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Voices from the Village: A Comparative Study of Coastal Resource Management in the Pacific Islands¹

Bob Gillett *Gillett, Preston & Associates*



This study was commissioned by the World Bank as part of its programme of assistance to the Pacific islands region. A Pacific-based team in collaboration with a World Bank team conducted the study.

Coastal resources are extremely important in the Pacific Islands. Much of the region's nutrition, welfare, culture, employment and recreation is based on the living resources in the zone between the shoreline and the outer reefs. The continuation of current lifestyles, the opportunities for future development and food security are all highly dependent on coastal resources.

The importance of coastal resources is matched by the range of challenges facing them. The most serious are:

- Over-harvesting: excess fishing has been created by commercial incentives, increased market access, population growth, modern fishing technology and urbanisation
- Land-based threats: such as those created by logging, mining and sewage disposal
- Destructive fishing: dynamiting and fish poisoning
- Competing uses of the coastal zone: land fill, infrastructure construction and buildings
- The lack of institutional coordination mechanisms to address multiple threats
- Coral and mangrove harvesting
- The breakdown of traditional authority which is usually considered to be essential for the community management of coastal resources

In the past, considerable attention from Pacific island countries has focused on fisheries topics such as Asian drift net fishing. The deterioration of coastal resources strikes closer to home, and is likely to have far greater impact on Pacific islanders, but because of its gradually worsening nature, has largely escaped the news media.

In the past, most coastal communities in the Pacific islands had some type of traditional management of adjacent marine resources, such as leaders restricting access by outsiders, and various kinds of harvest bans for residents. In many Pacific island countries during the colonial and subsequent periods, much of the traditional management has eroded. In recent years Governments and various groups interested in promoting effective coastal resource management have carried out many management initiatives, but the success has been mixed. The reasons for any management success are not always clear and the lessons learned from either successful or unsuccessful interventions are not readily available to those people involved in the actual management of coastal resources.

It could be argued that the greatest problem in the coastal resources of the Pacific Islands is the rise of the above threats with the simultaneous deterioration of traditional management to control them.

¹ The findings, interpretations and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organisations, to members of its Board of Executive Directors, or the countries they represent.



SPREP

The basic message was that residents of coastal villages feel that coastal resources are declining, even in the most isolated of locations.

Comparative Study of Coastal Resource Management in the Pacific Islands

Recognising the importance of coastal resources and their management to the Pacific islands, the World Bank recently carried out a study of coastal resource management in the Pacific. This study differed from all other previous studies on the subject in two major respects:

- The study was based on the village-level perceptions of coastal resource management. This is because it is the villagers who are highly dependent on coastal resources, who have a major influence on the success of any management system, and who have the greatest stake in whether the system succeeds or fails.
- The study was a comparative study in which views were obtained from 31 coastal communities in Fiji, Tonga, Samoa, Solomon Islands, and Palau.

Visits to the villages took place between July and December 1998. The field study team and World Bank staff from January to April 1999 undertook analysis of information obtained.

Main Results

The basic message was that residents of coastal villages feel that coastal resources are declining, even in the most isolated of locations. The villagers had many opinions on the reasons for the declines, why the present efforts are ineffective, and what changes are needed to improve the situation.

Coastal resources are perceived to be declining. Community groups were generally pessimistic about resource trends at their sites. Only 10 per cent of responses stated that catch per unit of effort

(a measure of how good the fishing is) had increased over the past decade, and only three per cent associated such an increase to management interventions.

National coastal resource management laws were often poorly known.

The study found that in 13 of the sites (42 per cent), respondents were not familiar with the national coastal resource management rules despite dependence of many national governments on national rules as a major coastal resource management tool. In addition, the residents of the 31 villages surveyed indicated that there appear to be only a few general categories of national coastal resource management rules where the compliance with national coastal resource management rules is especially good:

- Experience in Fiji and Samoa shows that when national rules are understood and seen as practical, needed and relevant by leaders, they are sometimes supported by local traditional authority. The perceived compliance for these rules is higher than for either purely national or purely local rules. Experience in the Solomon Islands and Palau shows that when national laws can be enforced and are enforced through buyers and/or exporters (for example, where the government fines buyers/exporters for violations of trochus or lobster minimum size regulations), the perceived compliance is high.
- Statistical analysis conducted on the perceptions of compliance with all management rules (national and local) also showed that protected areas, closed seasons, and destructive fishing practice rules (e.g. bans on debris root) were perceived as resulting in significantly

Team members interview villagers in Samoa



Site map drawn by
Samoan villagers



The full text of the report
*“Voices from the Village:
A Comparative Study of
Coastal Resource
Management in the
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better compliance than rules such as size limits, bans on the harvest of certain species and restrictions on outsiders.

Threats to coastal resources appear to be changing. Communities perceived pollution as the fastest rising threat to coastal resources, while destructive fishing (dynamiting, fish poisoning) threats were perceived to be declining rapidly.

The future outlook is perceived to be bleak. Of the 31 sites surveyed, 21 sites believed coastal resources would continue to decline in the future. In village after village, people whose livelihood depends on coastal resources argued for stricter enforcement of existing regulations and additional restrictions on commercial harvesting.

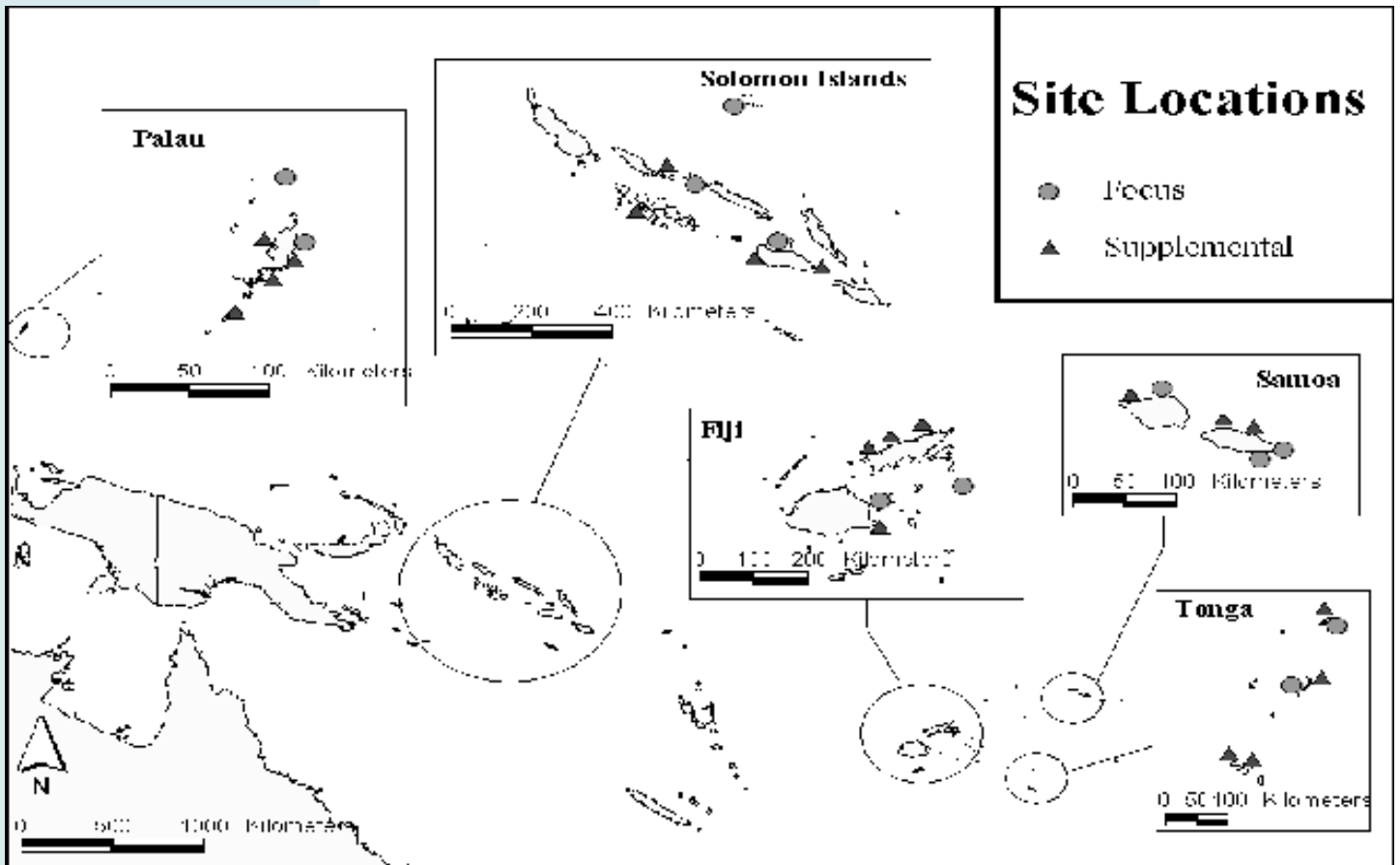
The simpler the management rules—the better. The study found that the simpler the national rules, the better they were understood and consequently followed by coastal communities. For example, straight bans on fishing in an area appear to enjoy greater compliance than more complicated arrangements that, for example, ban certain fishing gear types in specified seasons.

Village leaders and their business involvement. The study found that several villages had experienced the situation where external commercial operators had circumvented local rules by forming business alliances directly with village leaders. Many of the communities seemed to lack ways to prevent conflicts of interest between the leaders' management responsibilities towards the community and their private business interests.

Sanctuaries seem to act as catalysts for community awareness of coastal management benefits. Marine sanctuaries were present at 14 of the study sites. In general, communities had favourable impressions of sanctuaries' impact: compliance was perceived to be good; species abundance was thought to be increasing; and communities felt in general that the sanctuaries would be sustainable into the future. Perhaps as important as their management role, sanctuaries seem to act as catalysts for growing community awareness of coastal management benefits. However, sanctuaries do not eliminate the need for other management interventions, and there is some danger that communities may feel that the establishment of sanctuaries is all the management that is required.

Communities need help. The study found that, even considering the merits of community-based management, the villages studied still needed some form of outside assistance to handle problems such as pollution, mining, commercial overfishing, and other threats such as dredging, construction of causeways and oil drilling which cannot be controlled at the village level. It was also found that most communities seem to have difficulty in dealing with their own over-fishing. In many of the sites where the communities were successful in controlling their own over-fishing, external partners (government, NGOs, volunteers) had provided some assistance.

Coastal resource management seems to be receiving low priority. In general, the study findings indicate a need for further government assist-



Map of sites where the study was undertaken

ance in coastal resource management. Rough study estimates indicate that only about one-fourth of the staff time of government fisheries agencies is spent on coastal management activities. Given the relatively low priority allocated to coastal management, it is not surprising that only about 40 per cent of the study sites had been visited by a government official to discuss coastal resource management issues over the past 10 years.

Further collaborative efforts are needed, but perhaps of a different kind than presently provided.

Overfishing was one of the most important threats found at the study sites, yet in many cases it cannot be appropriately addressed by current regulations. This may require programmes aimed at increasing the communities' ability to restrict their own fishing efforts, such as awareness campaigns targeted at local leaders, and restrictions on commercial activity. Many of the threats where communities feel that

external help is required — e.g. pollution, mining, and coastal infrastructure — are outside the mandate of the institutions that traditionally deal with coastal resource management in the Pacific (fisheries and environmental agencies). This calls for mechanisms to coordinate government assistance across multiple sectors, a major institutional difficulty in many Pacific islands where inter-ministerial cooperation is usually weak or absent.

Voices from the Village: The Value of Perceptions of Coastal Communities

This study departed from conventional methods by relying heavily on the perceptions of coastal communities. This resulted in some useful insights as well as some surprising findings that are relevant to the management of coastal resources in the Pacific. The experience indicates that for future work, careful attention should be given to the views of coastal communities.

Conservation area summaries 2nd quarter April–June 1999

News from the South Pacific Biodiversity Conservation Programme (SPBCP-supported) Conservation Areas (CAs).

Funafuti CA (Tuvalu)

CA legislation (Protected Area Bill) was approved by parliament. The bill will help strengthen protection and conservation of the biodiversity found within the CA.

The Conservation Area Support Officer (CASO) and the Biodiversity Officer attended the SPBCP CA Management Workshop held in Nadi in May.

The CASO attended the Polynesian Avifauna Workshop held in Rarotonga, Cook Islands in April. A presentation on bird issues relating to Tuvalu was presented at the workshop.

The site for the Interpretive Centre is now approved and confirmed by the community in their last meeting. Construction of the building is scheduled to start in the third quarter.

The first consultation with the communities, the Funafuti elders and landowners regarding the CA Evaluation and Transition Strategy was done together with a CA management workshop organised by the project held in Funafuti on 29 June 1999.

Due to some people still harvesting the birds within the CA, regular patrols continued to be carried out to stop poaching. Engine problems with the project's boat meant that it was out of action for a month, but thanks to the generosity of local fishermen, patrolling continued using the fishermen's boats.

Weekly radio programmes were broadcast on issues relating to Tuvalu's environment. Monthly CA updates in the local newspaper entitled the *Tuvalu Echo* continue to be published.

The gecko species found in 1998 living on the western motu (islets) of Funafuti Atoll has been confirmed as a new species. The Conservation Area Coordinating Committee (CACC) is now in the process of naming it.

As a follow-up to the initial bird survey conducted by consultant Dick Watling last year, staff did a bird survey in June.

While doing a marine survey, staff sighted a possible new fish species belonging to the group of Wrasses. However, efforts to catch some for identification purposes have so far been unsuccessful. A photograph couldn't be taken of the fish, as the project doesn't have an underwater camera. Plans are underway to try and capture ten of these animals to send overseas for identification.

Staff tagged and released one turtle and reported the information on the tag of a captured one to the SPREP Regional Turtle Programme. A University of Hawaii staff member tagged the captured turtle.

About thirty visitors from overseas visited the CA, most of them hired local boats for their visit. In future, the project plans to charge a fee to boat owners operating tours to the CA.

The Kaupule (Council) has appointed Elia Tavita as project manager to the CA project.

Issues:

Some people are still violating the ban on harvesting of birds within the CA. Evidence seems to suggest that poaching occurs at night-time. Proposed responses to this issue are that patrolling of the CA will also be conducted at night-time, and the community elders will encourage the people to help police the CA.

Takitumu CA (TCA) (Cook Islands)

Applicants were called for the CASO assistant's job from the CA landowning families. The CACC granted Tungane George a 3-month trial period as CASO assistant.

The project co-sponsored a TV advertisement highlighting Suwarrow atoll's (an atoll in the Northern Cook Islands) natural environment. Suwarrow is an uninhabited seabird island threatened by a proposed pearl farming development.

The project was involved with organising the New Zealand band "Herbs" visit to the Cook Islands. The TCA identifies strongly with this band owing to their stance on environmental issues. Their performance raised NZ\$3,600 to purchase a new intravenous pump for the maternity ward of the local hospital.

The first radio show for the TCA was held on the 6 May 1999. A staff member spoke about the Polynesia Avifauna workshop held in Rarotonga in

April and some members of the band "Herbs" spoke about their music. The project aims to produce and broadcast more shows in the third quarter.

Project staff visited Tereora College and gave a talk to the lower fifth form class on the TCA. Two senior classes from two primary schools have requested the project for a talk and tour of the TCA in the third quarter.

The project set up a display on the TCA for World Environment Day celebrations on 5 June 1999. Environmental groups on Rarotonga commemorated World Environment Day together at the market place in the main town of Avarua. A regatta-type atmosphere was achieved at the Environment Day celebration.

Changes were made to the layout of the office to accommodate more space for the Eco-shop.

Tracks and roads in the CA were severely damaged during the heavy rains in May. The footbridge was washed downstream and relocated by the Outward Bound participants. Staff are working on repairing the damage.

The status on constructing the shelter is that the installation of the roof shingles is just about complete. This has proven to be labour intensive. The shelter will double as an Interpretive Centre and to be used by community groups wishing to camp in the TCA.

The CASO and two CACC members attended the SPBCP workshop on Project Manage-

ment held in Nadi, Fiji. They found the workshop to be very useful in regards to carrying out administrative duties.

Issues:

Too many activities were planned for the second quarter. However, at the recent Project Management workshop held in Nadi, it was advocated by the SPBCP that it would rather see one or two activities done well than many activities half completed. The project plans to follow this recommendation.

North Tarawa CA (Kiribati)

The CASO was involved as a resource person for the National Biodiversity Strategic Action Plan workshop held on Tabiteuea Island.

Ongoing radio programmes on the CA continue to be broadcasted on a weekly basis. The Itibwerere Drama Group was commissioned by the project to perform three short plays on coral reef, plants, and lagoon fishing in the communities.

Issues:

The CASO being stationed a long way from the CA meant that implementation of some activities were delayed. The project feels that another full time worker is needed to help implement activities.

Huvalu Forest CA (Niue)

Regular ongoing observation and monitoring of endangered species within the CA were carried out only in part of the quarter. This was due to staff being involved in SPBCP's CASO/CACC Project Management Training Workshop for

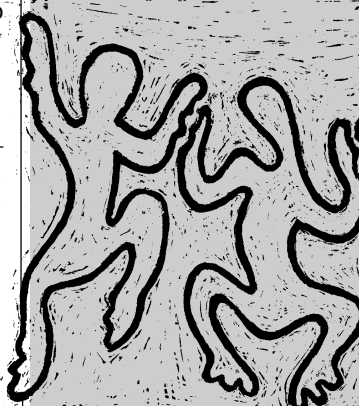
SPBCP-supported Conservation Areas, 17 to 28 May, in Nadi, Fiji; and a Tour Guiding training workshop held locally which was conducted by *terra firma* Associates.

The Huvalu Forest tour was developed with the help of consultants from *terra firma* Associates.

The construction of one of the two planned information kiosks began this quarter (local materials are being used).

Work commenced on the sea-track walk trail. This track will be beneficial for the project's ecotourism-related activities.

Is your Conservation Area mentioned here?



Well, its up to you! To make this newsletter more useful and interesting, we need input from you. Contributions to this newsletter are always welcome. Any one of the SPBCP staff at SPREP would be grateful to receive an article from you.

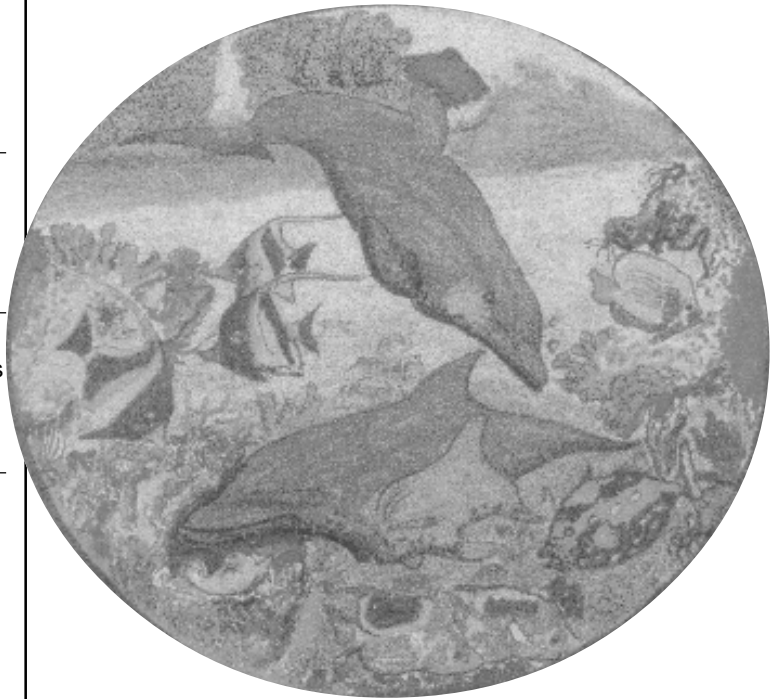


Illustration by a student from Robert Louis Stevenson School

New CASOs for Koroyanitu, Jaluit Atoll and Kiritimati Atoll Conservation Areas

We welcome three new CASO to the SPBCP supported projects

Koroyanitu Conservation Area, Fiji

Unaisi Tawake replaces Semi Lotawa as CASO. Before taking on the CASO position, Una as she is commonly known, worked as a Landuse Planning Assistant with the Fiji Native Land Trust Board - the Lead Agency for the project. Thus, she comes to Koroyanitu with inside knowledge of the project.

Jaluit Atoll, Marshall Islands

Before coming on board, John Bungitak was the President of the Jaluit Atoll Development Association. His past experience with this organisation and previous involvement in establishing the newest Conservation Area will be helpful in carrying out his responsibilities as CASO.

Kiritimati Atoll, Line and Phoenix Group, Kiribati

Tapaeko Awira is the new CASO for this CA. Previously, Bwere Eritaia, CASO for North Tarawa Conservation Area was acting CASO for Kiritimati Atoll. As Tapaeko is based on Kiritimati Atoll, this will enable him to work closely with the local communities.

From the Manager's Desk

Joe Reti *SPBCP Programme Manager*

Photo 3



How have the SPBCP and the Conservation Areas impacted on the natural resources and communities in the participating countries of the region? That is the question we must now confront as we come close to the end of SPBCP support.

For the past five years, the SPBCP has been providing financial and technical assistance to facilitate efforts by local communities, governments and NGOs to jointly establish and manage conservation areas for the benefit of the people and countries of the region. Encouraging progress has been achieved by a number of CAs, but I am under no illusion whatsoever about the magnitude of the work that still remains to be done, or of the continuing pressure the CAs could be subjected to should our efforts fail to meet the expectations of local communities.

There have been numerous problems associated with the initial stages of CA establishment and the on-going need to ensure that local communities accept full responsibility for the management of these projects. A number of CAs have been able to resolve some of these problems while others would greatly benefit from the experience of those that have come through this process. However, what we have come to realise is that, this has not been an easy task, but a task that is fundamental to the long-term success of the CAs and to the sustainable use of the biodiversity they contain.

If the CAs have been making a positive impact on the well-being of local communities, then there is reason to believe that the communities will continue to support the CAs in the long term. Finding out what impacts the CAs have made so far on the communities is therefore an extremely important next step in the work we are doing. We need to find out, and to document what has worked, what hasn't, and why.

The answers to these should help us better plan for the remaining years of the SPBCP.

It is encouraging to hear that some CAs are already carrying out evaluation of their projects in order to find answers to some of the above questions. This is something we could, and should all contribute to, by sharing experiences and lessons learnt, not only amongst SPBCP-supported CAs but also with those of other programmes in the region.

I have already informed you of the establishment of the Pacific Conservation Area Network which I hope will be used by all of us as a means of sharing our experiences and other information on the work we are doing in our region. So far, I have been very impressed with the support we have received for the network and I am looking forward to see contributions from our other colleagues outside the SPBCP in the next issue of the CALL newsletter. Five years may not be a lot of time in terms of setting up community-based CAs but I am sure that there have been special lessons learnt that will benefit others if allowed to be documented and shared widely. That is the message I want to convey to you in this issue.

Finally, we are once again indebted to our colleague Anna Tiraa, the former CASO for the Takitumu CA in the Cook Islands for putting together this issue. Anna and family have recently moved to Samoa where her husband has taken up a job with an AusAID-funded fisheries project.

Finding out what impacts the CAs have made so far on the communities is therefore an extremely important next step in the work we are doing.

The Little Mermaid

Teuru 8 years old, *Vaiala Beach School, Samoa*

One day while I was looking for shells along the beach, I heard a splash coming from the ocean. I looked towards the sea and saw a mermaid. She nearly came up to me but she stayed in the water. She asked me to go for a swim with her. So, I put my bag of shells down on the sand and dived into the water

with her. We went deeper into the water until I said to her, "Let's take a look around". She dragged me to a shipwreck and we looked around. There was nothing in the wreck but treasure. So we went out and looked behind some corals. We saw some sea urchins, fishes, dolphins and sea horses.

Atoll and Biodiversity Conservation: The Case of Naa Islet at North Tarawa Conservation Area

Bwera Eritaia CASO for North Tarawa CA, presented this paper as a case study at the recent SPBCP CASO/CACC Management Workshop held in Nadi, Fiji in May 1999

Physical features

Naa Islet is located on the northern tip of North Tarawa Conservation Area, Kiribati. Naa has a total land and sea area of 3,767.7 acres, which constitutes about 15 per cent of the total North Tarawa CA.

Like other limestone islets, Naa has on the ocean side an uplifted fringing limestone reef in the wave zone, which is sometimes covered with white sand. This leads to a single ridge of wave-washed boulders and coral fragments deposited during storms. There is also an inter-tidal fringing reef that gradually drops off into the ocean. This is a very important fishing and gleaning area, with fishermen diving from or taking boats and canoes over the reef edge into the open ocean.

On the lagoon side there is a wide inter-tidal or fore-shore area of fine sand which is exposed at low tide. This area is an important fishing ground for reef gleaning of marine invertebrates. Further from the shore, the bottom drops off to the deeper parts of the lagoon, a very important site for spear, line and net fishing for flying fish.

Vegetation

The vegetation of Naa islet is often vulnerable to natural threats such as drought, seawater inundation and damage by fire during the dry seasons. The soil is infertile and conventional agriculture as practiced on the bigger islands is impossible.

Water

On atolls, the only permanent freshwater resource is groundwater in the form of a "lens" which is often slightly brackish. In the case of Naa, the lens is very poorly developed. During the dry season, replenishment or recharge of the lens is impossible.

Development

The establishment of the Baha'i School on Naa, within a designated Conservation Area was considered compatible with the concepts of the Conservation Area Project. The development of the school was considered appropriate because it serves to provide education and a better understanding of the surrounding environment. The school building serves as a model as it was developed in an environmentally friendly manner.

Extension of Main Road

Even though it didn't gain the Conservation Area Coordinating Committee's approval, the main road

that leads to Naa was extended to provide easy access to the site. As a result, some of the old *Pisonia* trees were cleared together with other indigenous plants.

With a newly established small eco-resort called "Mauri Paradise", Naa has become a popular site for scuba diving and snorkeling. The islet's beautiful coral reef and wide variety of fish species are impressive. The adjacent lagoon flat of Naa is one of the most well known spawning run sites for bone and goat fish.


Key issues

In 1996, a series of participatory meetings with local communities from North Tarawa and Naa were undertaken. The meetings tried to identify the concerns of the people regarding development and the biodiversity of the area. Interviews and questionnaires were conducted to assist with identifying the issues. The main issues of concern identified were:

- 1 Depletion of marine resources in the lagoon, reef and ocean areas.
- 2 Absence of freshwater resources, i.e. groundwater and water catchment systems.
- 3 Loss of some plants and terrestrial resources, soil fertility, declining food production and bird populations.
- 4 Land scarcity, coastal erosion and land reclamation. In particular, combatting coastal erosion resulting from both natural and human made causes.
- 5 Lack of waste management and disposal of toxic and hazardous waste.

With regard to the issue of depletion of marine resources, the Fisheries Assistant Officer stationed in North Tarawa did a survey on the bonefish aggregation during the spawning season. Knowledgeable fishermen assisted the officer with the survey in the lagoon area of Naa islet. The report recommended that small mesh size gillnets and 'splashing' in the lagoon be banned. Also, that fishing within three days either side of the full moon and new moon of the bonefish run is banned. The recommendations received endorsement by the three Island Councils of Tarawa, and by-laws were formulated to support the recommended bans.

On the issue of loss of useful plants and terrestrial resources, members of the local communities carried out a vegetation survey (the surveyors were trained by the manager of the Atoll Research Pro-



The report recommended that small mesh size gillnets and 'splashing' in the lagoon be banned. Also, that fishing within three days either side of the full moon and new moon of the bonefish run is banned.

The marine and terrestrial resources when not managed properly will decline. Good waste management and sound disposal of plastics, toxic chemicals, defunct cars and their batteries are required.

gramme). Results of the survey showed that many species of useful plants and herbs especially, for medicinal purposes, have declined, and in some cases have disappeared altogether. Although people harvest the plants, there is no incentive for replanting. The CACC has given high priority to encourage the replanting of medicinal and rare trees.

On the lagoon side, Naa is connected to the main island by a small causeway. The causeway prevents circulation of fresh seawater into the inner lagoonal flat where mangroves grow, making it hard for the mangroves to survive. The area was once home to a diverse range of sea creatures. Many of the animals that lived in the mangroves have disappeared. The CACC have tried unsuccessfully to convince those who own this area to reopen the causeway or build a culvert to allow seawater to circulate.

Lessons learnt

The marine and terrestrial resources when not man-

aged properly will decline. Good waste management and sound disposal of plastics, toxic chemicals, defunct cars and their batteries are required. The construction of seawalls and causeways cause destruction to the mangrove ecosystem and prevents productivity of the site. Prior to the implementation of big development projects such as the extension of the main road to Naa, collaborative consultation between all sectors concerned is vitally important. The older *Pisonia* trees could have been saved if consultation between all parties concerned had taken place.

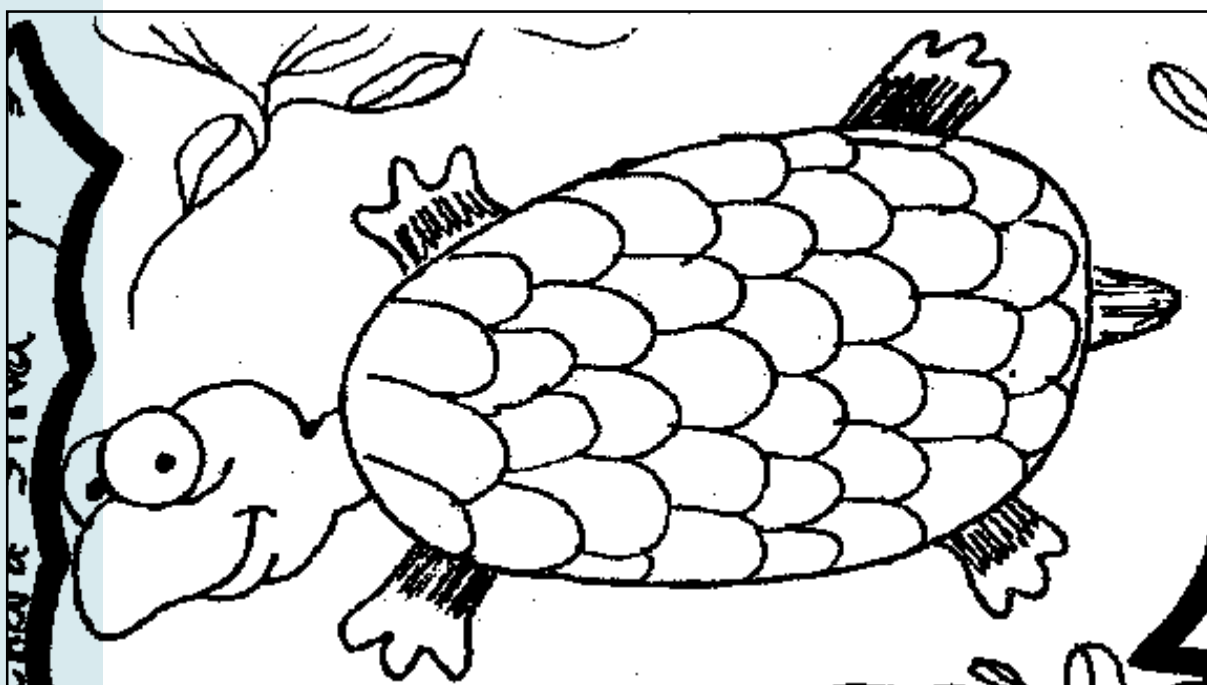
It is wise to invite people with extensive experience to help in carrying out studies as mentioned above. For better results, it is advisable that local expertise be given first consideration before considering foreign expertise. Studies of this kind require a sound and extensive understanding of the traditional culture and language of the community involved.



Common Acronyms

CA	Conservation Area
CALL	Conservation Area Live Link
CACC	Conservation Area Coordinating Committee
CAP	Conservation Area Project
CASO	Conservation Area Support Officer
SPBCP	South Pacific Biodiversity Conservation Programme
SPREP	South Pacific Regional Environment Programme

Illustrations by students from Robert Louis Stevenson School



How's Komarindi Going?

Anna Tiraa interviews Nathaniel Lix da Wheya

As a conservationist, my perspective of the tension is that it is competition between two groups—owners and users—over a valuable (and probably declining) resource(s)



This email interview was conducted with Nathaniel Lix da Wheya, CASO for the Komarindi Catchment Conservation Area (KCCA) Project, Guadalcanal, Solomon Islands. Komarindi Catchment is an outstanding natural area of untouched rainforest close to Honiara. Guadalcanal has received a lot of publicity recently over the ethnic problems between some Guadalcanal and Malaita islanders.

Anna: Kia Orana koe e Lix! Thank you for agreeing to be interviewed. Firstly, how are you?

Lix: I'm bored!

Anna: There has been a lot of publicity about tension on Guadalcanal of late. Are the reports we are hearing an exaggeration or are they founded?

One's view depends on what angle one is looking at. As a conservationist, my perspective of the tension is that it is competition between two groups - owners and users - over a valuable (and probably declining) resource(s).

It should be noted that the scale and spread of trouble and violence has been exaggerated.

Anna: Have the "uncertainties" in Guadalcanal affected the KCCA project in any way?

Lix: Oh, yes. At the height of the tension it was unwise to do any work with the communities because of the high risk involved, so we had to suspend work indefinitely. The communities were badly affected as they lived in constant fear from both sides, thus, their movements were restricted. Even though things have cooled down for now, it will take a few months for the communities to return to their normal routine, let alone work on the project.

Anna: In CASOLink 9 you gave an excellent report on the launching of Komarindi Ecotours. Has the Guadalcanal situation affected the Komarindi Ecotours?

Lix: It has. Firstly, we had to postpone the launching of our Cross-Guadalcanal EcoTrek, initially planned for July. As a result, our chance of gaining income from potential clients was lost. Secondly, a lot of overseas tourists cancelled their bookings. Most of them had booked with the travel agents that promote our tours. The impact of this will be felt for some time unless the government actively tries to convince tourists to return. At the moment even local expatriates would be reluctant to go on our tours, as they are still uncertain on what to expect. It is sad because we have worked so hard to get it up and going, and it was gaining momentum when this problem started. It would be like starting over again to attract people to come on our tours.

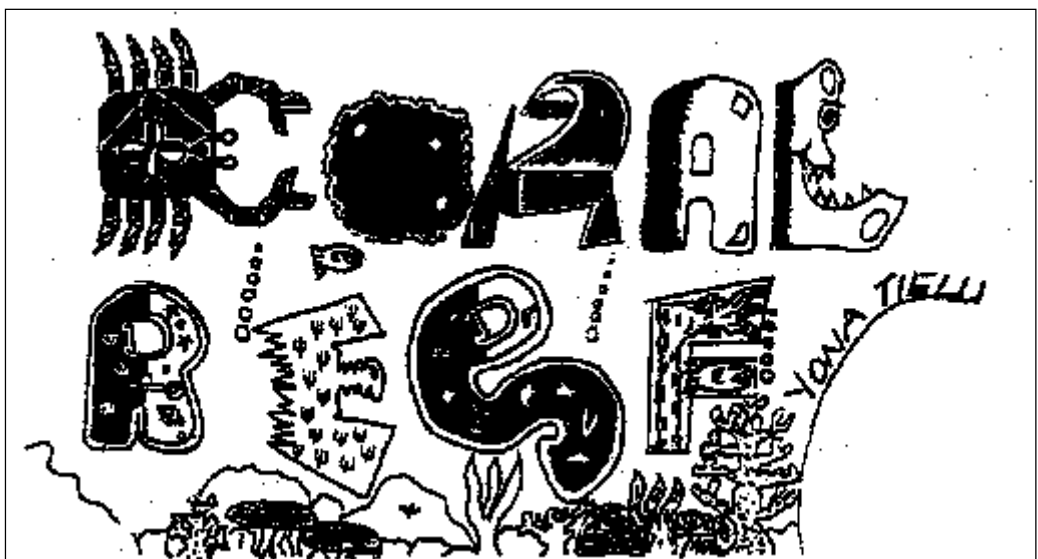
Anna: Lastly, is there anything else you wish to inform the readers?

Lix: I strongly believe that the tension is here today and gone tomorrow, but Komarindi CA is here to stay. Guadalcanal islanders have already demonstrated that they are prepared to "fight" to protect their resources from threats.

Anna: I would like to take this opportunity to wish you and the KCCA project all the best in your efforts in conserving a part of the Solomon Islands natural heritage.

Lix: My pleasure.

Illustration by a student from Robert Louis Stevenson School

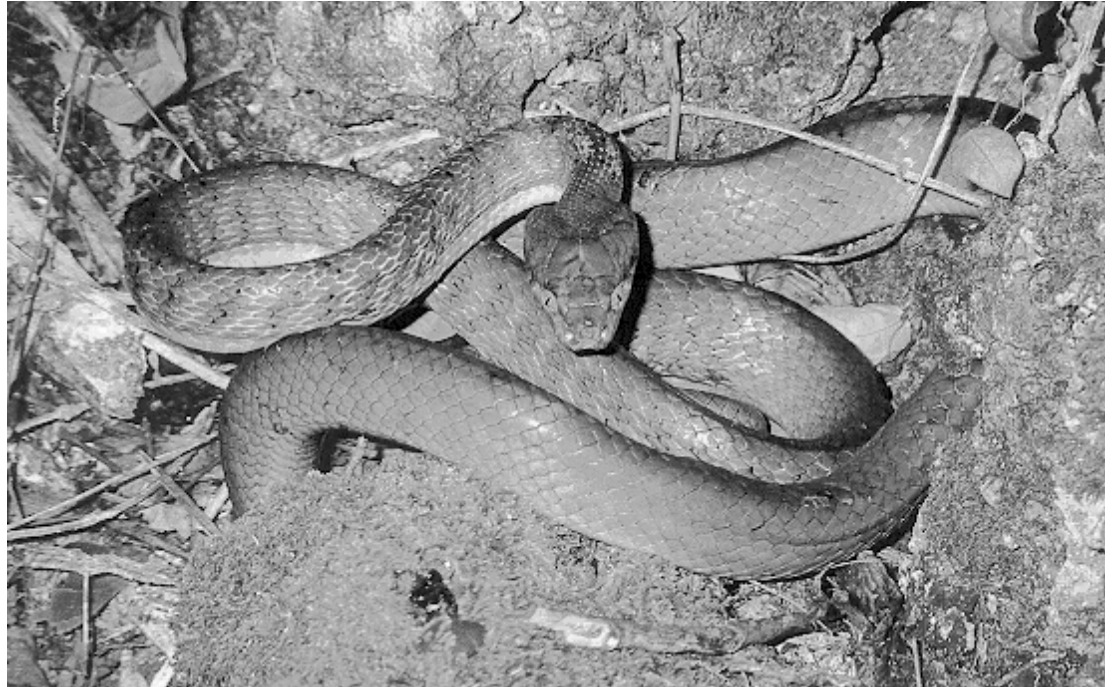


And no birds sing...

Tamari'i Tutangata *Director of SPREP (originally written for the Island Business Monthly Magazine)*

It was a very silent invasion on Guam. By the time people realised unwelcome aliens in the form of brown tree snakes had arrived and were breeding prolifically in the country's thick forests, their birds were already doomed.

The brown tree snake



The devastation which the brown tree snake has caused on Guam is a striking example of the damage introduced species can do when they arrive accidentally in a new country.

It is thought the snakes arrived in Guam shortly after the Second World War, vanished into the jungle and started multiplying. Ten years ago people began to wonder why the birds were disappearing. The snake connection came only after a researcher studying whether some mystery disease could be killing off the birds discovered a snake in a cage of birds she had caught. It had eaten three and a fourth was dead beside it.

The Problem

By now, there are virtually no native birds on the island. Nine out of 11 of Guam's native bird species are extinct; most of Guam's native lizard species have been wiped out; the native bats are at risk and a formerly thriving poultry and fighting cock industry is also under threat.

The snakes, which are expert climbers, are causing million-dollar headaches for the power company because they tend to stretch across wires as they hunt for birds, causing costly power outages.

They are also potentially dangerous near babies, because while the brown tree snake is only mildly venomous and not harmful to adults, its venom is enough to hurt a small child. The danger increases because the snakes wrap themselves tightly around their prey, and babies are not coordinated enough to extricate themselves. On Guam, a number of

babies have been hospitalised following snake bite or asphyxiation.

Damage by an Introduced Species

The devastation which the brown tree snake has caused on Guam is a striking example of the damage introduced species can do when they arrive accidentally in a new country. While many introduced species of plants and animals are beneficial – such as pigs, tomatoes and taro – the danger remains that plants, animals, insects and even bacteria that arrive accidentally without any supervision or control can run riot in their new country.

No Significant Predators

In Guam, for example, and on most Pacific islands, the brown tree snake has no significant predators. And without predators, its natural attributes make it a perfect machine for wildlife destruction. US Department of Agriculture wildlife biologist Dan Vice, who visited SPREP recently to discuss collaborative regional programmes to combat the dangers of invasive species, says the brown tree snake is nocturnal and secretive in its habits. Although Guam is now overrun by the snakes, many residents have never seen one. A four-foot brown snake can curl up in less than half a drinking water glass, making it easy for snakes to hide in small corners of cargo or baggage.

Vice says the snakes aggressively hunt their prey. They can eat up to 65 per cent of their body weight in one meal, and they can also go without food for up to a year. Female snakes can wait several months after mating before allowing the male sperm to fertilise their eggs, which means one female snake in a cargo ship could carry the seeds of destruction for an entire island.

Disturbing an Ecosystem

The disappearance of Guam's birds has also pointed out in worrying clarity the "cascade effect" of disturbing an ecosystem: if you take away one element of an ecosystem, you risk unsettling the balance of the entire system. Many of Guam's forest trees rely on nectar-eating birds to carry pollen from one tree to another, pollinating the flowers and allowing seeds to be produced. Now the birds are gone, the trees cannot reproduce. The birds also used to control insects and spiders in the forests. Without the birds, many insects are multiplying and, Vice says, when you walk into the forests now you are faced with a maze of enormous spider webs.

Vulnerability of Small Islands

Small islands are particularly vulnerable to invasive introduced species, because their unique native wildlife has evolved in isolation. And as ship and air links increase between Pacific island countries, so too do the risks to each country's natural heritage. Brown tree snakes are perhaps the highest-profile invader, but there are many others already causing problems. You only have to look at the hills of Tahiti, where the Miconia tree, originally from South America, has destroyed 70 per cent of forest growth. The dengue-carrying mosquito is another invasive species which has caused outbreaks of the disease in many islands, and killed a number of people.

Vigilance, public education and cooperative action are the main ways Pacific island countries can preserve their heritage. Guam's tragic loss of its birds should serve as a timely warning to all Pacific island countries that there is a pressing need for joint action to protect their environments from the potentially devastating effects of invasive alien species.



Jellyfish in the mud-sea

Naimila Mafi *Fanga GPS, Tonga*

Once upon a time, there was a big jellyfish. He lived in the mud-sea. He wanted to go for a swim along the clear-sea. He swam through the clear-sea. He saw his friend crab sitting under a rock. Crab saw him and called out.

"Jellyfish, Jellyfish come and stay with me".

"No, no, no I don't want to stay with you under the rock. You will smash me", said Jellyfish.

Jellyfish swam along the clear sea. He saw his friend loli squeezing from under a rock. Loli saw him and called out.

"Jellyfish, Jellyfish come and stay with me".

"No, no, no I don't want to stay with you under the rock. I will get sticky from you" yelled Jellyfish.

Jellyfish swam quickly along the clear sea. He saw his friend Vana hiding from under a rock. Vana saw him and called out.

"Jellyfish, Jellyfish come and stay with me".

"No, no, no I don't want to stay with you under the rock. I will get hurt from your spiky thorns", said Jellyfish.

Jellyfish continued to swim along the clear-sea. He saw his friend hermit crab crawling from under a rock.

Hermit crab saw him and called out.

"Jellyfish, Jellyfish come and stay with me".

"No, no, no I don't want to stay with you under the rock. You will cut me into pieces with your sharp claws, cried Jellyfish".

Jellyfish was so tired. He wanted to go home. As he swam back home, he thought to himself.

"It's better to live in the mud-sea, where I have peace and harmony, rather than live in the clear-sea and hide myself under a rock from the enemies".

Source
The best new environmental stories: Tonga National Environment Awareness Week Story Competition for Primary School Teachers, 1998

First Monitoring Survey of the Rarotonga Ra'ui

Ben Ponia *Director of Research, Ministry of Marine Resources, Rarotonga, Cook Islands*



In February 1998, the Koutu Nui (a formalised body of traditional leaders) declared a Ra'ui (traditional reserve) in five areas of Rarotonga's lagoon and its adjacent reef slopes. The Ministry of Marine Resources and the World Wide Fund for Nature have supported the Ra'ui by monitoring and surveying the sites and creating education and awareness for the Ra'ui.

The first monitoring survey of the Rarotonga Ra'ui was carried out in November 1998. Ra'ui is a traditional management system whereby access to a particular resource or area is forbidden. The present Ra'ui in Rarotonga restricts harvest of marine resources within five designated areas comprising 15 per cent of the total coastal area. The monitoring survey follows the baseline surveys of February 1988, which were conducted prior to the implementation of the Ra'ui (Ponia et al, 1998 and 1999).

The baseline study was a comprehensive snap-shot of the resident species of marine flora and fauna and their distribution patterns. It also included other information such as Geographical Information Systems (GIS) aerial images.

In contrast, the monitoring study only targeted the invertebrate (animals without backbones) resources as the key indicator to assess what impact the Ra'ui may have on the ecosystem. The primary reasons for choosing to survey invertebrates was that many are relatively immobile and non-cryptic and can therefore be accurately surveyed. In future, it is planned to include a fish and coral component into the monitoring surveys.

Methods and Results

More than 20 invertebrate species of biological and social importance were surveyed at four of the five Ra'ui areas. Information was collected using belt transects laid at the same sites previously utilised for the baseline survey.

By using the baseline data as a reference, some large increases (up to seven times) of invertebrate resource populations were noted. These included some of the highly regarded food species such as Trochus (*Trochus niloticus*), Giant clam (*Tridacna maxima*), and Paua. There was also a higher invertebrate diversity compared to the baseline surveys. This is because a greater number of species occurred with a more even spread in abundance. Recruitment of new species to the Ra'ui areas was particularly notable of the Avake, sea urchin (*Tripneustes gratilla*) and Vana, sea urchin (*Echinothrix diadema*).

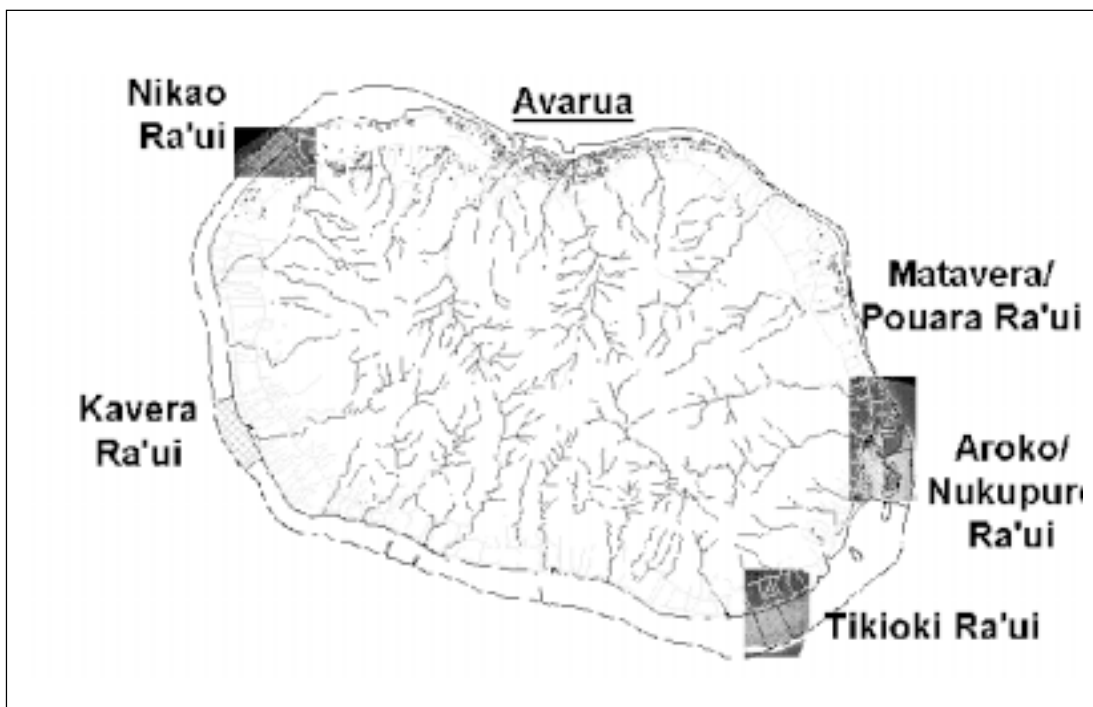
Conclusion

It is premature to be assured why positive outcomes of population and diversity increases have occurred. However, in view of some of the dramatic changes which occurred within the relatively short period of time between surveys, it is likely that the Ra'ui may be a significant contributing factor.

References

- Ponia, B. and K. Raumea. (1998). Rarotonga Marine Reserve Baseline Assessments: Nikao Ra'ui, Aroko Ra'ui, Matavera Ra'ui, Tikioki Ra'ui and Rutaki Ra'ui. Ministry of Marine Resources Report. 98/05: 109 pp
- Ponia, B., Raumea, K. and T. Turua. (1999). 1st Monitoring Survey of the Rarotonga Ra'ui: November, 1998. Ministry of Marine Resources Report. 99/18: 28 pp

Map showing Ra'ui sites around Rarotonga





Ecotourism Going Ahead!

Grant Trewenack *terra firma Associates*

With many good memories of the Lonnoc Ecotourism workshop last year (thanks everyone!), 1999 has seen Rob MacCalister and Grant Trewenack of *terra firma Associates* working with some CAs to implement the ecotourism Action Plans prepared at the workshop. The workshop was only the first step in ecotourism development—now is the time for the hard work of making the plans a reality.

Recently Rob has been in Samoa, working with CASO Iteli Tiatia at the Sa'anapu-Sataoa CA and with CASO Papaliitele Dion Ale at the Uafato CA. Grant has been to Niue, working with CASO Logo Seumanu at the Huvalu CA.

Sa'anapu-Sataoa has the best remaining mangrove forest in Samoa, home to many birds and fish. There has been some tourism activity in the past, with individual families involved in providing either homestead or basic 'beach fale' style accommodation, and running canoe tours through the mangroves. Iteli and Rob, with a team of CACC representatives, were trying to find a way to restructure and redevelop tourism in a way that benefits the community as a whole, and the Conservation Area.

At **Uafato**, the community said that ecotourism is not a high priority for development. However, Uafato has caught the interest of many tourists and tour companies, as it is beautiful, remote and the *fa'a samoa* (traditional Samoan way of life) is very strong. Rob and Dion looked at the ecotourism potential and ways of controlling tourism activity with Dion leading a very good community consultation.

On **Niue** the communities are eager for tourism to begin. Logo had several good ideas for the tours. We selected the HCA Conservation Tour to start: an introduction to life in the rainforest, coast and villages with a focus on traditional and modern con-

servation practices. Traditional resource management practices involve restrictions on hunting seasons, methods and areas and are amongst the most developed in the Pacific. The tour should appeal to ecotourists and, it is hoped, stimulate increased conservation awareness amongst guides and the broader community. A conservation park with interpretive signs and information huts in both villages are being designed concurrently by Malcolm Turner. If the HCA Conservation Tour takes off we are considering a Coconut Crab Monitoring Tour next.

In each job we followed some of the processes we learnt at the Lonnoc Workshop, such as the 7-step Tour Product Development Process, and used some of the tools like the basic EIA and Stakeholder Mapping. Especially for Sa'anapu-Sataoa, we spent a lot of time meeting the many tour operators in Samoa and getting them involved as 'partners in planning'. This is very important, as we need the tour companies to support and be part of the project.

The reports and plans developed from this work should be finalised in August 1999.

A final note for all Lonnoc participants

- Library materials you requested from the workshop were sent out early this year. If you did not receive them, please let us know.
- Finally, please feel free to contact us at *terra firma* for any casual advice or discussions about problems or issues you are facing back home. We are happy to help out

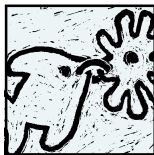
Rob MacCalister and a member of the Uafato community discuss the project



The story of Ikataea (Paddle Snapper) – Part Two

A story from Tuvalu continuation from Call Issue no 1

When Ikataea was four years old and had reached a size of 25 centimetres in length she too joined a big group around full moon to release her eggs into the water. That year Ikataea only produced about 10,000 eggs which means that probably only one of her children would have survived the long journey to reach maturity.



After the group of small fish had split up to explore their new home, Ikataea was left with two of her friends. They were very hungry so they started to look for food at the bottom of the lagoon. They were very happy to find small crabs and shells and even some fish that were smaller than themselves. Then a shadow passed over them and suddenly one of Ikataea's cousins was gone in the mouth of a big colourful fish. This made Ikataea realise that she would have to be more careful and hide from the big fish because she was no longer clear like glass and invisible.

For about a year Ikataea and her friend lived around the bottom of the reef. Sometimes they would meet some of their other cousins and once they met a group of taea who had floated all the way from Fiji to Funafuti when they were babies. When they were just a bit older than one year, they decided it was time to go and explore the reef. It was more dangerous up there so they agreed to join together with many other young taea and live in a big school. By this time there were only 400 survivors from the original group of four million. Sometimes the group would hang around the reef and sometimes they would go and explore the deep water. A few times they swam as deep as 150 feet.

Over the next 3-4 years Ikataea and her friends grew slowly. During their second year they heard about

quite a few of their friends disappearing off other reefs. Apparently fishermen had caught them. When Ikataea was four years old and had reached a size of 25 centimetres in length she too joined a big group around full moon to release her eggs into the water. That year Ikataea only produced about 10,000 eggs which means that probably only one of her children would have survived the long journey to reach maturity. But Ikataea was happy that she at least had the chance to add a new fish to the next generation.

Like her mother, Ikataea managed to survive for 20 years and grew to a size of 42 cms. Her big size allowed her to produce seven million eggs some years which meant that during her life time she had added many hundreds of new fish to the future generation. Some of her children would have grown up in Funafuti lagoon and others may have floated to Nukulaelae or even Vanuatu.

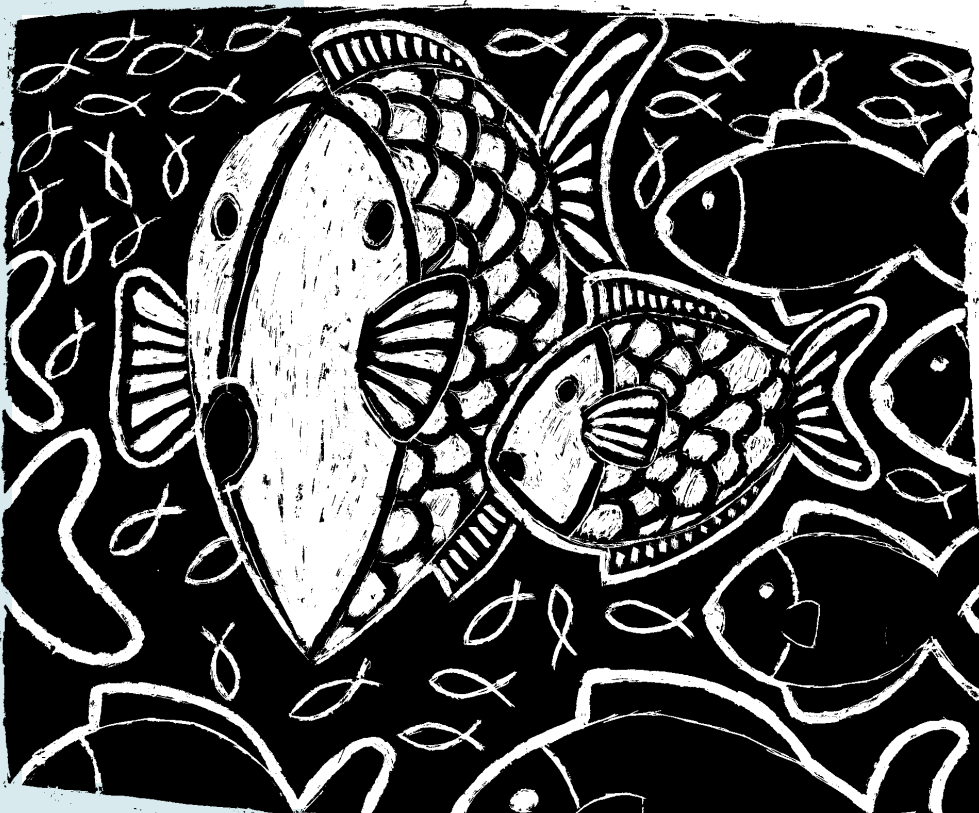
Fish have a very different life cycle to us humans. But, just like humans, if everyone has at least one child then our population will continue, whereas if most people died before they had children then our population would get smaller and smaller.

A fish has a big struggle to survive until it is big enough to breed. So if every taea is allowed to grow to at least 25 cm at which length it will have breed at least once, before it is killed, then we will not

overfish our populations of taea. And if some fish are allowed to live inside conservation areas where they can grow very big and have lots of babies, then our populations of taea will increase and our fishermen will have more fish to catch outside of those areas.

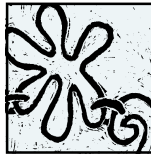
Do all fish have a similar life story?

Yes they do, except that different kinds of fish mature at different sizes. For example the thumb print emperor will have already reproduced once when it is only 20cm long, while the coral trout has to grow at least 38cm long before it can breed.



CASO/CACC Project Management Training Workshop

A workshop for SPBCP-supported Conservation Areas 17–28 May 1999, Nadi, Fiji



This training workshop was held mainly for Conservation Area Support Officers (CASOs) and representatives of the Conservation Area Coordinating Committees (CACC) from the 17 SPBCP supported projects. Also in attendance were representatives from other groups (lead agencies, NGOs and community organisations) involved in Conservation Area activities. Presentations of case studies on experiences and lessons learned from the CA projects were heard. Classroom sessions and experiential i.e. “learning by doing” were the methods of training.

Objectives of the Workshop

1

To provide participants with a better understanding of

- the South Pacific Biodiversity Conservation Programme (SPBCP)
- the roles and responsibilities of the key stakeholders in CA management (Local Communities, CACC, CASOs, Lead Agencies)
- the management of Conservation Area resources
- small conservation enterprise development and related socio-economic issues in order to participate effectively in identifying appropriate income-generating options
- the links between species conservation and CA management
- problems, successes and issues experienced by CA practitioners around the region
- the need to develop a Pacific Islands CA network
- means of ensuring wider replication of the SPBCP CA concept and approach
- organisational management functions and activities
- gender considerations in CA management

2

To provide participants with the skills and confidence to

- participate in the management and operation of income generating activities within their CA
- use effective problem-solving tools and techniques
- manage their time more effectively
- communicate more effectively particularly during negotiations, meetings and when conducting training

3

To involve participants in the development of mechanisms to enhance CA implementation through

- the SPBCP Transition Strategy to the year 2001, and its application to individual CAs
- the SPBCP CA Award

Correction

In CASOLink issue number 9, the photos on page 6 – Ngaremeduu CA and page 7 – Utwa-Walung are in fact those of Utwa-walung and Ngaremeduu respectively.

CALL is the newsletter of SPREP'S South Pacific Biodiversity Conservation Programme, based in Apia, Samoa.

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