The Locally-Managed Marine Area (LMMA) Network
Improving the practice of marine conservation

2006 Annual Report:
Enhancing LMMA Effectiveness
through Continued Learning

Solomon Islands. Photo by Hugh Govan

Filming Fiji reefs. Isaac Ward
Papua New Guinea. Pam Seeto
Indonesia. Cliff Marlessy
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¹ For the purposes of this report, the term “Micronesia” refers to the region in the Pacific, which includes the Federated States of Micronesia (to which Pohnpei and Yap belong), as well as the Republic of Palau.
I. INTRODUCTION

The Locally-Managed Marine Area (LMMA) Network is a group of practitioners involved in various community-based marine conservation projects around the globe who have joined together to learn how to improve our management efforts. Although the Network was officially launched in 2000, this is our third Annual Report. The first of these, the 2004 Annual Report, gave an in-depth introduction and history of the Network. Last year’s 2005 Annual Report focused on Results and Lessons Learned over the last five years. This year’s report presents more results from continued monitoring and data analyses, as well as stories from select sites and profiles on some of our many outstanding community members. We also give updates on progress made toward our objectives, member status, and country activities from last year.

This report is aimed at the people and organizations with whom we currently work, as well as external audiences interested in marine conservation and community-based management. This report is intended for those who are already familiar with our work and the Learning Framework (for more information, please see our previous years’ Annual Reports and the LMMA Network Learning Framework, available on our website www.lmmanetwork.org).
II. Progress on Objectives

We continue to make good progress toward our four original objectives. The first phase of the Network focused on community engagement – developing the Learning Framework (LF) and introducing the concept of LMMAs to local communities in the region. The second phase saw much effort in training communities in biological monitoring and gathering data on Learning Framework factors. Now in the third phase, we are concentrating on analyzing those data to better understand the conditions under which LMMAs work best, and from this, learning how to improve our work. Here we present updates on the progress made toward our objectives.

**Objective 1: Protect Biodiversity at Specific Sites.** By 2004, to reverse the rapid overexploitation and degradation of coastal and marine resources and ecosystems and to preserve aquatic biodiversity in at least ten sites across the Indo-Pacific region.

The Network started out with only a handful of sites in 2000. By 2004, we had 70 sites and 109 protected areas. These numbers have grown to the current 302 LMMA sites covering over 10,000 sq km, with 329 protected areas covering at least 1,750 sq km. The graph below shows the number and growth in LMMA sites across the Indo-Pacific region since the Network’s inception.

**Growth of LMMA Network (2000-2006)**
The table below gives a breakdown of LMMA Network site statistics as of 2006, including number, size, geographic distribution, and more. Please note that areas given for LMMAs and Tools/MPAs are minimum estimates only, as not all figures are available. Please also note that the total number of associate sites/members do not necessarily show up in the total number of LMMAs, as some Associates are sites and others are organizations who are interested in the Network but do not have an active site involved.

<table>
<thead>
<tr>
<th>Country</th>
<th>Total No. of LMMAs</th>
<th>LMMA Sites - Full</th>
<th>LMMA Sites - Provisional</th>
<th>LMMA Sites/Member - Associate</th>
<th>No. of Villages</th>
<th>No. of Tools/MPAs</th>
<th>LMMA Area (sq km) (*minimum)</th>
<th>Tool/MPA Area (sq km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiji</td>
<td>213</td>
<td>15</td>
<td>21</td>
<td>177</td>
<td>279</td>
<td>213</td>
<td>8,497</td>
<td>345</td>
</tr>
<tr>
<td>Indonesia</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>0</td>
<td>16</td>
<td>18</td>
<td>700</td>
<td>36</td>
</tr>
<tr>
<td>Palau</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>266</td>
<td>263</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>16</td>
<td>0</td>
<td>8</td>
<td>12</td>
<td>17</td>
<td>32</td>
<td>503</td>
<td>503</td>
</tr>
<tr>
<td>Philippines</td>
<td>17</td>
<td>8</td>
<td>5</td>
<td>4</td>
<td>17</td>
<td>17</td>
<td>270</td>
<td>7</td>
</tr>
<tr>
<td>Pohnpei, FSM</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>4</td>
<td>2</td>
<td>64</td>
<td>15</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>42</td>
<td>0</td>
<td>19</td>
<td>23</td>
<td>75</td>
<td>46</td>
<td>567</td>
<td>581</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>302</strong></td>
<td><strong>31</strong></td>
<td><strong>59</strong></td>
<td><strong>217</strong></td>
<td><strong>411</strong></td>
<td><strong>329</strong></td>
<td><strong>10,867</strong></td>
<td><strong>1,750</strong></td>
</tr>
</tbody>
</table>

The graph below shows the breakdown of sites per country.

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2 In comparing this table with last year's, there are some numbers that are lower than in 2005. The reasons for this are varied. For example, the number of associate sites may be lower this year due to the fact they these projects have moved up to being a provisional or full member. Similarly, fewer provisional sites may mean that these sites have moved up to full sites. Alternately, some LMMA sites were not performing or progressing as provisional members, so they went back down to associate. Finally, some numbers were reported erroneously in the past, including MPAs that weren't necessarily part of the LMMA Network. For example, the apparent decrease in number of Pohnpei's LMMAs is from misreporting in past years due to difficulty in categorizing for reporting purposes; there are indeed 5 communities helping in the management of 7 MPAs in Pohnpei, but only one of them is an active member of the LMMA Network. That is, only one of those communities (Enipein) is actively exercising LMMA tools. The rest of the communities are members of the local MPA network but are still in training to use LMMA tools. We apologize for any confusion and are making our best efforts to bring you the most current, accurate numbers.
Many of our sites have experienced success in increasing specific species as well as overall habitat health. Please see Section III: Data Results as well as our website for specific highlights.

**Objective 2: Develop Resource Management Policies in the Places where these Projects are Working.** To innovate and disseminate appropriate practical policies and strategies for management and conservation of coastal and marine resources and ecosystems and to work with appropriate partners to get them adopted and implemented in selected villages, provinces, and countries by 2004.

Network members continue to work on getting management policies implemented in their respective countries and provinces. The following are some highlights from specific sites:

- Improving enforcement policy in Indonesia – In November 2006, Agustinus Morin, the head of Padaido Islands sub-district in Indonesia, announced and circulated instructions to all the islands in his administration to watch for and apprehend fishers using bombs or dynamite. In addition, discussions with the head of Jayapura District in Indonesia has lead to the creation of a new division of Marine Police in Tanah Merah Bay, with a special task for monitoring non-sustainable fishing practices that are bad for the environment. In the first two months they arrested and jailed two groups of fisherman using bombs in these areas.

- Dynamite fishing has been strongly curtailed at one site in Fiji due to a series of workshops on dynamite fishing held for stakeholders by the Institute of Applied Science at the University of the South Pacific and the Government of Fiji, with follow-up by community leaders. See Section IV: Site Stories and Member Profiles for case study.

- There is increased recognition of traditional resource management approach by governments and others. For example, the community of Meos Mangguandi and Meos Auki in Indonesia have signed and announced their Natural Resources Management Act last year, which has specific regulation regarding traditional fishing boundaries.

- The LMMA Network is having discussions with SocMon about the possibility of integrating the LMMA Network’s Learning Framework with the regional Socioeconomic Monitoring Initiative for Coastal Management (SOCMON) guidebook. Check our website in the future for new developments.
Objective 3: Promote Learning Locally and Globally About the LMMA Tools. To determine the conditions under which locally-managed marine areas can be most effectively employed to meet both coastal biodiversity conservation and fisheries food security needs in developing countries in the Indo-Pacific region, and once these conditions have been determined, to help practitioners understand and use this knowledge.

We continue to promote learning globally about the LMMA tools through workshops, site visits, presentations, awards, our website, publications and DVDs.

Formal Learning

One of our main focuses in 2005 was to build upon the momentum from 2004 toward promoting learning through data analysis activities. In 2006, we teamed up with the World Fish Center to convert the LMMA Network’s Learning Framework Database, which is used to store and analyse data collected, to a more user-friendly interface using a Microsoft Access database. The Access database was introduced to members at a Network-level workshop in Bali, Indonesia in February, hosted by ILMMA in collaboration with USP. Various other workshops were held in several countries to introduce the new database and train community members and partner organization staff how to input and analyse data from specific sites. Additional and improved data are allowing more rigorous LF analyses to be performed. The analysis of this data helps us learn the conditions under which LMMAs succeed at improving fish and other marine stocks, and those which are unfavourable. (see Section III: Data Results for more information).

Analysis has been performed by a group from FLMMA in association with USP and the French-funded Coral Reef Initiative for the South Pacific (CRISP) on how different scales of monitoring managed marine area effectiveness affect the outcome of results (see box on next page for summary; for full report see our website). FLMMA has also become the local implementer of a major Conservation International project taking place in four countries in the world examining managed marine area effectiveness.
This report presents data from the most comprehensive assessment undertaken on differing levels of ecological survey effort employed in Fiji. The four methods examined in order of increasing taxonomic complexity (number of variables or species observed) were FLMMMA community monitoring, Reef Check†, Akuila Cakacaka’s Masters thesis method† and that used by Coral Cay Conservation in Fiji†.

All of these methods utilise a belt transect underwater visual census methodology with differing lengths of transects though for standardisation, all were set at 20m long by 5m wide by 5m high in this investigation.

All methods employed a target species list.

Of these target species lists, only the FLMMMA methodology observed individuals from all of its target taxa; the other methodologies observed only 67, 70 and 59% of the species included on the target species list for the ‘Reef Check method’, ‘Akuila’s method’ and the ‘Coral Cay method’ respectively.

All five of the FLMMMA variables (species) displayed significant differences between harvested and MPA sites with all results being significant above the 99% Confidence Intervals.

Only butterfly fish populations recorded by the ‘Reef Check method’ displayed significant differences. All six other encountered ‘Reef Check’ variables did not show significant differences between MPA and harvested samples.

Four out of the fifty-seven observed species recorded using ‘Akuila’s method’ showed significant differences between MPA and harvested samples, with one (Chaetodon rafflesi) being highly significantly different (99% Confidence Interval).

Eight out of the eighty six observed species recorded using the ‘Coral Cay method’ showed significant differences, with five of these variables being highly significantly different (99% Confidence Interval)

Only the FLMMMA and ‘Coral Cay method’ exhibited significant differences between MPA and harvested samples when a multivariate analysis was undertaken to examine differences in the entire population across all the variables surveyed.

Reducing the taxonomic resolution of the data collected using the ‘Akuila’s method’ to Family level increased the power of this method to detect differences between MPA and harvested area data sets using both univariate and multivariate analysis techniques.

Parrotfish and Emperors were the two taxa observed in the FLMMMA method that contributed most to the Bray-Curtis dissimilarity between MPA and harvested community composition.

Damselfish and the Wrasse family were the two most important taxa observed in the ‘Coral Cay method’ for describing the dissimilarity between MPA and harvested data sets.

This study was isolated to only one geographic area and one coral reef habitat class and examined only one measure of MPA effectiveness. Additional studies will be needed to form a more Fiji-wide understanding of techniques to assess MPA effectiveness.

This study, however, suggests that the use of an extensive indicator species list representing a high taxonomic complexity for assessing the effectiveness of MPAs in terms of fish population abundance may be less effective that a shorter list that has been selected by community members at a lower taxonomic resolution. A possible reason for this is the infrequency of observation of many target species in the more complex method and the consequent problems this creates in statistical analysis.

† Note that when reference is made to individual methods, these represent the target species or indicator lists used by each method only and are not intended to be a comparison of the method itself. Changes have been made to the prescribed method in terms of transect length, survey depth and replicate positioning. Accordingly, hereinafter in this document, all method names are given in inverted commas.
Conferences & Workshops

- There have been an increasing number of invitations for LMMA members to speak about the LMMA Network at regional and international conferences.
- FLMMA coordinator, Sunia Waqainabete, was among the Fiji delegation that attended the 8th Conference of the Parties of the Convention on Biological Diversity (COP8 of the CBD) in Curitiba, Brazil, March 2006.
- Philippine Country Co-coordinator Jovelyn Cleofe represented the LMMA Network at the UNEP Coordinating Body on the Seas of East Asia (COBSEA) "The 5 C's in Coral Reef Monitoring and Management in the Seas of East Asia - Consensus, Communication, Collaboration, Community and Coordination" in Pattaya, Thailand, May, 2006.
- Dr. Joeli Veitayaki of the School of Marine Studies and Alifereti Tawake of the Institute of Applied Sciences, both in Fiji, attended the First Peoples Worldwide (FPW) Fund for Indigenous Peoples & Protected Areas Round Table in Belize in June 2006.
- Hugh Govan of the Foundation of the Peoples of the South Pacific International (FSPI) and Dr. Bill Aalbersberg of the Institute of Applied Sciences in Fiji presented on LMMA work at the International Tropical Marine Ecosystems Management Symposium (ITMEMS) in Cozumel, Mexico, October 2006.

Awards

In 2006, the following Network members were recognized for their outstanding achievement:

- Pohnpei LMMA Member Bradley Phillip of the Conservation Society of Pohnpei wins RARE'S E.O. Wilson Grant for the Pohnpei Mangrove Crab campaign.
- FLMMA member Alifereti Tawake was awarded the Whitley Award for People and the Environment for a second year.

Communication

The website continues to expand; in 2006, we added Traditional Practices, a section describing historical customs that are being revived in modern management efforts at some sites. Site Profiles will be coming soon, giving details on specific sites throughout the region.

We have also completed a Lessons Learned video, in which members from various sites share their experiences, challenges and advice on LMMA work. So far the video has been screened at local sites and international conferences (such as the International Tropical Marine Ecosystems Management Symposium in Cozumel, Mexico, October 2006). The Community Biological Monitoring Training video, released last year, has been distributed to various communities and practitioners throughout the Asia-Pacific region. For ordering information on either video, contact info@lmmanetwork.org.

This year, we plan to release the LMMA Guidebook, which presents step-by-step guidelines for setting up an LMMA and provides simple and discrete community organizing activities and ‘tools’ that are used to facilitate and guide communities, local leaders, and their conservation partners through the process of creating and managing an LMMA.
**Objective 4: Enhance Capacity of Institutions in the Region.** To strengthen the capacity of our partners in key skills (project or program design, management, monitoring, analysis, and communications) required to undertake effective adaptive management of marine resources.

Country networks are increasingly effective in carrying out their work as a result of continued training and project support for community members and partner organization staff. In 2006, we continued our capacity-building activities for our partners throughout the region, holding workshops on data management and analysis in six countries, with 88 people from communities and partner organizations trained.

In addition, a training of trainers meeting was held in Fiji to improve Learning Framework analyses, attended by practitioners from various countries in the region. Other workshops have been held to introduce the LMMA approach to others who are not necessarily members of the Network. The table below shows a breakdown of number of people trained throughout the region over the last few years (note: these figures are a minimum, as not all numbers are available).

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of people trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiji</td>
<td>~1020</td>
</tr>
<tr>
<td>Indonesia</td>
<td>1036</td>
</tr>
<tr>
<td>Palau</td>
<td>23</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>167</td>
</tr>
<tr>
<td>Philippines</td>
<td>155</td>
</tr>
<tr>
<td>Pohnpei</td>
<td>250</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>87</td>
</tr>
<tr>
<td>Other (Hawaii, American Samoa, Yap, etc.)</td>
<td>~100</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>~2838</strong></td>
</tr>
</tbody>
</table>
Other efforts to enhance capacity in the region include discussions with Pacific Islands Marine Protected Areas Community (PIMPAC) about enhancing the roles of Universities in LMMA work by developing marine resource management programs that would allow for students/practitioners to get applied training in the field, as well as members of the Network Coordination Team attending USP’s Pacific Islands Community-based Conservation Course (PICCC) in 2007, which will provide participants with the practical knowledge and skills required for the sustainable management of protected areas.

2007 Plans (dates subject to change)

- **January**
  - International Pacific Marine Educators Conference, Hawaii
  - Our Sea of Islands Conference, Hawaii

- **April**
  - Network Coordination Team meeting

- **May**
  - SOCMON meeting
  - Indigenous Stewardship meeting

- **June**
  - Indigenous Stewardship roundtable

- **August-September**
  - CRISP meeting

- **October**
  - 8th Pacific Islands Conference on Nature Conservation and Protected Areas hosted by SPREP and the Roundtable for Nature Conservation, Alotau, Papua New Guinea

*Romblon fish identification training. Photo by Melchor Deocadez*
III. Data Results

One of the biggest lessons we have learned in the last two years is that we need more data on common indicators collected from all sites in order to make useful comparisons. We have made great progress toward this. There has been a great increase in LMMA sites with site reports, which gives details and data from monitoring at their LMMA sites – up from 14 in 2005 to 44 in 2006. We have assessed the effectiveness of different biophysical indicators and monitoring approaches at two workshops, and new analyses have been performed in December to assess 13 socioeconomic factors in relation to LMMA success.

The following are data results from Fiji, which had a total of 21 site reports\(^3\), nearly half of those for the entire Network.

1.0 Temporal changes in indicator abundance, Fiji

The graph on the following page shows changes in indicator abundances over time at 15 sites in Fiji, in both the protected (MPA) and the open harvest (control) areas. The indicators monitored vary by site.

Specific findings:

- Fourteen of the 15 sites showed increases in indicator abundance within the MPA, except for Vatu-o-lalai village along the Coral coast (this could be because the site is located close to a resort and/or because enforcement may be low).
- Eleven sites showed increases in the control area, possibly as a result of ‘spill-over’ from the protected area. (Decrease or no change in indicator abundance at the remaining four sites could be due to intense fishing pressure in the open harvest areas, or other reasons).
- The Namada MPA along the Coral coast had the highest indicator abundance at both the start (T0) and end (Tx) periods, in comparison to other sites.

\(^3\) The graphs below only represent those sites that had the appropriate data for that particular comparison, thus not all 21 sites may appear in the graphs.
• Kumi and Ucunivanua villages, which are monitoring *kaikoso* (a marine clam), have the most time series data (nine years, from 1997-2006). The Ucunivanua MPA has been opened temporarily for village functions but this did not appear to have had any negative effect.

![Temporal changes in indicator abundances at 15 LMMA sites in Fiji](image)

**2.0 Indicator success (SMD) by site**

The graph on the next page was plotted using all indicators surveyed (from only one survey period each), for nine of FLMMMA’s 21 sites. This graph uses SMD (Standard Mean Difference) calculations – that is, a comparison of indicator abundance in MPA against Control areas at one point in time rather than a time-series comparison in order to assess intervention effects. The MPA vs. Control SMD calculation is made for each indicator from one survey period only.

Indicators are represented by the dots in the graph. Because most sites monitor additional species on top of their *key* indicator species, some site therefore had more indicators than others. Indicators (dots) that appear above the ‘0’ in the y-axis mean that there is more of that species in the MPA than the control area and thus show a positive intervention effect.

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4 For the purposes of this report, we will use the term ‘SMD’ to mean “measure of success” in determining intervention effects.
Conversely, those that fall below ‘0’ on the y-axis mean that there is more of that indicator in the control area than in the MPA and thus show a negative intervention effect. Only two sites – 1. Nukuvou in Kadavu and 4. Naboutini in Vanua levu – have indicators which show positive intervention effect and no negative. The main purpose of this graph is to show that indicators at any one site have different SMDs (intervention effect success).

The dots represent the SMDs for different indicators that are monitored at each site.

**Site codes:** 1 - Nukuvou, 2 - Nasegai, 3 - Namuana, 4 - Naboutini, 5 - Daku, 6 - Vatuolalai, 7 - Navakavu, 8 - Tavua and 9 - Lekanai

3.0 Correlation Between SocioEconomic (SE) Factor and Indicator

The next chart shows the influence of specific socioeconomic (SE) factors\(^5\) in relation the abundance of the particular indicator species. More detailed information on each factor can be found in the LMMA Network Learning Framework (LF), available on our website [www.lmmanetwork.org](http://www.lmmanetwork.org).

We analyzed the SMDs (intervention effect or measure of success) for two indicators: one fish (Emperor Angelfish, *Pomacanthus imperator*) and one invertebrate (sea cucumber for most sites and *kaikoso* clam, *Anadara* sp. for Verata sites). The reason for calculating two SMDs is to see if the responses for each indicator vary drastically. We combined both SMDs into one graph for comparison.

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\(^5\) The sample size for each of the SE factors analyzed below varies, depending on the number of sites that collected data for a particular factor.
As evident from the graph below, some factors showed similar correlations (either positive or negative) but of different strengths, while other factors showed positive correlation for one indicator and negative for another.

The results are mixed. Understanding of resources rules, rules compliance, and credibility of enforcers are showing negative correlations to LMMA success, while most others are positive. Some factors show relationships which weren’t expected. For example:

- The Resource conflict within the community factor (G8) shows a moderate positive relationship with the Emperor indicator, signifying that the higher the conflict for usage of marine resources within the community, the higher the success of the LMMAs, when we were expecting the opposite.

- The Leadership factor (G7) indicates a very weak relationship between good leadership and LMMA success. Again, we were expecting the opposite.

Some the reasons that may explain the “unexpected” patterns could be:

- Outlying data points which skew the rest of the data
- The need for more data points (number of sites)
- Questions not clear during interviews thus yielding erroneous data
- Incorrect transcribing of interview questions

We continue our efforts in producing more and accurate site reports for data analysis and look forward to presenting more results in the future.
IV. Site Stories and Member Profiles

Site Story: Dynamite in Fishing – Tavua, Fiji

A community’s quest for protecting their marine resources has led them to epitomize the true spirit of conservation. Their achievements have demonstrated what can be accomplished by the sheer will of the people who are determined to work together to secure their wellbeing and that of their future generations.

One of the biggest concerns faced by the Tavua Village community was the use of dynamite in fishing. Tavua Village is situated close to the Emperor Gold Mine of Fiji in Vatukoula on the north shore of Viti Levu. Dynamite is smuggled out by the miners and sold to fishermen and businessmen in the Tavua area. Thus dynamite fishing was becoming a norm and a fast way to get easy cash. People from within the village and those from outside were using dynamite to fish in the Tavua Village fishing ground. More and more villagers and outsiders were getting seriously injured as a result of dynamite fishing. Several people lost their lives and many lost their eye-sight or body limbs, rendering them disabled.

Attempts by the village Qoliqoli Committee chairman, Mr. Kitione Ratuba Sabua, to stop dynamite fishing have many times almost cost him his life. He has been subject to verbal and physical abuse such as being beaten up by dynamite fishermen, having a spear gun hurled at him, and on one occasion having a spear gun held to his face whilst threats were made against his life. This he endured for several years. When asked what motivated him to champion this course, he said “dynamite will completely destroy our fishing ground and destroy our people”. He said he was doing this for his people and for Fiji and that dynamite use in fishing should be stopped.

Dynamite fishing is illegal in Fiji but the enforcement of this law is close to nil. Mr. Sabua said it was the hopelessness of this situation which made him determined to fight to save his people and their marine resources. He wanted to see this law enforced but it meant coming up against the insurmountable.

In his quest to conquer the impossible, Mr. Sabua sought the support of his chief, the Tui Tavua Ratu Ovini Bokini, who himself is a champion for resource conservation. This union saw the establishment of the Tavua Qoliqoli Committee (TQC) in 2003 as a part of the Fiji Locally Managed Marine Area Network. With dynamite as their priority issue, the TQC requested the assistance of USP’s Institute of Applied Science to conduct a workshop on the dangers and impacts of dynamite fishing. In April of 2004, IAS and the government’s Department of Mineral Resources collaborated to conduct a one-day workshop at Tavua Village. This was attended by 38 participants from key government departments, organizations and community representatives who are directly involved in the use of dynamite in fishing.
The one-day workshop aimed to raise awareness on dynamite fishing in Fiji and to identify issues that enhanced the illegal use of dynamite. As a result of the workshop, an action plan was developed to address the issues identified. This plan included petitioning government to consider making changes to the laws and the system in trying to stop the problems discussed and also to seriously consider the implications dynamite fishing has on the environment and human lives.

The workshop was the first step. After having learnt the dangers and impacts of dynamite use in fishing, Tavua villagers were banned from using dynamite. This was enforced by the village chief or the Tui Tavua himself. Now a fine is in place; if anyone is caught with dynamite in the Tavua fishing ground, they will pay a hefty fine of $1000.

It was late 2005 to early 2006 that developments began in earnest towards the policing of dynamite use. Confiscations of fishing boats and equipment of dynamite fishermen were made. These boats and their respective fishing equipment were then taken to the Tavua Police Department while the owners awaited their prosecution. Most of these confiscations erupted into angry verbal exchanges and even physical altercations, and in a few instances lead to life-threatening situations. Yet despite these efforts, Mr. Sabua and the TQC were not successful in prosecuting the offenders. Offenders would always get away with very minimal penalties because of the lack of will in the judicial system to convict dynamite fishers.

A majority of these dynamite fishing cases were acquitted for lack of evidence because most dispose of the dynamite sticks before their apprehension. After these acquittals, frustrations of the TQC prompted the Turaga na Tui Tavua to purchase a video camera so as to capture the act of dynamite fishing on the spot. Footage of such activity were to be used as evidence against the offenders. Although there was now footage on these illegal fishing activities, the offence was not held as serious and still dynamite fishers are freed or have very minimal penalties exacted. It is clear that the judiciary, who were invited to the initial workshop but did not attend, need to be targeted for further awareness.

Patrols out into the fishing grounds are more frequent now as compared to pre-2005. The increase in the frequency of patrols has come about through initiatives by the TQC through certain offices in the Ba Provincial Council to acquire a new aluminum boat to conduct patrols in the Tikina Tavua fishing grounds. Not only is the aluminum boat used for patrolling the fishing ground but also to carry out biological monitoring of their marine resources. At times patrols have been hampered due to lack in finances for fuel costs but in general it is definite that the patrolling of the fishing grounds has improved.

To get to the root of the problem the TQC sought the collaboration of the Emperor Gold Mine to join in the fight against dynamite fishing. This was a success. The EGM has since 2005 hired 8 people, members of the TQC from the village, to work in shifts, guarding the mine entrances and conducting body searches to prevent dynamite being smuggled out of the mines. With the main source of dynamite supply at the Gold Mine now under security, the committee looked to the Fiji Royal Navy to provide assistance with monitoring their vast fishing ground. Due to the large area of their fishing ground, poaching was another major problem faced. It was difficult when poachers used dynamite for fishing. The committee’s request to the Fiji Navy was a success. The Navy has, when available, gone on patrols around the Tavualevu fishing grounds to keep off poachers and prevent the use of illegal fishing practices.
Under the leadership of the Tavua Qoliqoli Chairman and the Tui Tavua, the community of Tavualevu is living the vision they have had since 2004 – “To be committed to work together towards the stopping of the illegal use of dynamite in fishing.”

Note: The story above is sourced from the chairman of the Tavua Qoliqoli Committee, Mr. Kitione Ratuba Sabua. Mr. Sabua is also the Fiji Locally Managed Marine Area (FLMMA) Network site representative for Tavua and an employee at the Emperor Gold Mine at Vatukoula at the time of this writing. In December, 2006, the Emperor Gold Mine suspended operations for economic reasons and its future is uncertain.

Member Profile: Saki Fong, Fiji

No stranger to the Fiji Locally-Managed Marine Area (FLMMA) Network family and communities, Sakiusa “Saki” Patrick Fong has completed his Masters and is now on staff at the Institute of Applied Sciences (IAS). Saki is collecting and checking on the quality of socioeconomic data from IAS LMMA sites. Saki’s thesis “Community Based Coastal Resources Management in the Fiji Islands: Case study of Korolevu I Wai district, Nadroga” is now available at the USP Library. He is actively involved in the socioeconomic aspects of IAS village governance and waste water management projects. Saki is also site liaison officer for the Tikina Namuka and Dogotuki LMMA sites in Macuata, Vanua Levu and the Tikina Vanuaso and Navukailagi on Gau Island.

Member Profile: Yoseph Rumkorem, Indonesia (in memoriam)

Most of the people in the surrounding islands of Meos Mangguandi knew Yoseph Rumkorem as a community leader against bomb fishing. He would be very angry if he discovered fishers using bombs for collecting in his traditional fishing ground. In many cases, he would run out with his boat to find them and occasionally he had to fight with fishers, some of whom were also his relatives.

Meos Mangguandi is one of 12 islands in the upper Padaido Islands that has had the best coral cover in Biak District, Papua. Yoseph helped create an awareness and desire for the community to look after their marine area, especially the coral reefs. In October 2002, Yoseph was selected as the head of the village of Supraima. During this time, he invited the LMMA Network to help him and his community develop Meos Mangguandi Island as a learning centre for marine conservation. He also facilitated the mapping of the island’s natural resources and the development of a management plan.

Yoseph worked very closely with community youth, church and traditional institutions on enhancing the Sasi, or protected areas. In March 2005, Meos Mangguandi announced the waters around the entire island as a Sasi, or closed area, for 5 marine species. This was the first time for such a closure in Padaido islands (see LMMA Annual Report 2005).

Yoseph was also known as one of the best boat drivers. In January 2005, Dan Miller from the MacArthur Foundation visited his island. Upon his return to Biak, the sea was very rough and the waves were very high, about 2 meters. Yoseph would not allow anyone else to drive the boat carrying such a guest. At 4 a.m., before the sun rise, they departed the island. An hour later, they were still struggling with the waves, and one of the passengers fell into the sea. The
waves were so hard that one of the outriggers (wooden beam that balances the boat) broke. After four hours, with Yoseph driving, they arrived safely in Biak.

In early February 2007, after one week in the hospital, Yoseph Rumkorem passed away. Yunus Rumkorem, his old brother, relays Yoseph’s last words: “Please continue the work that I have already done for the island of Meos Mangguandi.”

Thank you and God bless Yoseph Rumkorem. We will work hand-in-hand to take care of your island and continue to develop it as a learning centre for community-based marine conservation.

**Site Story: Pere Village LMMA, Papua New Guinea**

Pere is located on the Southern part of the Manus mainland, Papua New Guinea. It has a population of over 1000 people. The inhabitants of Pere and some other villages on the island are known as the Titans (or Mwanus). The Titans consist of about one third of the total Manus population. The Titan people were believed to be originated from the Kasta reef about 90 nautical miles southeast off the Manus mainland. The island sank some 1000 years ago, forcing these Titan people to settle on the southern part of Manus. Historically, the Titans were known as the great fighters, seafarers, and fishermen. They invaded and terrorized the inland people known as the Usiai tribes.

The Pere people have greatly changed since 1946 due to the intervention of Sir Paliau Moloat’s Spiritual Movement. Sir Paliau, known as the Last Prophet, united all the Manus Ethnic groups together. The Pere people repented when Sir Paliau performed his miraculous work and rituals. The Pere people threw away all their evil powers and retained what was deemed good for them, such as the inheritance of traditional fishing techniques, local knowledge on multi-species spawning aggregation, and healing powers.

The Pere people have limited land to plough for gardening, and fishing is still their art. Western influence has greatly affected the lives of the Pere people. Introduction of money has brought with it different needs and aspirations for a change in lifestyle. The Titan culture and the environment they rely upon have all been affected by westernization. The fish that were normally shared amongst the community for subsistence purposes is now turned into cash and benefits fewer families. Greed is a common thread that is contributing to rifts in traditional family ties and structures.
Due to the passing of information from generation to generation, the Pere people, unlike other Titans or Mwanus, have much local knowledge on local fish season and behaviour. They use the position of moon and the stars to determine the different seasons and location of fish. This practise has been going for some 1000 years. Pere has healthy coral reefs, seagrass and mangrove habitats which provide good nursery, feeding and breeding grounds for certain species. Despite continuous fishing pressure by these communities, local fish populations are generally in good health, although some aggregating fish species have declined in abundance.

Conservation efforts in Pere began with awareness and monitoring of local fish spawning aggregations (targeting Groupers) by The Nature Conservancy (TNC). Mr. Manuai Matawai, a Pere villager, was brought on board by TNC to assist the Pere community manage their resources better, and through the dedicated efforts of Manuai, the Pere people and their leaders have come to realize the importance of spawning aggregations and the need to improve resource management for conservation and ultimately, their livelihoods. Pere village proceeded to establish an environment committee, leading to the total closure and seasonal management of a few grouper spawning aggregation sites near the village. Monitoring has shown that fish and other invertebrates in the closed areas are recovering. The environment committee is now exploring ways to legally formalize the protected areas.

Pere community is one of the newest and most committed members in the PNG LMMA network. So far, the country network has carried out awareness meetings and facilitated a Community Biological and Socioeconomic Monitoring Training Workshop in late 2006 in Pere. Since then, the community has already completed their baseline surveys and data is waiting to be entered into the database.

**Member Profile – Stanis Giru, Kimbe LMMA Network, Papua New Guinea**

Stanis Giru, at the age of 53 years, is a well respected member of the community, and has been very active at his community’s LMMA. To anyone who meets Stanis for the first time, they would say that he is a very humble and a quiet person. And if you take a minute to talk to him, you will be surprised - he has a lot of knowledge and experiences that he willingly shares.

Stanis hails from Patanga Village in the Talasea District in Kimbe, West New Britain Province, Papua New Guinea (approximately 19.15 km from Kimbe Town, the capital of West New Britain Province). Stanis represents the Patanga LMMA committee and is also the secretary of the broader Kimbe Bay LMMA Provincial Network. He is a member of the representative clans of that area and is the Chairman of the local church council. He completed his year 10 studies and then went on to the University of Papua New Guinea in 1973 to study Accounting and Business. Since then he has returned back to the village to retire and is spending his time helping his community.

The Patanga LMMA is part of a coastal village community consisting of about 800 people who are subsistence farmers and fishers, who use the sea and the environment around them for food, shelter and other economic needs. This community became interested in *tabu* areas (reef closures) in the year 2001. The Patanga community LMMA is trying to restore and replenish
fish stocks, especially the *Karebu renge* (blue-striped surgeonfish). The community members are also doing surveillance to prevent destructive fishing methods.

Having grown up in the village, Stanis has witnessed the degradation of his community’s marine habitats over the past decade, and is now a true believer in improving and restoring their threatened marine resources. He believes that by doing so, he is contributing to the preservation of marine resources for the present and future generations in his village.

With the knowledge, respect and the education level that Stanis has, he has been a great leader, helping his community to understand the importance of their marine resources and mobilizing their youths to be active in monitoring activities. He has been an asset to the broader Kimbe community, representing the Provincial LMMA Network in community meetings and leading the local fundraising efforts to support the costs of site activities. Patanga LMMA committee is also spearheading the formation of a local association to assist with fundraising targeted at local businesses, donors and government agencies.

He is a very committed leader that is genuinely dedicated to conserving marine resources and will help his community to do so. He is a role model for younger generations within his local community.

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**Site Story: Marau Tabu Area, Solomon Islands**

**Introduction**

The Marau Sound Marine Protected Areas – or *tabu* areas – are located on the southeastern end of Guadalcanal Island (see maps below). The Marau Sound region is known for its beautiful small islands and sandy cays containing the most impressive fringing reefs. The first recent *tabu* areas in Marau Sound were established in 2004. Since then, the Marau communities, under the guidance of the Foundation of the People of the South Pacific International (FSPI), established eight more. These *tabu* areas were established at different locations within Marau Sound over the past three years: two in 2004, four in 2005, and three in 2006.

**The Marau Community**

The Marau community is a mixture of peoples from Guadalcanal and Malaita. They speak ‘Are’are dialect and are believed to have come from ‘Are’are, on nearby Malaita island just to the northeast.
The Marau communities have an understanding of what a tabu area can do for their marine resources, as well as a good knowledge of mariculture, specifically the farming of giant clam and other species. The latter is due to a long history of aquaculture trials, which trained Marau farmers on raising clams for export.

The Tabu Areas
Because of unsustainable use and depletion of marine resources, tabu areas are used as a conservation and management tool. The key species identified by the communities for protection and monitoring are mostly benthic species, such as giant clam, trochus (a type of snail), beche-de-mer (sea cucumber), as well as fish in general. Biological monitoring surveys conducted over the past three years show that resource health and regeneration of these marine species is gaining momentum, indicating that the idea of establishing tabu areas is now working.

Issues
The major issues faced by the Marau Sound tabu areas include commercial logging activities that increase siltation on the coral habitat and oil spills (from the machinery used). Poaching is also a grave concern. Some villagers do not respect these closed and no-take zones. In addition, anchor damage on corals from dive boats, presence of coral eating Crown-of-Thorns starfish, and coral bleaching slow or hinder regeneration of coral habitat.

Resource depletion is a grave concern. In the past, catch of these resources was very easy. For instance, even in just an hour or so, you could catch ample fish (more than 20), unlike nowadays when, after a full day of fishing travelling many kilometres to find a suitable fishing ground, you can catch less than 10 fish.

Progress
For the past three years, biological monitoring surveys were conducted at the nine established tabu areas by staff from FSPI, local partner Solomon Islands Development Trust (SIDT), Fisheries Department, and community representatives. In addition, local residents were trained by FSPI, SIDT, Fisheries Dept. and SILMMA Network in monitoring invertebrates, corals and reef fishes inside and outside these tabu areas. Follow up monitoring was conducted within these sites to closely monitor and detect any changes in habitat health or resource abundance. Results have shown an increase in trochus, beche-de-mer and fish in general. Marau communities continue to monitor and guard their tabu areas.
**Member Profile – Joe Keba, Solomon Islands**

Joseph lives in Leitongo, a village located in the Sandfly Islands of Ngella, Central Province, Solomon Islands. Under the leadership and guidance of the Foundation of the People of the South Pacific International (FSPI) and local partner Solomon Islands Development Trust (SIDT), Joe is currently employed as a village demonstration worker (VDW) for the Ngella communities. Joe’s work in Gela has seen the declaration of tabus grow from one to six villages in 2002 to nearly 20 in 2006. In addition, Gela has seen a revival of tabus in many villages elsewhere. Since 2002, Joe’s work and commitment to the communities’ established tabus in the Sandfly areas has been instrumental in achieving progress in conserving habitat and resources and the development of the Communities and Coasts programs. Through his efforts and contributions, more communities around Ngella had shown interest in establishing tabus at their sites.

Joe’s involvement in community work stems from being a member of the Solomon Islands Development Trust (SIDT) Community Action Theatre Group, which performs drama shows on health issues as well as environmental issues such as logging and overharvesting of marine resources. His participation and contributions led to some important developments and success of this theatre group in reaching communities throughout the Solomon Islands and the wider Pacific region. Seeing Joe’s capabilities, FSPI/SIDT took him on board to work as a village demonstration worker, a position to which he continues to be dedicated.

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**Site Story: Madolenihmw Cross-site Visit, Pohnpei**

Over the past three years, the Conservation Society of Pohnpei (CSP), in partnership with the Locally-Managed Marine Areas Network (LMMA), and local partners started an annual gathering of Marine Protected Area (MPA) Community Conservation Officers (CCOs). The CCOs are volunteers represented by the communities comprising Pohnpei’s MPA Network. The purpose of these gatherings is to exchange information between CCOs about their MPAs, update each other on accomplishments and lessons learned over the past year, and create work plans for the coming year. These gatherings also provide a powerful sense of ownership to communities that are resulted in active participation in resource management.

Not long ago, these CCOs only cared for their immediate families. Nowadays, due to the unbalanced order between the growing population and the scarce natural resources, these CCOs are beginning to form a line of defense to help maintain a balance to the people of Pohnpei. The CCOs are voluntarily conducting effectiveness monitoring programs to investigate positive or negative impacts of the MPA system. In addition to MPA effectiveness, CCOs are also pioneering alternative sources of income generations through the culturing of sponges and soft corals. CSP is working alongside Marine Environmental Research Institute of Pohnpei (MERIP) to provide technical assistance throughout the MPA Network in this area.

The CCOs have done numerous remarkable accomplishments to their localized community workplans and have influenced more community members to join and help. CCOs have also...
learned so many new things from various trainings and skill exchange programs. The CCOs have been trained to conduct fish and coral monitoring within their MPAs and are continuing to learn more.

On the 7th and 8th of December, 2006 Madolenihmw municipality hosted the 3rd annual MPA cross-site visit. The cross-site took place at the Sacred Heart Church at Tamwoarohi. The cross-site visit has become a tradition for the Pohnpei MPA network. Each year, at least two cross-site visits are conducted. A mini cross-site followed by an annual cross-site is taken each year. A mini cross-site is carried out between an active MPA community and a slow community. In 2006, for instance, Enipein communities generously invited Lenger community to a site visit to Nahtik. The day started with progress presentation by Enipein CCOs, followed by some information exchange. Also invited to the mini cross-site visit was the Marine Conservation Unit (MCU), the only deputized marine police. The focus of the mini cross-site was to assist Lenger Island through community networking. Finally, the annual MPA cross-site visit aims to gather CCO representatives from the whole MPA network.

The annual MPA cross-site visit rotates throughout the network. It was first held at Kitt (southern communities) in 2004 and then at Dehpehk/Takaieu communities (North-western communities). The network decided at the recent cross-site to organize the upcoming meeting at Parem Island (Northern communities). Parem Island is not a MPA community but is situated between Lenger and Mwahnd MPA communities. The network was very fortunate to gain community support from Parem community in 2006. One of the most successful outcomes from the cross-site was the commitment of partnership from Parem communities to join the network and assist Lenger and Mwahnd carry out their community action plan. The cross-site was concluded with closing remarks by Honorable Petrick Ringlen, Mayor of Madolenihmw Municipality. Mr. Ringlen concluded the meeting with some influential statements connecting the importance of keeping a balance between religion, culture and government. “These are the three elements of success.”

Annual gathering of Community Conservation Officers, Pohnpei. Photo by CSP.
V. Country Updates

In this section, we give brief updates on country activities from last year and plans for the future. We also present organizational charts and maps for each country. For more information on LMMA activities in specific countries, visit the Where We Work section on our website www.lmmanetwork.org.

FIJI

Fiji’s effort in community based coastal resource management has been widely publicised over the last 10 years. More than 189 villages spread across the 14 provinces in Fiji have established some form of community-based management measures while an additional 50-100 villages have indicated a keen interest and are at the preliminary consultation stage of the community engagement process.

The year 2006 was both a successful and challenging year for the FLMMA network. During the FLMMA Network 2005 National learning workshop in December 2005, a SWOT analysis was done by community representatives and field practitioners to identify concerns and determine needs of FLMMA community partners and government extension officers. A summary of needs is given below:

- Decentralize implementation of FLMMA activities to Provincial Levels of FLMMA sub-networks
- Build capacity for community facilitators in identified 8 provinces with established LMMA sites and provincial council institutional support
- Mobilize, train and support Provincial Implementation team
- Capacity building of FLMMA Network NGO and Government Partners
- Sharing of lessons learned and cross-site visits
- Provide technical support, training and monitoring materials to FLMMA Network partners and communities
- Strengthen technical FLMMA networking and coordination
- Develop and distribute communication and awareness materials to support Provincial Teams

To this end, much of FLMMA’s work in 2006 focused on these issues.

2006 Highlights

- April - FLMMA Executive Committee Meeting
- June - Laje Rotuma Initiative and SeaWeb were endorsed as official members of FLMMA. Laje Rotuma is a community-based education and awareness program and SeaWeb is a...
communications-based nonprofit organization focusing on ocean conservation. The Fiji Institute of Technology (FIT) also became a member of FLMMA in 2006; FIT students conducted a biological survey on Nanau-i-ra Island, data from which will be shared.

- **August**
  - Major General Sitiveni Rabuka, Former Prime Minister, current board member of the Native Land Trust Board, and Chairman of the Cakaudrove Provincial Council, briefed FLMMA members and others on the Qoliqoli Bill at WWF headquarters in Suva.
  - The Institute of Applied Sciences conducted a one-day workshop on using the Learning Framework socioeconomic forms in Muaivuso.
  - The FLMMA Biological Working Group organised a testing of *iqoliqoli* survey methods at the Muaivuso LMMA site, attended by representatives of FLMMA partner organizations, including Fisheries Department, Partners in Community Development Fiji Mamanuca Environment Society, Wildlife Conservation Society, WWF Fiji Country Program, FIT CRISP and the Institute of Applied Sciences.

- **September** - a mini Meta Analysis Workshop was conducted by Professor Jim Reynolds in preparation for the FLMMA country lessons sharing meeting held in October, where FLMMA partners analysed Learning Framework Data they collected.

- Members of the second oldest LMMA in Fiji - Votua LMMA in Ba, established in April 2002 - reviewed their Management Plan with assistance of a team from IAS/USP.

- At the request of the Bai kei Votua community, an IAS team conducted a workshop on Community Resource Governance and Leadership in hopes to forge a better working relationship in managing and conserving resources.

FLMMA continues to be a leader in community-based marine management in the region. For FLMMA’s full country Annual Report, visit our website.

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**INDONESIA**

In 2006, ILMMA worked to develop a comprehensive LMMA implementation team at each site to support activities at the site level, which will mostly be carried out by the community members themselves.

One of the recommendations from the ILMMA Evaluation Workshop is to have a legal body. So, in April, ILMMA became a legal entity and began to develop the Indonesia LMMA Social Contract to ensure the accountability of the network and each participant. After ILMMA established their legal body, SekPro Biak (the institution that formally led the ILMMA Program) became an ILMMA partner, with its sole focus on the Padaido Islands Program. See ILMMA organizational chart on next page.

ILMMA published its first country Annual Report in 2006 (for year 2005), which is posted on our website under Where We Work, Indonesia. The following are brief updates of ILMMA’s progress in 2006. For a detailed report of ILMMA’s work in 2006, see our website.
2006 Activities

- Developing a coral reef conservation area in the focal area of Tanah Merah Bay, Depapre, Jayapura, Papua
- Preparing ILMMA “Learning Center” at Tablanusu Village in Depapre Bay
- In the Padaido Islands focal area in Biak, Papua, the villages of Meos Mangguandi and Meos Auki announced their Natural Resources Management Act during ceremonies held in October and November, respectively, to which neighboring islands and villages were invited.
- Increasing the number of MPA sites at Meos Mangguandi and Meos Auki Island
- Workshop on developing an environmental education module for primary school
- New sites established at Ohoira Village and Tanimbar Kei Island. In October, ILMMA facilitated a Learning Framework Introduction Workshop and conducted biological and socioeconomic surveys at these sites.
- West Small Kei Island District Develops Conservation Area
- In the Kei Islands focal area in Southeast Moluccas, Ohoiren village opened their marine area to harvest sea cucumber after a closure of 10 months. They sold the harvest through
an open bidding and distributed the profits by giving 70% of the money to the church, 10% for the village government and 10% for the conservation group.

Harvesting Sea Cucumbers, Ohoiren Village, Kei Island, Indonesia. Photos by Nilam Ratnawati

2006 Highlights

- January-March
  - Evaluation Workshop
  - Financial Audit
  - Facilitating LMMA Network DMA Workshop & Project Support Committee Workshop
  - Biological data collecting at 12 sites
  - Facilitating Workshop Planning for Papua Biodiversity Center, in collaboration with Department of Natural Science of Cenderawasih University
  - Review Program Planning at Meos Mangguandi and Meos Auki - Padaido Islands and Tablasupa, Tablanusu and Demoikisi – Tanah Merah Bay

- April-June
  - Register the Indonesia LMMA as a legal entity
  - Attending Packard Foundation Evaluation Workshop, Palau
  - Building Tablanusu station & guest house
  - CCN grant to support country network activities was arrived

- July-September
  - Workshop at Bappeda Ambon
  - Recruiting Kei Islands Focal Area Coordinator
  - Recruiting Ambon Island Focal Area Coordinator
  - Biological data collecting at 12 sites
  - Packard grant to support country network activities was arrived
  - Proposal writing with Scott Atkinson

- October-December
  - Introduction of LF to Ohoira Village, Kei Island, Southern Moluccas
  - Socioeconomic Data Collection Training Workshops at Kei Island, Southern Moluccas
  - Biological baseline data collection at Ohoira Village, Kei Island, Southern Moluccas
  - 2007 program planning at 12 sites in 4 focal areas
  - Participatory designing ILMMA calendar

Lessons Learned

- Building and strengthening the capacity of community and village institutions encourage their sense of belonging to manage and monitor their resources.
- Periodic harvesting of marine resources by the community encourage their “belief” that by using LMMA tools they got more benefit.
Plans for 2007
- Continue biological serial data collection at 12 sites and socioeconomic serial data collection at 5 sites
- LF introduction and biological and socioeconomic baseline data collection at 3 new sites
- Data entry and analysis and the generation of at least three more site reports from existing and new project sites
- Developing Environmental Education Manuals for two primary schools in Kei Islands and seven primary schools in Biak, Padaido Islands
- 2006 ILMMA Annual Report
- Learning Framework, Indonesia Edition
- ILMMA Public Awareness Calendar 2008
- Coral Reef farming at 3 sites
- Introduction of LF to Leihari Village, Ambon Island, Central Moluccas and Tanimbar Kei Island, Southern Moluccas
- Socioeconomic Data Collection Training Workshop at Hukurila Village
- Continue Communication Workshop, with focus on proposal and report writing for new and existing project sites
- DMA Workshop
- More community organizing and institutional capacity building at core sites
- Develop business plan
- Indonesia LMMA National Networks meeting at Tablanusu, Jayapura, Papua
- 2008 program planning at 12 sites in 4 focal areas
- Strategic planning for the country network and local partners
- Hosting Summer School for Alumni of George August Gottingen University, German, at the LMMA sites, February 2007
- Introduction on LMMA to TNC Sorong Project, April 2007

MICRONESIA

We are happy to introduce and welcome some outstanding individuals who are new to or have taken new roles within the LMMA Network in Micronesia.

Wayne Andrew of the Helen Reef Management Project in Palau began serving as a regional coordinator for Micronesia LMMA activities, helping to ensure that all workplans, budgets, cashflows and data submissions for the region go smoothly.

Asap Bukurou of the Palau Conservation Society (PCS) will serve as an interim coordinator in Palau as Network activities broaden with LMMA Project Support Committee and other active agencies in Palau.

For the purposes of this report, the term “Micronesia” refers to the region in the Pacific, which includes the Federated States of Micronesia (to which Pohnpei and Yap belong), as well as the Republic of Palau.
Vanessa Fread of the Yap Community Action Program (YAPCAP) will be working with her FSM colleagues Brad Phillip and Eugene Joseph of the Conservation Society of Pohnpei (CSP) to engage communities in YAP with LMMA approaches and skills.

Selino Maxin of CSP has been identified as the data manager for Pohnpei and will be working with Brad and Eugene to manage and exchange Pohnpei data with the overall Network Data Manager. Other data managers will be identified from the region when data from islands/countries becomes available.

This highly motivated, skilled team of coordinators have already developed clear plans to engage with their community partners, provide training in new or improved approaches to LMMA conservation and management, and share their experiences and learning along the way with others in the region and beyond. Michael Guilbeaux from the Community Conservation Network (CCN) in Hawaii, who has been serving as interim coordinator for Micronesia since 2001, will continue to provide help, advice, and assistance to the Micronesia group as needed.

The organizational chart below shows the current structure of the LMMA Network in Micronesia. This chart represents an important stage in the development of the Micronesian LMMA Network, where local coordinators begin to represent and help coordinate the Network locally.

2006 Highlight: Cross-Site Visit to Helen Reef, Palau

Expanding partnerships and sharing information between islands are key to empowering communities to successfully manage Marine Protected Areas (MPA) in Micronesia. In October 2006, The Conservation Society of Pohnpei (CSP) in collaboration with the LMMA Network and the Helen Reef Resource Management Program (HRRMP), held the first MPA cross-training between Pohnpei and the Republic of Palau, which took place in Palau. Mr. Selino Maxin from
CSP and Mr. Brimo Eperiam from Enipein, Kitti municipality in Pohnpei, attended the training. Mr. Eperiam represented his community and his fellow Community Conservation Officers (CCOs).

The cross-training took two weeks and focused on sharing and exchanging ideas and biological monitoring techniques between community participants from other states. Participants collected data in one of Palau’s MPA sites, Helen Reef Atoll.

For five years, Palau’s Helen Reef was under protection by Tobi state, the owners of the reef. The whole reef was a “No Take” zone to foreigners and to the people of Palau. A new law was passed opening 40 percent of the 163 square kilometre reef to regulated fishing by members of the Tobi community. Before the MPA opened, Conservation Officers, community volunteers, partnering agencies, and community participants from other states collected baseline data for future comparison on the health of the MPA. During the training, the participants shared lessons learned from their states, while learning the lessons that the Helen Reef MPA has to offer. These lessons will be scattered to MPAs across Palau and Pohnpei.

The training was full of fun and excitement to the participants. It was like a dream for some seeing the tons of fish and turtle at Helen Reef, and hoping that one day other MPAs would be this rich. As for the Tobi community, they are happy seeing the results of their work, knowing that there will be an abundance of fish for them and their descendants. Enipein Village was proud to have a representative from their community go out and gain relevant information for new ideas to help with the management of their MPA. CSP is looking forward to finding more opportunities for capacity building for Pohnpei’s MPA communities, so they can take charge of their own management practices.

**Plans for 2007, Palau**

- Conduct a community evaluation of training and organizational needs
- Follow up training on Community needs
- Produce and disseminate LMMA Awareness materials
- Training in Management Planning
- Conduct at least 3 Cross site visit between participating members.
- Follow-up DMA training
- Community biological monitoring training
- Community socio-economic training
- Conduct Learning Framework Intro to 3 new sites
- Translate Socio Economic Surveys
- Conduct training on conceptual modelling and adaptive management
- Assist 3 sites develop monitoring plans
Plans for 2007, Pohnpei

- Work with Enipein communities to promote LMMA Learning Framework to Dehpehk/Takaieu, Mwahnd, Lenger (Sapwitik) and Temwen communities
  - Plan and conduct mini cross-site visits to at least two of the participating communities
  - Introduce LMMA Learning Framework to participating communities
  - Share results of meetings with other non-participating communities

- Enhance LMMA partnership through local communities and government stakeholders
  - Include local government partners and neighbouring communities in any LMMA activities with Enipein to gain interest and support
  - Share Enipein’s Lessons Learned in community outreach programs
  - Work with Enipein Elementary School to promote LMMA Network through the Youth to Youth and Green Road Show programs

- Continue to understand and plan for consistency with on-going management and monitoring programs
  - Develop a comprehensive adaptive MPA management plan for Enipein Marine Park and Nahtik Marine Sanctuary
  - Review data management and analysis methods (workshop, plus learning modules)
  - Conduct LMMA Socio-economic monitoring training for key CCOs
  - Conduct Socio-Economic monitoring at Enipein

- Continue training in specific monitoring methods and other LMMA methods (e.g. Socio-economic and biophysical)
  - Develop a formal community biophysical monitoring template for Nahtik
  - Continue to implement community monitoring training and data collection (monitoring methods)
  - undertake PLA/PRA training as necessary with CCOs
  - Update and revise community action plan for Nahtik with CCOs
  - Pilot LF with Enipein for Nahtik and MPA communities (LF workshop)
  - Undertake PLA/PRA training as necessary with CCOs

- Continue to implement community action planning and LF data collection
  - Hold technical workshop to discuss existing and new monitoring methods/summer MPA cross-site visits
  - Revisit/ follow up with community on their action plan and monitoring/indicators

Plans for 2007, Yap

- Introduce LMMA Network concept to interested communities
- Obtain community and partner endorsement
- To understand and plan for consistency with on-going management and monitoring programs
- Undertake LMMA Network Process with each community
- Obtain training in specific monitoring methods (e.g. socio-economic and biological monitoring)
- Implement community action planning and LF data collection
- Develop a Management Plan for the Kadaay & Qokaaw LMMA site
Much has happened in PNG this year. Three part-time local coordinators are now on-board, and their involvement has helped push the PNG LMMA Network forward. The new coordination structure has really streamlined LMMA work in PNG. See organizational chart below.

Trainings in biological and socio-economic monitoring, data analysis, proposal writing, project design and development of management plans have taken place and data that has been dormant was analyzed. Community involvement and environmental awareness has also increased; threats previously disregarded are now being recognized. A Threat Reduction Assessment in 2005 showed a decrease in threats in all but one site.

Pere Village, Papua New Guinea. Photo by Susan Ewen
Brief Summary on major Challenges

Although the PNG LMMA country network is proud of its achievements in assisting its members throughout 2006, there is still room for improvement at some sites in the areas of follow-on work and increased community participation and responsibility for their LMMA's. With limited resources and capacity, it has been very challenging for the country network to sustain follow-on activities after delivering each workshop, especially when there is limited funding and support from some partner organizations to help their communities organize themselves and implement their workplans. The country network has provided technical assistance to community members and partners, however it is reliant upon on-the-ground partners to continue implementation work.

To help address this problem, one approach that we will take in the future is to develop of a set of criteria that will be used to assess the level of commitment and support for ongoing LMMA activities at each site, and guide the network to make improved decisions regarding which sites it should be committing its time and resources on, including any new communities who may request assistance from the network. In light of the numerous requests we have received from new communities for assistance, and the reality that we are not able to help all, this criteria will also be used to assess partner organizations’ strengths and limitations, to give the network an indication of who we should be working with as a priority.

The PNG network has been trying to meet the growing requests for assistance from PNG communities in a way that is appropriate and meets everyone’s expectations. The network still lacks the capacity and manpower to deliver all the training that communities have requested, and we are struggling with trying to balance the opportunities for expansion with the need for consolidating the work that has already started in core sites. It is also taking us much longer than hoped to foster and maintain partnerships at the Provincial and National level and to share responsibilities with our partners to collaboratively implement our activities.

Regarding the relevance of data generated from monitoring, there is a need to explain where the limitations are to both communities and conservation science. Advanced biological monitoring to complement the community level monitoring is required. In addition, there is a need to have an appropriate translation of LMMA materials, specifically the Learning Framework, for village communities.

2006 Highlights

- January - Patanga LMMA in Kimbe completed its first community biological data collection
- March
  - The Madang Lagoon Association registered as a legal entity.
  - Madang Lagoon Community members (approx 10) graduated with open water dive certificates
- May-June
  - PNG network conducted its first National Community Socioeconomic Survey training in Kimbe and Madang
  - Patanga LMMA in Kimbe conducted their first Household and Key Informant community Socioeconomic survey
  - First national Partners Meeting in Port Moresby
- July - PNG LMMA Network convened its 4th national meeting in Kavieng, New Ireland Province, collaborating with the “Fish for the Future 2” Project to deliver training in project design and proposal development

- August
  - Kilu/Tamare conducted their first community Socioeconomic Key Informants survey
  - PNG network hosted its first Data Management Analysis training in Kimbe. It trained 13 community participants from Kimbe, Madang and Kavieng. Ron Vave and Meo Semisi from FLMMMA facilitated this training for the PNG team.
  - Patanga LMMA in Kimbe completed its second community biological data collection
  - Pasiloke LMMA in Kimbe completed its first community biological data collection

- September
  - Strategic planning meeting for local partner Ailan Awareness Inc. and its 7 LMMA sites in Kavieng. This planning meeting was facilitated by TNC.
  - Kilu/Tamare LMMA in Kimbe completed its first community biological data collection
  - GEF small grant to support country network activities was approved

- October
  - Gharile LMMA in Kimbe completed its second community biological data collection
  - Madang Lagoon LMMA completed their second community biological data collection
  - Pere LMMA in Manus Province hosted its first community Biological and Socioeconomic monitoring training. The PNG Network team trained 21 socioeconomic and 25 biological monitors. The participants came from Pere and the nearby island communities of Mbunai, Mbuke and Baluan.

- November
  - Kilu/Tamare LMMA in Kimbe conducted its first community Socioeconomic Focus Group survey
  - Patanga LMMA in Kimbe conducted its first community Socioeconomic Focus Group survey
  - Pere LMMA in Manus conducted its first community biological data collection
  - Kilu/Tamare in Kimbe conducted its first community Socioeconomic Household survey

- December
  - Kilu-Tamare LMMA working on data analysis, and first site report for Kimbe generated
  - Pere LMMA in Manus conducted its first community socioeconomic data collection

**2007 Plans**

With the limited resources and expertise we currently have, the PNG Network will strive to work more effectively with its partners to address community training needs that have been identified and help them secure funding for their programs. We will also be looking for another technical trainer to join the PNG team to help meet the growing demands of the country network, and focus on the organizational development of the country network to improve coordination and delivery of assistance to its members. In-country fundraising to support network activities will also be undertaken. Over the next year, we will also focus our efforts on the following activities:

- Basic and follow-up biological and socioeconomic monitoring training in current and new project sites
- Advanced biological monitoring at core sites in Kimbe, Manus and Madang
- Data entry and analysis and the generation of at least three more site reports from existing and new project sites
- Community Level LMMA Meeting
- Annual National LMMA Network meeting
- More community organizing and institutional capacity building at core sites
- Strategic planning for the country network and key partners
- Assessment and strengthening of all partnerships at local, provincial and national levels
- More outreach on the social contract “Our Promises to Each Other”
- Follow-up training in proposal and report writing for new and existing project sites
- Training in the development of management plans for LMMA members
- Translation of Network materials and manuals into Tok Pisin (local language)

**PHILIPPINES**

PLMMA is happy to welcome the following dedicated individuals who have taken new roles within the LMMA Network in the Philippines. Chito Dugan of the Center for the promotion of indigenous science and technology (SIKAT), and Jovelyn Cleofe of the Center for Empowerment & Resource Development (CERD), join Daisy Flores-Salgado as new Country Co-Coordinators. Melchor Deocadez from the University of the Philippines Marine Science Institute (UPMSI) is PLMMA’s country Data Manager.

This group makes up the Philippine LMMA Coordinating Team, which formally met and organized in April 2006. For the second quarter, the team focused on reviewing the 1-year plan formulated by PLMMA members in March 2006. Administrative concerns and the 2006 PLMMA budget were also discussed. The goals were to strengthen PLMMA members’ skills in the areas of information sharing and technical expertise in the management of marine areas and implementation of the Learning Framework (LF).

The following are PLMMA’s objectives:
- Increase level of awareness, understanding and capacity of the PLMMA members on the application and implementation of the LF
- Operationalise LMMA data analysis and management system and implementation of the Learning Framework at Philippine Sites
- Provide venue and mechanism for information sharing on Management of marine areas
- Link with the existing Community Based Coastal Resource Management network
- Promote LMMA project sites and experiences at national and international levels
- Institutionalization of Philippine LMMA Network

See the PLMMA organizational chart on the following page.
The following were the main activities for PLMMA in 2006:

- Annual planning workshop of LMMA network members in the Philippines
- Translation of the Learning Framework tools to Filipino
- Conduct Socioeconomic Training and Data Management Workshop for Candelaria (Zambales), Hinatuan (Surigao del Sur), Lobo (Batangas), Romblon (Romblon), Tawala ang Bingag, Dauis (Bohol)
- Conduct Biophysical Training and DM Workshop with PLMMA partners from Candelaria, Hinatuan, Romblon, Lobo and Bohol
- National level Convention on Data Management and Analysis
- Recruit new members
- Conduct LMMA Orientation to new and probationary network members: Romblon and Cebu
- Resource Mobilization
- Promotion of LMMA Network experiences locally and internationally
- Attend training workshops and other activities sponsored by the Network
2006 Highlights

- March - Country Level Annual Planning Workshop and Consultative Meeting
- May
  - LMMA Orientation Sessions, Agnay and Cobrador, Romblon
  - Socioeconomic Monitoring & Data Management Training Workshops
  - Socioeconomic Monitoring and Data Management Training Workshop, Candelaria
- June
  - Socioeconomic Monitoring and Data Management Training Workshop, Lobo & Romblon
  - Socioeconomic Training and Data Management Workshop, Hinatuan
- July - LMMA Orientation, Dalaguete and Alcoy, Cebu
- September - Biological Monitoring and Data Management Training, Bohol
- November
  - Biological Monitoring and Data Management Training, Malabrig, Lobo
  - Data Management & Analysis Training Workshop, 1st National Convention, Cagayan de Oro
  - Biophysical Monitoring & Evaluation Training Workshop, various sites
- December
  - Site Analysis Pilot testing, Hinatuan
  - Biophysical Monitoring Training and Data Management, Candelaria

Other activities
- Translation of Learning Framework Database survey tools to Filipino and Visayan/Cebuano languages
- PLMMA Membership Expansion (Cobrador, Romblon) and reengagement (Alcoy and Dalaguete)

Lessons Learned

- The Learning Framework research tools empower local stakeholders by encouraging local participation to monitor and assess pertinent information from their coastal resource management practices.
- Regardless of educational attainment and age, community members can contribute to the implementation of the LMMA Learning Framework either through data gathering, data encoding, data processing and analysis, popularization of reports and integrating results to local strategies.
- Research tools will be better utilized when translated to local dialect. This would also lessen the chance of misinterpretation both from local data gatherers and respondents.
- Local stakeholders have showed interest in using modern technologies to efficiently manage local information. However, access to these technologies (i.e. computer) remains a stumbling block in maximizing people’s participation.
- Mainstreaming Learning Framework will only be accomplished when local stakeholders have (1) the knowledge, skills and capacity to monitor the factors identified, and (2) facilitating environment and facilities to conduct data management activities.
2007 Plans

- Site Monitoring and Mentoring
- Data Management (ACCESS and Project Site Graph Devt) - National Level
- Site Analysis Training Workshop and Community Validation - Individual Project Level.
- Tools Development for 2007 Data Gathering
- Tools and Manual Translation
- Report Documentation and Writeshop to train local partners to be able to write their own stories
- Biophysical and Socio-Econ Data Gathering (Sites to continue time series data gathering)
- National Assessment and Consultative Planning Workshop
- Coordinate with MPA Support Network (MSN)
- CBCRM national networks in the Philippines
- National Data Presentation for possible Policy Recommendation
- Publication of Philippine Project Site experience in LMMA Network and LF implementation

SOLOMON ISLANDS

A 2005 Solomon Islands Rapid Ecological assessment conducted by TNC and other national partners of Solomon Island’s marine resources has placed the country along side Philippines, Indonesia, Papua New Guinea and Australia in terms of species richness. Whilst this is good news, the responsibility is great to ensure resource utilization is sustainable and sound management strategies are in place. Realizing the need, the marine-based NGOs working in Solomon Islands in 2005 pledged their strong support to the Solomon Islands Locally-Managed Marine Areas Network (SILMMA), which was formed in 2003 and gained momentum 2005. See organizational chart next page.

SILMMA follows the overall Network’s vision for:

- healthy ecosystems and communities
- abundant marine and fish stocks
- sustainable fisheries utilization
- protection of marine biodiversity

In addition, effective networking through communities, capacity building, skills empowerment and information sharing are areas in which SILMMA wished to gain efficiency beginning in 2006. Furthermore, SILMMA wishes to become the lead voice on national issues that contribute (directly or indirectly) to degradation of marine ecosystems in the country.

2006 Highlights

- Jan-Feb
  - Look-and-Learn visit to Tetepari Descendent Association and Toila Conservation Foundation Roviana community, by reps from Langa Langa, Gela, Marau, Kia, Chea, Billy, WWFSI and Choiseul Province

Tridacna gigas in the Arnavon Islands community managed conservation area. Photo by TNC
- Two-day Annual General Meeting
- Five-day Data Management training for SILMMA members
- Revise community management action plan for Marau, Gela and LLLagoon

2007 Plans
- SILMMA national lesson learning workshop for community reps
- SILMMA strategic planning meeting for steering committee
- SILMMA proposal writing training for steering committee
- Alternative livelihood workshops for communities
- Training of monitors for communities
- Follow-up on the first DMA training for DMA working group
- DMA trainers of training Western region
- DMA trainers of training for Eastern region
VI. Financials

The work of the overall LMMA Network is generously supported by the David and Lucile Packard and the John D. and Catherine T. MacArthur foundations. Country-level networks and individual projects are also funded through other sources. In addition to the $500,000 operational budget for 2007, the overall Network received additional grants from the Packard Foundation which will be used for organizational effectiveness, capacity building, fundraising, and an external evaluation of the Network.

The following graph illustrates operational funds expended annually by the overall Network since its inception (although the Network was launched in 2000, it did not have an operating budget until 2001). Types of expenses include salaries (including field staff and consultants), travel, conferences and workshops, equipment, resource materials, field supplies, and telecommunications. Figures presented here represent only costs pertaining to overall Network activities. All figures are expressed in $US dollars.

The pie chart at left shows LMMA Network funding of country networks for 2007 (final amount subject to change). The total country budgets are higher than this amount; this chart indicates only the amount being supplied by the overall Network directly.

Individual country networks continue to seek their own funding for in-country work. Part of the additional grants mentioned above will be used to train country coordinators in fundraising proposal writing and presentation.
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