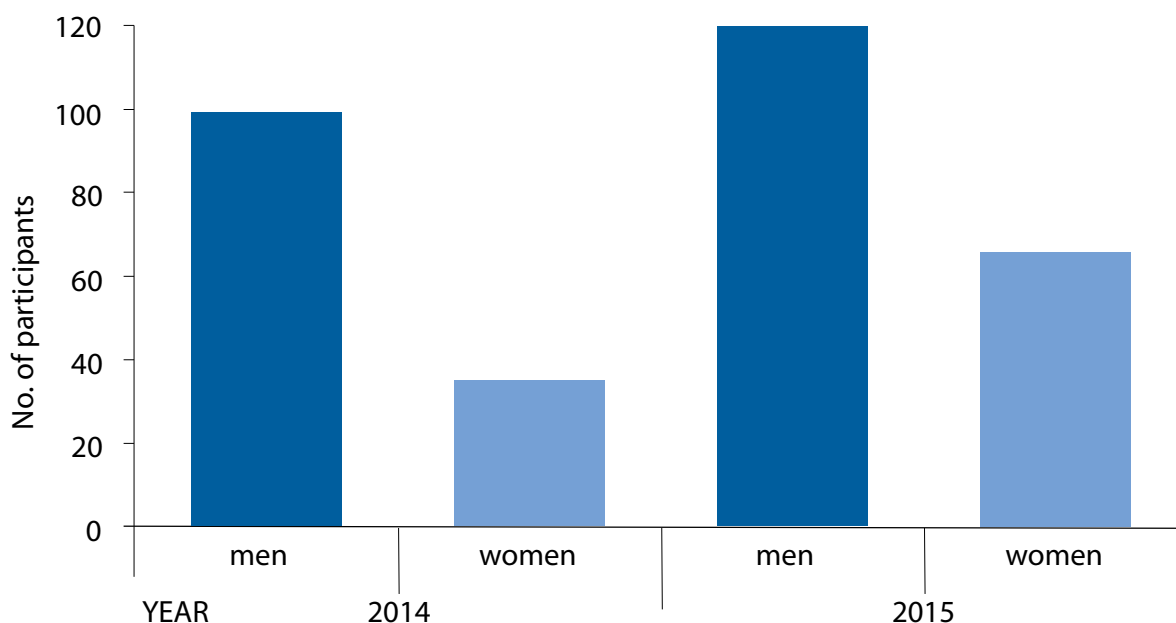


Figure 3. Number of participants in all project sites in Vanuatu, showing how the participation of women increased in later stages of the project.

newer version of the management plan because they know that in the long term, it would affect their livelihoods. Simultaneously, however, there was some resistance and reluctance to add this rule because women felt that the rule would make their lives harder in the short term.

Women and youth were also active in helping men to raise awareness and arrive at community-wide agreement with the management plan. The draft management plan was presented to the whole community (in the local dialect), which generated discussions. This also acted to promote further participation, given that anyone who had not had the chance to attend a workshop gave their view; there were some cases where this did in fact lead to changes to management plans. We observed a range of different roles that women were playing in CBFM (i.e. roles that were outside of the norm). For example, a woman from Pelongk Village provided voluntary help to her husband to collect fish data from artisanal and subsistence fisheries as part of monitoring efforts. On Santo, women were included in the current Big Bay Fishermen's Association and the FAD committee was fully represented by the youth of that area.

Conclusions

The process we used to select communities and work with them to design and implement CBFM is influenced by 25 years of experience and lessons on participatory processes, local fisheries management, and linking communities with government for appropriate and workable forms of technical and enforcement support. A foundation of CBFM is to work with the community to understand local resource concerns and their causes. Our experiences applying the four-pillar "diagnosis" process in the islands of Uliveo, Aniwa and Santo illustrated how we collectively came to an understanding of local issues and concerns. Some of these issues and concerns could be addressed by CBFM. The local context was influential in identifying opportunities and designing CBFM strategies, and local solutions were also influenced by the information we provided, and by the guidance provided by national regulations. While our results suggest there was satisfaction with the project at the national government, provincial government and community levels, we have yet to determine the success or challenges communities experience in implementing and sustaining their CBFM from this point. Further, it is yet to be seen in these cases what impacts and outcomes are realised from management and whether these have helped to realise the social and ecological objectives that communities are seeking.

Within the process we employed it was initially difficult to meaningfully include women and youth. Our engagements emphasised and encouraged

the participation of women and youth in all project activities by employing approaches that enable women and youth to speak freely. The participation of women and youth increased with project support, in part due to strategies that made the most of local strengths such as strong female leaders and women's groups. However, our engagements did not lead to more fundamental changes regarding gender norms or youth participation (that we observed), given that the balance of decision-making power still rested with local, typically male, leaders.

Our experiences highlights that no matter how clear, participatory and well-received a process is, there are always some challenges that communities and partners will face in realising their objectives. Some external challenges are substantial and cannot be easily overcome. For example, we were forced to cease activities in one of our project sites as a result of Tropical Cyclone Pam; it was not possible to focus on CBFM after communities were devastated by natural disasters as large as a category 5 cyclone. In this instance we were lucky enough that funding from the Australian Centre for International Agricultural Research could be used to help carry out fisheries assessments in all areas affected by Tropical Cyclone Pam and respond with fishing gear as part of relief supplies within the first three months after the cyclone. Furthermore, in some instances, community concerns fall outside the scope of the project that is supporting them. For example, deploying FADs was not in the original project scope, however fishing pressure is quiet high in all project sites, and establishing and extending tabu areas or implementing other resource management measures will not address the core issues of fishing pressure or lack of livelihood options. The role of linking communities to other forms of support is arguably as important as the role a partner can play in supporting the local implementation of CBFM.

Given the region-wide focus on community-based fisheries management, it is an important time to clarify the processes being followed, the logic behind them and the challenges that are faced in supporting the establishment of CBFM. Our experiences highlight that while communities can be successful in designing and implementing forms of CBFM, there are substantial challenges along the journey to realising community objectives.

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Sustaining appropriate community-based coastal resources management: Experiences and lessons from Vanuatu¹

Graham Nimoho,^{2*} Akiya Seko,^{3*} Mitsuoinuma,⁴ Kazuo Nishiyama⁵

Introduction

Coastal communities in Vanuatu depend heavily on marine resources for household subsistence and cash incomes. However, recent development activities and climate change have altered coastal ecosystems, resulting in a notable decline in coastal marine resources. Thus, in its National Development Plan 2006–2015, the Vanuatu government acknowledged the need for the appropriate management and use of coastal marine resources. However, personnel and technical and budgetary shortcomings have constrained efforts to improve and disseminate community-based coastal marine resource management (CBCRM). As a consequence, the government requested technical cooperation from Japan in providing comprehensive CBCRM. In response,

between 2006 and 2009, as requested by the government of Japan, the Japan International Cooperation Agency (JICA) conducted the technical cooperation project “Promotion of Grace of the Sea in the Coastal Villages in the Republic of Vanuatu (Phase I)”. The project focused on the propagation and culture of easily established shellfish together with community awareness building for coastal resource management (CRM). On Efate Island, the project set up a model for CBCRM. Based on Phase I, the Vanuatu government requested the project to establish CBCRM and to simultaneously improve community livelihoods to ensure their sustainability.

This article is based on Phase II of the project, which was conducted from January 2012 to January 2015, with local activities undertaken between February 2012 and October 2014 in: 1) northwestern Efate, at Mangaliliu, Lelepa Island and Moso Island; 2) northeastern Malakula, at Amal Crab Bay, Uripiv Island and Uri Island; and 3) southwestern Anenityum, at Analcauhat and Mystery Island (Fig. 1).

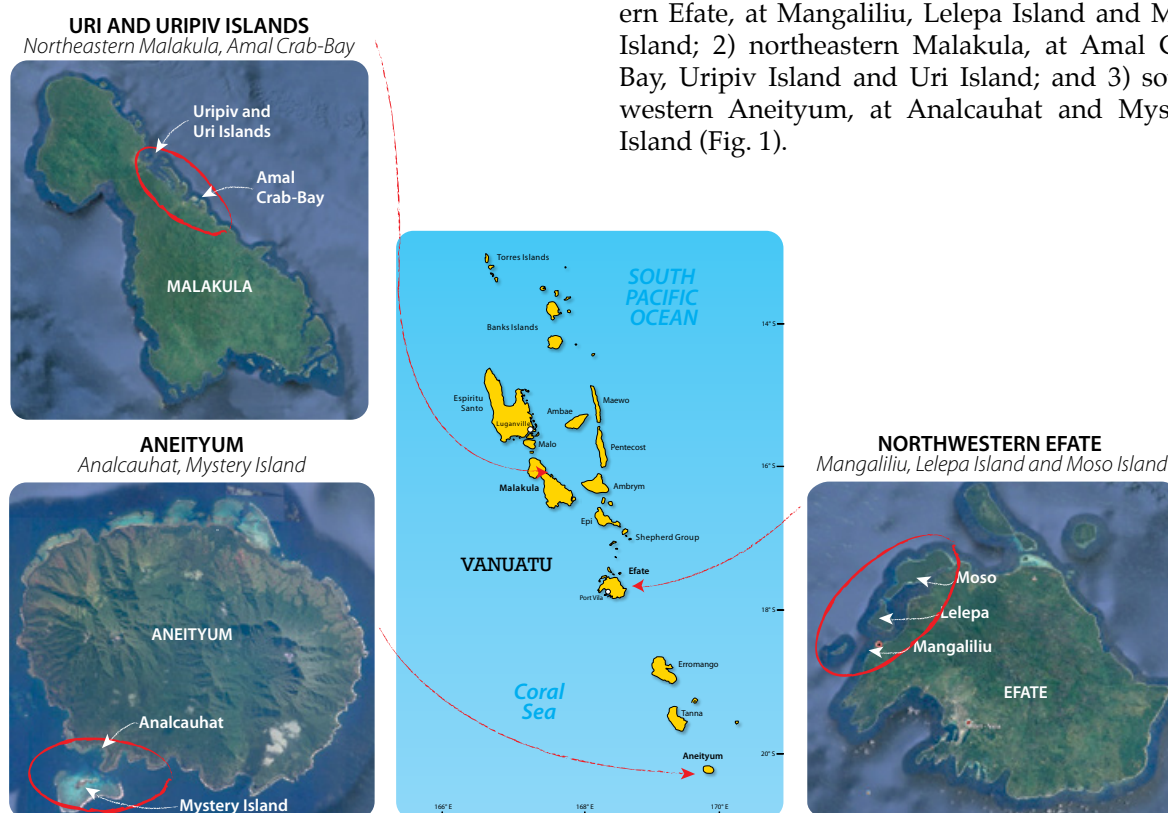


Figure 1. Location of Grace of the Sea project sites in Vanuatu.

¹ This article is dedicated in memory of Chief Mormor Kalotiti, from Magaliliu, a highly influential community leader who passed away on 15 December 2015. His leadership, dedication, enthusiasm, and hard work greatly inspired the project, not only in northwest Efate, but in all three project sites.

² Fisheries Department of Vanuatu. Email: gnimoho@vanuatu.gov.vu

³ IC NET Ltd. Email: seko@icnet.co.jp

⁴ IC NET Ltd. Email: iinuma@icnet.co.jp

⁵ IC NET Ltd. Email: nishiyama.kazuo@icnet.co.jp

* Corresponding authors

The project's goals were to enhance conservation of the coastal environment and the sustainable use of coastal resources in the project areas, and disseminate CBCRM to areas around the project sites. For these purposes, the capacity of the Vanuatu Fisheries Department (VFD), which supports CBCRM, had to be strengthened, particularly its ability to provide technical support to communities for CRM. To implement the project jointly with VFD, participatory resource evaluations and socioeconomic surveys were done in the project areas; the capacity of community organisations to make resource management plans was either established or enhanced; and trial CRM plans implemented as pilot projects were evaluated and revised, and lessons learned from resource management activities were shared with all stakeholders.

The project developed three innovative ways to implement CBCRM: a "community-based extension" approach, a "strengthening of existing organisations and collaboration" approach, and an "integrated management" approach that focused on tourism. The community-based extension approach was used in Aneityum, where a community extension officer was identified by VFD to handle CBCRM and supporting measures. As the first such case in Vanuatu, it was envisaged that the delegation of selected government services to communities could also be feasible elsewhere in the country. Integrated management was implemented in Malakula, where young leaders were closely involved in the cooperative relationship among the 16 communities of the Amal-Crab Bay area. Integrated management — focusing on tourism development — was the approach adopted in northwestern Efate, and was based on shellfish management and a tourism development plan.

To promote integration, fisheries management measures were combined with supporting measures that focused not only on alternative income generation, value-adding to fishery products, collective marketing, and diversification of fishing effort, but also on the community system and organisation strengthening. If such forms of integration were not ensured, sustained CBCRM would not have been feasible. Particularly important for ensuring sustainable CBCRM were inter-community coordination, managing local committee clusters, and an "authorisation mechanism". Inter-community coordination requires a local CRM committee to coordinate communities, as was done for the 17 communities of Malakula. Diverse small group activities of the committee necessitated "cluster management", such as was done by the Lelema committee in northwestern Efate, which formed six subcommittees: fish aggregating device (FAD) management, tourism, craft-making, marine protected area management, prawn farming, and management planning.

Project outputs included inexpensive FADs, data collection, locally made shell products, "fish cafés", and study visits. Low-cost, nearshore FADs were designed to diversify fishing activities, in an attempt to reduce pressure on vulnerable reef resources. The modernisation of traditional canoes improved fishing efficiency by allowing fishermen to access offshore deep-bottom reef fish and fish from the nearshore FADs. Fishermen recorded their catches in order to run their own local fish market or to monitor the status of target resources. Besides providing an additional source of income for women, shell craft making was linked to tourism development. With a certifying "eco-label" attached, products became more attractive to tourists wishing to support community efforts in CRM. The fish cafés enabled fishermen's families to generate more income than could be derived from simply selling fish at the local market, and thus reduced their reliance on coastal resources. Communities become motivated to participate in CRM when they observed other communities' work on fisheries management. They were also able to learn from each other and share important experiences during study visits.

Conceptual structure of CBCRM

Both management rules and their supporting measures must be in place to ensure effective and appropriate CRM. Supporting measures can be classified into those relating to: resource and the environment, economy and production, sociocultural factors, and institutions and governance (Fig. 2). The four perspectives of CBCRM and activities under each perspective are complementary and equally important. Because CRM can be realised only if those who exploit the resources are managed successfully, the sociocultural perspective sustains the resources and environment, and economy and production perspectives.

Resources and environment

In order to motivate community members to engage in CBCRM and establish coastal resource management rules, it is necessary to conduct coastal resource surveys, and to collect and analyse fishing activity data. These must be done together in order to determine the socioeconomic situation of a target community. As an initial step, a baseline survey should be conducted on the four perspectives for CBCRM, followed by selecting the best combination of approaches, and then developing appropriate action plans for promoting CBCRM.

Economy and production

To reduce fishing effort on coastal resources and compensate for the economic loss resulting from CBCRM activities while financially supporting CBCRM activities, alternative income-earning opportunities and linkages with the tourism sector are necessary.



Figure 2. The four perspectives of community-based coastal marine resource management used in Vanuatu, and the activities necessary for each perspective.

Sociocultural

To provide a motivation for CBCRM and improve community management capacity, participatory workshops and meetings should be organised in a way that maximises the exchange of opinions and experiences.

Institutions and governance

Communities must coordinate with relevant external organisations in order to acquire essential support from the government and NGOs.

A pilot project in each project site was designed so that VFD participants and their local community counterparts could develop an understanding of what CBCRM is and how it works. Based on results of the baseline surveys, the project adopted a “linkage to tourism development” approach for northwestern Efate, a “strengthening of existing organisations and collaboration among different communities” approach for Malakula, and a “community extensionist approach” for Aneityum.

1) Linking CBCRM with tourism

During Phase 1, an attempt was made to establish a marine protected area (MPA) management

committee in northwestern Efate to promote collaboration among communities. The attempt failed because communities could not agree on how coastal resources should be used. However, transplanted green snails and giant clams had been well maintained, showing that community members were able to take care of marine resources. Thus, the project attempted to re-establish the MPA committee and to link CBCRM and tourism development.

An additional reason was that the site has the potential to attract tourists because it is the location of the Roy Mata Domain — the only World Heritage site in Vanuatu — and has resort hotels and restaurants that could enable the community to generate income for promoting CBCRM. The project promoted the linkage of tourism and CBCRM and helped the community to implement its coastal resource management plan, which was developed during Phase 1.

Probably the single most important factor for the success of Phase 2 was the involvement of clan chiefs in the pilot project, which then motivated them to promote CBCRM. In Phase 1, community chiefs and young leaders were involved. The MPA committee could not be established, however, owing to a lack of common understanding of the importance of CBCRM. Phase 2 ensured that clan chiefs

became involved; as a result, they began to realise the significant potential of northwestern Efate for tourism development. In particular, the tourism development in Aneityum and Malakula inspired them. Thus, the clan chiefs understood the importance of CBCRM, tourism development, and the linkage between them leading them to play an important role in establishing the CBCRM committee. Because they own the land and decide on the way that sedentary resources on adjacent reefs are used, agreement among clan chiefs was required for establishing an MPA instead of a traditional taboo area. The approach of promoting the linkage between CBCRM and tourism development provided a catalyst for clan chiefs and young leaders to work together for the sake of CBCRM.

2) Strengthening existing community institutions

Strengthening existing community institutions can be effective when one or more arrangements for resource management is not functioning. A good example is provided by the 16 communities around Crab Bay that formed the Crab Bay MPA committee, with the support of the Malampa Province VFD Extension Officer. The committee, however, gradually became incapable of monitoring the resources. As a consequence, the project sought to strengthen it and develop income-generating activities for its support. Committee membership was restructured to involve younger community members because initially, meeting and workshop participants were mainly older people within the community, which was likely related to the stagnation of the MPA committee's activity. Based on their own ideas, younger members developed activities that included training on the maintenance of outboard motors, and the establishment of a fish market on Uripiv Island. Supported by the Department of Environment, younger community members also sought and obtained the official legislation for the Crab Bay MPA. Initiatives from younger members also stimulated the management of the land crab, which was being increasingly harvested illegally.

The pilot project was implemented in a fully participatory manner to ensure that the MPA committee could enhance its capacity. With the implementation of the pilot project, the younger members became capable of planning, monitoring and implementing activities. At the beginning of the pilot project, they were not official members of the MPA committee. However, older members admitted the youngsters' significant contribution, and accepted them as formal members. The MPA committee became a CBCRM committee to supervise other groups, and younger people were promoted to become board members. Now, representatives of the committee continue to promote tourism development in regular collaboration with member communities.

The younger people promoted the implementation of a tentative CBCRM plan made in February 2013. Their efforts were supported by the Department of Environment and the International Union for Conservation of Nature to legislate the Crab Bay MPA. For the legislation, the VFD Extension Officer and the younger community members repeatedly visited the 16 communities to explain the importance of and need for the Crab Bay MPA legislation. This first legislation of a coastal MPA in Vanuatu was a product of their dedication. Through their success, they came to understand the importance of working cooperatively. It led to their voluntary work for the tourism development in Crab Bay, which attracted the support of the Department of Tourism of Malampa Province, and that of private companies.

3) Community extensionist approach

Mystery Island provides one of the best examples of CBCRM in Vanuatu. The community of Analcauhat designated the reef around Mystery Island (an important tourism area) as an MPA, and began collecting data on the number of lobsters sold to tourists, and took actions to protect trochus, green snail and sea cucumbers. A pilot project focused on the sustainable management of lobsters. Because there was no VFD officer based in the area, the project adopted the "community extensionist approach": VFD appointed a "community extensionist" who became the local coordinator even before the project started. Once the project began, he prepared and conducted workshops and technical training, liaised with the community, and monitored the project's progress.

The duties of a community extensionist include almost all of those of an VFD Extension Officer: monitoring fishing activities, data collection and reporting, and awareness raising. These responsibilities require both technical knowledge of fishing and aquaculture, and communication and coordination skills for community development.

As a result, it was regarded as important for promoting CBCRM to establish clear criteria for the selection of extensionists. In the pilot project, the performance of the community extensionist was monitored, and the necessary skills and knowledge for such a person was discussed with VFD. VFD and project members then prepared guidelines for the selection and duties of a community extensionist.

The community extensionist in Aneityum was the first to be approved officially. For the smooth implementation of the pilot project, the community extensionist ensured the fair and equal participation of the six clans in Analcauhat, which fostered a better understanding of CBCRM among the community. The community extensionist selected young

leaders, and assigned them the task of managing FAD fisheries, engaging in shell polishing activities, managing the fish café, and other tasks. Among the young leaders, the woman in charge of shell polishing was given the opportunity to participate in shell polishing training in Indonesia. As a result, her skills improved dramatically. Three members of the fish café group studied cooking at the Hospitality Tourism and Leisure Training Centre in Port Vila. The young leader in charge of FAD management was recommended as a new community extensionist. In this way, guidance from the community extensionist contributed to the capacity development of the young leaders.

The two main outputs of the pilot project were the stable use of offshore and reef fisheries using FADs, and local fish sales through the fish café. Hitherto, fishing efforts tended to concentrate on lobster sales to tourists. However, after the fish café had demonstrated that local fish also could be sold to tourists, part of the fishing effort was shifted to offshore reef locations. Production and marketing of polished shell products resulted in both improved community livelihoods and enhanced environmental awareness.

From the pilot project, community members began to understand the importance of linking CBCRM and its supporting measures. The MPA committee that began managing the MPAs around Mystery Island and Analcauhat, also understood the need for supporting measures to manage the MPA. As a result, the committee was renamed the Analcauhat CBCRM Committee. This led to the designation of a new MPA.

An important conclusion demonstrated by this project is that various measures must be implemented along with management rules. Such essential supporting measures must be carefully planned to ensure effective CBCRM. In the case of this project, there were seven main categories of supporting measures.

1. Those relating to resources and the environment such as community participation in resource surveys and monitoring, which are required to motivate community members for CBCRM and to establish coastal resource management rules.
2. Activities such as awareness-raising about CBCRM, coastal resource surveying, and the collection and analysis of fishing activities data.
3. Rules and supporting measures that relate to economy and production are required to reduce fishing effort on coastal resources, and to compensate for the economic loss resulting from CBCRM activities, as well as the financial support needed for CBCRM activities.
4. Alternative livelihood measures such as FAD fisheries and shell crafting activities are linked to the tourism sector.
5. Rules and measures related to society and culture, are necessary to provide a motivation for CBCRM.
6. Participatory workshops and meetings should be organised to improve community management capacity, and allow the exchange of opinions and experiences.
7. Finally, rules and supporting measures that concern institutions and governance are needed so that communities can acquire essential support from government and NGOs.

Communities must coordinate with relevant external organisations, and resource management is only possible if the people who exploit the resources are managed successfully.

The remainder of this article examines the design and implementation of project activities, beginning with a brief summary of the baseline surveys and pilot projects in each project area and the development of activities. The common components of pilot projects — community-based collection and analysis of fishing activity data, FAD fishing management, and shell craft — and projects implemented in individual areas (north-western Efate, Malakula Island and Aneityum Island) are then described and analysed. This is followed by a discussion of the making of CRM plans because it was emphasised that, based on the experiences of the pilot project, the communities were expected to formulate their own implementation plans. As a result, communities largely managed their own fisheries and organised their own planning workshops.

The design and implementation of project activities

The first field activities were baseline surveys conducted in the three project areas, which consisted of interviews with individuals and workshops to evaluate the current CRM and the socioeconomic conditions in communities and relating to fishing activities. To complement previous activities for the promotion of CBCRM through Phase 1 and projects financed by other donors, the project conducted an institutional development and organisational strengthening workshop for VFD staff, during which the main external factors affecting the promotion of CBCRM were examined, as were potential approaches to mitigating threats against it (Table 1). The main internal strengths and weaknesses of the VFD were also identified (Table 2).

Table 1. Approaches for Vanuatu Fisheries Department to take to promote community-based coastal resource management (CBCRM).

	Main external factors	Approaches for promoting CBCRM
Opportunity	Large domestic demand for fish	Market development for fish
	Fishermen's association cooperates in data collection on fish catch	Collaboration with community organisations in charge of CBCRM to collect data on fish catch
	Traditional social governance system sustains the CBCRM	Promotion of collaboration with decision-makers in community (e.g. chiefs)
Threat	Long time to establish a fishermen's association	Capacity development of the community organisations that implement CBCRM activities
	Most community members engaged in fisheries are not registered	Organisation of a fishermen's association to register fishers
	Absence of a local fish market	Establishment and management of a community fish market

Table 2. Main internal factors affecting the promotion of community-based coastal resource management (CBCRM) at Vanuatu Fisheries Department.

Strengths	Weaknesses
Has capacity for data collection and analysis of fish catch (1)	No regular meetings (1)
Has accumulated research information (2)	No policy for coastal fisheries (2)
Can exempt tax on fuel for registered fishers (3)	The data collection on fish catch by fisheries extension officer has stopped (3)
Always collaborates with MPA management committee (4)	There is no reporting of data on fish catch from fisheries extension officer (3)
The Extension Officer has a good relationship with the provincial government (4)	There is insufficient follow-up by VFD officer (3)
Can provide small-scale financial support in collaboration with local NGO (4)	Financial management by fisheries extension officer is inadequate (6)

Note: Numbers in brackets show the workshop participants' rating of the importance of the factors.

Six major strategies for VFD were identified to promote and disseminate CBCRM: 1) making improvements in the distribution of local marine products, 2) strengthening the collection of fishing data by fishery organisations, 3) respecting and strengthening traditional resource management systems, 4) establishing and strengthening the activities of fishery organisations and fishermen's associations, 5) establishing local fish markets, and 6) strengthening CBCRM activities.

The project designed the pilot projects in each area based on the CBCRM issues identified through the baseline survey (Table 3). The different characteristics of CBCRM in each area are summarised in Table 4. These were also considered carefully in

designing the pilot projects. Thus, in northwestern Efate, a link to tourism development was adopted. On Malakula, the strengthening of existing organisations and collaboration was adopted for coordinating the different communities that participate in the management of land crabs in Crab Bay. On Aneityum, a community extensionist approach was adopted to counter the pressure for the temporal opening of the MPA, a high fishing pressure on lobster, and the problem that no VFD staff member was assigned to the island. From the results of the baseline survey it was clear that activities have three components: those directly related to CRM, those either supporting CRM or indirectly related to it, and activities for creating organisations and systems needed to conduct the first two.

Table 3. Community-based coastal resource management issues in each project area in Vanuatu.

	Northwestern Efate	Malakula	Aneityum
Main economic activity	Agriculture, tourism, fisheries	Agriculture, marketing, fisheries	Agriculture, tourism, fisheries
Percentage of income from fisheries	~ 20%	~ 10%	~ 10%
Status of coastal fisheries resources	Declining both inside and outside MPA	Stable inside MPA; declining outside MPA	Stable inside MPA; declining outside MPA
Status of offshore fisheries resources	Good	Good	Good
Interest and participation in community social activities	Moderate	Crab Bay: High Uri/ Uripiv: Moderate	High
Understanding of MPA management plan	Lelepa: High Moso island: Moderate	Crab Bay: High Uri/ Uripiv: Moderate	Moderate
Participation in CBCRM activities	Lelepa: Moderate Moso: Low	Crab Bay: Moderate Uri/ Uripiv: High	High
Main issues in CBCRM	Development of alternative income source Linkage with tourism development Market development for fish Fishing method diversification Establishment of MPA management organisation	Shortage of funds for MPA management committee Prevention of poaching	Development of alternative income source Awareness building on CBCRM for community Establishment of fishermen's association

Table 4. Characteristics of community-based coastal resource management (CBCRM) in each project area in Vanuatu.

Area	Characteristics of CBCRM
Northwestern Efate	MPA management plan exists (made during Phase I of the project), but is not respected by community Conflicts over fishing ground use No collaboration between Lelema and Moso Island. The community in Moso Island was particularly uninterested in working cooperatively
Malakula	16 communities consisting of different tribes participate in the management of the land crab in Crab Bay, so coordination is difficult In Uri and Uripiv islands, the coastal resource and economic status are in difficult situations. However, the remaining 14 communities in the main island of Malakula are relatively well off. There is a socioeconomic gap between the main island and remote islands. Owing to a shortage of funds, monitoring activities in Crab Bay were limited
Aneityum	There is a pressure for a temporary opening of the MPA Only lobsters are sold to tourists; hence, fishing pressure on lobster is too high No VFD staff member is assigned to the island. A VFD officer visits several times per year and provides limited governmental services.

Table 5. Components of coastal resource management in selected areas of Vanuatu.

Component	Envisaged activities
Resource management	<p>Formulation of management rules for coastal resource-related activities: Coordination among fishing grounds, deciding on protected species, size restrictions, legislation for MPAs, and others.</p> <p>Resource recovery measures: Releasing and raising the seeds of marine shellfish (e.g. trochus and green snail), relaying bloodstock, and others.</p>
Support for resource management	<p>Fishing activity diversification: The promotion of fishing activities in offshore areas using FADs.</p> <p>Livelihoods other than fishing: Shell polishing, ecotourism based on MPAs, ocean nursery of Tridacna clams, and others.</p> <p>Adding value to caught marine products: Running restaurants using or selling local fish, keeping fish fresh by developing fish markets, and others.</p>
Institutional and organisational strengthening	<p>Establishing and strengthening the activities of MPA committees</p> <p>Strengthening the operation and management of fishermen's organisations such as FAD management committees and fishermen's associations</p> <p>The collection and analysis of fishing activity data by fishermen's organisations</p>

The contents of each pilot project were designed to be consistent with the local socioeconomic situation. Based on the results of the baseline survey, the project agreed on the contents of the pilot project with the MPA committees. In northwestern Efate, where the traditional governance system is weakening owing in part to immigration from other islands, the baseline survey indicated a high potential for tourism development. However, the decline of reef fish stocks and the degradation of coral reefs were also indicated. Therefore, the project adopted a tourism development approach for promoting CBCRM. To strengthen the linkage between tourism development and CBCRM, activities were developed, such as an ocean nursery for giant clams used as a tourist attraction, the protection of reef resources by the introduction of FADs, and the use of a modified canoe. The community proposed to include fish marketing and the selling of polished shell products to local hotels and restaurants, so these activities were included in the pilot project. At Malakula, the Amal-Crab Bay MPA committee had been established more than a decade ago, but activity stagnated owing to a shortage of funds. The project re-activated the MPA Committee by generating a CBCRM promotion fund. The project also introduced a FAD fishery, the release and monitoring of green snail and trochus in Uripiv Island, production and marketing of polished shell products, the marketing of kava, bee-keeping, and the installation of

a yacht mooring facility. The communities proposed to establish fish markets in Uripiv Island and Louni; the market established in Uripiv made possible the joint fish marketing with the fish market in Lakatoro - the capital of the main island - through the Japan Overseas Cooperation Volunteer programme. On Aneityum, the Mystery Island MPA Management Committee developed CBCRM activities such as data collection for lobsters and the protection of reef fish, trochus, and green snail inside the MPA area. The lobster fishery needed to be controlled, so the controlled area was expanded to outside the MPA area. Because there was no VFD officer on the island, the community extensionist was playing an important role. The project introduced FADs, a fish market, a fish café, shell polishing by women, and helped the community extensionist to manage the pilot project. The pilot project provided both alternative income earning potentials for villagers and funding for CBCRM.

The project created pilot implementation plans (Tables 6, 7 and 8) by combining the above-mentioned activities to suit each project area. In particular, it was decided that three activities would be common to all project areas. These included the promotion of offshore fishing activities through FADs, shell polishing as an alternative source of income, and the collection and analysis of fishing activity data by fishermen's organisations.

Table 6. Draft pilot project plan for the northwestern Efate area (Mangaliliu, Lelepa Island and Moso Island).

Objectives	Establishing and strengthening coastal resource management organisations for relevant communities, and improving compliance with the MPA management plan
Activities	<p>Securing alternative livelihoods by promoting a link with tourism (e.g. joint sales of marine products caught, shell craft by communities, mariculture of ornamental Tridacna clams, and promoting giant clam — <i>Tridacna gigas</i> — raising sites for tourism)</p> <p>Diversifying fishing activities by promoting fishing outside reefs by introducing FADs</p> <p>Strengthening coastal resource management by strengthening community compliance with the MPA plan.</p> <p>Establishing and strengthening the activities of the MPA committee and fishery organisations</p>

Table 7. Draft pilot project plan for the Malakula area (Crab Bay, Uripiv Island, Uri Island).

Objectives	Revitalising the activities of the Crab Bay MPA committee by securing financial sources for coastal resource management activities
Activities	<p>Strengthening joint activities between communities: Joint introduction of FAD fishing by relevant communities; shell polishing by community women; ecotourism activities using the Crab Bay MPA, etc.</p> <p>Improved distribution of marine products caught: The development of joint fish collection points (fish markets); the sale of marine products caught in cooperation with the Lakatoro fish market</p> <p>Fishing activity diversification: The promotion of fishing outside the reefs through the introduction of FADs</p> <p>Coastal resource recovery: Releasing and raising marine shellfish (trochus and green snail)</p> <p>Organisational strengthening of the MPA committee and fishermen's organisations: The community-based collection and analysis of fishing activity data; the diversification of financial sources for MPA activities such as lending fishing gear, bee-keeping, selling kava, etc.</p>

Table 8. Draft pilot project plan for the Aneityum area (Analcauhat) — Activity development: Technical capacity building for VFD staff.

Objectives	The reduction of fishing pressure on spiny lobsters through fishing activity diversification and the introduction of alternative livelihoods
Activities	<p>Training of community fisheries extension workers: A trial extension worker system where community representatives recognized by the VFD serve as extension workers</p> <p>Securing alternative livelihoods: Cooperation with cruise ship tourism (the provision of cuisines using locally produced fish other than spiny lobsters; the production and sale of shell craft); the development and operation of joint collection points for marine products caught (fish markets)</p> <p>Fishing activity diversification: The promotion of fishing outside reefs through the introduction of FADs</p> <p>Strengthening coastal resource management activities: Strengthening the size restrictions for catching spiny lobsters and the expansion of the MPA</p> <p>Organisational strengthening of the MPA committee and fishermen's organisations: The community-based collection and analysis of fishing activity data; management of fish markets by fishermen's organisations, etc.</p>

Activity development: Technical capacity building for VFD staff

The impact of management actions on relatively sedentary shellfish is readily visible, more so than on reef fish, and facilitates acceptance of other CBCRM measures. Therefore, basic guidance for propagating shellfish was provided during Phase 1, and monitoring and further guidance provided in Phase 2. The release and raising of giant clams, done during phases 1 and 2, promoted community awareness of CBCRM. The idea was that VFD CEOs would conduct seed production independently, and the facilities of VFD's hatchery together with its operation would be improved. The *Tridacna* seed production was led mainly by VFD staff.

The project released fluted giant clams at Gideon's Landing beach — a privately owned beach in north-west Efate that tourists from Port Vila often visit — to promote community clam management as a resource for tourism.

The techniques for *Tridacna* mariculture using net cages had been established in Phase 1. However, seeds were supplied only to localities near Efate. The project set up the air transport of *Tridacna* seeds to remote areas, and in November 2013 transported seeds to Uri and Uripiv islands in Malakula, in addition to installing aquaculture cages there. The project monitored giant clams transplanted from Tonga to northwest Efate (Mangaliliu, Lelepa Island, Tasiriki and Sunae) in 2007. In Phase 1, green snails from Aneityum Island, the only place in Vanuatu to have experienced a stock recovery from overfishing (following a community initiative in cooperation with VFD), had been released at Mangaliliu, on Efate Island, which later formed a broodstock population. In February 2013, the project conducted a recapture survey and found evidence of reproduction.

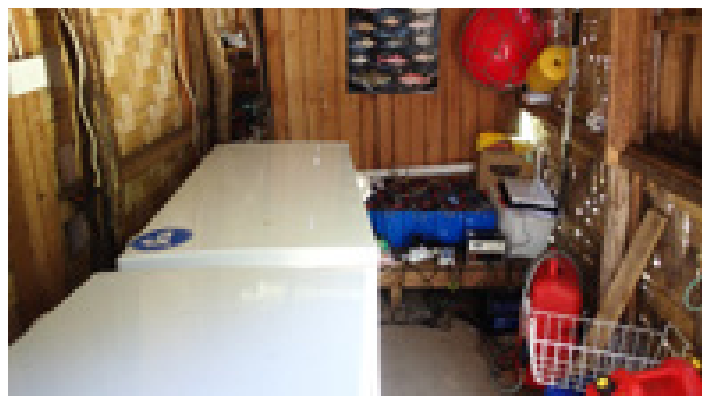
Common components of pilot projects

Community-based collection and analysis of fishing activity data

To properly conduct CRM, it is important to record and analyse coastal fishing activity data, and to apply it to adjusting catches and effort. Communities were encouraged to assemble their fishing activity records and understand the general trends and changes in their fishing activities. In addition, the aggregated results were used to consider future CRM activities for target communities. Easily understood data recording sheets were introduced when the first FADs were deployed and their management committees established, in November and December 2012. The project also created and taught community members to use a simple programme using Microsoft Excel, which allows each community to manage and use its fishing activity data. The

project provided a computer to the MPA committee or the FAD management committee in each project area. Only a few community members, however, continue to keep their records.

In the Aneityum area, the project installed two solar freezers and developed a fish market in Analcauhat. A joint collection point with a small solar freezer was also developed on Uripiv Island through the cooperation of the Japan Overseas Cooperation Volunteer (JOCV) programme. These fish markets are run mainly by local FAD management committees.



The interior of the fish market in Analcauhat community on Aneityum. Solar freezers and fishing gear are kept in the building.

FAD fishing management

A major issue concerning CRM in the target communities is that fishing pressure on the reef is high. Therefore, the project aimed at relocating activities outside the reef by using FADs. To disseminate FADs widely, a simple and inexpensive unit that could be installed and maintained by communities was essential. The FAD designed by the project costs approximately USD 1,000–1,500, depending on deployment depth, and because sandbags are used to anchor it. This FAD can be installed using a community's small boats. In November and December 2012, the first FAD fishing workshop was held, and a FAD committee was established in each project area, mainly by the workshop participants. In May and June 2013, a second workshop on FAD fishing management was held in each project area. Objectives included maintaining and inspecting the two installed FADs, and improving and teaching the trolling method of fishing in the waters around the FADs. For trolling, project staff introduced fishing gear as an alternative to the simple trolling currently practiced. In October and November 2013, a third workshop on FAD fishing management was held in each project area. The objective was to provide guidance on new fishing methods for catching offshore fish using FADs, such as a vertical dropline and diamondback squid drift vertical line, and to motivate the establishment of a user's group whose members would maintain the FAD themselves.



A member of the Aneityum FAD management committee measures and records fish when they are brought in to be kept in the solar freezers introduced by the project.



The Malakula FAD committee records in a notebook data on fish caught when they are received for storage in the solar freezer at the fish market on Uripiv Island.

Shell craft

Because women and children play an important role in resource management, working only with men and MPA committee members is not enough to promote CBCRM. Therefore, project staff helped MPA management committees establish women's groups to promote shell polishing and marketing. A major issue in shell craft and marketing was the lack of information for tourists on the origin and eco-friendliness of the products. Therefore, the project introduced an "eco-tag" for shell craft products. VFD and the Department of Tourism jointly produced eco-tags for use on shell craft merchandise

and a pamphlet about the products. An additional function of the eco-tags was for purchasers to appreciate the significance of shell polishing and marketing as a CBCRM activity, and that the proceeds were used to fund activities of the MPA committee.

Shell polishing activities became increasingly organised after workshops were held in each target site. From 5–7 February 2014, a shell polishing and marketing workshop was held at VFD in Port Vila, to enable the exchange of opinions among shell craft groups in each project site and to provide marketing guidance by local owners of souvenir shops.



- A Eco-tags used on a trial basis as a promotional tool for local shell craft.
- B Eco-tags used for shell craft marketing (from left to right: those used in Aneityum, Efate and Malakula).
- C The eco-tags are used as a promotional tool for shell craft.
- D In November 2013, the sales of shell craft began at a store on Mystery Island near where the cruise ships dock.
- E The poster and booklet (in Bislama) used to promote shell polishing and marketing.
- F Shell craft products made by women's groups from Aneityum and Malakula.
- G Shell craft made by the women's group were displayed as samples at the ceremony for legislation of the Crab Bay MPA.
- H The shell craft studio, equipped with a new solar power generation system (February 2014).
- I Shell craft workshop held on Uripiv Island, with a local instructor providing guidance on the basic techniques for making shell craft.

Projects in individual areas

1) Northwestern Efate

During Phase 1, an MPA committee was established in northwestern Efate. However, collaboration, including that for CRM, has been collapsing together with traditional governance via the chief system, due perhaps to a large influx of immigrants from other parts of the country. On the other hand, the area boasts excellent tourism resources such as the World Heritage Site of Hat Island. Taking advantage of this situation, a tourism approach was selected for northwestern Efate. To strengthen CRM capacity informally, several activities were conducted to instruct communities about management methods. Project staff conducted ocean nursery tests for *Tridacna maxima*, which can be sold to ornamental fish markets in Sunae and Tasiriki, on Moso Island. Difficulties resulted largely from the varying levels of awareness in the communities who volunteered to participate, and VFD was unable to provide enough technical support. As demonstrated by the successful cases of *Tridacna clam* aquaculture in Sunae, having core human resources in a village is a key to success. In June 2013, project staff distributed fluted giant clam seeds to the two families in Sunae who had performed successfully in the *Tridacna maxima* clam aquaculture tests, as well as to one clan on Lelepa Island and another in the Lelema area of Efate Island, who have aquaculture experience that they gained from Phase 1 of the project. They then started a full-fledged ocean nursery. If the aquaculture of the fluted giant clam and the giant clam can be launched in the future, *Tridacna* clam aquaculture can potentially provide an alternative income source for coastal communities.

To raise funds for FAD management activities, the management committee conducted FAD fishing trials, mainly involving communities from Lelepa Island and Mangalili. The management committee has been trying to sell fish caught from around the FAD directly to Port Vila Capital Market and tourist cottages. The committee has also been charging a user fee for sports fishing boat owners who use the FAD. The proceeds were used as activity funds for the FAD management committee. Fuel prices, however, are high in Vanuatu; a single trip using a 30–45 hp outboard engine to go fishing offshore costs at least 2,000–3,000 vatu.¹ This is one reason why communities hesitate to use offshore FADs. To promote the use of FADs, project staff constructed modified canoes that were inexpensive to build and would save fuel costs by using a sail. In January 2013, a canoe modification workshop was held in Mangaliliu. Project staff introduced a small canoe equipped with a sail and outboard engine, and alter, together with community members, began fitting existing canoes with sails and outboards. A

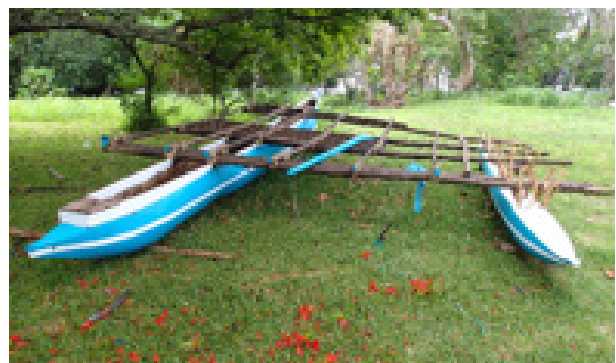
demonstration fishing trip using a modified canoe was found to save at least 10–15 litres of fuel worth about 1,500–2,000 vatu. The modified canoes are being used for everyday fishing and tourism activities in Mangaliliu and on Lelepa Island. Inspired by the concept, communities in Mangaliliu and on Lelepa Island have modified a large canoe using the FAD committee's profits from selling marine products.



Community members from Mangaliliu and Lelepa Island participated in the canoe modification workshop in January 2013.



Existing canoes were converted by project staff and community members.



The completed large modified canoe (December 2013).

New fishing methods such as dropline and diamondback squid fishing were introduced and trialled on two occasions with members from the

¹ 100 vatu = 0.95 USD (September 2016)

Lelepa Island community on Efate, and several diamondback squid were caught. In October 2014, diamondback squid processing techniques were introduced to people involved in tourism and fisheries in Port Vila. Samples of processed squid were also provided to hotels and restaurants in Port Vila.

2) Malakula Island

On Malakula, the Crab Bay MPA committee, which was established more than a decade ago, provides an excellent example of a CRM committee. However, its activities became moribund owing to the lack of a sustainable finance system. The main goal on Malakula Island, therefore, was to strengthen the finances and organisation of the Crab Bay MPA committee and increase the monitoring area and the number of marine species under management. To diversify funding for the Crab Bay MPA activities, support was provided to encourage foreign yachts to visit the bay, and mooring buoys and a tank to catch rainwater were installed. Visiting yachts would be charged to use the moorings, and the proceeds would be used to finance committee activities. The MPA committee borrowed a mincer to produce kava that was then sold at community and church events. The mincing machine helped increase committee profits.



In July 2013, members of the MPA committee set up a place for yachts to moor in Crab Bay. It is a potential new source of funds for resource management.

At the Coastal Resource Management Planning Workshop in Port Vila, hosted by VFD in late February 2013, the Crab Bay MPA Committee made legislating the Crab Bay MPA part of the action plan. This came about because it was difficult for local communities to independently maintain the MPA scheme under the chief system. With support from the International Union for Conservation of Nature, and led by the Crab Bay MPA Committee and the Malampa Province Fisheries Department, the committee applied to the Ministry of Lands and Natural Resources for the MPA to be legislated. Workshops on rewriting coastal resource

management plans were held in the 16 communities around Crab Bay between late September and early October 2013. Based on the results, Crab Bay was announced as a legislated MPA on 19 December 2013, and the revised MPA management plan was published as a pamphlet. Given that full support was given to resource management activities of the Crab Bay MPA Committee, legislation of the Crab Bay MPA was regarded as a major success of the project.

Through the Japan Overseas Cooperation Volunteer programme, a rural fish market was built on Uripiv by the island community, and a small solar-powered freezer was installed. As a result, catches of fish can now be kept frozen on the island before being shipped in bulk to the Lakatoro Fish Market. Also, because the fish are almost all stocked and stored for market, catch records are now made at the fish market. The market is managed by members of the FAD management committee, and organised as part of the project. Spurred by the activities on Uripiv Island, the Crab Bay communities began preparations for a similar fish market in Louni. The youth group within the MPA committee purchased materials for a market building, using funds coming from various activities, such as the selling of kava.

3) Aneityum Island

Several activities were undertaken to reduce fishing pressure on lobster using the community extensionist system. These were: starting a fish café business, running a “cooking with fish” workshop, building a modified canoe, and establishing a fish market.



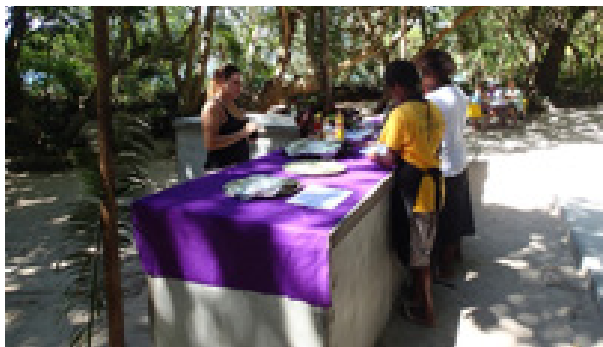
Tourists from a cruise ship, waiting for their fish dishes at the fish café.

Mystery Island, adjacent to Aneityum, is visited annually by over 70 cruise ships. However, the only local food item targeting tourists is the spiny lobster, resulting in heavy fishing pressure on this species throughout the entire island of Aneityum. To diversify the local foods offered to tourists, a “fish café” business was set up to encourage the use of underutilised fish resources.

From 27 July to 3 August 2013, a workshop on cooking with local fish was provided, and was attended by 15 people from the communities of Analcauhat. Instruction focused on four different fish dishes and coconut juice cocktails, and procurement and cost calculations. The three days of trial sales at the workshop generated about 270,000 vatu in sales. By late September, the Café Management Committee had sold fish dishes to tourists five times, with average daily sales of approximately 60,000 vatu. Two additional fish restaurants opened on Mystery Island, both modelled on the original fish café.



Sample of an à la carte dish taught at the “cooking with fish” workshop.



Operating conditions of the fish café on Mystery Island (28 November 2013).

In conjunction with the fish market and the introduction of a solar freezer, a market management committee was established by members of the FAD management committee. In effect, the market is operated and managed by the FAD management committee. All of these activities are controlled by the community extensionist.

Making CRM plans and conducting national and regional seminars

Rather than the project or VFD drafting plans, it was emphasised that the communities were expected to formulate, independently, their own implementation plans, based on the experience of the pilot projects. As a result, with the assistance of VFD, communities organised their own planning workshops and drafted their own fishery management plans.

For example, the First Coastal Resource Management Planning Workshop, held in February 2013, was attended by three-to-five community representatives involved in CBCRM activities from each target area. The main topic of this workshop was that the CBCRM plans were not working well. Community representatives listed the issues (problem analysis), and examined potential solutions to them (objective analysis). The content of existing MPA management plans was reconfirmed, the revision of details was discussed, and CBCRM action plans were undertaken by the communities.

Feedback seminars were also held in each target area to deepen local discussion, and workshop participants explained their action plans to community members in terms of preparatory procedures, implementation, and support from the project and VFD.

In February 2014, community members from northwestern Efate and Aneityum visited Crab Bay and Uripiv Island. This was an important “farmer-to-farmer” study tour to understand CRM and livelihood improvement activities implemented by Crab Bay communities. The visitors were particularly interested in the cooperative activities of the Crab Bay MPA management committee, especially with regard to schemes to fund activities, and the Uripiv fish market. Given their inability to develop a successful cooperative relationship, the representatives from northwestern Efate were surprised by the level of cooperation of the 16 Crab Bay communities. The representatives from Aneityum were interested in the fact that the solar-powered freezer, FAD fishing equipment, tools for making shell craft and other items were being managed collectively and stored at the fish market. They spoke of developing facilities on Aneityum using a similar concept.

After the first CRM planning workshop, and in cooperation with JICA, FLAMMA (Fiji Locally Managed Marine Area) held a joint seminar with stakeholders from Fiji, Tonga and Vanuatu in December 2013, to share lessons learned from similar activities. By visiting project sites, participants from Vanuatu learned things to apply in their own communities. And other regions paid attention to activities being implemented in Vanuatu.

The second Coastal Resource Management Planning Workshop was held in February, 2014 to: 1) examine the progress of the pilot projects, 2) distil

lessons learned, and 3) formulate CRM action plans and activity schedules for the following three-to-five years. Community representatives from each site participated in the workshop together with VFD personnel and Japanese specialists. Community members themselves conducted this workshop with the cooperation of VFD staff.

In northwestern Efate, following Phase I, each target community managed its resources individually, focusing on raising giant clams and green snails. The pilot project had heightened awareness of the need for communities to join regional efforts in CRM. For this purpose, in May 2014, Mangaliliu and Lelepa Island re-established the Lelema MPA committee in order to extend the MPA area and conduct CBCRM activities.

On Malakula, efforts to manage the land crab resource was already underway, and in addition to keeping records on land crabs shipped from the Lakatoro Market, the sale of gravid females has been prohibited. Measures to manage mud crabs have also been incorporated into the action plan.

To strengthen CRM activities on Aneityum, measures incorporated into the action plan included a review of traditional systems for community governance, the establishment of a new Fisheries Cooperative Association, expanding the MPA to include reefs at Analcauhat mainland area and surrounding Mystery Island, and continuing to collect fisheries data and enabling the communities to use it. The subdivision of the Analcauhat management area of the mainland into five management zones, in line with the traditional land tenure system and individual clan ownership, further improved the monitoring of management measures. Under this system, the community has ownership and direct control of the management of their coastal resources

Plans to further promote a number of initiatives led by community organisations were introduced into the pilot projects. These supporting measures to the management plan included the promotion of FADs, reduction of fuel costs through modified canoes, improvement of women's livelihoods through shell craft and value-adding to local fishery products, and operating fish cafés and roadside shops. In northwestern Efate, diversifying livelihoods based on villages' proximity to Port Vila was incorporated into the action plan.

During the February 2013 workshop, participant community representatives performed a key role in formulating the one-year action plans for CRM. Given that the pilot project had not yet reached its midpoint, the action plans were not specific. However, at the second workshop, community representatives could formulate more realistic action plans based on the experiences gained from the pilot projects and observing other sites. The second workshop also enabled communities to clarify how

they could independently carry on CRM activities without the direct support of the project.

Armed with the draft action plans for CRM for the next three to five years, participants returned to their communities to share the plans with other community members. Feedback seminars, participated in by 20–30 community members, were held at each project site with an aim of focusing the plans. Where necessary, a counterpart from VFD provided guidance. These seminars enabled the details of the action plans to be conveyed to community members and future activities to be organised clearly and concisely.

A major result of the Second CRM Planning Workshop was a booklet of CRM action plans compiled for each area. Further, MPA management plans were amended, including expansion of MPAs to other districts, increasing the number of protected species, and adding new communities.

A national workshop (7–10 October 2014) and a regional seminar (13–16 October 2014) were held to share and disseminate project results. Both were co-sponsored with the Pacific Community (SPC). Participants in the national workshop included 12 community representatives. Group discussions were divided by target province. Participants visited project sites in northwestern Efate to observe community CRM initiatives. In addition to officials from VFD, the regional seminar was also attended by representatives from the fisheries departments of Fiji, Solomon Islands, Tonga and Samoa, as well as from SPC's Fisheries, Aquaculture and Marine Ecosystem Division, and the School of Marine Studies of the University of the South Pacific. The objective of the seminar was to share CBCRM initiatives and organise regional cooperation. Issue-specific groups were based on the three themes under the conceptual structure of CBCRM with three perspectives comprising the content of the pilot projects: FADs, shellfish aquaculture, and livelihood improvement activities. The conventional FAD model disseminated by SPC is both expensive and difficult to deploy in rural areas such as Aneityum, where shipping services are irregular. The project FAD, on the other hand is inexpensive, easy to deploy under rural conditions, and durable. Therefore, requests were received for regional training in its construction and deployment.

Various initiatives for improving the livelihoods of coastal communities are in place in each country, and common to each are handicraft making, including shell craft, coastal tourism activities, and the farming of tilapia and freshwater prawns. Livelihood improvement activities require a comprehensive approach rather than just providing technical advice because it is also important to provide target communities with guidance in management, sales and organisation.

Cooperation with organisations

Collaborative activities conducted in pilot projects included a survey, in cooperation with SPC, of the green snail and trochus off Northwest Efate and Aneityum, and marketing shell craft by women's groups with the Department of Women's Affairs in the project areas and with the Department of Tourism to affix ecotags to shell products. The manager of programmes at Wan Smolbag Theatre, a local NGO engaged in environmental programmes, explained that as part of a mini-seminar with a local community on Aneityum, the NGO's Sea Turtle Protection Program and the importance of "Fishing Activity Record Sheets" were being recommended by the project.

Project achievements

The project strengthened the capacity of VFD to support CBCRM, target areas where communities successfully acquired skills in CBCRM approaches and tools, and the experiences gained was disseminated.

Strengthening VFD capacity

VFD counterparts worked closely with the project staff to conduct a baseline survey, and through it learned how to conduct an initial survey intended to elucidate motivation for undertaking CBCRM and existing local organisations and institutions to support it. VFD counterparts experienced the entire process of conducting workshops and a questionnaire survey by instructing and overseeing surveyors recruited from each community, thereby acquiring broad skills in practical social science methodology. Using the baseline survey, existing MPAs were upgraded, providing a basis for drafting CBCRM plans. The VFD counterparts monitored activities in each area, analysed their monitoring results and prioritised their support for the activities. Thus, they could understand both community perspectives on activities and the types and levels of support they could provide during planning and implementation. VFD counterparts provided training, coordinated with the Vanuatu Institute of Technology, and also experienced the installation of smaller FADs. VFD gained experience and "know-how" in several activities related to CBCRM, including: giant clam ocean nursery management, released shells monitoring, data collection on fishing activities, and FAD fishing technique skills. The project incorporated these supporting measures into the entire CRM by providing direct benefits to the communities, so that a cycle of resource management emerged.

Community acquisition of CBCRM-related skills

It was observed during the project that a mechanism of CBCRM in the target communities has been strengthened. The target areas already had MPA committees managing taboo areas before the

project was implemented, but through discussions and activities among all stakeholders, the MPA committees became more active and there was greater involvement of community members as a whole, plus various sub-committees and groups, such as FAD management committees, shell polishing groups, and a fish café group. In rural areas where full government support and services cannot be expected, responsibilities can be delegated effectively by the government to the area, where various participatory committees and groups are established under the framework of CBCRM. The experiences of this project demonstrated that such an integrated management approach was successful with a higher degree of participation of motivated community members. In addition to the workshops and training programmes provided at each site, joint workshops and mutual study visits were conducted, and these motivated the participants. Examples include: 1) a visit to Aneityum that stimulated representatives from other pilot areas when they observed how the reef environment on Mystery Island had revived in 10 years, after most coastal resources had been depleted; 2) an MPA member in northwestern Efate learned from a member from Aneityum that it would be effective to keep shellfish close to each other in the protected area when releasing them for easier reproduction; and 3) observations of shell crafts made in other areas provided good ideas for diversifying their own products.

Lessons learned from the project

1) The relationship among the four perspectives of CBCRM

Close consideration must be given to the relationship among the four perspectives of CBCRM. In Aneityum, for example, the community extensionist approach (the institution and/or governance perspective) was linked with FAD fishery management, shell polishing and a fish café (the economy or production perspective), thereby strengthening community organisation (the sociocultural perspective). However, in Malakula, strengthening existing organisations and/or collaboration among the different communities' approach (the sociocultural perspective) ensured the serious commitment of the community, which led to external assistance from the government and NGOs (the institution and/or governance perspective). Given that different approaches generate different synergistic effects, these simple examples demonstrate the importance of carefully considering the best combination of the four approaches to suit the conditions and constraints in each individual area. It is equally important to understand that there is no generic combination applicable to all areas.

2) Inclusion of wider social segments of the community (cluster approach)

The FAD fishery management workshop motivated fishermen. However, the number of community members with access to a FAD for fishing was limited. As a consequence, the community was initially little interested in CBCRM. Later, community members began to develop various activities, including modifying canoes, shell polishing, and building a fish market and fish café. Gradually, this participation of wider segments of the community enabled the successful promotion of CBCRM.

3) Involvement of clan chiefs

During Phase 1, community chiefs and youth leaders worked for the project. However, they could not establish an MPA management committee owing to the lack of understanding of it by community members. Possibly the underlying reason was that the project did not properly involve clan chiefs, the people with the power to manage the reef area. So, in Phase II, the participation of clan chiefs was requested, which led eventually to the formation of a CBCRM committee.

In northwestern Efate, the project's target site during Phase I, an MPA committee was not established owing to the lack of awareness about CBCRM among community members. The project believes that the situation arose because of the weakening of the traditional governance system and a low dependence on coastal marine resources. However, after the second FAD fishery management workshop, a clan leader on Lelepa Island showed interest in the FAD fishery, and became the leader of the FAD management committee. Awareness of CBCRM within the community began to increase after this. This clan leader exerted strong leadership not only in relation to the FAD fishery but also in CBCRM planning and other activities. Through these activities, he realised the high potential of tourism development in the area and began to convince the chiefs of other clans. Without his understanding of the linkage between CBCRM and tourism development as a supporting measure for CBCRM, the creation of the Lelema CBCRM committee would not have been possible.

4) Thorough participatory CBCRM planning and implementation

The project always ensured community participation in CBCRM planning and implementation. Through workshops, community members made their own CBCRM plan, with support from VFD and project staff. Through the planning, implementation, review and updating of CBCRM plans, community members became self-reliant and capable of sustained promotion of CBCRM.

5) Feedback on project achievements

The project always ensured feedback to community members. For example, the results of the baseline

survey were presented to the community, CBCRM plans made in Port Vila with the representatives of each site were taken back to the community for further consultations, and the fishing data collected and analysed was presented to the community. These types of feedback to the community were critical in order for the community to understand the importance of CBCRM.

6) Study tours

In Vanuatu, there is little opportunity for exchange programmes. Through the study programme organised during implementation, the project demonstrated that even if just for a few days, community members can learn many things from each other by discussing and observing project sites.

7) Collaboration with various local resources

Collaboration with various other groups and organisations facilitated a higher level of promotion of CBCRM than would have been possible had the project operated independently. As a result, the project collaborated with various local resources in addition to VFD. For example, a young leader in Mangaliliu worked as trainer for shell polishing and taught basic skills to women's groups. The owner of a handicraft shop in Port Vila gave advice to community members during the shell polishing workshop. Trainers from the Hospitality Tourism and Leisure Training Centre in Port Vila came to Aneityum to teach the basic skills needed to manage a fish café. The Department of Tourism cooperated to promote giant clam farming and the production and marketing of local polished shell products.

8) Collaboration with relevant organisations

One key to the project's success was timely collaboration with national and international organisations. Whereas Phase 1 of the project focused mainly on resources and the environment, Phase 2 focused on the other three perspectives important for CBCRM: economy/production, sociocultural factors, and institutions/governance. Development of activities based on the various perspectives brought timely collaboration with relevant organisations such as the Department of Environment, the Department of Tourism, the Department of Cooperatives and Ni-Vanuatu Business Service, and NGOs. The timely collaboration also contributed significantly to motivating communities to engage in CBCRM. The resource and environment perspective was not the main focus during Phase 2. Therefore, the collaboration with the French Research Institute for Development (IRD) and SPC for stock assessment was indispensable. Their survey and feedback to the community enhanced awareness of CBCRM and motivated communities to become involved in it. In particular, the demonstration of green snail reproduction made by IRD and SPC in Efate, and

the survey of the potential use of coastal resources for tourism development by IRD were important for community motivation.

9) Collaboration with other schemes such as training and volunteering

A contributing factor of the project's success was the collaboration of former participants of JICA training. Of eight VFD counterparts, six were former participants in JICA training courses. Through those courses, the VFD staff understood the fisheries management system of Japan, as well as project cycle management and rapid rural appraisal. As a result, from the beginning, these individuals could facilitate the community participatory workshops for CBCRM planning. They also trained community members on how to organise and coordinate the community.

A JOCV and senior volunteer also played an important role in the project. The JOCV assigned to the VFD office in Malampa Province worked together with youth leaders in the community. The senior volunteer assigned to the Hospitality Tourism and Leisure Training Centre was made possible by the training on cooking in Aneityum and the introduction of a fish café.

With cooperation from the expert assigned to USP in Fiji, counterparts from VFD and local communities participated in the FLMMA-JICA joint seminar in Fiji. A youth leader from Malakula participated in JICA training in Okinawa on ecotourism. He worked hard to promote Crab Bay as a tourism destination.

From these experiences the project recommends a well-designed framework for implementation that enables smooth collaboration with other projects and schemes, such as training and JOCV.

Conclusions

The most important achievement of CBCRM is to allow the recovery of resources and, where possible to increase their productivity. However, accurate stock assessments are difficult, costly and affected by natural uncertainty. Hence, just checking whether a resource has recovered or increased could

mislead the evaluation of a project. The project not only contributed to the self-reliance of communities and the capacity-building of VFD staff, but also influenced VFD policy and SPC cooperation in the Pacific region.

However, the effectiveness of the four approaches remains a hypothesis proven only in the target sites of this project. For this hypothesis to be useful and have a wider applicability and replicability throughout the region, it is important to start another project to test the hypothesis in a timely manner, and in the long term.

In the South Pacific region, self-sustaining development is difficult owing to the disadvantage of small island states, such as their high dependency on foreign aid and remittances, and limited governmental capacity. Experience indicates that in many cases outputs and achievements eventually shrink after the completion of projects. If started too late, the next project would require additional inputs to recover the lost outputs and achievements. Therefore, timely and continuous support is essential.

For regional development to occur in the South Pacific, including Vanuatu, the sustainable use of marine resources, especially fisheries resources, is indispensable. In most cases, the level of exploitation of the beyond-the-reef fisheries resource is low, and the domestic fishery depends heavily on reef resources.

The project promoted CBCRM and its supporting measures to ensure sustainability after completion of the project. Diversification of fisheries, distribution and marketing, and value-adding through the fish café were introduced. Moreover, the linkage with tourism and the production of shell polishing brought wider segments of the communities into CBCRM, particularly women and children.

The experience gained through this project indicates that comprehensive community development can promote CBCRM, and that community development through CBCRM can be quite effective for small island states.

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Pacific Community, Fisheries Information Section
BP D5, 98848 Noumea Cedex, New Caledonia
Telephone: +687 262000; Fax: +687 263818; cfpinfo@spc.int; <http://www.spc.int/coastfish>