

Refinement and analysis of coastal
fishery problems facing Makefu and
Alofi North villages, Niue, with
associated recommendations

By Sione Leolahi

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Abbreviations and acronyms

DAFF	Department of Agriculture Forestry and Fisheries
DOE	Department of Environment
EIA	environment impact assessments
FAD	fish aggregating device
GEF	Global Environment Facility
IWP	International Waters Project
LPWG	Local Project Working Group
MPA	marine protected area
NTC	National Task Committee
PCU	Project Coordination Unit
PEC	Priority Environmental Concerns
PSA	Participatory Situation Analysis
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environmental Programme
SWOT	Strength, Weakness, Opportunities, Threats
TCA	Temporary Closed Area
UNDP	United Nation Development Programme
UNESCO	United Nations Educational Scientific Communication Organisation
VC	Village Councils

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Fakamonuina mai he Atua.

Executive summary

Sustainable coastal fisheries are the prime focal area for Niue IWP, and are being addressed through a pilot project in the adjacent villages of Alofi North and Makefu, on the island's west coast. Along with other villages, these two identified the problems associated with their use of the coastal fishery and the results were published in a report "Participatory Situation Analysis: Summary Report of Village Consultations in Niue" (Niue IWP 2003). As with other Pacific Islands, Niue's people feel their coastal waters are not as productive as they were in former years.

Following the devastation of Cyclone Heta in January 2004, some of the project's momentum was lost while people coped with more immediate needs, but in May 2004 two additional meetings in each village were held to confirm the identified problems and identify potential solutions. It is significant that only one problem was removed from the original list following the cyclone and six new ones were added in each village. Oil spillage and sea track damage were the only new problems common to both villages.

This report discusses solution options and makes recommendations to address most, but not all, of the problems identified. Some of the solutions require input from regional agencies. Others need action nationally to give legislative backing to some of the solutions. However, by most of the recommendations involve the village people acting on their own or in consultation with other, mainly government, agencies. In all 24 recommendations are made.

Recommendations:

1. IWP continue to publicise the activities being undertaken in the pilot project villages, and promote sustainable coastal fisheries generally, through signage, posters, brochures, newsletters and video filming as well as distributing relevant regional publicity information.
2. The Fisheries Division continue to distribute publicity about the incidence of fish poisoning (ciguatera) and, together with Alofi North Village, document the locations from which ciguatoxic fish have been taken.
3. Alofi North and Makefu Village Councils advocate, through their members of Parliament, for amendment to the Domestic Fishing Act to permit co-management of coastal fisheries by villages and the Fisheries Division of the Department of Agriculture Forestry and Fisheries.
4. IWP, with assistance of the Fisheries Division and the Crown Law Office, ensure the Domestic Fishing Act is amended (and supporting documentation is prepared for Cabinet and ultimately for consideration in the Legislative Assembly) to provide for village and government co-management of village fisheries.
5. With backup support from IWP and Fisheries Division, Makefu and Alofi North villages prepare and regularly review Fisheries Management plans for their respective designated fishing grounds, and progressively trial marine conservation management practices.
6. Following amendment to the Domestic Fishing Act, Makefu and Alofi North Village Councils pass bylaws protecting the Vailoapu–Namoui Marine Protected Area.
7. The village councils recommend to cabinet the approval of the reservation of the Vailoapu–Namoui Marine Protected Area in terms of Sec. 7 of the Domestic Fishing Act.
8. The Local Project Working Groups (LPWGs) or Fisheries Management Committees consider systems of temporary closures in their village fishery to ensure some areas are always being left to reproduce.

9. Makefu and Alofi North LPWGs or Fisheries Management Committees work with Fisheries Division to formulate a register of recommended fishing practices and promote them by providing information and, if necessary, with bylaws that ban unacceptable practices.
10. The LPWGs or Fisheries Management Committees ensure current fishing regulations are publicised in the villages as a starting point for promoting sustainable coastal fisheries.
11. That IWP and the two pilot project villages establish databases in which to record cases of coral bleaching reported by divers and others, and undertake analysis to determine any trends in the process.
12. That the villages work with Fisheries Division to understand the process and risks of translocation of shellfish into their waters and consider whether to seek support from the Secretariat of the Pacific Community (SPC) for such a programme.
13. Village Councils fund and arrange to have rubbish bins located at the road end of sea tracks and ensure the rubbish collection contractor regularly empties them.
14. Village Councils seek assistance from the Environment Department to investigate alternatives to plastic shopping bags.
15. The Department for Environment arrange for the disused fuel tanks at Sir Robert's Wharf to be dismantled and removed from the seaside without spillage of residual fuel into the marine environment.
16. Fisheries Division publicise the current laws and protocols regarding discharge of wastes from ships and yachts moored in the harbour, with the aim of improving voluntary compliance.
17. IWP and the Fisheries Division use SPC's socioeconomic survey as a baseline for monitoring changes in harvest and use of coastal fish
18. Alofi North and Makefu villages adopt a system of all fishers recording their daily catch of fish and reef resources, keep the records in the village and supply a copy to the Fisheries Division (IWP) and make them available for input into any analysis or study of the social and economic effects of fishery management, or for management itself.
19. Near-shore fish aggregation devices (FADs) be established in Makefu and Alofi North's coastal waters to target "baitfish" and associated species.
20. The Health Department be asked to help the villagers to monitor trends in the quality of freshwater flowing into the sea through coastal caves or water lenses, by training them in sampling and by undertaking the appropriate tests.
21. Villages establish an active programme of promoting good vegetative cover of all bare ground areas near the coast.
22. IWP supports and promotes to Department of Environment, through its membership in the NTC, regulations requiring proper evaluation of all major developments or any with significant earthworks to ensure environmental impact assessments are undertaken and where appropriate social and economic studies are done.
23. The Department of Environment (DOE) conduct capacity building and awareness programmes in environmental impact requirements for village leaders.
24. The DOE work with Village Councils to publicise good practice in earthworks to minimise the chance of sediment being deposited on the reef.

Many of the recommendations will involve IWP working with the village to take responsibility for managing its own fishery. While the long term aim is for villages to be able to manage the necessary interaction with other agencies themselves, some back-up support may be needed after the end of the IWP (Dec 2006) and it is expected the Fisheries Division of DAFF will be

staffed to enable it to service these and other villages as they take on co-management of their own coastal fisheries in a sustainable manner.

1 Introduction

The International Waters Project (IWP) in Niue is part of a Global Environment Facility (GEF)-funded programme in 14 small island developing Pacific states. It is managed by the Secretariat of Pacific Regional Environment Programme (SPREP) from its office in Apia, Samoa through a Niuean National Coordinator, who reports to the local Project Manager, the Director of Niue's Department of Agriculture, Forestry and Fisheries (DAFF).

This report briefly summarises the background to the project in Niue and outlines the consultation process undertaken. The lessons learned in working on a pilot project in two adjacent villages on Niue's west coast are also documented. The document lists issues of concern (problems) to those villages. Some options for dealing with those problems are discussed and recommendations are made.

2 Background

Sustainable Coastal Fisheries was recommended as the prime focal area to be addressed by the International Waters Project in Niue during the preparation of a National Priority Environmental Concerns (PEC) assessment in November–December 2001 (Butler 2003). The IWP National Task Committee (NTC) adopted that recommendation. The NTC also directed that, if possible, integration of other IWP focal areas (e.g. marine protected areas, waste management and water resources) should be included as pilot project opportunities.

Niue IWP carried out an island-wide village participatory situation analysis (PSA) from September to December 2002 (Niue IWP 2003). During this process Makefu and Alofi North stakeholder groups identified resource concerns encountered in their villages. At a National Forum in April 2003 Members of Parliament and Village Council representatives from those two villages presented their village situation reports, listing the concerns, and expressed their interest in hosting village-level activities in the IWP pilot project.

Makefu and Alofi North were selected by the NTC to host the pilot project, based on a strength, weaknesses, opportunities and threats analysis of the different villages.¹ An underlying factor that determined support for the selection of those villages was the presence of the existing Vailoapu–Namoui Marine Protected Area (MPA). It is currently the only MPA on the island, and the villages were unsure of their responsibilities towards it. It was felt that the relatively high population in Alofi North and low population in Makefu would enable lessons learned in the pilot project to be applied in other villages of varying sizes.

The establishment of an ecological baseline was contracted to marine biologist Dr David Fisk. It began with a literature review in November 2003 (completed in April 2004, see Fisk 2007a). A second phase took place in March 2004 (completed in June 2004, see Fisk 2007b), with efforts to validate the problems perceived and the root causes postulated in the village PSAs. At the same time underwater visual reporting and photographs on the reef flats were provided showing the effects of, and damage caused by, Cyclone Heta that hit the island on Monday 5 January 2004. Belt transects were also established at eight reef locations and they were monitored again in the third phase, when instruction in other survey methods was also undertaken (completed in December 2004, see Fisk 2007c). Dr Fisk supervised the initial work but subsequent monitoring is being undertaken locally.

Village profiles showing the stakeholders structures and functions were completed for both

¹ Local IWP report to the Niue National Task Committee, dated July 2003, Recommendation for the pilot project activities and site selection.

villages at the end of 2003, providing information on people's designated roles and responsibilities in the two communities (Niue IWP 2004).

In May 2004 four meetings (two in each village) were conducted with the villagers, Village Councils and the zone representatives for Makefu and Alofi North villages. Two Niuean facilitators, one an Alofi North resident, were used to facilitate the meetings with support from the IWP staff. Attendance of villagers at the meetings (held on Sunday evenings) was variable, with 70% participation for Makefu and 30% for Alofi North. Household deliveries of meeting notices made for 100% awareness in both villages. Some participants represented themselves and others spoke for those not present in the meetings.

Throughout the meetings people were informed that if a pilot activity was effective in addressing a priority concern and supporting more sustainable use of coastal fisheries, then it might be replicated nationally and linked with other local initiatives.

3 Methodology

In addressing sustainable coastal fisheries issues, a key session involved brainstorming, where the people described problems perceived in their coastal environment. Both IWP pilot villages ranked resource depletion and habitat degradation highly. Some people in both villages questioned the validity of the issues raised and considered some issues only assumptions, which needed validation. Dr Fisk attempted this validation in his second phase report (Fisk 2007b).

The contributing root cause to resource depletion and habitat degradation was highlighted in most meetings as "a lack of money".

4 Problem identification

4.1 Results of Makefu village meetings

Meetings were held in the partly damaged women's cultural building. Originally twenty-nine environmental concerns were identified during the brainstorming and the PSA process in 2002 (Niue IWP 2003). Six new problems resulted after the refinement meetings in 2004. They are marked below with a +. The sea and land based issues identified were caused by people, domestic animals or by nature.

The concerns were categorised into two areas, namely; marine-related issues and land-based issues.

4.1.1 Concerns related to the sea

Fifteen issues were listed as marine-related concerns:

- Edible seaweed are not protected in any form (limu/sea weeds).
- Dying reef species (e.g. *ugako* or tube worms); people are unsure of the causes.
- Large sea birds are increasing in numbers (herons or *motuku*), these birds feed on edible marine life depended on by the women. (Some fishers are scared of these birds).
- Breaking and damage of the reef from poor harvesting practices.
- Poaching crayfish and land crabs (no management regime covers the designated fishing grounds).
- Divers poaching over fishing grounds.
- Fishing without permission and using different fishing methods.

- Spear fishing considered as destructive fishing.
- Uncertain of the implication of closed areas (unsure of traditional laws).
- Bleaching caused by temperature changes, particularly during calms.
- Coral growth is closing up the pools.
- Scuba diving is a concern.
- Damage caused by Cyclone Heta is very high, are seeing declines of clams, *alili/turbo*, fish and shellfish.
- Uncertain of the level of damage by Cyclone Heta and current status of the resource.
- Economic value of the resources in the village is unknown.

4.1.2 Concerns related to the Land

The village identified nineteen concerns that were land-based:

- Poaching of land crabs.
- Rough and damaged sea tracks.
- Siltation: materials from road and land areas draining towards the sea.
- Storm water drainage systems from roads leading to the sea.
- No awareness signs or rubbish bins installed around the sea access to control littering.
- Water drains mainly to the sea. Not enough properly designed storm water drainage.
- Uncertain of quality of underground fresh water.
- No enforcement for disposing of dead animal along the roadsides.
- Uncertainty about fresh water contamination levels caused from use of chemicals.
- Some pigsties are located on the seaside. (Note: After the cyclone the village advised there were now no pigsties on the sea cliffs).
- Some household septic tanks are still unsealed and others lacked water flushing systems.
- Most people use chemicals such as weed killers for weeding sea tracks.
- Long drops are still used by some residents.
- Land crabs are run over by vehicles during migration to spawn.
- Cats and dogs feeding on spawning species.
- No guidelines in place for tourism usage in Avaiki chasm.
- + Uncertain level of oil spillage into the sea.
- + Uncertain by the level of sewage contamination and reef resource degradation.
- + Poorly designed sea track development upgrading after Cyclone Heta (siltation).

4.1.3 Issues that were not categorised

- Soaking of *Fou* tree (bark). Sea track should be developed for the women for ease access.
- Storm surge protection.

- Develop a public policy by Government for future housing and village.
- + Development on a national scale, A town planner should be identified to assist lessons learned from Cyclone Heta.

Makefu villagers have identified the need to establish the value of the resources in the village.

4.2 Results of Alofi North village meetings

The meetings were conducted at the Nuku Club, as the Tahitian relief team, assisting Niue with the cyclone recovery, was occupying the village hall.

The concerns were categorised into three areas, namely the MPA, sea-related issues and land based issues.

4.2.1 Marine Protected Area Vailoapu- Namoui

Villagers from Alofi North emphasised the need to improve the role and responsibilities of the village related to the Vailoapu–Namoui MPA. Four concerns were identified during the initial PSA, and one issue was identified during the refinement meeting held in May 2004. Those identified at the refinement meeting are marked below with a +.

- No village and landowners rights over the declared MPA.
- Uncertain of the principals related to the MPA.
- No bylaw from the Village Council to mandate MPA.
- No declared boundary delimits for the MPA.
- + What are the aims for the MPA when IWP is completed?

4.2.2 Concerns related to the sea

There were sixteen Issues identified for the concerns related to the sea:

- Netting of undersize fish.
- Increasing coral growth is narrowing small reef pools.
- More and more plastic bags are found in the sea.
- Fuel discharges around the wharf area are polluting reefs.
- Pollution in port by vessel and yacht sewage discharges.
- Rusting pipes and other solid waste material are seen around reefs.
- Oil discharges from vessels around the wharf area.
- Still a risk of using poisonous tree roots to fish.
- Uncertainty of ciguatera around the wharf vicinity.
- Lacking of strategies or plans to address resource and habitant degradation.
- Risks of over harvesting of marine resources due to sophisticated gear.
- Uncertain of coral bleaching and level of effects to reef ecosystems (sea temperature changes).
- No information to determine undersize fish catches.
- Seasonal fishes are attracted by offshore FADs located too far for local fishermen with canoes to target.
- Dead animals are often disposed into the sea.
- + People outside the village are fishing with axes and crowbars to harvest species in the village.

4.2.3 Concerns related to the land

Sixteen issues were identified for the land-based issues:

- Long drop toilets are still being used.
- Water pipes are wearing out, affecting the water quality.
- Houses with asbestos damage from Cyclone Heta are a health risk.
- Uncertain of the water quality.
- Cemeteries and burial grounds are situated along the coastal cliffs.
- Siltation after heavy rains changed environment on reef flats.
- Sea tracks are poorly designed without environment impact assessments.
- Septic tank discharges and soak holes are using caves and crevices.
- Impacts from using fireworks and explosives in wharf construction.
- Crabs migrating to spawn are run over by traffic.
- Female *uga* and other land crabs are harvested during the seasonal migration to spawn.
- + Fuel tanks at the wharf are leaking out to sea after Cyclone Heta.
- + Bare cliffs after Cyclone Heta are allowing silt to flow easily to the sea (e.g. the Togonalupo sea track is washing out to sea).
- + Historical cave at Alofi Wharf is used as storm drainage.
- + New fuel storage relocated at Tuila is a concern; groundwater and residents are under threat.

5 Solution options and recommendations

This section groups the concerns above and discusses the options raised during consultation. Those that have backing from the communities and are reasonable with respect to human resources, expertise and cost are recommended.

5.1 Public awareness

5.1(a) General awareness raising

The people of both Makefu and Alofi North understand there is a need to make the public aware of the problems identified and the options available for solving them. They see a public awareness programme as crucial to changing attitudes to coastal resources and their management. Involving the people in assessing and then implementing the solution options is essential for community “ownership” of the management process. A communications strategy has been prepared with the PCU to guide the public awareness programme. Various methods of public awareness raising can be used, but documentary type film clips suitable for video and DVD reproduction have proved effective. IWP envisages developing further videos with local people.

Signboards have been erected showing the pilot project area and others defining the MPA and temporary closed area (TCA).

Adding to the locally-generated public awareness activities are regional public information materials. A good example is the SPC publicity posters and pamphlets on ciguatera. This regional public awareness information needs to be well publicised in the villages and nationally.

Recommendation

1. That IWP continues to publicise the activities being undertaken in the pilot project villages, and promotes sustainable coastal fisheries generally, through signage, posters, brochures, newsletters and video filming as well as distributing relevant regional publicity information.

5.1(b) Awareness raising about poisonous fish.

Fish poisoning by ciguatera has become a problem in the past few years. Currently this only occurs in an area around Sir Robert's wharf in Alofi. This is of particular concern for Alofi North village. Region-wide understanding of ciguatera is good but eradication has been impossible. Management of it elsewhere has focused on public information on its incidence, and trying to avoid the degradation of coral habitat that favours the algae on which ciguatera live. Close consultation with Fisheries Division is recommended so up-to-date information on disease management can be implemented. Options for ensuring high awareness of ciguatera range from distributing publicity material to establishing a register of sites where poisonous fish have been harvested. A trap, tag and release programme to mark where fish from a ciguatoxic area migrate is another option to consider.

Recommendation:

2. That the Fisheries Division continue to distribute publicity about the incidence of poisonous fish (ciguatera) and, together with Alofi North Village, document the locations from which poisonous fish have been taken.

5.2 Domestic Fishing Act amendment

Responsibility for fisheries management lies with the Fisheries Division of DAFF. Its primary focus is on oceanic resources. There are laws and regulations affecting coastal fisheries, but there are insufficient resources, and perhaps will, to actively manage these resources. Further, individual villagers are the principal users of these areas and any control will require community inputs into awareness raising and promotion. During consultation villagers were critical of the central government's lack of commitment to managing the coastal fishery. A number of the issues raised in the brainstorming can be better addressed by involving village people in managing their own fishery resource in association with the Fisheries Division. The Fisheries Division has supported village co-management through its promotion of the SPC village fishery management planning process, but there has been little discussion at a political level. Legislators need to hear from the people that they are ready and willing to take a greater part in managing coastal fisheries.

For villagers to successfully co-manage the coastal fishery with Fisheries Division, the Domestic Fishing Act will need amendment. Although the Village Councils Act permits Village Councils to pass bylaws for resource management and facilities development, legal advice suggests that coastal fishery management should be contained in specific fisheries legislation.² If it is clear village bylaws can be used for village fishery management it opens options for seeing that preferred fishing practices can be promoted and, if necessary, enforced in the communities where the effects of damaging practices are felt. The types of practices that could be promoted (using bylaws as a backstop, if voluntary compliance could not be obtained), include:

- net fishing methods; types of net, mesh sizes, seasonal limitations and night fishing;

² See IWP Discussion Paper "Legislative Initiatives to Give Effect to the Draft Niuean National Management Plan for Coastal Fisheries", included as Annex 1 in Powell 2007b.

- other gear restrictions;
- size limits below which fish have to be released;
- total allowable catch for different species;
- licensing of fishers; and
- a requirement to record total amount of each species caught and return a log sheet of total fish harvested to a fishing warden so the total harvest by the village can be monitored.

Recommendations:

3. That Alofi North and Makefu Village Councils advocate, through their MPs, for amendment to the Domestic Fishing Act to permit co-management of coastal fisheries by villages and DAFF's Fisheries Division.
4. That IWP, with assistance of the Fisheries Division and the Crown Law Office, ensure the Domestic Fishing Act is amended and supporting documentation is prepared for Cabinet and ultimately for consideration in the Legislative Assembly, to provide for village and government co-management of village fisheries.

5.3 Village Fishery Management Plans (VFMP)

Both villages were made aware of assistance provided by SPC to formulate fisheries management plans with the Fisheries Division and Niue's village communities. The information collected by IWP could be the starting point for a VFMP. Both villages have decided to prepare VFMPs. Makefu and Alofi North inhabitants understood their plans would have no legal backing unless the Domestic Fishing Act is amended to permit the designation of village fishing grounds and provide the ability for Village Councils to make bylaws for coastal fishery management. However, the need to first seek voluntary compliance with the plans was endorsed.

Recommendation:

5. That, with backup support from IWP and the Fisheries Division, Makefu and Alofi North villages prepare and regularly review Fisheries Management plans for their respective designated fishing grounds, and progressively trial marine conservation management practices.

5.4 Protected Areas (MPAs and TCAs)

Having seen the damage Cyclone Heta did to their marine resources, the villagers wish to ensure all species have a chance to mature and breed. People of both villages are committed to the Vailoapu–Namoui MPA that crosses their common boundary, and would like to see it receive more formal protection. They expressed disappointment with the central government's lack of regulation of the area and felt the people regularly using adjacent areas should be more involved in its management. They believed involving local people in caring for a reserved area would be more likely to be effective than relying on an under-resourced government agency. TCAs are an additional method of giving marine areas a chance to recover. Normally TCAs are in place for one year, but the term can vary, and they are designed to capture the benefits of the traditional *fono*. Alofi North has established a TCA and Makefu is considering one. When those areas are opened up for fishing again new areas should be considered for protection.

The Vailoapu–Namoui MPA that was declared in 1996 has received external funding for study and has been given regional publicity. However, it has not been given legal status by cabinet approval. The villages wish to protect it with a village bylaw as well as seeking legal recognition from central government. This dual declaration would give the villagers a sense of "ownership"; if a violation were prosecuted the court would have to consider any legislation in place, and not treat solely as a breach of a village bylaw.

Recommendations:

6. That, following amendment of the Domestic Fishing Act, Makefu and Alofi North Village Councils pass bylaws protecting the Vailoapu–Namoui Marine Protected Area.
7. That the village councils recommend to cabinet the approval of the reservation of the Vailoapu–Namoui Marine Protected Area in terms of Sec. 7 of the Domestic Fishing Act.
8. That the Local Project Working Groups (or Fisheries Management Committees) consider systems of temporary closures in their village fishery to ensure some areas are always being left to reproduce.

5.5 Fishing practices

People in the villages realise some fishing practices, often using modern gear, damage the environment or lead to over fishing. They support having some restrictions on practices that damage the reef environment and wanted to investigate the possibility of having policies on harvesting methods and also limits on numbers and size of fish and reef organisms taken. Those restrictions could be secured by bylaw.

Recommendation:

9. That Makefu and Alofi North Local Project Working Groups (or Fisheries Management Committees) work with Fisheries Division to formulate a register of recommended fishing practices and promote them by providing information and, if necessary, with bylaws that ban unacceptable practices.

5.6 Fish poisoning

Although Alofi North villagers claimed there was still a risk of people using poisonous plant root to stupefy fish, the activity is thought to be minimal. The Domestic Fisheries Act has a provision banning the use of the stupefying methods. In the past people used the stupefying method when fishing equipment was difficult to obtain. There are cases of people being prosecuted for the use of toxic plant roots for fishing.

Recommendation:

10. That LPWGs (or Fisheries Management Committees) ensure current fishing regulations are publicised in the villages as a starting point for promoting sustainable coastal fisheries.

5.7 Coral death

Coral is beneficial reef habitat for fish so its depletion is serious. It appears coral bleaching is from natural causes, beyond the scope of coastal management. However, the monitoring of instances of bleaching provides information that may assist management, and it should be noted in the village resource database. Divers can be approached to assist with information on bleaching occurrence.

Recommendation:

11. IWP and the two pilot project villages should establish databases in which to record cases of coral bleaching reported by divers and others, and undertake analysis to determine any trends.

5.8 Translocation

Transplanting stock from elsewhere, to provide the brood stock for recruitment of a species, can be another solution for villages to consider in conjunction with Fisheries Division. It really only has application with species that remain reasonably stationary for at least their adult life. It can be useful where an area has been depleted by a national disaster and should be associated

with some period of restricted harvest. SPC has an aquaculture programme that assists with translocation. In a situation such as the impacts from cyclones this option can be an alternative

Recommendation

12. That the villages work with Fisheries Division to understand the process and risks of translocation of shellfish into their waters and consider whether to seek SPC support for such a programme.

5.9 Waste management

The Health Department is responsible for waste and rubbish management, while the recently established Environment Department has overall responsibility for environmental quality. Authorities have undertaken a public awareness campaign, erecting road signs as well as distributing posters and pamphlets, but there is no law prohibiting dumping of rubbish in the sea. The number of plastic bags that end up in the sea and on the coast is a concern. Villages have requested provision of rubbish bins at the main sea tracks used by the public.

Recommendations:

13. Village Councils fund and arrange to have rubbish bins located at the road end of sea tracks and ensure the rubbish collection contractor regularly empties them.
14. Village Councils seek assistance from the Environment Department to investigate alternatives to plastic shopping bags.

5.10 Fuel Contamination and port waste management

The wharf storage tanks in the Alofi North area, damaged in the cyclone, are no longer used to store fuel. They are in a high-risk area and the cost to dismantle them is high. Fuel is currently shipped in containers and, on the island, is managed by the Bulk Fuel Corporation. Legislation covering vessel oil spills, sewage and port waste is the responsibility of Environment Department. Other organisations (such as the yacht club) maintain facilities for people to use at the wharf.

Recommendations:

15. That the Department for Environment arrange for the disused fuel tanks at Sir Robert's Wharf to be dismantled and removed from the seaside without spillage of residual fuel into the marine environment.
16. That the Fisheries Division publicise the current laws and protocols regarding discharge of wastes from ships and yachts moored in the harbour, with the aim of improving voluntary compliance.

5.11 Resource value

Villagers of Alofi North and Makefu feel there is little documented understanding of the value of the coastal resources they use every day. Because fishing and reef harvesting is so much part of Niuean culture there are social as well as economic values to be considered. Any socioeconomic assessment will need cooperation from the villagers as they have much of the information needed. This work has been included in a socioeconomic study of the island by SPC's PROCFish project. The report will include a subset of data for each village showing the effect the coastal resources have on economic and social life of the village people. The Fisheries Division intends to undertake this survey in subsequent years. Its success will depend on the willingness of the villagers to give accurate information about what they take from the sea and how it is used.

Having a clear picture of the social and economic value of the coastal resources would assist in their management. Good decisions on any form of resource use can only be made when their

impact on people is accurately assessed.

The people of the two villages would like to expand their use of the coastal fish resources to reduce dependence on reef gleaning. It is particularly important if reef areas are being reserved from harvest. Installing FADs in the near-shore fishery could increase the catch of baitfish that could then be used for local consumption or sold to commercial fishermen.

Tourism is another area that could be developed. It is an option with some limited potential to reduce dependence on reef species for income generation. Much would depend on the skill and knowledge of guides, but it would also depend on having areas that are continually plentiful with fish or reef species. Of course tourism in the villages will be very dependant on the island's ability to attract and look after tourists. Cooperation throughout the whole industry will be essential. No specific recommendation is made.

Recommendations:

17. That IWP and the Fisheries Division use the SPC socioeconomic survey as a baseline for monitoring changes in harvest and use of coastal fish.
18. That Alofi North and Makefu villages adopt a system of all fishers recording their daily catch of fish and reef resources, keep the records in the village and supply a copy to the Fisheries Division (IWP) and make them available for input into any analysis or study of the social and economic effects of fishery management, or for management itself.
19. That near-shore FADs be established in Makefu and Alofi North's coastal waters to target "baitfish" and associated species.

5.12 Freshwater quality

People in the villages have concerns about the quality of fresh water flowing from underground caves and the effect it has on the reefs ecosystems. IWP can contribute by assisting with training people to sample the fresh water. However, testing for relatively minor amounts of biological and chemical contaminants requires laboratory processes and training. The Health Department has such facilities for its domestic water testing. Further consultation with the Health Department and Public Works Department on how villages can contribute to freshwater quality testing along the coast is required. SOPAC may also be needed to assist in training villagers in water sampling.

Recommendation:

20. That the Health Department be asked to help the villagers to monitor trends in the quality of freshwater flowing into the sea through coastal caves or the fresh water lens, by training them in sampling and by undertaking the appropriate tests.

5.13 Tree planting

Tree planting programmes to control siltation were discussed with the villages. The Department of Agriculture Forestry and Fisheries supplied the planting materials for the village to organise planting. However, natural revegetation is achieving ground cover, and in any future event planting should not be delayed.

Recommendation:

21. That villages establish an active programme of promoting good vegetative cover of all bare ground areas near the coast.

5.14 Assessment of development proposals

The effects of development on the coastal environment concerned the villagers. They were aware of sedimentation onto the reef flat from poorly maintained sea tracks, particularly after the cyclone, and of the perceived impact of wharf development on the incidence of poisonous

fish. The Environment Act makes provision for regulations. A regulation could require all major developments to have environmental impact assessments (EIAs). There is also an understanding that even in cases where environmental effects may be minor, social or economic effects need to be considered.

The Department of Environment administers the Environment Act and it is working with SPREP to conduct training in EIAs prior to requiring them for all major developments, or ones with significant earthworks. There is a need to raise awareness of the EIA process in villages so people know what is expected of all developers and the process is open and transparent.

While the villages support regulation requiring EIAs for all major developments, or ones with significant earthworks, they also believe social and economic assessments should be performed. However, they are aware that maintenance standards also affect sediment discharge. They believe codes of practice that minimise discharge of silt-laden water to the reef should be promoted through training and publicity.

Recommendations:

22. That IWP support and promote to the Department of Environment, through its membership on the NTC, regulations requiring proper evaluation of all major developments or any with significant earthworks to ensure environmental impact assessments are undertaken, and where appropriate, social and economic studies are done.
23. That the Department of Environment conduct capacity building and awareness programmes in environmental impact requirements for village leaders.
24. That the Department of Environment work with Village Councils to publicise good practice in earthworks to minimise the chance of sediment being deposited on the reef.

6 Makefu local project working group

As a result of the discussions a Local Project Working Group (LPWG) was formed in Makefu village. It is made up of representatives from the women’s group, fishers, youth and Village Council (see Table 1).

Table 1: Makefu LPWG

Men	Role	Women	Role
David Poihega	Village Council	Mary Anne Talagi	Fisher
Togia Saimone	Village Council	Fou Aso Tohovaka	Fisher
Charlie Tohovaka	Fisher	Vai Tuineau	Fisher
Darren Tohovaka	Fisher	Peta Poihega	Fisher
James Tohovaka	Youth	Silau Jamal Talagi	Youth

7 Alofi North local project working group

The Alofi North Local Project Working Group was formed with members of the village from various sectors (see Table 2).

Table 2: Alofi North LPWG

Men	Role	Women	Role
Rev Hawea Jackson	Pastor	Va’aiga Tukuitonga	Member of Parliament
Richard Hipa	Village Council	Rupina Morrissey	Hotel owner
Tutuli Heka	Village Council	Sue Touna	Fisher
Foutau Palahetogia	Fisher	Pati Palanite	Fisher
		Takaese Togotogo	Fisher

8 Lessons learned

This section highlights some issues experienced during engagement with the villagers. Niue's experience may be useful for agencies in other similar countries when consulting with communities.

8.1 Meeting schedules

Influential people in both villages were best approached first through letters to let them know about the importance of the village meetings and the reasons for them. Members of Parliament and Chairpersons of the Village Councils were also visited, primarily to seek their support, but also to brief them on the project, confirm their availability, and to plan out the timing and venue for the meetings. The venue needed to have at least one wall to use for the electronic presentations and pinning of the flip charts.

Radio announcements were used to remind people of the meetings. Each household in both villages received meeting invitations with the programme and agenda attached. This ensured 100% awareness of meetings. However, nothing guarantees a high level of participation, as demonstrated with Alofi North's 30% attendance rates, but at least all households had been contacted. In general, meetings were easier to organise in villages with smaller populations.

8.2 Meeting times

Setting the dates and timing of the meetings must be done in parallel with the people's availability. Most people work during the week and were not available on Saturdays, hence Sundays were chosen (evenings, after church, were found to be most suitable). Elderly stakeholders favoured Sunday evenings more than any other day. The preferred duration for each meeting was approximately 3 hours (commencing at 5pm) or, in the case of Makefu village, which has no afternoon church session, at 4pm.

8.3 Village protocols and language

Before starting meetings it is a standard cultural practice for the village pastor or a respected elder, who may or may not be in an elected leadership position, to lead the meeting with an opening prayer, followed by words of welcome by the Village Council representative or the Member of Parliament. People can be offended if the elders do not address the opening. Niuean language is encouraged, but English can be used from time to time to thoroughly address an issue. Understanding the Niuean language is important for translation.

8.4 Village profiles

Information from the village profiles helps in understanding the stakeholders one is dealing with and in arranging a successful meeting. In both villages in Niue the stakeholder structure and roles were basically the same as in other villages islandwide. Village profiles are reviewed from time to time to address changes such as organisation elections and new appointments.

8.5 Village resource management roles

It is unfortunate that the level of damage to the resources and the habitant by Cyclone Heta could not be measured against pre-cyclone data.³ Comparing the situation before and after is difficult without baseline data from before the event. Resource management is highly dependent on resource status data and village capacity. The village people indicated inshore marine resource monitoring capacity should be strengthened in both villages. Youth groups are

³ Editor's note: Fisk 2007b does make some comparisons.

ideal to train in resource monitoring, as it could have some input to their formal education, but people making management decisions must also understand the process

8.6 Village facilitation process

Language must be clearly expressed or recorded by the facilitator, and interpretation of Niuean to English be undertaken quickly and accurately, to properly document concerns raised. Some issues or concerns may be raised when something else is being discussed, but it is important they be properly noted. A facilitator who fully understands the concerns should be the recorder, while a second facilitates the process.

8.7 Equipment and materials

Electronic equipment such as a laptop computer and PowerPoint projectors can make presentations easier and can allow people to see what is being recorded, allowing people to know that what is being recorded relates to what is said. Recordings on flip charts need to be written up later, with the potential to misinterpret issues. Power supply connections available in both venues made PowerPoint display possible.

9 Conclusions

A principal objective of the IWP in Niue is to enable the village people to understand their fishery and take more responsibility for its management. Many of the solutions identified to deal with the perceived problems involve action by the villagers, assisted by IWP staff and staff of other government departments.

Twenty-four recommendations have been drafted that arise out of the discussion of possible solutions. They fall into three general groupings. The first group involves mechanisms to bring about effective village-based coastal fishery management. Of the six recommendations in this group, two are to amend the Domestic Fishing Act, one supports VFMPs and three deal with use of reserves or temporary closures to promote regeneration of fish species (Recs. 3 to 8).

The second group involves management (collection, analysis and dissemination) of information. It includes general publicity on conservation management as well as using specific data to better understand fisheries ecology and therefore fisheries management. The limited management options for dealing with ciguatera result in distribution of information as the sole mechanism recommended. In all, six recommendations involve collection and distribution of information (Recs. 1, 2, 10, 11, 16 and 18).

Three recommendations involve analysis of information, either by the community or by contracted experts (Recs. 9, 12 and 17).

The third grouping is works or activities related to works. As well as activities directly related to managing fish and reef organisms, there were real concerns about land-based activities affecting the habitat. Eight recommendations address works issues. Four of them deal with managing sediment that may wash onto the reef, one of which aims to ensure proper evaluation of works proposals (Recs. 21 to 24).

In an attempt to ease pressure on reef resources the villages sought the installation of near-shore FADs, making it easier for canoe fishermen to target near-shore fish (Rec. 19).

The management of waste near the coast impacts on marine habitat. Three recommendations deal with it, two of which are specific to works activities, while the other involves collection and analysis of information prior to implement a major programme to change community behaviour (Recs. 13 to 15).

Finally, the issue of fresh water contamination is addressed with a water-testing regime, to try to establish whether freshwater is delivering chemical or biological contaminants to the coastal

waters (Rec. 20).

The recommended actions will assist the two communities of Alofi North and Makefu to take greater responsibility for managing their coastal fishery, as well as some land-based activities that affect the fishery. There will be an ongoing need for a government agency to assist the villages in reviewing and amending their VFMPs as they become better acquainted with the process and learn more about the resource and its management. The Fisheries Division will be providing that service to other villages in Niue, and it is expected to do the same for Makefu and Alofi North after the IWP finishes at the end of 2006. It is understood some increase in staff capacity will be needed to ensure the momentum generated in undertaking co-management in the VFMPs is not lost.

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Appendix 1

Makefu Village Meeting Participants 02/05/04

1. Reverend Faulkland Liuvaie
2. David Poihega (Vice Village Council Chairperson)
3. Charlie Tohovaka (North West Village Council National Task Committee rep)
4. Peta Poihega
5. Fou Tohovaka
6. Maryanne Talagi
7. John Tohovaka
8. Samoa Togakilo
9. Tomrick Tauetule
10. Sione Leolahi (IWP)
11. Ron Paulin (IWP)
12. Peta Misikea (Facilitator)
13. Herman Tagaloamailuga (Facilitator)

Makefu Village Meeting Participants 16/05/04

1. Reverend Faulkland Liuvaie
2. Hon Tofua Puletama (Member of Parliament)
3. David Poihega (Vice Village Council Chairperson)
4. Charlie Tohovaka (North West Village Council National Task Committee rep)
5. Semokolo Talagi
6. Ligmata Talagi
7. Lito Togatama
8. Thompson Togatama
9. M. Tuineau
10. Trudy Tohovaka
11. Moka Misihepi
12. Lovely Puletama
13. Iva Barry
14. L. Palemia
15. Aefe Talagi
16. Mary Anne Talagi
17. Kolose Talagi
18. Amanda Palemia
19. Finetea Patuua
20. Fou Aso Tohovaka
21. Nike Misikea
22. Uluvili Tohovaka
23. Iapeta Poihega
24. Maryanne Talagi
25. Sione Leolahi (IWP)
26. Ron Paulin (IWP)
27. Peta Misikea (Facilitator)
28. Herman Tagaloamailuga (Facilitator)

Appendix 2

Attendance at Alofi North Village Meeting 9 May 2004

1. Pastor Manu Latu
2. Richard Hipa (Chairperson of Village Council)
3. Tuli Heka (Vice Chairperson of village Council)
4. Sefeti Fatiaki (Village Council member)
5. Pao Palahetogia (Village Council member)
6. Talepita Talepita
7. Moka Heka
8. Foahala Foulagi
9. Roberta Sionesini
10. Sifa Tulepu
11. L. Latu
12. Morris Tafatu
13. Fiafia Rex (Fisheries officer)
14. Brendan Pasisi (Principal Fisheries officer)
15. Sae Hipa
16. Lilly Tafatu Hipa
17. Sione Leolahi (IWP)
18. Ron Paulin (IWP)
19. Logo Seumanu (IWP)
20. Herman Tagaloailuga (Facilitator)
21. Peta Misikea (Facilitator)

Attendance at Alofi North Village Meeting 23 May 2004

1. Pastor Latu
2. Va'aiga Tukuitonga (Member of Parliament)
3. Richard Hipa (Chairperson of Village Council)
4. Tuli Heka (Vice Chairperson of village Council)
5. Sefeti Fatiaki (Village Council member)
6. Charlie Tohovaka (North West Village Council National Task Committee rep)
7. Mrs Latu
8. Talepita Talepita
9. Mrs. Hiku
10. Morris Tafatu
11. Nike Misikea
12. Sifa Tulepu
13. Foahala Foulagi
14. Mrs. Foulagi
15. Sione Leolahi (IWP)
16. Ron Paulin (IWP)
17. Peta Misikea (Facilitator)
18. Herman Tagaloailuga (Facilitator)