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The Role of Locally-managed Marine Areas (LMMAs) in the  
Development of Ecotourism in Fiji.

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# **The Role of Locally-Managed Marine Areas (LMMAs) in the Development of Ecotourism in Fiji**

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Pacific island communities have long practiced traditional management systems such as seasonal bans and temporary no-take areas that can be adapted for modern use. Most Pacific islands have a concept of community marine tenure either legally enshrined or informally recognized. Such a system helps ensure that benefits from marine biodiversity conservation efforts will accrue to the local community. The strength of customary marine tenure (CMT) has declined in many areas and there is widespread belief that marine resources are in decline in the Pacific.

A recent global review of marine reserves clearly indicates that fully protected marine reserves:

- Protect exploited populations and enhance the production of recruits, which can restock fishing grounds.
- Supplement fisheries through spillover of adults and juveniles into the fishing ground.
- Provide a refuge from fishing for vulnerable species.
- Maintain biodiversity of natural biological communities that are different from those in fishing grounds.
- Facilitate ecosystem recovery after major human or natural disturbances.

Another trend in reserves, both terrestrial and marine, is to work with communities near them to define what activities are allowed in these reserves and how communities can achieve benefits from them. In the Pacific this movement is being realized by the application and modification of traditional conservation practices in what is commonly described as "locally-managed marine areas (LMMA)." This term was agreed to by Asia and Pacific conservation practitioners at meetings held in the Philippines and Fiji in August, 2000 to represent:

- projects are often co-managed by the community and government or some other body so locally managed is preferred to community-managed
- the tool employed is not strictly "marine protected areas" or "marine reserves" as the protection may be species specific, spatial, temporal, involve gear restrictions or be some combination of these

- other non-fishing issues may be addressed

Established projects that have involved biological monitoring from the outset are showing impressive gains of the kinds described above for marine reserves. In Verata, Fiji, for example, important marine resources such as *Anadara sp.* clams and mangrove lobsters *Thalassina anomala*, are increasing by roughly 300% and 200% annually in protected sea-grass beds and mangroves, respectively. There is also an associated annual spillover effect of roughly 100%. Local biodiversity in these areas is also recovering.

These LMMA activities combine many of the best integrated coastal management (ICM) practices and are now considered a type of ICM

- government departments at all levels are involved, including local communities
- appropriate national government departments from many sectors can be called on for assistance
- the science of monitoring (both community and outside) is used to enhance management decisions
- the community marine management plans prioritize threats of all types on their marine resources
- stakeholders from civil society and industry (especially tourism) are included. Progress is often initiated with assistance of local or regional NGO
- income generating activities are often considered (the increase in artisanal fisheries themselves often provide added income)
- projects monitor success and adapt their management plans accordingly

A survey of the LMMAs in the region has recently been compiled as part of the SPREP International Waters program. Information on eight potential project countries is given below:

### **Federated States of Micronesia**

There are State trochus sanctuaries in Pohnpei, Chuuk, Kosrae and Yap. Pohnpei State has initiated several marine and mangrove sanctuaries under the Marine Sanctuary and Wildlife Refuge Act (1998), but none of these are yet being actively managed. Lenger Island Marine Reserve as of 2001 was the only community-based MPA in Pohnpei. There are no community-based MPAs in Chuuk or Yap, but the FSM government is keen to foster NGO development and conservation partnerships because budgetary restrictions have diminished its capacity for natural resource management and conservation. In Kosrae, the Utwe-Walung Marine Park is supported by the South Pacific Biodiversity Programme (SPBCP) and has been operating since 1995. The Kosrae Integrated

Resource Management Project closely follows the approach developed by SPBCP for the Utwe-Walung Marine Park.

## **Fiji**

Up until recently conservation efforts in Fiji appear to have concentrated on terrestrial areas and at a national level this is still true. Fiji has no national marine parks although Astrolabe Bay is worthy of consideration. The two officially recognized marine reserves in Fiji are Makogai island, under the jurisdiction of the Ministry of Forestry and Fisheries, and the first legally recognized community-based reserve at Ono Island, Kadavu. There are a growing number of community-based reserves that are not government-recognized, as well as several proposed MPAs involving various interest groups including the Fiji Fisheries Department, WWF (World Wide Fund for Nature), USP, local communities and business concerns.

The Verata Tikina project includes several community-managed and monitored MPAs that include species-specific and full no-take reserves (NTRs) established by traditional *tabu* within larger management areas, and alternative income generation (AIG) through bioprospecting. It involves partnerships between local communities, various NGOs and USP and has been used as an example to promote establishment of similar projects elsewhere in Fiji.

## **Kiribati**

Kiribati has two marine conservation areas, Kiritimati and North Tarawa. Both areas have been adopted as SPBCP projects. The current status of the Kiritimati Conservation Area is unknown. SPBCP funding for the North Tarawa Conservation area terminated in 2001 and a transition strategy for project continuation was prepared for both areas.

## **Marshall Islands**

Jaluit Atoll, the only MPA recorded for the Marshall Islands, is the most recent conservation area established by the SPBCP in 1999. Because this MPA is still in its infancy there is no transition strategy to date.

## **Palau**

Most MPA initiatives in Palau are State/community projects covered by state legislation and initiated since 1994. "All these areas were established due to a local concern over depleted resources or habitat, and over diminishing control". The exceptions are the Ngerukewid Islands and the Ngerrumekaol grouper spawning area, which are covered by both national and state legislation.

Conservation areas are initially established with customary authority, such as a *bul*, which in most cases is reinforced with state legislation. The different states provide varying degrees of ongoing support for the MPAs. The future of most of the areas is uncertain past the end of the *bul* and the need for management plans and parallel national legislation to support conservation areas are priority needs.

## **Samoa**

Samoa's only national MPA is the Palolo Deep marine reserve. As of May 2001, 65 villages had established fisheries management plans under the Fisheries Division Extension programme, of which 57 have established NTRs. The Sa'anapu-Sataoa Conservation Area has had limited success but there is support for its continuation. IUCN is executing a GEF project to establish large multiple-use MPAs in the Aleipata and Safata districts, the latter of which includes the villages of Sa'anapu and Sataoa. The only other recorded conservation area in Samoa with a marine component is the Uafato Conservation Area being established by the Uafato Village Council in collaboration with the O le Siosiomaga Society, a local NGO, and SPBCP.

## **Tonga**

Six of the eight listed MPAs in Tonga have been established under the Parks and Reserves Act (1995) and the Birds and Fish Preservation Amendment Act (1974), which are administered by the Ministry of Lands, Survey and Natural Resources. Tenure in all of these belongs to the state. Current management status of these reserves is unknown but according to the UNEP-WCMC database there is no active management in the Ha'atafu Beach Reserve, apart from notice boards proclaiming the rules, and this may also be the situation in the other state reserves. There appears to have been some local community opposition to establishment of at least some of these areas e.g. the Pangaimotu reef reserve. Community-managed projects in Tonga include giant clam sanctuaries established by the Ministry of Lands, Survey and Natural Resources but run by local communities, and the SPBCP Ha'apai Conservation Area.

## **Tuvalu**

Tuvalu has a single MPA at Funafuti atoll, established under the SPBCP in collaboration with the Funafuti Town Council. Funding for the project terminated in 2001 and a draft transition strategy was prepared.

## **Vanuatu**

With the exception of the President Coolidge and Million Dollar Reserve, all of the MPAs in Vanuatu are community-managed areas under customary tenure arrangements, supported in many cases by the Fisheries Department. Some of these appear to be quite successful while others have failed, largely as a result of division within communities and CMT disputes between communities.

In these LMMA efforts the Pacific is leading the way and much effort is being expended to replicate these efforts. The International Waters project of SPREP and the International Coral Reef Action Network and current and future Peace Corps initiatives are examples.

## **The Fiji LMMA Network as a Case Study**

### **History**

Before 1990 there had been scattered attempts in Fiji to set up marine protected areas such as efforts by chiefs on the north coast of Vanua Levu but these generally involved temporary closures. As the international conservation world began to see the importance of involving communities in managing protected areas, project approaches in development agencies began to reflect this changing paradigm. Thus in the mid 1990s WWF began working with communities in Ono, Kadavu and USP in association with the US Biodiversity Conservation Network working in Verata, Tailevu to help communities develop marine resource management plans.

The community tenurial control of marine resources in Fiji and concerns about declining marine resources made fertile ground for these efforts which proved to be quite successful (*ide infra*). This attracted funding by US foundations to the above organisations as well as the Foundation for Peoples of the South Pacific for work in Cuvu tikina. The three organisations were also encouraged to work together in these efforts and held discussions which led to the formation of joint teams sharing each others' ideas and skills to work in new communities seeking also to conserve their marine resources.

Although NGOs can play a key role in initiating innovative programs, for such programs to be sustainable and extend country-wide involvement of the government is critical. Thus in mid-2001 the Fisheries Department was presented with the achievements of these LMMA projects and urged to become part of this effort. As this was in line with evolving government thinking for Fisheries to also have a conservation focus as well as an economic development one, the approach was enthusiastically welcomed and other departments such as Environment, Tourism and Fijian Affairs were also keen to be involved.

In 2002 this Fiji LMMA Network was very productive in working with new communities (a total of 13 communities now have set up marine protected areas governed under an approved management plan) and also conducting training exercises for Fisheries Department extension officers. A high point of the year was the recognition of the achievements of the Network by the international conservation community by the award of US\$30,000 Equator Initiative Award at the Johannesburg World Summit on Sustainable Development for best practice in developing partnerships for sustainable development and poverty alleviation.

Another major effort was a workshop in December, 2002 of all community leaders involved in this work which resulted in the Lomawai Declaration endorsing this approach to conservation and development and urging government and the private sector to support it.

Given below are some of the biological and socioeconomic benefits that have resulted from this work and a description of the methodology that has made this kind of work so successful.

## **OUTCOMES**

### **1. Small community-based protected areas can yield significant increase in biological productivity.**

For *kaikoso* in Verata this increase is about 300% per year in the protected area and 100% per year in nearby areas by spillover effect.

For *mana* this is about 200% per year in the protected area and 100% per year in nearby areas by the spillover effect.

For fish we do not have long-term quantitative data but from other Pacific countries increases (although smaller than *mana* and *kaikoso* due to different reproduction methods) have been found. In the Philippines one of the earliest protected areas has demonstrated that a very high biomass of fish develop. Time can range from a few years for small fish to ten years for large fish such as groupers. The fishery is also enhanced in adjacent areas.

As increased biomass yields are observed, the community replicates marine protected areas elsewhere in their coastal waters, thereby increasing the degree of protection as well as productivity through time. Verata started with only one community deciding to declare a tabu area but once they heard of the benefits from the community monitoring they too wanted these benefits and there are now 10 protected areas in Verata *tikina*.

**2. Associated biodiversity also seems to increase in undisturbed (protected) areas.**

Verata people report the return of a number of marine organisms associated with target species in the protected area that were previously rare or locally disappeared. For example, *veata* (seahare), one of Fiji's delicacies, are now being found again in the area where *kaikoso* clams are protected for the first time in decades.

Also, predators of target species (e.g. *vai* (stingray) in *kaikoso* areas) also show large increases.

Finally, as more protected areas are being replicated through time, a larger diversity of associated organisms and habitats are observed as well.

It is also likely that protected areas would facilitate ecosystem recovery after natural disturbances such as cyclones or bleaching events.

**3. Socioeconomic benefits are also significant.**

In Kumi, Verata there has been a 35% increase in household income in three years, largely due to *kaikoso* sales.

Catches are easier to acquire, with women reporting being able to harvest 4-5 bags in the same time they could previously collect one.

Community and cultural pride have been increased with spread of the successes being experienced, and younger generations are taking a new interest in both science and traditional ways.

**4. Community cohesion is increased.**

Working together to protect a marine area can lead to a more unified village which allows them to better develop and carry out other projects.

**5. Skills are developed and shared.**

Community members trained in planning and monitoring and analysis and communication have shared their lessons with other villages and often improve provincial environmental policy.



## **PROCESS**

### **Stage 1 : Village meetings**

The approach taken is to respond to community requests as success is more likely when communities already realise they have a problem. Even so it is important to make clear to the communities the idea of the project, "to help the communities develop and carry out a marine management plan which will ensure adequate marine resources for generation to come in the community". It is critical at this stage that enough meetings are held to ensure that a large number of community members are aware of initiative, understand it and want to participate. It is of course critical that local leaders (chief, minister, local school headmaster, etc.) are fully behind the project. This can take several months (especially if the original approach was made in the hope of obtaining material assistance).

### **Stage 2 : Resource Management Planning Workshop**

This generally takes about three days. Usually there are three representatives (a man, woman and youth) from each group (e.g. village, *yavusa*) to make a total workshop of 20-30 participants. Participatory activities are facilitated which lead the group to develop a vision, priority threats to that vision, an action plan (with responsibilities) to address key threats, a statement of what each action hopes to achieve (quantitative change in a given time frame) and an idea of the importance of monitoring the effects of the interventions.

At this point an approach must also be developed to discuss the plan at village meetings and at the *tikina* (and, if necessary, provincial) level. Regular communication with the communities to encourage this process is important at this stage.

### **Stage 3: Biological monitoring workshop (3-4 days)**

Once the marine management plan has been fully discussed and agreed to, a follow-up workshop is held. Key indicators are discussed and possible ones for each intervention suggested. The "best" one is decided and monitoring techniques discussed. Communities decide which monitoring it feels it can do and how it might be done. Training is then carried out for the method(s) and a baseline survey done.

Such techniques will be very new to communities so data analysis and how to report to the full community and follow-up monitoring will need a lot of encouragement and support. Such monitoring has in the past

seldom been done during projects, especially by communities. We see this aspect of having the community members judge for themselves the effectiveness of their actions and share and learn from this to be a critical factor of a successful project. In Kumi village in Verata, for example, communities had chosen to have rotating reserves in which one area was tabu for a year and then opened and a different area closed for a year. Monitoring showed they were more *kaikoso* but quite small ones. When the communities learned also that *kaikoso* reach sexual maturity after about 18 months, they changed their plan to rotate the areas every two years instead of annually.

#### **Stage 4 : Socioeconomic monitoring**

So as not to overload villages this monitoring has often not been approached until biological monitoring is well underway and communities see how useful monitoring data are. By now a "community team" of those really committed to the project has usually evolved and our approach has been to have a day discussion of Socioeconomic (SE) Monitoring and its possible usefulness and bring in someone from another community who has used this tool. An exercise may be developed for people to monitor their household use of cash for a period.

Meetings continue to encourage the development of SE Monitoring Plan but the decision to implement this should be finally the community's.

### **THE FUTURE**

Some individual LMMA sites have already discovered the mutual benefits of having the tourism industry be closely involved in these community-based conservation efforts. This has been well established with the Fijian Hotel and Cuvu tikina and more recently with the Hideaway Resort and Tagaqe village. Waitabu village in Taveuni has also developed a snorkeling "trail" through their LMMA. Although I am sure everyone in the tourism industry understands the importance of maintaining a healthy marine environment to their continued success, ways to do this in a cost-effective manner may not have been so obvious. With the presence of groups like the LMMA Network, Coral Cay Conservation and Resort Support there is now increasing information available to hotels to assist them to make these decisions. Among possible initiatives are:

1. have marine staff trained in environmental matters and LMMA approaches
2. prioritise support for sites with established management plans
3. develop joint management plans with community

4. minimise negative environmental impacts on reef
5. support restoration of marine areas
6. proactive development of ecotourism sites
7. regulatory approaches (conservation trust funds, dive tax)
8. holistic approach to marine conservation

From an LMMA Network point of view we feel that the tourism industry is a key stakeholder in our work whose involvement needs to be more formally developed. We hope attendance at this workshop will assist in this effort. The Ministry of Tourism has been a strong supporter of our work and the newly-formed Fijian Tourism Resource Owners Group has also realised the benefits of working together. Our hope is that this will also happen with the Fiji Tourism Industry.

The success of the Fiji LMMA efforts to date have resulted in numerous requests from communities/*tikina*/islands/provinces for assistance. At present there is a backlog of about 30 requests to FLMMA for assistance. We have realised that we need to develop strategies in which local resources such as Fisheries extension officers, trained community members and local tourism establishments work together, supported by FLMMA to get started, to meet these growing requests. In the end we will all benefit from this.