

# **FISHERIES DIVISION**

# **ANNUAL REPORT**

**July 2003-June 2004**

**Apia**

**July, 2004**

## **1. MISSION STATEMENT**

The Fisheries Division is again dedicated to the Vision, Goal and Objectives as stipulated in the Statement of Development Strategy (SDS) and the Ministry's Corporate Plan (2002-2005) goal of "Growing a Healthy and Wealthy Samoa. Below is the mission statement of the Division that promotes the overarching goal:

**Promotes the optimum and ecologically sustainable use of the country's fishery resources and the development of suitable alternatives to harvesting of depleted resources in order to maximize benefits to Samoa.**

## **2. OVERVIEW**

The following highlights represent the major achievements the Fisheries Division attained during the fiscal year 2002/2003.

### **2.1 INSHORE FISHERIES**

- ***Fisheries annual landings:*** Overall, a total of about 134.4 metric tonnes (mt) of inshore fishery products which valued at around \$ 1.51 million tala was landed during the year. Of the overall total, 72.5% of the products were traded locally with 27.5% were exported. The majority of the items were sold fresh and wholly at the Apia Fish market, Faleolo-Apia roadsides and Salelologa market. Processed fishery items were sold mainly at Fugalei market accounted for about 22.2% of the total. Fishery products that harvested via subsistence is estimated as 7,000 mt annually.
- ***Resources monitoring:*** Altogether, 22 community-owned fish reserves and permanent sites have been initially and annually assessed to determine the present status, adverse impacts and health of coral reefs, other benthic substrates and associated biological diversity. There were 4 new community-based fish reserves have been established at Luua Faga, Apolima-uta Tafatafa and Matautu Falelatai during the period in which biological baseline data were collected and referenced.
- ***Researches:*** Outcomes of the 2003 Fisher Creel census was summarised with details are briefly provided in the report. Three technical research projects were started in which breeding species, potential poisoned species and MPA community monitoring are investigated. The respective projects are ranging from 1.5 to 2 years.
- ***Consultation and Awareness:*** Two community consultation workshops on the conservation and sustainable use of coral reefs and associated resources were conducted in Savaii and Upolu on 12/11/03 and 30/4/04 respectively. Outcomes of the annual resources and habitat monitoring were delivered with key issues on the proper management of these resources being discussed and consulted.

### **2.2 OFFSHORE FISHERIES**

- *yet to provided information*

## 2.3 AQUACULTURE

- *yet to provided information*

## 2.4 FISHERIES ADVISORY SERVICES (EXTENSION)

- ***Village Fisheries Management:*** Four new villages with approved Village Fisheries Management Plans were achieved during this period. These were Luua, Faga Savaii, Tafatafa & Matavai, Falealili, Apolima-uta and Matautu Falelatai. The facilitation process in producing Management Plans for these villages took 5-6 weeks before approval by various village councils (fono).
- ***Village By-laws:*** A total of 11 village by-laws have been formulated including bylaws for the new villages and are now in the process to be gazette. These bylaws have been reviewed to be in line with the Amendments 2003 of the Fisheries Principal Act.
- ***Village Fish Reserves:*** A total of 4 Fish reserves or marine Protected Areas have been established and declared by the matais of the new villages with Management Plans.
- ***Village Management Plans Review:*** All villages with Management Plans have been reviewed with 75 % of the total villages in the program achieving scores of over 80%.
- ***Community Consultation/Workshops;*** 12 consultation workshop with village communities of Luua, Apolima-uta, Tafatafa & Matavai and Matautu, Falelatai on the formulation of management plans.

## 2.5 FISH MARKET AND REGULATION

- *yet to provided information*

# 3. SUMMARY OF ACTIVITIES

## 3.1 INSHORE FISHERIES

### ***Fishery annual landings:***

Landings of fishery products harvested specifically from the inshore waters that were locally landed were randomly monitored on a weekly basis through sampling programmes at selected outlets. Volume and values of domestic landed and traded fishery products were obtained from surveys carried out at the Apia fish market, Fugalei market, Apia-Faleolo roadsides and the Salelologa market. The subsistence fishery was investigated through the Fisher Creel census conducted in early 2003.

A total of about 134.4 metric tonnes (mt) of inshore fishery products which valued at around \$ 1.51 million tala was landed during the year. About 72.5% of the products were traded locally and 27.5% were exported either for commercial purpose or for *faaoso*. Fresh and wholly sold items were the predominant fishery commodity that landed and traded locally during the year. However, processed fishery items that were sold mainly at Fugalei market accounted for about 22.2% of the overall total volumes. Landings from subsistence fishery was estimated as 7,000 mt annually with a value of about 45 million tala.

**Researches:**

The Inshore Section is currently undertaken three technical research projects and the projects have timelines that ranged from 1.5 to 2 years. The Spawning research project is investigated aggregating, spawning and breeding sites of inshore fish and invertebrate species. Appropriate management regimes that will promote the conservation of the breeding species will be formulated and applied. The Fish poison research project is aimed at identifying potential poisoned species, times and locations. The third project is aimed at simplifying monitoring techniques in which community will use to monitor coral reefs and associated biological resources. The three research projects are funded under the Fisheries Project Fund component of the US Pacific Tuna Multi-treaty

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**Resources monitoring:**

Ana briefly summaries activities & target achieved. I have done the above parts.



**Staff conducted fishery resources monitoring survey.**

**Information and Awareness:**

Two community workshops were conducted on Savaii and Upolu islands where key results of habitats and biodiversity monitoring were delivered. The workshops also provided forums for community members and Fisheries to deliberate and consulted on issues of resources sustainable utilization and management.

One coral reef conservation information sheet was produced both in English and Samoan for the general public.

**3.2 OFFSHORE FISHERIES**

*Summary of activities & results is yet to per  
provided*

### **3.3 AQUACULTURE**

*Summary of activities & results is yet  
to per provided*

### **3.4 FISHERIES ADVISORY EXTENSION**

The Advisory Services Section continued to work closely with village communities in the management of coastal fisheries and marine resources.

- Four new villages have produced Village Fisheries Management Plans.
- Eleven bylaws been processed.
- Four new community-owned fish reserves been declared and enforced.
- 12 Community workshops been



conducted in villages with Management Plans.

- All villages with Management Plans reviewed.
- Seventy five percent (75%) of all villages reviewed have good performance and committed to carry out undertakings pertaining to the management of coastal and inshore fishery resources.
- Assisted the governments of American Samoa and Tokelau with their Community based Fisheries Management Programs.



### **3.5 FISH MARKET & REGULATION AND ENFORCEMENT**

Report is received but yet to give the summary.  
Perhaps you can summarise their report to get a brief summary of their activities & targets achieved.

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### **3.6. TRAINING AND WORKSHOPS**

*Resources Assessment and Monitoring:*

*Aquaculture:*

*Regulation and Enforcement:*

*Seafood safety:*

*Fishing technologies:*

## **4. ACKNOWLEDGEMENT**

The Fisheries Division would like to acknowledge with much appreciation, the invaluable contributions from the following agencies:

- Government of Australia (AusAID, ACIAR)
- Government of New Zealand (NZODA)
- Food and Agriculture Organization (FAO)
- Forum Fisheries Agency (FFA)
- Secretariat for the Pacific Community (SPC)
- Canadian International Development Agency (CIDA)
- Japan International Cooperation Agency (JICA)
- South Pacific Regional Environment Program (SPREP)
- University of the South Pacific – Marine Studies
- SOPAC

Su'a Nanai Tanielu Su'a

**ASSISTANT CHIEF EXECUTIVE OFFICER (FISHERIES)**

### **APPENDIX 1.**

## **FMU 7.1: INSHORE FISHERIES**

### **1. MONITORING AND MANAGEMENT**

#### **1.1 Inshore fishery landings**

The monitoring and management of the inshore fisheries was one of the primary functions of the Fisheries Division to ensure that the fishery resources of Samoa are properly utilised and managed sustainably. Through the sampling programmes, data on catches, efforts, economics, biological and other parameters are collected. The main objectives of the sampling programmes are to determine the level of fisheries exploitation annually and to assist in the formulation of appropriate management regimes ensuring the sustainable utilisation and management of the inshore resources in Samoa.

The following surveys were implemented over the 2003/2004 fiscal year period are as follows:

- (a) Apia & Salelologa Weekly Inshore fishery survey.
- (b) Processed inshore fishery roduct survey.
- (c) Apia-Faleolo Roadsides Surveys
- (d) Commercial & Faaoso Inshore Fishery Exports certification

*Table 1. Overall estimated totals of inshore fishery products that were landed and traded through domestic and overseas outlets during 2002/2003 period.*

Inshore fishery groups	Domestic sold		Exports		Totals	
	Wt (Mt)	Val(000T)	Wt (Mt)	Val(000T)	Wt (Mt)	Val(000T)
Fin-fish	58.8	558,774				
Crustacean	2.2	30,800				
Invertebrates	1.2	11,266				
Molluscs	5.3	50,336				
Processed marine products	29.8	625,311				
Totals	97.3	1,276,487				

### 1.1.1 Domestic landed and traded fishery products.

*Table 2. Estimated total of Inshore fishery products landed and sold via domestic outlets.*

Inshore fishery groups	Est. tot. Wt (Mt)	Est. tot. Value(ST)	Avg. price (\$/kg)	% Wt
Reef / lagoon finfish	58.8	558,774	9.50	60.4
Crustaceans	2.2	30,800	14.00	2.2
Invertebrates	1.2	11,266	9.38	1.2
Molluscs	5.3	50,336	9.40	5.4
Processed items	29.8	625,311	21.00	30.6
<b>TOTAL</b>	97.3	1,276,487		

*Table 3. Major reef and lagoon finfish landed and sold at the Apia, Salelologa markets and Apia-Faleolo roadsides..*

Family name	Major finfish types	% wt	Avg. pr (kg)	Est Wt (mt)	Est Value (000ST)
Acanthuridae	surgeonfish (pone, alogo, palagi, manini)				
Acanthuridae	unicornfish (ume, iliilia)				
Carangidae	bigeye trevally (malauli, lupu)				
Myripristidae	soldierfish (malau)				
Kyphosidae	t/sail drummer (ganue)				
Labridae	wrass (lalafi, sugale)				
Lethrinidae	emperor (mataleele)				
Lutjanidae	snapper (malai, tamalau, isi)				
Mugilidae	mullet (anae)				
Mullidae	goatfish (ta'ulaia, ululaoa, vete)				
Muraenidae	morayeel (pusi)				
Scaridae	parrotfish (fugausi, laea)				
Scombridae	long jawed mackerel (ga)				
Serranidae	grouper (gatala, ataata)				
Siganidae	rabbitfish (lo, pauulu, tito, malava)				
	Others				
Reef fish (Roadside survey)					-
Total					

### (b) Fishery items sold in processed forms



*Table 4. Summary of processed inshore fishery products traded through Fugalei and Salelologa Agriculture Market in 2002/2003 period.*

<b>Processed product type</b>	<b>Est. qtys</b>	<b>Avg \$/kg</b>	<b>Est.tot. val</b>	<b>% val</b>
Faiai fee (cooked)				
Faiai fee (cooked) (ipu popo)				
Faiai fuagau (ipu popo)				
Faiai gau (cooked)				
Faiai pusi (cooked)				
Faiai pusi (ipu popo)				
Lau'i'a (cooked)				
Limu (wrapped seagrass)				
Lumane (cooked)				
Matalelei (cooked)				
Palolo (cooked)				
Fagu Sea (bottled)				
others				
<b>Total</b>				

*Figure 1. Annual estimated landings of inshore fisheries that were sold locally*

### 1.1.2 Export fisheries

*Table 8. Exports of inshore fishery products for 2002/2003 period.*

<b>Exports non-commercial</b>		
<b>Groups</b>	<b>Wt (mt)</b>	<b>Value(000T)</b>
Reef & lagoon fish		
Bivalves		
Molluscs		
Sea cucumbers		
Sea weeds		
TOTAL		
<b>Exports -commercial</b>		
Reef & lagoon fish		
OVERALL TOTAL		

### 1.1.3 Subsistence fisheries

Creel survey is used to quantify marine products harvested from shallow-waters by subsistence and artisanal fishers. The Fisher Creel Census of 2003 was to concurrently undertaken with the Household Surveys in 2000. However, the AusAid sponsored Fisheries project terminated before the creel surveys eventuated. With financial support rendered through the Canada International Development Agency sponsored Fisheries and Climate

Change project, the creel surveys undertaken at Savaii, Upolu and Manono islands were made possible.

The objectives of the creel census were as follows:

- provide an account of the fishing grounds and areas based on their natural ecological characteristics, not on arbitrary boundaries;
- produce an estimate of the total tonnage of fish caught, broken down by principal species, fishing gears and areas;
- provide an account of the applied fishing efforts (fishing boats and fishing gear);
- give an estimate of the numbers of full-time or part-time artisanal (= semi or full commercial) fishermen, and subsistence fishermen (who are always part-time even though they might be specialists within their village); and
- show the basic seasonal trends in the fishery.

A nation wide fisher creel census was conducted over a two one-week periods in 2003 covered a total of 112 villages of which 37% located on Savaii island and 63% situated on Upolu, and Manono islands. This survey covered about 8% of all subsistence fishers estimated during the 2000 Household Surveys. A total of 11,700 fishers were estimated with male and female fishers representing 82% and 18% respectively of the total fishers. Of the total households in Samoa, it is found that 37% engaged in fishing activities, either fully or partially subsistence. For all those fishing for subsistence and small-scale commercial, full-time fishers accounted for 37% and 63% represented part-time fishers.

The majority of the active fishing population is aged between 20 and 50 years representing 85% of all fishers. On average, they fished about thrice a week on an average of 4 hours per trip. Most fishers used the paopao (canoe) and 4,446 canoes are estimated in Samoa in 2003. Spearfishing (32% of total fishers) entailed free diving is the main fishing method employed and predominantly (89%) occurred in lagoons (inner and outer) and on reef patches, fringing and barrier reefs. Spear with an attached elastic band is the main gear utilised, which landed about 42% of the total subsistence catches by weight.

About 57% of all fishers reported that they utilised all of their catches for consumption and 17% ate nothing of their catches. However, 25% of fishers ate parts, which ranged from quarter, half and  $\frac{3}{4}$  of their catches. It was found that 22% of fishers reported 'sold some' of their catches and 13% sold more than 75 to 100 per cents of their catches.

## **2. Habitat & Resource Monitoring**

The Inshore Fisheries Section had undertake habitats and resources monitoring of coral reefs and associated biodiversity within community-managed fish reserves and permanent sites under the GCRMN project. Present status, threats and impacts of coral reefs and associated biological resources from anthropogenic and natural events are monitored through annual and bi-annual surveys.

### **2.1. Coral reef monitoring**

#### **2.1.1 Permanent GCRMN sites**

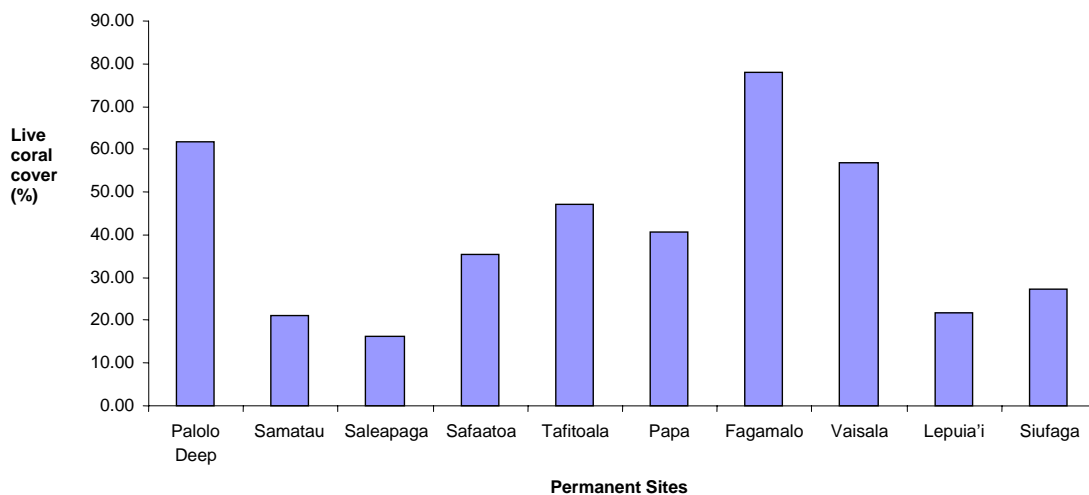
Since 2002, ten permanent sites were chosen for regular biannual monitoring under the GCRMN project. The 3 Points Line Intercept Transect (LIT) was utilised for the assessment

of the substrate lifeforms, while the Belt Line Transect (BLT) was utilised for the fish and invertebrate counts. The same methods are presently used in the monitoring of coral reefs and other biodiversities in established community-based MPAs.

Most of the MPAs are established within the lagoonal areas towards the reef flats. Generally, barrier lagoons are shallow with depths of 2-3m. These areas are subject to deposition from land, and overtime have become shallow from silt deposits. They are not well endowed with and reef flats at these lagoons have little coral growth and diversity. The fringing lagoons in some sites have high coral growth and diversity than the barrier lagoons.

**(a) Coral cover**

Overall, the mean coral cover on the permanent sites selected as representation of reefal areas around Samoa was 41% from the 2003 monitoring. Permanent sites that were monitor in 2002 showed that cover of live coral (predominantly hard) was 45%. The difference may due to the random selection of transects within the surveyed sites. Living hard coral accounted for about 99% of the total live coral coverage. The summary of the 2003-04 coral reef monitoring is presented in Fig. 2.



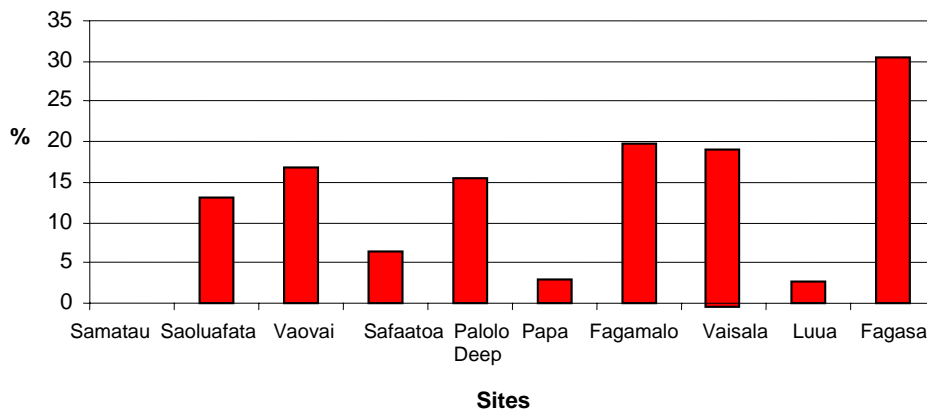
The Algae group also recorded a significant amount in sites in Upolu with the *Sargassum sp* being the most common algae. The dead corals were a result of coral wreckages from waves and other disturbances, while the Others group is made up of other living lifeforms such as the Sea anemones, zooanthids, bivalves and so forth. The coral bleaching from both islands were most probably the result of the crown of thorn still seen in some sites, rather than a mass bleaching form natural causes.

Of the total living hard coral coverage, *Acropora* branching (ACB) was the dominant type representing 25%. Coral submassive (CS) was the second highest live hard coral type and it is accounted for 17% of the total. Hard coral type, Coral foliose (CF) accounted for 14%.

Coral branching (CB) and Coral massive (CM) hard coral types were representing 11% each of the living hard coral cover.

Average cover of live coral on reef flats and slopes was highest at 50% on the island of Savaii with Upolu and Manono islands represented 44% and 6% respectively. The highest mean value for cover of living coral on Savaii was found at the Fagamalo site of which represented about 78%. Living coral cover at Vaisala and Papa were 57% and 41% respectively. The highest (62%) average of living coral cover on Upolu was found at the Palolo Deep Marine reserve. Tafitoala site has an average living coral cover of about 48%.

However, in early 2004, cyclone Heta devastated Samoa and impacted relatively on the marine habitats. Straight after the Cyclone Heta, quick assessments of the damages on coral reefs sustained were conducted at permanent sites and several community-based MPAs. The surveys were carried out on Upolu, (18<sup>th</sup> -22<sup>nd</sup> January) and on Savaii (14<sup>th</sup> -16<sup>th</sup> January 2004) with the main focus of determining how much devastation and the severity of the impacts on live corals that is sustained by the recent cyclone. Results of the post-Heta monitoring of damages to living corals are illustrated in Fig. 3.



**Figure 3.** Living coral reef damages sustained during cyclone Heta in early 2004.

Overall, live coral reefs sustained approximately 13% damages. The live corals on the north western side of Savaii suffered about 25% damages and this is due to being highly exposed to strong wave action caused by the cyclone. The southern and northern parts of the Savaii Island, corals suffered minimal damages (2%).

On Upolu Island, live corals on the northern side especially the north-west side have impacted relatively less with an average of 12%. Reefs on the west and southwest of Upolu have suffered minimally (6%). According to results being obtained, the assessment have found that there is not much damage caused by Cyclone Heta on our coral reefs as compared to the magnitude of devastation sustained cyclones Ofa and Val in 1990-1991.

**(b) Fishes**

***(analyse abundance and determine species density (either number or mass/sq.m) per site. If possible, depending where spp sizes are available, then determine the spp biomass per MPA, total area.***

**(c) Benthic organisms (abundance and density – no./sq.m)**

## **2.2 Community-managed fish reserves**

During the last 10-20 years ago, researches and scientific studies proved that there was a decline in fisheries marine resources due to the reasons being; Overfishing, increasing population, natural disasters such as cyclones (Ofa in 1990 and Val in 1991), increased runoff from land and destructive fishing methods.

However, Community-based Fisheries reserves have been introduced with the assistant of the AusAid Samoa Fisheries Project in 1996, to revitalize coral growth, fish and invertebrate abundance within our coastal waters. The success of the programme was noted by Zann (1999), pointing out that the status of coral reefs around the country is rapidly improving from its previous damage.

Throughout the year, selected community-based fish reserves were monitored of changes, impacts and threats arises from both human and natural events. A total of 13 community managed fish reserves had been re-surveyed with 4 new fish reserves have been assessed with baseline biological data collected and referenced. Reports detailing the present status of living coral covers, fish density and other benthic organisms were provided for communities advising them of the situation of coral reefs and associated biodiversity available within their respective reserves. Furthermore, recommendations for the newly established reserves emanating the initial surveys conducted were provided for communities to facilitate their understanding of the present status of biodiversities available and also assist in making their decision whether they still would like to install a reserve as a management tool. and decision of the technical opinions of the Division in supporting the establishment of the marine protected areas.

### ***Coral reefs and other substrates.***

There were thirteen community-managed fish reserves have been monitored during 2003-2004 period. There were only four new reserves being initially assessed excluding the others being re-surveyed. The Table below summarised the outcomes of the monitoring activities of the major substrates. Fagaae and Fagasa both located on Savaii island and Tauaoo on Upolu have higher percentage of live corals form of more than 40%. Abiotic substrates consisted of coral rubbles, sands and rocks were higher at Siufaga Falelatai, Apolima and Faleapuna. Others group including algae and seagrass were highly common in Sapapalii, Apolima uta and Vaiala.

Table ; *Community-owned and managed Fish Reserves surveyed in the 2003/2004 period.*

<b>Marine Protected Areas</b>	<b>Survey Date</b>	<b>Est. Area (m2)</b>	<b>Survey</b>	<b>Live Corals</b>	<b>Dead Corals</b>	<b>Dead coral with</b>	<b>Abiotic (sand, rubbles,</b>	<b>Others/ Algae.</b>	<b>Damaged corals</b>	<b>Bleached corals</b>
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Locations						algae	rock)			
<b>SAVAII</b>									0	0
Sapapalii	11-Dec-03	100 000		0	0	0	12.05	87.95	0	0
Manase	12-Nov-03	19 500		45.12	0	23.08	7.43	24.87	0	0
Fatuvalu	13-Nov-03	120		31.41	8.01	1.15	32.01	8.37	0	0
Fagaee	17-Nov-03	2 500		46	0	30	17	7	0	0

Marine Reserve Sites	Date	ACB	ACT	ACD	ACS	CB	CE	CF	CM	CS	CMR
<b>SAVAII</b>											
Sapapalii	11-Dec-03										
Manase	12-Nov-03	24.1				19.23	1.79				
Fatuvalu	13-Nov-03	1.6				1.28	4.17	23.72		0.64	
Fagaee	13-Nov-03	9.3	1.9			2.6	6.4	21.8	0.3	4.2	
Fagasa	20-Jan-04	3.21	2.56	0.64		0.32	1.6	14.1	0.32	3.85	
<b>UPOLU</b>											
Apolima	4-Dec-03					0.51			3.08		
Vaovai	11-Jul-03	9.23	0.26			2.05		8.46	5.64	15.64	0.26
Faleapuna	15-Jul-03								6.67		
Tauaoo	16-Jul-03	8.21		0.26		6.41	1.28	0.26	7.69	12.82	
Siufaga Falelatai	14-Jul-03					0.77		9.74	5.38	6.92	
Vaiala	28-Oct-03	3.59	0.51	0.26		2.05	8.46	0.77	0.77	4.62	2.56
Vaovai	15-Jan-04	0.96	1.28		0.32						
Tafatafa	02-Oct-03	0.26				1.03		0.51	4.62	1.28	
Matautu Falelatai	17-Jun-04	3.21							2.99		
Saoluafata	14-Jan-04	0.96								0.32	

Fagasa	20-Jan-04	80 000		26.6	0	2.29	34.18	4.17	29.81	0
<b>UPOLU</b>										
Apolima	4-Dec-03	180 000	I	3.59	0.51	0.77	50.51	44.57	0	0
Vaovai	11-Jul-03	46 500		41.54	1.54	3.33	37.91	40.11	0	0
Faleapuna	15-Jul-03	40 000		6.67	21.03	0	46.15	26.16	0	0
Tauaoo	16-Jul-03	80 000		36.93	0	9.23	28.2	25.38	0	2.6
Siufaga Falelatai	14-Jul-03	390 000		22.81	1.28	10.77	45.39	16.92	0	
Vaiala	28-Oct-03	120 000	I	23.59	1.03	8.72	32.1	42.56	0	0
Vaovai	15-Jan-04	46 500		30.62	2.24	9.94	28.2	9.93	07.05	0
Tafatafa	02-Oct-03	180 000	I	7.7	0	4.1	78.46	10.28	0	0
Matautu Falelatai	17-Jun-04	320 000	I	6.2	0	2.56	33.11	58.16	0	0
Saoluafata	14-Jan-04	62 000		1.28	1.28	2.24	64.1	12.27	8.97	0

I = initial, R1 = re-survey 1, R2 = re-survey 2, R3 = re-survey 3

Acropora branching (ACB), Coral branching (CB), Coral encrusting (CE), Coral massive (CM) and Coral submassive (CS) were the highest common coral types in most of the reserves. Except for Sapapalii, Saoluafata and Apolima which have less live corals were being found.

*Table : Summary of hard live corals that were being observed during 2003-2004 period.*

### *Fish and invertebrates*

There were 15 key species that have been selected as indicator species using to determine the abundance of finfishes within each community-owned fish reserve. Tuuu (Damsel fish) and Lauaufalaumea (Humbugs) were the main fish type observed to be occurred in large numbers in all surveyed sites. Their abundance ranged from 30% to 80%. Wrassfish (lalafi) was noted to be very common in all sites with small number ranging from 7% to 30% in abundance. In Table B below summarised the results the key fish species and their abundance in all sites were being surveyed on Upolu and Savaii during 2003-2004 period.

*Table. Summary of major fish indicators used to determine fish abundance in surveyed fish reserves.*

Sites	Apolima uta	Sapapalii	Manase	Fatuvalu	Vaovai	Faleapuna	Tauaoo	Siufaga (F)	Vaiala	Tafatafa	Matautu (F)
<b>Survey Dates</b>	04-Dec-03	11-Nov-03	12-Nov-03	13-Nov-03	11-Jul-03	15-Jul-03	16-Jul-03	14-Jul-03	28-Oct-03	02-Oct-03	17-Jun-04
<b>Total MPA Area (sq meters)</b>	180 000	30 000	19 500	120	46 500	40 000	87 500	390 000	120 000	180 000	320 000
<b>Transect Total</b>	5	5	4	5		5	5	5	5	5	6
Butterfly fish			0.71			1.33	1.28			2.36	5.61
<b>Damsels</b>	51.47		47.16	50.92	30.18	80.22	43.07	41.67	38.26	50.47	11.29
Humbugs	31.86	63.64		3.89	37.56	11.11	28.28	25		26.42	
Angelfish											46.77
Rabbit fish								8.33			
Line Surgeon fish									1.45		
Striated Surgeon fish				1.43					8.41	0.47	
Convict Surgeon fish	1.96		9.23	0.2	0.96	12.89	0.18				
Parrot fish	4.9		23.02	28.83			7.3		17.97	0.3	1.61
Soldier fish	1.96										
Trigger fish			0.61								
Goat fish									14.49	1.89	
Grouper			0.41	0.61				2.78	1.45		1.61
<b>Emperor</b>		18.18									
<b>Wrasses</b>	7.84	18.18	18.8 6	14.11	31.1	24.44	19.69	22.22	17.97	15.09	37.1
Total(%)	100%	100%	100%	100%	100	100	100	100	100	100	100

**Key:** ACT: Acropora Coral Tabulate, ACB: Acropora Coral Branching, ACD: Acropora Coral Digitate, CB: Coral Branching, CE: Coral Encrusting, CF: Coral Foliose, CM: Coral Massive, CS: Coral submassive.

There were 12 invertebrate indicator species selected and were monitored for all surveyed sites. In summary, lolyfish (loli), greenfish (maisu) and sea-urchin (tuitui) were the most dominant invertebrate species in all monitored sites ranging from 2% to 80%. Giant clams were observed to be found only in Manase reserve with a total of 7.89%. Jellyfish and

curryfish were found in Vaiala and Matautu Falelatai reserve with small numbers. Table C summarised the main key invertebrate species and their abundance in all surveyed sites.

. *Summary of key selected invertebrates as per community-owned fish reserve surveyed during the 2003-2004 period*

Sites	Vaovai	Faleapuna	Tauaoo	Siufaga (F)	Vaiala	Tafatafa	Matautu (F)	Apolima uta	Sapapalii	Manase
<b>Survey Dates</b>	11-Jul-03	15-Jul-03	16-Jul-03	14-Jul-03	28-Oct-03	02-Oct-03	17-Jun-04	04-Dec-03	11-Nov-03	12-Nov-03
Giant clams										7.89
Lolly fish	1.2	5.88	0.45	55.81		16.67	30.08	98.34		2.63
Green fish	14.97	0.42	82.88	24.81	46.38	80	4.24	1.54		
Crown of thorn										
Blue starfish	2.4	2.94	3.6	10.08	26.09			0.12	97.44	0.88
Sea urchin	80.24	89.92	11.26	8.53	27.54		2.97			82.46
Brown sand fish		0.42								0.88
Jellyfish							0.42			
Curryfish							3.81			
Cowry						3.33	0.42			
Fole							57.2			
Peva	1.2	0.42	1.8	0.78			0.85		2.56	5.26
Total	100	100	100	100	100	100	100	100%	100%	100%

## 2.3 Current Status

The status of coral reefs is very encouraging, considering the range and intensity of natural and anthropogenic impacts that have affected reef habitats in Samoa over the past decade or two. Accordingly to Green (1996), several reefs have been significantly recovered with good coral rejuvenation after damages sustained by cyclones in early 1990s. Generally, coral reefs are recovering remarkably well in areas where co-managed system is established. Coral cover is generally very high on the outer slopes and on outer lagoons adjacent to avas (channels or deep spots).

However, there are areas that are equally disturbed especially in areas that have no management regime imposed or fishing is frequently accessed. In some areas of the islands, the shallow depth impact from a moderate bleaching event earlier in the 2001 and there is white band coral disease in the dominant plate corals on the outer slope and sometime was identified as bleached corals.

Fish status is highly variable with fish abundance usually low in most accessible areas of the lagoon (especially) but also at certain outer slope locations. Fish abundance and diversity is usually relatively higher in less frequented areas (usually some of the exposed outer slope areas), though the size of fish were generally small. Juvenile fish stocks are good especially in the outer lagoon habitats of GCRMN permanent sites and some community MPAs that have good live coral coverage. The subsistence fisheries survey in 2000 revealed that catch rates from villages with fisheries management plan and non managed areas were 2.8 kg/capita/hr and 1.8 kg/capita/hr respectively.



Overall, the reefs are recovering relatively well from the early 1990's cyclones though there is enduring damage still evident in other consequential factors (eg, shifts in major topographic features important for inshore fisheries). Recovery from earlier COTS outbreaks (1970's and 80's) in some locations has been slow, notably in a number of the avas and bays, with evidence of community shifts occurring from corals to coralline algae. There is also evidence of a shift from a coral dominated reef flat to brown macro and green calcareous algae dominance. *Turbinaria ornata* macro algae dominated reefs at the south and eastern sides of Upolu. The calcareous green macro algae dominated and patched the reef flats at the northern part of Upolu. The bleaching event earlier in 2001 was selective in its impact on coral cover and on species most affected.

## **2.4 Awareness and consultation**

To further strengthening the co-management of coral reefs and its associated ecosystems, awareness generation was focused primarily among fishers, villagers and other relevant stakeholders are promoted. Television ads on coral reefs conservation and protection were aired for 3 months annually since 2002. Several articles on the subject matter were also produced and released on Fisheries Division and Ministry of Agriculture newsletters. Two info-sheets were also produced and distributed. Since 2001, workshops were held annually for communities on Savaii and Upolu islands where results of the monitoring activities were delivered and discussed. Through these workshops, forums were provided whereby communities and Fisheries Division deliberates future mechanisms to further strengthening the sustainable management and conservation of coral reefs.

## **2.5 Threats to Coral reefs.**

The destruction of coral reefs and the decline of marine resources is attributed to over exploitation, the use of destructive fishing methods, improve of efficiency in fishing practises and infrastructure development.

### ***(a) Fishing***

The people of Samoa heavily rely on the marine resources because it is their livelihood. That is why in the past great respect was given to the marine environment and its resources. However, over the years, the increase in population has put strain on the resources from overfishing and the use of destructive fishing methods. Subsistence fishery was the most common practise in the past, with people collecting from inshore lagoons and reefs. However, the improving of technologies has shifted the focus from subsistence to artisanal and commercial fisheries. Weekly survey on the status of the inshore fishery was analysed and revealed that fish landing have declined dramatically from 250 metric tonnes in 1986 to just 50 metric tonnes in 1994. This is one obvious indication of the pressure on the marine resources from excessive uses.

### ***(b) Pollution***

Various forms of anthropogenic pollutions unfortunately have very damaging effects on our marine resources. Studies show that since 1954 or possibly earlier, pollution and sediment deposit have resulted in a steady replacement of corals with seagrass and algae. (Zann 1991). The unregulated use of pesticides herbicides and other chemicals some twenty years ago is still and will have damaging effects on the marine environment.

***(c) Sediment and Siltation.***

Poor land practices in Samoa have caused high eutrophication in lagoonal areas from runoff. In 1970 and 1985, the widespread die back of the corals on the Northern reef was most probably caused from the increase of sediment and nutrients outflow from poor land practices. Most of these land practices including poor agricultural and forestry practices, land clearing and housing, road and seawall construction activities and lagoonal dredging.

***(d) Tourism***

Tourism has become one of Samoa's major growing sector. In 1997, tourism earned SAT\$101.8 million, which is four times larger than the export earnings. The rise in the national economy brought the strong support of the Government and also the rise in the local economy through employment of the local people. The threat to the marine environment is a result of poor planning, especially in reclaiming of the foreshore for land development. Waste and sewage disposal and management are a major problem with these tourism facilities expanding and yet no effective regulatory framework are in place. Furthermore, increase in careless tourists trampling over corals and collection of marine organisms as souvenirs worsen the problem. Although every tourism projects require an environmental impact assessment, the absence of relevant effective regulations and procedures have often resulted in the requirement not being strictly administered. (Vaai 1998).

***(e) Coral Bleaching***

The 1997-1998 period, saw a dramatic increase of coral bleaching. This had said to be the result of high sea surface temperature in the Indian Ocean and some parts of the Pacific Ocean. (Wilkinson 1998). In year 2000, there were localised bleaching events in some northern areas, while in 2001, bleaching was reported from the Southern and Eastern sides of Upolu.

***(f) Crown of thorn***

One of the coral predators, the crown of thorn is quite common in the reefs of Samoa. These species are further enhanced due to the removal of their predator, the

## **2.6 Recommendations**

***(a) Conservation and Monitoring Initiatives***

The initiative to establish MPAs was a very important step and the involvement of the villages is vital and should be encouraged. Through this initiative, more community-owned MPAs should be established to ensure that living coral reefs and associated biodiversity are sustainable.

At present, 35% of all coastal communities are now directly engaged in managing their inshore fisheries and environment using the community-based management approach. Many of these communities have established village by-laws of which strengthening more the conservation of corals and the associated resources. It is essential that bylaws are to properly and actively enforced. More awareness programmes must strongly promote to strengthening more the understanding and motivate resource users to actively participate in conservation efforts applied. Other conservation initiatives and efforts by other governmental agencies, communities and NGOs must solidly coordinate and collaborate to ensure that coral reefs are sustainably managed.

**(b) Management Capacity.**

The managing of marine resources can only be properly implement if the State law and the customary system work together. The Government have recognised the importance of the involvement of the local communities in management and conservation efforts, and this should be further encouraged. The use of legislation to regulate fishing, and promote research, development, conservation and monitoring efforts must recognise the faa Samoa (Samoan way). Importantly is the need for legislation to be formulated with the involvement of village chiefs and councils.

**(c) Qualify Personel**

There is a great need for more qualify personel within the Government Divisions for carrying out specialise tasks. Taxonomists, ecologists and biologists are lacking at the Fisheries Division. More researches are needed on the Samoa marine biodiversity in order to get a factual and detail information on its current status. Although no endemic or rare species identify, this merely reflects the lack of knowledge on the coral reefs biodiversity. Furthermore endanger animals such as *Tridacna sp*, *Mugil cephlus*, *Chanos chanos* and the *Charonia tritonis* are declining continuously with no nationwide respond identified. As a result, one of the local species *Hippopus hippopus* have become extinct with no record on when it did.

Table 1. Summary of live coral cover (%) at selected permanent sites.

LONGTERM SITES	Palolo Deep	Samatau	Saleapaga	Safaatoa	Tafitoala	Papa	Fagamalo	Vaisala	Lepuia'i	Siufaga
SURVEY DATES	9/11/02	13/01/03	13/03/03	22/01/03	24/01/03	3/03/03	5/03/03	3/04/03	29/04/03	16/05/03
TRANSECT (50mX3m)	5	5	5	5	5	5	5	5	5	4
CORAL TYPES										
Arcopora Branching (ACB)	22.31	6.92	4.30	6.77	11.62	1.03	26.92	15.38	2.19	3.21
Acropora Tabulate (ACT)	3.08	0	0.62	0	1.20	27.43	6.67	4.1	0.99	0.51
Acropora Digitate (ACD)	4.36	2.82	0.82	2.82	0.00	1.28	0.26	2.05	1.19	
Acropora Submassive ACS	0	0	0.41	0	0.00	0.51	0.51	1.28	0.00	0.32
Acropora Encrusting (ACE)	0	0	0.00	0.51	0.40	0.26		0.51	0.00	
Coral Branching (CB)	5.38	0.77	0.20	1.54	24.48	0.26	1.79	1.03	5.77	1.6
Coral Encrusting (CE)	0	0	3.08	0.51	0.20	3.59	13.59		0.60	
Coral Foliose (CF)	9.23	0.26	1.23	2.82	4.20	5.13	16.15	18.46	0.40	
Coral Massive (CM)	2.56	4.1	0.62	11.74	2.80	1.28	4.62	3.85	5.57	7.2
Coral Submassive (CS)	14.87	5.38	4.51	8.72	2.20	0	7.44	8.72	4.97	13.46
Coral Mushroom (CMR)	0	0.77	0.41	0	0.00	0			0.00	
<b>Live Hard Corals</b>	<b>61.79</b>	<b>21.02</b>	<b>16.20</b>	<b>35.43</b>	<b>47.11</b>	<b>40.77</b>	<b>77.95</b>	<b>55.38</b>	<b>21.67</b>	<b>26.30</b>
<b>Soft Corals (SC)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>1.54</b>		<b>0.96</b>
<b>Live coral cover</b>	<b>61.79</b>	<b>21.02</b>	<b>16.20</b>	<b>35.43</b>	<b>47.11</b>	<b>40.77</b>	<b>77.95</b>	<b>56.92</b>	<b>21.67</b>	<b>27.26</b>

**3. RESEARCHES (provide details on projects, objectives, activities done in the fy and anticipated outcomes)**

**a) Spawning species**

**b) Fish poison**

**c) Monitoring of Community-based fish reserves**

**4. INFORMATION, CONSULTATION AND AWARENESS** (*summarise the outcomes of the workshops based on the reports*)

- **Information**
- **Consultation**
- **Awareness**

## Appendix 4.

### 7.4 FISHERIES ADVISORY SERVICES

#### 1. Introduction

The management of fishery resources through community participation is a new concept and has been a major activity in the Fisheries annual plans since its inception in 1996. The key task is to convince the communities that since they are the resource users, **they**, not Government, have the primary responsibility to manage their marine environment.

The overall management strategy is to seek a community-developed Fisheries Management Plan from communities participating in a national management program. Each participating community is to be encouraged to analyse its fishing practices and to develop a community-owned plan with undertakings to introduce appropriate village rules and regulations and to pursue other conservation measures. The management strategy is based on four principles - i) maximum community participation; ii) motivation rather than education; iii) a demand-based management system; and iv) the development of alternative sources of seafood to those resulting in the present heavy and destructive exploitation of lagoons and near-shore reefs.

##### i. Maximum community participation.

Community ownership will be optimised if as many people as possible are allowed to contribute to the process of developing the village fisheries management plan. This will require involving all groups, including women and untitled men, to ensure the widest community participation and eventual ownership of the plan. The length of the extension process in each village has to be sufficiently extended to allow the community time to establish ownership of their plan and undertakings. Ownership by the community requires sufficient time for people to consider their own problems and causes, and think of their own solutions.

##### ii. Motivation not education.

The knowledge of island and coastal people regarding the marine environment has often been underestimated. Most coastal communities have an awareness of, and concern for, their marine environment. Although public awareness-raising activities are part of the fisheries management program, the prime need is not for education, but for motivation and support. Part of this motivation depends on the availability of economically viable alternatives to the present unsustainable and destructive fishing practices. The key task is to convince communities that being resource users, they have the primary responsibility to manage their marine environment.

##### iii. A management system which is demand-based.

For reasons of efficiency and sustainability, the management system focuses on villages in which communities have a concern for the marine environment, and are prepared to participate and contribute in finding solutions to problems. Although it is tempting to concentrate on villages where the need is greatest, community-based management will not work unless the community has a strong desire to address its own problems. The strategy involves working selectively with village communities eager to participate in the program.

##### iv. The development of alternative sources of seafood

Whether community-based or not, most fisheries conservation measures, including the prevention of destructive fishing and the imposition of fish size limits, will cause a short-term decrease in catches (King 1995). The same is so for community-owned marine reserves as they reduce the area available for fishing.

As most subsistence fishers require seafood for their families on a daily basis, it is unreasonable to expect fishing communities to adopt conservation measures which will initially reduce present catches of seafood even further without offering alternatives.

The alternatives seafood sources may include the diversion of fishing pressure to areas immediately beyond the reefs through the introduction of other means of fishing, the promotion of community-level aquaculture, and, the judicious introduction of depleted shellfish species.

## **2. Achievements**

### **2.1 New Villages**

#### ***Luua, Faga (July 24, 2003)***

The village of Luua is situated at the north-eastern side of the island of Savaii and has a population of about 250 including matais, women, aumaga and children. The village has a long fringing reef extending from the east to the west at a distance of about 880 meters and about 220 meters from shore. The deepest part of the lagoon can reach 7 meters during high tides and half a meter at low tides.

#### ***Tafatafa & Matavai, Falealili (September 22, 2003)***

The village of Tafatafa & Matavai is situated at the south-east side of the island of Upolu and has a population of about 260 including matais, women, aumaga and children. The village has a long fringing reef extending from the east to the west at a distance of about 400 meters and about 300 meters from shore. The deepest part of the lagoon can reach 12 feet during high tides and 4 feet at low tides.

#### ***Apolima-uta (November 28, 2003)***

The village of Apolima-uta is situated at the eastern side of the island of Upolu and has a population of about 450 including matais, women, aumaga and children. The village has a long fringing reef extending from the east to the west at a distance of about 500 meters and about 400 meters from shore. The deepest part of the lagoon can reach 5 meters during high tides and half a meter at low tides.

#### ***Matautu, Falelatai (June 24, 2004)***

The village of Matautu Falelatai is situated at the south-west side of the island of Upolu and has a population of about 700 including matais, women, aumaga and children. The village has a long fringing reef extending from the east to the west at a distance of about 3000 meters and about 1000 meters from shore. The deepest part of the lagoon can reach 5 meters during high tides and half a meter at low tides.

The four villages have produced their own Village Fisheries Management Plans that contain a range of community undertakings designed to conserve and rebuild fish stocks and to protect the marine environment. Undertakings have differed from village to village and the most common are summarized below.

- Banning the use of dynamite and poisons to kill fish
- Banning smashing of corals to catch sheltering fish
- Minimum size limits on fish
- Banning underwater torches for spearfishing at night
- Collecting Crown of Thorns starfish
- Banning removal of beach sand and dumping of rubbish
- Establishment of fish reserves
- Production of village By-Laws.

## **2.2 Program Reviews (6 monthly)**

The purpose of the review is to assist the Fisheries Management Committee (FMC) to analyze its performance and to make any improvements necessary. The review attempts to measure how effective the Village Fisheries Management Plan has been, and how well the community has carried out its own undertakings.

Reviewing the performance of the villages with management plans is one of the major components of the extension work during the last twelve months. The review is conducted on a six-month period since the approval of the Village Management Plan. The review employs a quantitative approach whereby scores are given (as percentage) every six months to assess the effectiveness of the management plan and the undertakings listed. It also allows the community to assess the performance of the Extension Services received by the village from time to time.

All villages with Management Plans have been reviewed with 75 % of the total villages in the program achieving scores of over 80%.

## **2.3 New Village Fish Reserves or Marine Protected Areas**

A total of 4 Fish reserves or marine Protected Areas have been established and declared by the matais of the new villages with Management Plans. The sites for the fish reserves were assessed by the research team of the Inshore Section. These villages were also provided with “**No Fishing Allowed**” sign boards.

## **2.4 Village By-laws**

One other most important part of the Extension Services work during this period is assisting the village fisheries management committees in the preparation and the processing of village by-laws. ‘Village by-laws are village rules that have been prepared in accordance with relevant provisions of the national Fisheries Legislation and are accorded legal recognition in the Court of Law’.

The main objective of village bylaws is for village laws to gain government recognition that enable the villages to prosecute and punish offenders accordingly. One of the advantages in employing bylaws as a management tool is the fact that these are village laws created by the people with a real interest in the management and conservation of fishery resources and the villages are therefore be more inclined to act on breaches of these laws.

A total of 11 village by-laws have been formulated including bylaws for the new villages and are now in the process to be gazette. These bylaws have been reviewed to be in line with the Amendments 2003 of the Fisheries Principal Act.

## **2.5 Training/Workshops**

- 12 consultation workshop with village communities of Luua, Apolima-uta, Tafatafa & Matavai and Matautu, Falelatai on the formulation of management plans.
- 1 consultation workshop with Fagalii village on farming giant clam as an Aquarium Trade project.
- 2 consultation workshop with Saoluafata and Saleapaga in Upolu and Papa i Palauli (Savaii) on Farming Trochus as a potential alternative seafood and stock enhancement.
- 2 consultation workshops (Upolu and Savaii) to inform village communities on coral reef monitoring survey results and recommendations on future management strategies.
- In house training on Video Production Skills to enhance staff knowledge on production, recording, editing and maintenance of video equipment.
- Conducted workshop on Community-based fisheries management for participants from American Samoa and Tokelau Islands.

## **2.6 Other Activities**

- Dissemination of information sheets to general public and assisted students on research topics.
- Coordinated Lincoln University study tour to villages in the community-based fisheries management programme (Saluafata and Saleapaga).
- Participated in the World Food Day celebration (October 03), Avanoa Tutusa Career Day (February 04) and World Environmental Day (June 04).
- Participated in the Trochus Second Annual General Meeting 2004

## **3. Regional and International Issues**

With a request from the SPC, the Fisheries Advisory Services Section had assisted the governments of American Samoa and Tokelau with their Community-based Fisheries Management Programs. A one week training program was conducted to train the Fisheries staff from American Samoa in updating their skills with the extension process and also to introduce island representatives from Tokelau into the basic principles of community management.

The Extension staff was then requested to work in Tokelau with the implementation of their program. The three week assignment was concluded with the presentation of three.



## Appendix 6.

### **7.6 FISH MARKET, REGULATION AND ENFORCEMENT**

The Management and staff of the Fish Market continue to perform their duties as stated in the list of goals and objectives of the Fisheries Division under the 2003-2004 Budget.

#### **DAILY DUTIES:**

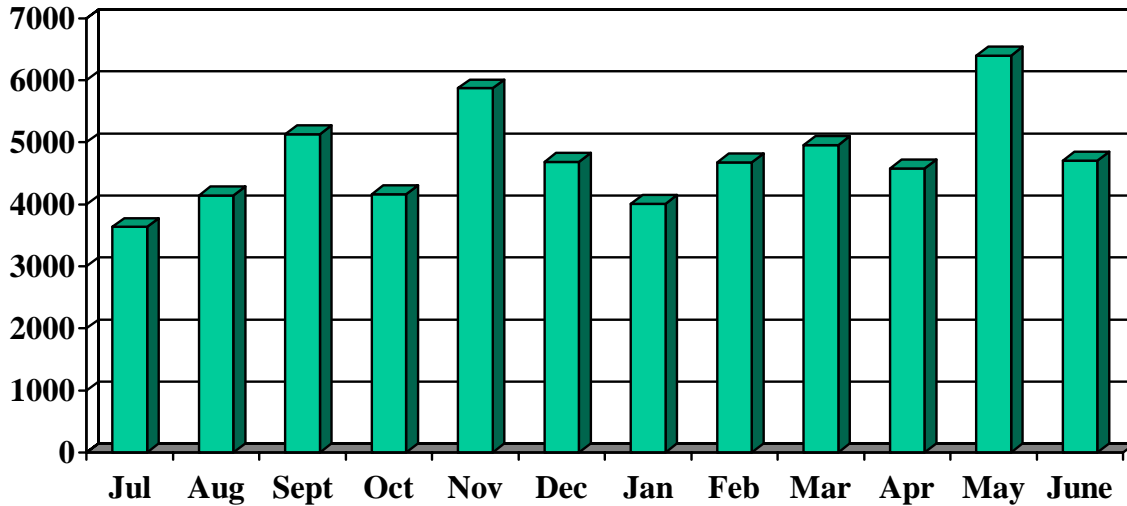
- Keeping the market clean at all times.
- Keeping the health standards of seafood sold at the Fish Market to achieve the highest quality, required for export..
- Using the necessary detergents and chemicals for particular purposes when required.
- Use of the appropriate tools in the performance of these daily duties.
- Monitoring fish caught using the inappropriate methodologies banned under the Fishery Act 1996.
- Monitoring the quantity and quality of fish that fail to meet the requirement stated in the above mentioned Act .
- Monitoring the poisonous fish like the *Mu* and other local fish.
- Conducting random checks as a control to determine, and to remind members of the Fishing Industry to maintain the highest quality in keeping the fish using coolers as all times.
- Using the B.A system to remind the public on a daily basis on the Fisheries Act 1988 as part of the Fish Market Awareness Programme.
- Maintaining and repairing the Fish Market as soon as the need arise.
- Collecting revenue from the sale of fish on the shelves.
- Alert at all times to overcome any accident like fire and others.

<b><u>REVENUE COLLECTED FROM THE FISH MARKET</u></b>	
<b>MONTH</b>	<b>REVENUE COLLECTED</b>
July 03	\$3,636.00
August 03	\$4,141.00
September 03	\$5,129.00
October 03	\$4,166.00
November 03	\$5,871.00
December 03	\$4,684.00
January 04	\$4,011.00
February 04	\$4,675.00
March 04	\$4,961.00
April 04	\$4,580.00
May 04	\$6,402.00
June 04	\$4,707.00
<b>TOTAL</b>	<b>\$56,963.00</b>

The above total represents all revenues collected since the beginning of July 2003 up to June 2004.

Column Graph for Revenue collected from the Fish Market as at July 2003 to June 2004

There is a decrease in the number of fish being sold at the Fish Market this year due to the following reasons.



- There are a number of Companies exporting fish to overseas markets.
- The Fishery Division has been effective in policing the Fishery Act to monitor the type of fish excepted for consumption and for export.
- The Cyclone Heta damaged the Fish Market at the beginning of the year. This was quickly repaired due to the financial assistance from the Trade Winds Co. Ltd.
- The reimbursement of the Trade Winds Co. Ltd funds stated above will be sorted out later with the Government of Samoa.

**ICE MACHINE AT ASAU**

The Fishing Industry at Asau has shown its appreciation to the Government because of the importance of this Ice machine in maintaining the quality of fish.

**ICE MACHINE AT MULIFANUA**

The Ice machine that was based at Salailua has been moved to Salelologa after the village banned the use of their water for the ice production.

This machine has yet to maximize its output due to the following reasons:

- Daily disruption of the power supply.
- The electricity sometimes could not reach the required power output for the smooth running of this Ice machine.
- The transfer of some of the parts from Savaii to Upolu has damaged some parts.

The Fishery Division is awaiting the arrival of new spare parts from overseas to fix the above mentioned Ice machine as soon as possible.