
PACIFIC BLUE
FOUNDATION
Sustaining Reef Communities
7
6
5
1
2
3
4
2008
ANNUAL REPORT

THE PACIFIC BLUE FOUNDATION (PBF) provides basic research, education, encouragement, and implementation of sustainable practices in coastal regions with the ultimate goal of preserving and promoting the biological and cultural diversity of the region.

2008 ANNUAL REPORT

IT TAKES A VILLAGE

The involvement of the local community is crucial to conserving the coral reefs. Sustainable practices must prove to have practical benefits for the locals so that they will be accepted and carried out, perhaps through an intertwining of new conservation concepts and older, traditional methods.

Creating *qoliqolis*, or local fishing areas, have been a long-standing method that Fijians have used to manage their fisheries. The Locally Marine Managed Area (LMMA) Network explains that temporary *tabu* areas, or designated non-fishing zones, were put in place after the death of a chief, usually ensuring a plentiful harvest once the *tabu* was lifted.

Traditional practices, such as these, can be carried forth and fine-tuned to replenish fisheries and protect the village's marine resources, benefiting the fishermen as well as the coral reef ecosystem.

Promoting local participation starts by showing locals that there are rewards to be reaped from sustainable marine management, ensuring villagers that they will profit from the gains, while also supporting local marine management.

Yanuca's Head Advisor and respected elder, Taito Tabaleka, voiced his concern that the village's resources would be misused by outsiders. Tabaleka conveyed the wish of his community to protect and control local resources as well as their progress into the future.

In order to facilitate the community's governance over their resources while also adhering to traditional roles held by elders and the Chief, Pacific Blue Foundation provided the village with the concept of a trust deed. The trust deed would allow the village to make communal decisions, encouraging local interest and involvement, while also drawing on traditional knowledge and wisdom. Pacific Blue Foundation intends to foster an empowered and self-sustained community that will promote sustainable practices and benefit from coral conservation.

DIRECTORS, ADMINISTRATORS & CONSULTANTS

BOARD OF DIRECTORS

Brian Greg Mitchell, PhD
Scripps Institute of Oceanography, University of California San Diego
Charles R. Booth
Biospherical Instruments
Dale A. Keifer, PhD
University of Southern California, Department of Biology
Daniel Goodrich McNamara, Jr., Esq.

Mark Douglas Mitchell

Michael Kent Mitchell

Richard Murphy, PhD

ADMINISTRATIVE TEAM

Mary Anderson
Administrative Manager
Kerry Donovan
Pacific Islands Coordinator
Roko Sau Roko Josefa Cinavilakeba
Fiji Islands Coordinator, PBF
Sireli Kago
Serua Province Coordinator, PBF

CONSULTANTS

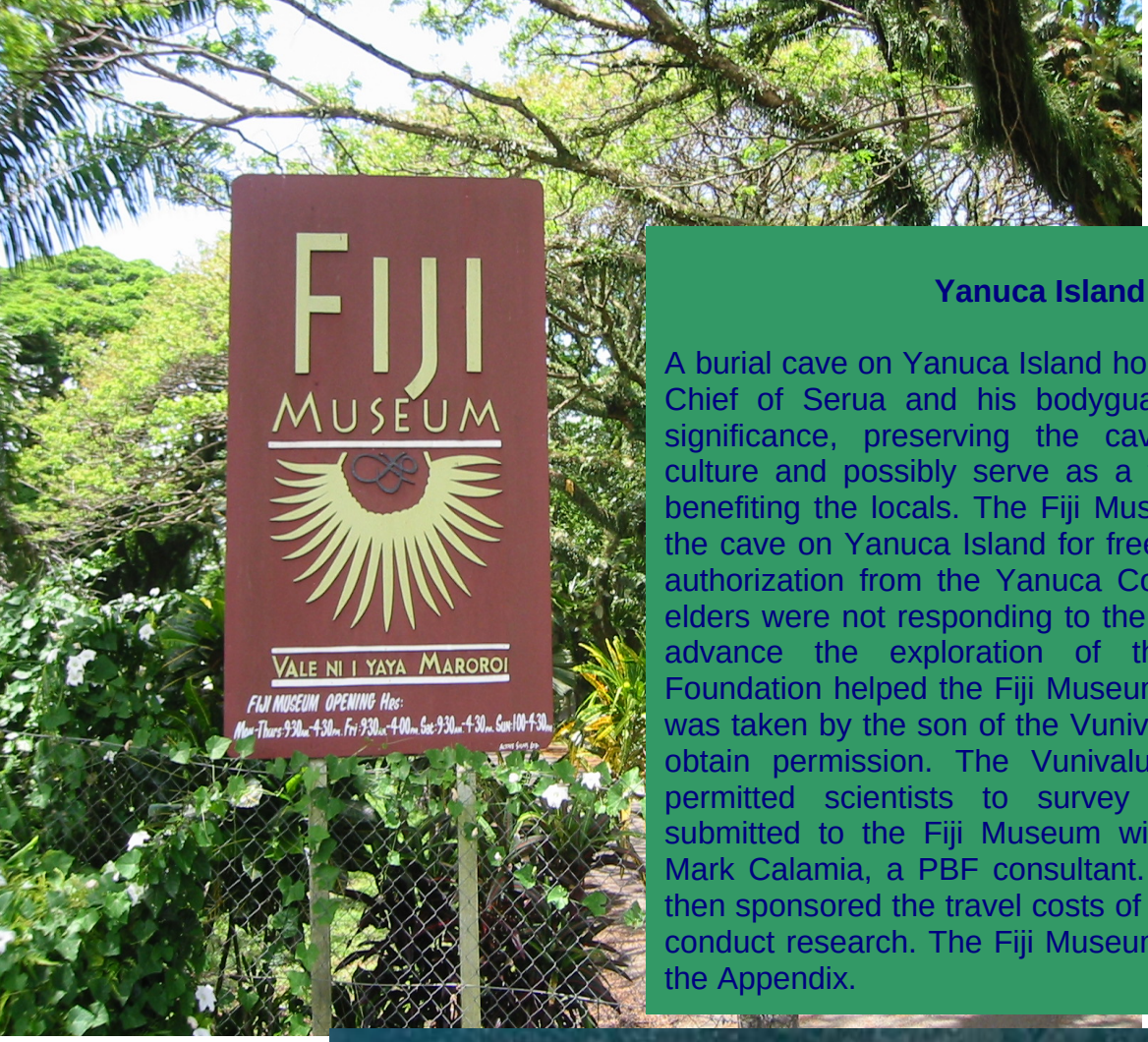
Davey Kline
University of Queensland
Mark Calamia
Ethnographic Enquiry
Didi Dulunaqio
Wildlife Conservation Society
Bret Diamond
SeaAid
Austin Bowden-Kerby
Corals for Conservation

HIGHLIGHTS

In 2008, Pacific Blue Foundation continued to fund projects and programs that would protect coral reefs and better sustain coastal communities. Most of the work is concentrated on Yanuca Island, Fiji. Working with Yanuca locals allows Pacific Blue Foundation to witness how the health of the coral reef affects the community.

Accounting for Sustainability

Due to a lack of organization, unsystematic accounting, and inefficient boat management, the Yanuca Council's funds were often depleted prior to disbursement of funds to the Chief, patrol wardens, and other expenses that supported the Marine Protected Area. In order to make up for the insufficient funds, the Chief, Tui Daga, approved of fishing licenses for non-villagers, charging $800 per license. While this seemed to be a viable option for increasing the Council's revenue, Fisheries Navua explained that each licensed fisherman brought in $20,000 worth of fish per year. Pacific Blue Foundation explained to the Yanuca Council that permitting outsiders to fish in the village's designated *qoliqoli* increased the local fishermen's competition, increased coral damage from anchors, and depleted the fisheries that the locals depend on. In November of 2008, in an effort create a sustainable fishing industry that the local community will benefit from, Pacific Blue Foundation proposed a budget plan that would use transparent accounting, cut out unnecessary expenditures, and stop issuance of fishing licenses to outsiders in an effort to minimize the pressure on the fishery stock, better support the Marine Protected Area, and place revenue back into the hands of the villagers by way of Yanuca's Fish Cooperative. The budget was well received and would take effect at the beginning of 2009.



Yanuca Island Cave

A burial cave on Yanuca Island holds the remains of a High Chief of Serua and his bodyguards. Due to its historic significance, preserving the cave would uphold Fijian culture and possibly serve as a tourism revenue source, benefiting the locals. The Fiji Museum offered to research the cave on Yanuca Island for free, but required a letter of authorization from the Yanuca Council. Unfortunately, the elders were not responding to the Fiji Museum. In order to advance the exploration of the cave, Pacific Blue Foundation helped the Fiji Museum obtain permission, and was taken by the son of the Vunivalu, or Chief, of Serua to obtain permission. The Vunivalu provided a letter that permitted scientists to survey the cave, which was submitted to the Fiji Museum with a support letter from Mark Calamia, a PBF consultant. Pacific Blue Foundation then sponsored the travel costs of the Museum scientists to conduct research. The Fiji Museum's report can be read in the Appendix.

Time Series Photographs of Coral Reef in Panama

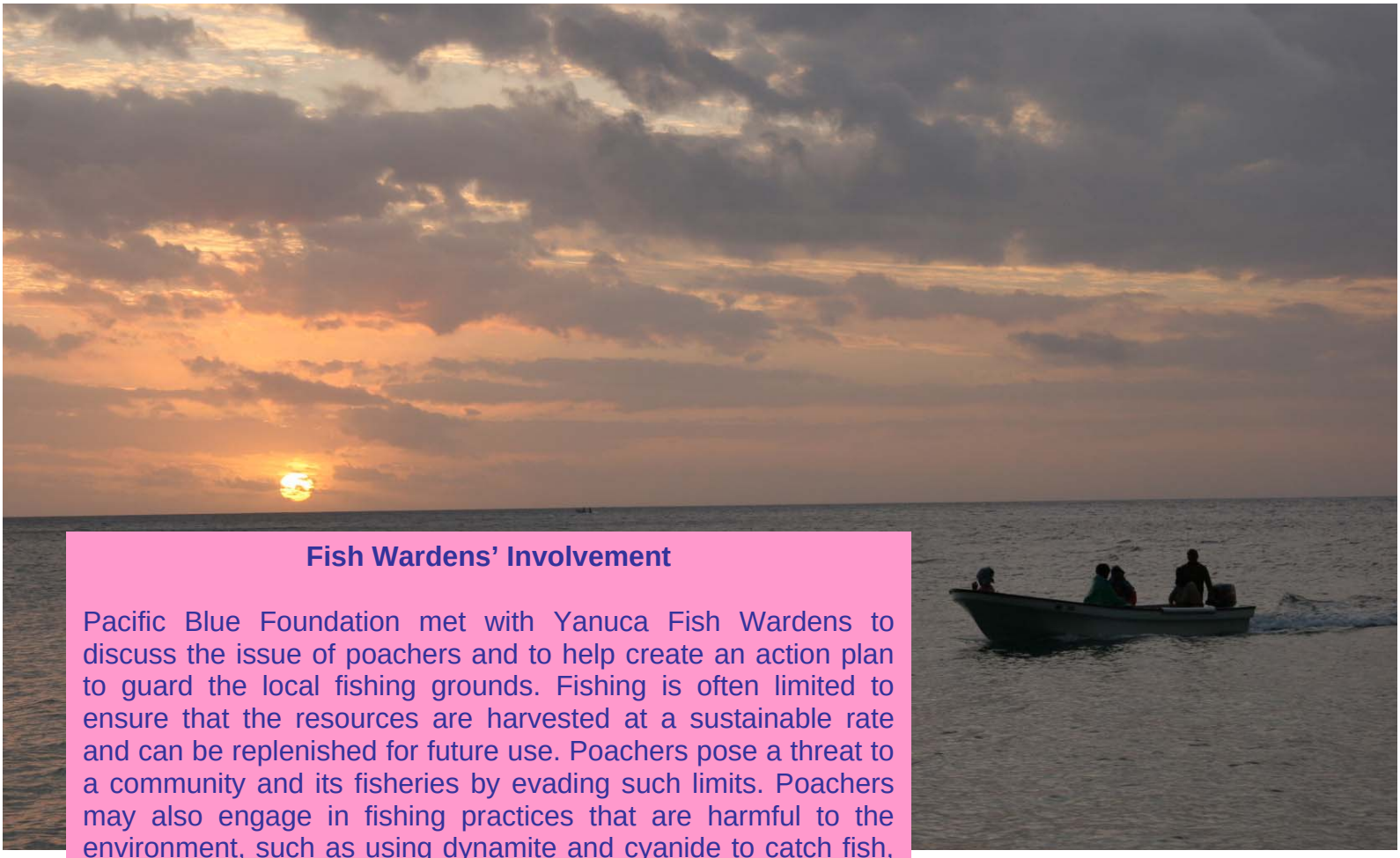
Pacific Blue Foundation continues to provide funding for Dr. David Kline's Coral Reef research off Bocas del Toro, Panama. The Time Series Survey is an ongoing project that has captured images of the coral reef in Panama since the mass coral bleaching in 2005. These images will determine the health of the coral reef over a period of time and demonstrate how current changes in the water's temperature and acidity will affect the state of the coral reef. The data sets obtained from this research is currently being used by Computer Vision Coral Ecology, CVCE, a project funded by the National Science Foundation.

Trust Deed Governance

Local concerns regarding outsiders' influence on resources led Pacific Blue Foundation to introduce the Yanuca Council to the concept of governing through a Trust Deed. The Trust Deed would allow several locals to take on the role of "Trustee," making decisions for the good of the "Beneficiaries," or Yanuca locals. The Yanuca Council would be able to maintain traditional methods of governing, such as having the respected elders retain their leadership roles by acting as Trustees, while also allowing the entire village to take part by voicing their concerns as beneficiaries. The Trust Deed method of governing would also ensure that no single individual would be able to make decisions for the whole, guarding the village from self-interest schemes. Governing by way of a trust deed would place the power back into the hands of the people, allowing them to determine how their resources would be allocated and conserved.

PCDF Coral Garden Workshops

PBF collaborated with Partners in Community Development, or PCDF, to provide Yanuca locals with Coral Garden Workshops. PCDF held workshops on land the first day, teaching the community how to plant corals and sustain coral reef environments. The following day, the workshops were held in the ocean, where the community put into practice their coral gardening skills. The workshops allowed Yanuca villagers to take part in sustainable practices, emphasizing the importance of their role in coral reef conservation. Yanuca leaders also decided to amend the Marine Protected Area, or MPA, to include open waters on the Northwest side of the island, thereby expanding the protected waters and enabling fish to spawn. Local fish wardens worked to help PCDF complete an annual reef survey in their *qoliqoli*, or traditional fishing area. PCDF's Biological Survey of Yanuca MPA can be viewed in the appendix.



Fish Wardens' Involvement

Pacific Blue Foundation met with Yanuca Fish Wardens to discuss the issue of poachers and to help create an action plan to guard the local fishing grounds. Fishing is often limited to ensure that the resources are harvested at a sustainable rate and can be replenished for future use. Poachers pose a threat to a community and its fisheries by evading such limits. Poachers may also engage in fishing practices that are harmful to the environment, such as using dynamite and cyanide to catch fish, so that they may collect fish quickly. In order to minimize such illicit practices, the Yanuca community chose to take action and safeguard their waters. Pacific Blue Foundation suggested that the Fish Warden on duty fish for revenue while patrolling to cover the expense of fuel. The meeting proved beneficial, for not only did it provide the fish wardens with a plan to protect their *qoliqoli*, but it also demonstrated the village's interest in preserving their local fisheries.

PACIFIC BLUE FOUNDATION

PROJECTS, RESEARCH & FUNDING

PANAMA

Bocas del Toro

Funding for Time Series Photographs & Coral Reef Analysis

- Dr. David Kline with Pacific Blue Foundation Sponsorship

FIJI

Yanuca Island

Invited PCDF to conduct Coral Garden Workshops on Yanuca Island

- PCDF with Pacific Blue Foundation

Sponsored UCLA law student to study *qoliqoli* issues & interview leaders

- Randi Sims with Pacific Blue Foundation Sponsorship

Obtained consent letter from Serua Chief to advance Fiji Museum research

- Pacific Blue Foundation Sponsorship

Funded travel expenses for Fiji Museum scientists for Yanuca cave survey

- Pacific Blue Foundation Sponsorship

Refurbished computer software and trained staff of Serua Provincial Office

- Pacific Blue Foundation Sponsorship

Financial Donation to International Ladies Association for Village Footpath

- Pacific Blue Foundation Sponsorship

Launched Pilot Rocket Stoves in five Yanuca Households

- Pacific Blue Foundation Sponsorship

Updated Yanuca Rubbish Disposal System Newsletter & provided aid

- Pacific Blue Foundation Sponsorship

Provided Trust Deed Document in English & Fijian for review

- Pacific Blue Foundation Sponsorship

Funded cost of building MPA signs on Island and Mainland

- Pacific Blue Foundation Sponsorship

Provided Fish Wardens with equipment to protect MPA from poachers

- Pacific Blue Foundation Sponsorship

Totoya Island

Provided one clean-burning Rocket Stove to each village in Totoya

- Pacific Blue Foundation Sponsorship

APPENDIX

BIOLOGICAL SURVEY OF YANUCA MPA
March 11th– 14th, 2008

AUSAID/EED PROJECT

NRM – PCDF
SUVA
FIJI

August - 2008

Funded by AUSAID and EED

CONTENTS

LIST OF FIGURES

LIST OF PLATES

LIST OF APPENDICES

ACKNOWLEDGEMENT

We want to acknowledge the following people for their support in making this trip a successful one.

- Turaga ni Koro of Yanuca (Mr. Sireli Kago) for organizing the people of Yanuca for the two day workshop;
- Mr. Kerry Donovan of Pacific Blue Foundation for supporting the workshop with food for the participants;
- The chief of Yanuca (Turaga na Tui Daga) for letting PCDF come into the community to conduct the workshop and work with his people.

We would also like to thank the young men and women of Yanuca for their time, enthusiasm and commitment to be part of the workshop and survey.

We want to highlight and thank the ever- ready attitude of the women of Yanuca for the provision of food on the table at meal times.

Not forgetting the Natural Resource Team of PCDF for their effort and support in conducting the survey for the people of Yanuca, thank you very much.

Without the funding support of AUSAID and EED this work would not have materialized. We therefore acknowledge them for their provision of finance to fund this project.

EXECUTIVE SUMMARY

The second biological survey for Yanuca was conducted on March the 12th 2008 by locally trained young men and the NRM team. A total of eight (8) transect was made with four each taken for MPA and Non MPA sites. Similar to the first survey that was conducted in 2007, the same number of fishes and invertebrates were observed on this survey. The coral cover was also estimated using the quadrat counts for each transect.

The fish and invertebrates counts did not show any difference when it was compared to the 2007 data. Although there were slight increases in numbers and densities it does not paint the true picture of the effect of no fishing for one year in this area.

We expected a significant increase since the MPA site has not had any fishing activity for over one year. Nevertheless, some of the anomalies that contributed to the low count were the weather, tidal effect and water condition. The weather was cold and there was tidal surge as a result of underwater earthquake for the last few days. It was also observed that major food fishes that were listed in the data sheet were missing completely during the count.

The coral coverage for the sites was predominantly live corals, sands and rubbles or dead corals. Even though major fish species were absent from the count, small colored coral reef fishes were observed throughout the survey areas. According to the advice from the local team, they had observed food fishes in this area when the weather was fine. We realize that fishes and invertebrates are very sensitive to weather changes, which plays an important part in the low coverage shown in this report.

Given the fact that small increases have been recorded from the data collected, together with information from the community in regards to sighting of abundance of fishes and invertebrates when the weather is fine, we can say that there is a definite increase in resources after one year of no fishing at Yanuca Island MPA.

It would therefore be sensible to return when the weather is fine and re-survey the site for at least a day. What ever the outcome of that future observation is, this report is appropriate to be used in comparison to previous data that was collected during the initial stage.

INTRODUCTION

It had been reported in the first survey of the Yanuca MPA of the need to conduct a second survey in order to confirm the true picture of the impact of MPA over a reasonable period of time. We conducted the second survey with the goal of engaging the village participants as well as getting the necessary data to compare against the first data set of 2007 on the impact of MPA.

The second biological survey of MPA areas at Yanuca was a follow-up to the first which was conducted in April 2007. This survey should be a good indicator to the success or failure of the MPA initiative which the local people have embarked on. It will also show the impact of management which in the long-run should be sustainable according to the strategic/plan set up for the MPA.

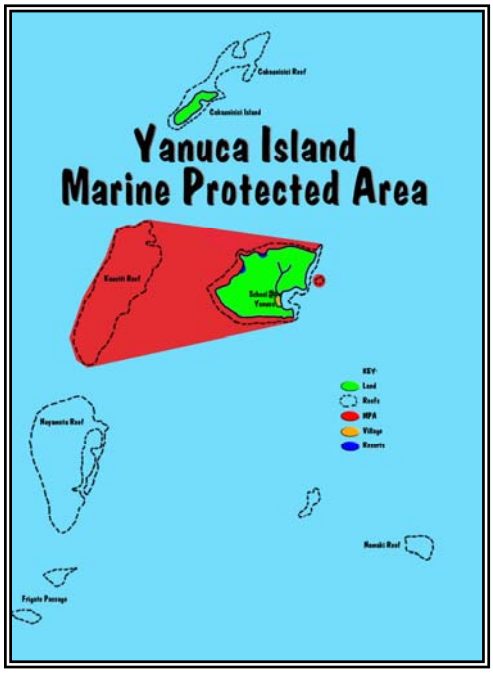


Plate 1: MPA map of Yanuca Island

BACKGROUND

Yanuca village MPA site shown on the map in plate 1 is situated at the Southern eastern tip of the island running southwards towards the barrier Kauviti passage, and then northwards encompassing the outer reef edge until it reaches the north passage then curve south-easterly towards the northern tip of the island. The village is located to the east of the island marked yellow on the map within the bay.

The men that were trained earlier as Fish Warden and biological monitoring were also involved in the second survey. This survey was the repeat of the baseline survey that was conducted last year (2007).

Prior to conducting the survey, the wardens were again briefed on the method to be used and how the counts were to be made for fish, non-fish and coral cover. Even though some of the team members that were involved in last year's survey were not present, the team that was put together was well versed with the methodology.

Plate 2: Team refresher on quadrat sampling method

METHOD

Using line and belt transect method described by *English etal,* 4 samples were taken each in the MPA and Non MPA sites and recorded as Transect 1 to 4. Using two boats with 4 men in each boat, sampling was distributed with a total of four transect each for the two boats. A total of 8 transects was made for the sites; 4 for the MPA site and 4 for the open site.

Data was analysed using excel spreadsheet to draw out the mean number of fish and non-fish counted as well as the density of both resources according to the number of transect made for both sites. The coral cover was also analysed using the percentage coverage for both sites. This result was later compared to the baseline data collected in 2007 to show any significant changes that may occur for the time period of one year duration for the MPA site.

The data set and analysis confirms changes that may have occurred during the period of one year. The discussion that supports these changes in this report is focusing on the data provided together with some insight to actual activities that has happened within that year.

Plate 3: MPA site sampling next to Resort – quadrat team member

RESULTS AND DISCUSSION

Fish Counts:

Figure 1 below illustrates the average number of indicator fish counted for the survey comparing the Tabu and Non-Tabu sites. The average number of fish count was taken for the 8 transects (4 for the MPA and 4 for the non-MPA).

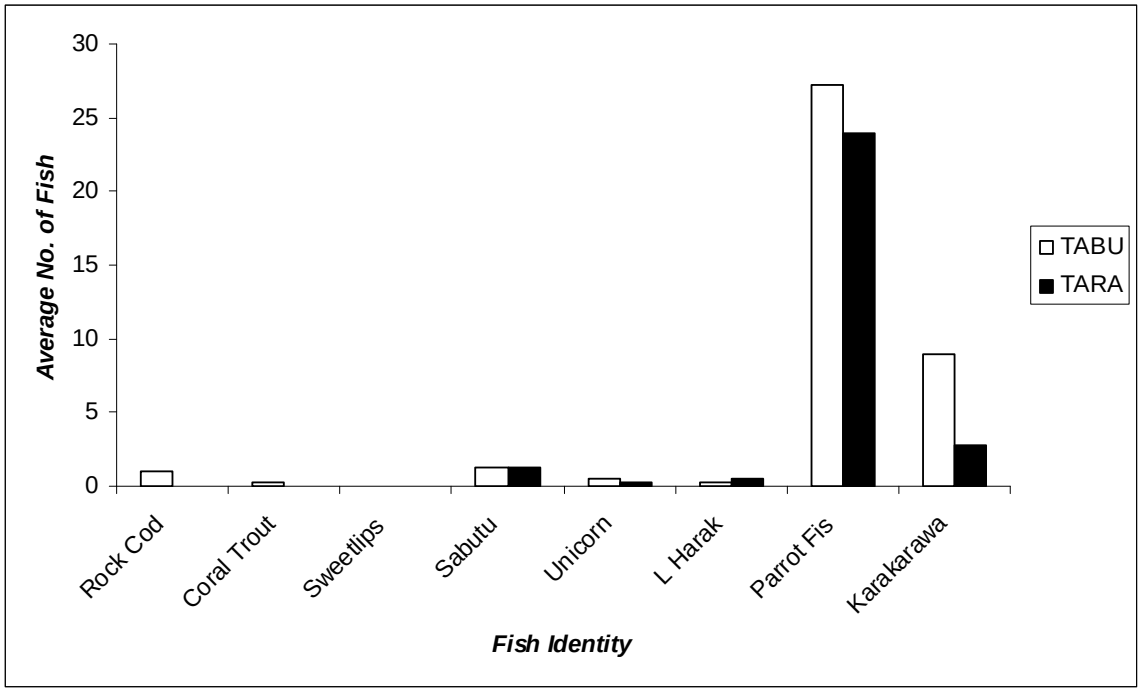


Figure 1: Average number of fish counted per indicator for TABU and Non TABU sites *(Tabu=MPA site, Tara=Non MPA site, Sabutu=Large-eye bream Emperors, Karakarawa=Wrasses)*

Myers (1999), Allan & Swainston (1997), Fiji Food Fishes Chart 1 and 2

The average number of fish count for MPA (TABU) is insignificant when compared to the Non MPA (TARA) site. Except for Parrot and Wrasses (Karakarawa) they show slight increases in numbers on MPA then in the open site.

But the non occurrence of major food fishes like rock cod, coral trout, sweetlips, unicorn and emperors is significantly noted in this data.

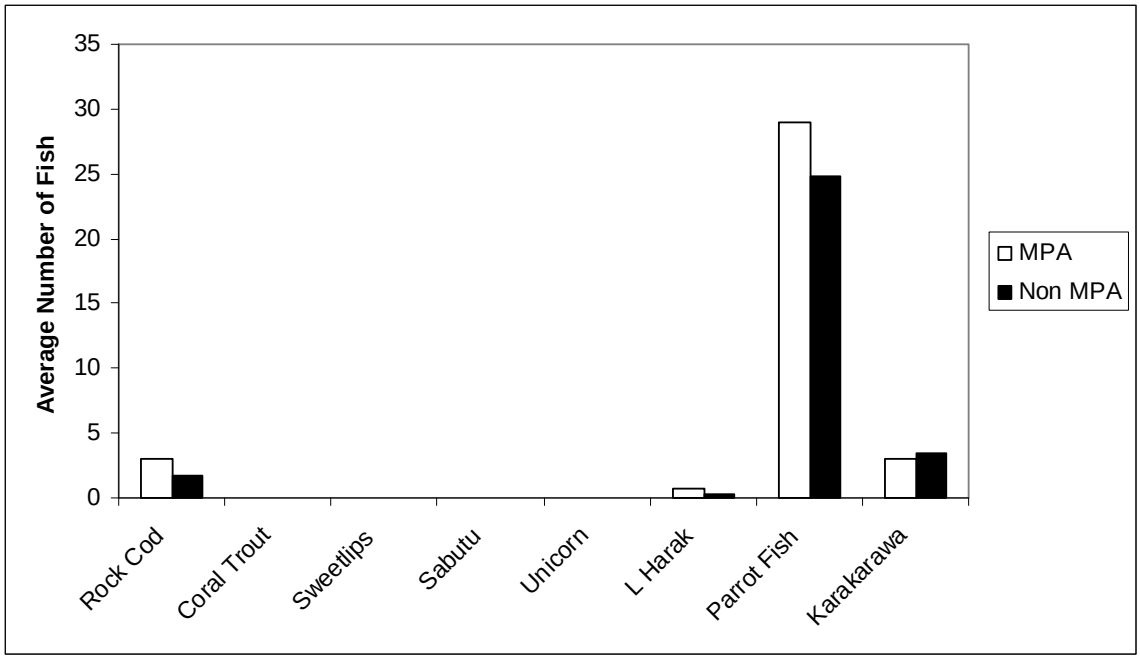


Figure 2: Average number of fish count during baseline survey in 2007

Figure 2 illustrates the average count of fish during the first survey in 2007. It clearly illustrates the trend that there is more fish counted in MPA site compared to the non – MPA site. When we compare the two data and graphs shown (Figures 1 and 2) the number of fish counted did not show any change at all. Even though the MPA sites had more then the Non MPA site, but the number of fish are just in the range of 20 to 30. There is very little change and therefore we can not conclude that this was the result of the MPA initiative.

Figures 3 and 4 below show the trend before and after one year duration for the MPA and Non MPA site, at Yanuca. These figures showed that there is no significant change in the number of fishes that were sampled considering that the area has been banned from all fishing activities.. Could it be the time of day, current, tide or other factors that may have affected the presence of fish during the survey time? Or, it could be attributed to poaching or night diving which is prevalent in this area by outsiders.

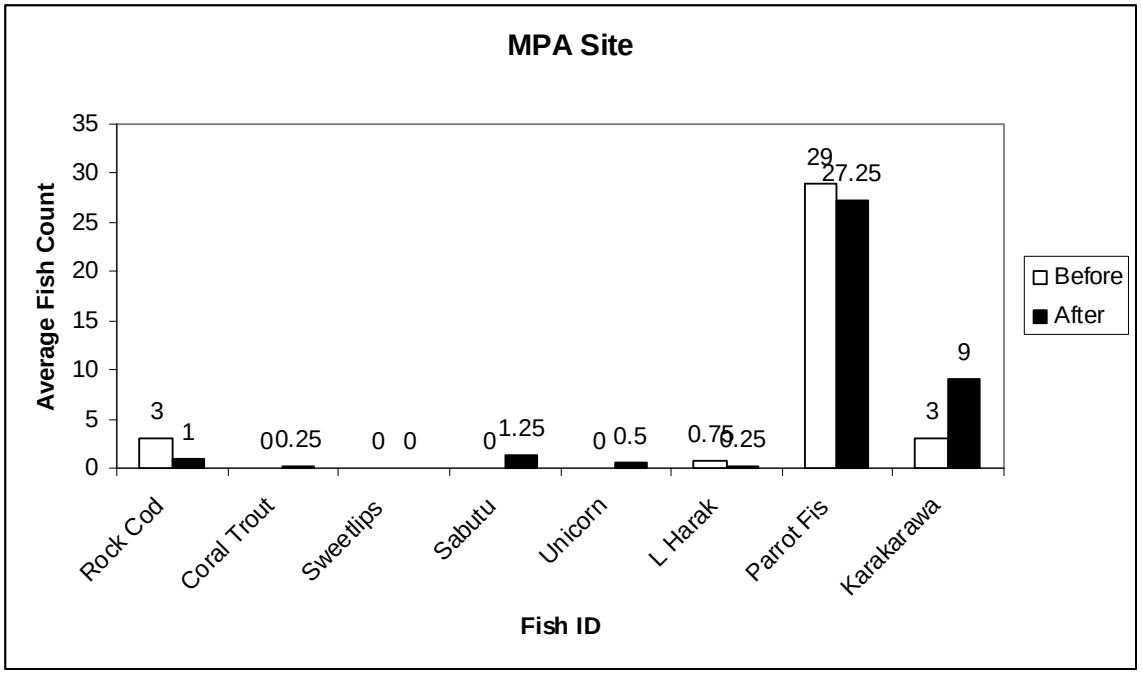


Figure 3: Fish Count in MPA site before and after one year

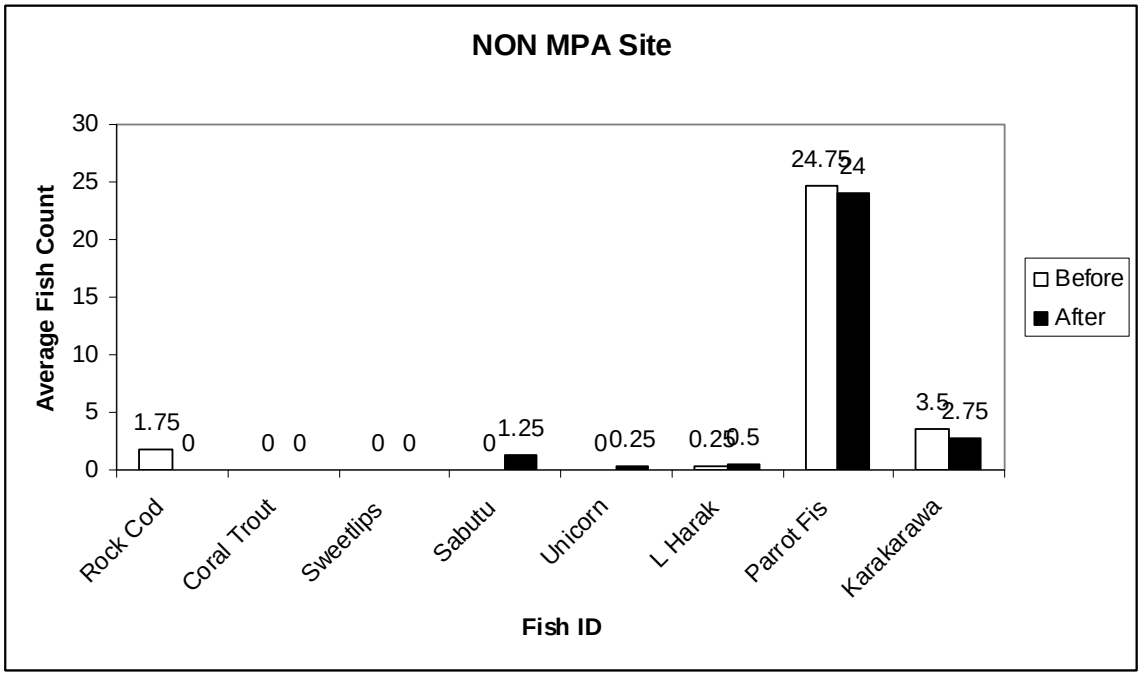


Figure 4: Fish Count in NON MPA site before and after one year

Fish Density

Figure 5 illustrates fish density per square meter according to the 50 meters sampling distance for each transect. It shows that more fish is found in MPA site when compared to Non MPA site. This is only true for T2 whilst the other transect show very little change.

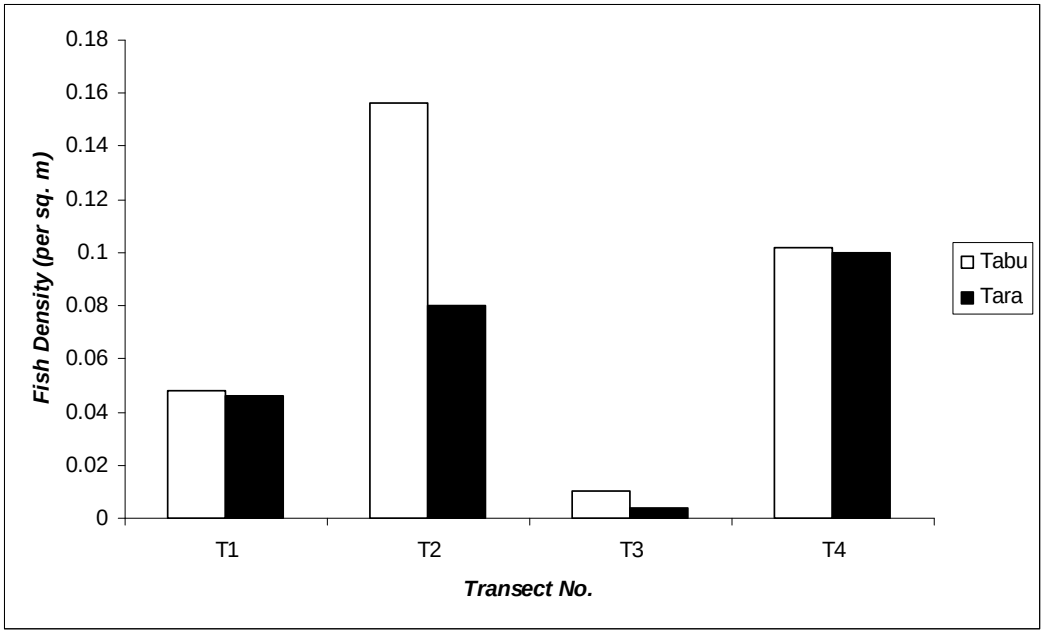


Figure 5: Density of fish per transect for MPA and Non MPA sites at Yanuca *(Tabu=MPA site and Tara=Non MPA or Open site)*

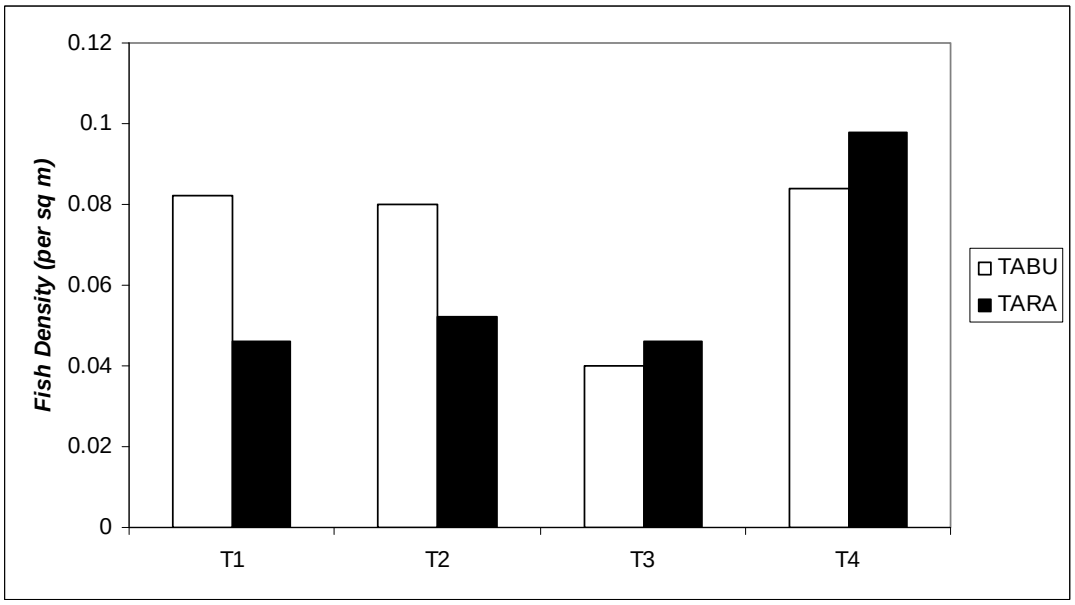


Figure 6: Density of fish per transect for the 2007 Baseline survey at Yanuca Sites

Figure 6 shows the density of fish counted in 2007. And when its is compared to the 2008 data set after one year there is a slight increase in fish density for MPA looking at the overall graphs according to the four transect set. The increase for this count has been minimal and it could be related to the time of day, tidal differences, weather in general was rough and surge everywhere.

Invertebrates Counts

The count of invertebrates shown in figure 7 is much more distinct then the fish count. That is, the number of invertebrates in MPA is more then what was counted in the open site. But notice the averages are too low between 0 and 1. The graph can be deceiving if we are just observing the picture however, the numerals shown on the side showed clearly the low abundance of these resources. Similar to the fish count and densities, the number shown in these figure reflects that other anomalies could attribute to the low count.

The weather as discussed above could be the major attributing factor to the low count.

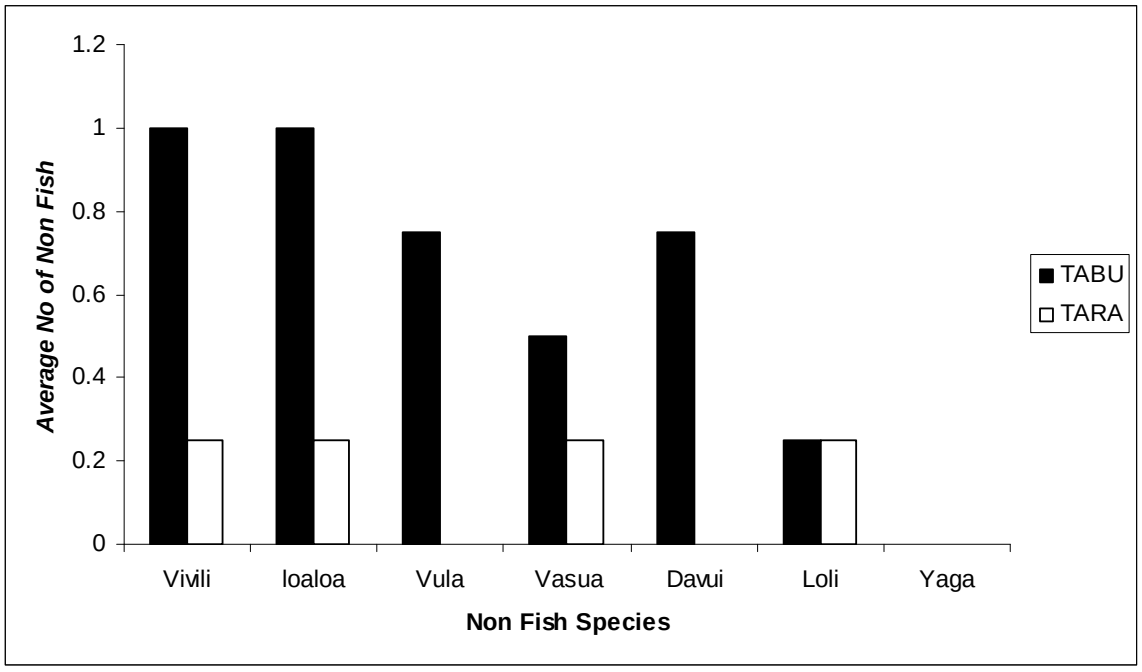


Figure 7 shows average invertebrates counts for Tabu and Non Tabu sites

Invertebrates Density

The density comparison shown below on figure 8 further illustrates the low abundance of invertebrates in both MPA and open sites. Even though the graph showed prevalent occurrence in MPA sites, it is still very low according to the one year duration recovery quantity that was expected.

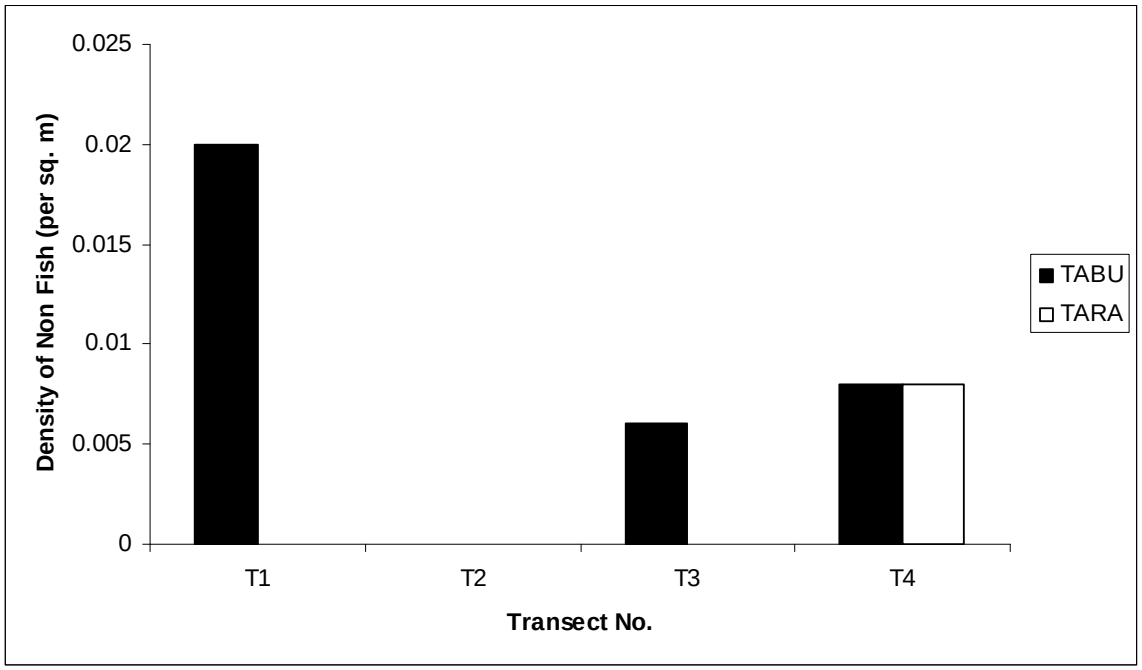


Figure 8 shows density of invertebrates per transect for Tabu and Non Tabu sites

Invertebrates Comparison after One Year Duration

The following graphs (figures 9 and 10) further substantiate what has been observed through out this survey, that the change that was expected did not materialize after one year of no fishing. The data itself almost mirror image one another (before and after 1 year), even though there are minor negligible trends for some species.

The number of invertebrates is very low for both sites which from our observation were not expected. The local team also advised after the survey that the weather was not good

for fishing which could be a major contribution to the low fish and non-fish occurrence from the survey.

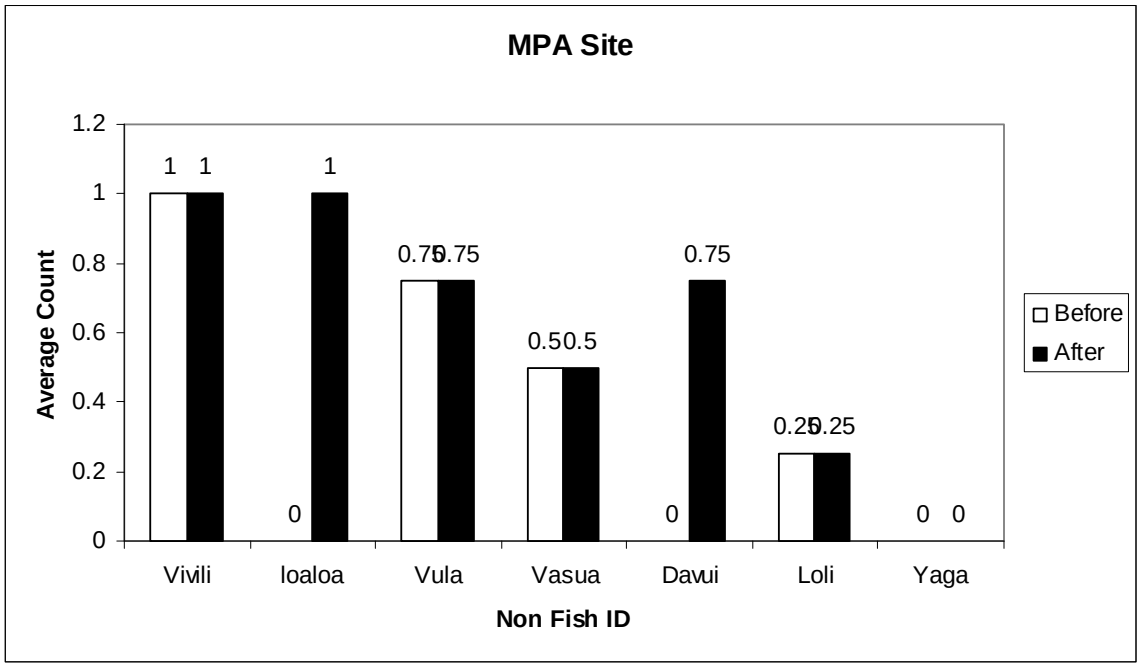


Figure 9 shows average invertebrates counts before and after one year on MPA site *(Vivili=Trochus, Loaloa=Black teatfish, Vula=Brown sandfish, Vasua=Clams, Davui=Triton shellfish, Loli=Black beche de mer, Yaga=Spider shellfish)*

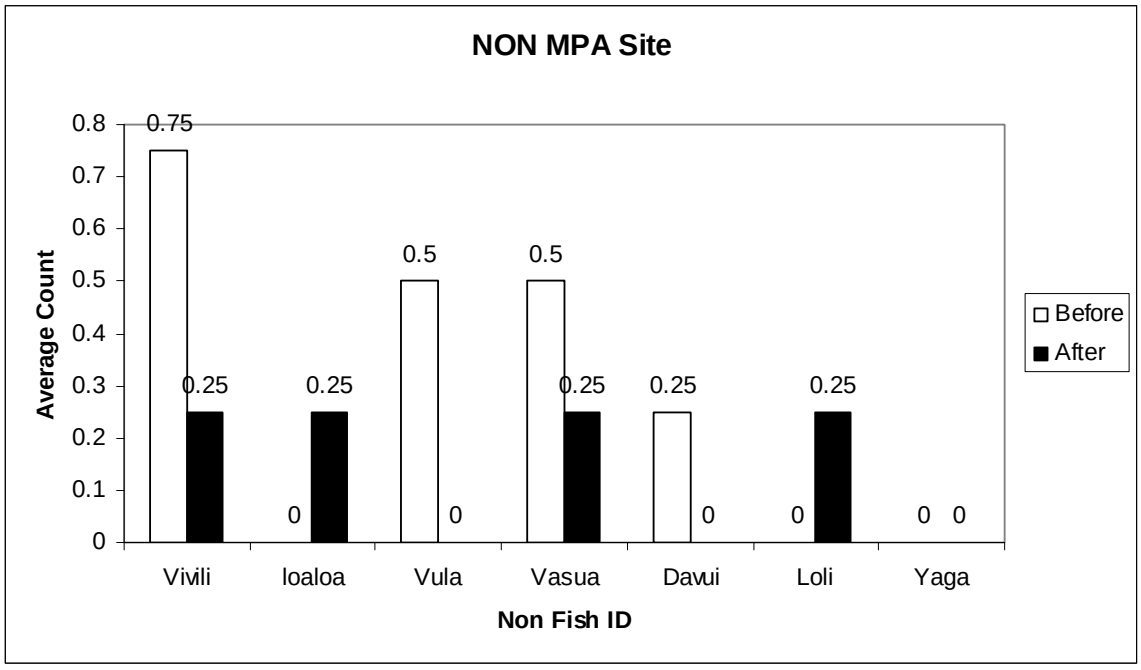


Figure 10 shows average count of invertebrates after one year on Non MPA site

Coral Cover

Figure 11 described the substrate structure of the areas around Yanuca. The result showed that live corals and sand are dominant followed by dead corals and rubbles.

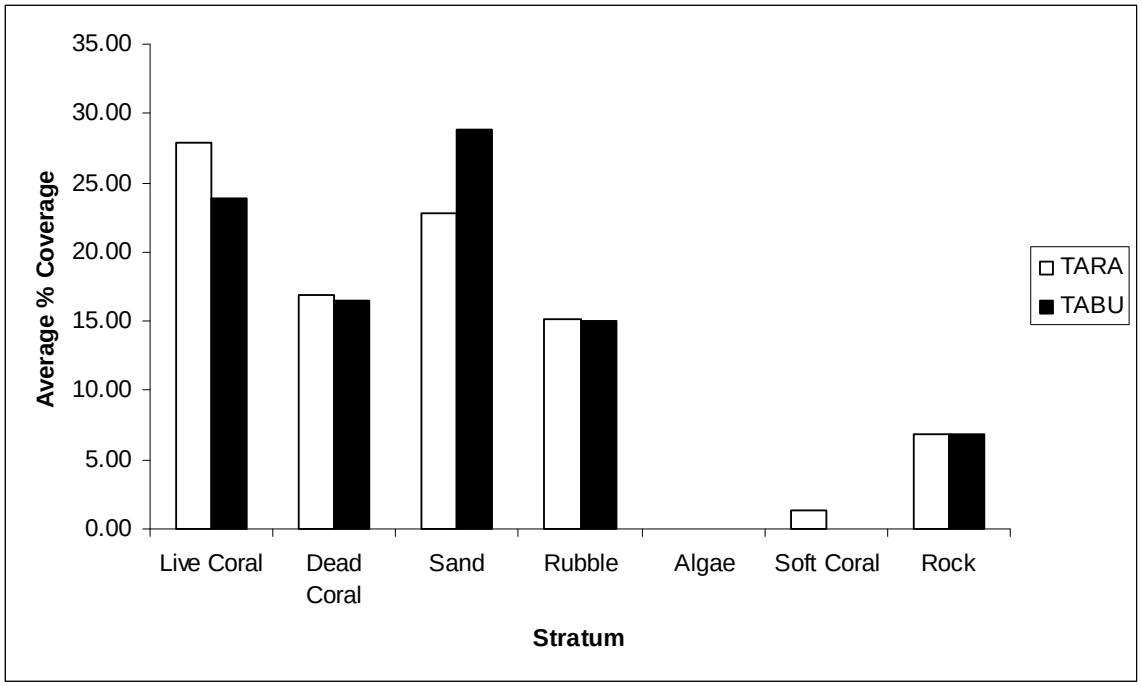


Figure 11 shows the coral coverage for MPA and Non MPA sites
(Tara=Open site, Tabu=MPA site)

The coral assemblage surrounding the island and the barrier reef bordering the west of the island is alive with acroporidae, poritidae and large coral boulders submerged in between the island and the breakers. The site has been prone to coral and small fish extraction for more then 10 years by a foreign owned company based at Pacific Harbour.

Conclusion and Recommendations

The survey of Marine Protected Areas and Open Areas was completed with a result that was not expected. Under normal condition, changes after one year of no-fishing should be observed with increase in the number of fishes and invertebrates for MPA would be

obvious. In this case, the count and densities were low. As described in the result above, the weather was not very favorable and in fact it was not a good time for any fishermen to go out and fish. It would be useful to re-visit the site when the weather improves in order to substantiate the information of the increase in fish abundance as described by the local people.

The number of fishes and invertebrates did not show any significant changes in number as well densities from the data that was collected. We have come to a conclusion that changes have occurred in these sites for the last year. We also understand with discussion from the villagers that took part in the survey, if the weather was fine the fish and invertebrates would come out in numbers. It is therefore worthy to re-visit the site as soon as the weather changes to verify this information.

For future biological survey work to be successful it has to be conducted during good weather conditions, in order to get the appropriate data set that will paint the true picture of what nature can do without our interference. It will also save time and money spent. As a whole this lesson will enable the team to be cautious in our future work schedules.

References

English S., C. Wilkinson and V. Baker (1997). Survey Manual for Tropical Marine Resources. Second Edition. Australian Institute of Marine Resources.

Fisheries Department – Fiji. Charts on Food Fishes of Fiji 1 and 2

Fisheries Department – Fiji. Chart on Aquatic Foods of Fiji.

Robert F. Myers (1999). Micronesian Reef Fishes. A comprehension guide to the coral reef fishes of Micronesia. Third Edition: Coral Graphics Production, Guam, USA.

Appendices

Appendix 1: List of Fishes and Invertebrates for Yanuca

Fishes

Fijian Name	Common Name	Scientific Name
Kawakawa	Rock Cod	*Epinephelus sp.*
Donu	Coral Trout	*Plectropomus sp.*
Sevaseva	Sweetlips	*Plectorhinchus sp.*
Sabutu	Emperors	*Lethrinus sp.*
Ta	Unicorn fish	*Naso unicornis*
Kabatia	Blackspot emperor	*Lethrinus harak*
Ulavi	Parrot fish	*Scaridaes sp.*
Karakarawa	Wrasses	*Labridaes sp.*

Invertebrates

Fijian Name	Common Name	Scientific Name
Vivili	Trochus shellfish	*Trochus niloticus*
Loaloa	Black teatfish	*Microthele nobilis*
Vula	Brown sandfish	*Bohardschia marmorata*
Vasua	Clams	*Tridacna sp.*
Davui	Trumpet triton shellfish	*Charonia tritonis*
Loli	Black Beche de mer	*Halodeima atra*
Yaga	Spider shellfish	*Lambis lambis*

MUSEUM VISIT TO YANUCA ISLAND CAVE

FIJI MUSEUM
VALE NI I YAQA MARORO

P O BOX 2023
GOVERNMENT BUILDINGS
SUVA, FIJI ISLANDS
PH: (679) 3315 944/3315 043
FAX: (679) 3305 143
EMAIL: fijimuseum@connect.com.fj
fijimuseum@kidanet.net.fj

MUSEUM VISIT TO YANUCA ISLAND CAVE

Introduction

The Fiji Museum was requested by the Turaga Vunivalu of Serua, Ratu Peni Latianara and Yanuca Village Council to conduct an archaeological impact assessment on the island of Yanuca. The main focus is on the cave that harbors the skeletal remains of a High Chief of Serua and his warrior bodyguards

Work Undertaken

This was a one day field work and was conducted on the 28th of April, 2008. Two Fiji Museum staff members Sakiusa Kataiwai and Sepeti Mata from the Archaeology department traveled to Yanuca Island to record and survey the site. Upon our arrival a "I sevusevu' was presented with another presentation made to seek their permission for the Fiji Museum staff to visit the burial cave. Our request was granted and then we were taken in a fiberglass boat to the coast where the cave situated.

Lots of pieces of driftwood were on the beach and it almost blocked the cave entrance. We could also notice the amount of sand and gravel or beach shingles built up at the entrance and part of the inside of the cave. The floor of the cave was wet and covered with sand and swiftlet (bird) droppings.

Upon reaching the end of the cave we noticed a wooden tray about two and half meters long and fifty centimeter wide, on top of the tray were some pieces of human bones.

There was not very much left in the tray of the skeleton of what we were told to be the Vunivalu's remains.

Around the wooden tray we noticed some pieces of human skeleton remains which we were told belong to the warriors who were willing to guard their chief's body until they die, wanting to protect the body from falling into their enemy's hand.

A brief verbal report was given to the Tui Daga and the village elders of our observations and what the Fiji Museum's involvement if the villages want to develop some sort of eco-tourism project on the island with the main attraction to be the Burial Cave.

Recommendation:

The cave entrance is to be thoroughly cleared. All large beach rock and driftwood are to be removed from the entrance of the cave. A retaining wall of rock to be constructed about three meters away across the cave mouth to stop the sand and sea water being blown in. A proper gravel and sand walk way to be put in place inside the cave floor. A security buffer fencing made out of chain link galvanized wire netting is to be erected inside the cave to indicate to the visiting public how far they could go.

Report for Mr. Kerry Donovan—Coordinator Pacific Blue Foundation
And Sireli Kago Turaga ni Koro—Yanuca Island, Serua.

By Sakiusa Kataiwai and S. Matararaba. Fiji Museum Archaeology Department.

EXPLANATION OF TRUSTS TO FIJIAN VILLAGE
IN ENGLISH AND FIJIAN LANGUAGE

EXPLANATION OF TRUSTS TO FIJIAN VILLAGE IN ENGLISH AND FIJIAN LANGUAGE

DEED OF TRUST FOR A YAVUSA OR MATAQALI

A Deed of Trust is a formal legal document which defines rules for a small group of persons (TRUSTEES) to hold and manage property for the benefit of the full group (BENEFICIARIES). For example, members of a Mataqali or Yavusa can be chosen as Trustees to make decisions on behalf of the full Mataqali or Yavusa.

The Deed of Trust allows the Trustees to enter into contracts, receive funds, enter commercial undertakings and carry out business decisions for the Beneficiaries. This helps the group to participate in business by making decisions more efficient.

For example, a Mataqali could agree that that several Trustees should manage the properties or land of the Mataqali in a business for the benefit of the Mataqali. Another example is that a Yavusa could agree that Trustees manage business transactions for their iqoliqoli.

A Deed of Trust usually includes the following but details will depend on the wishes of the Beneficiaries after consultation with their lawyers–

1. How the Trustees are to be appointed
2. Qualifications and terms of Trustees
3. What powers would the Trustees have
4. What duties do the Trustees have
5. How often should the Trustees meet
6. How often should the Trustees meet with the beneficiaries
7. Which properties and assets are to be held and managed by the Trust
8. How is the Trust to be administered
9. How are accounts to be kept
10. How are the funds of the Trust to be distributed or allocated
11. Who are to be the beneficiaries of this Trust

A Deed of Trust can be prepared and explained to the Beneficiaries who can discuss, and propose revisions as a group. The Deed can then be changed as desired by the Beneficiaries. The revised Deed would then be explained again before it is approved and signed by the Beneficiaries.

After the Deed of Trust has been approved and signed by the Beneficiaries the Deed would be registered with the Government. After registration, the Trustees would be able to make efficient decisions to benefit the full group.

DEED OF TRUST NI YAVUSA SE MATAQALI

Na **Deed of Trust** e dua na veidinadinati vakarautaki vakalawa, ka vauci kina e dua na mata i lawalawa lailai ka tu veiratou na kaukauwa vakalawa, ni kena maroroi se vakatulewataki vakamatau ni nodra i yau na lewe levu me vinaka vei ira. Kena i vakaraitaki e rawa ni ratou digitaki e vica na lewe ni mataqali me ratou trustees/se tamata vakabauti, me vakatulewa ena vukudra na mataqali se yavusa.

Na Deed of Trust se na veidinadinati e vakatara vei iratou na trustees me ratou veiyalayalati, ratou ciqoma nai lavo, kalawa e na veivosaki ni vei ka vakabisinisi, ka vakatulewa vakamatau ena vukudra na lewena. Oqo ena veivuke sara vakalevu ka vakavinaka ena nodra vakaitavi ena veika vakabisinisi.

Kena i vakaraitaki, na mataqali se yavusa ena rawa ni vakadonuya me vica vata na trustees me qarava na qele ka sa vakayagataki ena bisinisi se na veikatale eso ka taukeni vakabisinisi me vinaka vei ira na lewena.

Nai karua ni vakaraitaki na trustees ni yavusa e rawa ni qarava na bisinisi ni kena i qoliqoli. Me na dau tiko talega ena loma ni deed of trust na veika oqo -

1. digitaki vakacava ni trustees
2. veika vakavuli baleti iratou na trustees
3. na kaukauwa levu cava ena tiko vei iratou
4. na i tavi cava eratou na qarava
5. na gauna ni nodratou dau bose
6. gauna cava so ni nodratou dau bosevata kina kei ira na mataqali kece
7. na cava so nai yau, kei na vei ka tale eso e taukena na mataqali e ratou na maroroya ka cakacaka kina na trustees
8. na cava so nai walewale se i tuvatuva e ratou na vei qaravi kina
9. na maroroi ni veika vakaivola
10. e na dau wasei vakacava nai lavo se na tubu kei na levu ni kena i wasewase ya dua
11. o cei so era i taukei ni trust oqo

Na deed of trust e rawa ni vakarautaki ka qai vakamacalataki vakamatata sara vei ira na lewena me rawa ni ra qai veitalanoa taka, ka tuvatuva ka, ka vakatutu vaka mataqali se yavusa. E rawa ni veisautaki e na nodra gagadre na lewena ena qai dikevi tale, qai vakamacalataki tale vei ira, ni bera ni ra qai vakadonuya me sainitaki.

Ni sa vakadonu oti ka sainitaki talega mai vei ira na lewena sa na qai vaka matanitutaki (register) sa na qai rawarawa na nodratou vakatulewa na kena trustees me vinaka vei ira na lewi ni mataqali.

YANUCA VILLAGE, 2008 FIJI NEEDS ASSESSMENT SUMMARY

Mark A. Calamia, Ph.D. (Ethnographic Inquiry)
And Bret Diamond, M.A. (SeaAid)

YANUCA VILLAGE, 2008 FIJI NEEDS ASSESSMENT SUMMARY

Mark A. Calamia, Ph.D. (Ethnographic Inquiry)
And Bret Diamond, M.A. (SeaAid)

Introduction

As part of an ongoing research agenda to help Yanuca village improve its quality of life and establish a marine protected area, Pacific Blue Foundation (PBF) requested the assistance from Dr. Mark A. Calamia of Ethnographic Inquiry and Captain Bret Diamond of SeaAid to conduct a two week needs assessment in November 2008 of basic living requirements, including a newly established community-based marine protected area (CBMPA). Actual fieldwork, including planning time, for this field season was from November 4th through November 17 2008. To conduct the assessment, a door-to-door household survey questionnaire was developed and administered by Dr. Calamia and Captain Diamond together with three Fijian interviewers recommended to PBF by Partners in Community Development Fiji (PCDF). The survey itself focused on several areas: demographic information, household views of marine protected area, and family community needs, and well being. A number of key indicators of family and community well-being were investigated through a series of questions aimed at understanding specific household family needs, daily activities, food consumption, health issues, sanitation issues, village income needs, and risks to traditional culture. A separate study of Yanuca honorary fish wardens' perceptions of the MPA was also undertaken as part of the community needs assessment. This brief report summarizes only the objectives and activities performed during the 2008 season. The final results of the needs assessment will be presented in a report to be submitted to PBF in May or June of 2009.

Objectives

The primary objectives for the 2008 season of fieldwork Yanuca Village needs assessment focused on several dimensions pertaining to the community well-being: (1) family and community living needs, (2) management of the large CBMPA, (3) governance of the CBMPA, (4) patrolling of the CBMPA, (5) assessing a location on the island for placing a fixed radar system to detect poachers, (6) understanding the implication of developing and implementing a deed of trust for improving the existing partnership between PBF and Yancua to enhance resource management, cost recovery, and overall governance of the CBMPA.

Yanuca Village Facts and Statistics

Mataqali (patrilineages) 3: Nukutabua, Batiluva, Lutuya
Households: 48
Population: 247 (Mataqali Nukutabua: 66, Mataqali Batiluva: 111, Mataqali Lutuya: 70)
Note: The mataqali Lutuya is actually based a Navutulevu Village in Serua Province, but for historical reasons its members reside in Yanuca village. There are many other people who are registered as members of the village, but reside in Suva and other cities in Fiji.
The Yanuca Island local economy is based primarily on subsistence-based crops and artisanal and subsistence-based fishing. However, a substantial amount of income is

derived from fire walking performances given at Pacific Harbor's Cultural Center and from revenue derived from a surf resort (Wainidubu, Yanuca Island Resort) owned by the Batiluva mataqali.

The recognized customary fishing rights owners of the Beqa Lagoon and their customary fishing grounds (*qoliqoli*) CFRA 4 and CFRA 5 are shown in the Native Lands and Fisheries Commission (NLFC) maps. The numbers correspond to the *qoliqoli* owners by area shown on the attached map files (note that *qoliqoli* 1,2,3, and 6 are not included as part of the attached maps): Sawau, Nacurumoce, Vagadra and Levuka (1); Kulu (2); Naduruvesi, Nacurumoce and Kulu (3); Naduruvesi, Nacurumoce, and Nukutabua (4); Nukutabua (5); Naduruvesi and Nacurmoce (6); and Raviravi. Prior to 1961 an eastern portion of the eastern qoliqoli boundary of Nakutabua extended south to Nukatawai. Later, Nukutabua extended eastward to Kulu (Yavusa) because they are closely related kin. Today, the *qoliqoli* belonging to Naduruvesi, Nacurumoce, and Nukutabua (4) is shared with Rukua, but not with any of the other villages of Beqa Island.

The chief of Yanuca Village is the Tui Daga (Ratu Panapasa Matia) who is from the chiefly lineage of Nukutabua. Because of historical reasons, he lives in Wainiwabia village in the District of Serua along the Coral Coast but maintains traditional authority over Yanuca. Once or twice a month he visits the village of Yanuca in order to discuss major issues or decisions where his input is required. The overall day-to-day management of the village, however, is conducted by his brother Manasa Maidrue who has authority to make small-scale decisions in his brother's behalf. The Tui Daga makes decisions together with the 5-person village council, which includes Taito Tabaleka (formerly of Fiji Telecom) and the *turaga-ni-koro*, Sireli Kogo. By making collective decisions in this way, protocol is followed. The actual line of decision making that was given to me included the following: *turaga-ni-koro*, village council, Taito, and the Tui Daga, in that order.

Methodological Approach

Preparatory work for the door-to-door household survey involved the collaborative effort of Dr. Calamia and Captain Diamond with assistance from Mr. Kerry Donovan of PBF from November 4th – 7th while in Pacific Harbor, Viti Levu Island, Fiji. Using prior information and knowledge from Dr. Calamia's and Mr. Donovan's prior experience on Yanuca and Mr. Diamond's experience in conducting other community need assessments, specific questions were developed that would be the basis of the survey instrument. Following the suggestion of Captain Diamond, semi-structured questions were developed for the questionnaire rather than structured ones. This was done in order to avoid introducing outside biases from the instrument designers during the interview process. This methodological decision had implications for data analysis in which only response frequencies and percentages could be calculated. Some qualitative responses—in n the form of quotations or statements—also were gleaned to support quantitative results. Initially, an attempt was made to select households on a random basis using a random number table, but because of timing of the availability of many interviewees, it was necessary to interview heads of family and spouses when they were present and available. PBF compensated the households interviewed with food items. Three Fijian

field interviewers were hired based on recommendations from Partners in Community Development Fiji (PCDF) A total of 34 households were surveyed for the basic needs assessment study and a total of 9 honorary fish wardens were interviewed during the needs assessment survey; however, for analytical purposes the fish warden survey was treated as a separate data base. Once back in the United States, data analysis was undertaken with the help of two university undergraduate sociology students that were hired by Dr. Calamia and PBF. With the assistance of the students, Dr. Calamia developed the data bases, which would be populated with data derived from the survey forms. The students were instructed to code the data and then enter them into the data bases. Eventually, the students were asked to perform simple frequency and proportion analyses using the SPSS software and the Excel spreadsheet program.

Specific Topics Covered In Needs Assessment Survey

A number of topics relevant to family and community needs and well-being were addressed by the questions given on the survey instrument (questionnaire). Basic demographic and socioeconomic data were collected on name of household, number of people in household, age of people, number in household, length of residence on Yanuca, educational level, occupation, and average monthly income.

Regarding the CBMPA itself, questions were asked regarding it purpose, origin, benefits, decision-making process, ideas for improvement, changes in protected area species abundance, inner and outer compliance, sanctions for noncompliance, and nature and frequency of violations.

In terms of family and community well-being, the areas emphasized were specific ways to improve quality of life, particular activities undertaken during the week, use of extra time, needed sea and terrestrial foods, significant health issues, village income, home improvement needs, island tourism, threats to traditional culture, and ways to preserve traditional culture on Yanuca Island.

In the honorary fish warden survey, the informants were asked about their role and authority, needed resources for protecting CBMPA from poaching, ideas on protecting CBMPA, ideas on monitoring CBMPA during day and at night, handling of poachers (including family members), and non-traditional ways to treat poachers caught stealing Yanuca's marine resources.

Additional Observations

As part of the last fieldwork, Captain Diamond conducted a visual inspection of the inner portion of several household water tanks and their wire mesh filters. In addition, he interviewed an individual concerning his home vegetable gardening. The informant seemed interested in learning about raised gardens. Other members in the community seemed interested in learning about solar ovens and rocket stoves. Discussions were also held with teachers and other village members about the school and concerns over the village generator. Finally, Captain Diamond performed a visual inspection of various parts of Yancua Island to assess the potential for installing a fixed radar system to protect the CBMPA from poachers, especially at night.

Toward the end of the visit to Fiji a meeting was attended in Suva by Dr. Calamia to understand and document the development of a deed of trust between the Yanuca community and PBF; the trust is for improving overall management and governance of the MPA. As of this writing, the deed of trust is still in the nascent stages of development.

PBF intends to use the results of this community needs assessment and Yanuca Village to prioritize several projects in 2009 aimed at improving community development and conservation while also stimulating local economic growth and employment. In this way, PBF hopes that overall individual and community-well being will be enhanced.

Totoya Island Report

Kerry Donovan, Pacific Island Coordinator

Totoya Island Report

Visit 12-16 December, 2008 by Pacific Blue Foundation

Table of Contents

1. Purpose of visit

1.1 Introduction of Pacific Blue Foundation in preparation for a marine area survey of Totoya in mid 2009.
1.2 Survey each village and up to five households in each, gathering enough information to verify problems in the Yasayasamoala group previously identified by Roko Jo and other elders. Initiate a draft report for sustainable improvements of village life and environment on Totoya.
1.3 Researcher: Kerry Donovan, Pacific Islands Coordinator, Pacific Blue Foundation.
1.4 Hosted and accompanied by High Chief Roko Jo Cinavilakeba and elder Rusi.

2. Geography

2.1 The Yasayasamoala group of islands is situated between 18 and 19 degrees South Latitude, right on the International Dateline, 180 degrees from Greenwich. Comprised of four islands: Moala, Matuku, Totoya and Vanua Vatu; approximately 80-100 miles southeast of Suva. The first three islands are approximately the same perimeter size as Beqa Island, but Totoya has a substantial size harbor, being the ocean-filled crater of the volcano from which it was formed. Vanua Vatu to the northwest is smaller than the other three islands of the group.

2.2 Totoya Island
Land area: approx 35 sq kilometers, 13.5 sq miles (8640 acres)
Flora and fauna: coconut tree plantations-approx 70-80,000 trees, potential to increase by planting 20% more, other natural forest, tall grass.
Terrain: predominately undulating to steep hilly peaks, no roads, paths worn by human or goat, some of terrain is difficult for humans to traverse on foot, sandy beaches separated by rocky headlands. There is some protected flatter sloping land where villages have been established and land has been cultivated over many hundreds of years. Lapita pottery has been found and studied there by scientists from the University of South Pacific.
Four Villages: Tovu, Ketei, Dravuwalu and Udu. Total island population: 477 today, (600 in 2008).

Sea: tropical coral reef perimeter protecting substantial inshore waters with South East trade winds.

3. Summary of Island, Village and Household Survey

3.1 Island

The island has many untouched bays with clean sand. Most transport is by boat to the many coconut plantations in the many bays. In general, visible signs of pollution seem contained to near the villages. There are the usual items of human waste around the village (scrap clothing, empty cans and waste packaging) and along the waters edge, but overall very little glass and plastic rubbish due to the low income of families and small amount of those types of imported goods purchased. The waters away from the villages are very clear and there seems a plethora of fish life but we did not dive anywhere. There are very few tourist visitors.

Education: There is only a primary school in each village and no college on the island. About 154 students go to the four primary schools, about 32% of population.

Diet: The island communities live mostly from crops they grow or catch, and there is about 18-20% imported food. Foods imported include flour, sugar, rice, biscuits, cooking oil, soap, tinned tuna, and other miscellaneous items.
Foods grown, raised or caught: Dalo, cassava, yams, banana, pawpaw, pineapple, bele (local spinach), Chickens, pigs, fish, shell fish.

Health: One male nurse resides at Tovu, with a clinic and some medicines. He is not very proactive in visiting villages and taking hygiene concepts through and this may not be part of his job. There are a lot of flies in each village breeding from the waste of domestic animals and poultry.

Exports: 224 tons of copra annually, fish export was not surveyed and it was difficult to get estimates of fish catches.

Imports: Food (as listed above), Fuels (diesel, premix/gasoline, kerosene), Engine parts, and House materials.

3.2 Villages

The people are wonderfully friendly, open to assistance and ideas, and one Rocket Stove was introduced to each village. It was made to exactly the design brought to Yanuca Island by Sea Aid's Bret Diamond in July 2008. Strict advice was given to caution children on the risk of burns as the fire cannot be easily noticed inside the pipe. It was recommended that as many people as possible use its

'village' stove so we can phone in March 2009 to survey its popularity. The people all agreed their prototype Rocket Stove could become a communal one.
All village surveys were conducted by Roko Jo except Dravuwalu village surveyed by Tomasi Radakua, a Totoya islander working for Fijian Holdings, visiting at the same time as us.

Tovu Village

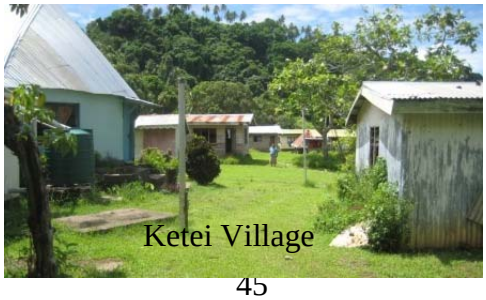
Turaga ni Koro - Mosese Mailoma
Population - 144 (46 male, 44 female, 54 children)
Houses - 72 - 42 resided in, 30 vacant
Primary School, good condition, built 37 years ago, classes 1-8, 4 teachers, 40 students.
Computers – 1 at school (purchased 2005), unused.
Water Supply - Reservoir from bore, No houses with guttering
Toilets - 6 flush, 21 pit
Power on grid - broken village generator, small premix generators
Power demand - 5000 watts
Fishing - There are no licensed fishermen
Methods – spear, line, trolling, nets
Fish Buyers- local and sometimes commercial boat from Suva
Boat Inventory - 8 small fiberglass boats. 2x15hp, 2x25hp, 4x40hp, all Yamaha run on premix.
Boat maintenance & repair - 3 men trained by CATD certificate (3 week course)


Leaving Tovu Village

Communication Systems - VT Satellite telephones are powered by solar; four phones in the village.
Sky Pacific powered by solar, $10/wk.
Annual Exports - 78 tons copra.
Imports -2400 liters diesel, 7200 liters kerosene, and 12,000 liters premix (outboard fuel)
Fish catches – approx ½ ton a week

Ketei Village

Turaga ni Koro - Nasema Veikauyaki
Population - 124 (34 male, 35 female, 55 children)
Houses - 62 - 41 resided in, 21 vacant
Primary School, good condition, built 18 years ago, classes 1-8. 4 teachers, 42 students
Computers - none
Water Supply - Reservoir from bore. Only a few houses had some partial guttering.
Toilets - 0 flush, 30 pit
Power - village generator sent Suva, 3 small premix generators
Power demand - 3000 watts
Fishing- There are no licensed fishermen
Methods – spear, line, trolling, nets


Ketei Village

Fish Buyers- local civil servant, locals, Suva boat
Boat Inventory - 2 small fiberglass boats: 20hp, 25hp Yamaha.
Boat maintenance & repair - three men in Tovu village
Communication Systems - VT Satellite telephones are powered by solar; four phones in village.
Sky Pacific powered by solar, $10/wk.
Annual Exports - 60 tons copra.
Imports – 2400 liters diesel, 400 liters kerosene, and 600 liters premix (outboard fuel)
Fish catches – approx ½ ton a week


Dravuwalu Village

Dravuwalu Village
Turaga ni Koro - Meli Dautu
Population - 141 (36 male, 43 female, 62 children)
Houses - 43 - 37 resided in, 6 vacant
Primary School, very good condition, well maintained built 15 years ago, classes 1 – 8; 3 teachers, 52 students.
Computers - none
Water Supply - bore, 36 Houses without guttering, 7 Houses with partial guttering
Toilets - 7 flush, 23 pit
Power grid - village generator unserviceable, 7 small premix generators
Power demand - 3500 watts
Fishing - There are no licensed fishermen
Methods - spear, line, free diving, nets. No trolling.
Fish Buyers- neighboring villagers
Boat Inventory - 6 small fiberglass boats, 2x19ft 25hp, 4x23ft 40hp, Yamaha, premix
Boat maintenance & repair - three men in Tovu village
Communication Systems - VT Satellite telephones are powered by solar, four phones in village.
Sky Pacific powered by solar, $10/wk.
Exports annual - 50 tons copra
Imports – nil diesel, 4000 liters kerosene, and 10,000 liters premix (outboard fuel)
Fish catches – approx ½ ton a week.

Udu village

Turaga ni Koro - Nepote Soko
Population - 68 (20 male, 25 female, 23 children) - Was 87 in December but 19 left at Xmas.
Houses 40 - 17 resided in, 23 vacant.
Education - Primary School built 35 years ago, bad condition, needs repair, classes 1-8: 3 teachers, 20 students.
Computers – none.
Water Supply – There is no dam, roof rain only. 5 water tanks, 5 houses with 100% guttering.
Toilets - 0 flush, 12 pits

Power supply - no village grid or generator, school 3Kv diesel, church 2Kv super, 1 house 5Kv premix
Power demand - 2000 watts
Fishing - There are no licensed fishermen.
Methods – spear, line, trolling, nets
Fish Buyers- locals, neighboring villagers, Suva boat, Joe Wise from Waila, Nausoki.
Boat Inventory - 2 small boats. 1 x 30ft f'glass 40hp premix Yamaha, 1x18ft wood 20hp Yamaha
Boat maintenance & repair - three men in Tovu village
Communication Systems - VT Satellite telephones are powered by solar, four phones in village.
Sky Pacific powered by solar, $10/wk.
Annual Exports - 36 tons copra
Imports – nil diesel, 2400 liters kerosene, and 2400 liters premix (outboard fuel)
Fish catches – approx ½ ton a week (from only 2 boats)

3.3 Households

All household interviews were by Roko Jo. He chose those households under most hardship and least supported from Suva relatives. Only some householders (2or 3) from each village were interviewed due to time constraint.

From the interviews we found incomes are very low, around $100 per month. Residents in Dravuwalu seem the wealthiest from the number of houses in good condition, spaced widely apart; whereas houses in Tovu and Ketei are very close to each other and some are deteriorating. The poorest village seems to be Udu where average household income is about $60 -100 per month. Udu also has the smallest population and we sensed there was less ability to support each other and share facilities because of that.
Two thirds of the houses in each village were vacant because their owners had moved to the mainland. They were shuttered and unused. Throughout the four villages there is a notable absence of teenagers and people in their twenties and thirties.
There were many questions from them as to how we could bring help to increase income.

Hygiene and sanitation

Hygiene and sanitation in each village seems to be a low standard. Roko Joe requested that the fly problem be acknowledged here in detail and recommends awareness workshops; many of the survey responses asked Pacific Blue to help raise the standard of living and hygiene by building cleaner houses with flush toilets, yet the way the villagers handle their pigs, chickens and dogs is a large part of the fly problem.
There is ample reservoir water from rainfall at two villages but inadequate plumbing, lack of stainless benches and grey water system. Even though many of the residents use the copious water to wash clothes and cooking utensils in an effort to prepare a clean and tidy table, there are a huge number of flies in every household day and night. They land on served food and cooking areas and likely carry

harmful bacteria and other microbes and viruses. They breed in the feces of dogs, chickens and pigs which are kept in the village very close to the houses. The pigs are penned but kept close to the house, so household scraps can be easily fed to them. Chickens and dogs roam freely and defecate anywhere. None of it is cleaned up and it is left on the ground. People walk barefoot through the feces then enter houses with a casual wiping of the feet at the door mat. This further raises the chances of bacteria and harmful pathogens entering to the house floor where food is prepared while sitting on the floor. There is much contact with the floor by hands by those preparing food.

Exports and Imports

The Takayawa family in Suva, descendants of Totoya, explained that the four-island group has been left out of the national development budget over the past few decades. They said the late Ratu Mara was from Lakeba to the NE, and they believed his people favored their own island group when funds were distributed, rather than supporting the more remote islands such as Yasayasamoala.

As a result of this and the distance from port of Suva for wholesale export of island goods and importing supplies, the lifestyle is difficult and expensive. The Suva ferry does not come often, and can be a month and sometimes up to three months between visits. Often the people run out of important supplies such as kerosene (cooking), diesel (electric power) and pre-mix for outboards (transport). Prices are very high, $4/liter for premix fuel on Totoya compared to $2/liter on mainland. This cost of imported supplies is severely affecting every family.

Income

One of the most concerning survey responses was the one regarding their attitude towards achieving their financial goals. They seem to have adapted the notion/belief that they send their children to college in Suva, after which the children go and work and send money back to the island family. This separates the smaller family unit and community in a totally dependent way and there seems to be a huge loss to their indigenous family lifestyle and culture.

Education

There is a primary school in each of the four Totoya villages but no secondary school (college) on Totoya. There is a secondary school on nearby Moala Island but we could get no clarity as to why students did not go there. It seemed Moala has a policy of not taking in other students from other islands, or it is too expensive to billet the students as there is little income on Totoya. This difficult lifestyle and lack of a college and jobs has lead to a gradual exodus of Totoya young people to mainland Fiji (Viti Levu) for education and work. “Once the class 8 child (age 12) gets on the ferry and arrives in Suva for college they never come back.” There are about 2,000 Totoya people (born or descended) now living off-island and about 600 remain on Totoya but the numbers are dwindling.

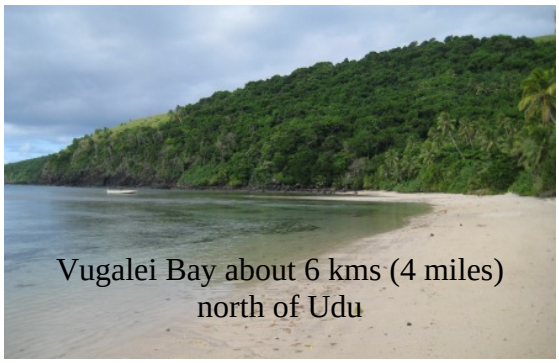
Culture

They still grow the voivoi plant and prepare and weave their own mats. Some still make oil from the coconut the traditional way. Each village has some houses with access to Sky

Pacific through satellite dish and powered from solar panels. All of these are paid for by Suva relatives. The watching of news and documentaries is expanding their worldly awareness but diminishing the traditional passing on of some Fijian indigenous ways: *meke*, dance, traditional stories. Their culture needs more surveying as there was a clear wish from many that the primary school should formally teach the culture.

Fishing

Income from fishing is underdeveloped. There have been various fishery exploitations in the past outside the *qoliqoli* by licensed overseas companies, but none inside the *qoliqoli*. Currently there is no ice-making plant on Totoya Island, so fishing produce is mostly sold locally to those unable to fish. Fishing activity is increased a few days preceding a known ferry visit, then caught fish is kept on ice in various fridges cooled by small generator power; if the ferry is fast enough, the fish is sold to a buyer on the boat or shipped on it to a relative in Suva who sells it.



Vugalei Bay about 6 kms (4 miles) north of Udu

Trolling at Matamat Reef

There was no evidence that a fish buyer was driving by boat to Totoya regularly to buy fish and transport it to Suva markets.

Udu village residents strongly complained of “pirate” (unlicensed and uninvited) fishermen coming regularly now from Suva to steal fish overnight then return to Suva. The Udu fishermen do not have the training as fish wardens to know what to do, and they said their boats with 40hp outboard engines cannot catch the faster boats of the ‘pirates’.

Sea cucumbers are gleaned without scuba but very small sizes are left. There is little drying process to add value.

Roko Joe wants to work with outside partners who will bring awareness workshops about good fishing practices, spawning and tabu areas, marine protected areas, fish warden training. From there would be like the community to define a full marine and land management plan towards the goals they have, i.e. increasing income while minimizing the grosser effects of rural development.

Copra

Copra is the white pulp extracted from inside the coconut and exported. It is the main source of income from the

land, and comes from approximately 70-80,000 coconut trees in plantations around the island. Land becomes steep at many places after the coconut tree areas, but we estimated there was arable land on which to plant about 20% more coconut trees. There are large areas of cleared land now covered in long grass that has no commercial value but some of this land was steep. Other types of trees might be able to be planted on these higher slopes.

Copra is freighted at $70/ton by ferry to Suva, and sold at about $600/ton to the Suva buyers, Punjas and Jeklal. They squeeze the valuable oil out and add value by manufacturing it into marketable and consumable products of a high standard, or on selling it in refined form to other manufacturers. There is potential for the coconut oil to be extracted commercially on the island, adding export value without the high freight cost of the copra, creating jobs and income on the island. It could also provide a valuable source of bio-fuel for diesel engines although wind and solar studies should be done to take advantage of these power sources.

Total annual copra export from island is about 224 tons from about 80,000 trees, at a price of $600/ton. That is $134,400 copra revenue per year for a population of 477. If the oil was extracted on-island there would be lower freight costs for the oil and higher revenue per ton of copra, increasing its value.

Flora and Fauna

There were many cows and goats on the island but a government program culled the cows and most of goats. Wild pigs and goats still roam the harder to reach parts of the island and devastate the new growth of tree shoots so the entire island is steadily losing its natural vegetative beauty. Unless the introduced feral animals are removed to pens or culled, the natural jungle will soon disappear and there will only be long grass and coconut trees.

Much of the higher lying land seems good for growing cocoa and macadamia trees, both with high yield crops without a large weight for value freighted, which could add income to the economy.