

*Project Title:*  
**Developing a Coral Reef Monitoring Program in the State of Yap,  
Federated States of Micronesia**

*NOAA Award Number:*  
**NA06NMF4630109**

*Amount of Grant:*  
**USD\$46,088.00**

*Amount of Grant spent:*  
**USD\$36,625.16**

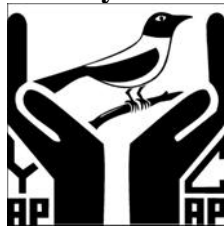
*Award Period:*  
**From: 01 August 2006 To: 31 August 2008**

**A FINAL PROGRESS REPORT TO THE NATIONAL OCEANIC AND ATMOSPHERIC  
ADMINISTRATION  
CORAL REEF CONSERVATION GRANT PROGRAM – FISHERIES HABITAT CONSERVATION  
PROGRAM OFFICE**

*Period Covered by this Progress Report:*  
**From: 01 August 2006 To: 31 August 2008**

**Submitted by:**

**Yap Community Action Program**



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Charles L. Chieng, Executive Director, Yap CAP

## FINAL PROGRESS REPORT

### *Project Summary*

This project seeks to establish a long term coral monitoring program in Yap State which yields data beneficial to the assessment of reef 'health' over time. These data will provide the information necessary to initiate a public education and awareness program to promote conservation of Yap's coral reef resources at the community level. This newly developed monitoring program calls for collaboration between State entities, public and private, and especially local communities, to influence positive efforts in coral reef management and conservation.

### *Project Goals and Objectives*

The overall long term goal of the coral monitoring program in Yap is to characterize reef community development and assess the impacts that various stressors place upon Yap's reefs, and use this information to drive management. This monitoring program will enable local managers and communities to document changes and make decisions regarding appropriate courses of action to minimize impacts.

This project will accomplish four objectives to: 1.) establish simple, realistic monitoring methods, 2.) collect and analyze a set of baseline monitoring data, 3.) establish a working Coral Reef Task Force network amongst local stakeholders in marine resource management in Yap, and 4.) promote and begin to technically support conservation efforts at the community level.

### *Summary of Project Activities*

Six survey sites were selected and meetings were held with village representatives and the Environmental Stewardship Consortium (ESC) to explain the scope of the project, to request permission to survey coral reefs in villages, and to gain community support for the project. Workshops were held with community representatives before surveys were conducted to go over methods and data. General meetings with communities and their representatives to the project took place to plan steps of action, discuss any issues that may come up, progress, and project results and findings. Three visits were conducted by PICRC staff throughout the duration of this grant to assist with site selection, determining monitoring parameters, training, data collection, and data management and analysis. A monitoring team was established/created and trained consisting of agency staff and community representatives. A complete set of biological data was collected for all six (6) established coral reef monitoring sites for Yap. A Coral Reef Task Force was created and members meet regularly with members of the Coral Reef Monitoring Team.

No "formal" education and awareness component was undertaken during this project due to miscommunications with the NOAA office and lack of funds, but as mentioned in previous reports, the community members on the team serve as a source and/or pathway of coral reef conservation information to the greater communities of Yap.

*Work Accomplishments for this grant period: (as related to project goals, objectives, and activities listed in the approved workplan)*

The overall Goal of this project was to “raise awareness of coral reef conservation through building/developing a coral reef monitoring program in Yap State”. This goal was achieved during this grant period by implementing the following activities below:

Objective 1: Ecosystem Monitoring

- a. Activity 1 – Site selection
  - a. Task 1 – Meet with interested village representatives
  - b. Task 2 – Meet with ESC
  - c. Task 3 – PICRC Staff visits
  - d. Task 4 – Identify 6 potential monitoring sites
- b. Activity 2 – Ecosystem Monitoring
  - a. Task 1 – Purchase materials and supplies
  - b. Task 2 – Workshops/meetings to go over and review methods
  - c. Task 3 – Ecosystem monitoring fieldwork

Objective 2: Data Analysis and Sharing of Information

- a. Activity 1 – Establishing Interagency Collaboration
  - a. Task 1 – Establishment of a coral monitoring task force
  - b. Task 2 – Establish coral monitoring team
  - c. Task 3 – Meetings of the task force
  - d. Task 4 – Monthly monitoring team meetings

Communities in Yap who voiced their concerns in the past about declined fisheries in their water jurisdiction were primary supporters of this project. Meetings with these communities were successful in that the support and human resources needed to develop a coral reef monitoring program was not difficult to obtain. The support of communities for establishing community-based marine conservation areas have increased in the past years, therefore, gaining the support and approval of communities to conduct surveys in their waters was fairly easy. They were all interested and willing to be part of the coral reef monitoring initiative and they knew there was a need to develop environmental programs/projects, such as coral reef monitoring.

The ESC meetings were successful in gaining the support of government departments and officials, as well as the community representatives from each municipality on Yap who are members of the ESC. The ESC and communities were kept informed through ESC meetings or individual community meetings of the progress and results of this project along with other ongoing environmental programs.

The Palau International Coral Reef Center (PICRC) served as the technical advisor/consultant specifically, Mr. Steven Victor who was Head Researcher at the center, to Yap State on this project. The Center was established to be a research facility concentrating on Palau, but to also assist the Micronesian region on coral reef related research projects and conservation programs.

During the latter part of August 2006 PICRC staff Mr. Sebastian Marino and Mr. Steven Victor visited Yap on one of their annual needs assessment trips to the FSM. Members of the monitoring team from the three agencies; Yap CAP, Yap State EPA, and MRMD were able to meet with them to discuss Yap's newly funded Coral Reef Monitoring Project. During the meeting we discussed and planned the project including issues of design, management, equipment and supplies, potential monitoring sites, PICRC's first technical visit to Yap for the project, and issues to cover during stakeholder and community meetings, as well as meetings with the Environmental Stewardship Consortium (ESC).

As part of developing a coral reef monitoring program in Yap, potential monitoring sites were selected (Figure 1) to be surveyed. It was also decided during the August meeting that PICRC (Steven Victor and one other PICRC staff) will visit Yap in early December 2006 for 10 days. They are to assist the Yap team with coral reef survey training and setting up the coral reef monitoring program. It was also decided, based on PICRC's recommendation, to reduce the scope of data to be collected. Instead of collecting all the datasets stated in the proposal, we were to start with benthic data using video, fish size and abundance, coral recruits, and commercially or locally valuable macroinvertebrates (i.e. Trochus, Holothurians, and Clams). Datasets will be added as the program and teams skills develop and improve.

From September to November 2006 Yap was to assemble a team for the project, have meetings with the ESC and related communities to arrange access to the monitoring sites, and order needed equipment and supplies. By November 2006 all needed equipment and supplies were ordered and purchased in preparation for field work and PICRC's visit in December. During a meeting of the Coral Reef Monitoring Task Force (Consists of the heads of Yap CAP, MRMD, and Yap EPA) in November 2006, it was decided that Yap CAP will not only manage the project grant, but be the lead in this project and to make sure it is implemented keeping in mind its goals and objectives.

PICRC's first trip - PICRC representatives, Mr. Steven Victor and Mr. Arius Merep visited Yap from December 10 - 20, 2006. The Core Monitoring Team's first planning meeting with them was to review the needs of the State and its communities and their current marine conservation efforts. It is noted that MRMD did not attend this meeting, even though they are a member of the Core Monitoring Team. MRMD was absent throughout PICRC's first visit to Yap.

After much discussion of Yap's current situation it was decided, based on PICRC's recommendation, to initially focus Yap's Coral Reef Monitoring Program on newly established community conservation areas, which only included Marine Channel Systems (see Figure 1). Miil and Goofnuw Channels were included as monitoring sites for their economic value (i.e. Manta rays reside only in these two channels in Yap and it is Yap's most important asset for Tourism) and high marine biodiversity. As the program and team's skills develop, other marine ecosystems will be included as monitoring sites.

Our second meeting with PICRC included the community representatives of these conservation areas who are also part of the monitoring team. Their coral reef monitoring training started at this meeting, as the concept of coral reef monitoring was covered and the methods used in the field and for data processing. Most of the data sheets and field guides to be used for the Yap State Coral Reef Monitoring Program is based on templates (i.e. Excel Worksheets) provided by PICRC.

These coral reef survey methods were then applied in the field during two days of training in benthic (video), fish size and abundance, coral recruits, and macroinvertebrate surveys. Because the community representatives on the team were not SCUBA certified they were only able to practice and participate in the surveys using snorkeling gear on the inner reef flats at each site. The survey methods to be used to gather data for the Yap State Coral Reef Monitoring Program is based on what was recommended and taught by PICRC representatives during their first visit to Yap for this project. It was also decided by the team that the coral reef data collected for this project will be managed and processed by Yap CAP staff. The focus of PICRC's first visit was on field training; data entry and analysis; and designing Yap's monitoring program (i.e. survey stations at each site, transect locations). PICRC's first visit was successful as we were able to create a monitoring team, train the team, and start developing Yap's first long term Coral Reef Monitoring Program. PICRC staff made two more visits to Yap during the implementation of this project.

PICRC's second trip - Mr. Steven Victor and Mr. Geory Mereb of PICRC visited Yap from August 16<sup>th</sup> to the 22<sup>nd</sup>, 2007 to assist the Team with setting up survey stations at Miil and Goofnuw Channels (the last 2 sites to be surveyed out of the 6 selected monitoring sites) and to review methods and data that has been collected from the first four surveyed locations (see figure 1). During PICRC's visit we were able to collect data from the stations that were selected in the inner reef (channel system), but due to rough seas the outer reef stations at Miil and Goofnuw Channels were later completed by the team towards the end of August and first week of September.

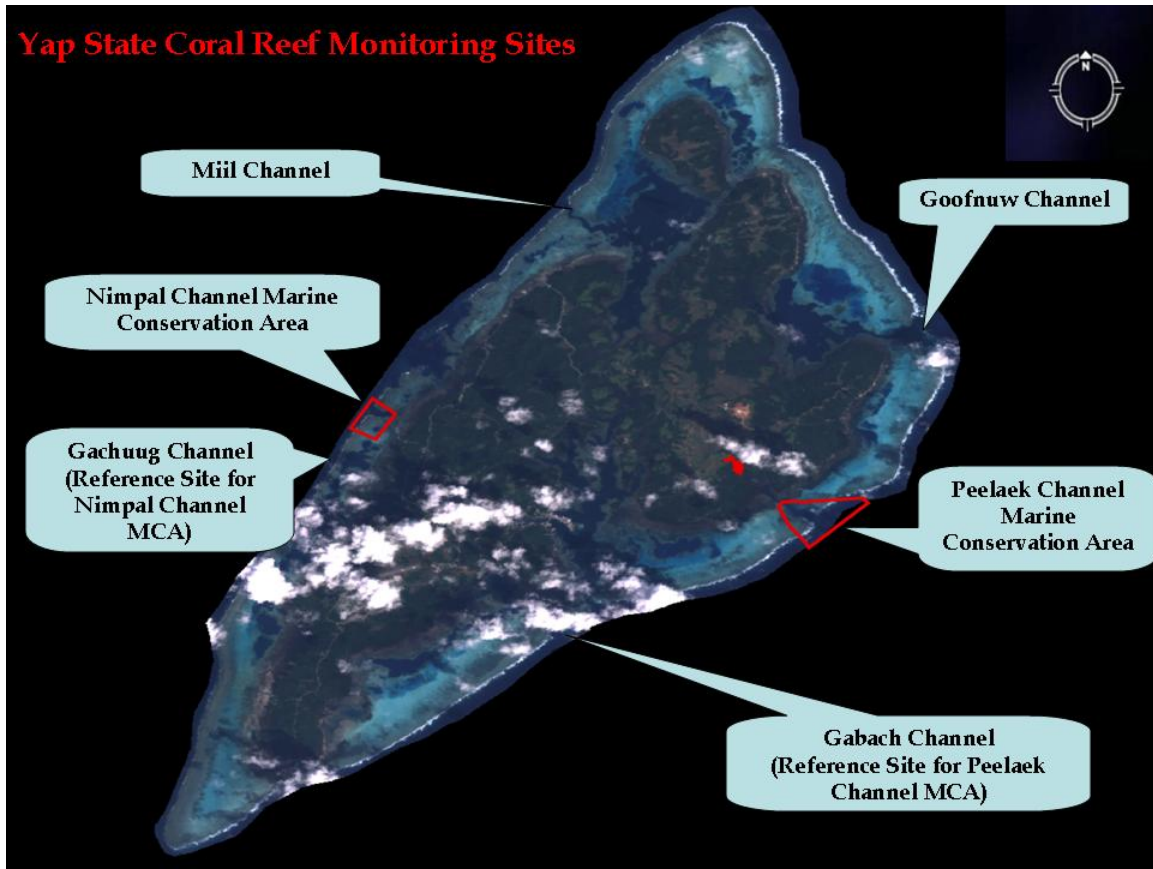


Figure 1: Yap Island map showing all six (6) established coral reef monitoring sites.

In addition to setting up stations at Miil and Goofnuw Channels PICRC and the team reviewed data sets collected from Nimpal, Peelaek, Gabach, and Gachuug Channels and identified data gaps as well as developed a schedule for field work to gather the remaining data. These remaining data sets at either 3 meters or 10 meters were collected after PICRC staff left Yap. All data collection was completed in September 2007 (please see attached 2007 datasets – excel file). Data entry and video analysis began during this month as well. Also, potential future monitoring sites were discussed with PICRC staff during their visit. Some potential sites were selected keeping in mind their location and habitat type (figure 2). These sites will be incorporated into the program over time and as the need arises.

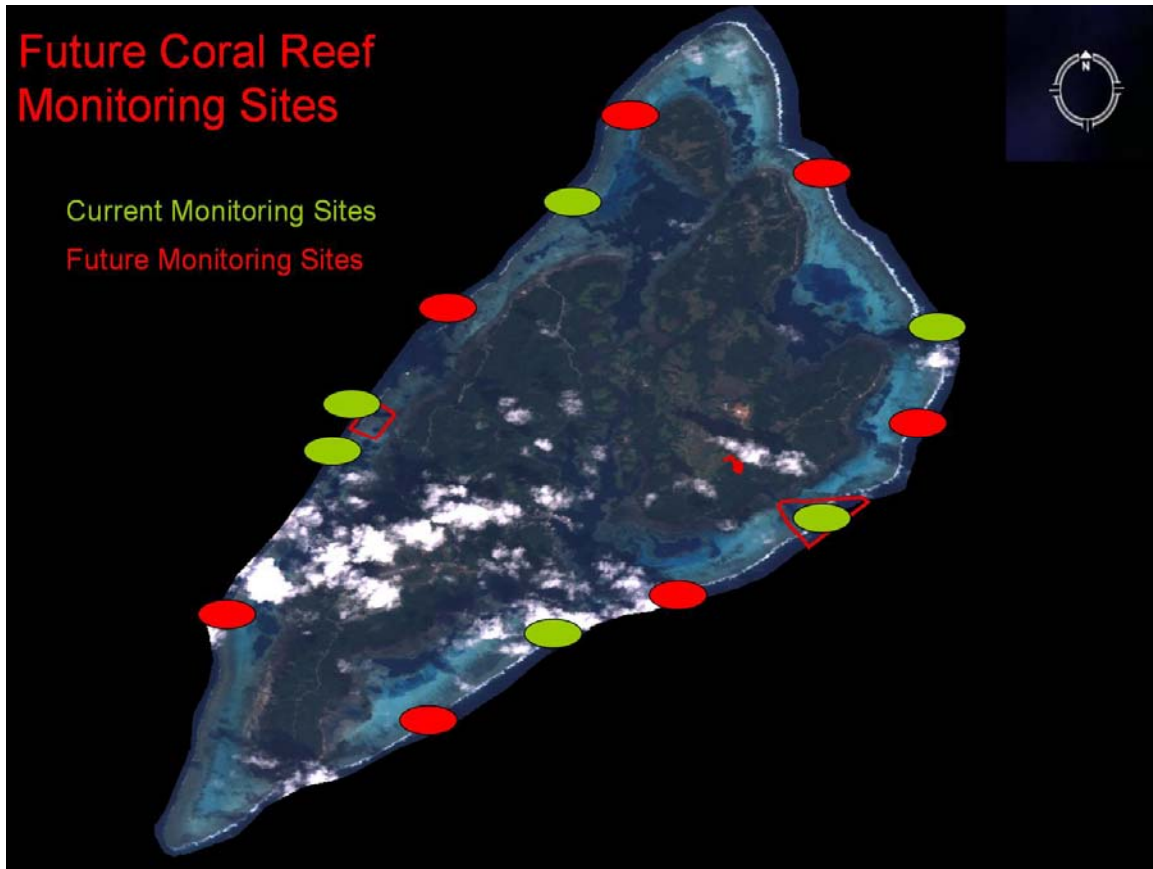


Figure 2: Yap Island map showing established (green circles) and potential future coral reef monitoring sites (red circles).

It was decided by the Core Monitoring Team after PICRC's visit that the community representatives on the monitoring team needed to be SCUBA certified. Five (5) community representatives (4 from the Nimpal Channel Marine Conservation Area Project and 1 from the Peelaek Channel Marine Conservation Area Project) underwent a SCUBA certification class in January with a local dive shop (Beyond the Reef). Funding provided to Yap CAP by the Locally Managed Marine Area (LMMA) Network for community-based marine conservation projects, was used to pay for their certification. These community representatives are assisting the Yap State Coral Reef Monitoring Program as team members and at the same time they are gaining skills, which will be useful if not essential to the management and monitoring of their marine conservation areas.

Building off PICRC's training and guidance during their first visit in December 2006, the monitoring team (including community representatives) underwent training focused mainly on coral reef monitoring methods and field data collection on the following:

1. Fish abundance and size
2. Laying 50m transect lines
3. Benthic videos
4. Macroinvertebrates (i.e. Clams, Holothurians, and Trochus)

## 5. Coral Recruits

During this project a coral reef monitoring team was created and trained consisting of agency staff and community representatives in the above components. It is a goal that all members of the team are cross trained in all parameters currently being measured in the Yap coral reef monitoring program and we will continue to work towards this goal during this project period and beyond this grant period.

Additional training for the team includes a NOAA funded FAS Coral Reef Monitoring Training with Dr. Robert van Woesik and Sebastian Marino (PICRC Marine Monitoring Coordinator) took place in Yap from June 02 – 07, 2007. The training included the following topics and presentations on coral reef research and necessary skills to:

1. Understand the fundamental principles of monitoring;
2. Identify the most common benthic reef organisms and fishes;
3. Conduct field monitoring surveys;
4. Data entry and data management; and
5. Reporting

The training began with field visits (2 days) to all the monitoring sites including Miil and Goofnuw Channels. For Dr. van Woesik to best help the Yap Team with its monitoring program and training he needed to become familiar with our coral reefs and monitoring sites. Members of the team are familiar with fish species and their local names as they are local fishermen, so the taxonomy component focused mainly on coral groups, although fish groups were briefly covered. The week ended with a day in the field with Dr. van Woesik to review and practice coral groups and species. The team was also presented with certificates by Dr. van Woesik and Mr. Marino of PICRC on the last day for successfully completing the training.

In addition to the training topics listed above, Dr. van Woesik discussed potential changes and enhancements to be made to the current monitoring protocol and design used by the Team. These suggestions included using InStat (statistics software program) and Microsoft Access instead of Microsoft Excel for database management. We also discussed the potential to add new monitoring sites in the future (potentially 2009) to include other coral reef habitats around Yap in our coral reef monitoring program. It was decided that these suggestions will be discussed further with Mr. Steven Victor in August during PICRC's second visit to Yap.

Another training and participatory project/opportunity that the team was exposed to during this project was the Yap State Marine REA which took place from July 11 – 31, 2007. The Coral Reef Monitoring Team participated during the field work on Yap Island, Ngulu Atoll, and Ulithi Atoll. It was a challenging yet productive and constructive time for the team, as valuable skills and information was gained during the REA. Team members were exposed to coral, fish, and invertebrate experts and taxonomists from different places around the world and coral reef management concepts and data interpretation. By working together during the 3 week long REA project our team



camaraderie and effectiveness was truly enhanced. Consequently, the team gained valuable skills in monitoring methods as well as information on fish, coral, and invertebrates, which contributed greatly to Yap's Coral Reef Monitoring Program.

It was initially envisaged that the Core Monitoring Team was to consist of staff from Yap CAP, Yap State EPA, and Yap MRMD who participated in the past NOAA funded FAS Coral Reef Monitoring Trainings through PICRC in Palau. But due to EPA's internal re-organization of its staff, Ms. Christina Fillmed, who participated in the FAS Training during the summer of 2006, was made Executive Director of the agency. Mr. Joe Fanafal who participated in the training during the summer of 2005 resigned from MRMD a few months after attending the training. Ms. Lisa Johnson who was a US Peace Corp Volunteer at Yap EPA and attended both FAS trainings in 2005 and 2006 left Yap in November 2006 when her PCV term ended. This leaves Mr. Michael Hasurmi of MRMD who participated in the 2006 training and Ms. Vanessa Fread, who attended the first FAS training in 2005 as the remaining members of the monitoring team.

For these reasons, the monitoring team needed to be adjusted to suit the situation, so community representatives from the Nimpal and Peelaek Conservation Areas were brought in to be part of the monitoring team during PICRC's visit in December. They will not only serve as liaisons for the project, but they will assist with data collection. This way we are also building the capacity of these community representatives to conduct marine monitoring, with hopes of them conducting their own monitoring within their sites in the future. Instead of having community representatives on the team from each village to be surveyed in this project (all monitoring sites) as originally proposed, we decided to focus our effort and training on the six community representatives from the two conservation sites, instead of 12 community representatives from different villages on Yap who may or may not have marine conservation areas in place. Thus, the skills that are gained during this project can be utilized and applied to the conservation areas by these six community representatives and their communities.

- b. Activity 2 – Data Analysis
  - a. Task 1 – Purchase and setup equipment (notebook)
  - b. Task 2 – Set up datasets
  - c. Task 3 – Data processing
  - d. Task 4 – Summarizing and Report writing

As mentioned above the data sets for all the selected six sites were completed at two depths (3m and 10m) by September and data entry began. Video analysis began when the macroinvertebrate, coral recruits, and fish data have been entered into excel. Because of the amount of data and videos to be analyzed it took us longer to process it as we anticipated. This has been a learning process for Yap's team and we have been working with PICRC to develop a simple yet informative and appropriate coral reef monitoring program for Yap, which follows standard coral reef monitoring protocol. As mentioned in our second report submitted in June 2007, these enhancements to our coral reef monitoring program and potential future monitoring sites were suggested by Dr. van Woesik during the training he conducted in Yap. These issues were discussed with Mr.

Victor during his 3<sup>rd</sup> visit to Yap for this project. It was agreed that this is a good action to take as part of developing our program, but should happen when we are ready and familiar and comfortable with the process of data collection and processing.

PICRC's third visit - Steven Victor was the only one who came from PICRC to assist us during PICRC's 3<sup>rd</sup> trip scheduled for this project in January 2008. The main purpose for Mr. Victor's visit was to review the program and collected data and for him to assist us with data management and processing. Also, during PICRC's 3<sup>rd</sup> visit data management and analysis exercises of collected data was undertaken. The data that was processed during this visit was presented back to the team and later to the communities of Qokaaw and Kadaay who co-own and co-manage the Nimpal Channel Marine Conservation Area (MCA). Processing of the remaining data continued after Mr. Victor left and is still being conducted at this time. Assistance to properly manage the data for easy analysis is being sought after from other data specialists in the region. Additional data sets, which will be collected in the future, is needed to determine any solid correlations or assumptions about the health of coral reefs in Yap.

- c. Activity 3 – Public Education and Awareness of coral reefs and LMMAs
  - a. Task 1 – Identify local artist to design calendars and stickers
  - b. Task 2 – Develop outreach materials for schools
  - c. Task 3 – Presentations of data to village communities (include LMMA outreach)
  - d. Task 4 – Presentations of data to government agencies
  - e. Task 5 – Develop outreach awareness materials for public

It is envisioned that public awareness raised from data collected and all project findings will help promote sustainable coral resource use, protection, and conservation through future community led initiatives. Throughout the duration of this project we have presented and discussed with the Environment Stewardship Consortium (ESC) and all other relevant local, regional, and international organizations of the status of this project. We have also shared with communities as we conduct consultations with communities who are interested in establishing a Marine Managed Area within their water jurisdictions.

The Public Education and Awareness materials for this project were not created during this project, as it was dependent on datasets and availability of funding. Also, there were some miscommunications between Yap CAP and the Grants Program at NOAA. Nonetheless, this program and the importance of coral reefs have been continuously presented to communities through our community representatives and meetings with other communities on Yap, the government and ESC. Yap CAP has also discussed this program during its community meetings/consultations with villages around Yap. New communities are approaching Yap CAP about establishing a Marine Managed/Conservation Area within their water jurisdictions, so we utilize these opportunities to talk about Yap's Coral Reef Monitoring Program and the importance of coral reef monitoring and management.

We strongly feel that the direct involvement of community representatives in this project is the most instrumental and effective outreach and awareness tool. It will also contribute to the success, long term goal, and sustainability of this program. Having the resource owners directly involved in the planning, management, and monitoring of their resources is beneficial not only to the resources, but it contributes significantly to the goal of developing a long term coral reef monitoring program for the State of Yap.

Yap CAP on behalf of the Yap State Coral Reef Monitoring Team and Program would like to thank NOAA for their generous assistance in establishing a long-term coral reef monitoring program in the state of Yap. Without your assistance and financial support this work wouldn't have been possible. We will continue to enhance all aspects of our program into the future and we would like to ask that NOAA continues to support our efforts to monitor the health of our coral reefs and to effectively manage and conserve them for future of our people.