Good Coastal Management practices in the Pacific

Experiences from the field

SPREP PROE

ICRI
International Coral Reef Initiative

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2011

The International Coral Reef Initiative (ICRI) is a unique-public partnership that brings together governments, international organizations, scientific entities, and non-governmental organizations committed to reversing the global degradation of coral reefs and related ecosystems, by promoting the conservation and sustainable use of these resources for future generations. The ICRI secretariat is currently co-chaired by France and Samoa, in relation with Monaco. In an effort to improve regional cooperation and enhance the regional focus of ICRI's work, a full day of the last ICRI General Meeting was devoted to the Pacific region. One of the recommendations from this day was the development of a guide on good coastal management practices in the Pacific. With support from the French Government, the SPREP was tasked to coordinate this activity on behalf of the Secretariat.

For more information about ICRI: www.icriforum.org

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Good coastal management practices in the Pacific

The Pacific Islands and their Ocean

The Pacific Ocean occupies around 180 million square kilometers, equivalent to half of the Earth's sea surface and more than a third of the Earth's surface overall. Some 200 high islands and 2,500 low islands or atolls make up the 22 Pacific Islands Countries and dependent Territories (PICTs)[1]. The PICTs have exclusive rights to the exploitation of approximately 30 million square kilometers of sea area delimited by their Exclusive Economic Zones (EEZs), though their land mass comprises just over half a million square kilometres, 84% of which are accounted for by Papua New Guinea.

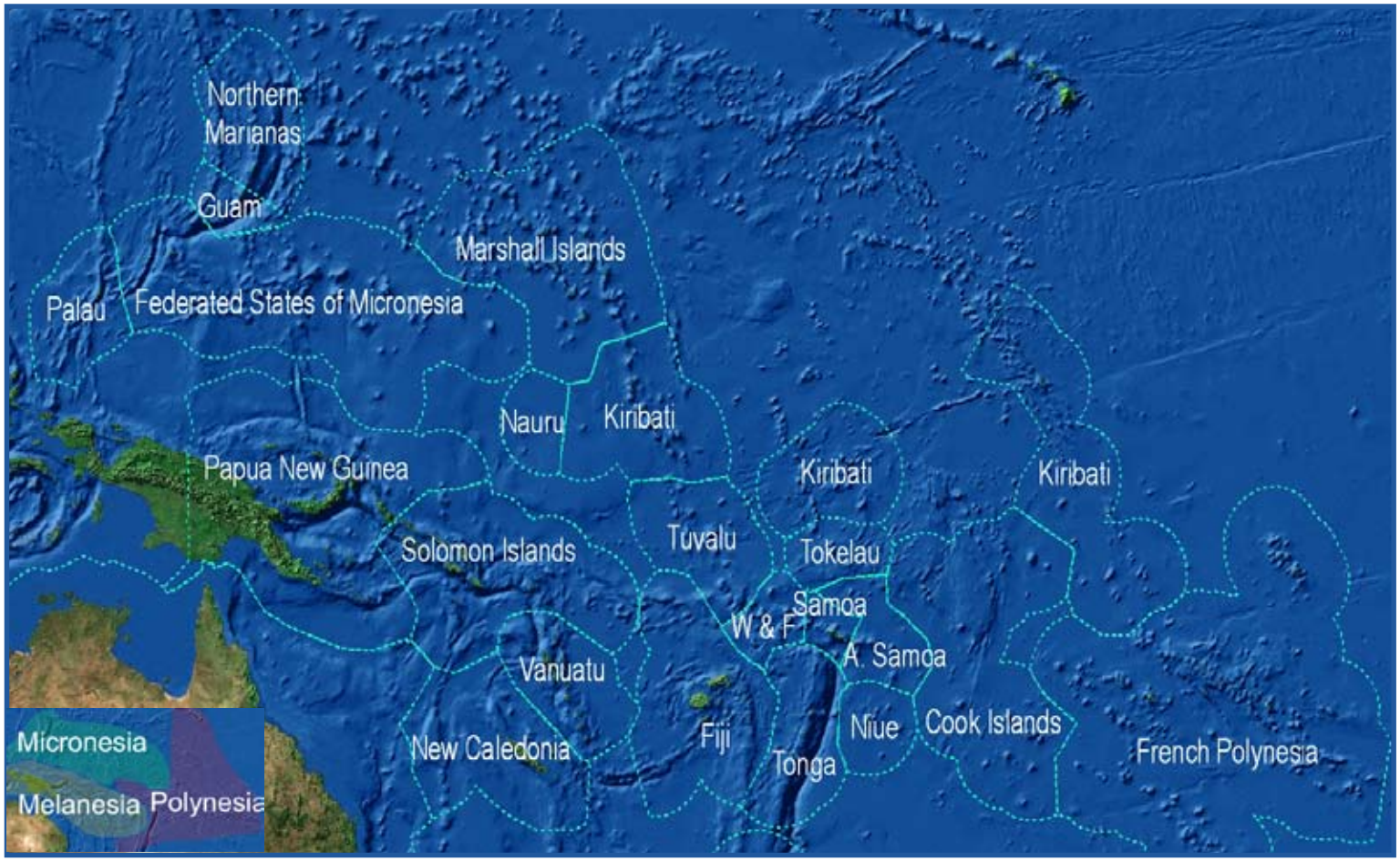


Figure 1. Pacific Island Countries and Territories (PICTs) showing boundaries of Exclusive Economic Zones. Inset shows Melanesian, Polynesian and Micronesian regions referred to in the text.

Pacific Islands' diversity

Although often described and considered as a single region, Oceania or the Pacific is in fact extremely culturally diverse with over one thousand different ethnic groups and languages. The bulk of these ethnic groups are found in the high islands of Melanesia in the Western Pacific, the four westernmost Melanesian countries consistently rate amongst the 15 most culturally and linguistically diverse countries in the world[2]. Melanesian countries account for 98% of the region's land mass, three quarters of the region's coastline[3] and account for 88% of the region's total population. The relatively land and resource-poor atolls and small islands of Polynesia to the West and Micronesia to the North account for 7% and 5% of the population respectively, inhabiting a minute fraction of the regional land mass but with rights over three quarters of the regional EEZ. Twelve Pacific countries are independent and governed by their indigenous populations but the remaining 10 continue in some form of association with France, New Zealand, USA or the UK.

The Pacific region is one of the world's centres of biological diversity or species richness (Figure 2). The region possesses the most extended coral reef system and the highest marine diversity in the world, particularly in the western Pacific in the area known as the Coral Triangle. Evolutionary processes, in combination with regional geography, have led to high endemism and biological diversity in terrestrial species, particularly on larger islands. However, the terrestrial, and marine biodiversity in particular, is still considered to be poorly inventoried or understood by western science[4].

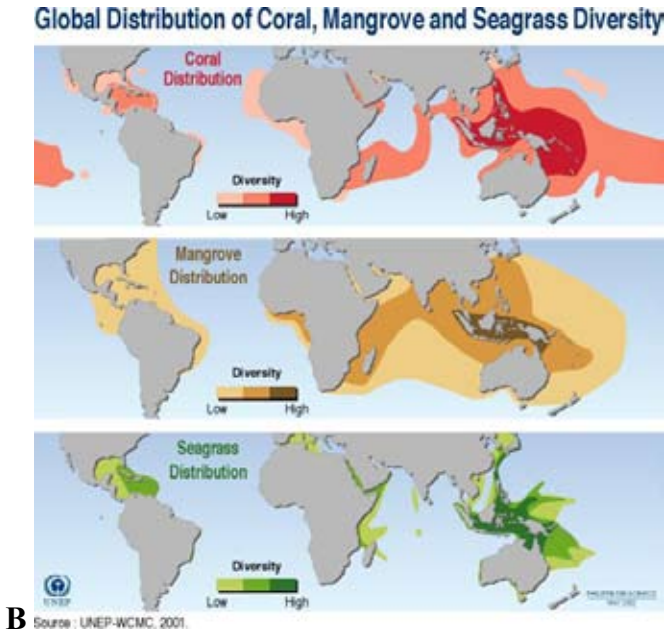
1 World Bank 2000b.

2 Harmon and Loh 2004, Loh and Harmon 2005.

3 Population and land area data are all for 2011 from Secretariat of the Pacific Community (http://www.spc.int/prism/), EEZ and coastline data from Pacific Islands Applied Geoscience Commission (http://www.sopac.org)

4 McIntyre 2005

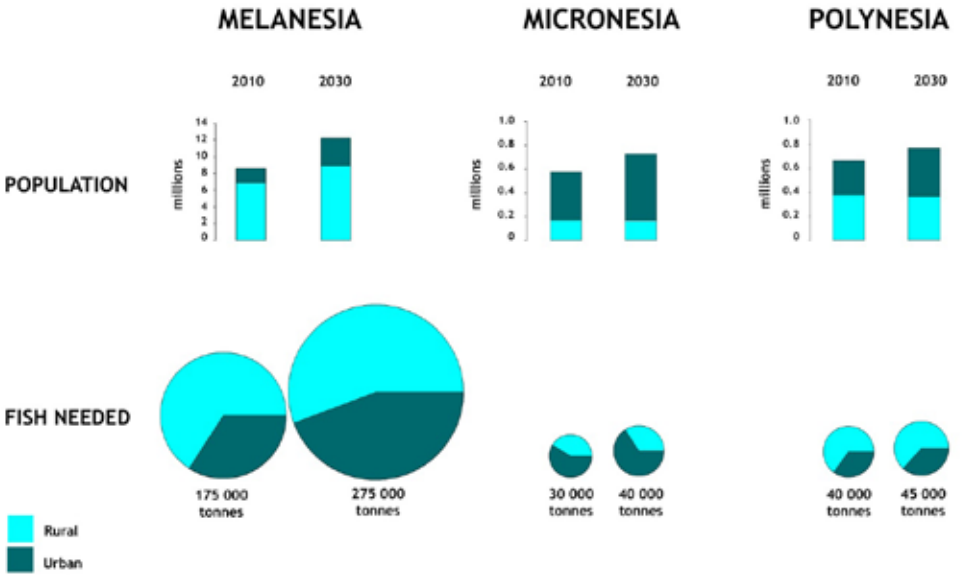
Figure 2. Marine biodiversity in the Pacific Ocean. Global distribution of coral, mangrove and sea grass diversity (UNEP/WCMC 2001)



Pacific Islands' challenges

The population of the PICTs exceeded 10 million in 2011 and is projected to double in the next 30 years. Population growth combined with poor economic performance and growing inequalities within countries is leading to problems associated with poverty in most of the independent countries[5]. The Western Melanesian countries of PNG, Solomon Islands and Vanuatu have high levels of poverty, relatively low development, high and rapidly growing populations, low employment, weak economies and poor public sector capacity. All the PICTS are highly vulnerable to economic and environmental impacts and with their high population growth and weak resource bases the atoll nations of Kiribati and Nauru are of particular concern.

Figure 3. Projected population growth in rural and urban areas of Melanesia, Micronesia and Polynesia to 2030, and the fish needed for future food security (Secretariat for the Pacific Community and Bell et al. 2007).



The future of Pacific Island peoples is inextricably linked to their terrestrial and coastal biodiversity and ecosystems, with high levels of participation in small scale fisheries for livelihoods and high reliance on fish as the major source of protein. However, due to pressures on coastal resources from population growth, commercial fisheries exploitation, destructive fishing and factors external to the fisheries sector (e.g. climate change) the security of these benefits for Pacific populations is threatened (Figure 3). Biodiversity is already paying a price and species extinction rates are reported to be among the highest in the world[6]. In Melanesia very high population growth and a lack of alternative livelihood and protein sources suggests that projected food requirements will be well in excess of what coastal areas are likely to produce[7].

Functions and benefits from this Pacific Island coastal biodiversity and ecosystems extend far beyond that of sustenance or income generation and include such vital functions as protection from extreme natural phenomena and providing a central element of Island society and culture - the very identity of Pacific Islanders[8]. Effective management is critical to maximize security of the functions and benefits from coastal biodiversity and ecosystems to Pacific populations into the future.

5 UNDP 2007, NZAID 2002, Lightfoot et al. 2001.

6 McIntyre 2005, Chape 2006

7 See for instance Bell, J. 2007, Commission of the European Communities, 2000, Gillett and Lightfoot 2002, Gillett and Cartwright 2010 and UNDP 2002.

8 Whittingham et al 2003, Johannes 1981, Hviding 1996

Pacific Islands' solutions?

The independent Pacific Island countries have tended to inherit forms of government that are ill suited to their geographical and social realities. Centralized governments have been challenged, due to inadequate capacity and ill-fitting strategies, to manage coastal resource use in diverse and geographically expansive Pacific nations. The "command and control" approach to policy and regulation has clashed with customary resource tenure and systems of local governance that persist and are prevalent in almost all the PICTs.

Between 81-98% of the land in independent Melanesia and Polynesia remains under some form of customary tenure. Group or individual rights of use and access to land through customary processes still remains one of the main components of ethnic and national identity. The relationship between people and their land and sea may define, among other things, the duty of care that people have to others, to future generations as well as to the environment and is embodied for instance by the *vanua* in Fiji, *fenua* (Tuvalu), *enua* (Cook Islands) and the *puava* (Marovo, Solomon Islands). In fact, similar concepts are to be found in most of the traditional Pacific societies. These cultural relationships affect resource allocation and promote responsible environmental stewardship[9].

A shift in resource management strategies has occurred over the last decade or so, building on some of the regional strengths highlighted above – diversity, traditional tenure and local governance. Globally, we have seen greater recognition and integration of local aspirations and livelihoods into conservation and inshore fisheries management actions via, collaborative and participatory approaches[10]. In many respects, the Pacific has taken the lead with hundreds of communities in Fiji, Vanuatu, Solomon Islands, Samoa, Papua New Guinea, Tuvalu and Micronesia now proactively managing their coastal resources (Figure 4). This shift in focus and policy towards Community Based Resource Management over the Pacific region is unprecedented on a global scale[11]. Although it may appear that community based resource management is re-assertion of traditional approaches, it more truly represents a process of hybridization between traditional and contemporary governance systems and knowledge.

The critical role local communities can play in managing coastal resources has now been amply demonstrated. Many coastal communities of the Pacific employ small protected areas, traditional fishing reserves and/or local management plans. However these localized actions will not be sufficient to secure biodiversity and benefits from coastal ecosystems unless integrated into wider management processes via integrated coastal management (ICM) that addresses livelihoods, development, inshore fisheries and conservation as a whole[12]. In the Pacific the area to be managed would cover all the island areas in a ridge to reef approach, ICM would be more realistically viewed as integrated island management and achieving its potential will involve developing strategies that integrate sectors previously considered separately; namely conservation, fisheries and livelihoods in addition to addressing some of the challenges mentioned below.

Roviana Lagoon, Solomon Islands © Hugh Govan

Good coastal management practices for the Pacific

Despite regional agreements on the importance of integrated management of coastal and marine areas dating back nearly a decade[13], ICM is still in its infancy in the region and the good practice examples in this compendium have been selected to illustrate potential ways forward and solutions to some of the challenges for coastal management in the region including:

Integrating coastal, catchment and island management

The threats facing coastal areas, with the possible exception of climate change associated events, are principally land based. These threats include infrastructure development, logging, agriculture, waste management and the resource needs of a growing population. The need to approach management in an integrated way, yet in line with traditional approaches (Case 3), is an area that has been slow to demonstrate good practice except in some aspects of conservation planning (Cases 11 and 13) and waste management (Case 10). Some community level work has achieved wider scale impacts by forming alliances between neighboring communities (Case 1 and 7) and emerging work on practical ecosystem-based and catchment management approaches is promising[14].

9 Lal and Keen 2002, Hviding 1996
10 Govan 1997, Whittingham et al. 2003
11 Govan et al. 2009
12 Whittingham et al. 2003, Bell et al. 2006, World Bank 2006
13 Cf. Pacific Islands Regional Ocean Policy and review in Pratt and Govan 2010

Enhancing the role of government and strengthening the enabling environment

The local management practiced by communities, often with the support of non-government organizations (NGOs), can conflict with top down "command and control" approaches more typical of governments. Institutions and legal mechanisms need to be adapted or created to foster linkages between governments, NGOs and communities to improve support to, and coordination with, community achievements. Many of the cases presented in this report deal with developing these relationships (Cases 1, 3, 7, 9, 15) and engaging with legal and policy frameworks (Cases 12 and 13). However the meshing of customary and modern legal systems is not without ongoing challenges (Case 8).

Aleipata islands and MPA, Samoa. © Stuart Chape

Achieving multi-sector partnerships

Improving coastal management requires collaboration between a multitude of sectors within government (Case 13), between government and civil society (Case 9) and with the private sector and other stakeholders (Case 4). In the past, environment and conservation agendas have been poorly aligned with fisheries interests, however there are now increasing trends towards improved collaboration and coordination between the two sectors (Case 11).

Sustaining support and achieving cost effectiveness

A particular challenge, which is slowly being addressed, is moving from localized or small-scale pilot coastal management activities to national approaches. Key challenges to "up-scaling" include designing sustainable finance strategies such as self-financing (Case 4) or adoption into national institutions and budgetary support (Case 12). A key issue in either case is an increased emphasis on the cost-effectiveness of mechanisms and structures supporting on-the-ground coastal management actions (Cases 1, 2, 3, 6, 10, 14, 16).

Providing appropriate information through education, awareness, monitoring or research

Information and awareness at local, national and international levels is vital to successful coastal management. However the form, generation and dissemination of information to best meet needs and positively impact on management actions is far less clear. To date the financial costs of scientific research and monitoring appear to have far exceeded investments in actual management of coastal areas. Using locally available information with simple approaches to community monitoring is a cost effective solution (Case 2) and collaboration with government or regional technical agencies for generating highly technical and specific information such as stock assessment is another (Case 5). Networks of communities and support agencies can assess information needs common to many communities, coordinate responses and disseminate information.These networks have shown good results at the provincial (Case 7), national (Case 9) and regional scales (Case 15).

The good practice coastal management case studies

This report presents a series of case studies of coastal management initiatives from a wide a range of countries and territories throughout the Pacific region. Case studies illustrate examples of local, provincial, national and regional scales of actions. The initiatives and lessons described in case studies are;

- locally and culturally appropriate,
- suitable to national institutional structure and capacity,
- supported by evidence or considered to have a high likelihood of success,
- cost effective and potentially sustainable or promoting sustainability,
- potentially applicable elsewhere

14 Fenemor et al. 2010, Wilkinson and Brodie 2011, Govan et al 2011

The cases selected and shown in Table 1 and Figure 4 represent a small sample of much good work being done in the region. Each case study includes a map showing the location of the intervention and also an overlay including the latest available hard coral distribution[15].

Figure 4. Map of the Pacific region showing distribution of the selected case studies and also location of Marine Managed areas (Govan et al. 2009).

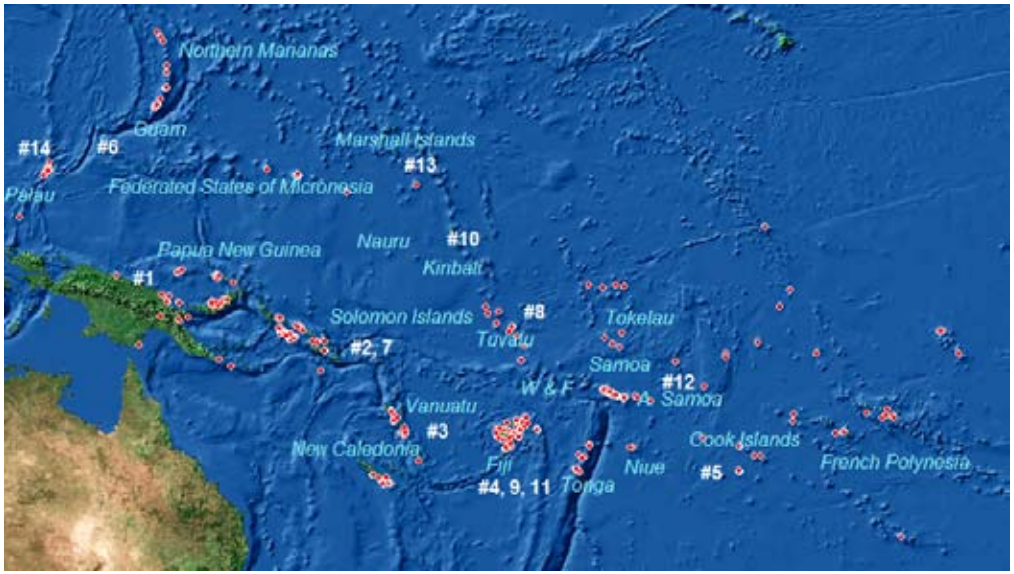


Table 1: Good practice in coastal management in the Pacific: Case studies

#	Country	Case
1	Papua New Guinea	M'buke Ailan Marin Menesmen Eria, Manus Province, PNG: From local management to province wide low cost approaches to build self-reliance
2	Solomon Islands	Community-based management of marine resources in Jorio, Vella Lavella, Solomon Islands: Adaptive management and the "dashboard" approach to community monitoring
3	Vanuatu	Marou and Emua, North Efate, Vanuatu: Village resource management planning: a vehicle for integrated management and engaging with national development?
4	Fiji	The Namena Marine Reserve, Kubulau, Bua, Fiji: Equitable sharing of the benefits of ecotourism
5	Cook Islands	The Aitutaki trochus management experience, Cook Islands: Community transferrable quotas issued by the Island Council
6	Federated States of Micronesia	Surveillance and enforcement using radar at Ngulu Atoll, Yap State, Federated States of Micronesia: Addressing the challenge of illegal fishing at remote reef locations
7	Solomon Islands	Central Islands Province's GERUSA natural resource management network in Solomon Islands : Building de-centralized support institutions for community resource management and climate change adaptation
8	Tuvalu	The Island Conservation Areas in Tuvalu: Building on traditional and modern approaches to marine resource management
9	Fiji	Fiji's Locally Managed Marine Area Network (FLMMA): A community governed network to guide national marine resource management
10	Kiribati	Kaoki Mange or "Return the Rubbish" in Tarawa, Kiribati: Looking for solutions to the waste management issue in crowded islands
11	Fiji	Fiji National Protected Area Committee's approach to achieving national conservation goals: National conservation planning that incorporates community- based management
12	Samoa	The Community-based Fisheries Management Program in Samoa: Legal and institutional support of community based fisheries management
13	Republic of the Marshall Islands	Reimaanlok, Marshall Islands: Developing a national conservation area strategy for the Marshall Islands
14	Republic of Palau	Palau Green Fees: Financing conservation through tourist levies
15	Regional	Regional networks of practitioners: The Locally-Managed Marine Area (LMMA) Network and the Pacific Island Marine Protected Area Community (PIMPAC)
16	Regional	Pacific Islands Community-based Conservation Course (PICCC): Regional training at the University of the South Pacific
17	French Polynesia	The 'Man and Biosphere' UNESCO reserve of Fakarava, French Polynesia

15 Andréfouët et al. 2005

Background

Progress in improving coastal management depends on a combination of factors, from dynamic local leaders and far-sighted government officials to the development of informal and formal support networks and training. The case of M'buke Island in Manus Province, where concerned community member Selarn Kaluwin, and the island chiefs sought to reverse the decline of their resources,serves to illustrate the value of links between people in these different governance roles and what can be achieved with little outside help.

Papua New Guinea (PNG) occupies the eastern half of the island of New Guinea and is the largest country of the Pacific Islands with a population just under 7 million and a land mass of 463,000 km^2. PNG isalso amongst the most ecologically and culturally diverse countries in the world being located near the center of marine biodiversity (the Coral Triangle) and with over 850 indigenous societies.

M'buke Island © Selarn Kaluwin.

Manus Province is the smallest province in PNG with a population of some 50,000 and M'buke Island is the main island of a group of 12 islets located on the Southwest coast of Manus, inhabited by around 800 people sometimes referred to as "*Titans*".

What was intended and how was it addressed

By 1999 the M'buke Council of Chiefs and local organizations such as Mbuke Island People's Association (MIPA) had become concerned that the once abundant resources such as turtles, giant clams, trochus, coral and sea cucumber were being seriously depleted. With the support of the community organizations Selarn Kaluwin sought assistance and information on the biological resources to build the community capacity to manage them sustainably.

It was not until 2004 that finally a connection to the World Wide Fund for Nature (WWF) was made and a collaborationwas started. Important connections were also made with other national and local organizations such as PNG Locally Managed Marine Area Network (LMMA), the national network supported by the regional LMMA network (see Cases 9 and 15). Due in part to the remote location and logistical challenges modest activities followed including community awareness and social and biological surveys usually conducted with a combination of partner and local funding. Local funding was provided, for example, by the Marine Environment Action Response Team (MEART) an organization founded by Selarn.

Progress was slow but steady; relying on whatever collaboration was available including with the Provincial Government and another international NGO, The Nature Conservancy (TNC). Selarn's skills were boosted when he attended a regional training, The Pacific Island Community-based Conservation Course (PICCC – see Case 16) in 2009 and immediately applied participatory techniques and integrated management approaches learnt there.

Local canoes © Hugh Govan

CASE STUDY 1

M'bukeAilan Marin MenesmenEria, Manus Province, PNG

From low-cost local management to province wide approaches

Lessons and conclusions

The M'buke case is a testament to what a motivated community with motivated leaders can achieve. Working locally the community substantially improved its resource management, but an eye for strategic collaborations and exchange has ensured that the resource management achievements realized at M'buke are more sustainable and likely to have widespread impacts than if efforts were conducted in isolation.

Further information:
LMMA Annual Report 2007 http://bit.ly/kVtHof

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Contributors:
Selarn Kaluwin and Manuai Matawai

What was achieved

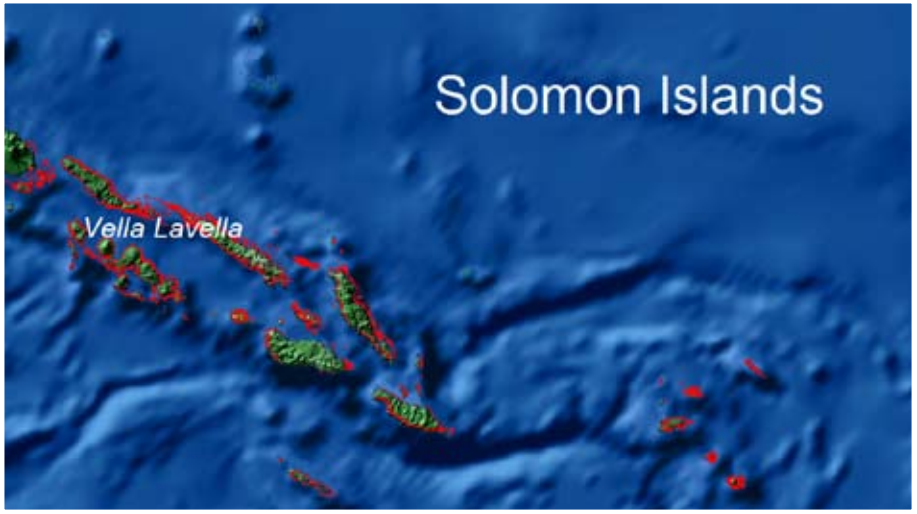
The Council of Chiefs established the *M'buke Ailan Marin Menesmen Eria* or Marine Management Area and in community meetings developed a working management plan which included provision for 3 no-take reserves.

Coral, particularly staghorn or *Acropora* species, is a culturally important resource in M'buke as it is harvested, burned and powdered to produce lime which is widely sold for consumption with betel nut, a nationally popular mild stimulant. The community implemented coral harvesting rules and regulations, including rotational harvests and experimental coral replanting.

Following on from training he received in the PICCC course, Selarn facilitated workshops to introduce and integrate the management of terrestrial resources (Cases3 and 13). The community subsequently initiated restrictions on the harvest of wildfowl eggs and seagulls, as well as implemented mangrove restoration activities and watershed surveys.

M'buke's experience extended to other communities in the surrounding Pobuma Local Level Government (LLG) area and eventually other LLGs. Increasingly close collaboration with Manus Provincial Government and provincial stakeholders led to a province wide approach (Case 7) for resource management and climate change adaptation. National and provincial stakeholders have recently signed a Memorandum of Understanding committing to collaborative work on the Provincial Sustainable Development Program. This will be part financed under the Coral Triangle Initiative and covers: Conservation of Biodiversity, Climate Change & Environmental Awareness, Environmental Monitoring, State of the Environment Report, and a Model Communities Program.

Community sign for the M'buke Island Marine Management Area © Selarn Kaluwin



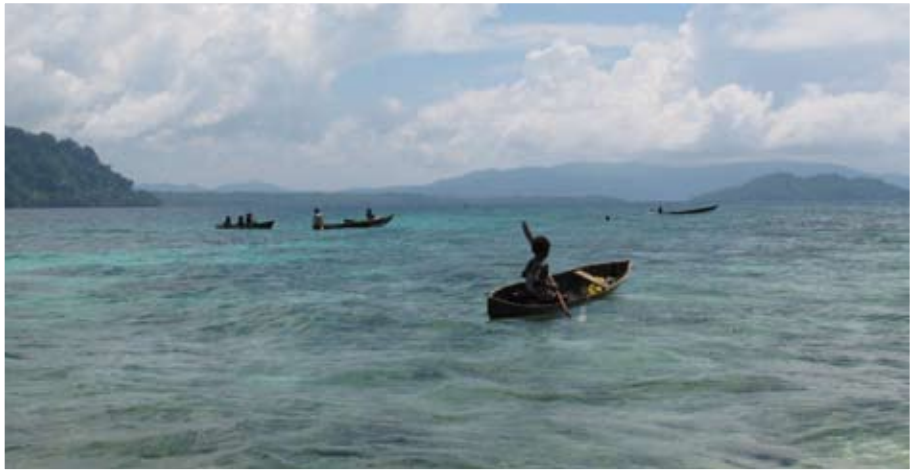
Background

Jorio is a region of Vella Lavella Island in the Western Province of Solomon Islands which comprises five communities: Iriqila, Vatoro, Leona, Paramata and Tiberias. In response to a serious decline in the sea cucumber fishery, one of their main sources of income, the community of Iriqila requested assistance in 2006 from a fisheries NGO; the World Fish Center. In consultations the leaders of Iriqila identified that the neighbouring communities of Vatoro, Leona, Paramata and Tiberias also share fishing rights over their waters and that they should be included in any discussions and decisions regarding marine resource management.

The community assessed that marine resources such as finfish, trochus and sea cucumber provided an important source of income for communities in the region and were used to a lesser extent for subsistence purposes (gardening was the main activity of the majority of people). Unsustainable fishing pressure had led to a decline in the numbers of trochus and some species of sea cucumber and environmental damage from logging activities and unpermitted fishing by outsiders threatened the sustainable use of their marine resources. This recognition of broader issues and impacts led to a widening of the scope of resource management planning from sea cucumbers to all marine resources.

What was intended and how was it addressed

The challenge for Jorio communities was how to manage the inter-related threats to their marine resource related livelihoods, with little external financial support; WorldFish employ a lowcost and low intensity engagement strategy (focusing on the provision of technical support) that emphasizes and encourages community led processes and governance. The Jorio Marine Resource Management Committee (JMRMC), representing all communities in the Jorio region, was formed to develop and administer a marine resource management plan. This overarching committee (encompassing individual village committees) decided to use a combination of *tambus* (closed marine areas) and management rules for open reefs. *Tambus* have been traditionally practiced in the region as a mark of respect for a deceased person and opened for fishing to provide food for funereal celebrations. Examples of open reefs rules included prohibiting the use of destructive fishing gears and restricting the times of harvest for selected species.



Leona view © Tim Alexander.

The JMRMC recognised that it was unrealistic for a management plan to address all external factors affecting the quality of the marine environment, such as land-based impacts from logging and climate change, but they believed that something needed to be done locally to prevent greater depletion of resources. A JMRMC Management Plan was developed to promote the sustainable use of marine resources to secure resource benefits for the Jorio people. An adaptive management approach was developed which included monitoring of community-selected biological indicators in order to evaluate resource changes and to guide modification of management if necessary.

Indicators for monitoring of the management plan were selected by the committee and consisted of the main fish and invertebrate species of interest to communities. Catches of indicator species are recorded as part of regular fishing activities, along with the duration of the fishing trip and the number of fishers contributing to the catch – allowing a simple estimate of Catch Per Unit Effort. Catch thresholds were identified based on local historical knowledge of catches to indicate whether resources were a) good, b) okay, or c) in crisis. The state of the resources was then mapped onto a "dashboard" that provided a simple visual display of data and tool for the management committee to review management measures.

Lessons and conclusions

Monitoring and adaptive management: Simple monitoring can help to demonstrate ecological or social benefits of community management efforts such as stock recovery or improved community cohesion (such as agreement on management goals and activities). Communication of these benefits across the region can stimulate motivation for adaptive management locally and further afield, which in this case is evidenced by interest, and subsequent implementation of management, by at least two other communities in the same province.

Local motivation and external support: Long term perseverance by community leaders and co-managers is needed to stimulate local adoption of marine resource management that meets locally identified needs. Communities can benefit from appropriate, but not necessarily costly, external assistance with information or internal conflict resolution that can hamper management planning. Regular, informal reviews with some support or facilitation by an external partner can also improve the practice of adaptive management.

Community based management is practiced ever more widely in the Pacific Region, but it is still a great challenge to implement wide-scale application of locally sustainable approaches that generate information and implement management in a cost effective way with only basic support from central agencies. Dashboard approaches to simple community monitoring for adaptive management appear to be a promising tool for local management.

Further information:

Boso et al (2010) Community-based adaptive resource management in Solomon Islands: lessons learned. http://bit.ly/k0B3N7

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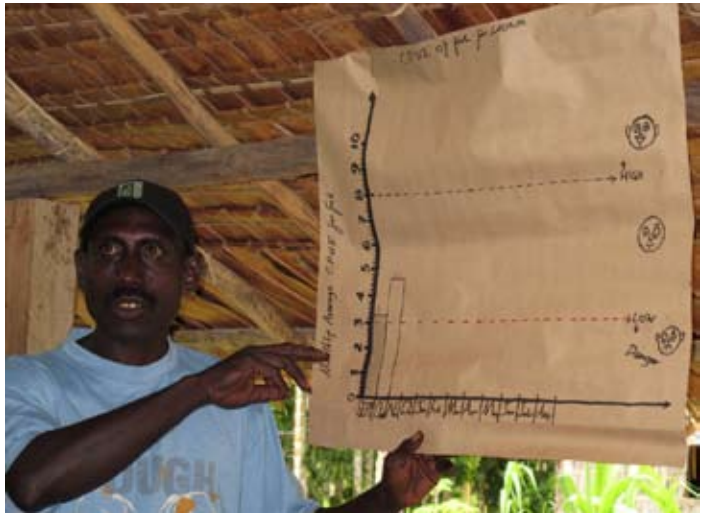
What was achieved



Catch data graph and "dashboard" thresholds. © Tim Alexander.

Currently, fish and invertebrate catch monitoring data are regularly collected, analysed and used to inform on-going adaptive management. All communities have implemented their planned *tambus* (including areas of reef and mangrove), and to a lesser degree, the management rules on open reefs. . From time to time each community has experienced difficulties in implementing management as a consequence of internal issues such as unresolved land tenure disputes which impact on local governance. However, all communities have retained membership in the JMRM Committee,

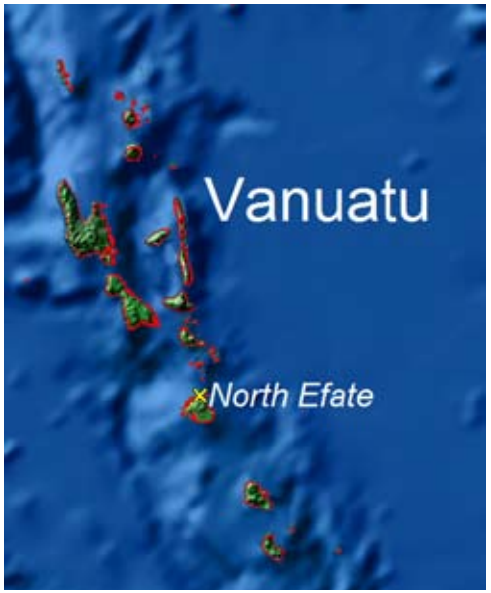
The community of Leona has been particularly successful in implementing the management plan, applying both rotational *tambus* and management rules on open reefs. Additionally for several years Leona has also integrated management of land (supported by a forestry NGO) with the management of their sea areas. The other communities of Jorio have experienced varying levels of success when enforcing management rules. Women from all communities and several proactive committee members continue to promote awareness of the management plan within their community, as well as to neighbouring communities. The successes of Leona are acting to maintain motivation for marine resource management across the Jorio region and beyond. A recent achievement and source of inspiration was the establishment of the JMRMC as a Community Based Organisation which leads to national recognition of the organization and can allow for greater autonomy.

Roviana Lagoon, Western Province. © Hugh Govan.

CASE STUDY 3

Marou and Emua, North Efate, Vanuatu

Village resource management planning: a vehicle for integrated management and engaging with national development?



Background

In recent years increasing emphasis has been placed on the need to approach natural resource management in an integrated way by considering entire ecosystems alongside social, political, economic and environmental elements. The proliferating community based management approaches in the Pacific have usually been driven specifically by fisheries or conservation interests, often by outsiders or supporting organizations. Traditionally however communities have taken a more holistic view and would not separate concepts such as conservation and harvest or people's health and environmental health. This has raised concerns that such external interventions in some cases may be overlooking or even undermining important cultural attitudes and attributes.

Vanuatu is an archipelago comprising 82 relatively small volcanic islands and is inhabited by a quarter of a million Melanesians who conserve a rich and diverse cultural heritage as exemplified by the some 108 languages still spoken today. The expression of these cultures is to be found everywhere in daily life including the traditional management of customarily owned resources which is still being practiced in hundreds of communities.

Chief endorsing management plan in Marou (modern method) © Tevi Obed.

Efate is an island accommodating the national capital Port Vila, an international airport, main shipping port and a round island road. The villages of the coast have relatively easy access to and are affected by, many of the things that development brings including the bulk of tourist visits, business schemes, property sale and market access. These pressures have increased community disputes and severely undermined local governance and traditional authority. In such a situation many communities have sought assistance from outside, including for advice and support on resource management.

What was intended and how was it addressed

Wan Smol Bag (WSB), a community theatre, awareness and action group, and the community development NGO, Foundation of the Peoples of the South Pacific Vanuatu (FSP), along with the Fisheries Department sought to respond to community requests in an a way that strengthened local culture and governance at the same time as allowing opportunities for communities to engage with "development" in constructive ways.

The approach emphasized long term, yet relatively low intensity, involvement with the communities of Marou and Emua amongst other communities of North Efate. When the communities felt ready, a process of engagement with chiefs, leaders

Lessons and conclusions

As discussed in other case studies (see Case 13), culturally appropriate ways may be devised for assisting communities in managing the wide ranging pressures and opportunities of development. In the process, the strengths of traditional processes and concepts may be reflected in more integrated or ecosystem wide solutions and plans. The balance between contemporary and traditional approaches remains an important debate and depends on individual communities and their circumstances. However engaging with communities in a manner sensitive to existing traditional structures should lead to the development of more appropriate and accepted hybrid models of management and development.

Further information:

Hickey 2006. Traditional marine resource management in Vanuatu: Acknowledging, supporting and strengthening indigenous management systems http://bit.ly/iNydIN

Pascal 2011. Cost-benefit analysis of community-based marine protected areas: Five case studies in Vanuatu. http://bit.ly/jxpfXm

Dumas et al. 2009.Training in community-based monitoring techniques in Emau Islandhttp://bit.ly/mBGR6W

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and the village at large led to discussion on general community issues and priorities and identification of the major areas for action. Eventually issues and actions were documented in a draft community plan that was sent for further discussion and eventual community endorsement.

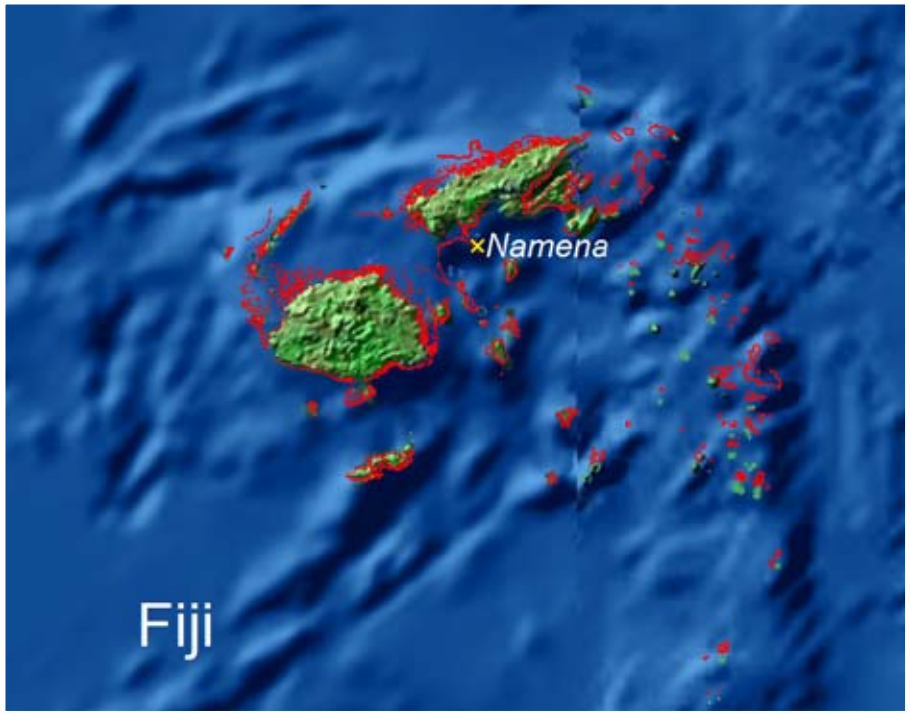
Chief establishing closed area in Marou (traditional approach) © Tevi Obed

What was achieved

The community plans expressed priorities ranging from social issues, fisheries, gardening, availability of building materials, income generation, waste management, political interactions, and health. Because the process was not explicitly confined to one subject area they covered the pressing issues for community life “from ridge to reef” i.e. an integrated or holistic approach. The issues raised and actions proposed almost all reflected the pressures of commercialization, development and erosion of culture and traditional authority.

The plans include foreign concepts such as MPAs that were also modeled on traditional closures or tabus and were intended to serve as much to attract tourists as to conserve resources. The plans were formalized and endorsed through traditional protocol including a pig killing ceremony to ensure widespread respect and compliance with the agreements.

Research has shown that due to MPAs, numbers of trochus snails have increased in Marou, income has increased through tourism and, to a lesser extent, due to fishing in Emua. But perhaps of greater importance was the process of forming community agreements that addressed a wide range of development issues. The process provided communities some clarity on the impacts of development and possible responses, while the resulting plan can serve as a basis for negotiation with outside agencies for addressing community identified issues and priorities.



Background

Namena Island's exceptional natural beauty, colorful soft and hard corals, and intriguing fish species has made it a favorite tourist destination among divers, justly earning it the name "the mecca of diving in Fiji." The island harbors an amazing concentration of marine biodiversity, with breeding grounds for endangered hawksbill turtles, nesting sites for seabirds, and regular visits from bottlenose dolphins and pilot, sperm, false killer, minke, and humpback whales.

Up until the 1980s, commercial fishing around the reefs of Namena was a lucrative business. Locals watched the commercial fishing boats come and go and gradually the fish stocks began to decline. The chief of the Kubulau District had the foresight to take conservation action. He established a fishing committee to oversee the traditional fishing grounds and to report unauthorized fishing activities to the government. In 1997 the community, through what was to become the Namena Committee, managed to ban all 'outsiders' from fishing around the reefs of Namena for a period of five years, thereby forfeiting revenue that previously went to the community from commercial fishing licenses.

The challenge for the community and the local tourism industry was to ensure that the benefits of sustainably managing this valuable resource were distributed fairly amongst community members to avoid internal conflict and secure long term support.

What was intended and how was it addressed

Despite the growing popularity of Namena as an international dive destination, the Kubulau community struggled to receive benefits from tourism and remained one of the poorest districts in Fiji. The Namena Committee decided that a good way to generate income to compensate for the loss of revenue from fishing licenses was to establish a user fee for diving the reefs of Namena. The Namena 'good will' fee was established in 1998 at FJ$1 per person per day. During the subsequent years the fee was raised to $3, and by 2000 had reached $10.

As income was generated, disagreements among the resource owners and residents of Kubulau on how the user fee funds should be collected, reported, and spent increased. In order to avoid conflict, the Kubulau community sought the help of the Coral Reef Alliance (CORAL), an international conservation NGO. CORAL began working with the community to build alliances between the resource owners and other local stakeholders.

Namena Marine Reserve © Heidi Willaims

CASE STUDY 4

The Namena Marine Reserve, Kubulau, Bua,Fiji

Equitable sharing of the benefits of ecotourism

Lessons and conclusions

The Namena Marine Reserve in Fiji provides a strong example of what can be accomplished when a community is empowered to manage and protect its own reef resources. Importantly, care is being taken to ensure that the income generated from sustainable tourism and coral reef conservation is seen to be distributed in a fair and equitable way thus reducing the conflicts surrounding income distribution sometimes seen in other communities. The benefits are increasing the quality of life in their community, while at the same time building strong support for conservation.

Further information:
htt://www.coral.org
http://www.namena.org/
S. Jupiter in Wilkinson and Brodie. 2011. http://bit.ly/mVoJzN

Contacts:
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Terri Young and Heidi Williams

Villagers prepare to welcome visitors © Heidi Willaims

CORAL and the Wildlife Conservation Society (WCS) supported the creation of the Kubulau Resource Management Committee (KRMC), comprising representatives from all ten villages in the district, to manage the Namena Marine Reserve and to encourage cooperative discussions among the villagers. Working with the local NGOs, the KRMC began holding regular stakeholder meetings to engage representatives from local hotels, resorts, dive operators, and live-aboard dive boats in discussions about the reserve.

What was achieved

Based on surveys and research conducted by the NGOs, the KRMC decided to increase its user fee to $FJ 25 per year per diver. Roughly half of the collected funds (FJ$24,000 - 30,000 per year) are now deposited into a student scholarship fund program for the community. More than 160 students have benefitted from the program so far. The other half is used to fund the continued protection of the reserve, including community improvement projects, mooring buoy maintenance activities, and KRMC operations.

To ensure increased transparency and equitable sharing, the Kubulau Business Development Committee (KBDC)—a think tank of qualified professionals from the Kubulau District—was formed to help manage the income and develop a business plan to increase the benefits of the Namena Reserve.

As a result, and with the aim of ensuring the benefits are more widely distributed, villages within the Kubulau District are now encouraged to capitalize on the tourist influx by offering 'village visits' (see photo) and eco-tours as part of a community-based ecotourism program created in partnership with CORAL. The program has helped Kubulau villagers set up ecotourism businesses that leverage the area's attraction as a dive tourism destination and bring new revenue to the local communities. With the income generated from these visits, one village was able to fund the additional infrastructure required to extend clean water resources into the community. Moreover, tourists who are inspired by their visits often donate books, school supplies, and funding for the local scholarship program. Plans are also currently underway to develop the Kubulau Administrative Centre, where the KBDC can operate more efficiently and the people of Kubulau can access essential public services.

Background

The gastropod snail, *Trochus niloticus*, has long been an economic mainstay of rural communities in many parts of the Pacific as its shell is highly sought after for mother of pearl used in buttons and decoration. Unfortunately, trochus has been overharvested near to the point of extinction throughout most of its range and common requests from communities are for information or support to recover and sustainably harvest trochus stocks. The good news is that trochus, which is highly reproductive with a short larval cycle, is amenable to management techniques that are compatible with traditional resource ownership and area closures that are periodically harvested.

What was intended and how was it addressed

Due to perceptions that the trochus population was vulnerable to overharvesting, the Island Council of Aitutaki in the Cook Islands decided to introduce rules to maximize the long-term economic return from the trochus resource through management based on decades of experience harvesting trochus. With the support of the Ministry of Marine Resources, the Island Council developed a management system which would be sustainable, easy to implement and ensure fair distribution of the benefits of the common resource to all families in the community.

What was achieved

The management approach developed involved locally based staff of the Ministry of Marine Resources conducting stock assessments by counting trochus along 6-8 belt transects (2m x 100m) at each of 12 sites to measure their population density. Trochus of harvest size were marked to allow cross checking of survey accuracy when the harvest is opened. The permitted size for harvest was between 8-11cm - this protects juvenile trochus and large highly reproductive trochus to contribute to stock recovery. Additionally some areas of *ra'ui* or permanent closure were established.

The harvest period is declared open when densities are estimated at or above 500 individuals per hectare and the total allowable catch is estimated as 30-40% of the stock of trochus in the harvest size range. The reason for the range in allowable catch is to ensure that only full containers are shipped in an effort to maximize profit as a container fits 17 tonnes of cleaned trochus.

During the assessment period the Island Council carries out a household head count so that each person on Aitutaki gets an equal share.

Trochus on the reef © Kalo Pakoa / SPC.

Lessons and conclusions

The system worked well for 2 decades up until 2001 with general satisfaction amongst the community and a minimum of conflict. However since 2001 there has been no harvest from Aitutaki, due to decreased trochus prices, and relatively good opportunities in the tourism sector or fishing and selling tuna.

The recent Ministry survey results show quite a large proportion of the trochus population are old and wormy, making shells not good for the market. The quantity of juveniles is also lower now than previous harvesting years which may suggest that the stocks need to be reduced to ecologic and economic productivity. The Island Council is contemplating recommencing harvests despite low prices.

The Aitutaki experience suggests that combining traditional governance local management and enforcement with simple contemporary stock assessment approaches can achieve a sustained and profitable fishery. However due to social, ecological and economic differences some trial and error (or adaptive management) will almost certainly be necessary for this success to be replicated in other areas.

Further information:
Protecting Aitutaki's marine resources http://bit.ly/jpfZdJ

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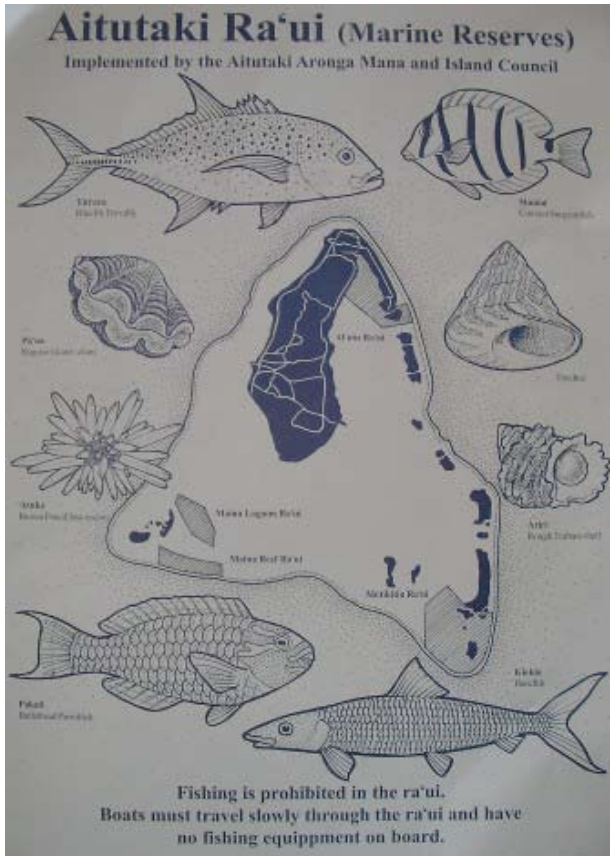


Aitutaki's system of marine reserves including trochus recruitment areas in the South

The allowable catch is divided by the head count and when the harvest date is announced the head of each household is requested to go the Council office to receive a permit stating the number and names of people in the household and an assigned household or individual person quota. Those not wishing to participate in the harvest may transfer their quota to another person in writing.

Most harvests occur towards the end of the year to provide finances in preparation for the Christmas period. The harvest may run for 1-2 months and closes when the inter-island ship arrives to take the trochus to market or when the quota is filled, whichever comes first. Each family takes the boiled and clean trochus shells to the area designated by the council for weighing and grading. Trochus of the wrong size or in excess of quota are confiscated as a disincentive to overharvesting.

A management plan was drafted to enshrine all the rules and procedures but eventually, frustrated by the slow legal process, the council decided to pass it as an island resolution with only minor modifications. The council and traditional leaders also made provision for incorporated trochus recruitment areas in their separate island system of *ra'ui* or marine reserves. The annual harvest amounted to some 18 – 45 tonnes per year generating in the range of NZ$100 – 200,000.

Making buttons from trochus shells. © Kalo Pakoa and SPC

CASE STUDY 6

Surveillance and enforcement using radar at Ngulu Atoll, Yap State, Federated States of Micronesia

Addressing the challenge of illegal fishing at remote reef locations

Background

Ngulu Atoll is a large coral reef atoll in the southwestern-most part of Yap State in the Federated States of Micronesia (FSM). The atoll is located 120 km southwest of the main Yap Islands and is reached via occasional visits from a supply ship that takes around 10 hours to arrive from Yap. The population has been reduced to around 8 people and many of the former inhabitants now reside in Yap, making occasional visits especially during the summer months. Ngulu fish populations and reefs are relatively healthy but the traditional leaders of Ngulu are concerned about unauthorized fishing on the reefs by foreign fishing boats. The atoll's isolation creates significant surveillance and enforcement challenges for the local population and FSM in general.

What was intended and how was it addressed

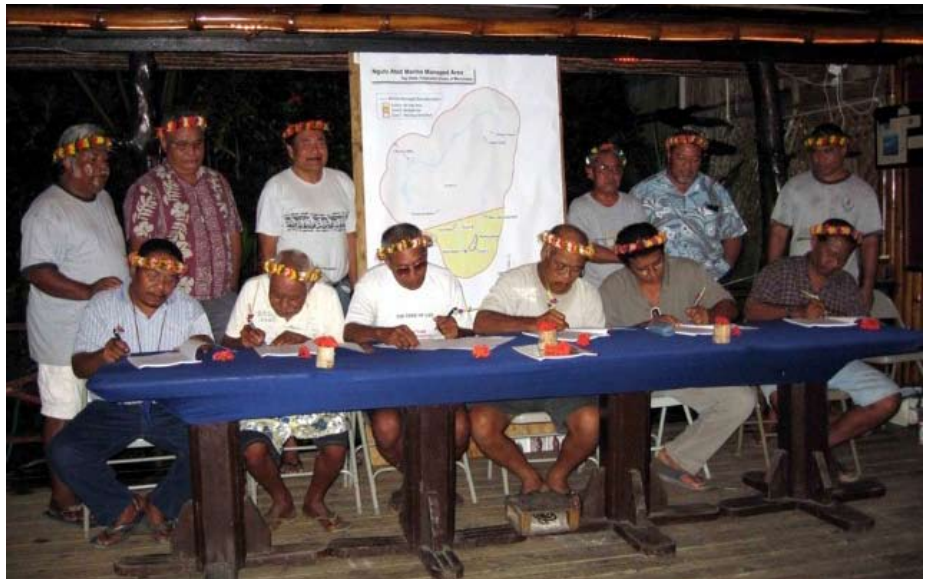
In 2005 the traditional leaders of Ngulu requested support from Yap Community Action Program (YapCAP, an NGO). This support included the facilitation of community management planning and financing the participation of a representative from Helen Reef Resource Management Program, Hatohobei State, Palau, which faces similar problems. The 2 year process led to the establishment of the Ngulu Atoll Marine Managed Area(NAMMA) and a Three Year Management Plan in 2009.

Ngulu Atoll. © Vanessa Fread.

The NAMMA management plan, drafted with input from the newly established Ngulu Atoll Resource Management Committee, identified zoning and use rules that built on local traditions of resource management and integrated new management concepts and information from modern science. Nearly 75% of the atoll was set aside as a no fishing area. Approximately 25% of the Atoll remains as a multiple-use area, where local subsistence use is permitted. The plan also includes specific goals and activities that the Committee feels are important steps in improving the conditions at Ngulu Atoll. The highest priority activity identified in the plan was to develop means whereby the small resident community could help reduce the impact of foreign and illegal fishing vessels. After discussions with the representative from Helen Reef, which faces similar challenges, establishing a radar-based surveillance system seemed a good first step in the absence of national capacity for surveillance and enforcement.

What was achieved

Thanks to financial support from the European Union and the German Ministry for the Environment approximately US$125,000 were raised that allowed for the installation and tuning of the radar system and subsequent training in its operation.



NARM committee signs management plan. © Vanessa Fread.

Lessons and conclusions

Securing marine resources and sustainable livelihoods in remote island locations is a daunting challenge in the face of persistent and increasing pressure from long distance foreign fishing vessels and the cost of patrolling distant waters. Though initially expensive there appears to be a role in certain cases for robust technology-based approaches for remote surveillance, such as radar in the hands of local and traditional resource owners. Over time the use of effective remote surveillance and detection approaches should reduce patrolling costs at remote locations.The solar panel and communication system also provide additional services to these communities which can enhance the quality of life in such remote locations.

Remote coastal surveillance systems will not however be applicable in many cases. It is important to consider from the outset factors such as the level of threat from unauthorized fishing vessels, the size and material of the vessels to be detected, availability of technical advice and training, the desired range of coverage, the availability of adequate and reliable electricity, suitable communications systems for reporting and response coordination and support for long term operation and maintenance.

The lessons being learned in Ngulu and Helen Reef will hopefully serve as useful examples for conserving and securing benefits from marine resources in the most remoteareas of the Pacific Ocean.

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Fread, V. 2011. Protecting the Biodiversity of Ngulu Atoll Yap State, FSM: www.micronesianfishing.com/Issues/JMF1_5.pdf

NAMMA Three Year Management Plan, (2009 – 2011): http://www.sprep.org/att/IRC/eCOPIES/Countries/FSM/78.pdf

Andrew, W. 2011. Helen Reef Hatohobei State, Palau. Conservation success on a remote atoll rich in marine resources: http://www.micronesianfishing.com/Issues/JMF_SPRING2011.pdf

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By late 2009,the radar tower, solar panels and associated support equipment were installed and by early 2011 the radar station was being operated by the residents.

The radar system detects vessels within a large proportion of the NAMMA and the associated solar panels generate a surplus of power that is used by the local inhabitants.

Initially, the focus is on improving the detection, observation, and reporting of any unauthorized vessels in the area. Information recorded on unauthorized vessels is transmitted to State and National administrative and enforcement agencies. Warnings can also be broadcast to suspected violators via marine-band VHF radio. Later phases of the strategy will focus on developing local capacity for response and will integrate local actions with activities of the FSM National Maritime Police. A similar approach was used with success at Helen Reef in developing local detection and enforcement capabilities.

Ngulu radar tower complete. © Alice Leney

Central Islands Province's GERUSA natural resource management network in Solomon Islands

Building de-centralized support institutions for community resource management and climate change adaptation

Background

The Pacific Islands have experienced a proliferation of Community Based Management initiatives that have demonstrated the vital importance of working from the village up to address issues ranging from natural resource management (local and ecosystem-based), climate change adaptation, disaster risk reduction and other aspects of sustainable development. Despite the common acceptance of these bottom-up approaches, progress on designing and implementing widespread national support has lagged behind (with few exceptions – see Case 12). In the larger Pacific countries, especially Fiji and Solomon Islands, a step forward involves decentralizing coordination, networking and key support activities to the Provincial level.

Solomon Islands comprises large and small islands of volcanic and coral origin spread out over 1,500 km. The half a million inhabitants represent a rich diversity of mainly Melanesian but also Polynesian and Micronesian peoples. The geographic scale and associated logistical challenges make providing government services to the predominantly rural population almost impossible given the financial constraints of this lesser developed country (LDC). Recent policy has identified the importance of strengthening Provincial Government capacity as a requisite to supporting local resource management; significant advances have been made in Choiseul and Central Islands Provinces.

What was intended and how was it addressed

A handful of rural communities in Central Islands Province, particularly in the area of Sandfly/Longana in the Florida Islands, have been pioneering efforts to manage their marine environments through Locally Managed Marine Areas (LMMAs) over the last decade. Communities from other islands in the Province had expressed interest in replicating such efforts but neither NGOs nor government agencies were able to commit the financial and technical support required. By 2008, the NGO Foundation of the Peoples of the South Pacific / Solomon Islands Development Trust (FSPI/SIDT) and the Provincial Government agreed to work together to find ways of extending support to communities throughout the province and to ensure such support was sustained over the long term

Sisili traditional closed area, one of the early community responses to threats such as dynamite fishing and which became one of the bases for the GERUSA network © FSPI/SIDT

What was achieved

National and provincial government, existing and prospective LMMAs and NGOs were involved in consultation where it was agreed to establish a Central Islands Province Natural Resources Management Network or GERUSA (named after the principal island groups – Gela, Russell Islands and Savo). A four step process was outlined and put into action: Firstly, an Engagement and Visioning step secured the political commitment of the provincial government premier, his ministers and technical officers and after they agreed to take the lead a common vision and goals were set. Secondly, the Action Planning step saw the development of district and provincial action plans and an agreed coordination and decision making structure. Thirdly, the Capacity Building step is a longer term phase in which community and agency stakeholders will provide and receive information and awareness on key issues and will develop capacity to facilitate community based adaptive management through training and mentoring. The fourth step is also a long term phase and involves Strengthening Provincial level

Lessons and conclusion

GERUSA has already made significant achievements that are worth sharing more widely. Closely involving provincial and national government at an early stage of forming provincial (or any larger than local) networks or strategies for coastal resource management and climate change adaptation ensures that the objectives are more realistic and address common challenges (this is not always the case when communities and NGOs have tended to work in isolation). National level government officers have started to increase the emphasis on building new information exchange and collaborative linkages between communities, provincial government and national level government

Increased information and exposure to a wider range of stakeholders means that communities are now building meaningful partnerships with service providers such as provincial government, NGOs and even the private sector. Provincial government is integrating community identified priorities into provincial development plans and intends to make budget allocations to support activities identified in plans. One proposal to further reduce costs at the provincial level and enhance resilience of community based approaches is to organize nearby communities into clusters that can share information, lessons learned and technical support visits

Provincial networking is now at various stages of implementation in other Solomon Island provinces including Malaita, Western Province and Choiseul. Elsewhere in the region, Fiji has now more than 6 years of experience in provincially decentralized (or in some cases island level) approaches to coastal resource management with the Kadavu Province process being the best known.

Further information:

Pita 2010. Establishing Provincial Network to support Community Natural Resource Management. http://bit.ly/ijbirq

Example from Choiseul Province: Game et al. 2011. Informed opportunism for conservation planning in the Solomon Islands.http://bit.ly/joakfk

Example from Kadavu Province, Fiji: Tawake, A. 2007. Scaling-Up Networks of Locally Managed Marine Areas (LMMAs). http://bit.ly/iVpXIm

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Coordination and partnership to ensure that appropriate enabling mechanisms, such as legal ordinances are in place and resources are available.

Participants at the inception meeting of GERUSA, Savo Island © FSPI/SIDT

Activities have proceeded as opportunities and funding have arisen. GERUSA has recently been recognized under the National Plan of Action for the Coral Triangle Initiative and a Memorandum of Understanding commits funding and support to expand the scope of network activities to include climate change vulnerability assessment, community level adaptation planning and the development of provincial fisheries ordinance that supports community based approaches to coastal resource management.

Background

Tuvalu is a small island developing state comprising 9 islands of around 400-600 inhabitants each with the exception of Funafuti, the seat of government, with a population of about 5,000. There is a long tradition of self-reliance manifest in Tuvaluan customs and way of life including systems of island governance and traditional resource management. Currently however the potential impact of climate change is generating much concern amongst the population of these low-lying atolls and reef islands,

Faced with limited land resources and poor soil fertility islanders developed rich knowledge of traditional marine resources and management practices, but these are slowly being lost along with other important cultural aspects. In 1996 the Funafuti Conservation Area (FCA) was established using modern approaches, scientific monitoring and an assumption that clear financial benefits would ensure sustainability of management implemented. The FCA still survives today but amidst controversy and skepticism from some that it generates any benefits at all.

What was intended and how was it addressed

The challenge facing the different island *Kaupule* (councils) was how to achieve more sustainable resource management that would build on the strengths of tradition but also incorporate the lessons offered by contemporary conservation practice while also adapting to the new challenges of political organization and development on their respective islands.

In 2005 the *Kaupule* of Nukufetau Island requested and obtained assistance from the Tuvalu Association of NGOs (TANGO). Also with the support of the government departments of Environment and Fisheries, the *Kaupule* and its island population carried out planning processes for community based management. A similar process was replicated on Nanumea Island in 2006 and word of mouth led to further requests and similar management planning exercises in all the islands of Tuvalu

What was achieved

All the islands have now improved their marine resource management; some have finalized management plans, others are still in the drafting stages and others are relying entirely on community agreements. In some cases communities have defined management rules for their entire traditional areas, but for the most part communities are focusing on management rules within specific areas or for species of particular interest within their traditional areas. Most of the islands' management approaches include no-take fishing reserves or marine protected areas (locally known as *tapu*) and all except Funafuti use traditional laws for enforcement purposes. Fishermen of Nanumea report that their "*Momea Tapu*" or closed marine area has resulted in more abundant fish.

Fish drying in Funafala, Tuvalu. © Hugh Govan.

Lessons learned and conclusions

The island Kaupule and supporting organizations have had to develop responses to a number of emerging issues and this process of continual improvement of resource use rule sand responding to emerging challenges will be a feature of the management and planning process into the long term.

Communities in Tuvalu have taken the lead in improving their management of resources and government and NGOs have been able to take the opportunity of these promising partnerships for national coastal resource management results. Tuvalu has demonstrated that resource management approaches using traditional and modern elements can be developed and sustained at the local level with little outside support. This experience suggests important ways forward for other island countries facing challenges of dwindling resources and emerging challenges such as global development and climate change. Tuvalu will continue to be an important test case in expanding the use of community knowledge and capacity to confront these emerging and large scale threats.

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Govan et al. 2009b. Community Conserved Areas: A review of status & needs in Melanesia and Polynesia. http://bit.ly/cYjoao

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Appropriate support:

Based on the experiences of the FCA it was apparent that support and provision of information had to proceed at a pace appropriate to local understanding and decision-making. In this context, maintaining momentum of management and planning activities presented a challenge due to considerable logistical difficulties including transport to remote islands alongside financial constraints due to the low amounts or only short term funding generally available through projects or government institutions. A mixture of strategic and long term planning and opportunism seems to have been the best solution.

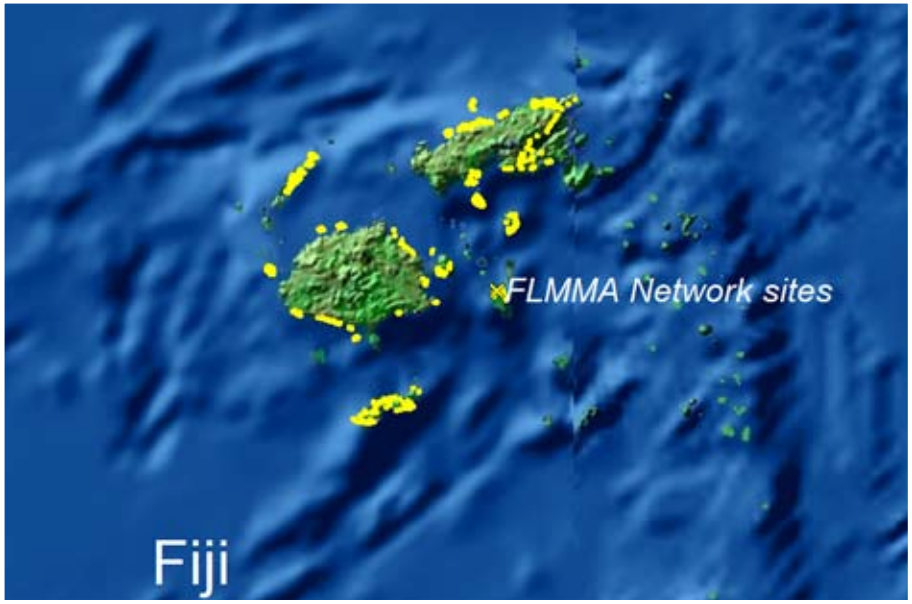
Community planning. © Semese Alefaio

Traditional and modern law:

Despite the effectiveness of local and traditional law in enforcing resource management, considerable concern and effort has gone into trying to align the local efforts with national laws or create local by-laws. Enshrining community intentions and adaptability in national law, such as the gazettal of protected areas, poses considerable and perhaps insurmountable challenges not least in terms of whether government and communities agree on who has the final say on local resources. Relying more heavily on locally generated best practice and community accepted rules is now being considered as a better solution to enforcement issues.

The roles of elders and youth:

The elders of Tuvaluan communities played a key role in island governance and recollection of traditional knowledge. However, youth and unmarried men are relied on for most aspects of implementation and enforcement of rules. The priorities of both groups sometimes do not coincide and this can lead to the risk of unsupported decisions and rules. This challenge requires careful facilitation, sometimes by outsiders, to ensure that both groups, who traditionally may not have shared decision-making, can agree on way forward.



Background

Fiji is one of the largest Pacific Island countries after Papua New Guinea and Solomon Islands. In common with these countries, very little progress had been made towards coastal and inshore marine resource management by the mid-1990s. At this time donor-funded conservation projects were failing to meet local aspirations or were not engaging successfully with traditional ownership and management practices. The increased pressure from population growth and commercial exploitation was leading to a decline in resources that was becoming apparent to both community members and outside observers.

In 1994, the son of a high chief from Ucunivanua Village in the Verata district sought assistance from staff at the University of the South Pacific (USP) to resolve some of the problems facing the village, particularly the loss of the *kaikoso*, or clam, a staple food and main source of income. The ensuing collaboration resulted in the development of a management plan, declaration by chiefs and elders of a *tabu* (closed) area for 3 years, and implementation of community monitoring. Monitoring data indicated that management measures resulted in the rather quick recovery of *kaikoso* and associated increases in harvests and income. Other communities and NGO partners were also exploring local solutions to diminishing marine resources; Cuvu district on the Coral Coast of Viti Levu was working with the Foundation for the Peoples of the South Pacific (FSP, now Partners in Community Development Fiji) and in Ono, in the island group of Kadavu, villagers were working with the World Wildlife Fund for Nature (WWF) to find ways to protect some key coral reef areas. Each of these projects was testing, under different social, ecological and economic conditions, whether Locally-Managed Marine Areas (LMMAs) could contribute to conservation of biodiversity and habitats alongside improvement of local livelihoods.

What was intended and how was it addressed

The promising results of these projects emerging in 2000 were of great interest to communities around Fiji. However, achieving a widespread implementation of LMMAs in the remaining 407 *i qoliqoli* (traditional fishing areas) in Fiji, in a cost effective way that respected community protocols and best practices, represented a considerable challenge.

Team members from the three projects—Ucunivanua, Cuvu, and Ono—joined in 2001 to form the Fiji LMMA Network (FLMMA), to serve as a forum in which communities and their project partners could share methods, results and lessons learned. Membership of the network rapidly expanded and NGOs, government departments and many communities began sharing valuable experiences and information. The strong representation of community leaders defined the priorities, procedures and appropriateness of the network. Regular exchanges and meetings, the formation of an executive and sub-committees that were answerable to the membership at the Annual General Meetings (AGMs), and partnership with other national and international collaborators, such as the regional LMMA Network (see Case 15) underpinned the function, effectiveness and accountability of the network.

The FLMMA network vision encompasses:

- Healthy ecosystems and communities, abundant marine and fish stocks, and sustainable fisheries utilization
- Protected marine biodiversity
- Sustainable development in coastal communities
- Understanding of what communities are doing and can do in managing marine areas
- Understanding of ecological and socio-economic responses to LMMA and coastal management implementation

Mission Statement

"Everlasting Fish for our Future Generation"
" Kedra Sasalu Tawamudu na Noda Kawa"
"Levu na Sasalu, Marau ko Nau"

What was achieved

National policy: With the help of the respective project teams, the community members in the network presented the results of their monitoring activities to fishery policy makers of the Fijian government. While surprised at first to be given scientific findings by villagers, the government representatives grew excited about the idea of adapting Fijian customary ownership and governance systems to the management of

Lessons and conclusions

Networking is not easy and can potentially be expensive and at times inefficient. The success and sustainability of FLMMA is due to many factors, including a clear need for the services the network provides and the efforts of many individuals. FLMMA has progressed, driven by the spirit of partnership between government, communities and NGOs and the committed steering by communities at meetings and AGMs. Contributions of staff time and finances sanctioned at high level by member NGOs, priority setting led by communities representatives, and a commitment by all members to Pacific Island approaches to decision making and dispute resolution are some of the notable strengths of the FLMMA Network.

The potential for peer to peer networking, government and NGO collaboration, and community involvement in the governance of national approaches has sparked much interest in the region and beyond. A number of countries have established similar national networks including Solomon Islands (SILMMA), PNG (PNG-CLMA) Indonesia (ILMMA) and Philippines (PhiLMMA).

Further information:
FLMMA: http://www.lmmanetwork.org/fiji
SILMMA: http://bit.ly/jQLTpC
PNG-CLMA: http://bit.ly/jeUMdN

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Source:
Govan, H. and S. Meo. 2011. FLMMA Operations Guide: The way we work together. FLMMA, Fiji. http://bit.ly/m3WrkC

marine resources. The national government has formally adopted the LMMA approach and has designated a division of the Fisheries Department to promote inshore management and to work with FLMMA. FLMMA is now coordinated from this office.

Spread of LMMA sites: By 2011, more than 200 LMMAs had been established in Fiji, covering more than half the area of the country's *i qoliqoli* (equivalent to about 10% of the territorial waters) and managed by nearly 400 communities. In most cases management plans or local rules are set for each *i qoliqoli* and these usually include one or more *tabu* areas that are temporarily or permanently closed to fishing. Much of the momentum for this spread was generated by communities exchanging their data and stories of success alongside support from the broad membership of NGOs and government departments. Requests for assistance from FLMMA by new communities are discussed by the executive committee and assigned to the partner (NGO or Government) with most capacity at that moment to respond. Community requests are firstly assessed to determine if they correspond with real needs and comply with community traditional protocol. The last 5 years have seen FLMMA community management support activities, decentralized to the provincial level aiming at more cost effective and locally responsive support to communities (see Case 7).

Operating procedures and protocols: FLMMA was registered in 2004 under the Charitable Trust Act and has established a Trust Fund. A number of operating procedures have evolved from lessons learned over the years and have been enshrined in an Operations Guide. These provide an overarching set of guidelines or goals including the establishment of community and network research priorities and protocols that govern any collaborating researchers, minimum monitoring approaches for network and community purposes, communications and intellectual property issues, and membership criteria.

FLMMA Annual General Meeting 2010. © FLMMA.

CASE STUDY 10

Kaoki Mange or "Return the Rubbish" in Tarawa, Kiribati

Looking for solutions to the waste management issue in crowded islands

Background

With the considerable attention received by the impending threats of global warming, associated sea level rise and changed climatic conditions there is a real risk of overlooking some immediate problems that the Pacific region has long been grappling with. Along with the decline of subsistence and commercially important natural resources, the immediate threats of urbanization such as pollution and poor sanitation create a greater threat to the sustainability and viability of Pacific Island countries; situations are particularly acute in the smaller countries. Subsistence lifestyles have now given way to consumerism and the combination ofpoor solid waste management, increasingly dense populations and reduced space is already impacting on fragile atoll or small island ecosystems and their limited water resources.

The Republic of Kiribati comprises 33 coral atolls with sandy soils and limited vegetation spread out over 3.5 million km^2 of the Pacific Ocean and is home to more than 100,000 *I Kiribati* people. The capital, South Tarawa, comprises a string of seven islets joined by causeways stretching some 30kilometres andits 50,000 inhabitants share the confined space with a seaport, international airport, government offices and commercial installations. Waste management is a pressing issue and up until a decade ago management systems were rudimentary with very little recycling (some 25% of aluminum cans).

What was intended and how was it addressed

Up until 2002 waste management in Tarawa was relatively limited, there was some garbage collection but much illegal dumping and little recycling. Following on from public awareness raising efforts, the Foundation of the Peoples of the South Pacific Kiribati (FSPK) secured a small amount of funding to carry out a simple waste stream analysis and look into the feasibility of recycling in Tarawa. After considering various possibilities, a project was initiated to start a deposit - refund based recycling system for cans, plastic bottles and lead acid batteries, while also raising the profile of general waste management issues in Kiribati. The project was named Kaoki Mange! (Return the Rubbish!) and received United Nations Development Programme (UNDP) funding from 2004 to 2006 and assistance of many other regional donors.

Collections of waste for recycling on Bonriki, Tarawa © Alice Leney

What was achieved

The project sought practical approaches and engaging ways to increase public and government interest and support.

A campaign promoted simple, clear messages using things like catchy radio songs, newspapers and community theatre groups.

A recycling system was developed that is self-financing. A container deposit scheme means that a small deposit is paid on import of certain items, the refund is then paid out when those items are returned to the recycling collection points. A Materials Recovery Facility (MRF) ships recovered material to Australia and appropriate legislation has been developed and passed.

Lessons and conclusions

The Kaoki Mange! project demonstrated that careful development of locally appropriate approaches to waste management that aim to be both locally acceptable and self-financing may eventually lead to ways to overcome an apparently insurmountable waste problem. However, careful monitoring and ongoing support of solid waste management is vital, Tarawa still has substantial problems with waste collection and landfill and much work is required to strengthen relevant institutions. Despite the difficulties involved, other Pacific countries are following Kiribati's lead: Kaoki Mange! has already provided a model for a similar system in parts of the Federated States of Micronesia, while Fiji is also in the process of implementing a container legislated deposit system and reducing imports of majors sources of waste such as non-biodegradable plastic bags.

Further information and sources:

Finnigan 2011, Pacific Island Paradise – Wasting Away. http://bit.ly/jfKP9A

Music video - RuffDogs - Te Kaoki Mange http://www.youtube.com/watch?v=z4q1hk8neic

Kaoki Mange! Project 2005 Report: http://bit.ly/mGPROP and http://bit.ly/iX3K9F

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Contributor:

Alice Leney

Improvements in waste ending up on the shoreline © Alice Leney

The project also worked to capture domestic garbage in plastic bags rather than in piles on the streets and to direct organic refuse away from street collection towards use in home gardens and "banana circles" to reduce the waste stream.

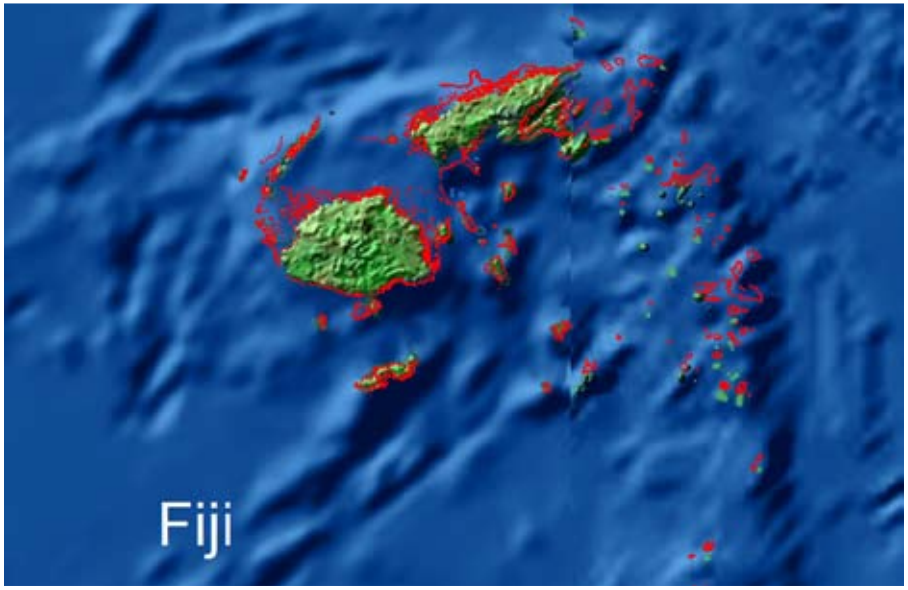
The seed funds provided by UNDP, allowed the MRF to be established and subsequently the Ministry of Environment contracted out to a local operator who is able to make money operating the system unburdened by the need for capital investment. The local contractor makes 1 cent (AUD) per beverage container collected and also gains the value of the recycled materials. Progress was also made on recycling cars, car batteries and other scrap metal that all too often litter the shores of Pacific Islands. By 2010 over 25 million cans and a million plastic bottles had been exported generating up to 30 jobs andhundreds of thousands of dollars for operators and the public alike.

This project's strong emphasis on government leading the process and gaining popular support undoubtedly influenced some of Kiribati's other advances in waste management including aspects of the Environment Act (2007), improved land fill practices, improved school environmental curriculum and increased revenue for waste management from taxes.

CASE STUDY 11

Fiji National Protected Area Committee's approach to achieving national conservation goals

National conservation planning that incorporates community-based management



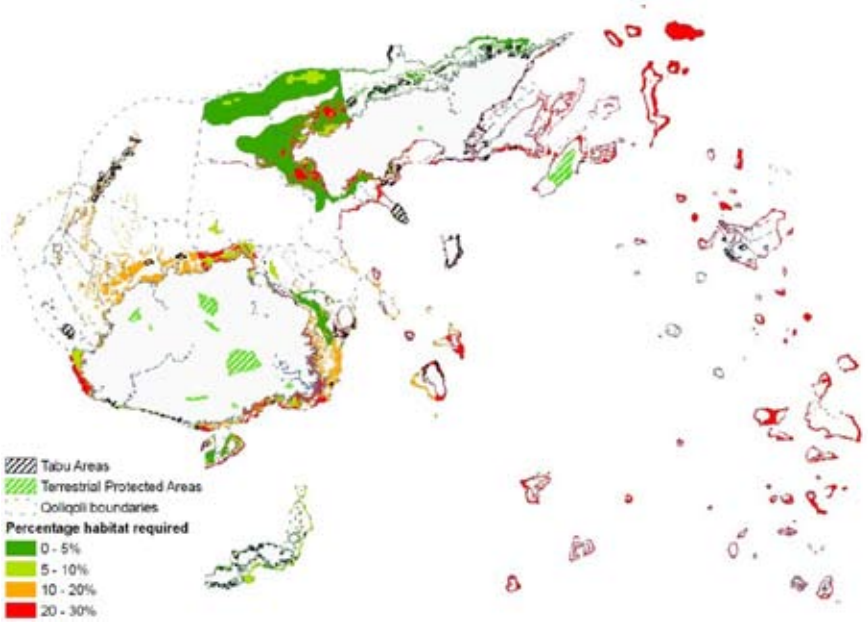
Background

Beginning in the 1990s, community-based initiatives began to emerge across Fiji to conserve and manage marine resources. By 2001, these local practitioners, together with government and non-government partner organizations, had organized themselves within the Fiji Locally Managed Marine Area (FLMMA) network to share knowledge and lessons learned (see Case 9). Locally Managed Marine Areas (LMMAs) are driven by community needs and motivation and are typically established to improve food security. Local management is exercised to varying degrees over the entire traditional fishing ground or *qoliqoli* in an LMMA and usually includes one or more *tabu* areas (traditionally managed closures). The LMMAs have grown rapidly in number from one site in 1997 to approximately 150 LMMAs in 2009, with at least 216 *tabu* areas. The conservation impact in terms of effectiveness of the LMMAs varies widely depending on mainly community related factors.

The large collection of management actions under the FLMMA network provides virtually the only sustained national marine managed area approach for Fiji. The institution is a support mechanism for the Fiji Government commitment at the Mauritius International Meeting on Small Island Developing States in 2005 to effectively manage at least 30% of Fiji's inshore marine areas and other global commitments to protect proportions of each of the major marine habitat types. Coordinating national conservation planning relying on self-driven community approaches as a building block is a major challenge for Pacific Island countries, such as Fiji where, community tenure is exerted over much of the coastal and inshore marine area and resources.

What was intended and how was it addressed

The Fiji National Protected Area Committee (FNPAC), together with researchers from James Cook University (JCU), engaged in work between 2009 and 2010 to gauge how much of Fiji's inshore marine habitats (mangroves, intertidal, and reefs) are currently managed by FLMMA network members. The team used an innovative approach that considered not only the size of the managed areas, but also the potential ecological effectiveness of the management actions. The team then met with provincial administrators and members of FLMMA to discuss the results of the study and best ways to "fill the gaps" in management.



Locations of existing protected areas in Fiji and the "gaps" or amount of each habitat type to protect to meet the 30% target. The colours indicate the extent of the gap (green-smaller gap, red-bigger gap) © Morena Mills

What was achieved

Firstly, an expert working group estimated ecological effectiveness weightings for marine management actions (permanent no-take areas, conditional closures with controlled harvests, conditional closures with uncontrolled harvests and other managed areas) for important species found in each target habitat. For example, conditional closures on fringing reefs with uncontrolled harvesting (during periods when the closure is lifted) were assumed to be less effective at protecting target invertebrates than fish because fish rapidly learn to avoid highly fished areas.

Lessons and conclusions

This exercise demonstrated that national scale conservation planning approaches can be applied even for systems reliant on community based management, as long as planning considers community level specificities and existing information, including local to national expert opinions. Conservation planning outputs are a useful starting point for dialogue with stakeholders and enable clearer understanding of "big picture" concepts that may be difficult to appreciate at the community level.

The conservation planning approaches pioneered by FNPAC and JCU provide cost effective and relatively simple approaches to coordinating and planning conservation in Fiji and the approach is likely applicable to other Pacific Island nations implementing community based management. While the nature of "bottom-up" conservation may appear hard to reconcile with centralized or national level planning, appropriate engagement with local authorities provides the opportunity for coordinating both national and local priorities. Samoa has also made important progress in this regard (see Case 12 and further information below).

Further information:

Mills et al. (provisionally accepted). Incorporating effectiveness of community-based management strategies in a national marine gap analysis for Fiji

Jupiter et al. 2011. Filling the gaps: identifying candidate sites to expand Fiji's national protected area network. Wildlife Conservation Society Fijihttp://www.wcsfiji.org/Resources/Reports/tabid/3428/Default.aspx

Samoa biodiversity planning: www.sprep.org/att/irc/ecopies/countries/samoa/191.pdf

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Contributor:

Stacy Jupiter

Provincial planning meeting. © Stacy D. Jupiter

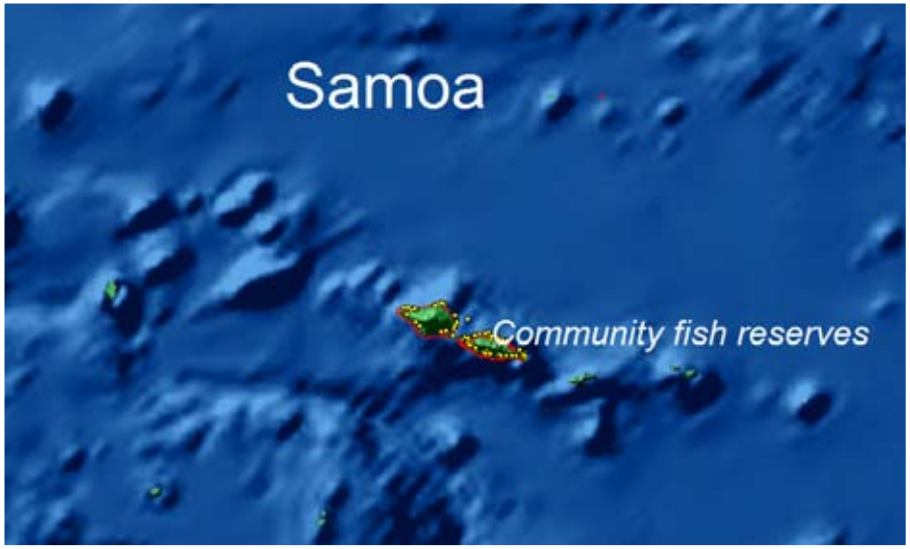
Next, using maps of FLMMA coverage and multiplying the weightings by the total amount of each target habitat under management, the team found that the current FLMMA network effectively protects approximately 10-25% of each target habitat. The amount of protection varied substantially by province.

Finally, as FLMMA has prioritized decentralizing support for LMMA sites to the provincial level (see Case 7), information generated by the study was presented to provincial administrators and FLMMA members. Subsequent discussions allowed greater understanding of the importance of managing all habitat types and concepts such as ecological connectivity. The participants identified gap areas which needed priority attention for protection and management. These lists of gaps will be the basis of future consultations with community members and other stakeholders to expand the current managed marine area network.

CASE STUDY 12

The Community-based Fisheries Management Program in Samoa

Legal and institutional support of community based fisheries management



Background

Pacific Island countries are increasingly identifying community based approaches as key to resource management and other sustainable development issues in emerging policy and practice. The challenges that this raises in terms of wide-scale implementation are mentioned in Cases 7, 9 and 11, but the legal systems and institutional structures of most Pacific Island countries will also need to be adapted to accommodate bottomup approaches. Most Pacific Islands have inherited legislation and government structures more or less based on Western approaches that are not necessarily adapted to the culture, tenure and geographical realities of the Islands. Samoa is perhaps the country with the longest track record in developing synergies between community based approaches to fisheries management and the legal framework.

The Polynesian country of Samoa comprises two main islands and 8 small islets with a predominantly rural population of 180,000. In 1995 the government commenced implementation of inshore fisheries management based on the strong chiefly system (matai system) and the traditional ties to marine resources; however, this posed challenges as locally imposed rules on use of inshore resources conflicted with general access rights enshrined in the constitution.

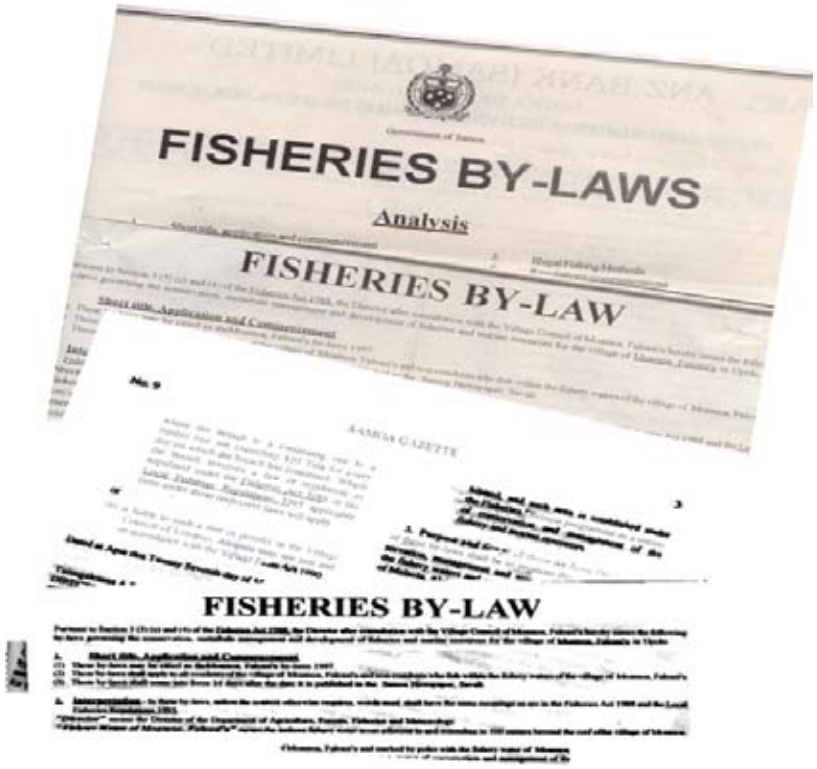
What was intended and how was it addressed

Three main challenges needed to be overcome in the development of Samoa's inshore fisheries management system. Firstly there was the need for a government administered institutional framework, secondly the appropriate methods and approaches had to be designed and thirdly a legal basis had to be developed or clarified.

What was achieved

An Australian aid funded Fisheries Training and Extension Project provided the opportunity in 1995 to create an Extension Section within the Fisheries Division and train new recruits in community-based fisheries management approaches. Today, a staff of 11 still support the Community-based Fisheries Management Program (CBFMP) and the Section has a secure annual budget.

The processes for engaging with communities involves meeting with the village *fono* (council of chiefs) and other resource users (the untitled men and the women's group) in separate meetings to commence the formation of a Fisheries Management and Advisory Committee (FMAC). The overall objective is to develop a Fisheries Management Plan using simple participatory techniques to enable the village to manage its resources through a Fisheries Management Committee (FMC). The process takes as long as necessary to allow due consultation and discussion of appropriate solutions to the main problems. Management rules are set in the Plan and often include fish reserves, banning destructive methods of catching fish (including some traditional methods) and penalties for infractions such as fines in cash, fine mats, or food for the village. Enforcement is the responsibility of the village and this usually works well when village members infringe rules however, it proved controversial when applied to outsiders who could claim right of access under the constitution.



Fisheries by-laws in Samoa. © Etuati Ropeti

Lessons learned and conclusions

The experience of Samoa is important in demonstrating the role government can play in supporting community based management from an institutional and legal perspective and in the use of by-laws to close loop holes to community enforcement. Elsewhere different and locally adapted approaches to developing legal support are being taken; Solomon Islands has produced a Protected areas Act (2010) and Fisheries Bill both of which support community-based management approaches. Fiji is currently reviewing its Fisheries Act with input from communities and the Fiji Locally Managed Marine Areas network. Vanuatu's Environmental Management and Conservation Act (2002) makes provision for Community Conserved Areas and PNG has developed promising approaches to community based management through Local Level Government that make use of the Organic Law on Provincial Governments and Local-level Governments (1995). Developing the government institutional structure and capacity to implement and support community based management is increasingly the priority.

Further information

Tauaefa, A. 2007.Progress of Community Fisheries Management Program in Samoa. http://bit.ly/kIqRb7

Govan et al 2009b. Community Conserved Areas: A review of status & needs in Melanesia and Polynesia. http://bit.ly/cYjoao

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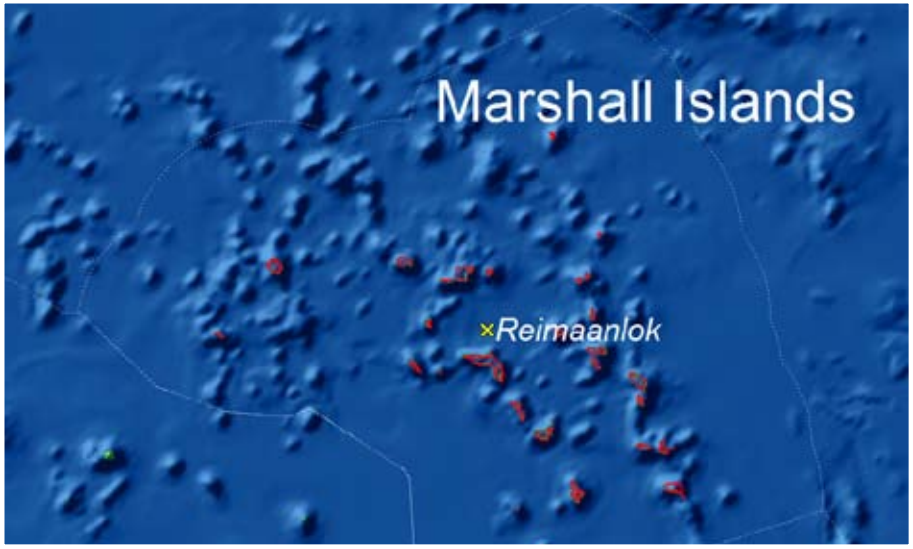
Fisheries Division, Ministry of Agriculture and Fisheries.
olofa.tuaopepe@fisheries.gov.ws

Contributor:

Etuati Ropeti

The Fisheries Act (1988) and Regulations (1995) provided the legal opportunity to overcome the apparent legal weakness of the community based management system. Villages are supported in the production of by-laws in coordination with the Fisheries Division which may enshrine the management plan and penalties. The by-laws are recognized in court but are subsidiary to national laws with which they must comply. The by-laws have increased the capacity and legitimacy of villagers to enforce local plans on both community residents and outsiders. In cases where outsiders still do not comply, the Fisheries Division may be enlisted to take the matter to the formal court system. In 2007 more than 80 villages had prepared management plans, 69 fish reserves had been declared and 57 by-laws approved and gazetted.

No fishing sign at a fish reserve in Samoa © Etuati Ropeti



Background

The Marshall Islands comprise twenty-nine low-lying coral atolls and five low coral islands populated by some 60,000 people, two-thirds of whom inhabit urban centers of Majuro and Ebeyeand the rest scattered at low density in the remaining atolls and islands. In the face of global losses of biodiversity, the Marshall Islands retain some of the most pristine coral reef systems anywhere in the world but in recent years biodiversity in the Marshall Islands has become threatened by climate change and sea-level rise, increased urbanizationand pollution, increased pressures on fisheries and a loss of the traditional subsistence lifestyle central to the identity and well-being of the Marshallese people.

In addition, and similarly to other countries in the region, Marshall Islands has made international commitments to establish a national protected area network (in this case through the Convention on Biological Diversity Program of Work on Protected Areas and the Micronesia Challenge). The challenge facing Pacific Islands and the Marshall Islands in particular is to meet these international targets as well as address national and local needs in a way that fits the local context and particular mix of western style government and traditional governance and cultural structures.

What was intended and how was it addressed

Similarly to other Pacific Island countries the Marshall Islands Government has the authority at a national level to manage, conserve or sustainably develop its natural resources but day to day decision making about theuse of the resources occurs almost entirely within local communities. A range of conservation initiatives had attempted to work within that context but with varying degrees of success. There was a need for an overarching framework for conservation area planning that would provide clear direction for national agencies on how best to engage with and assist local communities and to provide a focus for funding and assistance from international donors. The development of the *Reimaanlok* framework and accompanying processes and guidelines for conservation and sustainable resource management was driven by this need.

Planning meeting © Emelyn Simon.

The development of *Reimaanlok* (meaning “looking to the future, together” in Marshallese) as an overarching National Framework was led by a core team of local and international experts who engaged with people from all government and non-government resource management agencies through workshops, interviews, and reviewing documents. This planning process was used as an opportunity for local institutions to create and manage a program through a process of group learning and consensus building which aimed to be practical, relevant and to build capacity through the process.

What was achieved

The *Reimaanlok* process developed a number of novel approaches with potentially broad application to other small island countries. A “hybrid” approach to resource management was taken which combined traditional and community strengths with modern planning. In this national-level process, it was decided to stop short of identifying priority conservation sites because “the biodiversity of each atoll is important to those people who live on it, all atolls have areas worth conserving, and only the community and landowners of that atoll have the right to determine which sites they will conserve”

Lessons and conclusions

Integrating the need for national level planning with the realities of traditional resource ownership and dispersed and remote communities is a challenge facing most Pacific Island countries. International commitments and support can be useful provided countrie stake the lead in developing processes that match their national situations, institutional capacities and local contexts. There is much to be learned from emerging experiences; Marshall Islands and Fiji (see case 11) are prime examples.

Further information:

Reimaan National Planning Team. 2008.Reimaanlok: National Conservation Area Plan for the Marshall Islands 2007-2012: http://bit.ly/isFqa4

Baker et al. 2011. Reimaanlok: A National Framework for Conservation Area Planning in theMarshall Islands: http://bit.ly/jg1fDi

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Contributor:

Nicole Baker

The planning team. © Nicole Baker

A detailed process for conservation planning at the level of each atoll was developed to ensure that the process would be led by local stakeholders and resource owners. This approach still enabled the objective of a representative network of conservation areas to be met, because each of the Marshallese atolls have a similar array of habitats and geomorphology; a situation that is not necessarily found in other Pacific Island countries.

Key Principles for Establishing Community-Based Conservation and Management were developed based on input from all stakeholders and analysis of past experiences and included: the need to focus on community leadership and social sanctions, ensuring project sare initiated by the community, ensuring adequate time and commitment of resources by Marshallese agencies, using appropriate tools for community-based planning and integrating multiple realms and objectives: marine, terrestrial, and human.

The establishment of a local planning process also allowed for incorporation of other issues such as climate change impacts, adaptation, and food and water security, into a process of dialogue within the community.

Background

Impressive progress has been made by Pacific Island countries to find locally appropriate ways to improve resource management and conservation. However, funding these efforts at a national scale and over the long term represents a significant challenge to these cash-strapped Small Island Developing States.

The Republic of Palau is the western-most country of the Micronesian region comprising over 500 islands of which only nine are permanently inhabited; 95 percent of the estimated 20,643 residents live on just three islands. Despite the small population and land mass (535km^2) Palau enjoys good communication links which contribute to a steady influx of tourists who come to enjoy the rich biodiversity and culture and tourism constitutes the country's primary source of income and ensures that the national per capita income far exceeds others in Micronesia.

Palauan culture exhibits deep knowledge and a duty of care for natural resources, which combined with the increasing reliance on tourism, motivated the development of a national network of protected areas combined traditional, modern state and national approaches to conservation areas. In 2003 Palau enacted landmark Protected Areas Network (PAN) legislation, encouraging national and state governments, in consultation with traditional leaders, to collaborate in designing a nationwide resilient network of terrestrial and marine protected areas. By 2006 the President of Palau challenged the world and his fellow Micronesian Heads of States through "The Micronesian Challenge" committing Micronesian countries to conserving 30% of near-shore and 20% of terrestrial areas. Soon Palau achieved their target with 23 recognized protected areas.

What was intended and how was it addressed

In order to achieve the goal of a sustainably financed protected area system, the PAN carried out an analysis of the costs involved in supporting the network and managing the protected areas. PAN then sought fund-raising options with government and NGO partners. Considerable lobbying by political and local champions for law changes alongside work to raise community and stakeholder support, led to a series of important laws that intended to pave the way for sustainable financing of protected areas.

What was achieved

By 2008 a non-profit corporation, the PAN Fund,was created to manage and disburse funds earmarked for the PAN sites. In 2009, legislation established the "green fee" – a US$15 fee to be paid by tourist visitors upon departure from Palau to be wholly used to support PAN. The "green fee" became effective in November 2009. In addition to this fee, the fund receives direct contributions from donors and a portion of interest from the Micronesian Challenge Endowment Fundwhich is managed by the Micronesian Conservation Trust (MCT). MCT is a well established conservation trust fund supporting conservation in Micronesia with a proven track record.

The 2009-2010 fiscal year saw US$1.29 million raised, which combined with the endowment raised through the Micronesian Challenge, provides the Board of Directors with adequate funding to support the network and individual protected areas.

Diving is one of the key tourist attractions in Palau. © Eric Verheij

Lessons and conclusions

The implementation of the Green Fee in 2009 made Palau the first country in the world to fully meet its obligations for establishing a self-sustaining network of protected areas under the Convention on Biological Diversity alongside meetings its commitment to the Micronesian Challenge. This has been achieved thanks to the willingness of tourists to pay for the conservation of the resources which they enjoy and the eventual support of communities and the hotel industry.

The collection of the "green fee" on departure has caused unease among some tourists as the US$15 green fee and US$20 departure tax together seem onerous. This might be avoided if the fee were charged as an arrival conservation fee, collected before the great Palauan environmental experience.

Partnership is one of the keys to the success in the sustainable financing of Palau's conservation efforts. The Nature Conservancy provided the much needed expert and technical support in the creation of the "green fee". Transparency and consensus on the need, process and distribution of revenue has been vital to Palau's success.

This and other experiences such as those of Cook Islands provide important lessons for other Pacific Countries as they tackle the challenges of securing sustainable financing. Cook Islands has been implementing the Environment Protection Fund since 1994, raising funds through departure taxes, a proportion of which is supposedly designated for conservation and protection of the natural environment. Some of the key lessons include the importance of conducting appropriate economic and financial studies (including the "willingness to pay" of tourists) and determining the amount required to fund essential resource management activities. Great care must be taken in designing and governing the fund management mechanism to ensure that funds are used for the purposes for which they were raised.

Further information and sources:

Mauritius +5 Status Report: Republic of Palau http://bit.ly/igCVcw
Palau Green fee hits the 1 million mark in less than a year: Press Release 2010. http://bit.ly/mlsaCd

Contacts:

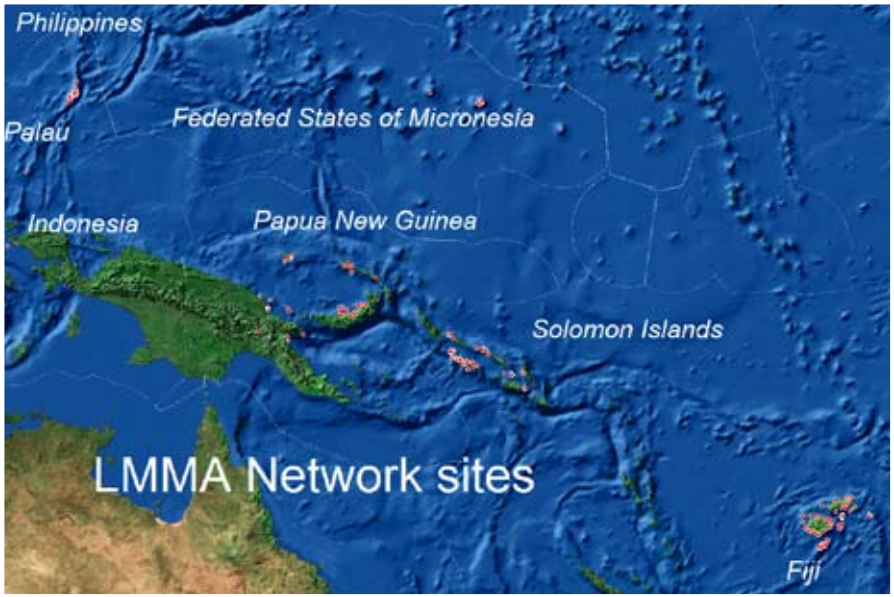
Joe Aitaro, PAN Coordinator, Palau Ministry of Resource and Development. Email: pan@palaunet.com

Contributors:

Joe Aitaro and Eric Verheij

The Board includes representatives from The Nature Conservancy, Conservation International, the Palau Minister of Natural Resources, Environment & Tourism, the Minister of Finance amongst others. The regulations that govern the board state that the number of government representatives should not outnumber the other members of the board, and that the Minister Representatives are not able to vote as they are ex-officio members. The Board of Directors is advised by a technical committee which reviews management plans submitted by communities and provides advice to the Board on applications for funding.

Signing of the amended Protected areas Network Act which includes the Green Fee. © Eric Verheij



Background

Supporting community-based approaches across the Pacific, given the wide distribution of both location and cultures of communities, poses numerous challenges. The need to tailor approaches to each country and village means that centralized technical advice and training are not always well suited to the needs of practitioners struggling with context-specific issues in the locations they are working.

As a response to these challenges new approaches to training and support for practitioners have developed, including the Pacific Islands Community Conservation Course (Case 16) and a variety of networks supporting marine managed areas, conservation leaders and specialist topics such as invasive species. The Locally-Managed Marine Area (LMMA) Network is one of the pioneers in this field.

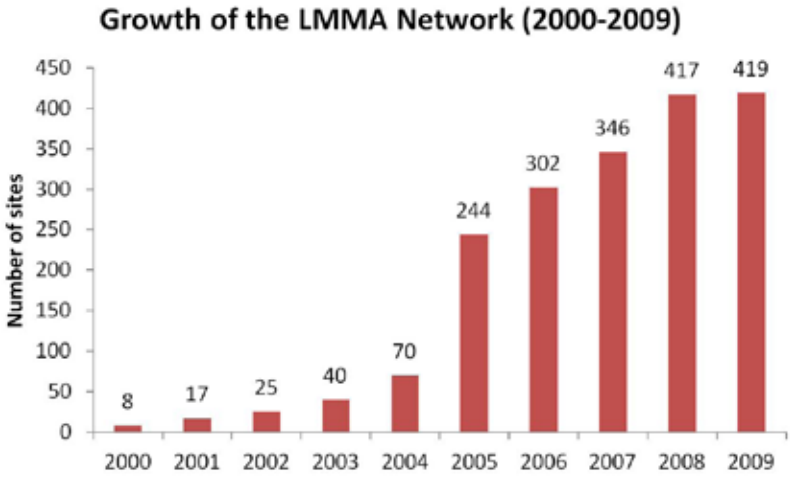
What was intended and how was it addressed

Practitioners from NGOs, universities, governments and communities from South East Asia and the Pacific shared the view that there was a pressing need to share and learn from experiences in order to more widely promote community-based management and conservation of marine resources. These practitioners convened in two workshops in 2000 to address this need. The vision shared was for communities to effectively and sustainably manage their coastal resources to improve their livelihoods and protect biodiversity. The participants coined the term "Locally-Managed Marine Area" to describe the approach. The underlying reasoning was that local ownership of resource management increases the likelihood of culturally appropriate and sustainable outcomes.

Thanks to the support of two US foundations (Packard and Macarthur) the LMMA Network was established comprising members from NGOs, governments and communities working at a handful of local sites in the Indo-Pacific. The network was coordinated by a team who were seconded from their organizations for a small portion of their time on an annual basis to develop the network. Time and effort was invested in developing a "Social Contract" to establish the governing principles of the network, particularly address issues of community rights and intellectual property. A structured approach to generating and sharing information for optimal learning was developed into a "Learning Framework".

Following the lead of Fiji (see Case 9), countries were encouraged to establish national networks to provide more targeted support and coordination. Some of the main approaches to facilitate cross site and inter-agency learning include: training and exchange visits between communities and practitioners, mentoring and regular regional or sub-regional meetings.

In a similar process and partly inspired by the LMMA Network, the Pacific Island Managed and Protected Area Community (PIMPAC) Network was established in 2005 to address a similar set of challenges and the need for more specific support to the US Flag Islands and the Freely Associated States. Since its establishment, PIMPAC has been supported and coordinated by the US NOAA Coral Reef Conservation Program and the Micronesia Conservation Trust.



Lessons learned and Conclusions

The provision of both structured and less formal practitioner exchanges alongside more formal training, has been integral to success. The networks have recently undergone strategic planning to ensure they evolve to continue to meet the needs of their growing membership.

In the case of the LMMA Network, the rapid membership growth over a decade necessitated the development of a more formal governance system of a council comprised of representatives from each country to replace the original structure which was intended for a much smaller network. The unexpected growth of the LMMA Network provides an ongoing challenge to continue to meet the needs of members as they gain capacity and increase in number, to meet requests for assistance from ever further afield, and to develop systems for formal learning over great distances and different situations.

Further information:

Govan et al. 2008. Locally-Managed Marine Areas: A guide to supporting Community-Based Adaptive Management. http://bit.ly/9t8JBr

Contacts:

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info@lmmanetwork.org
http://www.lmmanetwork.org/

Pacific Island Marine Protected Area Community:
http://www.pimpac.org/

Contributors:

Toni Parras and Mike Lameier

What was achieved

LMMA regional meeting and exchange 2008 © LMMA

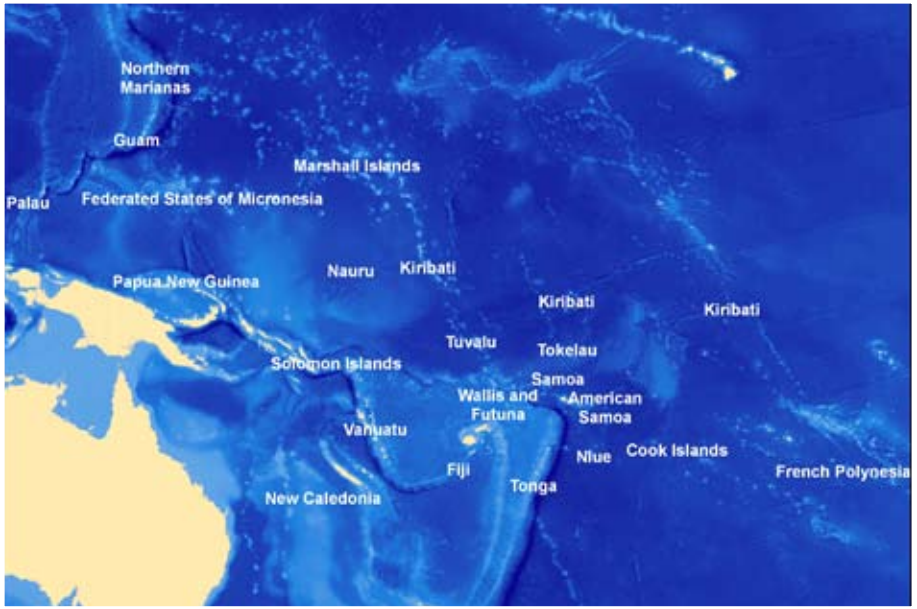
The LMMA Network grew steadily and by 2009 comprised some 419 member sites in Fiji, Indonesia, Palau, PNG, Philippines, Pohnpei, Solomon Islands and Vanuatu. The main approach adopted and promoted by LMMA is Community-Based Adaptive Management (CBAM). CBAM involves community led development of management plans, some form of monitoring, and ongoing process for reviewing and improving the plan based on monitoring results and/or changed need or situations. To date, more than 600 villages are involved and upwards of 300 management plans have been developed covering over 12,000 km^2. Members in most of these countries have established national networks and are active in coordinating support from the variety of NGO and government members as well as contributing to the development of national policy and institutional capacity that support CBAM. Other interested groups worldwide are involved as well and exchange visits regularly occur outside the official member countries and encompass French Polynesia, Samoa, New Caledonia, Madagascar, Colombia, Costa Rica, Panama, Australia, New Zealand, Timor Leste, Vietnam and Hawaii. By 2010 over 9,000 people had participated in LMMA Network events. Continued interest from new sites and organisations attest that the LMMA Network, and indeed the approach itself, is useful in the Pacific and beyond.

PIMPAC uses four types of activities to reach its goals and objectives: 1) Training and Technical Support, 2) Learning Exchanges, 3) Partnership Building, and 4) Communications/ Information Sharing. These activities primarily focus on building capacity within the areas of management planning for marine and terrestrial areas, both biological and socio-economic monitoring, enforcement and climate change adaptation.

CASE STUDY 16

Pacific Islands Community-based Conservation Course (PICCC)

Regional training at the University of the South Pacific



Background

The Pacific Islands are dispersed over a third of the globe and blessed with extremely rich marine biological and habitat diversity, matched by remarkable diversity of its people's cultures. However this diversity presents many challenges to resource managers. In remote island settings, communities, who in most cases are customary owners of the land, inshore areas and natural resources therein, are the lynchpin in achieving wise resource management and Western, relatively centralized, approaches to resource management do not work. Until recently this represented a significant challenge in terms of capacity building, as most modern expertise and information came from the West.

This lack of human capacity to address government and local resource managers' needs was identified in 2000 through a study conducted by the Secretariat of the Pacific Regional Environment Programme (SPREP). The following year a collaboration between SPREP and the region's University of the South Pacific (USP) had initiated to develop a course for Pacific Island practitioners.

What was intended and how was it addressed

The course had to meet design constraints which included ensuring that approaches appropriate to the region were taught, that appropriate methods were used both during the course and in subsequent support to trainees, information and tools provided were likely to be applied after course completion and to keep the course concise so as not to remove key staff from their jobs for an excessive period.

The Pacific Islands Community-based Conservation Course (PICCC) was subsequently designed as a year-long, 3 phase (learn, implement, reflect) programme during which candidates undertake four weeks of intensive face-to-face learning at the Fiji campus of USP, complete a six-month work attachment in their home country and a final 3 weeks to finish the last components of the course, refresh phase 1 and report back on their practical assignment.

The training is carried out almost entirely by regional and national resource management practitioners including staff from USP, SPREP and international and regional NGOs. The admitted trainees do not necessarily require academic qualifications but are selected primarily on their current work activities, their drive and enthusiasm and existing relevant skill sets. The trainees bring much to share with each other. The training methods focus on participatory learning with a minimum of lectures while maximizing group and practical learning experiences involving case studies, role plays, fieldwork and site visits. The relationships developed with other trainees and staff from the various institutions are important for ongoing lesson sharing and mentoring that can be maintained over the Internet in the long term.

Presentation by participants of their PICCC group work © Patrick Mesia

Lessons and conclusions

Over the past decade the course has maintained an adaptive approach to ensuring thatthe curriculum and course structure met the evolving needs of Pacific Island conservation professionals. Much of the success of the course is due to the roles and qualities of selected trainees alongside the unique course structure that minimized out of country time while still optimizing opportunities for technical information exchange and ongoing mentoring. Trainees were readily able to both gain and apply knowledge to address challenges in their own work. The PICCC model has now been identified by major donors and NGOs, as appropriate for other parts of the world. Future plans for the course include national PICCCs taught by alumni and applying the approach to training of climate change specialists.

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Pacific Regional Environment Programme (SPREP): Bruce Jefferies brucej@sprep.org

Contributor:
Bill Aalbersberg

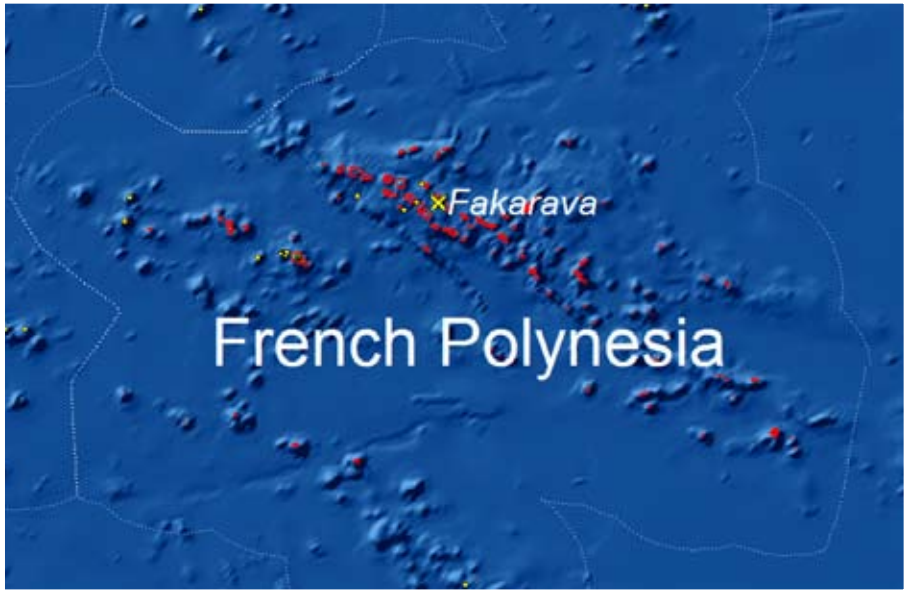
What was achieved

PICCC participants 2009 © Patrick Mesia

The course has run every alternate year since 2001 and attracts participants from island states across the South Pacific. The course has received acclaim from governments, NGOs and sponsors alike.

More than 100 participants from 14 Pacific Island countries have attended the course, including community leaders, most government Environment and many Fisheries Departments, international and most national conservation NGOs. There are usually near-equal proportions of government and non-government participants.

Participants are taught skills that can be applied in their work places and they particularly value the participatory approaches and confidence gained. Former PICCC students are found in almost all the major conservation projects in the region and many now lead local conservation organizations. Former trainees frequently maintain contact with each other and their trainers.



Background

The concept of islands as laboratories to develop understandings of relationships between human populations, development, natural resources and the environment has been tested in the Man and Biosphere Programme, UNESCO (United Nations Educational, Scientific and Cultural Organization). This programme uses reserves to examine and test how to reconcile the conservation of biodiversity, the quest for economic and social development and the maintenance of associated cultural values (UNESCO, 1996, Biosphere reserves: The Seville Strategy and the Statutory Framework of the World Network, UNESCO, Paris. 18pp).

In 1972, the French Polynesian government designated Taiaro's atoll as a strict scientific reserve, and in 1977 the area was classified as a UNESCO reserve. In 1995, the French Polynesian government decided to extend the area of the Taiaro reserve to include inhabited islands in order to fulfill the requirements and goals laid out in the Seville's Strategy for Man and Biosphere reserves.

What was intended and how was it addressed

In accordance with the Seville Strategy, biosphere reserves aim to: 1. conserve natural biodiversity, ecoystems and land and seascapes; 2. mainstream biodiversity conservation and sustainable use, in close cooperation with local communities; 3. promote research activites, capacity building, monitoring and education.

What was achieved

The Fakarava reserve was integrated to the world network of Biosphere Reserves on the 27th October 2006, by the international coordination council of the Man and Biosphere programme. The reserve is regulated by common French Polynesian rules and by two more regulatory tools which are a Management Plan, adopted the 12 July 2007 and a Sea Management Plan, adopted the 4 July 2007. These two plans provide a framework for the use and management of the terrestrial and sea areas of the reserve. The Fakarava reserve comprises of 7 atolls: Aratika, Fakarava, Kaueihi, Niau, Raraka, Taiaro and Toau - all of them are inhabited except Taiaro. The reserve is divided into three zones;

- a central area (530 km^2) for the full protection of the species, landscape/ seascape and ecosystem. In this area activities of local communities are allowed at a level which will not cause significant biological or ecological degradation to the natural resources
- a buffer zone (938 km^2) taking into account the needs of local communities and traditional activities
- a transitional area (1,214 km^2) including human activities

The Napoleon wrasse, one of the flagship species of the reserve. © CNRS-Thomas Vignaud

Lessons and conclusions

The Fakarava reserve involves policy-makers, administrators and local communities. The people inhabiting the atolls (1,516 inhabitants according to the 2002 census) have been involved in the formation of the reserve. Three key focuses of the reserve reflect the traditional knowledge, regulations and use of natural resources. In its final report, the Man and Biosphere Advisory Committee highlighted the successful participatory processes that were undertaken in the establishment of Fakarava reserve.

Further information:

http://www.environnement.pf/spip.php?rubrique65

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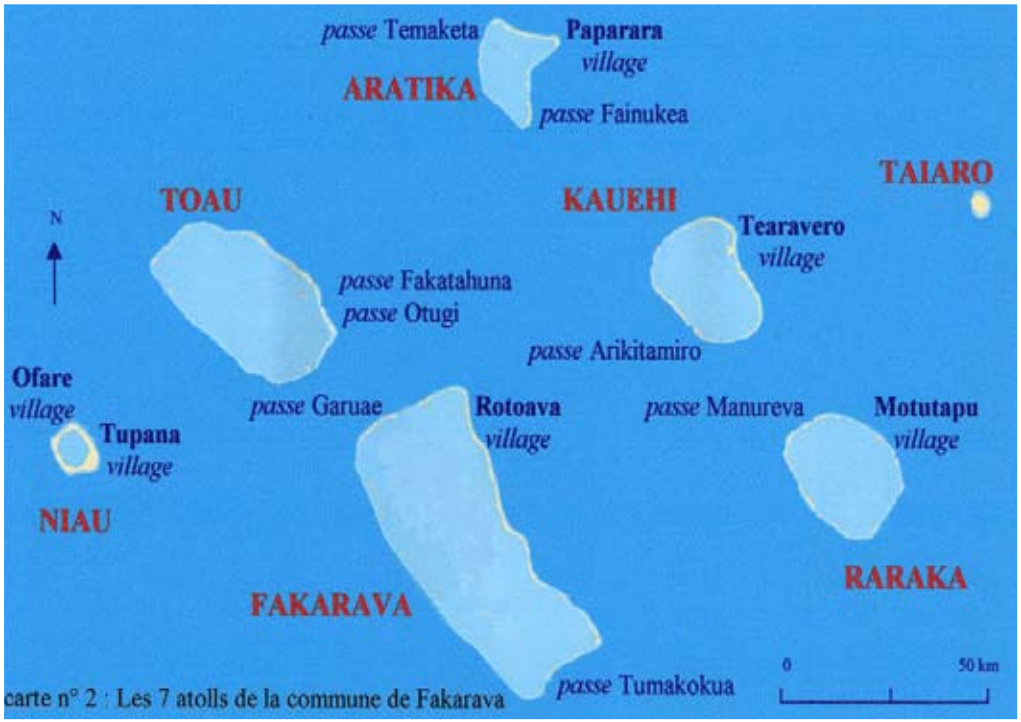
The management structure of the reserve includes a management committee chaired by the mayor of Fakarava; a scientific council and four associations based in the inhabited atolls. These associations are the Association biosphère Tamaketa, Association Garuae, Association Te Vevo O Te Manu Kaveka and the Association Vaitamae.



The seven atolls of the commune de Fakarava.

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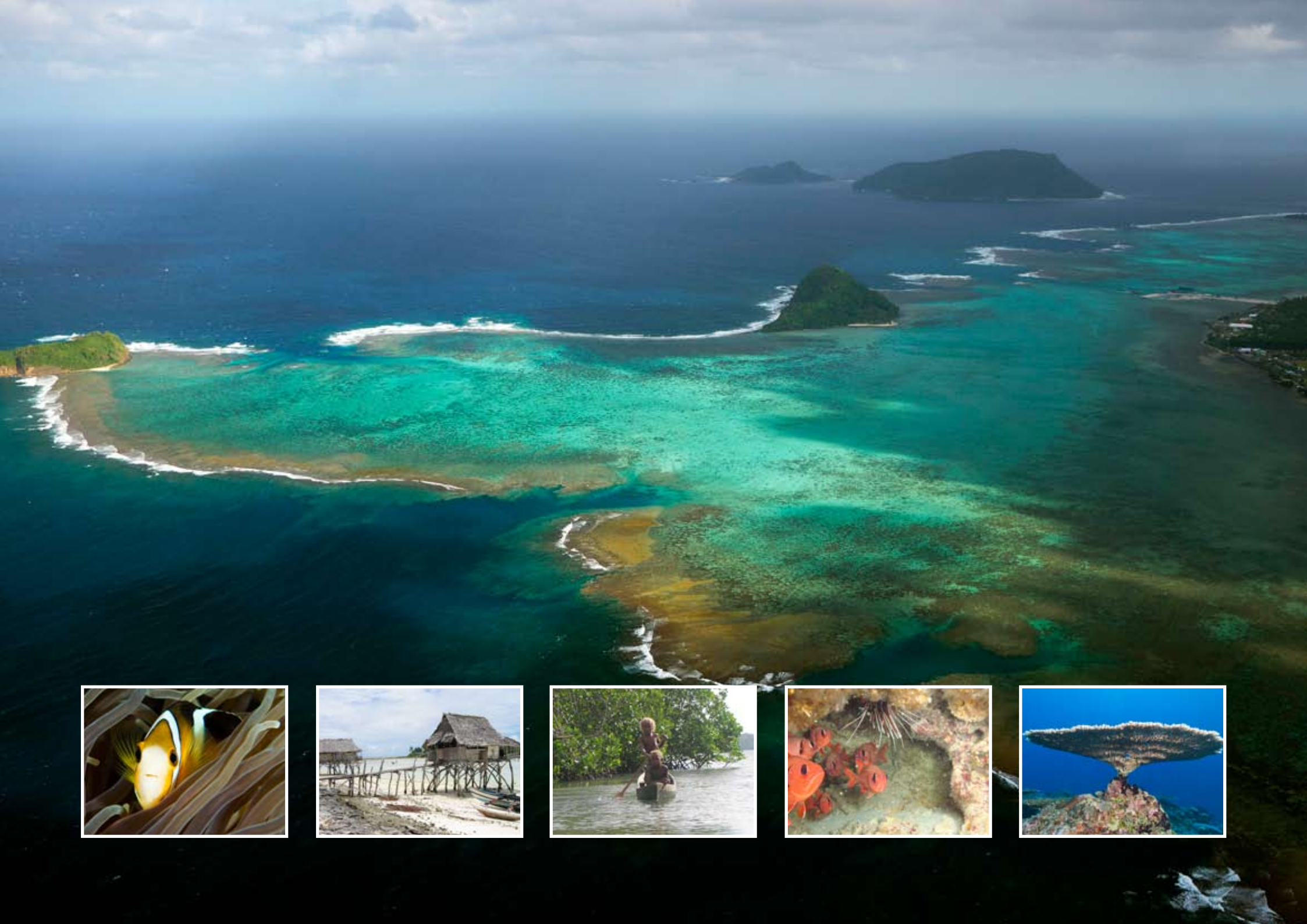
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