

South Pacific Regional Environment Programme

INDICATORS OF SUCCESS

SOUTH PACIFIC

BIODIVERSITY CONSERVATION PROGRAMME



VOLUME THREE—DATA REPORT

Trevor Ward, Fanaura Kingstone, Suliana Siwatibau

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Indicators of Success for the South Pacific Biodiversity Conservation Programme

Volume Three—Data Report

Trevor Ward

(CSIRO Marine Research, Perth, Western Australia)

Fanaura Kingstone

(Community Development Consultant, Aitutaki, Cook Islands)

Suliana Siwatibau

(Island Consulting, Port Vila, Vanuatu)

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Cover

top panel, left to right

Cliffs and secondary forest in Koroyanitu National Heritage Park

Preparing local foods in Vatthe Conservation Area

Seafoods captured in Vaoto Bay, Uafato Conservation Area

bottom panel

Kava drying in Uafato Village

Preface

This series of reports documents the findings of a consultancy project undertaken for SPREP to develop and trial success indicators for the South Pacific Biodiversity Conservation Project.

This report (Volume 3) contains the complete set of data gathered during consultations with villagers and SPBCP staff during the development of Success Indicators for the SPBCP.

Companion reports in this series are:

Volume 1—Technical Report

Volume 2—Field Trials (records the findings of the field trials for the indicators)

Volume 4—Keeping Track of Changes in Uafato Conservation Area (non-technical)

Volume 5—Keeping Track of Changes in Vatthe Conservation Area (non-technical)

Volume 6—Keeping Track of Changes in Koroyanitu Conservation Area (non-technical)

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INTRODUCTION

This report is a compilation of the raw data that was collected and used by the consultancy team. The data described in this report must be read in conjunction with the technical report in this series: Volume 1—Technical Report, which reports our interpretation and evaluation of the data in this Volume.

All the data described in this report were gathered, mainly using PRA methods and in close consultation with the local communities, during field visits in October and November, 1998. The CASOs for each CA made a major contribution to the data collection process, and in some instances they are also provided the data we describe here.

This report presents the raw data that was collected during the consultancy. For summaries of the data, interpretations and assessment see the technical report. The data and transcripts of interviews etc. in this Volume have been edited only for readability, and are presented here in raw form as a documented record of the consultancy's work.

UAFATO CONSERVATION AREA

VEGETATION

The vegetation of Uafato Conservation Area had been surveyed by the botanist Art Whistler and his team as part of the activities of the SPBCP. The indicators team did not have time to revisit all the area they surveyed but obtained an overview of the vegetation types described through a quick visit to selected areas and survey of the coastline through binoculars from a boat. A brief summary of vegetation types identified by Whistler and his team is provided here.

Disturbed Vegetation

Managed Land.

This includes village area, roads, gardens, and coconut plantations. It is claimed to cover about 10% of the total CA area (PPD, June, 1996). Whistler and his team did not study the vegetation of these areas.

Secondary Forest.

This is area that had regenerated after major disturbance usually from abandoned gardens. The PPD states that this forest covers some 7% of the area of the CA. The dominant trees in secondary forest include *Rhus taitensis*, *Alphitonia zizyphoides* and *Hibiscus tiliaceus*.

Climax Vegetation

Lowland Rainforest

Valley Forest. This is found in two areas along the coast to Tiavea, covering shallow valleys. This forest is not recognised in the PPD and is probably included there under the category of coastal forest which was reported to cover 12% of the CA. The valley forest has a single storey of trees that form the main canopy with a few emergents. While valley forests in Samoa are dominated by *Dysoxylum samoense*, the valley forest in the Uafato CA is dominated by *Inocarpus fagifer*. Other common trees recorded within the Uafato valley forest include *Dysoxylum samoense*, *Terminalia catappa*, *Macaranga spp.*, *Guettarda speciosa*, and *Sterculia spp.*

Coastal Forest. Whistler and his team identified this forest as occurring in a very restricted and small area of the CA close to the village on Cape Tagisia. It is threatened with encroaching gardens. However, some of it occurs in highly inaccessible terrain towards the edge of a high cliff and will probably remain intact there. Coastal forest is usually found immediately inland from the littoral forest. This forest in Uafato is dominated by *Dysoxylum samoense*. Other common trees

recorded include *Syzygium clusiifolium*, *S. dealatum*, *Sterculia fanaiho*, *Planchonella garberi*, *Calophyllum inophyllum*, *Terminalia catappa*, *Barringtonia asiatica*, and *Macaranga harveyana*.

Ridge Forest. This is the most extensive type of climax vegetation. The PPD lists it as occupying 535 of the CA. The village people identify 23 ridges within the Uafato CA. These are covered with forest of similar structure and therefore all classified by Whistler as ridge forest. However, due to differing substratum and other local ecological conditions, the dominant trees association differs between ridges with one of them being dominated by *Inocarpus fagifer*, while others are dominated by one or more of the following: *Canarium vitiense*, *Syzygium inophylloides*, *Palaquim stellinii*, *Intsia bijuga*, and *Dysoxylum samoense*. Where there has been much disturbance, the ridge forest is usually dominated by *Rhus taitensis*.

Littoral Forest.

This forest remains only in very small and widely scattered patches. Whistler and his team therefore did not make any special study of it. Remnants are found along the front of the village, on the edge of the shoreline stretching away on either side of the village, and in patches on beaches further away along the coastline. This forest is usually of only a single tree storey with a clear undergrowth. In Uafato it is dominated by *Barringtonia asiatica*, *Hernandia peltata*, *Callophyllum inophyllum*, *Guettarda speciosa*, *Erythrina variegata*, and *Terminalia catappa*.

Montane Forest.

This occurs on high elevations from about 500m to 730m. The PPD reports it to cover 18% of the CA. It is a low forest of trees and tree ferns. In Samoa, the montane forest is usually dominated by *Dysoxylum huntii*. In Uafato however, the montane forest has been much damaged and is dominated by *Fagraea beteroana* and *Trichospermum richii*. Other common trees are *Myristica hypargyrea*, *Cerbera oddollum* and the tree fern, *Cyathea spp.*

NOTES ON THE VEGETATION, FROM FIELD OBSERVATIONS

Managed vegetation

Gardens

Kava has rapidly gained importance as a cash crop replacing taro as a crop for freshly cleared forested areas. Kava requires some protection from direct sun in its early growth but quickly demands full sunlight for further growth and vigour. While taro matures within a year, kava matures in from 3 to 5 years. It fetches a good price and the agent comes to the village for purchases. A kava growers' club has been formed to encourage kava farming. Because of its longer cycle, kava farming may require a faster rate of forest clearing than previously demanded for taro growing. It would be wise to keep a close monitor on kava farming.

Many abandoned gardens continue to grow bananas. Bananas also grow in amongst coconuts. This favours the regrowth of secondary forest trees as the seedlings are sheltered by the tall

banana trees. The role of bananas in abandoned gardens as opposed to grasslands, in nurturing secondary forest regrowth may be usefully monitored.

Village plants

Two low trees grown in the village area are of interest. They are as follows:

Securinega flexuosa (poumuli). This tree is grown for its strong and straight bole which makes it an ideal house post. It may be harvested at any size depending on the specific requirements for the house. It grows easily and once planted continues to grow young ones. Poumuli posts are also sold for cash by Uafato villagers. Given its strength, this tree may also make good wood for decorative carving.

Morinda citrifolia. This low tree is a common coastal plant that is widely used for medicine in the Pacific. It grows very well in the Uafato village grounds where many seedlings were found sprouting in house yards. This has become a commercial medicinal crop in some Pacific island communities. It is a potential cash earner also for Uafato.

Coconut plantations.

The major portion of the coconut plantations occur close to the village. While the undergrowth is not cleared, it is uncertain what role the coconut plantation has in nurturing secondary forest regrowth because of extensive foraging by village pigs. This damage by pigs may be worth monitoring.

Weeds and invasive species

A wide variety of weeds both those of aboriginal introduction and those of later years were found in disturbed areas of Uafato. Particularly of interest in the widespread occurrence of *Mikania micrantha* which is of recent introduction - probably about the same time as the coming of the Asian community in Samoa as its common name implies. This climbing weed can smother young tree seedlings and significantly interfere with forest regrowth. Another weed to monitor closely is the herb, *Clidemia hirta*, a common weed associated with pastures. It has been reported by Whistler to have penetrated into the climax forest area of Uafato. The dominant weed species and their distribution should be monitored.

Climax Vegetation

Associations dominated by Intsia bijuga

A few ridges have tree associations dominated by the ifilele tree, *Intsia bijuga*. As ifilele tree is being logged as the major tree for carving, it is important to monitor its harvest and occurrence in the forest. Permanent monitoring plots laid by F Martell and his team should be maintained and regularly monitored. The rate of harvest and yield also need to be monitored.

Associations dominated by Inocarpus fagifer

While Whistler identified 2 particular areas dominated by *Inocarpus fagifer*, the local villagers reported on 2 other areas close to the village. One occurs above the village to the east and within site of the village, the other occurs in a coastal valley east of Cape Tagisia. *Inocarpus fagifer* grows in areas with constant supplies of water - such as swamps, mangrove forests and river sides. In Uafato it is dominant where there is running water close to the surface or where small streams run off the ridges. It would be useful to monitor the occurrence and extent of *Inocarpus* dominated associations as an indicator of availability of ground water coming to the surface.

Rare Plant Species

Whistler noted the occurrence of *Cordia aspera* (Tou), in the valley forest at Fao'to. This tree had not been recorded from Samoa in recent years. It is of cultural importance as it was used to glue tapa pieces together. It is important to identify the location of the tree(s) and to take measures to save it from extinction in Samoa.

IMPORTANT RIDGES IN UAFATO AND THEIR VALUES

(as defined by consultation with the Chiefs).

Ridge Name (see Figure 3.1 for location)	Important area for this reason
Mealelei Ridge	bird hunting ground source of clay rich area for ifilele
Tuasivi o ele Ridge	source of clay ifilele bird hunting
Laloulu Ridge	agriculture ifilele hunting grounds
Tagaila Ridge	ifilele agriculture gentle slopes
Olo Ridge	important legendary site (old fortress)
Tulagavae Ridge	ifilele important legendary site
Faga Ridge	ifilele agriculture
Lalaoa Ridge	ifilele agriculture
Taualoa Ridge	ifilele agriculture
Liuovaa Ridge	ifilele agriculture important legendary site
Afuonina Ridge	ifilele agriculture important legendary site
Aegasa Ridge	ifilele agriculture
Gaoa Ridge	ifilele

	agriculture
Maalata Ridge	agriculture important legendary site
Sialofi Ridge	ifilele agriculture important legendary site
Falelau Ridge	ifilele agriculture important legendary site
Lagituaiava Ridge	ifilele agriculture important legendary site
Tagisia Ridge	ifilele agriculture important legendary site
Tuasiviovavau Ridge	ifilele agriculture important legendary site
Tafaga Ridge	ifilele agriculture important legendary site marine fish, shellfish
Utifala Ridge	ifilele agriculture important legendary site
Uaaolata Ridge	ifilele agriculture important legendary site

RESOURCES ANALYSIS—UAFATO VILLAGE (CHIEFS)

Commercial Resources

All coastal areas and resources are considered important for resource use purposes. The resources of most commercial importance are: ifelele for carving (bowls, sticks, etc), other timber species for carving, lobsters, fish, sinnet (finely woven coconut fibre), woven handicrafts, and the carving skills (for training of other carvers).

Land Resources

the most highly valued terrestrial resources (for commercial, subsistence or cultural purposes) are:
ifelele - considered to be stable in time (not increasing or decreasing in quantity and/or availability)

kava - improving, although not as good as previously

pandanus - decreasing.

Marine Resources:

the most highly valued marine resources are:

fish - stable, no trend upwards or downwards

shellfish (molluscs) - increasingly available.

RESOURCES ANALYSIS—UAFATO VILLAGE (WOMEN)

Conservation Area Resources

Fourteen women participated in an evaluation of the resources of the CA considered to be of value for the Uafato Village.

The most important resources of the CA were considered to be:

Very Important: cabbage, cocoa beans, eggplant, chickens, lau pele, pandanus, marine gastropod (Ilele).

Important: beans, mangoes, tomatoes

Least Important: fish

Resources from outside the CA that contributed to the village, but were considered to be of only low importance, were:

work in Apia

remittances from overseas relatives.

The Criteria and justification used by the women to make the above evaluations of importance were:

Lau Pele: easy to grow and of high nutritional value

eggplant: easy to grow and of high nutritional value

cabbage: easy to grow and of high nutritional value

chickens: women's job to manage/harvest for food production

cocoa beans: women's job to manage/harvest for food production

marine gastropod (Ilele): women's job to manage/harvest for food production

beans: not highly preferred food

tomatoes: high maintenance required

mangoes: trees not highly productive, but valuable for medicinal purposes

fish: preparation is women's job.

Resources for the Village

Commercial Resources:

the most important commercial resources were considered to be carving, posts (selling), poumuli logs, dried kava, pandanus for weaving, coconut (sinnet) fibre whisks.

Land Resources:

the most important terrestrial resources were considered to be all the vegetation, pandanus, breadfruit, bananas, ifelele, and vegetables from the gardens.

Marine Resources:

the most important marine resources were considered to be: shellfish (gastropods), fish, coral (as habitat for fish and as flooring material for houses and yards/pathways), clams, lobsters, octopus, sea eels, sea snails, and small clams.

In general, over time resources were considered to be increasing in abundance and/or availability and accessibility. Over time the marine resources were considered to show no changes (increase or decrease) in abundance or in accessibility. Over time the land resources were considered to be increasing, and accessible.

INCOME AND LIVELIHOOD ANALYSIS—UAFATO CHIEFS

Cash Income

The main cash income generating activities were considered to be

- handicrafts - for men, the carving of bowls, spears, shafts and other weapons; - for women, the weaving of mats, fans, table mats, and fine mats.
- kava
- tourism income
- remittances from relatives outside the village (although this was not considered to be an important source of cash).

Note that there were no agricultural products considered to be important sources of cash income.

Cash and Subsistence

the main activities/products that are important for both cash and subsistence, include:

- pigs and chickens
- shellfish and fish (traded only in the village)
- poumuli (poles for timber construction)
- mats.

Non-cash Activities/Products

the main activities/products that are important for subsistence, include:

- agricultural products
- fine mats
- pandanus
- herbal medicines
- pigeons, flying foxes
- ifi nuts
- potable water.

The Criteria used to determine (above) the resources that are important for the village are:

1. those things that can be used to definitely make money within a few days;
2. things that are important for life/living, such as food;

3. things that are important for cultural obligations.

INCOME AND LIVELIHOOD ANALYSIS—UAFATO WOMEN

Eight women participated in the discussion group.

Cash Income

The main cash income generating activities were considered to be:

- pandanus, for table mats, mats, fine mats, bags and baskets, hand bags, hats, fans, woven flowers; pandanus was thought no to have changed much in availability or accessibility over the years.

Non-cash Activities/Products

the main activities/products that are important for subsistence, include fish, eggplant, shellfish, cocoa beans, chicken, Lan Pele (hibiscus), breadfruit, beans, bananas, mango, tomato, cabbage.

Resources from outside the CA include cash from working in Apia, and remittances from Australia, New Zealand and American Samoa.

SOCIAL MAPPING—UAFATO VILLAGE

Household and Population Survey

This is a summary of findings from the survey of individual households of Uafato. The details of membership are provided for each household. House types, services, appliances and skills are summarised for the whole village. It would be best to have a social map of the village that would show the occurrence and distribution of these.

House types

Corrugated iron roof and coral stone floor	15 houses	28%
Corrugated iron roof and concrete floor	21	39%
Thatched roof and coral stone floor	15	28%
Thatched roof and wood floor	3	5%

House numbers per household

A household is defined here as a group of persons who eat together and whose meals are prepared together from the one and same kitchen.

In Uafato, the household is usually an extended family usually headed by a Matai or family chief. It may consist of several nuclear families. Each household usually has more than house.

The average number of houses per household is 2.3

Toilets

Pour flush or Peace Corps (pit) toilets	16 households	73%
Septic tank flush toilets	5	23%
Shower and toilet in dwelling house	1	4%

Water Taps:

Households with only one tap	6
Households with 2 taps	8
Households with 3 or more taps	2
Unrecorded	7

Electricity

Every household is supplied with electricity from the national mains supply.

Appliances

TV/Video	8 households
Refrigerator	9
Deep Freezer	5
Microwave oven	1
Stereo	4
Radio	9
Electric iron	3
Electric jug	3
Electric fan	1
Electric sewing machine	2
Manual sewing machine	1
Kerosene cooker	10
LPG cooker	3

Other Equipment

Chainsaw	9 households
Motorised boat	1
Billiard table	2

Uafato Household and population count (as at 20 and 21 October, 1998)

HH #	Adult males	Adult females	School children	Children below school age	Total in household	Total on 20/11/95
1 (Pastor's)	1	1	4	2	8	
2	3	2	1	2	8	
3	6	9	1	5	21	25
4	1	1	4	-	6	
5	1	2	3	1	7	7
6	2	2	-	6	10	6
7	4	2	3	1	10	37
8	11	9	10	3	33	11
9	4	6	6	3	19	40
10	2	1	-	-	3	8
11	3	4	9	-	16	15
12	5	7	5	3	20	15
13	3	4	2	2	11	20
14	6	7	12	8	33	
15	3	1	1	-	5	
16	7	8	7	1	23	13
17	7	6	2	6	21	12
18	3	7	3	3	16	7
19	5	5	2	2	14	8
20	3	1	1	-	5	
21	5	6	2	6	19	13
22	7	5	4	1	17	26
23	3	1	5	3	12	
24	NA	NA	NA	NA	NA	
TOTAL	93	97	87	58	337	

NOTES:

1. Household 24 was not available for interview as all the members had gone to Apia Hospital for a few days.
2. The great differences in numbers of household members for some households between 1995 and 1998 could be due to incorrect identification of household heads between the two surveys. This emphasises the need to make a social map of the village where all the households are numbered on the map so that there is no confusion.
3. The total population recorded for the 23 households surveyed in 1998 was 337 while in 1995 it was 232 for 24 households.
4. The last column states the total household members for identified households as recorded by a community survey exercise conducted as part of the project preparatory activities for the Uafato CA in November, 1995.

Household Skills

The skills recorded were

- weaving - in every household
- carving - in 18 households, with a total of 43 carvers.

The 1995 survey also recorded additional skills:

Canoe making	6 households
Construction	6
Fine mats	13

Traditional Medicine practitioners were recorded from 10 households in 1995 but in only 4 households in 1998

Community Services

Uafato village had 3 shops, 2 churches, a kindergarten with 22 children and a primary school of classes 1 to 6 with 73 children. It also has a cricket pitch and a volley ball court. The village has no health clinic. There is an irregular bus service to Apia.

INSTITUTIONAL ANALYSIS.

There are a total of 12 village organisations that play either a direct or indirect a role in the management of the Uafato CA. These are as follows:

1 Village Council - FONO

Established - As old as the village itself

Purpose - Make decisions about rules, general welfare, security, safety, resource management, discipline in the community, mete out punishment, speak on behalf of the village on external matters.

Membership - 1 paramount chief who has the final say in meetings
4 other high ranking chiefs
1 chief orator
20 or more new matais or orators

Members are all males. The council has no female or youth members although youth have to be ready to serve the needs of the council during council meetings.

Assessment - Highly respected and very effective except sometimes when resources such as government funds have to be distributed. There is often disagreements amongst those who do the work. Otherwise the council maintains unity in the village.

Role in Conservation - Ban on dynamite, fish poison, bleach
Regulate shooting of flying fox and pigeons
Legislate ifilele logging
Policed by village untitled men

2 Committee of Untitled Men - AOMAGA (aged 19 years and over)

Purpose: - To serve the Village Council and implement its decisions. These men work the land, have the gardens, raise the animals, police regulations and are the fishermen.

Membership - 30 to 40 of them. 10 main ones with 4 leaders. No women and no youth although youth may be invited sometimes as observers.

Assessment - Very effective in the village. The cricket team for example in their responsibility. It has been the national champion for several years. It is responsible for all the productive activities of the village.

Role in conservation: These men are the ones who are logging the forest for carving wood. They also hunt. They are the ones who implement decisions about conservation. They meet monthly and sometimes weekly depending on the amount of activities to be done.

3 Single Women' Committee - SAOAO & MATAMAITAI (aged 20 years and over).

Purpose- keep village clean, maintain public hygiene and public health, village beautification, weaving and handicrafts, welcome guests to the village, finishing touches eg - decorate the church, entertainment etc.

Members - 20 to 30 of them who all come to the regular meetings - led by the oldest of the chiefly family.

Assessment - Most effective body in the village. Well organised.

Conservation role - grow flowers and shrubs, provide education for young children who always join in their meetings, teach children at home, produce handicrafts from pandanus, finishing of ifilele carving, shellfish fishing, healers, produce floral leis.

4 Youth committee - TUPULAGA TALAVOU (aged 9 to 18years).

Purpose: Learners by assisting and observing all other bodies.

Membership: Over 50 members

Assessment: Very important in conservation - potential to train this group in sustainable resource management, community awareness and education. Normally do not meet but only get together to service others.

5 Married women - FALETAU MATAUSI

Purpose: as wives, these are personal assistants to their husbands, including the paramount chief and other chiefs.

Membership: Wives usually come from outside their husbands' village. In Uafato however, a few of the wives come from within the village. Wives do not meet. They have no formal body in the village structure.

6 Congregational Church Women's Group - MAFATAGA'ATINA

Purpose: Does only church work. Sometimes initiate programmes for village such as clean up, hygiene, beautification, school uniforms, improvement of homes and houses.

Membership: 25 to 30 members. Led by Pastor's wife.

Assessment: very effective- always achieve goals they set.

Conservation role - same as for the single women.

7 Church Youth Group - YAUTALAVOU

Purpose: Implement church projects, maintain church projects, maintain church and pastor's house, entertain guests.

Conservation role: Assist with conservation programmes eg construction of nature trails.

Assessment: Fair performance

8 LDS Church

The LDS church does not play any role in the development programmes of the village.

Membership - 4 households belong to this church. They have one carver. The members are very supportive of the CA and attend meetings regularly.

9 Kava Growers - ULU PO'O CLUB

Purpose: Promote cultivation of kava as substitute for carving. Only in existence for 2 years - began in late 1996.

Members - Open only to those who are not carvers. There are 5 to 10 members - all males.

Activities: Help each other cultivate kava - have regular inspections and competitions.

Assessment: Very effective in achieving goal and obtaining regular income for their households.

Role in Conservation: Indirectly contribute to ifilele conservation.

10 Carving Groups

Purpose: Production groups - share trees, share tools, share skills, share patterns, social group, may also market together.

Membership: There are 13 groups of carvers. Each group has about 6 to 7 members. All males. Began in 1986/87.

Assessment: Very effective income earning group.

Role in conservation: Possible sustainable logging of ifilele and other carving trees.

11 CACC

Established in 1996.

Purpose: Manage the CA as identified by management plan and speaks for the village council as well as liaise with implementing agency.

Assessment: Very effective and ensure activities for the CA are not overly delayed.

Role in Conservation: Play a major role at community level in implementing CA activities.

Educate village council on purpose of CA. The CACC is the most important group of people in the project. They are "appointed by the village" to make plans, consult the community when they have to and make decisions on behalf of their people. At present there are no women on the Uafato CACC although there are women matais in Uafato.

12 Samoan Congregational Church

The Pastor of the Samoan Congregational Church is the Chairman of the Committee and holds a lot of power and influence over what the community will or will not do. The Pastor arrived the village in 1991 and has seen many changes for the better take place. Donations to the work of the Church for instance rose from \$3,000:00 for the year 1991, and steadily increased each year (- 1992: \$5,000:00 plus; -1993: \$8,000:00 plus; -1994 \$9,000:00 plus; -1995: \$11,000:00 plus; - 1996: \$15,000 plus; 1997: \$17,000:00 plus; 1998: expected to be more than \$20,000). The Pastor

attributes the increase in faith and the willingness of the people to contribute to the work of God as the main reason for the increase in people's contributions to the work of the Church.

MARINE FIELD SURVEY NOTES: WEDNESDAY 21 OCTOBER 1998

Two marine sites were examined at the Uafato Conservation Area. The observational survey was conducted by walking in the reef flat area and snorkelling in shallow waters (< 5m depth at low tide). A boat from the village was used to gain access to Vaoto Bay, and about 10 men and women from the village utilised this opportunity for a fishing trip.

Site 1: Vaoto Bay, between Cape Tulavaoto and Cape Utuele.

About 500 m of reef flat and reef was examined by snorkelling near the head of the bay, where the boat was able to gain access to the shore. Conditions:

- visit commenced at about 1030 and finished at about 1430 hrs
- weather was bright and sunny, with one cloudy period and a rain shower
- tide was falling and near low tide
- swell was about 0.5 metre at the reef edge.

The majority of the intertidal zone is dominated by bare volcanic pebbles, stones and boulders, indicative of the exposed high energy coastline. The reef flat area is high energy, and there are few corals. Lower zones of the intertidal reefs are encrusted with what appeared to be dense growths of coralline algae.

The reef drop-off zone has 10 to 50% coral cover, depending on specific location. About 10 genera of hard corals were observed, but were dominated by one plate-forming coral of fairly uniform size distribution. This suggested that the corals were badly damaged by the cyclones that affected this area in the early 1990's, and the corals are now in recovery. Fish species observed during a 45 min snorkel were limited to small individuals; the largest fish observed was a wrasse about 20 cm, but most fish seen were much smaller.

The collecting efforts of 7 villagers, and spear fishing by 3 villagers, in about a 3 hour period, yielded the following catch:

- about 40 fish, mixed reef species, taken mainly by spearing; and about 6 (including a stonefish) also taken by hand collection; these fish were all small, with none longer than about 25 cm.
- 1 large octopus
- 1 mature crayfish
- about 30 to 50 kgs of one species of large (up to about 15 cm, most about 8-10cm) gastropod snail (Ile?)
- small numbers (<10 of each) of large cowries, chitons, limpets and sea cucumbers.

Site 2: Uafato Bay, southern side, adjacent to village.

About 300 m of the lagoon and reef was examined by snorkelling near the eastern end of the village. Conditions:

- visit commenced at about 1600 and finished at about 1730 hrs

- weather was cloudy and fully overcast
- tide was rising but still very low; some areas of the reef were exposed to about half a metre above water level
- swell at reef was about 1 metre.

The lagoon: the lagoon comprises coral rubble and sand, with a small amount of fines, and an extensive rubble bank. Disturbance of the sand in the lagoon proper releases a cloud of silt. The eastern end of the lagoon is dominated by a substantial seagrass bed (*Halophila* sp. - with leaves about 1 cm in length). The western end of the lagoon has only occasional patches of seagrass. In the eastern end the seagrass is heavily epiphytised, possibly indicative of a nutrient source nearby. Large amounts of fresh water were observed flowing from the beach (as groundwater) into the lagoon at specific places, and this may have an effect on the seagrass distribution and supply of nutrients to the lagoon waters. It also opens the possibility that nutrients from the village may be quickly discharged to the lagoon via the groundwater. However, the flow of groundwater was substantial, and given that this was at the end of a long dry season, the groundwater flow would normally be higher, and this could mitigate against any impacts of village-derived nutrients occurring in the lagoon. Nonetheless, this warrants much more detailed study and evaluation to determine that actual risk from toilets and other waste waters discharged into the groundwater. It also means that an indicator should be monitored to keep track of the potential for impacts and changes in the lagoon.

The reef drop-off zone has substantial coral cover; large areas were observed to have 100% cover, although (as at Vaoto Bay) the composition is dominated by a single plate-forming coral (*Acropora* sp.) of mainly uniform size. Occasional small areas of uniformly dead but structurally intact coral were observed, perhaps suggesting the use of poisons for fishing. No evidence of dynamite fishing was observed, either here or in Vaoto Bay. Only small fish, and few in number, were observed, but lighting and water conditions were not good.

IFILELE TREES—NOTES ON CARVING

The ifilele tree is Samoa's most prized wood for carving, especially for the production of the kava bowl or 'tanoa'. Ifilele trunks are also used for house posts and occasionally, for the wooden floor of an important village building. Smaller traditional articles such as war-clubs, spears and walking sticks are also fashioned from branches of the tree.

A few decades back, the mountain ranges of the whole Fagaloa Bay area, which has a number of villages found along its coastline, had an abundance of ifilele trees. All villages had access to the trees which were found not only in the mountain ranges, but also in slopes closer to the settlements.

Today, only the Uafato area has substantial stands of ifilele trees. These grow in groves in the high and steep mountain ranges, mainly within the Uafato conservation area only. The rest of the Fagaloa Bay area and villages no longer have ifilele trees.

A count of two hundred or more ifilele trees was made by the people of Uafato some years back. There have also been counts made by other people. It is estimated that fifty trees per year must be grown if the village is to be able to continue harvesting into the future. It has been

proposed to establish two permanent sample plots of ifilele trees in the CA for monitoring purposes.

The main sources of income for the people of Uafato are from carving and weaving. A medium-sized tanoa can fetch up to WS\$60:00 (Sixty WSDollars) with one carver able to produce one tanoa a week. The community is therefore anxious to make sure the ifilele tree can continue to be used to bring income to their households through careful use of the forest so it does not become depleted of this prized wood.

There are approximately 40 to 50 carvers in Uafato, each belonging to a carving group (we recorded 43 resident carvers in our survey, see above). Each group contains about 7 or 8 carvers. Trees are logged using mobile chainsaws. With some households owning a chainsaw, this newly introduced method enables easy access to ifilele timber, thus posing the real threat of over-harvesting. Carvers obtain trees from their own land but for those without any dedicated land, it is a common practice for those with trees to share with those who have none. The same applies to the use of chainsaws as not everyone is able to afford a chainsaw.

Due to the extremely steep and difficult locations of the ifilele groves, a felled tree is usually cut into small manageable pieces and hand-carried by carvers back to the village.

Hands-on-training of younger men is undertaken with 'apprentices' learning skills very quickly, having been exposed and familiar with the trade all their life.

UAFATO LIVELIHOOD ANALYSIS, WEDNESDAY, 21 OCTOBER, 1998

Cash

- 1 Men: carving (locally) ifilele and other wood: and skills of/from other countries to add to their own
- 2 Women: weaving: (mats, fans, tablemats, fine mats (small: \$30:00 - \$40:00 to large \$3,000:00)
- 3 Remittances
- 4 Tourism
- 5 Crop growing including kava
- 6 Pigs

Non-cash

- 1 Garden produce
- 2 Fine-mats (for family and community customary practices
- 3 Pandanus
- 4 Local medicine
- 5 Pigeons, flying foxes (harvested for special occasions)
- 6 Ifi
- 7 Fresh drinking water

Cash/subsistence

- 1 Pigs, chickens and other similar family food which can also be sold

- 2 Fish is sometimes sold to each other in the village
- 3 Shellfish also
- 4 Fuamuli (posts) for local use and also sold to outsiders
- 5 Mats

Criteria Used

Why is something important?

Consistently reliable; gives monetary returns immediately; not have to wait for money to arrive e.g. remittances from relatives; carving and weaving give immediate monetary returns

Things that will help meet daily needs in life e.g. food, material requirements

Things that will help meet cultural and customary obligations

CIRCLES TOOL FOR RESOURCE EVALUATION

Most Important Resources

Crops: 100% from within CA, with 90% of work done by men and rest by women

Carving: 75% men; 25% women and children (polishing and finishing touches)

Women's woven goods: 90% women, 10% men

Kava: 5% work done by women (very minor role) especially weeding only

Fishing: 1/3 women; 2/3 men

Fine mats: 50/50 share of the work

Herbal medicine 50/50: very important

Drinking water: very important

Is Important

Tourism: 80% men, 20% women (mainly household related)

Fuamuli: mostly men (90%)

Lupe and feía (pigeon) all men (hunting)

Remittances

Remittances are the least important of all criteria and the community does not rely on it. Receipts of remittances are also on the decline.

GENERAL OBSERVATIONS

More people are returning to live in Uafato. Those who went away have returned. There was little indication given of importance of education for Uafato's children and young people. Secondary schooling is provided in a neighbouring village. Children stay there and return home on special occasions/holidays.

Definition of a Household

A group of people who prepare their food together but do not necessarily sleep or eat together. Each household is headed by a male matai. The community is male dominated. Little evidence of female matai in the village.

Factors for Population Increase in Uafato

Working-age population find no need to look for a job in town as money can be earned by carving and weaving, therefore tendency not to leave for Apia or elsewhere.

Those from Uafato who left to seek opportunities in town/elsewhere have returned to the village for the above reason.

Role of women as household breadwinners was stressed. Father fished in morning; wife made between WS\$200:00 to WS\$300:00 dollars per week. A 6x9 mat woven in one day earns the household that amount of money. Men helped with weaving by scraping and rolling pandanus leaves for drying in the sun. Two sons trained locally (hands-on training and skills transfer) and can make up to WS\$115:00 for two tanoa bowls.

UAFATO NOTES

Interview with Francois Martel, prior to field work.

There is only 1 village in the CA and is the only CA project, which is being implemented by an NGO group rather than a government agency.

Involvement of community people in the project is fairly intensive.

Ifilele timber is key to income generating activity for the village with 40 to 50 carvers producing ifilele tanoa (kava bowls). The ifilele tree however is under threat (an estimated 200 {rough count} remain) as Uafato is the only remaining village with groves of the tree still standing and dotted around the ridges of the area close to Uafato. All other neighbouring villages have lost their ifilele trees from over-harvesting and therefore no longer produce ifilele kava bowls. Ifilele is found in groves on ridges and beyond the ridges. Very difficult to access thus most work is done where trees are felled.

Baseline data is done but not good on ifilele estimates. A vegetation study is also done and likewise sightings. A marine study is yet to be done.

Natural resources relates to a socio-economic component of the project.

Permanent sample plots are in place and used for training of village people to learn to look after these plots and learn to measure, count, mark, monitor, etc the ifilele trees. The work is done by young people.

Work to be done in each permanent or temporary plot requires the necessary equipment, which currently SPREP does not have. It would be useful for the project to have the necessary tools.

Women: do a bit of gardening, but weaving is main occupation; this however has declined over the years due to pigs ruining and eating ilaufala (fax) plots. Now very few women produce woven goods for sale ñ an income generating activity that must be revived. Penning pigs responsibility of men but not being attended to much to annoyance of women. They also do herbal medicine using secondary forests nearby to find necessary plants.

Siosiomaga Society has made attempts in the past to increase and improve herbal medicine image. Due to steep terrain of area, medicine plants are foraged in secondary forests or cleared areas. Herbal medicine is important to the village due to difficult access to village and distance from health services.

Youth: A social Christian Youth Group of males and females.

Youth groups and primary school children will be used to help monitor some aspects of the biodiversity project. This will ensure community has a monitoring system in place to chart progress over a period of time if youth groups and schools are involved. This will also assist control over amounts to be harvested.

Increasing the awareness of community at all levels to the importance and reasons for conservation, is still the most critical factor to be attended to. It must go hand in hand with income-generating initiatives and must be done thoroughly at all stages and at all times with all groups, beginning with children through to the elders. CASOs play a large part in to ensure awareness-raising initiatives are continuously undertaken.

Eco-tourism is being considered as an alternative income-generating activity for Uafato but needs intensive promotional work as visitors numbers to Samoa is low compared to Cook Islands and Fiji. A regional eco-tourism package should be produced for all 17 CAs in the region.

VATTHE CONSERVATION AREA

VEGETATION TYPES OF THE VATTHE CONSERVATION AREA

Several descriptions exist of the vegetation of the Vatthe CA. These include those by the Forestry Department, the NZ Royal Forest and Bird Society and of Sam Chanel. None of them covers the whole vegetation of the area. Briefly the vegetation types are as follows:

Managed Vegetation.

This includes gardens, coconut plantations, roads and village settlement areas. The total area of this land is not known. However, villagers have agreed to limit the forest area they will clear for gardens. Many of them have garden areas outside of the CA. The usual cycle of land use in Santo is to clear the virgin forest for gardens, which are then replaced by coconut plantation. Cattle is then grazed under coconut plantation. This does not allow a rotation cycle for gardens but requires clearing of new land each time a new garden is established. The same practice has been followed in the Vatthe CA. The presence of cattle has brought with it several persistent and aggressive weeds such as *Sida spp.*, *Stachytarpheta spp.*, *Eleusine indica* and *Mikania micrantha*. It would be useful to monitor not only the changes in garden and coconut areas, but also the extent of invasion of aggressive weed species.

Disturbed Vegetation

Grasslands

A significant proportion of the CA is covered in grasslands which provide pastures for the population of wild cattle in the area. This grass land is both in the lowland river flats as well as on the highland plateau. The latter appears to be more heavily grazed and therefore allow little regrowth of trees. It has stands of secondary bush trees such as *Hibiscus tiliaceus*, and a range of weeds including the poisonous ----. The lowland grasslands appear less grazed and therefore has more growth of young tree seedlings including those of *Terminalia spp.*, *Syzygium spp.*, *Psidium guajava* and *Spondias dulcis*. Heavy trampling and grazing of wild cattle will continue to maintain the grasslands by making conditions unfavourable for any shrub or tree regrowth. It will be useful to monitor the changes in overall area of grasslands as well as note major changes in species of weeds and shrubs/ trees associated with them.

Previously Logged and Cleared Coastal Forest

An area of the CA closer to the Jordan river and along the coast had been logged mostly of *Intsia bijuga*, and had been cleared by previous expatriate settlers. This area is now covered in low forest with a mix of climax (*Burckella obovata*, *Dendrocnide harveyi*), littoral (*Callophyllum inophyllum*, *Barringtonia asiatica*) and secondary forest (*Hibiscus tiliaceus*, *Macaranga spp.*) species. This area is also frequently used by the villagers as they go fishing and hunting along the coast or walk to Jordan river to fish. The total area covered by this kind of vegetation is unknown and probably only restricted to the coastal strip from the village to the Jordan river. How important its role is in

providing shelter for young crabs, breeding turtles, and young coconut crabs is not known. Monitoring of gross changes to this vegetation type would be useful.

Climax Vegetation

A large part of the Vatthe CA is covered with what is officially classified as mid height forest. This in Vatthe may be differentiated into several subtypes depending on the location and the dominant tree associations as follows:

Ridge Vegetation

This is reported (P. Curry) to be a species rich vegetation covering the ridge that surrounds the CA. A brief walk through the coastal end showed it to be of a single storey of trees with a few emergents - largely *Catanospermum australe* and *Intsia bijuga*. The canopy is relatively closed with the undergrowth composed largely of small shrubs (eg *Psychotria* spp.) and tree seedlings. The canopy is formed by low trees such as *Myristica fatua* and *Dysoxylum gaudichaudianum*. This ridge vegetation growing on rough uplifted coral rocks, provides shelter for adult land and coconut crabs. Although the top of the ridge itself may be cropped, the slopes are too steep and the terrain too rough for any kind of cultivation. It would be useful to monitor natural changes to this ridge vegetation.

Swamp Vegetation

There are several patches of the river flat covered with water-loving vegetation. A large area close to the village is almost comprised almost entirely of *Inocarpus fagifer* and *Barringtonia* spp. Other areas are covered with *Barringtonia procera*, *Hibiscus tiliaceus* and other swamp weeds. Just at the edges of the swamplands the forest is dominated by *Kleinhovia hospitata* and *Castanospermum australe*. The swamp area is useful as a source edible fruits of *Inocarpus* and *Barringtonia*. Total area of the swamp forest needs to be monitored as it can also be an indicator of water availability to the whole valley forest.

Riverine Forest Vegetation.

This area has been logged twice before. Although still left with much of it relatively intact it does show obvious signs of both past and current disturbance. Dominant tree species include *Castanospermum australe*, *Dracontomelon vitiensis*, *Antiaris toxicana*, *Intsia bijuga*, *Garuga floribunda* and *Kleinhovia hospitata*. Other minor trees that form a lower storey include *Adenanthera pavonina*, *Myristica fatua*, *Dysoxylum* spp. and *Dendrocnide* spp. Where cattle and roads cross the forest, the vegetation of the clearings is dominated by grass species, weedy climbers such as *Mikania micrantha*, and native shrubs including *Cordiaem* spp., *Ixora* spp., and *Micromelum minutum*.

This forest area is probably the most used by the village of Matantas. It is where the wild pigs, cattle, pigeons, flying foxes, and incubator bird eggs are mostly hunted and harvested. It is where the timber for housing and other construction is collected from and it is also where much of the edible fruits such as *Canarium*, *Barringtonia*, *Syzygium*, and *Burckella* are to be found. This forest also contains much of the medicinal plant species used by healers in the village. Close to the main road the young seedlings in the undergrowth of this forest type are being attacked by the giant African snail. It will be important to monitor closely not only the harvest of trees for construction from this area, but also the changes in its overall biodiversity.

Riverbed Vegetation

The Jordan river is a braided river with a wide bed the dry areas of which are covered in low vegetation. On the river sides however, tall trees of *Casuarina equisetifolia* dominate. This tree is regularly cut for house construction and tools for the village. It will be useful to monitor the vegetation changes along with other changes in the river system.

MATANTAS VILLAGE

Health Status of Matantas (With Chief Moses)

Almost all illnesses can be cured by traditional medicine. Chief Moses has wide knowledge and skills learnt from elders in the use of forest resources for medicinal purposes. He continues to provide alternative cures which cannot be provided by the health clinic.

The level of forest resources has declined drastically to what it used to be, but continues to provide an adequate level of supply for people's health needs. Younger people are being taught to respect proper use of resources. The Chief has tried very hard to teach some of the young men the skills and knowledge of traditional cures and what can be obtained from the wealth of the forest. One young married man (Ken) has shown interest and is currently the only student of Chief Moses.

Everyone in the community uses traditional medicine. Since the establishment of the Lodge two years ago, there is an even greater sense of urgency for the level of forest and other resources to remain intact, for medicinal as well as for other purposes, e.g. house construction timber.

In the past, up to 5 persons per month would seek the Chief's medical help. Today, only 2 or 3 persons per month visit. No records are kept of diagnosed cases and cures used, but this is now being considered. For 1998, the Chief predicts he would have dealt with 20 cases by the end of the year.

The Chief is able to diagnose unknown illnesses with the help of traditional spirits. Once an illness is identified, he prepares and dispenses the required brew and if the case is complex and complicated, he will prepare a new brew every day until the illness is cured. Sometimes complicated cases take longer and will require more than one type of medicine over perhaps a two to three-week period before being cured.

Other creatures also depend on the resources of the forest for sustenance. The forest is for all creatures to use. It is therefore important that careful and proper use of those resources be practiced for the sake of future generations.

Chief Moses is committed to making sure the message is well understood and practiced by the whole community. He will ensure people today do not abuse and misuse the resources within and outside of the conservation area. He uses his traditional role as Chief of the village to influence and wield community discipline and control over use of forest resources for all purposes.

The practice of tambu is used to prevent over-harvest and misuse/abuse of resources. Such is the current tambu on pigeons and flying foxes. This traditional method of conservation is practiced

and adhered to by the whole community. Unfortunately, outside influences sometimes try to interfere and undermine these community disciplinary measures.

The following illnesses can be cured with medicine provided by Chief Moses:

Malaria	Headache	Toothache
Ear-ache	Stomach disorders	Heart problems
Diarrhea	Dengue fever	TB
High blood pressure	Heart ailments	Anemia
Culture (sore limbs, the shakes?)	Barren	Eye problems (poor sight)
Liver problems	Swollen joints/limbs etc	Heart problems
Leprosy	Vomiting	Mental/psychological cases
Dizzy spells, fainting, etc	Surgery problems (healing stage)	

The Chief sees no conflict between the health clinic services and traditional practices. He is happy that the community has an alternative service available. Despite availability of the new alternative service however people are still inclined to seek his advice and cures if the clinic is not able to help.

Health Aid Centre (Nickson, nephew of Chief Moses)

The personnel is a volunteer selected by Chief Moses two years ago to be responsible for the centre. He has had one training course when first recruited and feels the urgent need for another. Although he has been promised further training in Port Vila, he is still waiting.

The role of the Health Aid personnel is to dispense basic medical supplies such as malaria pills and tablets for headaches, diarrhea and to attend to superficial skin diseases such as sores. Replenishments of medical supplies are ordered through the Sanma Province Health Office in Luganville once a monthly. Overall responsibility of all Health Aid clinics throughout Vanuatu rests with the Department of Health, Port Vila. No records are kept in the Matantas clinic of medicine dispensed or illness treated.. The personnel has requested for a book to record his work. He expects to get one soon. Lack of relevant information makes it difficult to have a true indication of the real health status of the community.

Children today are taken to the clinic first then to the Chief should the parents feel inclined to do so. The District Nurse, based in Malao (a three-hour walk or one hour by car from Matantas) visits the clinic once a month to attend to maternal care and child welfare. Records of such visits are made by the Nurse and kept in Malao.

Although community people continue to use the clinic, the personnel finds that the number attending during this, the second year of the clinic, is on the decline. He attributes this to the healthy status of the community as well as the availability of traditional medicine. Chief Moses

did state that since the establishment of the clinic, people tend to go to the clinic first but still resort to traditional medicine without exception.

Malaria and paracetamol/panadol tablets are the most sought after of the clinic's medical supplies.

Resources Analysis - Matantas Village

(from Chief Solomon)

RESOURCES	IMPORTANCE TO VILLAGE(*)	CONDITION (*)	TREND (**)
CASH RESOURCES			
fish	2	2	D
coconut	1	1	I
coconut crab	3	3	D
chickens	3	2	NC
cattle	3	3	D
ginger	3	1	I
citrus	3	1	I
calophyllum seeds	3	3	NC
LAND RESOURCES			
Namatal - matchstick tree	1	1	NC
bamboo	1	2	I
wild nuts and fruits	1	1	NC
Naneri	1	2	D
Tora	1	2	D
Namalous	1	2	D
black bean	1	1	NC
wild cane	1	1	I
Tangana palm tree thatch	1	3	D
Coconut	1	1	I
firewood	1	1	I
Pandanus	2	3	NC
gardens-banana, manioc, taro, corn, taro-viti, yam	1	2	I
flying fox	3	1	I
pidgeon	1	1	I
Nataroa	1	1	D
big grin pidgeon	1	2	NC
smol	2	2	NC
Namalau	1	2	D
wild jungle fowls	1	1	I
short leg	3	1	I
long tail	3	3	NC
wild duck	2	1	I
parrot	3	1	NC
nasiko	3	1	NC
AQUATIC -RIVER			
black mullet	1	1	NC

white mullet	1	1	NC
bonefish	1	1	NC
pae pae (pike)	1	3	D
big eye (Latalata)	1	2	NC
eel	3	3	D
prawns	3	3	D
red fish	1	2	NC
black spot - pehuru	1	2	D
mud fish	2	2	NC
Natoro	1	2	NC
AQUATIC - MARINE			
poulet fish	1	2	NC
snapper	1	2	NC
karrong	1	1	NC
sword fish	1	2	I
total	2	3	D
mullet	1	2	NC
parrot fish	1	2	D
trochus	2	3	D
clams	2	2	NC
shark	3	1	NC
stingaree	3	3	NC

* 1 = highest importance, best condition; 3 = lowest importance, worst condition (condition judged on abundance and availability).

** I = increasing over the years, D = decreasing over the years, NC = much the same level over the years.

Resource and Livelihood Analyses with Matantas Women

Cash Resources	rank & trend	Livlhd rank & trend	Land Resources	rank & trend	Livlhd rank & trend	Marine & River Resources	rank & trend	Livlhd rank & trend
Cash only			Building & weapons			Marine		
Copra	1 U	1 U	Natora	3 D m	1	Turtle eggs	3 D	1
Fish	3 D	1 U	Naneri	1 U s	1	Lobster		
Bullock	2 D s	1 U	Navilai	1 U	1	Fish (poulet, karong, snapper)	1	1
Ginger	2 U s	1 D s	Namantal	1 U s	1	Trochus	3 D	1
Cocoa	2 U s	1 D s	Navenu	1 U s	1	Nakato	1 U	3
Kava	1 U	1 U	Oktri	1 U s	1	Land crab	2 D	3
Wages & Allowances		2 U s	Nabamga Melektri	1 U s 1 U s	1 1	Octopus Seaweed	1 U 3 D	3 3
Tourists		1 U s	Pamtri	1 U s	1	Nasise	1 U	2
Truck (1 only)		1 =	Narara	3 D m	1	River		
Boats (3 only)		1 U s	Nameu	3 D	1	Prawns	2 =	1

Cash & Subsistence			Asmaruru Navola	1 U 1 U	1 1	River and sea eels	1 U	3
Peanuts	2 U s	1	Namure	1 D	1	River mullet	3 D	1
Coconut crab	3 D m	1	Nangalati	1 U	1	River shellfish	1 U	3
Chicken/fowl	1 U	1	Namiri	3 D	1			
Island cabbage	1 U	1	Fruit Trees					
Beans	2 U	1	Naus	1 U	1			
Pandanus baskets	2 U s	1	Nakavika Namambe	1 U 1 U	1 1			
Shells	1 U	1	Nankae	1 U	1			
Kumara	2 U s	1	Navele	1 U	1			
Mullet	3 D	1	Nakatambol	1 U	1			
Pawpaw	1 U	1	Breadfruit	1 U	1			
Pineapple	1 U	1	Mango	1 U	1			
Tomato	2 =	1	Korasol	3 =	2			
Banana	1 U	1	Garden					
Island Taro	1 U	1	Yam					
Corn	1 U	1	Wild Life					
Citrus fruits	1 U	1	Pig	1 U m	3			
Salad veges.	3 U s	2	Pigeon	2 U s	1			
Water melon	3 U	1	Flying fox	1 U m	2			
			Duck	2 U s	1			
			Scrub duck	2 U s	1			

Key to symbols: U = increased in recent years

s = small change

D = decrease in recent years

m = much change

CRITERIA FOR RANKING

Resources: Quantity and Accessibility

Livelihood: Number of families involved

Seasonal Calendar For Matantas

(put together with the womem)

1	2	3	4	5	6	7
Flowering of Narara & Naqilaqila	Flowering of Naqilaqila & Narara	Flowering of Kinori	Navele changes leaf. Close to Xmas/ New Year	Flowering of Namariu	Yam vine dies	Flowering of mahoto "grass"
Time to clear bush and prepare ground for yam garden	Time to plant yam - also kumala, island cabbage etc.	Time for weeding garden, cleaning village. Good fishing time.	Time for a short rest	Work for cash for school fees. Cut copra, fishing	Time to harvest yam and kumala. Good fishing	Yam ceremonies- family feasts to celebrate yam harvest
Busy time	Busy time	Busy time	Not so busy	Busy time	Not as busy	Not so busy
Men, women, youth	Men, women, youth	Men, women, youth - sports competitions	Men, women, youth	men, women, youth	All	All
Lots of mosquitoes Navele fruit	Lots of mosquitoes Fruits: Nangai, Nakavika, Navele	Fruits: Namambe	Fruits: Mango, Nadao, Nakatambol, Naus	Fruits: Orange, Breadfruit, Nakatambol	Fruits: Nakatambol	
July/ August	Sept/ Oct	Nov / Dec	December	Jan/ Feb	March/April	May/ June

Social Mapping And Demogrophy Of Matantas

From interviewing a young man and a young woman resident of the village.

Housing

A total of 24 households live in Matantas. All have at least 2 units of housing - one being for cooking and one for sleeping. 20 houses are thatched with bamboo walls, while 4 have iron roofing 2 of which have timber walls.

Communications

The village has 1 community truck, 4 canoes, 3 boats, and 5 outboard motor engines that are working. It has a radio telephone that is used by several other nearby villages too. People walk to interior villages, go by boat to coastal villages up the bay, and by road to Sara etc.

Population

A total population of 127 reside in the village while 30 mainly live in interior villages (bush) and keep homes in Matantas. Only one person lives in Luganville, while one household resides in Vila and keeps a holiday home in the village. This last household is not counted in the village survey.

Household #	Adult males	Adult females	School children	Children below school age	Members in bush /out	Total
1	2	2	1	3	2	10
2	1	1	5	-	1	8
3	4	4	-	2	-	10
4	1	1	1	-	6	9
5	1	-	-	-	-	1
6	1	1	-	-	-	2
7	2	3	4	1	7	17
8	1	1	1	-	-	3
9	1	1	-	2	-	4
10	1	1	-	1	-	3
11	1	1	3	1	-	6
12	2	1	-	1	-	4
13	2	2	-	2	1	7
14	1	1	1	1	-	4
15	1	1	1	-	-	3
16	1	1	3	1	6 all in bush	6
17	1	2	2	-	5 all in bush	5
18	1	1	2	-	-	4
19	1	1	5	-	-	7
20	1	1	4	1	-	7
21	1	2	6	-	-	9
22	1	4	1	-	-	6
23	1	4	3	-	-	8
24	6	3	1	2	3	15
TOTAL S	36	40	44	18	31	158**

** Total population is 158. The totals across is 169 because it includes those 11 persons in 2 households (16 & 17) who are all in the bush.

Institutional Analysis

(From interview with Chief Solomon)

The village is dominated by the 2 religious organisations - SDA and Bahai. Outside of the religious organisations, the chief is paramount and does not have an advisory committee to share

decision-making with. There are no customary organisations. Custom is weak due to abolition of such by the SDA church.

SDA Organisations

SDA Committee - 5 men and 2 women

Responsible for church maintenance, services, and other duties of the church. There is no Pastor. This committee does not work well. People do not turn up to meetings, and activities are not attended to.

Dorcas Society - Women's SDA organisations.

Worked well only for one year. Broke up in 1997 due to internal conflict.

Bahai Faith Organisations

The Bahai group is run by a Local Spiritual Assembly of nine members made up of men and women. They are organised according to the teachings of their faith. They have committees for the school, environment, social and economic welfare and others. Everyone commented on their good organisations and strong unity.

Joint Youth Group

A joint Bahai/ SDA youth group was established in August 1998. Almost all youth of the village have joined. They organise sports activities, and labouring gangs to earn cash for the group. This is currently only for young men.

Joint Bahai/SDA Community Truck Committee

This has been going 2 years and is working well. They pay the driver a commission.

Joint Matantas/ Sara Committee - Conservation Management Committee

This has 3 men and 3 women each from Matantas and from Sara. Chief Solomon chairs the joint committee. He and Pastor Joseph are the liaison persons for the 2 villages. Sara women now no longer attend the meetings because of custom. Attendance of other members is not always regular but scheduled meetings go ahead any way. (There appear to be 2 youth representatives also in this group but I could not confirm from Chief Solomon as our interview was interrupted.)

Interview With Matantas Teachers

Roy Kalorip - Headmaster of Primary School;
Steve Bihu - Preschool teacher

The school has a total of 28 children aged from 4 to 12 years
Preschool has 14 children from 4 to 6 years of age
Primary school has 14 children from 6 to 12 years of age. Primary school currently has only classes 1 and 2. The plan is to build it up gradually to class 6.

The teachers are volunteer Bahai youth committed to stay on for at least another 5 years in order to complete the establishment of the school as a full primary school with the complete complement of classes 1 to 6.

They follow the government curriculum which includes nature studies. Given appropriate teaching materials and teacher training they will be willing to have the school involved in monitoring,. They asked for Charles, or Russell to give the school a talk in order to raise the children's awareness and understanding of the CA and of environment issues in general. They will be delighted to have Wan Smol Bag Theatre perform in their school. They had already organised the youth group to prepare a plot for alley cropping demonstration as part of their course in Agriculture. It seems that they are involved in the discussions with Chief Moses (himself a Bahai) for the establishment of a Rural Training Centre in Matantas.

The two teachers made the comment that SDA parents are very difficult to get to support school activities and come to meetings.

SARA VILLAGE

Livelihood Analysis (from women)

<i>Cash Only</i>		<i>Cash & Subsistence</i>		<i>Subsistence Only</i>
Timber	R - 1	Kumala	R - 1	Nataqora
Bus (1 only)		Yam	R - 1	Bamboo
Trucks (7 only)		Coconut Crab		Namamao
Copra	R - 1	Peanut & Pineapple		Navene
Ginger		Taro & Maniok		Firewood
Kava		Bullock	R - 1	Laplap stone - from CA
Cocoa		Pig		Nakavika
Wages		Fowl		Nakatambol
		Garden Vegetables		
		Wild fruits		WATER - from CA
		Orange		
		Corn, Water melon,		
		Pumpkin		
		Breadfruit		
		Bananas & Pawpaw		

Notes:

a) R - 1 = rating of 1. These are very important cash sources for most families. They are: Yam, Kumala (Mostly involving women's labour)
Bullock, Timber, Copra (Mostly involving men)

b) CA = Resources from the Conservation Area. These are:

Stones from the Jordan River for cooking Laplap

Water from Matantas River during the dry season

Importance Of CA?

1. To save forest and allow the wild life population of the Matantas area to recover. In the early 1970's the place used to be so full of pigeons, fowls, nawimba, crabs, megapodes, fish etc. Since human settlement, wild life has dwindled considerably.
2. Conserve Tabu place called Takara on top of the hill.
3. Wild pigs have done damage to forest, for example, wild yams have almost disappeared completely.

CAMC Membership

4 men and 3 women from Sara are on the CAMC. The women attended at first then dropped out due to custom restrictions.

The women are relatively unaware of the CA and would appreciate an organised tour of it.

Livelihood Analysis; Mens Group

Resources used for the livelihood of Sara village

Cash and or Pig value	Both Cash and Subsistence uses	Subsistence uses
pig	wild pig	Rattan
fowl	bamboo	
bullock	Namamau post	
logs	Natangura	
Kumala	firewood	
Yam	leaf - lap lap	
Taro		
banana		
corn		
nuts		
coconut crab		
land crab		
Nawimba		
flying fox		
fish		
Naura		
land		
Kava		
ginger		
fruits		
employment		

Resources used from the Vatthe Conservation Area: Mens group

Resource	Location	Proportion(*) of total use extracted from CA	Importance Rank for the village(**)	Condition (***) of the resource	Trend over time
Flying fox	Taem Narara (flowering tree around the whitegrass area)	2	3	2	increasing
Nawimba (pidgeon)	whole CA	2	1	2	increasing
coconut crab	Vatthe site, north side of village	1	2	2	increasing
pig	whole area	2	1	1	increasing
bullock	whole area	2	1	2	decreasing
fish (reef)	near Matantas village	1	1	1	increasing
Nelson-counterpart CASO		1	1	1	

* 1 = almost all extracted from the CA;
 2 = a medium amount extracted from the CA;
 3 = a small amount extracted from the CA.

** 1 = most important
 2 = medium importance
 3 = least importance

*** 1 = best condition
 2 = medium condition
 3 = bad condition

Places of cultural or historical importance

Sara Mens group

Place name	Description	Spiritual or historical significance
Takar	hill	SI
Vatthe	eye of the sea	HI
Methegalver	place belong Satan	SI
Galver	white Satan (Jordan River)	SI
Lorepo	grassland	SI
Niethkele	cliff face	SI
Novupes	Satan's dog hole (cliff face)	SI
Londrum	Old village site	HI
Nethalgo	Old coconut tree	HI
Virunga	River hole (east of Melan)	HI

MATANTAS AND TOURISM

The focus of income-generating activity for the community as intended by the project. Eco-tourism while a viable income-earning incentive for the people, a deeper sense and greater understanding of the value of the biodiversity of the natural resources of the CA has yet to be instilled in every community member. In the long-term, focus on improving physical amenities and tourist attraction sites/sights for tourists, could distract from the purpose of the CA, i.e. the sustainable use of the natural resources.

MATANTAS LIVELIHOOD ANALYSIS (SUNDAY, 1 NOV, 1998)

Resources that are important to the community are:

Cash

Eco-tourism: forest walks

Boats (some of the households)

Community truck

Fish (river mullet) and ocean catches are sold in Luganville practically every day.

Fresh-water mullet was once in abundance, but now declining due to over-harvesting. Firm control is needed. Deep sea fishing is mainly for sale in Luganville. With boats and outboard motors and with more fishermen using long-line fishing, there is a definite decline in deep-sea catches.

There were few producers of copra before, but has increased and likely to continue to do so in importance as a cash crop. Price has fluctuated between a high of VT2000 to a low of VT600. Ginger was introduced to the area in mid 1997. Only three (3) households grew the plant at first. Today, all households grow ginger for sale.

Few households plant peanuts due to rats ruining crops, It is regarded as an important crop for household use and for cash.

Since the establishment of Lodge, kumaras, bananas, taro, yam are also sold to the Lodge.

Littler bit of weaving done for sale to tourists. Inconsistent level of production due to low and unpredictable number of tourists who arrive the village

Non-cash

Garden produce: ginger, island cabbage, tomatoes, cucumber, onions, corn and beans are grown for household . Today a little bit is sold to the Lodge as required for tourists; the Manager of the Lodge tries to roster all households for buying of vegetables.

Root crops: yam, taro, kumara, manioc, kava

Medicinal plants

Trees: namure, nangalat, naus, asmaruru, navola (rope), natora (ifilele), naneri, navilai, namatel, navenu, oktri, nakavika (fruit), namambe, nangai, navele, nakatombol, nabanga, melek tri, palm tri, bamboo,

Pigeons, flying foxes are currently under tambu therefore cannot be touched although some have tried to ignore rules.

Fowls are for household consumption and also sold to the Lodge

Ducks and scrub ducks also.

Fish (sea and fresh-water fish from River Jordan) found in significant amounts

Coconut crabs, land crabs and shellfish found but not consumed as much,

Nuts (a significant variety found), peanuts,

Fruits: watermelon, pineapple, citrus, pawpaw, mango, karasol, soursop all important to households,

Cocoa, breadfruit, banana also used by households

Bullock and pigs in abundance but very little consumed by households.

Firewood and stones (for cooking)

Community water tanks for quality drinking water for all households.

Cash/Subsistence

Bullock meat is sometimes sold to the Lodge.

Fish is sold in Luganville and also to the Lodge; used by all households

Sometimes fruits, root crops and garden produce sold to the Lodge

Forest plants etc are for local medicine use mainly

Criteria

Why is something important?

Anything that will help meet the daily needs of people's lives e.g. food, water, material requirements.

Things that will help meet cultural and customary obligations of communities

Circles Tool for Resources Evaluation

Very important

Crops for home consumption: 100% from within CA; work done by both men and women

Fishing: deep sea, done by men only; for household use and cash (sold in Luganville and today to Lodge also)

Herbal medicine: very important; utilised by Chief Moses for anyone in the community needing his services. He is teaching only one other adult male as rest of male youth population not interested to learn.

Tourism; variety of tasks are carried out by men and women and whole package will take some time to properly gel as tourism

Good drinking water is lacking. Community in critical need of easily accessible drinking water. Four (4) water tanks already built and underground source already exists, now a matter of find way to reticulate to each household.

Forest resources will always be important but must be carefully and properly used.

Forestry resources uses: house construction (trees), medicine (plants and certain trees), dye (bark), 'traditional clothes' (bark), homes for other creatures, birds, wild pigs and fowls.

Is important

Bullock is not considered a very important source of food.

Little weaving done by women (for tourists mainly). Young girls are not learning as much as they should.

Sports: young men only: soccer and volley-ball

Not so important

Eels, coconut crabs, hermit crabs, lobsters, octopus, sea-weeds, freshwater shellfish are not important food items to the community nor are they sold.

Pigs are also not an important food for the community due to religious belief. SDAs followers do not eat pigs, coconut crabs, eel meat or beef.

General observations

Some older members of the community are of the opinion that young people are not keen to learn as much as they should about their natural environment and the uses of these. Changes have begun to take place and will continue to do so. This has seen the decline of some resources within the CA and surrounding areas.

According to Chief Moses and Ana (from Sara, daughter of the previous Matantas Chief before Chief Moses), there is a huge difference with what is available today on land, in the sea and fresh water sources. When they were children there was an abundance and a greater variety of resources. They were both adamant that much of the more dramatic changes have been in the last decade or two.

The women of Matantas (and Ana of Sara village) state that there is an indication of improvement and increase in the land resources of the community in the last few years. Whether the trend continues upwards remains to be seen.

KOROYANITU CONSERVATION AREA

VEGETATION TYPES AROUND ABACA

No description is available of the vegetation types of the Core Conservation Area of Koroyanitu, although broad categorisations have been made of the so called buffer zone (by the NLTB). These categories are: Dense Forest; Medium Forest; Scattered Forest; Scrub; Reeds or Grass; Pine Plantation; and Sugar Cane. Dr. R. Thaman categorises broad vegetation types for the whole area as including; montane and dense tropical submontane forest, stunted cloud and ridge forest, open secondary forest, degraded talasiga grassland, scrublands and fernlands, plantation forest and shifting cultivation areas.

Vegetation observed around Abaca by this consultancy team is a mosaic of forest stands, scrublands, abandoned garden areas, grasslands, gardens and plantations. A brief description of each of these follows.

Managed lands

These include areas of gardens, pastures and of pine plantations. Much of the land of Abaca village is the water catchment not only for the river systems of the Lautoka/Ba areas but also for the urban water supplies of the two townships. Therefore there is general and public interest in the way the people of Abaca manage their lands. Not only the land use practices but also the location and extent of those practices are important.

Crop Gardens

Gardens are maintained with the traditional shifting cultivation method. Much of the crop gardens are on hill slopes with no effective measures to prevent erosion of soil from bare ground surfaces. Each new garden clearing is burned before it is tilled and planted. While fire kills most of the pests and weeds it usually causes much more extensive damage when it continues uncontrolled as sometimes happen in this dry leeward side of Fiji. During the team's visit a substantial portion of the land had been burnt from garden fires that went out of control. Lack of proper contouring of some gardens on hill slopes also show signs of degraded soils. Total area of garden lands and their location will be useful to monitor.

Pine plantations

A plantation of pine (*Pinus carribea*) close to the village had already been harvested and shows some natural regrowth with seedlings. Further away from the village a larger pine plantation under land leased to the Fiji Pine Commission is being harvested. Forest fires have been common in pine plantations, and had affected some of this stand. Total area of pine plantation and location of pine regrowth would be of interest to monitor to see how well the introduced pine tree regenerates compared to native trees.

Pastures

The village has community pastures close to the Core Conservation Area. People graze cattle and goats in these pastures. Goats and cattle fetch good money and this activity may expand much

more in future. It would be useful to monitor the location, management and area of pasture lands, particularly with respect to its effect on the river system.

Disturbed vegetation

Abandoned gardens

Close to the village abandoned garden areas are covered in grass and low weeds including *Sida* spp. *Hyptis pectinata*, *Stachytapheta urticaefolia* and dominated by standing fruit trees such as citrus, bananas, and malay apple (*Syzygium malaccense*), as well as shrubs such as yaqoyaqona (*Piper aduncum*). Such a mix of weed growth appear to occur in more moist areas close to or within the Core Conservation Area. Abandoned gardens in drier areas are usually dominated by grass.

Grasslands

Extensive areas are covered with dry grasslands dominated by the tall mission grass (*Pennisetum polystachyon*). Fijians in the Western side of Fiji claim that the widespread occurrence of mission grass usually indicates very low soil fertility. Such areas will give poor yields even of cassava, the crop that tolerates poor soils. Areas where, reeds (*Miscanthus floridulus*), dominate however, have higher fertility and will provide better yields when cropped. Close to the village, the Core Conservation Area includes some grassland covered with mission grass. Since, the area has been set aside clearing and burning has ceased, small stands of reeds, secondary shrubs and low trees have begun to establish themselves. The trees include, *Decaspermum vitiense*, *Mussaenda raiateensis*, *Cerbera manghas*, and *Psidium guajava*. It will be useful to monitor the occurrence and extent of reed growth in the grassland area as an indicator of changes in soil conditions.

Climax Vegetation

A variety of natural climax vegetation occurs around Abaca associated with different land forms and elevations. The main ones noted are as follows:

Sub montane.

This was not visited but only observed from afar. Therefore it cannot be described here.

Riverine

This includes vegetation growing on dry patches within the river bed, by the banks of the river and on steep cliff sides delimiting the river in deep gorges. Ferns including the edible *Athyrium esculentum*, low herbs such as *Impatiens* spp., small shrubs such as *Ixora* spp. and *Acalypha* spp. grow on the banks and lower valley slopes bordering the river. Trees found along the river banks include *Bischofia javanica*, and *Metrosideros collina*. Close monitoring of this vegetation is necessary to warn of changes in the conditions of the river system.

Valley Forest.

This is dense forest found along the valleys on the foothills of the high cliffs that rise up to the peaks of the Koroyanitu mountain range. Some of this kind of forest is found around the lodge at Abaca. It is a two storey canopy forest with emergent trees of *Agathis vitiensis*, *Pterocymbium oceanicum* and the palm *Veitchia joannis*. The main canopy trees include *Macaranga graeffeana*,

Dysoxylum forsteri, *Trichospermum richii*, *Elaeocarpus spp.* *Syzygium malacense* and *Dendrocnide harveyi*. The lower tree storey include small trees such as *Vavaea amicorum*, *Hibiscus tiliaceus*, *Melicope spp.* and tree ferns such as *Cyathea spp.* The ground cover includes the edible fern, *Tectaria spp.*

Cliff Vegetation.

On the steep cliff sides a special kind of vegetation has established itself. This comprises low shrubs ferns and grass including stunted clumps of the reed, *Miscanthus floridulus*. The team did not have an opportunity to examine this particular vegetation type. It would be useful however to survey it and to monitor changes particularly associated with climatic changes.

ABACA VILLAGE—RESOURCE AND LIVELIHOOD ANALYSIS WITH WOMEN

Abaca village: main resources and livelihood sources; womens group

For Cash Only	Priority rating	gender	For Cash and Subsistence	Priority rating	gender	For Subsistence Only	Priority rating	gender
tourism services	1	m/f	cassava	1	m/f	Freshwater prawns, shrimps	np	f
wages - eg mining exploration	np	m	kumala	1	m/f	Eels	3	m
lease for water catchment	np	m/f	wild yam	1	m/f	Wild pigs	3	m
handicraft and sulu sale to tourists	1	f	taro (Colocasia)	1	m/f	chicken	np	m/f
			taro (Xanthosoma)	1	m/f	cultivated yam	np	m/f
			taro leaves (Colocasia)	1	m/f	edible forest fungi	np	
			water cress	np	f	edible forest fern	np	
			malay apple	np		Mahogany timber	np	m
			citrus	np		<i>Intsia bijuga</i> timber	3	m
			wild ginger	np		reed	np	m
			kava	2	m	bamboo	1	m
			bele	np		wild creepers		
			edible wild fern	np	f	<i>Entada phaseoloides</i>	1	m
			banana	1	m/f	<i>Freycinetia spp.</i>	3	m
			breadfruit	np	m/f			
			goat	np	m			
			cattle	np	m			

Notes:

1. np = not a priority
2. m = males mostly involved
3. f = females mostly involved
4. m/f = both males and females involved
5. Priority rating is based on the criteria of quantity and accessibility. Score of 1 is highest and 3 is lowest.

Resources from the Core Conservation Area showing priority rating and trends

Resource	Rating	Trend	Resource	Rating	Trend
kava	1	increased	taro	2	unchanged
taro - Xanthosoma	2	decreased	wild yam	2	increased a lot
taro leaves	2	decreased a lot	water cress	2	decreased a little
malay apple	2	increased a lot	citrus	2	increased a lot
goats	2	increased	cattle	2	increased
bananas	2	increased a lot	breadfruit	3	unchanged
bele - <i>Abelmoschus</i>	3	unchanged	tokoi	1	increased
eels	2	unchanged	wild pigs	2	increased
edible fungi	1	increased	forest fern	2	increased
tourism services	1	increased	<i>Freycinetia</i>	1	increased

Notes:

1. Priority rating here is an assessment of the importance of the Core Conservation Area as the source of the resource. A score of 1 is very important, 2 is important and 3 is not so important. All those with priority 1 are largely if not solely from the Core Conservation Area.
2. Trends indicate quantity and availability over recent years. In many cases the time period is very short covering only the last year. This is so for example for wild yams and fruits which were claimed to have increased substantially due to the long sunny days associated with the drought period.
3. Other values of the Conservation Area in general are associated with sites of cultural importance including: Old village sites, Old burial sites, Abandoned taro terraces, and Old Cannibal pool on the plateau.

HOUSEHOLD SURVEY AND DEMOGRAPHY

The details of the population of each of the 13 households of Abaca are summarised in the Table below. A summary of the household and community social data collected is as follows:

Housing

Iron roof and wood walls	7 houses
Iron roof and bamboo walls	20 houses
Iron roof and iron walls	3 houses
Thatch roof and bamboo walls	1 house

The household is defined as a group of persons sharing meals which are prepared in the one and the same kitchen. Some households are extended families while some are nuclear families. Each household usually has more than one house. There are on average 2.4 houses per household in Abaca.

Toilets

Pit toilets: 3 households

Pour flush toilets: 10 households

Septic tank flush toilets : 2 community ones with showers. The Lodge has septic flush toilet and shower.

Water

every household is supplied with at least one water tap.

Electrification

The village is not electrified, but 2 households have their own small generators, while the CA office has photovoltaic lighting The Tourist lodge has benzene pressure and kerosene lamps.

Cooking fuels

Every household cooks with wood. 7 households also cook with kerosene while 5 households cook with LPG. Only one household does not supplement its cooking fuel with either kerosene or LPG. The Lodge has LPG stove.

SKILLS IN ABACA VILLAGE

A range of skills were identified as possessed by the villagers of Abaca as follows:

skill	number of households	skill	number of households
Plumbing	3	Carpentry/ building	4
Electrical skills	1	Mechanical skills	1
Hunting	8	Sewing/handicrafts	12
Saddle-making	1	Healers	2
Health worker	1	Qualified horticulturalist	1

HOUSEHOLD POPULATIONS AND PARTICIPATION IN TOURISM AND KAVA SALES

Household #	total members	adult males	adult females	school children	below school age	in tourism	sell kava
1	7	2	2	2	1	Y	N
2	7	1	2	2	2	Y	Y
3	7	2	3	-	2	Y	Y
4	9	3	3	1	2	Y	Y
5	4	3	1	-	-	Y	Y
6	3	1	1	1	-	Y	Y
7	5	2	2	-	1	Y	Y
8	5	1	3	-	1	Y	N
9	5	1	1	2	1	Y	Y
10	4	1	1	2	-	Y	Y
11	6	2	2	2	-	Y	Y
12	7	2	2	1	2	Y	Y
13	12	3	3	6	-	Y	Y
TOTALS	81	24	26	19	12	13 Yes	11 Yes

ABACA VILLAGE—SENIOR MEN, RESOURCES AND LIVELIHOOD ASSESSMENT

Resource	Core or Buffer Area?	Location	Importance Rank(*)	Condition(**)	Trend (#)	Gender (@)
CASH RESOURCES						
tourism	C and B	village, river, lodge, BBQ area, walking tracks	1	1	I	all
mining exploration	B	Vadrama area	3			
wages for workers	not in either C or B		2			
CASH AND SUBSISTENCE						
Kava	C	walking tracks (2 hr)	2	2	D	M
root crops (vegetable gardens)	C and B	road, walking tracks	1	2	D	all
seasonal fruits	C and B	everywhere	2	1	I	all
goats	C and B	everywhere	2	2	NC	M
cattle	B	fenced area near village	2	2	NC	M
tumeric	C and B	everywhere	3	2	NC	all
wild ginger	C and B	everywhere	3	2	NC	all
horses - used for transportation and tourism	C and B	fenced area	2	2	I	all

the natural heritage and ecology	C and B	everywhere	1	1	I	all
SUBSISTENCE						
chickens	village	village	3	2	NC	all
bamboo	C and B	everywhere	3	2	I	M
freshwater fish, eels and prawns	C and B	river pools, and eels upstream; taken by spear	3	3	D	all
medicinal herbs	C and B	everywhere	2	1	I	all
timber for houses	C and B	togo togo, everywhere	2 (tourism)	1	I	M
reeds for thatching	B	everywhere	2 (tourism)	2	I	M
pigs	C and B	everywhere	3	1	I	all

* Importance to the village is ranked from most important = 1, to not very important = 3; and using the criteria of

- (1) its contribution to conservation of the environment and natural resources,
- (2) capacity to promote social and community reunification,
- (3) extent of support given for better education for kids and adults.

** Condition is ranked from 1 = very good, to 3 = very bad; the criteria used were the abundance of the resource and its availability and/or effort needed for collection/harvest. Note that much of the information/judgements in this column are related to the major drought afflicting Abaca; the senior men said that it had not rained at all since January 1998, a period of extreme drought of more than 9 months.

Trend in the resource is recorded as I = increasing, D = decreasing, NC = no major change.

@ The main gender involved in the resource harvesting/management.

SEMI-STRUCTURED INTERVIEWS

Senior men: In discussion with the senior men of the Abaca Village (11 November 1998) two sites of great cultural importance were mentioned.

1. The site of the original village from which Abaca residents are descended. On the 22 February in 1931 (early on a Sunday morning) the original village was buried in a major land slide. The 3 survivors (all men) established the present village site for Abaca, and are the ancestors of the present villagers. The 22 February is now honoured in Abaca as the anniversary of the destruction of the original village and the founding of the present Abaca. The site of the original village is considered to be of extreme cultural significance.

2. The village of Abaca is named after the so-called ABC rock, a large rock face on the skyline to the SW of the village. The ABC rock and its immediate surrounds are considered to be of high cultural importance to the villagers of Abaca.