

# FISHERIES DIVISION

## ANNUAL REPORT July 1999-June 2000

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## MISSION STATEMENT

The Fisheries Division is committed to the Vision, Goal and Objectives identified in the Ministry's Corporate Plan, and has established the following as its Mission.

*To take actions that promote the optimum and ecologically sustainable use of the country's fishery resources and to develop suitable alternatives to substitute for harvesting depleted resources and maximise benefits to Samoa.*

## HIGHLIGHTS

- The following highlights represent a number of achievements Fisheries had entertained during the fiscal year:
- Fish and fish products exported in the 1999/2000 period is estimated to be around 4,440 metric tons with an estimated value of about ST\$31.63 millions.
- The domestic fishing fleet was estimated to be around 266 boats. Of this number 263 were less than 15 meters, and 3 were 15 meters and over. Due to restrictions imposed on the licensing conditions, only 21 have received licenses to fish. Of the total fleet, 152 boats were estimated to actively fish longline.
- The division has worked with 10 villages under its Community Extension program bringing the total number of villages to 63 that have worked with Fisheries Division in the last five years. Of these 10 villages, 6 were from Upolu and 4 were from Savaii. All of them have established Marine Protected Areas and 7 have already formulated village by-laws.
- In the Aquaculture development, the Tilapia hatchery had produced 4,400 fingerlings and with 10,000 from the Channel demonstration pond made up the total production of 14,400 fingerlings. Of this production, 3,900 were used to stock tilapia projects in 7 villages (two in Savaii and five in Upolu). For giant clam projects, 1700 baby clams were given to 5 villages (one in Upolu and four in Savaii).
- The design of a giant clam hatchery was completed and the successful tender for its construction selected.
- The newly designed 40ft alia prototype planned to be the next generation of alia fishing boats was completed in April 2000. The boat, which was fully equipped cost about \$371,000, was scheduled to undertake a six-month fishing trial to determine its economic viability.
- The formation of the Commercial Fisheries Management Advisory Committee (CF-MAC) has given the fishing industry the opportunity to voice their part in the development of the fishery in Samoa. The committee is working very well after the approval by the Cabinet. The CF-MAC has so far conducted 6 meetings.

- The proposed Tuna Management Arrangement for the region is still under negotiation through a Multilateral High Level Conference (MHLC) process. A sixth MHLC negotiation was held in April 2000 in Honolulu. It is expected to have one more round of talk before the Convention is completed and open for signatures.
- The Fisheries Treaty between the United States and FFA countries has reached its thirteenth year. Government had earned around US\$259,000 from this treaty within this fiscal year.

## ACTIVITIES

### *Research Section*

The activities of the Research Section had focussed on the three work areas namely the Aquaculture, Fisheries Statistics, and Fisheries Resource Assessment. On the aquaculture, the work was mainly done on the Nile Tilapia and Giant Clams. The section was able to supply 3,900 tilapia fingerlings to 8 villages from its Tilapia Hatchery and the demonstration pond at Channel College. For giant clam restocking, 5 villages were supplied with 1,703 baby clams under the Fisheries extension programme.

### *Monitoring of coral for village marine protected area*

The collection, compilation and analysis of fisheries statistics has always been an important task for the Research Section of the Fisheries Division. Data were normally collected from the Government fish market, Fisheries wharf, Fugalei market, along roadsides, from fish exporters and from Savaii. They are then analysed to give estimates on fish catches in subsistence and commercial fisheries, inshore and offshore, and the estimate of fisheries contribution to the economy of the country.

One of the important work for the Research Section is assessing the status of the fish stock particularly in Marine Protected Areas (MPA), where the coral reef monitoring programme is being conducted. Translocation of bivalves such as "tunage", "asi" and green snail also forms part of this assessment work. The activities of the Research section are detailed in Appendices 2 and 8. B.

### *Development Section*

Work of the Development Section was mainly focussed on the Exploratory fishing, Fishermen radio communication network, Registration and licensing of fishing vessels, and the servicing of the Commercial Fisheries Management Advisory Committee (CF-MAC). Throughout the fiscal year, Tautai Matapalapala has conducted 10 fishing trials and Tautai Iapani due to repair needed on the boat and engine; it only conducted three fishing trials.

The 40ft new alia the "Ulimasao" was one of the best achievements by the Development section when its construction was completed in April 2000. The vessel was then scheduled to undertake a series of trial fishing to determine its profitability.

#### *Launching of the F.V. Ulimasao*

Due to difficulty faced by fishermen in communication through one channel particularly in the Apia area, an upgrade which provided four extra channels in the Apia area and two for the Asau area was completed in May 2000. This has enhanced the level of communication between the fishermen while operating at sea.

*Fishermen Radio Communication Network  
Tower at Fisheries for upgrade*

The Development section also registered and licensed both foreign and local fishing boats. The licensing fee allocation for domestic fleet were \$200 for boats less than 12 metres, \$500 for boats 12 metres to less than 15 metres, \$5,000 for boats 15metres and over and \$6000 for foreign fishing vessels. Throughout the year, only 21 local fishing boats were licensed to fish compared to 35 in the 1998/99 period. The tremendous drop was due to new conditions imposed by the Ministry of Transport on safety appliances required by the fishing boats to carry on board while fishing. There was only one foreign vessel licensed during the period.

The section has established a Commercial Fisheries Management Advisory Committee (CF-MAC) comprising of representatives from the private sectors and government agencies. The main goal for this establishment is to allow more input from the private sectors into the development of the fishing industry. The committee has so far met six times. Appendices 1 and 8 of the report explain the activities of the section in more details.

*Fisheries Extension Section*

The Fisheries Extension programme allows the Fisheries staff to work closely with village communities to settle problems in connection with the management of their respective fisheries and marine environment. The section has worked with 10 villages developing fisheries management plans. The principal approach to working with village communities was a "bottom up" method where members of the communities were charged with the responsibilities of managing their own fisheries. Fisheries has focused on facilitating the development of village fisheries management plans, identifying alternative food sources, conducting six monthly reviews on village performance, and providing training for the communities through workshops. Details are described in Appendix 5.

*Extension Officer conducting community fisheries training for village members*

### *Fish Market*

The Fish Market continued to look after the cleanliness of the site and collect revenue for government through table rents. The revenue collected was \$64,234 during the twelve months, which is over the forecasted amount of \$60,000.

With the Market Manager position removed by PSC in the Fisheries budget, one of the Senior Fisheries Officers took care of the market with two staff members and three casual labourers. Appendix 6 provided more information on the Fish Market.

*Fish landed and ready to go to fish market*

### *Regional and International fisheries matters*

The Forum Fisheries Committee (FFC) which is the governing council of the Forum Fisheries Agency (FFA) met in Apia in May 1999 to discuss the FFA budget and work programme.

The annual consultation on the fisheries treaty between the United States and certain countries of the Pacific was held in Niue in March 2000. The treaty has earned about US\$148,000 in cash grant and \$111,000 in projects development.

The Multi High Level Conference (MHLC) talks to establish an international commission to manage the exploitation of the highly migratory fish stocks in the Western and Central Pacific had completed it's sixth round of talk in Hawaii in April 2000. It was expected to have one more round of talk to finalise outstanding issues before the Convention is completed and open for signatures.

### *Training and Workshops*

A range of training in a various areas of fisheries have been carried out by the Fisheries Division. Areas covered include legal, management, research, sea food, fish handling, computer and others. Five Fisheries staff have been sent for long term training at the University of the South Pacific (USP) and quite a few to overseas short courses. A number of workshops have been conducted in villages under the Fisheries Extension Programme. Various training and works shops carried out by Fisheries Division are detailed in the Appendix 7.

## **CHALLENGES**

The past twelfth-month period was a challenging experience. The construction of the newly designed 40ft alia had put a lot of pressure on everybody involved. The involvement and contribution of the local boat builders to the project as originally envisaged did not come to expectation. The support by the Ministry was not readily available. These have caused tremendous delay in the boat construction.

Shortage of staff and delayed recruitment were amongst the main problems particularly those of the Extension Section. This had upset programme schedules and delayed achievement of goals. Delegation of authorities was hard to come about and had resulted in the slow movement of daily routine work.

The Ministry's internal procedure of communication had often slowed down progress of important issues. Every now and then, important decisions were either not transparent or taken without professional advice.

The Ministry is too large and the load may not be fair to the Director. This has often caused loss of communications and resulted in repeated reproduction of documents.

## RECOMMENDATION

As the Ministry is large enough, the progress of important matters pertaining to development of fisheries has always not to its expectation. Fisheries stands to have plenty of room for better development for the benefit of the country but would always fail to accomplish so because of internal prioritization amongst other divisions of the Ministry. It is therefore recommended that as a matter of urgency, Fisheries Division should be detached from the Ministry to form a separate department. Alternatively, the Director should delegate his authority as provided under the Fisheries Act 1988 to the Head of Fisheries Division to perform his function mandated under the Act.

A new procedure should be put in place to speed up the everyday routine work of the Ministry, and important decisions should not be taken without professional advice from appropriate officers and that such decisions must be transparent to all involved and to all stakeholders.

## ACKNOWLEDGEMENT

The Fisheries Division wishes to acknowledge the invaluable contribution of the following agencies:

- Government of Australia (AusAID)
- Food and Agriculture Organization (FAO)
- Forum Fisheries Agency (FFA)
- Secretariat for the Pacific Community (SPC)
- Japan International Cooperation Agency (JICA)
- South Pacific Regional Environment Program (SPREP)
- University of the South Pacific - Marine Studies

For local contributions, the support of the Foreign Affairs, Public Service Commission and Treasury were appreciated.

Throughout the year, the support of the AusAID Fisheries staff particularly the Team Leader in moving the Fisheries activities forward to meet planned targets has been a tremendous contribution. I also acknowledge with thanks the dedication put in by my

own staff particularly my Senior Officers that has driven fisheries to the stage, as it is now recognised.

Last but not least I acknowledge the support of the Minister and Director.

Soifua

Ueta Fa'asili  
**ASSISTANT DIRECTOR - FISHERIES**

## **Appendix 1 : Sub Output 15.1 - Registration, licensing and surveillance services**

by: S. Time and A. Mulipola

1. The results reported in this section were the achievements of programmed activities under the Sub-output 15.1 of the Output 15.0.

### ***Local fishing vessels registration and licensing***

2. Efforts have been targeted to increase the licensing of local and foreign fishing vessels under bilateral and multilateral arrangement. A total of US\$259,000 was received by the Government through the Multilateral Fishing Treaty with the United States. A total of 21 local fishing boats had their license renewed during this period. This is only 12% of the local fleet (refer to Table 1 of the Appendix 8) thus showing the negative attitude of the vessel owners to the new regulations imposed by the government. However, the Fisheries Division has and is still pressing on to monitor and control the situation. The Fisheries Division on the other hand had played an active role in regional talks concerning licensing conditions of foreign fishing vessels. An amendment was made to the Fisheries Regulation licensing fee whereby they are charged according to their sizes.

3. It is expected that more fishing vessels will be registered and licensed as a result of enforcement actions now taken by the Fisheries Division in collaboration with the Ministry of Transport and Police Department. This in part is due to the revival of the Surveillance Committee which has caused a fair response from the local fishermen.

4. Four legal workshops on fisheries legislation and regulation have been conducted. These were In-house legal training at MAFFM, Fish size limits, Local commercial fishing boat safety, navigation and registration and Village By-laws. Two workshops were conducted for the Regulation Enforcement Committee. The Fisheries Division in a joint effort with the Ministry of Transport has managed to enforce small fishing vessels regulations and Fisheries regulation on commercial fishing boat registration and licensing. These workshops have helped the Surveillance Steering Committee members and Fisheries authorized staffs build up confidence in performing their duties.

### ***Surveillance and foreign fishing vessels***

5. One foreign fishing vessel has had its fishing license renewed. Surveillance activities continued throughout the period both at the Fish and Fugalei Markets for the sale of undersized and prohibited fish species. Surface surveillance has been conducted by the

Police patrol boat Nafanua while aerial surveillance has been handled by the assistance of Australian and New Zealand Royal Air Force. No infringement was reported which indicated the absence of any illegal foreign activities in our EEZ.

### *Fishermen safety at sea radio communication network*

6. The Fishermen Safety at Sea Radio Communication Network has remained the Fisheries Division's one of the most successful contribution to the fishing industry. The fishing vessel owners as well as the fishermen have appreciated the services offered not only for daily monitoring of the vessel movements but for the provision of weather forecasts and information about fishing grounds. Through the availability of free communication system, they are well advised of the arrival time and be informed immediately should the vessel encounter any problems whilst fishing. At the time of this report, there are close to 300 fishing vessels and users currently utilizing the system.

7. With the rapid growth of the local fleet (from 60 fishing vessels in 1996 to more than 300 in 1999) within two years of operation, there have been problems observed. These were mainly caused when the boat owners and the fishermen competed for the use of the limited channels thus creating system congestion. With the expectation that the local fleet is continuing to increase, the Fisheries Division to their concern had to find solutions to alleviate these problems. A request for an Upgrade of the Radio System was submitted and approved by the government. Consequently, a contract for construction was signed with funding identified from FFA. Construction work for the upgrade of the Fishermen Communication Network was completed in May 2000. The upgrade included the addition and installation of four channels for Upolu and two for Savai'i. Another new addition to the Network is the installation of HF frequencies with three international channels and five private channels for SSB radios.

8. Since the completion of the Upgrade of the Radio Communication Network, monitoring is now under the full control of the operator at the Fisheries Base thus, it has assisted in reducing the abuse and congestion of the system. The number of fishermen losing lives at sea is declining compared to the previous years when no communication system was in place. This is an excellent reflection of the improvement in the monitoring system administered by the Fisheries.

9. So far its continuous 24-hour service has been very efficient and had assisted in fifteen sea incidents which brought the distressed boats to safety.

### *Size Limits Regulation Monitoring*

10. Undersize fishes and invertebrates have been regularly monitored at the Apia Fish Market at 7 days/week and Fugalei Market on 3 days/week. Overall, a total of about 126 days monitoring activities have been carried out over the past four (4) months when staff have been trained and authorised.
11. In total, 55 cases of fishers selling undersized fish and invertebrates have been reported, but 47 were condoned as first issued warnings. Only eight (8) cases were formally charged and prosecuted at the Apia District Court resulted in the fisherman paying \$400 or 3 months imprisonment. Table 2 of Appendix 8 summarises the number of cases reported.
12. Staff members who have carried out the monitoring process have attended 6 training on fisheries legislation and regulations conducted by the Ministry's Legal Officer.

### *Commercial Fisheries*

#### *Commercial Fisheries Management Advisory Committee (CF-MAC)*

13. As the tuna longline fishery becomes the major export earner for Samoa, it is therefore very vital that the industry be developed and managed properly to ensure that the resources will not be depleted. The setting up of the Commercial Fisheries Management, Advisory Committee was the first step towards this goal. In May 1999, the first steering committee meeting was held to discuss the formation of the CF-MAC; its membership, functions and who to be represented in the committee. This was followed by a series of meetings with fish exporters association, boat builders association and also the Savaii and Upolu fishermen's association.
14. The first CF-MAC meeting to discuss the terms of reference for the CF-MAC was held in September 1999. The committee members and the terms of reference was presented and approved by Cabinet on Wednesday 2<sup>nd</sup> February 2000. Since its establishment, we've held 7 CF-MAC meetings.

Some of the more important issues that were raised and discussed during these meetings were:

- New commercial fishing fleet marina proposed at Mulinuu point.
- Tuna management plan for the Fishery.
- Fuel pump on Fisheries wharf.

### *Trainings and Workshops*

15. The first series of training and workshops conducted by the Commercial Fisheries Extension Service was that on fish handling for Upolu and Savaii fishermen. A total of 45 fishermen attended the Upolu training and 30 for Savaii. The aim of these workshops was to provide proper training in fish handling and chilling procedures for fishermen. Also 2 workshops on the use of charts and GPS for navigation during fishing activities was conducted in both Savaii and Upolu in December and January.

16. A three-day outboard engine maintenance and repair workshop was also carried out in Upolu and Savaii. The aim of this workshop was to train fishermen in the basics of engine maintenance and repair. So far 6 training/workshop was carried out for both Upolu and Savaii fishermen.

### *Information Sheets/Newsletter*

17. The Commercial Fisheries Extension Services has also provided information sheets and newsletters to disseminate information, new ideas and also news from the local and regional fishing industries. So far, 4 information sheets and 2 newsletters (published every six months) have been published. In addition, a tuna cookbook was also published and was distributed to the public for free.

The summary of all activities that was carried out by the Commercial Fisheries Extension Services during the period is listed in Table 25 of Appendix 8.

### *Future Activities*

- Update and maintain records of all fishing vessels (both licensed and unlicensed)
- Liase with the Ministry of Transport on safety issues for vessel registration and licensing
- Liase with the Police Department on enforcement of Fisheries Regulations
- Continue to conduct inspections for the fishing vessels
- Continue to monitor the sale of under-sized fish and prohibited fish species at the market places
- Cooperate with the Police Department on the offshore surveillance
- Participate in aerial surveillance when required
- Monitor good record of the Foreign fishing vessel licensing
- Continue to provide and strengthen the vital service for the fishermen and the vessel owners
- Closely monitor the daily operation of the Radio Communication Network
- Liase with the Police Department on the use of the patrol vessel for rescue missions

## **Appendix 2 : Sub Output 15.2 - Fisheries stocks, statistics and information services**

By: A. Mulipola & A. Trevor.

1. The results of activities reported in this section falls under the Sub-output 15.2 of the Output 15.0. The collection, collating and compilation of fishery statistics and related information were some of the ongoing activities performed by the Research Unit throughout the year. Importantly, the ongoing collection of data and information was to facilitate the monitoring of fisheries exploitable resources over time. In the outcome, appropriate, meaningful and practical measures are to be identified in order to sustainably and ecologically manage Samoa's fishery resources.
2. The ongoing data collection involved the sampling of fishery landings and efforts of different fisheries. Data was obtained via surveys conducted regularly, periodically and randomly at various outlets (i.e. Apia Fish market, Salelologa Market, retailers, landing ports, etc.). During sampling, major taxa (families to species) of fishes and invertebrates were identified and recorded. The lengths and weights were taken and numbers being counted for each species to determine relative species composition during each sampling day.
3. Additional information pertaining to economic value and fishing effort (fishing hours, location, fuel consumption, number of crew, fishing methods, etc.) were also obtained from interviewing sellers, proprietors and vendors. Data and related information were verified and entered into a central database system developed using ACCESS.
4. Similar surveys undertook in 1999/2000 period have again been implemented in this fiscal year in which data were gathered from the following sampling programmes:
  - (a) Offshore tuna fishery survey.
  - (b) Offshore bottomfish fishery survey.
  - (c) Inshore fishery survey.
  - (d) Apolima landing site survey.
  - (e) Longline port samplings.
  - (f) Fugalei market and Roadside fishery surveys.

### ***Domestic commercial/artisanal fisheries landings***

5. The total volume and value of all fisheries items that were sold locally for the 1999/2000 period was estimated at approximately 276 mt at SAT 2 million tala respectively. The total estimates were generated from fish and invertebrates that were sold commercially and artisanally through the Apia fish market, Fugalei and Salelologa agricultural markets and the along Apia-Toamua roadside.

6. Some of inshore originated items sold at both Fugalei and Salelologa were not quantified due to the processed form they were sold. However, the total value was estimated at around 0.43 million tala. Offshore fisheries dominated (74%) the overall total fishery items that were sold domestically during the period. Table 1. below summarises the overall estimated total of fishery products, which were domestically sold fresh and processed.

*Table 1: Total estimates of volume and value of domestic sold fisheries*

| <b>Fishery</b> | <b>Est Wt (mt)</b> | <b>Est Val ('000t)</b> | <b>% Wt</b> |
|----------------|--------------------|------------------------|-------------|
| Inshore        | 72.4*              | 1,371.9                | 26          |
| Offshore       | 203.3              | 607.7                  | 74          |
| <b>Total</b>   | <b>275.7</b>       | <b>1,979.6</b>         |             |

\*including values of the non quantified processed items sold via Fugalei Market.

#### *Offshore fisheries*

7. The overall summary of offshore fisheries that were domestically landed and sold is presented in Table 4 (see Appendix). Tuna was the predominant (84%) offshore originated item sold locally with about 66% was of the skipjack (*Katsuwonus pelamis*) type. Large tunas (i.e. albacore and yellowfin) and by-catches of the longline fishery like marlins, swordfishes, dolphin fishes were generally cut up in pieces of 1.5-2 kg in weight and sold at an average cost of \$10-20 per piece. However, through the year, tuna and pelagic items were sold at an average of \$2/lb. Tables 4 and 5 of the Appendix 8 summarise domestic disposed tuna and by-catch by major species sold.

8. Deepwater finfish comprised about 12% of the overall offshore total. Groups of deepwater finfish such snappers and lethrinus were the major fish types sold at an average price of \$4/lb. The breakdown of bottomfish offshore items by groups and types of major and common fishes sold is summarised in Table 5 in the Appendix 8.

*Table 2: Domestic sold offshore fisheries by major groups*

| <b>Fishery</b> | <b>Est Wt (mt)</b> | <b>Est Val ('000)</b> | <b>% Wt</b> |
|----------------|--------------------|-----------------------|-------------|
| Tuna           | 170.2              | 446.8                 | 84          |
| Pelagic        | 8.0                | 39.8                  | 4           |
| Deepwater      | 25.1               | 121.1                 | 12          |
| <b>Total</b>   | <b>203.3</b>       | <b>607.7</b>          |             |

### *Inshore fisheries*

9. Reef and lagoon fin-fish continued to be the dominant inshore fishery products sold through domestic outlets during the year. Finfish accounted for more than 80% of the total domestic inshore landing and followed by crustacean comprising about 14% (refer to Table 8 below of breakdown in major groups). In total, about 72.4 mt of inshore fisheries was landed and sold via domestic outlets. This volume generated a value of approximately 1.1 million tala. The volume of items sold in processed forms such as traditionally cooked, gutting in bottles, cutting, etc. was not quantified. This was due to impossibility of evaluating quantities per types as most were sold in chopped pieces or mixture with others. In total, about 0.43 million tala worth of processed items was sold with *fagu-sea* and *ofu-limu* accounting for 25% and 24% respectively. Traditionally cooked *faiai-pusi* (15%) and *faiai-fee* (12%) were the second most common items sold.

Table 3: Domestic inshore fisheries by major groups sold at markets

| Fishery       | Est Wt (mt) | Est Val ('000) | % Wt |
|---------------|-------------|----------------|------|
| Fin fish      | 58.7        | 388.0          | 81   |
| Crustacean    | 10.3        | 204.7          | 14   |
| Invertebrates | 3.4         | 68.6           | 5    |
| Processed     |             | 431.1          |      |
| <b>Total</b>  | <b>72.4</b> | <b>1,092.4</b> |      |

10. Throughout the year, finfish was sold at an average price/lb of \$3.00 tala, crustacean at \$9.00 tala and mollusc (fee) at \$10.00 tala. Generally, fin fishes were in sold strings or bundles ranging from \$15-30 tala. The summaries of domestic disposed inshore items by major types are summarised in Tables 6, 7, 8, and 9 in the Appendix 8.

### *Fisheries exports*

#### *Total fishery exports*

11. Fishery product exports are categorised into commercial and *faaoso* (home consumption). Commercial exports refer to fishery products exported primarily for commercial purposes or for re-selling. The *faaoso* exports refer to items exported mainly for family consumption or as gift for relatives and families overseas. Export monitoring is based on exporters declaring volume and value of fishery items exported using the Central Bank of Samoa/Custom Department/Fisheries Division, fisheries provisional export form. Faaoso exports were monitored through a certification

process implemented by the Fisheries division where all intending faaoso items are inspected and certified by the Division.

Table 4: Total fisheries exports for sale and faaoso in 1999/2000

| GROUPS     | COMMERCIAL     |                 |      | FAAOSO      |              |      |
|------------|----------------|-----------------|------|-------------|--------------|------|
|            | Wt(mt)         | Val(000T)       | % wt | Wt(mt)      | Val(000T)    | % wt |
| Tuna       | 4,272.2        | 30,015.9        | 96.2 | 32.4        | 142.7        | 77.0 |
| Pelagic    | 97.7           | 974.2           | 2.2  | 5.0         | 21.8         | 12.0 |
| Bottomfish | 57.7           | 550.3           | 1.3  | 2.6         | 18.8         | 6.0  |
| Others     | 8.9            | 61.4            | 0.2  |             |              |      |
| Inshore    | 4.4            | 28.1            | 0.1  | 2.3         | 13.2         | 5.0  |
|            | <b>4,441.0</b> | <b>31,629.9</b> |      | <b>42.3</b> | <b>196.5</b> |      |

12. Based on export provisional records and the faaoso certification, a total volume of about 4483 mt of fishery products, worth approximately \$32 million tala, have been exported. Summary of fisheries exports per group is presented in Table 4 above. The monthly trend of exports by quantities and values is illustrated in Figure 1. Again, export for commercial sales accounted for about 99% of the total volume. Similarly to last year, tuna dominated the total exports, which constituted about 96% of the total volume. This volume has generated approximately \$30 million tala. Likewise, tuna comprised about 77% of the total *faaoso* export volume. Predominantly, tuna for *faaosos* were usually processed as fillets. Appendix 8 Table 11 summarises exports by common species types.

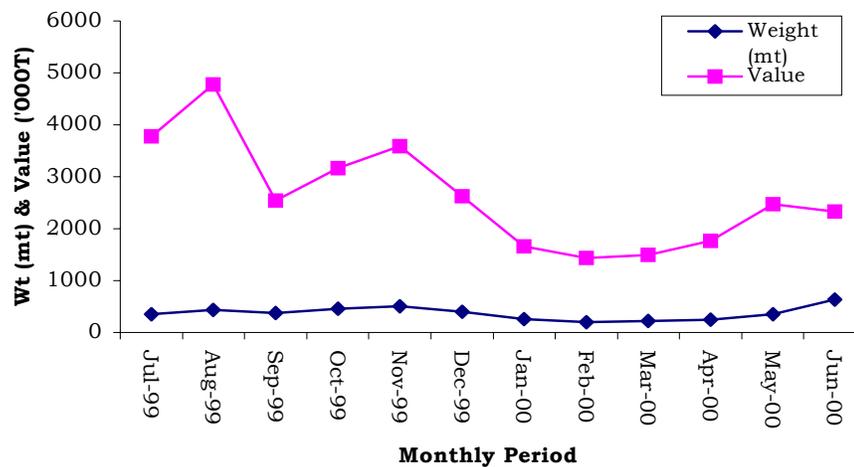


Figure 1. Monthly trend of total fishery exports.

### *Export species composition*

13. Albacore accounted for about 92% of the total tuna export weight, while yellowfin and bigeye tunas comprised approximately 6% and 2% respectively (refer to Table 10 in Appendix 8). Accordingly, tuna was predominantly sold frozen to the canneries in American Samoa which constituted about 86% of all locally landed tuna. Throughout the period, tuna was sold at an average price of approximately \$3.20 tala/lb. Due to the restriction of cargo space availability on commercial flights from Samoa, small amount of fresh chilled tuna was exported targeting the sashimi markets in the USA (14%).

14. A small portion (approximately 58 mt) of the total exports was deepwater fish (bottomfish) originated. Similar to the last period, most of the bottomfish was exported to the USA markets, fresh. Bottomfish, on average, was transacted at around \$4.33 tala/lb. With regards to species composition, snapper was the most common fish type exported which accounted for more than 80% of the total bottomfish export. Appendix 8 Table 11 summarises the bottomfish export by common fish types.

15. About 98 mt of other pelagic fishes was commercially exported in 1999/2000 period and it generated around \$0.97 million tala. Wahoo and dolphin fish were the most commonly export types. The former consisted about 54% and the latter comprised 29% of the total exported quantity. On average, pelagic items were sold at about \$4.50 tala/lb. Export composition of pelagic species is presented in Appendix 8 Table 12.

16. The total amount of inshore fisheries being exported over the year was about 4.5 mt and it was worth around \$0.28 million tala. Surgeonfish and Parrotfish both accounted for about 36% respectively were the major fish types exported. Finfish inshore items were mainly sold commercially in American Samoa at a mean price of \$2.88 tala/lb. Composition of exported inshore fish types is summarised in Appendix 8 Table 13.

### *Resources assessment and fish reserves*

#### *Fisheries Reserves*

17. The establishment of fish reserves in Samoa has been observed to be a practical management strategy in the protection of biodiversity of marine species and the enhancement of degraded inshore fisheries resources. It is noted in Zann (1999) that the status of coral reefs around Samoa ranges from highly degraded to very good. However, in the last 10 – 20 years it has been eminent that numerous edible fisheries resources have been heavily reduced due to overfishing, increased population, cyclones

(Ofa in 1990 and Val in 1991), increased runoff from land and destructive fishing methods.

18. In an attempt to restore depleted fish and other marine species populations various community-owned and managed fish reserves have been established on Upolu, Savai'i and Manono. Since the reserves are community-owned, the village decides how to manage their reserve with technical support from the Fisheries Division. Some villages will declare a total ban of fishing within the reserve area while some villages will declare a ban but open the reserve for fishing when there are large village gatherings. When the village decides to establish a fish reserve the proposed area is assessed to estimate the abundance and diversity of marine species. The reserve areas range from 15,000 – 50,000m<sup>2</sup>. Although the fish reserves may be small in size it is believed that the various network of small reserves facilitates the recruitment of fish and other marine species in areas outside the protected areas. During the 1999/2000 period, 9 initial surveys and 2 re-surveys were conducted (Table 14 Appendix 8). After the initial assessment the Fisheries Division will continue to re-survey the site on a 12 monthly basis to monitor changes in flora and fauna diversity and abundance.

19. The survey methods used by the Fisheries Division are belt transects for counting fish and invertebrates and the Line Intercept transect (LIT) is used to assess sessile benthic communities which include live coral, dead coral, algae, seagrasses, sand, and rubble. The methods used by the Fisheries Division have been adapted from methods outlined in ReefCheck and the AIMS Survey Manual for Tropical Marine Resources. A database has also been developed for data collection from fish reserve surveys.

#### *Bivalve Translocation*

20. It has been observed by villages that some of the local bivalves which used to be plentiful in the past have either severely depleted or are no longer found in these areas. In response to requests from various villages the Fisheries Division have started trials in 4 villages whereby local bivalves from one area have been translocated to another area. The bivalves utilised in this trial are *Gafrarium tumidum* (tugane), *Anadara antiquata* (pae/asi) and *Asaphis violascens* (pipi). The villages in which these trials are being conducted are Auala, Asau, Fagali'i and Poutasi (Falealili). Refer to Table 15 of the Appendix 8.

The Fisheries Division will continue to monitor these trials on a monthly basis for growth and mortality rates. If these trials are successful then more of these bivalves will be translocated to further enhance depleted stocks.

### *Green Snail Introduction*

21. In May 1999, 300 Green snails, *Turbo marmoratus* were introduced into 3 sites around the islands of Savai'i and Upolu. The sites of introduction were chosen due to their suitability according to criteria suggested by Amos (1996) in a feasibility study carried out on the introduction of green snail.

22. Visits to sample the green snail in the trial sites have been carried out when the area is accessible. The reason for this being that these animals tend to prefer area exposed to heavy wave action and are nocturnal. To date no snails have been recovered as they may have moved in to deeper areas. The Fisheries Division intends to carry another search using SCUBA gear.

### *Information sheets/Training*

23. Ten (10) information sheets have been produced namely Fish Farming in Samoa, Tilapia farming, Fishery Reserves or MPA, Longline fishing method, Fish Handling Onboard, Navigation, Commercial Tuna, Tuna Profile, Tuna Management, Tuna Fishing and Coral Reef Conservation Management. The info-sheets were developed to be readily available and easily understood by the public should they require further information on certain topics relating to fisheries.

24. Fisheries Database had also received further technical support in database system development from Emmanuel Schniter of SPC. The Fisheries Division Database has been further modified and improved and this was used as an exercise for the responsible staff. Likewise, further support was also provided by two US Peace Corps teaching at Levaula College which trained five staff members in database ACCESS introduction. The training had further improved the existing FD database system.

25. On-going practical exercises and training on coral reef monitoring techniques were regularly implemented during the appraisal of Marine Protected Areas for communities.

## **Appendix 3 : Sub Output - 15.4 Development and Exploratory fishing services**

by: S. Time & S. Moala

1. This program comes under the Output AG 15. 4. and aimed at conducting fishing trials.

During this financial year three vessels were involved in performing the field activities.

### *Fisberies Division fishing vessels and exploratory fishing*

#### *Tautai Matapalapala*

2. The Fishing Vessel Tautai Matapalapala had remained in good running conditions and had completed 10 longline trial fishing trips as recorded in Table 17 at the Appendix 8. It also had a trip to American Samoa to transport a load of juvenile giant clams for the Division's aquaculture programs. Towards the end of the period the crew members were transferred to the construction of Ulimasao and conducted fishing trials.

#### *Tautai Iapani*

3. The other fishing vessel Tautai Iapani based in Asau also completed three fishing trips and the crew members were transferred as well to the Ulimasao for fishing trials.

#### *Ulimasao*

4. The newly designed, constructed and operated new fishing vessel currently known as Ulimasao has been one main feature of this period. The design of the prototype alia was completed and came on hand on the 7<sup>th</sup> September 1999. Construction started in September 1999 and finished in early April 2000. The Ulimasao was officially launched and blessed on 6<sup>th</sup> April 2000. It shows an excellent model for the smaller alias as it incorporates all safety elements and sufficient platform and holding wells to ensure better fish quality. To accomplish its purpose of construction, the Ulimasao has already completed four trial fishing trips during the last three months. These are shown in Table 18 at the Appendix 8.

### *Technology transfers*

#### *SPC Consultant*

5. A master fisherman from the Secretariat of Pacific Community was contracted from August to December 1999 to conduct fishing trials targeting huge size tuna for sashimi markets and to provide technical support in tuna long line research. During the course of his assignment he provided onboard training for the local skipper and crew on

navigation and fish handling and storage in ice. He also conducted three workshops for the local skippers and fishermen on Fish Handling and use of charts and Global Positioning System (GPS) in relation to navigation. It is beyond doubt that his assignment had been a rewarding and an important one not only for Fisheries Division personnels but the local fishermen as well.

He was again contracted from April to August 2000 to conduct fishing trials on the Fisheries new alia Ulimasao to find out its economic performance.

### *Workshops/Training*

6. A total of eight workshops on Fishing Gear and Methods, Fish Handling and Quality Control on Board, Basic Navigation and GPS Operation, ORS Fishing Methods and Outboard Motor Repairs and Maintenance were conducted for the local fishermen and fish exporters both in Upolu and Savai'i. These have enhanced the fishermen's fishing skills with regards to navigation and use of GPS, good fish handling practices to guarantee and maintain better quality of fish for the overseas markets and higher revenue in return. This has also helped to alleviate problems of engine failures, line entanglements that further leads to losing lives at sea. There have been improvements in the quality of fish exported to overseas markets as shown by the decline in rejected fish. Fisheries Division was kind enough to conduct one training on fishing gear and method and on board demonstration for the Toloa Maritime students. This has helped these students to find employment in the private sectors.

### *Fish Aggregating Devices (FADs)*

7. A total of four Fish Aggregating Device units were deployed in August 1999, but towards the end of the period only three were still in place as the other one had been disassociated from its position. So far, these FADS units have helped to improve the catch of the local fishing vessels.

### *Future Activities*

The following are suggested activities which must include in the work plan:

- Conduct trial fishing for sashimi markets
- Continue to provide training for the local fishermen on fishing gear and method
- Continue to conduct training on fish handling, storage on board and quality control
- Continue to conduct long line fishing trials with collaboration of ARMS
- Monitoring of three FAD units left from the four deployed
- Conduct trial fishing around the vicinity of the devises to test the productivity



## Appendix 4 : Output 16 - Aquaculture services

1. The outcomes reported in this section were the details of the achieved targets for the Output 16.0 for the Fisheries Division. Aquaculture development is an ongoing program involving the farming, stocking and restocking of suitable freshwater bodies within villages with tilapia, *Oreochromis niloticus*. Similarly, several species of giant clams (faisua) were distributed for repopulating and enhancement of faisua stocks within village lagoonal areas. Objectively, aquaculture and mariculture promotions have been observed to be one of the applied options in alleviating pressure on over-exploited inshore reef and lagoon fisheries and to increase fish production.
2. The 1999/2000 aquaculture development program was concentrated on the culture and breeding of the much ideal and suitable species of tilapia. Several species of giant clams namely, *Tridacna derasa*, *T. squamosa*, *T. maxima* and *Hippopus hippopus* were also distributed to selected lagoonal and reefal areas around the country.

### *Nile tilapia*

#### *Stocking and restocking*

3. The farming of the tilapia was conducted in the most conventional way of pond culturing. However, a mono-sex and fencing cultures were also carried out. At Chanel College farm, about 1,500 male tilapia were cultured using mono-sex method. Tilapia was stocked into seven village ponds employing fence/cage/pen culture and the usual free roaming methods as summarised in Table 19 of the Appendix 8. Overall, about 3,900 fry in total were stocked during 1999/2000 period. Since the introduction of the Nile tilapia in community ponds/lakes there are in total, 11 farms on Upolu and 8 farms on Savaii respectively.

#### *Hatchery*

4. The Division has continued to operate their backyard hatchery at its headquarter in Apia. The backyard hatchery continued to produce fingerlings for initial stockings or restockings. About 4,400 fingerlings (Table 20 in the Appendix 8) were produced during the breeding programme during the year. In addition, about 10,000 more fingerlings were produced at the Chanel farm which have been distributed for stocking and restocking programmes.

### *Giant clam farming*

5. Stock enhancement has been another way that the Fisheries Division has attempted to replenish depleted fisheries resources in Samoa. Several giant clam species have been introduced into Samoa since 1988 and the species include *Tridacna derasa*, *T. squamosa*, *T. gigas* and *Hippopus hippopus*. *H. hippopus* is believed to have become geographically extinct in Samoa and only shells of this species have been found in areas that have been dredged. The two species that are endemic and still in existence in Samoan waters are *T. squamosa* and *T. maxima*.

6. To date 43,286 giant clams have been introduced 61 village lagoons/reefs on the islands of Upolu, Savai'i, and Manono. At present 400 giant clams of the species *T. derasa*, *T. gigas*, *T. maxima* and *H. hippopus* are being kept by the Fisheries Division to be used as broodstock in the giant clam hatchery that is currently under construction at Toloa.

7. Only five new introductions took place in the 1999/2000 period (see Table 21 in Appendix 8). Clams given to these 5 villages were from the stocks purchased by the Fisheries Division in the previous year. The Fisheries Division made no further clam purchases for distribution to the villages as plans have set to spawn clams when the hatchery construction is complete.

8. The growth rate for *T. derasa* has been 4.23mm/month (5.076cm/year) while that for *T. gigas* is 7.33mm/month. These are comparable to those growth rates reported by Heslinga (1990) for Palau in which the growth rates for *T. derasa* were between 5-6cm/year for the first 5 years.

9. The Fisheries Division will continue to monitor the growth and mortality as well as providing technical support on the maintenance of giant clam grow-out nurseries on a 1-2 monthly basis.

### *Workshops/training*

10. A total of seven on-location workshops on faisua maintenance and three on-location training on tilapia farming were conducted at communities. Members of the CFMAC were the usual participants to these on the spots training where Research staff relayed proper approaches and mechanism to look after giant clams and tilapia. The on-location training is envisaged to be continuous updating communities on proper ways to maintain faisua/tilapia in their care.

### *Future Activities*

The following should form part of the activities of the Output:

- Continue trials of mono-sex and fencing cultures
- Continue breeding and fry production at FD backyard hatchery.
- Carry out spawning and breeding programme at Toloa hatchery.
- Continue distributing faisuas to villages upon request.

## Appendix 5: Output 17 - Fisheries Advisory Services

1. The achievements detailed in the following sections were the targeted measures under the Output 17.0 for the 1999/2000 fiscal year.

### *Community-based fisheries management*

2. The AusAID funded Fisheries Extension and Training Project in its second phase continued to support the community/village-based fisheries management program. This program was established in 1995 and invented the process of community/village-based fisheries management in Samoa. The overall objective of the process is to promote the participation of village communities in the management of their marine environment and fishery resources. The medium term goal of the project is to prevent a further decline in village near-shore fisheries resources. Reasons for this decline include, overexploitation, the use of destructive fishing methods, and environmental disturbances.

3. The process of community involvement in the management of fisheries resources is achieved when;

- people of such community is aware of the problems with the marine environment and fisheries resources,
- there is a concern for these problems and their effects on the community,
- there is a desire and willingness to take actions to address these problems,
- there is an assumed control over adjacent fishing areas and,
- the community should have the power to make and enforce their own rules and regulations.

4. The village extension process employed is simply known as the 'bottom-up' approach. This approach is designed in a way where the various groups of the community voiced the problems, possible solutions to the problems, what should be done to reduce or eliminate the problems and, who should be responsible for these actions. The extension staffs work together with the community and are seen as facilitators for the group meetings and other activities.

5. The process culminates in each community producing its own Village Fisheries Management Plan including the resource management and conservation undertakings of the community, and the support undertakings of the Fisheries Division.

### *Village Management Plans*

6. A total of 10 Village Management Plans were approved in the July 99-June 2000 period. These include six from Upolu and four from Savaii. Table 22 of Appendix 8 provides a summary of the villages and the dates in which the management plans were

approved. The village based fisheries management process is a lengthy process and sometimes takes weeks before a management plan is produced and approved. In some cases, the process is delayed due to other village commitments.

7. The plans 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 spear fishing 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.

8. 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'.

9. Seven village by-laws were produced and gazetted during this period. These included five for Upolu and two for Savaii as shown Table 23 of Appendix 8.

#### *Other Alternatives for Village Income and Food Source*

10. The Fisheries Division has been encouraging the development of alternative sources of seafood to those resulting from the present heavy exploitation of near-shore reefs and lagoons. The alternative means of obtaining seafood are 1) the diversion of fishing pressure to areas beyond the reefs through the introduction of low-cost boats, 2) the promotion of village-level aquaculture, and, 3) the judicious introduction of new or depleted species.

11. The Extension staff have continually worked with the Research Section in the promotion of *tialpia* farming and stocking of water bodies in villages with management plans (Refer to Research Section's report for further clarification).

12. The Extension Services were actively involved with the promotion of the Outer Reef Slope (ORS) fishing program. These include the collection of catch data forms from fishers from villages and assisted in organising workshops for new fishers.

### *Training and Workshops*

13. The following is a list of various workshops that the Extension staff have organised during this period. The workshops were conducted both in Upolu and Savaii not only for the Extension staff but as well as the public.

- Workshop on GPS and Navigation
- Extension Process (for the new Extension staff)
- Outer Reef Slope fishing
- Outboard motor maintenance
- Workshops on *faisua* maintenance
- On-location training on tilapia farming
- Fish handling and Quality Control on Board training.

### *Six - Monthly Reviews*

14. Reviewing the performance of the villages with management plans is one of the major components of the extension work during the 1999-2000 period. 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. The average scores are presented in Tables 23 and 24 of Appendix 8.

### *Future activities*

- Working in new villages targeting ten Village Management Plans produced in the next fiscal year.
- Continue working in existing communities to improve performance.
- Assist the communities with training/workshops in areas requested by the communities.
- Carry out 6-Monthly Reviews for all existing villages.
- Conduct in-house training for Extension Staff (especially the new staff members) to be familiar with extension work and the bottom up approach.

## **Appendix 6 : Output 18.- Fish Market Services**

1. The results detailed under this section were the achieved targets of the Output 18.0.

### *Operation*

2. The Apia Fish Market continued to operate under the management of the Fisheries Division in 1999/2000. The daily operation involved the management and maintenance of the open side of the market for the general public to trade their fishery products. The market operates seven days a week and open from 0600 hrs to 1800 hrs everyday except Saturday and Sunday. The market operates from 0600 to about 1300 on Saturday and from 0500 to 0830 hrs on Sunday.

3. The fish market is managed by a Senior Fisheries Officer with two permanent staff (rental collectors) and 3 casuals who assist with the collection of the rents and ensuring that the place is hygienically acceptable at all times.

### *Fish Market Revenue*

4. The total revenue collected from the fish market in the 1999-2000 period was SAT64,234.00. This was from the rentals of tables/blocks by the fish sellers at a price of SAT4.00 and SAT5.00. The following Table 26 of Appendix 8 presents the revenue per month collected at the Fish Market.

### *Future activities*

- Continue on with the daily operation and management of the market
- Continue with the general maintenance of the market
- Ensure that cleaning and sanitation are carried out at all times.
- Assist the Division with the enforcement of size limits on fish and invertebrates exposed for sale
- Ensure that the fish sold via the fish market is of good quality. This can be achieved through advising fish sellers to practice HACCP principles such as storing fish in ice before and during sale.

## Appendix 7 : Fisheries Training Programme

*Register updated Sept 2000*

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This Training Register includes all formal and short-term training either totally funded, part-funded, arranged or otherwise assisted through the above project. It does not include training completed as a normal part of other project activities.

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### **KEY TO FISHERIES STAFF**

**Assistant Director** UF Ueta Faasili  
**Principal Fisheries Officer:** AM Atonio Mulipola  
**Senior Fisheries Officers:** ST Savali Time, ER Etuati Ropeti, TA Totive Aloaina,  
AT Aotalavou Taua, PF Pouvave Fainuulelei, ATr Anne

Trevor

TU Tusi Ualolo

**Fisheries Staff:** ML Malwine Lober, TS Tauvae Sua, KM Kaisara Motuga, IK Iulia Kelekolio, MM Mamoe Malolo, ML Mikaele Lafaele, SS Susau Siolo, AaM-A'a Mauletaua, MF Maatui Filifili, SV Sione Vaofusi, NT Niutao Tinomineta, TS Tavita Sasi, PP Peleti Paia, MG Mamoe Gie, MS Malama Siamomua, PT Patelesio Tualofa, VT Vaauli Tulutua, SolT Solomona Tufuga, TM Tulaga Malaulau, AK Ameto Kalolo, TM Tulaga Malaulau, LM Leo Mulipola, LS Laupama Sanele, FF Faasulu Fetulei, IT Isia Tiitii, TG Tusi Gaumatau, UT Ulusapeti TiiTii; Faalima Nofoaiga (FN)

**Project Staff Advisers:** MK Mike King, MM Mauisii Mose, UB Ueli O'Brien, SL Steve Lindsay, LB Lui Bell, JK Jennifer Kallie, GD Geoff Dews, GC Grant Carnie, RC Robert Cogger, AV Annice Vass, MR Mike Rimmer

### **Staff meetings/workshops**

Monthly Fisheries Project Meetings commenced in formal format in February 1999. The meetings were subsequently renamed Fisheries Meeting and the agenda broadened to include all sections, as requested by Assistant Director. Brief written summaries of section reports are required. Meetings are scheduled for the last Friday in the month. At the request of the Assistant Director (Fisheries) in August 1999, these meetings were rescheduled to be held at two-monthly intervals. Each meeting has a standard agenda to:

- a) Review and assess progress of the past period
- b) Plan activities for the coming period
- c) Discuss any other business.

## Local Formal Training (USP Alafua campus)

| Course             | Institution | Period  | Candidate           | Grade |
|--------------------|-------------|---------|---------------------|-------|
| PGD: MS201         | USP, Alafua | 1999/01 | Anne Trevor         | C     |
| CTF**: MA131       | USP, Alafua | 1999/01 | Patelesio Taualofa  | D     |
| CTF**: MA131       | USP, Alafua | 1999/01 | Autalavou Taua      | E     |
| CTF**: MS201*      | USP, Alafua | 1999/01 | Vaauli Tultua       | D     |
| CTF**: MG101&EC101 | USP, Alafua | 1999/01 | Susau Siolo         | C+,C  |
| CORM: MS111        | USP, Alafua | 1999/01 | Ioapo Tyrell        | E     |
| CORM: MS111        | USP, Alafua | 1999/01 | Leo Mulipola        | E     |
| CORM: MS111        | USP, Alafua | 1999/01 | Tulaga Malaulau     | E     |
| CORM: MS111        | USP, Alafua | 1999/01 | Laupama Sanele      | E     |
| CORM: MS111        | USP, Alafua | 1999/01 | Tufue Fiso          | E     |
| CBM: MG101         | USP, Alafua | 1999/01 | Faasulu Fepuleai    | C     |
| CBM: MAS21         | USP, Alafua | 1999/02 | Faasulu Fepuleai    | E     |
| CORM: SE103        | USP, Alafua | 1999/02 | Susau Siolo         | C     |
| CBM: CS121         | USP, Alafua | 2000/01 | Faasulu Fepuleai    | D     |
| CBM: AFF01         | USP, Alafua | 2000/01 | Faalima Nofoaiga*** | E     |
| CORM**: CS121      | USP, Alafua | 2000/01 | Tavita Sasi         | B+    |
| CORM:SE100         | USP, Alafua | 2000/01 | Susau Siolo         | D     |

\* Self funded

\*\* Existing enrolments from AusAID Extension and Training Project

\*\*\* Now wants to change enrolment to CORM

**Abbreviations:** PGD: Post-graduate Diploma; CORM: Certificate of Ocean Resources Management

CTM: Certificate in Tropical Fisheries; CBM: Certificate in Business Management

Key to grades; A Distinction D Below standard required for pass

B Credit E Fail

C Pass

## Overseas Formal Training:

| Course                                  | Institution    | Period    | Candidate                     |
|---|----------------|-----------|-------------------------------|
| Dip. Ocean Resources                    | USP, Fiji      | 1999-2001 | Tauvae Sua                    |
| BA Marine Affairs                       | USP, Fiji      | 1999-2002 | Ioelu Malofie, Nofoaiga Tausa |
|   |                | 1999-2001 | Malama Siamomua               |
|   |                | 1999-2001 | Mikaele Lafaele               |
| BSc (Fisheries)<br>COMPLETED July, 2000 | AMC, Australia | 1997-2000 | Etuati Ropeti (AusAID funded) |

## Local training/workshops for Community/Public (FD/Project funded)

| Workshop | Period | Villages/groups/communities (presenters) |
|----------|--------|--|
|----------|--------|--|

|                                 |             |   |
|---------------------------------|-------------|---|
| ORS fishing workshop<br>AaM)    | 25/3/99     | Fasitootai/Vailuutai (UB, SV, KP, MM, JK, VS,   |
| ORS fishing workshop            | 29-1/4/99   | Fasitoo Pastor & Fishers (UB, MM)   |
| ORS fishing workshop            | 16/4/99     | Nuusuatia (UB, MM)  |
| ORS fishing workshop            | 20/4/99     | Nuusuatia (UB, MM)  |
| ORS fishing workshop            | 26/5/99     | Mutiatele, Pue, Vailoa, Satitua (UB, MM VS, KS, IK)   |
| ORS fishing workshop            | 7-11/6/99   | Ulutogia (UB, MM - KP,SV data collection)   |
| Clam Workshop (in villages)     | 13-16/6/99  | New villages with clams   |
| ORS fishing workshop            | 16-17/6/99  | Solosolo (UB, MM, PP)   |
| ORS fishing workshop            | 22-23/6/99  | Solosolo (UB, MM, PP)   |
| Savaii Clam Workshop            | 27/6/99     | Papa, Sapa, Lelepa, Saleauma, Satalepai -26 people.   |
| Upolu Clam Workshop             | 28/6/99     | Solosolo, Utufaalaafa, Fasitootai, Fagalii, Samatau, Faleula, Lalovi, Mulifanua, Fuailoloo, Mulifanua, Saleilua, Vailoa, Saoluafata, Tauoo - 31 people. |
| Seaweed farming (Saluafata etc) | 15/7/99     | IK  |
| ORS fishing workshop            | 20/7/99     | Faleula (UB, MM, PP)  |
| ORS fishing workshop            | 19/8/99     | Saafatua (UB, MM, PP)   |
| ORS fishing workshop            | 24/2/00     | Faleu, Manono (UB, MM)  |
| Mollusc translocation w/s       | 14-16/2/00  | Asau/Auala FMC (JK ATr, ML)   |
| ORS fishing workshop            | 22/3/00     | Mulifanua (UB. MM)  |
| ORS fishing workshop            | 24/3/00     | Tafua (UB, MM and Savaii staff)   |
| Mollusc translocation w/s       | 27/3/00     | Fagalii FMC (LB, AT, ML)  |
| Mollusc translocation w/s       | 28/3/00     | Poutasi FMC (JK LB, ATr, ML)  |
| Extension service w/s           | 17-21/7/00  | American Samoa FD staff (ER JK and Ext. staff)  |
| Mollusc translocation w/s       | 25-26/7/00  | Asau/Auala FMC (ATr, ML)  |
| Marine training                 | 1/6-31/7/00 | Fishing boat employees (UB)   |
| ORS fishing workshop            | 14/8-?      | Satitua (UB)  |
| Extension service w/s           | 17-21/7/00  | Tanzanian FD staff (ER JK and Ext. staff)   |

### Overseas short courses, attachments, conferences, workshops

| Course                              | Period        | Location    | Attendees                        | Funding    |
|-------------------------------------|---------------|-------------|----------------------------------|------------|
| Fisheries Extension Officers course | 2/99-6/99     | New Zealand | TS                               | SPC        |
| Aquaculture w/shop                  | 22/3-26/3/99  | Fiji        | AM                               | FAO        |
| FFA Regional meeting (tuna)         | 27/4-7/5/99   | Samoa       | UF, ST, SM,<br>AM, AT, IK        | FFC        |
| Seaweed Farming workshop            | 7/5-14/5/99   | Fiji        | IK, Tala Pulou<br>Sisavaii Pivao | SPRADP/FTP |
| Standing Committee Tuna Billfish    | 14/6-25/6/99  | Tahiti      | ATr                              | SPC/OFP    |
| Coastal Fisheries Management        | 30/6-2/7/99   | Fiji        | AT                               | MRAG*      |
| Technology and Aquaculture          | 2/8-3/9/99    | Korea       | MG                               | KOICA      |
| Head of Fisheries, Noumea           | 2/8-13/8/99   | Noumea      | UF IK                            | SPC        |
| Highly migratory fish, Honolulu     | 3/9-15/9/99   | Hawaii      | UF                               | FFA        |
| Coastal and Marine Conservation     | 28/9-10/10/99 | Korea       | ATr                              | IOC KOICA  |
| ?                                   | 28/10-4/12    | Japan       | PF PT                            | JICA       |
| Women in Cty Mgt in Fisheries       | 5/11-12/11    | Fiji        | IK                               | FFA        |
| Community based MPAs                | 12/11-20/     | Tahiti      | AM                               |            |
|                                     |               |             | CSPODP/SPREP                     |            |
| FishRights 99 Conference - WA       | 15-20/11/99   | Australia   | AT                               | FAO        |
| Tuna Quotas - Fiji                  | 6-17/12/99    | Fiji        | UF                               | FFA        |

|                                     |             |             |       |             |
|-------------------------------------|-------------|-------------|-------|-------------|
| Fisheries Extension Officers course | 2/00-6/00   | New Zealand | Sol T | SPC/Project |
| US Fisheries Mgt                    | 11-17/3/00  | Niue        | UF    | GOS/Project |
| Standing Cttee on Tuna & Billfish   | 1-18/7/00   | Noumea      | AM    | SPC         |
| Assistance in Fisheries Regulations | 18-29/7/00  | Tonga       | AT    | FAO         |
| 7thm-lateral-migratory fish         | 28/8-5/9/00 | Hawaii      | UF    | Project     |

\*(Marine Resources Assessment Group Ltd)

### Local workshops/training sessions for FD staff

| Workshop                           | Period      | Participants                                  | Presenter(s)    | Funding     |
|------------------------------------|-------------|---|-----------------|-------------|
| Fisheries Extension Review         | 26/2/99     | Ext staff                                     | AT, JK          | SFP         |
| Fisheries Extension Review         | 19/3/99     | Ext staff                                     | AT, JK          | SFP         |
| Coral growing                      | 8/4/99      | Ext/Res staff                                 | SL              | SFP         |
| Samoa Culture 1                    | 9/4/99      | Ext/Res staff                                 | MM              | SFP         |
| Samoa Culture 2                    | 30/4/99     | Ext/Res staff                                 | MM              | SFP         |
| Fisheries Post Harvest Project     | 7/5/99      | Ext/Res staff                                 | Irene Novaczek  | SFP         |
| Fish ID for Port sampling          | 28/5/99     | Ext/Res staff                                 | Peter Sharples  | SPC         |
| Review of village assessment       | 3/06/99     | Exten.staff                                   | JK, MK          | SFP         |
| Institutional Strengthening Series | May/June,99 | All FD staff                                  | RC, MK          | SFP         |
| Polytech AIDs workshop             | 7/6-11/6/99 | AaM   | Polytech        | AusAID      |
| Advisors & Counterparts w/s        | 15-16/6/99  | JK,AT,TA,LB,<br>PT,PW,SM                      | Helen Sinclair  | AusAID      |
| AusAID/GOS Project process         | 18/6/99     | Project/counterparts                          |                 | Aus AID     |
| Seaweed farming workshop           | 15/7/99     | AM, IK, FF                                    | H.Tanaka        | FAO-SPADP   |
| Review of village assessment       | 27/7/99     | Exten.staff                                   | JK, MK          | SFP         |
| Samoa Culture 3                    | 27/7/99     | Ext/Res staff                                 | MM              | SFP         |
| Advisors & Counterparts w/s        | 15-16/8/99  | MK, UF  | Helen Sinclair  | AusAID      |
| Advisors & Counterparts w/s        | 17-18/8/99  | KP, PF  | Helen Sinclair  | AusAID      |
| Aquaculture/extension w/s (Savaii) | 31/8-1/9/99 | all ext.staff                                 | JK, MR, LB      | SFP         |
| Extension process w/s (Savaii)     | 28-29/10    | Savaii ext staff                              | JK              | AusAID      |
| Seafood handling w/s               | 3/11        | SS, AaM                                       | W.Sokimi PW, ST | Project/FFA |
| Seafood handling w/s               | 17/11       | Savaii staff                                  | W.Sokimi PW, ST | Project/FFA |
| Navigation w/s (Upolu)             | 29/11/99    | 5 FD fishers                                  | PW, ST          | Project     |
| EIAs                               | 23/11/99    | Proj/countpts                                 | JD, ATr         | Project     |
| Clam data entry                    | 24/11/99    | Upolu staff                                   | LB              | Project     |
| Clam data entry                    | 26/11/99    | Savaii staff                                  | LB              | Project     |
| Legislation w/s                    | 6-10/12/99  | AM, ST, AT, TA, A Tr, IK, MS<br>MAFFM/Project |                 |             |
| Coral Reef w/s                     | 13/12/99    | AT, DEC, Ext staff & Upolu vills              |                 | FD/DEC      |
| Coral reef w/s                     | 14/12/99    | AT, DEC, Ext staff & Savaii vills             |                 | FD/DEC      |
| Tuna Mgt w/s                       | 20/12/99    | Senior FD staff & Project staff               |                 | Project     |
| Village Ext w/s                    | 20/12/99    | Senior FD staff, MK & JK                      |                 | Project     |
| Publicity/awareness-raising w/shop | 8/2/00      | Senior staff                                  | Susau           | FD          |
| Extension training                 | 8-9/2/00    | Savaii staff                                  | JK              | Project     |
| Translocation of molluscs          | 10/2/00     | Scientific staff                              | MK/LB           | Project     |
| Tilapia production workshop        | 11/2/00     | Fisheries staff                               | LB              | Project     |
| Field training (Mollusc translocn) | 14-16/2/00  | Fisheries staff                               | JK              | Project     |
| Fisheries data collection w/shop   | 3/3/00      | Fisheries staff                               | KP              | Project     |

|                                     |              |                  |                |                |
|-------------------------------------|--------------|------------------|----------------|----------------|
| Village Extension w/s               | 3/3/00       | Ext staff        | JK             | Project        |
| Survey of aquaculture sites         | 7-8/3/00     | Fisheries staff  | LB             | Project        |
| Village Extension training          | 22/3/00      | Savaii Ext staff | JK             | Project        |
| Environmental assessment training   | 16/5-12/6/00 | A Tr, S Jungblut | GD             | Project        |
| Media & Publicity training          | 16/5-12/6/00 | SS, UT           | AV             | Project        |
| Village Extension training          | 19-21/6/00   | Savaii Ext staff | JK             | Project        |
| HACCP training                      | 26/6-6/7/00  | A Tr, ST, SM, PF |                | Francisco      |
|                                     |              | NZODA/Project    |                |                |
|                                     |              | MM, TU           | Blaha          |                |
| Mollusc translocation               | 17/7/00      | JK, LB, A Tr     | MLMK           | Project        |
| Village Extension training          | 17-20/7/00   | Extension staff  | ER             | Project        |
| Village Extension training/         | 2-4/8/00     | Savaii Ext staff | JK             | Project        |
| Surveying MPAs w/s                  |              |                  |                |                |
| Library Technical Assistance        | 27/7-4/8/00  | A Tr, SS, UT     | Ganeshan Rao   | USP/SPC/CSPODP |
| Marine Conservation Sites:          | 14-25/8/00   | UT, VT           | Trevor Ward    | GD SPREP/SPBCP |
| Monitoring Indicators w/s           |              |                  |                |                |
| Computer training (Extension)       | 16-18/8/00   | Asau Ext.staff   | JK             | Project        |
| Advisors & Counterparts w/s         | 29/8/00      | KP, LB, A Tr, PF |                | Helen Sinclair |
|                                     |              | AusAID           |                |                |
| Advisors & Counterparts w/s         | 31/8/00      | JK, ER, AT, TA,  |                | Helen Sinclair |
|                                     |              | AusAID           |                |                |
| Village Extension computer training |              | 6-8/9/00         | Ext staff Asau | JK Project     |
| Village Extension training          | 12-13/9/00   | Salelologa Ext   | JK             | Project        |

## Appendix 8. List of Tables

### A. Surveillance, Monitoring, Registration and Licensing Services

*Table 1. Vessel Categories with allocated fees and number of licensed fishing vessels*

| Vessel Size                       | Fee        | Number Licensed |
|-----------------------------------|------------|-----------------|
| Less than 12 metres               | \$200. 00  | 16              |
| 12 metres but less than 15 metres | \$500. 00  | 2               |
| 15 metres and over                | \$5000. 00 | 3               |

*Table 2. Size limits reported cases*

| Month | No. cases | Undersized fish | Undersized crabs | Undersize d lobsters | Egg bearing lobsters |
|-------|-----------|-----------------|------------------|----------------------|----------------------|
| March | 1         | 1               |                  |                      |                      |
| April | 33        | 16              | 4                | 5                    | 7                    |
| May   | 17        | 10              | 3                | 1                    | 3                    |
| June  | 4         | 2               | 1                | 1                    |                      |
|       | 55        | 30              | 8                | 7                    | 10                   |

### B. Fisheries Stocks, Statistics and Information Services

*Table 3. Domestic commercial and artisanal sold offshore tuna by major species groups*

| TUNA SPECIES           | EST WT(mt)        | EST VAL(T)        | % WT |
|------------------------|-------------------|-------------------|------|
| Albacore               | 1,372.46          | 6,049.80          | 0.8  |
| Bigeye                 | 2,941.57          | 12,966.44         | 1.7  |
| Dogtooth               | 214.93            | 947.41            | 0.1  |
| Skipjack               | 112,206.53        | 494,606.38        | 65.9 |
| Yellowfin              | 53,428.88         | 235,514.50        | 31.4 |
| <b>TOTAL / AVERAGE</b> | <b>170,164.37</b> | <b>750,084.54</b> |      |

*Table 4. Domestic commercial and artisanal non-tuna pelagic or by-catch by major species groups*

| PELAGIC SPECIES | EST WT(mt) | EST VAL(T) | % WT |
|-----------------|------------|------------|------|
| Billfish        | 3,906.02   | 2,3511.53  | 49   |
| Dolphinfish     | 1,488.32   | 3989.26    | 19   |
| Others          | 497.33     | 2158.37    | 6    |
| Rainbow runner  | 343.64     | 1947.49    | 4    |
| Shark           | 186.11     | 1546.06    | 2    |

|                        |                 |                  |    |
|------------------------|-----------------|------------------|----|
| Trevally               | 292.18          | 2089.25          | 4  |
| Wahoo                  | 1,250.87        | 4517.52          | 16 |
| <b>TOTAL / AVERAGE</b> | <b>7,964.47</b> | <b>39,759.48</b> |    |

Table 5. Domestic commercial and artisanal finfish deepwater by major species groups

| SPECIES                  | EST WT (kg)      | EST VAL (T)       | % WT |
|--------------------------|------------------|-------------------|------|
| Trevally - Malauli       | 157.57           | 1,389.14          | 1    |
| Squirrelfish - Malau     | 195.08           | 1,719.83          | 1    |
| Shark - Malie            | 278.39           | 2,454.29          | 1    |
| Silverjaw - Palusina     | 469.92           | 4,142.81          | 2    |
| Jobfish - Utu            | 1,294.11         | 11,408.87         | 5    |
| Baracuda - Sapatu        | 1,831.01         | 16,142.18         | 7    |
| Groupers - Gatala,Papa   | 1,919.19         | 16,919.58         | 8    |
| Snapper - Sinepa         | 2,481.14         | 21,873.73         | 10   |
| Emperor - Filoa, Pela    | 7,124.33         | 62,808.09         | 28   |
| Letrinus - Malai, Savane | 9,356.92         | 82,490.61         | 37   |
| <b>TOTAL</b>             | <b>25,107.66</b> | <b>221,349.13</b> |      |

Table 6. Domestic commercial and artisanal inshore finfish by major species groups

| FIN-FISH                           | Est Wt (kg)      | Est Val (T)       | % wt |
|------------------------------------|------------------|-------------------|------|
| Parrot-Fuga, Laea                  | 14,766.91        | 97,638.81         | 25   |
| Unicorn-Paumalo                    | 11,867.76        | 78,469.63         | 20   |
| Mullet-Anae                        | 7,874.65         | 52,067.19         | 13   |
| Emperor-Mataelele,Filoa            | 6,381.05         | 42,191.50         | 11   |
| Surgeonfish-Alogo, Pone,<br>Manini | 5,617.67         | 37,144.03         | 10   |
| Grouper-Gatala                     | 2,072.13         | 13,700.92         | 4    |
| Soldierfish-Malau                  | 2,396.56         | 15,846.05         | 4    |
| Morayeel-Pusigatala                | 1,912.97         | 12,648.56         | 3    |
| Caranx-Malauli,Lupo                | 1,375.89         | 9,097.38          | 2    |
| Goatfish-Taulaia, Vete             | 910.39           | 6,019.50          | 2    |
| Bigeye scad-Atule                  | 655.51           | 4,334.23          | 1    |
| Rabbitfish-Lo, Pauulu, Tito        | 756.32           | 5,000.79          | 1    |
| Humpback sna-Malai                 | 749.15           | 4,953.38          | 1    |
| T/sail drummer-Ganue               | 491.68           | 3,250.99          | 1    |
| Other fish Isi iá                  | 573.02           | 3,788.81          | 1    |
| Wrass-Lalafi, Sugale               | 274.61           | 1,815.72          |      |
| <b>TOTAL</b>                       | <b>58,676.27</b> | <b>387,967.50</b> |      |

Table 7. Domestic commercial and artisanal crustacean by major species groups

| GROUPS      | Est Wt (kg) | Est Val (T) | % wt |
|-------------|-------------|-------------|------|
| Lobster-Ula | 7,026.08    | 139,369.32  | 68   |

|                        |                  |                   |          |
|------------------------|------------------|-------------------|----------|
| Mudcrab-Paalumago      | 1,766.76         | 35,045.45         | 17       |
| Slip lobster-Papata    | 849.74           | 16,855.44         | 8        |
| Othercrab-Isi paa      | 419.39           | 8,319.02          | 4        |
| Reef crab-Kuku         | 260.05           | 5,158.35          | 3        |
| <b>TOTAL / AVERAGE</b> | <b>10,322.02</b> | <b>204,747.59</b> | <b>1</b> |

Table 8. Domestic commercial and artisanal crustacean by major species groups

| <b>GROUPS</b>      | <b>Est Wt (kg)</b> | <b>Est Val (T)</b> | <b>% wt</b> |
|--------------------|--------------------|--------------------|-------------|
| Giant clams-Faisua | 189.16             | 4,169.09           | 5.6         |
| Octopus-Fee        | 2756.95            | 60,763.18          | 81.0        |
| Others -Isi        | 6.01               | 132.46             | 0.2         |
| Seahare-Gau        | 128.64             | 2,835.23           | 3.8         |
| Topshell-Aliao     | 323.29             | 7,125.31           | 9.5         |
| <b>TOTAL</b>       | <b>3,404.05</b>    | <b>75,025.26</b>   |             |

Table 9. Processed inshore items sold commercially at Fugalei market

| <b>SPECIES</b>   | <b>% WT</b> | <b>Est Val</b>    |
|------------------|-------------|-------------------|
| Palolo           | 1.0         | 4,310.81          |
| Tuitui           | 1.1         | 4,741.89          |
| Fuagfuga         | 2.3         | 9,914.86          |
| Alualu           | 2.5         | 10,777.03         |
| Tugane           | 3.0         | 12,932.43         |
| Faiiai gau       | 3.7         | 15,950.00         |
| Afi I'a          | 4.5         | 19,398.65         |
| Faiiai matalelei | 6.0         | 25,864.86         |
| Faiiai fee       | 11.9        | 51,298.65         |
| Faiiai pusi      | 14.9        | 64,231.08         |
| Limu             | 24.2        | 104,321.62        |
| Sea              | 24.9        | 107,339.19        |
| <b>TOTAL</b>     |             | <b>431,081.08</b> |

Table 10. Major tuna species commercially exported in 1999/2000 period

| <b>Tuna species</b>  | <b>Tot Wt (Mt)</b> | <b>Tot Value (000T)</b> | <b>% wt</b> |
|----------------------|--------------------|-------------------------|-------------|
| Yellofin (Asiasi)    | 256.3              | 2,101.10                | 6           |
| Bigeye tuna (Pikiai) | 85.4               | 300.2                   | 2           |
| Albacore (Apakoa)    | 3,930.50           | 27,614.60               | 92          |
|                      | <b>4,272.20</b>    | <b>30,015.90</b>        | <b>100%</b> |

Table 11. Major bottomfish species commercially exported in 1999/2000 period

| Fishery    | Est Wt (Mt) | Est Val(000T) | % Wt        |
|------------|-------------|---------------|-------------|
| Snapper    | 29.9        | 285.1         | 51.7        |
| Lethrinus  | 20.8        | 198.7         | 36.0        |
| Emperor    | 1.9         | 18.2          | 3.3         |
| Grouper    | 0.1         | 0.6           | 0.1         |
| Jobfish    | 1.9         | 18.2          | 3.3         |
| Malau      | 2.4         | 22.6          | 4.1         |
| Silverjaws | 0.9         | 8.3           | 1.5         |
|            | <b>57.8</b> | <b>551.4</b>  | <b>100%</b> |

Table 12. Major pelagic species commercially exported in 1999/2000 period

| Fishery        | Est Wt (mt)  | Est Val(000T) | % Wt         |
|----------------|--------------|---------------|--------------|
| Baracuda       | 0.09         | 0.9           | 0.09         |
| Dolphinfish    | 28.36        | 282.8         | 29.03        |
| Marlin         | 14.90        | 148.6         | 15.25        |
| Rainbow runner | 0.04         | 0.4           | 0.04         |
| Sailfish       | 0.23         | 2.3           | 0.24         |
| Sharkfins      | 0.95         | 9.4           | 0.97         |
| Swordfish      | 0.49         | 4.9           | 0.50         |
| Wahoo          | 52.64        | 524.9         | 53.88        |
|                | <b>97.70</b> | <b>974.2</b>  | <b>100.0</b> |

Table 13. Major inshore fish species commercially exported in 1999/2000 period

| Fishery     | Est Wt (mt) | Est Val('000T) | % Wt         |
|-------------|-------------|----------------|--------------|
| Emperors    | 0.14        | 0.90           | 3.2          |
| Goatfish    | 0.02        | 0.15           | 0.5          |
| Grouper     | 0.64        | 4.08           | 14.5         |
| Milkfish    | 0.12        | 0.76           | 2.7          |
| Mullet      | 0.21        | 1.35           | 4.8          |
| Parrotfish  | 1.60        | 10.13          | 35.9         |
| Rabbitfish  | 0.03        | 0.17           | 0.6          |
| Suregonfish | 1.59        | 10.05          | 35.6         |
| Trevally    | 0.03        | 0.17           | 0.6          |
| Unicornis   | 0.07        | 0.45           | 1.6          |
|             | <b>4.45</b> | <b>28.21</b>   | <b>100.0</b> |

Table 14: Village reserves assessed in the 1999/2000 period

| Village | Date of Survey | Initial assessment (IA)/Re-assessment | Approximate area (m <sup>2</sup> ) |
|---------|----------------|---------------------------------------|------------------------------------|
|---------|----------------|---------------------------------------|------------------------------------|

|               |                                | (R1, 2,3 etc.) |        |
|---------------|--------------------------------|----------------|--------|
| Manase        | 21 <sup>st</sup> July 1999     | IA             | 40,000 |
| Saleilua      | 1 <sup>st</sup> September 1999 | IA             | 30,000 |
| Fagae'e       | 2 <sup>nd</sup> November 1999  | IA             | 50,000 |
| Vaovai        | 1 <sup>st</sup> December 1999  | IA             | 40,000 |
| Poutasi       | 2 <sup>nd</sup> March 2000     | R2             | 30,000 |
| Eva           | 15 <sup>th</sup> March 2000    | IA             | 40,000 |
| Faleula       | 22 <sup>nd</sup> March 2000    | IA             | 40,000 |
| Satitua       | 30 <sup>th</sup> March 2000    | R1             | 40,000 |
| Tafitua       | 5 <sup>th</sup> April 2000     | IA             | 40,000 |
| Fatuvalu      | 16 <sup>th</sup> May 2000      | IA             | 40,000 |
| Papa, Palauli | 26 <sup>th</sup> June 2000     | IA             | 80,000 |

Table 15: Trial sites and species used in the bivalve translocation

| Trial Villages          | Species Introduced            | Numbers introduced | Average Length (mm) | Source Villages                  |
|-------------------------|-------------------------------|--------------------|---------------------|----------------------------------|
| Auala                   | <i>G. tumidum</i> - tugane    | 1,082              | 44.97               | Fusi, Safata<br>Vaiusu/Vailoa    |
| Asau                    | <i>G. tumidum</i> - tugane    | 1,022              | 37.48               | Fusi, Safata<br>Vaiusu/Vailoa    |
| Fagali'i                | <i>A. antiquata</i> - asi/pae | 204                | 69.30               | Fusi, Safata                     |
| Poutasi,<br>Falealili   | <i>A. violascens</i> - pipi   | 750                | 44.19               | Faala, Palauli<br>Asau<br>Manono |
| <i>Total introduced</i> |                               | 3,058              |                     |                                  |

### C. Exploratory Fishing and Demonstration Services

Table 16: Tautai Matapalapala Trial Fishing Expeditions during the 1999/2000 period.

| Trip No | Date                  | Catch Wt (lb)                     | Value (SAT) | Species |
|---------|-----------------------|-----------------------------------|-------------|---------|
| 1       | 6,7,8,9/7/99          | 360.36                            | 878.91      | tuna    |
| 2       | 20,21,22,23,24/9/99   | 878.80                            | 2,209.24    | tuna    |
| 3       | 27,28,29,30/9/99      | 1449.91                           | 3,652.09    | tuna    |
| 4       | 6,7,8/10/99           | Master fisherman observatory trip |             |         |
| 5       | 18,19,20,21/10/99     | 1580.92                           | 3,275.87    | tuna    |
| 6       | 25,26,27,28,29/10/99  | 1795.09                           | 4,596.16    | tuna    |
| 7       | 1,2,3/11/99           |                                   |             |         |
| 8       | 22,23,24,25,26/11/99  | 1479.83                           | 3,563.24    | tuna    |
| 9       | 29,30/11, 1,2,3/12/99 | 548.90                            | 2,226.51    | tuna    |

|    |                 |        |        |      |
|----|-----------------|--------|--------|------|
| 10 | 8,9,10,11/02/00 | 312.29 | 580.06 | tuna |
|----|-----------------|--------|--------|------|

Table 17: Ulimasao Trial Fishing Expeditions during its first six months of operation in the year 2000.

| Trip No | Date                     | Catch Wt (lb) | Value (SAT) | Species |
|---------|--------------------------|---------------|-------------|---------|
| 1       | 16, 17,18, 19/5/00       | 5,090.58      | 9,791.19    | tuna    |
| 2       | 5, 6,7,8, 9/6/00         | 2,607.20      | 5,657.47    | tuna    |
| 3       | 12, 13,14,15, 16/6/00    | 2,132.01      | 5,477.62    | tuna    |
| 4       | 24, 25,26,27,28, 29/6/00 | 3,596.23      | 8,933.18    | tuna    |

#### D. Fisheries Aquaculture Services.

Table 18. Tilapia stocking of village pond and fences/pens/cages.

| Village                                    | Date introduce               | Culture     | Numbers      | Avg size          |
|--|------------------------------|-------------|--------------|-------------------|
| Satoalepai                                 | 5 <sup>th</sup> October 1999 | Fences/pens | 200          |                   |
|  | February 2000                | Fences/pens | 200          |                   |
| Mulivai, Safata                            | 21 October 1999              | Fences/pens | 100          | 80g (17.05 cm)    |
|  | November 1999                | Fences/pens | 100          | 80g (17.05 cm)    |
|  | November 1999                | Fences/pens | 100          | 80g (17.05 cm)    |
|  | 21 October 1999              | Fences/pens | 200          | 80g (17.05 cm)    |
| Salani, Falealili<br>Vaovai, Falealili     | 20 October 1999              | Fences/pens | 220          |                   |
|  | 26 January 2000              | Fences/pens | 200          |                   |
|  | 26 January 2000              | Fences/pens | 20           | Broodstock        |
| Tafitoala                                  | 16 May 2000                  | Fences/pens | 150          | 42 g (11.7 cm)    |
|  | 16 May 2000                  | Fences/pens | 150          | 38 g (11.6 cm)    |
|  | 21 June 2000                 | Fences/pens | 150          | 23.6 g (9.8 cm)   |
|  | 31 May 2000                  | Fences/pens | 100          | 52.4g (11.9 cm)   |
| Fagalii                                    | 9 June 2000                  | Fences/pens | 129          | 30g (10.6 cm)     |
|  | 5 April 2000                 | Pond        | 25           | 45.88g (12.29 cm) |
| Fausaga<br>Motusaga, Savaii<br>Chanel farm | 23 May 2000                  | Pond        | 300          | 40g (12.5 cm)     |
|  |                              | Ponds       | 1,600        |                   |
|  |                              |             | <b>3,944</b> |                   |

Table 19. Nile tilapia hatchery production

| Pond         | No. of tilapia | Sex/types   |
|--------------|----------------|-------------|
| 1            | 90             | Males       |
| 2            | 0              |             |
| 3            | 26             | Females     |
| 4            | 0              |             |
| 5            | 2,947          | Fingerlings |
| 6            | 1,376          | Broods      |
| Chanel       | 10,000         | Fingerlings |
| <b>Total</b> | <b>14,429</b>  |             |

Table 20: Giant clam introductions to villages during 1999/2000 period

| Village | Date of Introduction | T. derasa Numbers introduced | T. derasa Average Length (mm) | T. gigas Numbers Introduced | T. gigas Average Length (mm) |
|---------|----------------------|------------------------------|-------------------------------|-----------------------------|------------------------------|
| Fagae'e | 21/12/99             | 250                          | 137.4                         | 50                          | 126.1                        |
| Lelepa  | 2/7/99               | 400                          | 45.1                          | 0                           | n/a                          |
| Vailoa  | 2/7/99               | 250                          | 66.5                          | 0                           | n/a                          |
| Saleilu | 8/7/99               | 400                          | 63.2                          | 0                           | n/a                          |
| a       |                      |                              |                               |                             |                              |
| Manase  | 20/7/99              | 403                          | 66.5                          | 0                           | n/a                          |

## E. Fisheries Advisory Services

Table 21: Villages targeted by the Fisheries Extension Program July-June 2000. Dates shown include those of the first village contact, the first fono meeting, group meetings, and FMAC meetings.

| VILLAGE                  | First contact | First fono meeting | Group Meetings | FMAC meetings           | Plan approved | Reserve declared | Reserve surveyed | Bylaws signed | Last Review | Next Review |
|--------------------------|---------------|--------------------|----------------|-------------------------|---------------|------------------|------------------|---------------|-------------|-------------|
| 1) Saleilua<br>Jan 01    | 16Apr99       | 3 May 99           | 9June 99       | Upolu<br>21June-24Jul99 | 5July99       | 6Sep99           | 1Sep99           |               | Jul 00      |             |
| 2) Fusi Saoluafata       | 13Apr99       | (delayed)          |                |                         |               |                  |                  |               |             |             |
| 3) Salani                | 3Aug 99       | 9 Aug 99           | 19 Aug 99      | 3Apr-5Apr00             | 11May00       |                  |                  |               | Nov00       |             |
| 4) Vaovai<br>May00 Nov00 | 5Oct99        | 20 Oct 99          | 26 Oct 99      | 4Nov-11Nov99            | 25Nov99       | 6Nov99           | 1Nov99           |               |             |             |
| 5) Sataoa                | 7Mar00        | 3 Apr 00           | 10Apr00        | 13Apr-18Apr00           | 1May00        | 10May00          | 10May00          |               | Nov00       |             |
| 6) Siufaga Falelatai     | 23Jun00       | (delayed)          |                |                         |               |                  |                  |               |             |             |
| 7) Manase                |               | 13 March 99        |                | Savaii                  | 9July 99      | 15 July 99       |                  |               |             |             |
| 8) Fagae                 | 4 Aug 99      | 31 Aug 99          | 10 Sept 99     | 28 Sept-19 Oct 99       | 29 Oct 99     | 2 Nov 99         |                  |               |             |             |
| 9) Fatuvalu              | 7 Feb 00      | 17 March 00        | 29 March 00    | 18 April-27April00      | 5 May00       | 16 May 00        |                  |               |             |             |
| 10) Papa-Sataua          | 6 April 00    | 14 April 00        | 19 April 00    | 28 April-11 May00       | 18 May00      | 20 June 00       |                  |               |             |             |

Table 22. By-laws gazetted and approved during 1999/2000 fiscal year.

| Upolu                 | Savaii              |
|-----------------------|---------------------|
| Fuailoloo (Mulifanua) | Fagaee (Itu-o Tane) |
| Lalovi (Mulifanua)    | Manase (Itu-o-Tane) |
| Saleaaumua (Aleipata) |                     |
| Vaovai (Falealili)    |                     |
| Saleilua (Falealili)  |                     |

Table 23. Management plan reviews for villages on Upolu and Savaii for July 1999-June 2000

| Score (%)    | Upolu     | Savaii    |
|--------------|-----------|-----------|
| 85-100       | 14        | 11        |
| 51-84        | 24        | 10        |
| < 50         | 1         |           |
| <b>Total</b> | <b>39</b> | <b>21</b> |

Table 24. Activities, monitoring and reporting of the Commercial Fisheries Extension Services from July 1999 to June 2000

| DATE  | ACTIVITY  | DETAILS  |
|-------|---|--|
| 07/99 | Upolu Fishermen's Association Meeting   | Discuss the function and establishment of CF-MAC, elections of CF-MAC representatives  |
| 07/99 | Survey to determine training needs in the tuna fishing industry                       | Interviews with fishermen, boat owners, fish exporters and boat builders to determine training needs                               |
| 07/99 | Steering Committee Meeting No.3   | Discuss the Terms of Reference for the CF-MAC  |
| 08/99 | Estimates of rejection in the Samoan tuna fishery report for 1998 Milestone 32        | Report of 1998 rejection rate from the two canneries in Pago Pago and fish exporters in Samoa, recommendations to reduce rejection |
| 08/99 | Information sheet 21: Tuna Longline Fishing   | Information concerning tuna longlining for fishermen   |
| 09/99 | Boat Builders and MOT meeting   | Establish survey procedures for fishing vessels  |
| 09/99 | CF-MAC meeting No.1   | Discuss Terms of Reference for the CF-MAC  |
| 09/99 | Training Needs Analysis of the Offshore Fishing Industry of Samoa report Milestone 25 | Requirements for short term and long term training in the tuna industry, sources of training and funding                           |
| 09/99 | CF-MAC meeting with Treasury No.2   | Discuss needs of industry to be included in the 2000/01 Statement of Economic Strategy (SES)                                       |
| 10/99 | Information sheet 22: Onboard Handling of Tuna  | Step by step procedures for handling tuna properly to maintain quality   |
| 10/99 | CF-MAC meeting No. 3  | Recommendations set for 2000/01 SES, set Terms of Reference for CF-MAC, marina for the commercial                                  |

|       |   |   |
|-------|---|---|
|       |   | fishing fleet   |
| 10/99 | Project Co-ordinating Committee (PCC) meeting   | Present a report on the activities of the Commercial Fisheries Extension Service  |
| 11/99 | Fish Handling workshop (Upolu) No. 1  | Training in proper fish handling and chilling procedures; 45 participants   |
| 11/99 | Fish Handling Workshop (Savaii) No.2  | Training in proper fish handling and chilling procedures, 30 participants   |
| 11/99 | Terms of Reference and procedures of the Samoa CF-MAC report Milestone 19                                 | Guidelines for CF-MAC and procedures for meetings, elections of members etc.  |
| 11/99 | Submit proposal for fuel depot at the Fisheries wharf to the Cabinet Development                          | Drafted a proposal requesting funds to construct a fuel depot at the Fisheries wharf to assist the fishermen            |
| 11/99 | Information sheet 24: Basic Chartwork for Fishermen   | Guidelines for navigation with compass and charts   |
| 11/99 | Information sheet 25: Basic Use of GPS for Navigation   | Use of GPS for navigation and fishing purposes  |
| 11/99 | Steering Committee for Samoa Polytechnic meeting No. 1  | Discuss training programs for Safety at Sea, Master Class 6 and Fishing Technology                                      |
| 12/99 | Navigation Workshop (Upolu) No. 1   | Training in the use of charts and GPS for navigation during fishing activities; 40 participants                         |
| 12/99 | Marina for commercial fishing fleet CF-MAC sub-committee meetings   | Discuss the suitable potential sites for the commercial fishing fleet   |
| 12/99 | Sites for the commercial fishing fleet marina CF-MAC sub-committee report                                 | Prepared report to present to CF-MAC concerning sites and potential sources of external funding for marina              |
| 12/99 | CF-MAC meeting No.4   | Discuss the progress of the marina for the commercial fishing fleet, new catamaran for the fishing industry, fuel depot |
| 12/99 | A Commercial Fisheries Extension Service for Samoa report Milestone 22                                    | Function and responsibilities of the Commercial Fisheries Extension Service   |
| 12/99 | Steering Committee for the Samoa Polytechnic meeting No. 2  | Discuss training programs for the fishing industry  |
| 01/00 | Submit proposal for HACCP training to NZODA   | Training proposal for the fish exporters and relevant government departments in HACCP                                   |
| 01/00 | Commercial Fisheries Extension Service of Samoa; Activities, Monitoring and Reporting report Milestone 23 | Guidelines for the activities, monitoring and reporting for the Commercial Fisheries Extension Service                  |
| 01/00 | Navigation Workshop (Savaii) No. 2  | Training in the use of charts and GPS for navigation during fishing activities, 30 participants                         |
| 01/00 | Tuna Cookbook   | Recipes for cooking tunas   |
| 01/00 | Cabinet approval of the fuel depot at the Fisheries wharf   | Funds to construct a fuel depot for the Fisheries wharf were approved by Cabinet  |
| 02/00 | Bottom contour survey for marina at Mulinu'u  | Assisted Japanese engineering firm in surveying the depths of seabed west of Mulinu'u point for the marina              |
| 03/00 | Survey to determine rejection rates in the Samoa tuna fishery in 1999                                     | Interviews with the canneries in Pago Pago, fish exporters in Samoa and fishermen to determine rejection rates          |
| 03/00 | Submitted proposal for marina to the Cabinet Development Committee (CDC) to review                        | Assisted in drafting application for Japanese aid to construct a marina for the commercial fishing fleet                |

|       |  |   |
|-------|--|---|
| 03/00 | CF-MAC meeting No. 5   | Discuss the proposed Tuna Management Plan for the Domestic Tuna Fishery; progress of marina proposal and new catamaran  |
| 03/00 | Estimates of rejection in the Samoan tuna longline fishery for 1999 report | Estimates of rejection rate in 1999 from the two canneries in Pago Pago and fish exporters in Samoa, recommendations to reduce rejection                          |
| 03/00 | Outboard engine maintenance and repair workshop (Upolu) No.1               | One day workshop to train fishermen in maintenance and repair of outboard engines; 15 participants  |
| 03/00 | Approval of funding for HACCP training                                     | NZODA granted NZ\$20,000 for the HACCP workshop scheduled in May  |
| 04/00 | Samoa Longline Newsletter: No.1  | Newsletter articles concerning the national and international tuna fishing industry   |
| 04/00 | Upolu Fishermen's Association meeting                                      | Discuss the Tuna Management Plan for the fishing industry   |
| 04/00 | Outboard engine maintenance and repair workshop (Savaii) No. 2             | Three day workshop to train fishermen in maintenance and repair of outboard engines; 18 participants  |
| 04/00 | NZODA meeting  | Discuss funding for training workshops and scholarship program for training marine engineers in New Zealand   |
| 04/00 | Steering Committee meeting No.4  | Discuss the proposal to JICA for funding of a marina for the commercial fishing fleet   |
| 04/00 | CF-MAC meeting No. 6   | Discuss Tuna Management Plan and Marina for the Commercial Fishing fleet  |
| 04/00 | Samoa's Longline Newsletter No.1   | Publication of the first commercial longline fisheries newsletter   |
| 05/00 | PCC meeting  | Presented a report on the progress of the CFES for the 6 month period from October - May.   |
| 05/00 | Proposal for ice machines for Savaii                                       | Drafted a proposal requesting funds for two ice machines to assist the Savaii Fishermen's Association   |
| 05/00 | Submit applications for mechanical engineering training in Nelson to NZODA | Drafted the applications to NZODA for funding three persons from the private sector for training as mechanical engineers at Nelson Polytechnic                    |
| 05/00 | Steering Committee No. 5   | Enforcement of Sea Safety Regulations discussed with relevant departments   |
| 05/00 | Commercial fisherman/boat owner financial management computer program      | Developed a computer program to assist boat owners in determining the profit/loss of their fishing operations   |
| 06/00 | Monitoring Control and Surveillance Committee meeting No.1                 | Discuss action plan for the enforcement of the sea safety regulations for small fishing vessels   |
| 06/00 | CF-MAC meeting No.7  | Resolutions for the Tuna Management Plan, up-date on the marina proposal, announcement of the enforcement of the sea safety regulations for small fishing vessels |
| 06/00 | Monitoring Control and Surveillance committee meeting No.2 & 3             | Confirm the action plan for enforcement of the sea safety regulations for small fishing vessels   |
| 06/00 | Training of Samoa Polytech students on Fisheries longline vessel           | Practical fishing experience for students attending the Fisheries Technology course at the Maritime School of Training  |
| 06/00 | Students accepted for mechanical   | NZODA accepted the applications to fund 3   |

|  |                                   |  |
|--|-----------------------------------|--|
|  | engineering course in New Zealand | students to enrol for a mechanical engineering course at the Nelson School of Fisheries in New Zealand. Funding was approximately NZ\$37,000 |
|--|-----------------------------------|--|

**E. Fisheries Fish Market Service.**

*Table 25. Monthly summary of revenues generated from the Fish Market through block renting.*

| <b>Month/Year</b> | <b>Revenue Collected (SAT)</b> |
|-------------------|--------------------------------|
| July 1999         | 6570.00                        |
| August 1999       | 6804.00                        |
| September 1999    | 5730.00                        |
| October 1999      | 5501.00                        |
| November 1999     | 5431.00                        |
| December 1999     | 4945.00                        |
| January 2000      | 4598.00                        |
| February 2000     | 5197.00                        |
| March 2000        | 5518.00                        |
| April 2000        | 4472.00                        |
| May 2000          | 4998.00                        |
| June 2000         | 4470.00                        |
| <b>Total</b>      | <b>64,234.00</b>               |