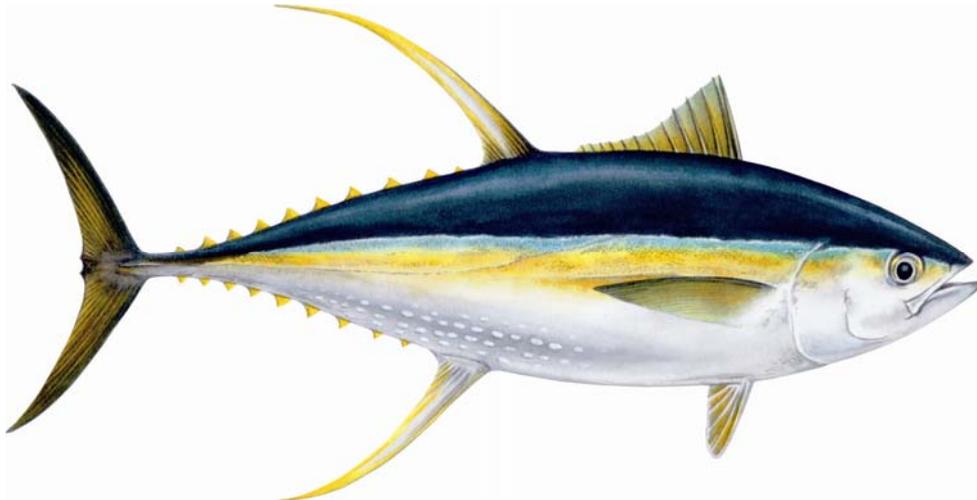

FISHERIES DIVISION

ANNUAL REPORT

July 2007 - June 2008



MINISTRY OF AGRICULTURE AND FISHERIES

Fisheries Division

Apia, Samoa

September, 2008

1 MISSION STATEMENT

The Fisheries Division is committed to the Strategic Vision, Goals and Objectives identified in the Strategies for the Development of Samoa (SDS) 2005-2007 and the Ministry of Agriculture and Fisheries Corporate Plan (2005-2007) goal of:

"Growing and Healthy and Wealthy Samoa".

The Strategic Mission Statement below emphasizes the aims of the Fisheries Division:

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

2 INTRODUCTION & OVERVIEW

The fiscal year 2007-2008 was another busy and challenge period for the Fisheries Division. The demands from the fishing industry and the need to sustainably and properly utilise and manage the various fisheries within Samoa's fishery waters, has forced additional burden and responsibilities on the Organisation. Moreover, the ongoing supports for new and current projects and services have stretched the resources and budget approved for the organisation to the limit. The followings highlighted major achievements accomplished by the Division during the 2008-2007 fiscal year.

2.1 Inshore Fisheries Services

a) Inshore fishery landings:

Volumes of fishery products harvested specifically from the inshore waters that were locally landed and sold through several outlets were randomly surveyed on a weekly basis. The outlets examined were the Apia fish market, Fugalei agro-produce market, Apia-Faleolo roadsides and the Salelologa market. A total of about 145 metric tonnes (mt) of inshore fishery products which valued at around \$1.8 million tala was traded commercially at the said outlets during the year. On average, finfish, crustacean and invertebrates groups were sold for about \$9.8/kg, \$26/kg and \$8/kg respectively.

Finfish accounted for 64% of the total volumes of fishery items traded and it was the dominant product type. Invertebrates and processed items were accounted for 24% and 11% correspondingly of the total volume. The total volume of inshore fishery products sold locally is increased by 12% as contrast to last year.

b) Resources monitoring:

Based on the outcomes of monitoring surveys undertaken at 18 inshore sites throughout the year, live coral reef is accounted for 41% of all substrate coverage. Other biotic substrates such as seagrass and algae types covered about 15% and 4% respectively of the total areas examined. Bleached corals noted were very small (1%) with dead corals, rubbles and sandy patches covered about 39% of the studied regions.

For the fish species, the Acanthuridae and the Scaridae families were the most abundant of the indicator species used for the fish reserve assessments. The fish species were mainly the line surgeons, surgeons, unicorns and the parrot fish species.

In conclusion, live corals have been recovered significantly and noted to increasing by about 34% since 4 years ago. Similarly, algae substrate, which was considered adversely impacting on coral growth,

was noted to be declining substantially by about 56%. The increase in live coral and declining in algae coverage are positive indications of the success of management tools such as fish reserves, by-laws and ownership of the community-based management approach by villages to manage their fishery resources.

c) *Trochus Reseeding*

The trochus reseedling programme was again boosted when hatchery bred trochus seedlings of 100 pieces sized 35 cm in length were introduced in Savaia Lefaga on the 20th August 2007. Savaia joins the four villages namely Saoluafata, Saleapaga, Papa and Foailalo already reseeded with adult sized trochus since 2003. On the recent assessment of the said sites, it was found that adult trochus attained a size 139mm while the juvenile ones achieved average size of 38mm. Given that this programme was started in 2002-03 period, it is likely that the adults and juveniles items noted suggested that the project has achieved second generations of reseedling. In conclusion, it is considered that *Trochus niloticus* is now established on the reefs of the four locations that were stocked with initial patch.

d) *Research:*

(i) *Fish & Shellfish Poisoning Project*

Three quarterly samplings for the macro algae were carried out during this fiscal year. Macro algae species of *Sargassum sp* and the *Halimeda sp* which are consider hosts to the poisonous dinoflagellate *Gambierdiscus toxicus* was collected for sampling, unfortunately, no presence the dinoflagellate was detected. A senior scientist from SPC will assist the Fisheries to implement future collection and identification of the micro-organism causing the ciguatera poison next FY.

(ii) *Monitoring of Aggregate Spawning Species and Sites Project.*

This project is to investigate aggregating, spawning times and breeding sites of inshore fish species. Collection, measurement and analysis of gonad indices from twelve selected species have been completed. A write up of the final report is currently in progress and also a literature review of similar studies undertaken for same species is also not completed. Preliminary results suggested that almost all the twelve species are repeated spawning through the year. Most species are aggregated at particular areas of the reef such as channel and spawn harmoniously together.

2.2 Offshore Fisheries Services

a) *Commercial Fisheries*

(i) *Tuna Longline fishery:*

Tuna longline fishing occurs in Samoan waters all year around involving a fishing fleet ranging from 10 meters to over 20.5 meters in length. The fleet is entirely based in Samoa and predominately targets albacore tuna (*Thunnus alalunga*). Current estimated catch rates from the fishery has shown progressive improvements from persistent low catch rates experienced during the 2003 to 2005 periods.

An estimated 3,704.1 mt of fish was landed from the fleet in the FY 2007-2008, an increase of over 33% from the amount landed in the previous FY. Albacore tuna as expected constitute the bulk of the catch with an estimated catch composition of over 82%. Yellowfin (*Thunnus albacares*) and Bigeye (*Thunnus obesus*) tuna are also caught with estimated catch compositions of 11% and 1.5% respectively. Other pelagic species caught in the tuna longline fishery including Broadbill fish, Wahoo, Dolphin fish and skipjack tuna which constituted around 5.2% of the total landed longline catch.

From observed catch rates, it has become more apparent that seasonal variation occurs in catches of the tuna longline fishing fleet and this has shown to be consistent with catch rates in other Pacific Island domestic tuna longline fishery targeting albacore.

(ii) Troll and bottom fish fishery

Fisheries data shows that in FY 2007-2008, an estimated total weight of 183.99 metric tones of troll and bottom fish catches were landed and sold at the main fish market centres in Samoa, valued at an estimated \$1,105,934.69 tala. The bulk of the landings come from skipjack tuna and other surface pelagic species from troll fishing which accounted for almost 83% of total estimated weight and 65% of total estimated value. The rest are the bottom fish species. Bottom fish species were sold at higher prices as oppose to troll species through out FY 07/08.

(iii) Fish Export

Currently, there are two Fish Processing Establishments (FPE) that export fishes to overseas markets. Frozen albacore is exported to the canneries in American Samoa comprised up to over 94 percent of Samoa's total fish exports. Large Yellowfin and Bigeye tuna comprised the bulk of fresh chilled exports which goes to markets in New Zealand, main land United States and occasionally, Japan. Some Broadbill Swordfish and other pelagic species including dolphin fish, moonfish and wahoo are also exported.

Total fish exports for FY 2007-2008 is estimated at 2,725.5 mt, an increase of over 21 percent from FY 2006-2007. Furthermore an estimated value of over 20 million tala was generated into Samoa's economy from fish exports in FY 2007-2008 and increase of over 17 percent from an amount of over 17 million tala from fish exports in FY 2006-2007. There were no reports on rejections of Samoa's fish exports from markets overseas or from local Fish Processing Establishments.

b) Onshore Commercial Supporting Facilities and other developments

A number of projects have been carried out in support of the commercial fishing industry. A new ice making machine was installed next to the fish market to support the Apia-based alia to access to ice supply. The machine is currently runs by the Division before it will outsource to the Tautai Samoa associations operation and management.

A trial to determine the feasibility of using a sail on the alia for both as safety and propelling purposes was conducted during the year. It was noted that the sail design and the boat needs further modification and alteration as to improve the ability to drive using the sail. Nonetheless, the alia was never made as a real sailboat, further alterations to the boat design or specification may restrict the working condition on the vessel (limit space for cargo, etc.) and the safety of the crew.

c) Commercial Fisheries Management Advisory Committee (CF-MAC) :

The work of this committee has contributed in addressing some of the issues affecting the management and further development of the commercial fisheries in Samoa. There were three meetings of the CF-MAC convened in FY 2007-2008 complimented by 2 sub-committee meetings to attend to some of the urgent issues raised by the industry in relation to their concerns on increasing operational costs and some economic factors seriously affecting commercial fishing operations. This has resulted in a cabinet submission being developed by the secretariat outlining options to facilitate in addressing concerns raised by the fishing industry. The Cabinet has approved a 'zero tariff' to all fishing gears imported for commercial fishing.

2.3 Aquaculture Fisheries Services

a) *Giant Clam Lagoon nursery*

Twelve villages were currently nursing giant clams within their lagoon reserves under the Community-based Fisheries Management Programme; 4 in Savaii and 8 in Upolu. Four quarterly monitoring surveys were conducted for each community which adds up to a total of 48 monitoring throughout the fiscal year. Declining and steady trends have been noticed in the number of live clams and this was due to natural mortality and poaching. Giant clam broodstocks for spawning were nursed at Palolo Deep for several years were relocated to Tafagamanu reserve in February 2008 due to security issues. A total of 116 live clams of species types; *H.hippopus*, *Tridacna gigas* and *Tridacna derasa* remained.

b) *Tilapia*



Aquaculture activities.

Most of the activities for the fiscal year focused on the implementing of tilapia culture. New and old fish farms were stocked and restocked. Other activities carried out include samplings. In addition, technical expertises were provided to assist the farmers with maintenances work needed in the long run. Six site assessments were conducted and four new tilapia sites were stocked. A total of 4,130 fingerlings were distributed to stock newly established farms as well as already existing ones. Only one spawning for tilapia at the hatchery was conducted and 5,000 fingerlings were produced.

c) *Research*

In collaboration with the Inshore section, a study to identify the status of the recruitment of giant clams in the Savaia and Tafagamanu coastal areas was conducted. Unfortunately, there were no giant clams of species introduced noted during the exercise. There was a strong current flow outward from the locations where spawners were placed, and there is a possibility that seedlings must have settled in places farther downstream.

Moreover, a feed trial for sufficient tilapia feed was conducted. Different combinations of local ingredient were formulated and tested using 3 ponds at the tilapia hatchery. These include the coconut meal and fishmeal which is locally produced; brew waste and fishmeal and the combination of the three ingredients. There was a slight delay in the processing of the feed due to the unavailability of imported fishmeal that was no longer supplied by the Agriculture Store and the Farm Supply.

2.4 Community Fisheries Advisory Services

a) *Community-based Fisheries Management Programme*

(i) *Village fisheries management plan:*

Twenty seven (27) Village Management Plans in total were reviewed of which seven villages on Upolu and 20 on Savaii were assessed. Apart from these reviews, all the 21 villages on Savaii that were actively conducting their undertakings have been visited and committee members were interviewed using the questionnaire survey to review their Fish Reserves as well as the CBFMP as a whole.

(ii) *Villages' Fish Reserves:*

Two former villages under the CBFMP (Poutasi & Fagamalo) requested to re-activate their Fish Reserves and the Division has commenced servicing and supporting these communities again. Ten (10) Fish Reserves areas were measured and digitised their locations by collecting their GPS coordinates and mapping.

(iii) Village Fisheries Bylaws:

Twenty seven (27) bylaws were approved, gazetted and distributed to the twenty five (25) villages and two (2) districts. In addition, two new bylaws for Salesatele, Falealili and Matautu-uta, Lefaga were drafted and forwarded to the MAF Legal Consultant and AG Office for legal inputs and processing.

(iv) CBFMP Visitation and Meeting

The Tonga Community Based Fisheries Project's second visit to Samoa in one week 31st Oct-6th Nov 2007 was to observe the CBFMP in Samoa. The visit aimed at to share experiences as well as observing the monitoring and management of Fisheries Reserves conducted by villages and the role play by the Fisheries Division in Samoa. A one week workshop coordinated by the Secretariat for the Pacific Community (SPC) was conducted in Apia (3-6th Sept 2007) for the Samoa and American Samoa Fisheries Community Based Programme.

b) Community-based projects

(i) JICA Community Follow-up Project.

Six communities (4 in Upolu and 2 in Savaii) received assistances under the Fisheries JICA follow-up project. This project funded communities marine reserves and also to strengthen the Fisheries Division information management and dissemination service.

(ii) Community Projects Financial Assistance:

Within this fiscal year 2007-2008 five villages received funding from the UNDP GEF Small Grants programme to assist in their Fish/marine reserves and conservation projects. The Fisheries would continue to provide technical support to these communities particularly their activities to be conducted under their projects.

2.5 Regulations and Enforcement Services

a) Authorisation issued

(i) Licenses for Fishing Vessels

Compliance Unit of the Fisheries Division is responsible for licensing local fishing vessels that are actively engaged in commercial fishing operations within Samoa's Exclusive Economic Zone (EEZ). A total of 54 locally based commercial fishing vessels were licensed.

(ii) Seafood Processing plants

Annual licences were renewed and issued for the Apia Export Fish Packers and the Tradewinds Fish Company allowing them to export fish to overseas markets. Monitoring of these facilities for HACCP compliance are quarterly conducted

b) Monitoring and Enforcement

(i) Boarding Inspections:

A total of nine (9) boarding inspections of foreign vessels namely the Island of Pukapuka and Te Ravakai were regularly conducted during the fiscal year. These vessels are licensed to fish in the Cook Islands and are boarded when returning to base for refurbishing, maintenance and repairs. On the other hand, only one (1) boarding inspection was conducted for a local fishing vessel namely Yellow Fin vessel which was used to transport goods to Cook Islands.

(ii) *Exclusive Economical Zone (EEZ) Surveillance:*

A total of seven (7) surface surveillances were carried out during the year when Fisheries Officers joined the Nafanua Patrol Boat for EEZ patrols. Three (3) aerial surveillances took place to compliment the surface surveillance exercises undertaken and these were supported by the Royal New Zealand and Australia Air Forces.

(iii) *Size Limits enforcement:*

A total of 114 cases of; 90 undersized fish, 12 undersized lobsters, four (4) egg bearing lobsters, undersized mudcrab and 2 undersized giant clams were reported to infringed provisions of the Fisheries regulation. During enforcement procedures, 12 cases were prosecuted in court. As a result, five (5) were charged for undersized fish, four (4) for undersized mudcrabs and three (3) were charged for using poisonous substance.

2.6 Fish Market Services

The renovated fish market was in its second year of operation, since it was officially opened in December 2006. The new old fish market has undergone a new face-lift under the Government of Japan Aid project throughout the 2006. The new market was officially opened in December 2006. Market has provided the general public, fish sellers and fishers a very safe, clean and hygienic environment to trade and purchase fish and selfish good for consumption. Although, the size of the complex remains the same, but more tables and blocks are now available to accommodate the increasing numbers of fish sellers trading their products to the public. A total of more than 6,892 fishers or fish sellers have used the fish market outlet during the years to sell their fishery commodities. The number of fish vendors was consistent throughout with an average of 570 sellers per month.

3 SUMMARY OF ACTIVITIES

3.1 Inshore fisheries services

a) *Fishery landings*

Surveys of inshore fishery landings were conducted throughout the reporting period on a random basis as ongoing activities. Volumes and values of domestic landed and traded fishery products were detailed in Table 1. These statistics were obtained from surveys carried out at the Apia fish market, Fugalei market, Apia-Faleolo roadsides and the Salelologa market. Information collected is divided into major fishery groups such as crustaceans, finfish, invertebrates, and processed seafoods (such as seafood cooked with coconut cream, wrapped and bottled). The total volume of inshore fishery products landed locally and sold commercially during 2007-2008 is 145 metric tonnes and valued at about \$1.8 million tala.

The finfish group which comprised 64% of the total volumes was the dominant group. The 'Invertebrate' category includes echinoderm, bivalves, and molluscs were the second largest with a total volume accounted for 24% of the total volume. The seafood traded in processed forms accounted for 11% of the total volume. Finfish species of *Scaridae*- parrotfish was major type of fish sold with 18% of the total volumes and was sold at an average of \$8 tala per kilo. *Acanthuridae*- surgeonfish species was for \$8.60/kg and accounted for 16% of the total weight of



Inshore fisheries activities

finfish. The *Acanthuridae*- unicornfish species totalled to about 16% of the volume and valued at \$9.60/kg, with the *Mugillidae* – mullet species accounted for 7% was sold at an average \$12/kg.

b) Resource Monitoring

(i) Community-based Fisheries Management Program

More than 80 village communities have established fish reserves and this is one of the management tools applied to improve the productivity of inshore fishery areas. Fisheries Division has provided technical assistance through the ongoing periodic assessments of fish reserves to note positive changes and impacts to substrate coverage and fish biomass over times. Outcomes of these surveys have been provided to communities for their information and understanding.

Twenty one (21) fish reserves were assessed during the fiscal year 2007-08 with three initial assessments and twenty re-assessments. The twenty fish reserves consist of the eight permanent monitoring sites under the GCRMN and the 12 fish reserves re-assessments. The new established reserves are Salimu and Auala in Savaii and Salesatele in Upolu. Table 2 shows the average percentages of the main substrate coverage. The live corals (avg 41%) were dominant with *Acropora* and *non-Acropora* as the main types. The non-branching was the principal coral type growing on reef assessed with the branching type accounted for 14% of coral coverage. The level of algae (4%) noted was also minimal and seagrass (15%) was relatively occurred in all sites studied. However, substantial areas on the reef examined were covered with dead corals mixed with rubbles and sands. Bleached coral due to diseases or high water temperature was very nominal (1.6%). The monitoring exercises conducted were mainly confined on the reef frontal and flat but limited at reef slopes.

There were eight main finfish species used as indicator to measure the abundance of fish population occur on coral reef habitats on sites assessed. Fish lengths and numbers were observed and then used to estimate the biomass of fish stock within the assessed area. Table 3 denoted the level of biomass for fish of the *Acanthuridae* family per site. The *Acanthuridae* family was the most abundant and its overall estimated biomass on reef area surveyed was about 25mt. The average size of fishes belonged to the *Acanthuridae* family observed was 15cm in length, and fish types were mainly consisted of juvenile surgeonfish (*Cenochatus striatus*), convict surgeons and the unicorns species. The *Scaridae* group (parrotfishes) were the second dominant with mostly juvenile and has an average length of 15cm as well. Its estimated biomass occurred in areas surveyed was about 24mt. The *Lethrinidae* (emperor) show very little biomass, however they were mainly the adult species with average lengths of more than 25cm.

(ii) Trochus Reseeding:

The main objective of the trochus reseeded is to plant and establish the trochus fishery in locations where fishery resources are depleted. All of the five sites, Saleapaga, Saolufata, Papa i Puleia, Foailalo including the newly reseeded site, Savaia were monitored and assessed on a quarterly basis to note the progress of trochus reseeded. Adult trochus found has an average size of 139mm while the juvenile species were 38mm. This is a good indication that the *Trochus niloticus* is regenerated well on the reefs and is now established on reefs of locations stocked. The appearance of juvenile trochus suggested that the stocked bivalve is now reproduced successfully in stocked sites. It is anticipate, a management plan will develop to ensure that the established trochus are sustainably managed and not harvested before they are further multiply and properly established.

c) Researches

Research activities implemented including ongoing Monitoring of Aggregate Spawning Species and Sites project, and the Fish and Shellfish Poisoning project.

(i) Monitoring of Aggregate Spawning Species and Sites Project:

Objectively, the research is to investigate aggregating, spawning times and breeding sites of inshore fish species. The fish-sampling phase including lengths-weights measurements and analysis of gonad indices for the 10 indicator fish species as well as the 2 new species added to the list have been completed. A write up of the final report with a literature review of similar studies is currently undertaken. Preliminary results suggested that almost all the twelve species are repeated spawning throughout the year. Most species are aggregated at particular areas of the reef such as channel and spawn harmoniously together.

(ii) Fish and Shellfish Poisoning Project:

The SPC has advised that specific algae known to be hosts to the poisonous dinoflagellate, the *Gambierdiscus toxicus* be sampled and collected for further testing. However, quarterly samplings of eight selected sites were carried out during this fiscal year 2007-08. Unfortunately, there was no sign of the dinoflagellate detected during the analysis of the algae species of *Sargassum sp* and *Halimeda sp* collected from the sampled sites. Therefore, a Senior Scientist from the SPC will be visiting the Fisheries to further advise the Division and share his expertise into the implementations of future samplings of algae and the analysis of the samples in the laboratory to detect any poisonous dinoflagellates.

3.2 Offshore fisheries services

The offshore service was focused on the implementation of some of the key projects in the tuna management plan 2005-09 and the sustainable development and management of oceanic and deepwater fishery resources. The key projects include the Legislation review, Taxation review, Catch data strengthening and infrastructure facility support for industry Proposals were also being submitted for the Fish Aggregating Devices programme, Sea safety Strengthening and Rural port facilities. The implementation undertaken for these activities ensured Samoa's obligations to the regional and international fisheries management instruments for sustainable development, conservation and management of fishery resources.

The offshore have also been working closely with the fishing industry through the CF-MAC in trying to find ways to counter the economic problems they are facing. These were brought about by the exchange rate of the US\$, increasing fuel prices and VAGST. The submission has been handed over to the minister for consideration by the cabinet.

3.2.1 Commercial Fisheries

a) Tuna Longline fishery:

The Offshore fisheries services have conducted and implemented various fisheries data collection mechanisms to enable the monitoring of the status and trends of catch landed and effort deployed by the tuna longline fishery.

(i) Longline fishing effort and catch

The longline fishing effort (Table 4) in terms of the numbers of fishing vessels has not changed from FY 2006-2007, although it was gradually increases since FY 2003-2004. The number of hooks deployed however has increased to over 7% from the amount deployed in FY 2006-2007 as shown in Table 3. This increase in the number of hooks deployed could be attributed to the fishing fleet conducting more sets per trip or conducting more trips per month while maintaining the number of fishing vessels operating in the fishery. Overall, over 6 million hooks were deployed in FY 2007-2008 as compared to around 5.5 million hooks deployed in FY 2006-2007.

An estimated 3,704.1 mt of fish was landed in FY 2007-2008, and increase of over 29% from what was landed in FY 2006-2007. An interesting point to note is that an estimated 7% increase in fishing effort brings and estimated 29% increase in catch. This could be plausibly as a result of increase catchability of the fishing fleet or increase availability of exploitable biomass of fish stocks to fishing gears.

The CPUE is usually refer to as an index of abundance of a fishery and sometimes it could be infer as an indication of the biomass of a fishery stock. The estimated CPUE of 60.7 kg per 100 hooks is the highest ever recorded since FY 2002-2003. A gradual increase in the CPUE was observed since FY 2003-2004 and was slightly below the estimated FY 2005-2006 level in FY 2006-2007. Furthermore, the CPUE in FY 2007-2008 is above 24% than the average CPUE for the past 5 FY.

(ii) Target species compositions

Albacore tuna as excepted continues to dominate the species composition of the longline catch. Over 82% (Table 5) of the total longline catch is albacore tuna, followed by Yellowfin tuna at 10.7%. Bigeye tuna accounted for less than 2% of the total catch with other pelagic species including broadbill fishes making up the rest of the catch. Although larger Yellowfin and Bigeye tuna (over 25Kg) are not primarily targeted by the fleet, they made up a very important component of the tuna longline catch as to its high value on the fresh chilled fish export market.

(iii) Longline fish exports

Frozen fish which is exported whole, gilled and gutted accounted for over 94% (Table 6) of Samoa's fish exports in FY 2007-2008 generating and estimated 18 million tala into Samoa's economy. Comparing to FY 2006-2007, the amount of frozen fish exports increase to over 41 percent in FY 2007-2008 however, the value only increase to around 35 percent. This is an indication of decreasing price of frozen albacore tuna from the canneries in American Samoa which currently provides the only markets for frozen Albacore tuna from Samoa. The amount of frozen fish exports in FY 2007-2008 is the highest recorded since FY 2003-2004.



Offshore fisheries activities

There were only 157 mt of fresh fished estimated to be exported generating over 2 million tala into Samoa's economy. The amount of fresh chilled exports in FY 2007-2008 is however below what was exported in FY 2006-2007, a reduction of over 63 percent and a loss of over 1.7 million tala. The preference of the fisherman as to where to sell his by catch including larger Yellowfin and Bigeye

could plausibly explain the observed low fresh chilled exports. In this case, the fisherman would likely to prefer the local markets as the majority of the estimated by catch is not reflected in the fresh chilled exports. Fish exports overall increases in both amount and value generated into Samoa's economy in FY 2007-2008 as compared to FY 2006-2007

b) Troll and bottom fish fishery

Like the Tuna Longline Fishery, fishery data collection mechanisms are also in place to capture an estimated amount of fish from Troll and Bottom fish fisheries, landed and sold in the main fish centres in Samoa. The data shows that an estimated total weight of 184mt of bottom fishes and surface pelagic species from trolling landed and sold at main fish centres, valued at an estimated \$1.11 million tala. The skipjack and other surface pelagics accounted for almost 83% of total estimated weight and 65% of total estimated value. Table 7 shows a summary of the last two fiscal years of troll and bottom fish fishery.

FY 2007-08 recorded an increase of 26.5% in weight of fish landed and sold with an almost 19% increase in value as oppose to FY 2006-07. Bottom or demersal fish species sold at a higher price while skipjack and other surface pelagics from troll fishing were slightly cheaper during FY 07-08 compare to FY 06-07.

The bulk of fish landed and sold was recorded in Apia fish market then Salelologa. Apolima sub-market only consists of bottom fish species and it is also the reason for the higher price per kilo. Fish were cheaper in Salelologa as oppose to the other two markets.

3.2.2 Onshore Commercial Supporting Facilities and other Developments.

The onshore activities are guided by the key projects identified in the Tuna Management and Development Plan for Samoa 2005-2009 which in cooperated in the Fisheries Annual Plan. The outcomes of the CF-MAC deliberations also influence priorities and drive other developments of the commercial fishing industry.

a) Ice Making Machines:

A new ice making machine is being installed at the new port extension on the west side. This is to help the small scale fishermen during the months when the tuna season peaked. The ice making machine's construction and establishment was made possible with funding from the EU-DEVFISH programme with the SPC and the Fisheries Division. The total project cost amount to \$107863. DEVFISH programme contributed for the ice box, shelter part of electricity and unit installation (\$60336, and Fisheries provided the ice making machine and electricity (\$47529) The ice making machine and the Sail Design Trials (another DEVFISF funded project) were launched on the 11 April 20008. The main speech was delivered by the Prime Minister.

b) Sail trial for the small alia:

A sail design had been trialled for the suitability on use for the alia fishing vessel. This was a strategic move to address the rising cost of fuels and the safety issues. An aluminium alia was slightly modified and fitted with a sail. The sail project was co-funded by the EU-DEVFISH and the Fisheries Division. It is anticipated that further trials of the modified sail will undertaken with all improvements are considered.

Results for this trial, after several runs, it was considered that the:

- Sail area was too small to power the alia of two tons with equipments and fully crewed
- Sail can only sail down wind or wind from the back and manage only 30⁰ steering angle.
- Alia lacks of keel or centre board result in the sliding as power now comes from the front not from the engine use to be at the back.
- sail will obstruct working spaces for the fishing operation
- Sail can only be used as emergency if winds allow and land locations are sighted.

c) Oceanic legislation review.

Professor Martin Tsamenyii and Dr Manu Tupou-Roosen of the FFA legal advisers replied upon Samoa's request to carry out the consultative process with stakeholders on the review of Samoa's Fisheries legislation. Professor Martin presented to stakeholders including the Attorney Generals Office, members of relevant government ministries and members of the commercial fishing industry new proposed provisions that needs to be incorporated into Samoa's Fisheries legislation. The objective is to allow Samoa to meet its legal obligations under various international fisheries arrangements particularly the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean.

d) Bottom Fish Stock Assessment

The Bottom fish Assessment activity aims to determine the status of bottomfish resources. The Bottom Fish Assessment was far away from completion due to some unexpected causes such as budget constraints, long waiting for ordered parts from overseas, unavailability of Ulimasao crew due to the assistance they provided for sail installation, and bad weather condition. Therefore only three trips were able to conduct. According to the results summarized in the table above, trip 1 showed large amount of catch (86) which equivalent to 97.65kg in weight as compared to trip 2 and 3. The low catch in trip 2 and 3 was due to the bad weather condition and this resulted in less number of fished hours. The total number of fish caught in three trips was 217 which were the same as 209.75kg of total weight. The two areas covered by these fishing trips were Aleipata and Apolima.

3.2.3 Management Advisory Committee Meetings:

The following highlighted some of key issues raised during the Commercial fisheries Management Advisory meetings and the outcomes and progress of issues raised.

- (i) This committee in which the Fisheries Division is the secretary has initiated in FY 2006-2007 a request to government through the Trade, Commerce and Industry (TCI) Revenue Board for assistance in reducing operational costs associated with commercial fishing activities. The outcome of this request has seen tariff exempted from inputs imported for commercial fishing activities and a reduction of excise tax in some inputs for the same purpose to be effective from the 1st of July 2008.
- (ii) A similar attempt was made in FY 2007-2008 as a result of deliberations in a series of meetings of this committee to cabinet through the Minister of Agriculture and Fisheries requesting an exemption of all fishermen from VAGST on all imported inputs essential for fishing operation including fuel. An outcome of this request is yet to be received by the secretary of the CF-MAC
- (iii) Deliberations of this committee has also resulted in the installation of an ice making machine in the Fisheries wharf to address concerns raised by alia operators regarding inadequate supply of ice during peak months of the fishing seasons.
- (iv) Most members of the committee in particular representatives from the fishing industry were not in favour of a recent regional attempt to develop a Multilateral Sub-Regional Longline Access Agreement and Management Arrangement which will provide the opportunity for Samoa's fishing fleet to expand its fishing grounds beyond our zone. The issue has been put aside as most domestic fishing industries in the region have shown opposition the arrangement.

3.3 Aquaculture Fisheries Services

a) Giant Clam:

(i) Community lagoon nursery

In the beginning of the fiscal year, only twelve community lagoon nurseries (8 Upolu and 4 Savai'i) had giant clams remained. A total of 5,384 live giant clam pieces were distributed and cultured within fish reserves in the early stages of the establishment of community-owned lagoon nurseries. However, only 1,668 live clams remained at the end of last year. Again, the number of clams has declined significantly with a total of about 1,533 giant clams still remained at the end of this fiscal year. The clams had an average sizes ranging from 193.5mm – 323mm in length and were growing at the average rates of between 0.31mm and 11.8mm per month. About 8.1% of the species were lost due to natural mortality, predation (snail *Cyrtium lotorium*) and poaching while 91.9% are still remaining. Table 8 detailing the number of remaining pieces of giant clams per sites and their respective sizes attained.

On August 7th, a shipment of 500 giant clam broodstocks (*Tridacna gigas*) from Tonga arrived for the village of Savaia supported by the UNDP Small grant. The 500 pieces were stocked into their lagoon nursery adding to the already existing *Tridacna derasa* pieces.

(ii) Broodstocks Reserve:

Giant clams broodstocks that were nursed at Palolo Deep were relocated to Tafagamanu reserve in February 2008 due to security issues. A total of 116 clams were nursed at Palolo Deep in the beginning of the fiscal year, with 3 species types; *H. hippopus*, *Tridacna gigas* and *Tridacna derasa*. Only 101 clams were left at the end of the year as this decline was due mainly to the loss to poachers, predatory snail *Cymatium iotorium* that feeds on clams causing death and as well as natural mortality.

(iii) Hatchery:

All the hatchery activities were on hold due to relocation issue. Proposals were submitted to various Donor agencies seeking financial supports for the re-establishment of a new fisheries hatchery. Moreover a proper location to re-establish the hatchery has yet to be selected. The Airport Authority was again requested for a land to re-establish the hatchery once fund is available.

b) Tilapia:

(i) Tilapia farming:

Aquaculture activities were focused mainly on Tilapia farming and propagation. A total of 5,000 fish fingerlings were produced and distributed to community, group and individual farmers. A total of 11 old and new farms were stocked with tilapia and five of those were new farms. A farmer, Seleni Faiga of Faleaseela received financial assistance from European Union to develop 5 new tilapia cement ponds, added to his already existing old tilapia farm. Mr Togiga A also expands his farm by developing a new earth pond. These individual farms together with village and group fish farms were stocked with a total number of 4,130 fish fingerlings produced from the Fisheries freshwater hatchery as detailed in Table 9.

c) Research:

(i) Giant clam recruitment:

A study to identify juveniles recruited from natural spawning of introduced giant clam species cultured in the lagoon nurseries of Savaia and Tafagamanu was conducted on the 10th of June 2008. A team of about 10 divers carried out sweep survey covering a wide area of reefs. Unfortunately, the exercise was unsuccessful as there were no juveniles specific to species introduced were found. There were clams of local species observed, but of the stocked species. More surveys of similar nature will be conducted in the future to determine whether juveniles of stocked species are established on the reefs.

(ii) Feed Formulation and Trials:

A feed formulation trial to determine appropriate fish feeds from using local ingredients was conducted since April 2008. There were three (3) main and consistent locally available ingredients; brewery waste (molo), coconut meal (penu) and fish meal from fish by-products. These materials were used to formulate various feed combinations based on the size of fish at several stages of their life cycle.

The trial to test the various feed formula was carried out using tilapia of various stages cultured at Fisheries ponds. Three separate ponds were identified with 40 tilapia each (only male species); the idea is to ensure that the feed will have an effect on the body weight during the feeding periods. The research is on-going with new ingredients tested now and then. Three feeds combination have been identified and tested and they are given to farmers to be tested further feeding fish at their farms. The Aquaculture section is working collaboratively with selected farmers on this research.

d) Information Dissemination and Stakeholder capacity building:

Four quarterly articles regarding tilapia and giant clam issues were produced and published on the Fisheries Newsletter for dissemination to stakeholders. Information provided was to help farmers and

villagers for proper maintenance and management of tilapia fish and farms and giant clams cultured in community lagoon nurseries. A media release on 'Harvesting Tilapia Farm' was also produced and distributed to media newspapers, radio and SBC television. The media release was based on the harvesting of a tilapia farm owned by the CCCS Youth Group of Faleseela Lefaga on 27th June 2007.

A tilapia feed practical was conducted for staff and students of the Asau College in May 2008 teaching them on proper ways to feed the fish as well as collecting data to monitor weights of fish attained from different feeds used. A similar workshop was also carried out for a CCCS Youth group of Faleseela on tilapia harvest. Maintenance of giant clams training was also undertaken for Tafagamanu Committee to enhance their capacity to properly look after the clams cultured in their lagoon nursery.

3.4 Community Fisheries Advisory Services

3.4.1 Community Based Fisheries Management Programme (CBFMP)

The CBFMP assist coastal village communities in Samoa to provide management measures to effectively manage, conserve and utilize inshore resources in a sustainable manner. The facilitation process encouraged the local communities to identify problems, determine solutions forming up their Management Plans outlining possible actions to undertake not only by the villages but the Fisheries Division. Members from the villages were also selected and formed up their Fisheries Management Committee (FMC) to oversee the undertakings when their Fish Reserves are established.

a) Village Fisheries Management Plans:

(i) New management plan

Within 2007-08 two (2) new villages participated in the programme and established their Marine Reserves. These villages were Salesatele, Falealili and Matautu-uta, Lefaga which added to about 89 coastal villages that contain Fisheries Management Plans. Safua in Savaii was interested and there were some consultations and meetings completed towards establish their Mangrove Conservation and Management Plan are in the process. Table 10 below shows the Management plan formulation process undertaken in the new villages that joined the CBFMP.



Community-based fisheries management activities

(ii) Management Plan Reviews:

A total of 26 villages (6 Upolu, 20 Savaii) reviews were conducted on their undertakings outlined in their Management Plans. From these reviews the villages performances varies from excellent, average/good and

poor (Table 4) showing their commitment and efforts.

As shown, excellent performance (39%) indicated villages that were strongly engaged in monitoring and enforcing their responsibilities in their Management Plans. The majority with average scores need improvement and continuous support from Fisheries and especially those below 54%.

b) Villages Fish Reserves:

(i) Establishment of new Village Fish Reserves

Two villages have recently established new Fish reserves as a management tool to facilitate the rehabilitation and improving of the inshore fisheries. Salesatele and Matau-uta declared and established their fish reserves in 15 February and 26 June 2008 respectively after the Fisheries has done the baseline surveys of the recommended areas.

(ii) Re-active former Fish Reserves

In addition to the new villages two former villages under the CBFMP (Poutasi, Falealili & Fagamalo in Savaii) requested to re-establish their Fish Reserves. Their Management Plans were then reviewed and updated and their bylaws were discussed as it will be modified according to new changes in their Management Plans and also the new format and changes currently used. In order to re-establish Marine Reserves of these two villages, consultations and presentations were conducted for awareness and understanding not only for the village council but the local communities (see Table 10).

(iii) Mapping Villages' Fish Reserves:

Calculating the areas of marine conservation was another vital activity undertaken. Ten villages Fish Reserves (6 Upolu, 4 Savaii) were marked their coordinates gathered using Global Positioning System device (GPS), and digital maps of these reserves were also produced. This action is ongoing until all villages Fish Reserves are marked and maps produced.

c) Village Fisheries Bylaws:

Twenty five (25) villages and two (2) districts bylaws were approved, published and advertised through the Savali Newspaper and actively enforced after 14 days from the date of first publication (18th, 25th Nov 07). Content and copies of these bylaws were explained and given to the particular villages (Table 12) and also to adjacent villages for awareness.

d) Community-based projects

(i) JICA Community Follow-up Project:

This project funded by JICA benefited six communities (4 in Upolu and 2 in Savaii) and assisted the strengthening of the Fisheries Division information management and dissemination. The Fish Reserves of these communities in Upolu (Salesatele, Tafatafa, Apolima-uta, Safaatoa) and Savaii (Salimu in Faga, Sataua) were marked using buoys and ropes and they were also provided with gears like fins, snorkels and masks to assist their daily monitoring and other activities. The Fisheries Division received some shelves for their newly established library and a promotional pocket folder that was printed.

(ii) Coral Restoration:

The film crew by the UNDP was able to visit the villages of Apai and Salua in Manono-tai with the Fisheries Division to observe coral restoration/garden in their Fish Reserve. They witnessed the re-growth of corals and also learnt how this activity contributes to rehabilitation of corals and reefs.

(iii) Community Projects Financial Assistance:

More communities under the CBFMP with Fish Reserves were able to secure funds from the UNDP GEF Small Grants Programme. This assisted them in various projects such as coral restoration, giant clam rehabilitation/restocking and marking of their Fish Reserves. These villages included Salesatele and Poutasi, Falealili; Matautu-uta and Tafagamanu, Lefaga; Salua Manono-tai and Salimu in Faga, Savaii. Fisheries Division technical support is ongoing in these villages not only with monitoring but also capacity building needs.

(iv) Community Visitation, Training and Workshops

The Tongan Community-based Fisheries Project visit Samoa on the 31st Oct to 02 Nov 07 was the second time they came to observe, learn and sharing experience with Samoa's Community-based Fisheries Management Programme. Their group consisted of staff from the Fisheries Department in Tonga and also representatives from communities with 'special management areas'. They were able to meet with village communities in Upolu (Tafagamanu and Saoluafata) and Savaii (Satoalepai and Faga) and shared experience and problems encountered by communities in Samoa and those in Tonga.

The Community Based Fisheries Programme in American Samoa attended a one week refresher training workshop with our CBFMP. The workshop was coordinated by the Secretariat for the Pacific Community (SPC). This workshop discussed and reviewed the current Community based model used by both countries and how the ecosystem approach can be adopted and used.

Inactive and new villages were able to visit the Fish Reserves of some active villages. They were able to observe other villages' fish reserves and learn methods of marking fish reserves and also of how other communities monitor their undertakings. These communities of Matautu-uta, Lefaga; Salesatele, Falealili and Salimu, Savaii were able to visit four Fish Reserves along Falelatai to Apolima-uta and the village of Fagamalo that visited Vaisala's Fish Reserve.

Seven workshops and consultations were provided and conducted with communities and other stakeholders in both Upolu and Savaii on various topical issues as follow:

- Consultation to gather views regarding the MAF corporate plan;
- Consultation to encourage and strengthen villages Fish Reserves and the CBFMP;
- Start your own fishery business;
- Consultation with villages 25 villages on their newly approved bylaws;
- Marking and monitoring of Fish Reserves;
- Construction of Coral Restoration and Fish houses.

e) Awareness Programmes:

(i) Stakeholder awareness generation

Awareness is a vital ongoing activity provided for communities and other stakeholders and also the public. Presentations on the CBFMP and fisheries services were provided for:-

- Village mayors (Upolu & Savaii) through the Internal Affairs;
- School (Aleipata Secondary) and villages (Fagalii/Vailele, Tafagamanu, Salua, Tafatafa and neighbouring villages of Malaemalu & Matautu, Poutasi)
- Organizations and other agencies (Peace Corp, FFA workshop in Samoa)

Apart from these the newsletter is distributed to communities and other stakeholders on various fisheries issues and activities.

(ii) Filming community projects:

A film crew from the UNDP office visited two villages under the CBFMP and filmed activities and projects such as coral reef restoration that UNDP funded. These sites were Apai and Salua in Manono-tai Island. A film crew from an American Food Show also came to Samoa and filmed the 'Giant Clams' lagoon nursery at Tafagamanu village for their show called the "Bizarre Food". Tafagamanu Village is also part of the Community-based Fisheries Management programme.

3.4 Regulation and Enforcement Services

a) Fishing Licenses for Fishing Vessels:

All fishing vessels are annually renewed their fishing license before the end of August every year. A total of 54 local fishing vessels were issued with licenses to legally fishing within Samoa's fishery waters. A total of \$105,000 tala of revenues was generated and the license fee is based on the cost recovery for the management of fishery resources. The Table 13 shows the number of fishing vessels of each category licensed to fish in 2007-08 period.

b) Inspections and Surveillance:

(i) Board inspection

Ongoing boarding inspections are often carried out by Authorised Officers in order to ensure that local and foreign fishing vessels are complied with Fisheries legislations and whether they are conducting Illegal, Unregulated and Unreported fishing activities. Inspections were carried for two locally based foreign fishing vessels namely the Island of Pukapuka and Te Taravakai that often called into their company. One boarding was also carried out for a local fishing vessel – Yellowfin, this was for the purpose of inspecting the vessel, as it was used to ship goods to Tokelau.

(ii) Economic Exclusive Economic Zone (EEZ) Surveillance:

Monitoring of fishing activity within Samoa's fishery waters was often carried out by the Maritime Police Division and Fisheries Compliance Officers during periodic patrols of the EEZ using the Nafanua patrol boat. A total of seven (7) surface surveillances were carried and three aerial surveillances were jointly conducted by the New Zealand and Australian Air Forces to monitor IUU fishing within Samoa's EEZ.

c) Enforcement of Fisheries regulations

(i) Undersized fish and invertebrates

The enforcement of Size Limit Regulations is carried out in accordance to the Local Fisheries Regulation 1995 and the Fisheries Act 1988. The enforcement of the said regulations normally carried out at the Apia Fish market, Fugalei market, Shops, Roadsides and Fish Exporters. Enforcement activities for undersized fishery products traded were carried out daily and also weekly with inspections of processing plants is conducted on quarterly basis.



Samples of size limits for fish and mudcrab

During this fiscal year, there were 114 reported cases of infringements of Fisheries regulations; 90 undersized fish, 12 undersized lobsters, four (4) egg bearing lobsters, one (1) undersized mudcrab, 2 (two) undersized giant clams and four (4) cases for green hare eggs, which is regarded as a prohibited good. A total of 12 cases were tried in the District Court with defendants were found guilty. Five (5) cases were charged for undersized fish, four (4) for undersized mudcrabs including those from last year and three (3) were charged for using

poisonous substance to catch fishes. Most of the cases reported were first offenders and they were strongly warned and only the cases that have been previously warned were preceded to the Court for trials.

(ii) Fish Export Certificates:

Certifying fishery products export for commercial and '*faaoso*' (token) purposes is to ensure that statistics are recorded, but also all items must comply with size limits allowable. Volumes and values of fisheries exports for commercial purpose are detailed in Section 3.2. Table 15 summarise the total volumes of tuna and inshore fishery products exported for '*faaoso*' (token) for Samoan families living overseas, especially in New Zealand.

Reef fish has always been the major species taken as '*faaoso*' with *Acanthuridae* species as the main fish types. A total number of 54 bottles (1litre) of '*sea*' - curry fish *stichopus horrens* has a total of weight of 90 kg. For tuna and pelagic, the dominant species were fillets of albacore tuna, yellowfin tuna and blue marlin.

3.6 Fish Market

The fish market service is opened to the public and fishermen seven days a week. The volume of fishery products trade through the facility showed that Monday had the lowest recorded. The highest volume of products traded was recorded on Sunday and it was also the busiest day of activity, even though the market opened for only four hours. Table 16 denoted various fish types used as indicators for prices observation throughout the year. A string of fish weigh 3.5-4 kg is normally sells between ST\$25-30. An individual fish of size 2-3kg is usually sells for ST\$25-30 tala. Normal prices for fish sold were observed from April to October and then prices were doubled from November to February. The increased of prices were brought about by several factors such as the period is associated with bad weathers or cyclone season, higher social activities, higher number of Samoan expatriates returning overseas from holidaying in Samoa and taking fish as '*faaosu*' (token) for families.

The number of fish sellers (Table 17) using the market was consistent throughout the year with the highest and lowest recorded in the months of May and August respectively. Total revenue generated from renting tables for selling fishery products to the public was about \$68,920 tala.

4 INTERNATIONAL AND REGIONAL ISSUES

4.1 Western and Central Pacific Fisheries Convention (WCPF)

The WCPF Convention consolidated and strengthened provisions of the UN Fish Stocks Agreement (1995) and obligated member countries that harvest shared fish stocks to ensure the highly migratory species are properly and sustainably conserve, develop and managed.

In the 4th Commission meeting held in Guam 2007, it was formally agreed and endorsed by all members the following Conservation and Management Measures and these are significantly relevant for Samoa deliver obligations for the sustainable management of highly migratory species:

(i) Conservation and Management Measures for Regional Observer Programme (ROP)

Article 28(1) of the Convention recall the formulation and establishment of a ROP to collect verified catch data and to monitor the conservation and management measure adopted by the Commission. The said CMM endorsed the establishment of a Commission ROP and also obligated members to provide reports of annually to the Commission relating to the Observer Programme and other matters relevant to the efficient operation of the programme. Furthermore, members are also obligated to ensure that all fishing vessels fishing in the Commission area, except for vessels exclusively fishing within country's EEZ, are prepared to accept observers from and discharge functions relating to the Commission ROP, if required.

(ii) Conservation and Management Measures for Commission Vessel Monitoring Scheme (VMS).

Importantly, VMS is considered a tool effectively supports the principles and measures for the conservation and management of highly migratory species within the Commission area. This CMM allows the implementation of the Commission VMS and will commenced and activated on 1st January 2008 in Area south 20°N, and east of 175°E in the area of the Convention Area north of 20°N. All vessel fishing in these areas are to equipped with VMS satellite equipments and transmit positions in a near real times.

(iii) Conservation and Management Measures to establish a List of Vessels presumed to have carried out Illegal, Unreported and Unregulated fishing activities.

IUU fishing activities are major concerns jeopardising and compromising the sustainable conservation and management of highly migratory species within the Pacific Ocean. This CMM is obligating member

countries to develop Plan of Actions consistent to the plan adopted by the FAO Council to prevent, deter and eliminate illegal, unreported and unregulated fishing in the Convention area.

(iv) Conservation and Management Measure to Mitigate the Impact of Fishing for Highly Migratory Species on Seabirds

The CMM set out measures and areas of application for all members, cooperating non-members and territories to implement the International Plan of Action for the Reducing Incidental Catches of Seabirds in Longline Fisheries. All concerned parties must report annually to the Commission on their implementation of actions to reduce incidental catches of seabirds.

4.2 FFA and SPC

Both Secretariats had continuously assisted their members to improve their capacity and capability to deliver their obligations and implement measures effectively relating to the Conservation and Management Measures adopted by the Western and Central Pacific Fisheries Commission. Moreover, the Secretariats assisted countries in reviewing and developing legislative frameworks and policies to strengthening their functions in the conservation and management of fishery resources within their EEZ.

The Secretariats were also helped members to develop and formulate relevant different options reflecting members needs for the conservation and management of highly migratory species in the Pacific whilst optimise benefits from their harvesting. Capacities building of members were done through regional and sub-regional consultation meetings, workshops, training, and attachments delivered by both agencies. Again, FFA and SPC continually assisted member countries to develop strategies to ensure their development aspirations are materialised and benefits are maximise from harvesting fishery resources.

5. CHALLENGES AND CONSTRAINTS

The 2007-08 period was a very challenging year for the Fisheries Division. The followings below detailed some major challenges and constraints that were potentially impacting on the performance of schedules activities and expected achievements

5.1 Regional Issues

The came into force of the Convention for the Conservation and Management of the Highly Migratory Species in the WCPO area has increased Samoa's obligations and workloads significantly in the implementation of endorsed measures for the conservation and management of tuna and related species within its EEZ. The Conventions is in its fifth year and the number of conservation and management measures and resolution adopted is significant. During the year, major efforts have been made to deliver Samoa's national obligations and these were ranging from Fishing License, EEZ Surveillance, National Observer, and Data and Statistic programmes.

The new Legislative Framework encompassing the oceanic and coastal fishery resources together was initially developed and currently underway. The new legislative framework will address gaps and weakness existed in the current framework and incorporating measures adopted by regional and international management instruments to strengthening Samoa's roles in sustainably conserve and manage its fishery resources.

Samoa's commitment to effectively deliver and enact its obligations under Regional and international instruments are limited due to:

- Weak current Legislative Framework

- Lack of staff attending and ensure conservation and management issues are performed and delivered.
- Lack of capacity and understanding of staff and fisheries users on the sustainable management while maximising benefits from harvesting tunas.
- Limited budget and policies for implementation of adopted conservation and management measures and to carry out programmes for enhancing capacity and recruiting staff to perform measures.

5.2 Division

- (i) The relocation of the marine species hatchery at Toloa for tourism development is still a major setback in aquaculture developments. Funding issue and site selection for the re-establishment of the Maine hatchery posed a major constraint to aquaculture development. The production of seedlings from the hatchery is completely ceased, hence affecting effort to promote aquaculture and stock enhancement efforts. Due to government's lack of funds, the Division is still seeking and awaiting financial and technical supports to re-establishment a new multi-species hatchery
- (ii) In numbers of inactive villages in the community-based fisheries management program as due to villages' lack of commitment and interest in the long term benefits of fish reserves. The programme was design to motivate and encourage communities to sustainably conserve and management their fisheries to food security. Security of foods from the oceans will compromised, if villages are not keen and willing to reverse the problem of fish depletion.
- (iii) The decrease in operational budget has again affected the implementation and management of proposed annual activities that could strengthen the conservation and management of fishery resources, and also supporting fisheries developments.
- (iv) Again insufficient operational budget to implement activities is a stumbling block particularly the implementation of the capacity plan based on needs to enhance capability and competencies required for provision of technical supports and service delivery to stakeholders.
- (v) Staff turnover resulted in several senior technical staff leaving work for other job opportunities. The sudden departure of the highly competent staff has impacted immensely on the technical capacity available within the Division to deliver support and service diligently and effectively to its stakeholders.
- (vi) Continue increase costs of fuels and materials needed for commercial fishing was also compromised the survival of the commercial fishing industry. It was a challenge to the Fisheries and Government to work out strategies to support the industry as to ensure the survival to the future.

6. RECOMMENDATIONS

The forward progress for aquaculture development in Samoa will depends very much on the existence of a proper hatchery that will produce sufficient seedlings and fish fingerlings to support aquaculture ventures. Aquaculture is prioritised in the current SDS as a mean to promote food security and income generation for communities given that fisheries captured from the wild are limited. Hence the government should provide its full support by providing funding for the re-establishment of a hatchery. In addition, the budget provided could be increased to allow and enable further development of the fishery sector and to maximise benefits accrue to Samoans.

Samoa must proactively engage in implementing and delivering obligations to international and regional fisheries management instruments adopted for the sustainable conservation, development and management of fisheries resources both in in-zones and throughout their ranges. Capacity building

and awareness generation for all concerned stakeholders and staff on the adopted conservation and management measures are paramount for the longterm sustainability of fishery resources.

Currently the Fisheries Division is initiating programmes to encourage former villages to reactivate their fisheries reserves. Several communities have received financial support from donors to improve their endeavours of properly manage their fishery, hence could significantly contribute to food security. The Government must effectively facilitate the access of communities and fishery stakeholders to financial and technical supports provided by external donors to assist in promoting fish and food security.

7. ACKNOWLEDGEMENTS

Fisheries Division acknowledge with appreciate the continue supports rendered by village communities, Government Ministries, non-governmental organizations and the private sector which we worked in partnership to sustainably develop, conserve, and manage fishery resources within Samoa's EEZ and also promoting fisheries developments.

Also, we would like to acknowledge and sincerely thanks our partners who continually supporting us throughout the year:

INTERNATIONAL	REGIONAL / LOCAL
<ul style="list-style-type: none">▪ Government of Japan▪ Japan International Cooperation Agency (JICA)▪ Government of Australia (AusAID, ACIAR)▪ Chinese Government▪ Food and Agriculture Organization (FAO)	<ul style="list-style-type: none">▪ Forum Fisheries Agency (FFA)▪ Secretariat for the Pacific Community (SPC)▪ Western and Central Pacific Fisheries Commission▪ US Peace Corps

Mulipola Taupau Atonio P. Mulipola
ASSISTANT CEO (Fisheries)

8. APPENDICIES

Table 1: Inshore Fisheries volumes (mt) and values (ST mil) by major fishery groups over the past 6 years.

Groups	2001-02	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08
Finfish	69.8	432.2	58.8	28.3	72.3	85.32	92.6
Crustacean	3.6	28.5	2.2	0.4	2.8	2.93	2.6
Invertebrates	3.3	3	6.5	44.7	26.3	24	34.1
Processed	39.1	65.5	29.8	17.4	13.3	14.22	15.7
TOTAL WT (mt)	115.8	529.2	97.3	90.8	114.7	126.47	145.0
VALUE (ST-mil)	1.54	4.30	1.15	1.15	1.50	1.50	1.80

Note: Invertebrates category including bivalve, ecinoderms, molluscs and other types

Table 2: Substrate coverage (%0 from assessments conducted in FY2007-08.

Substrate coverage	Fish reserves Average %	GCRMN sites Average %	Overall Average %
Acropora live corals	11.4	16.7	14.1
Non-Acropora	26	27.6	26.8
Algae	16.2	13	14.6
Seagrass	5.6	0.1	2.85
Bleach corals	1	2.1	1.6
Abiotic	28	30.7	29.4
Dead corals	11.4	8.8	10.1

Table 3: Areas of fish reserves and Fish biomass of sites surveyed

Fish Reserves total area in square meters							
Village	Area (m2)	<i>Acanthuridae</i> Est. Total biomass (mt)	<i>Scaridae</i> Est. Total biomass (mt)	Village	Area (m2)	<i>Acanthuridae</i> Est. Total biomass (mt)	<i>Scaridae</i> Est. Total biomass (mt)
Palolo	38,230	0.0073	0.28	Salimu	26,000	0.728	0.400
Matautu	197,800	0.001	0.49	Auala	50,000	0.001	0.244
Siufaga	82,180	0	0.077	Manase	46,000	0.191	0.839
Saleapaga	45,610	3.199	1.708	Safa'ato'a	50,000	0.539	0.819
Vailoa	72,740	3.043	2.855	Neiafu	25,000	0.013	0.029
Aufaga	36,320	0.397	0.295	Salua tai	18,200	0.00	0.008
Salesatele	38,110	0.818	0.478	Papa Puleia	75,000	2.256	3.814
Vavau	26,820	0.101	0.126	Fagamalo	150,000	0.521	1.298
Fatuvalu	31,990	6.6 x 10 ⁻⁴	0.107	Siufaga Faga	240,000	1.150	0.824
Vaisala	411,700	8.988	7.497	Samatau	200,000	3.083	2.297
Saoluafata	120,000	0.503	0.400	Totals		25.077	24.885

Table 4: Total Estimated Fishing Efforts, Aggregate Catches and Average CPUE from 2002-03 to 2007-08 periods

Yearly period	Number of LL vessels	Total Fishing Effort (No. hooks)	Estimated Catch (mt)	CPUE (kg/100-hooks)
2002-2003	24	7,492,729	3,977.3	53.1
2003-2004	17	5,262,957	2,220.6	42.0
2004-2005	32	4,595,439	2,020.3	44.0
2005-2006	54	3,799,366	1,979.3	52.1
2006-2007	60	5,686,408	2,855.1	50.2
2007-2008	60	6,103,754	3,704.1	60.7

Table 5: Estimated total weight in metric tonnes of targeted tuna species landed during 2002-03 to 2007-08 periods

Targeted tuna species	2002-03	2003-04	2004-05	2005-06	2006-07	2007-08	2007-08 % Wt
Albacore (<i>Thunnus alalunga</i>)	3,102.1	1,721.6	1,352.9	1,511.2	2,286.2	3,059.4	82.6
Bigeye (<i>Thunnus obesus</i>)	107.1	102.1	84.6	89.5	124.3	55.3	1.5
Yellowfin (<i>Thunnus albacares</i>)	392.5	223.8	409.0	228.6	253.6	397.2	10.7
Other species (<i>Skipjack, Masimasi, etc</i>)	375.6	173.5	173.8	149.9	191.0	192.3	5.2
Total	3,977.3	2,221.0	2,020.3	1,979.3	2,855.1	3,704.2	100

Table 6: Volume in (MT) of Samoa's frozen and fresh chilled fish exports over the past 6 years

Fiscal Year periods	Frozen fish		Fresh Chilled		Total	Total
	Est Wt (mt)	Est Val (ST)	Est Wt (mt)	Est Val (ST)	Volume (mt)	Value (ST)
2002-2003	2,259.0	16,257,543	567.2	7,480,845	2,826.2	\$ 23,738,388
2003-2004	1,345.3	9,376,849	430.3	5,457,612	1,775.6	\$ 14,834,461
2004-2005	1,477.7	10,825,626	481.0	6,246,017	1,958.7	\$ 17,071,643
2005-2006	1,042.1	7,626,230	144.6	1,775,155	1,186.7	\$ 9,401,385
2006-2007	1,819.3	13,405,456	429.8	4,008,088	2,249.1	\$ 17,413,544
2007-2008	2567.7	18,169,894	157.9	2,215,038	2,725.5	\$ 20,384,932

Table 7: Bottom fish and troll species landed and sold during the last two fiscal years.

	Bottom Fishing			Trolling			Total	
	Est_wt (MT)	Est_val (\$ST)	Ave \$/ kg	Est_wt (MT)	Est_val (\$ST)	Ave \$/ kg	Est_wt (MT)	Est_val (ST)
FY 06/07	32.93	\$386,527.65	\$11.74	102.41	\$509,523.83	\$4.98	135.35	\$896,051.48
FY 07/08	31.51	\$391,875.18	\$12.44	152.48	\$714,059.51	\$4.68	183.99	\$1,105,934.69

Table 8: Status of giant clams distributed and cultured in Community-owned lagoon nurseries in 2007-2008

Villages	No. pieces stocked	Year of stocking	No. of pieces remained	Average size	Growth rate (mm/qrter)
Safa'atoa	500	1998	7	250.86	5.29
Samatau	400	1999	284	329.05	7.25
Fuailolo'o Mulifanua	407	1999	29	265.0	5.6
Siufaga	492	2001	37	252.82	3.52
Savaia	553	2001	214 (<i>T. derasa</i>) 473 (<i>T. gigas</i>)	322.95 313.3	15.63 35.52
Tafatafa	520	2003	14	208.57	2.19
Apolima	205	2004	68	193.5	14.17
Matautu Falelatai	205	2004	156	244.55	13.6
Auala	500	1997	12	298.08	3.33
Fatuvalu	552	2001	13	256.46	0.92
Vaisala	500	2001	225	296.5	3.95
Luaa	550	2003	1	224	5.0
	5,384		1,533		

Table 9: Farms stocked with tilapia fingerlings during FY2007-08

Farmer	Location	Stocking date	No. of fry	Comments
Palemia Williams	Moamoa	27 th July, 07	30	Stock new farm
CCCS Youth	Faleseela	14 th August, 07	2,000	Stock new farm
Sapapalii Community	Sapapalii	15 th August, 07	400	Restock old ponds
Le Penina Golf Course	Mulifanua	26 th October, 07	500	Restock old ponds
Togiga. A.	Faleapuna	7 th November, 07	150	Stock additional pond
Tony Halman	Aleisa	24 th January, 08	150	Stock new farm
Stefan Szegedi	Tiapapata	4 th February, 08	100	Restock old ponds
Asau College	Asau	18 th February, 08	125	Stock new farm
Auala Community	Auala	18 th February, 08	125	Restock old ponds
Sala Sale	Patamea	13 th May, 08	100	Stock new farm
Seleni Faiga	Faleseela	12 th June, 08	450	Stock additional new ponds

Table 10: Meetings and Formation of new Management Plans, New & re-activate Villages Fish Reserves and drafted by-laws in 2007-08

Villages	First Fono Meeting (Introduce the CBFMP)	Group Meetings (Consultation process)	FMAC Meeting (Draft preparation)	Final Fono Meeting (Approval of the Plan)	Fish Reserve started	Draft By-laws & submitted to Legal Consultant
Salesatele	03 Dec 07	10 Dec 07	18 Dec 07	14 Jan 08	15 Feb 08	4 Mar 08
Matautu-uta Lefaga	20 May 08	23 May 08	28 May 08	30 May 08	26 Jun 08	6 June 08
Safua, Savaii*	13 June 08	18 June 08	<i>progress</i>	<i>progress</i>	<i>progress</i>	<i>progress</i>
Poutasi, Falealili**	<i>Feb 08; 7 May 08*</i>		<i>19 Jun 08</i>		<i>Management Plan, Bylaws</i>	
Fagamalo, Savaii**	<i>May 08</i>		<i>20 Jun 08</i>		<i>Management Plan</i>	

* to be completed in 08-09 fiscal year. **Re-active Fish reserves

Table 11: Results of Villages Performance of Management Plans Undertakings

Performance Rating	80-100 % Excellent	55-79% Average	54% & below Poor	Total
No. of MP Reviews	10	11	5	26
Percentage	39%	42%	19%	100%

Table 12: Approved Bylaws of Twenty Five Villages and Two Districts, 2007-08

SAVAII		
1. Siufaga, Faga	6. Fatuvalu	11. Fogatuli
2. Sapini, Faga	7. Vaisala	12. Foailalo
3. Luua, Faga	8. Sataua	
4. Salimu, Faga	9. Papa, Sataua	
5. Safa'i	10. Neiafu	
UPOLU		
13. Vaiusu	18. Vavau	23. Siufaga Falelatai
14. Leusoalii	19. Mataufu	24. Savaia Lefaga
15. Aufaga, Lepa	20. Tafatafa	25. Tafagamanu Lefaga
16. Lepa	21. Apolima-uta	26. <i>Aleipata District</i>
17. Saleapaga, Lepa	22. Matautu Falelatai	27. <i>Safata District</i>

**District bylaws*

Table 13: Fishing vessels licensed by categories in 2007-08

Categories	Number of fishing vessels	License fees	Revenue generated
A	38	\$200.00	\$7,600
B	1	\$500.00	\$500
C	2	\$3,000.00	\$6,000
D & E	13	\$7,000.00	\$91,000
	54		\$105,100.00

Table 14: Reported cases of infringements of Fisheries cases and guilty cases

Infringements	Reported cases	Guilty cases
Undersized fish	90	5
Undersized lobsters	12	
Egg bearing lobsters	4	
Undersized mudcrab	1	4
Undersized giant clams	2	
Green hare eggs	4	
Derris roots (fish poison)	1	3
Total	114	12

Table 15: Volumes of fish exported for faaoso' (token) in 2007-08 period.

Months	Tuna and pelagic species (kg)	Inshore species (kg)
July – December 07	1,131	5,160
January – June 08	409	4,635
TOTAL	1,540	9,795

Table 16: Average prices of fish sold at the fish market throughout the year.

Fishery products	No. of fish	Weight String/individ	Length (1 fish)	Selling Price Apr-Oct	Selling price Nov 07/Feb 08
Alogo (<i>Acanthurus lineatus</i>)	13	3.5 kg	22cm	\$25.00	\$40.00
Poge (<i>Cenochatus striatus</i>)	13	3.5 kg	22cm	25.00	\$40.00
Palagi (<i>Acanthurus spp</i>)	10	3.5 kg	24cm	25.00	\$40.00
Ililia (<i>Acanthurus spp</i>)	13	3.5 kg	26cm	25.00	\$40.00
Anae (<i>Mugil spp</i>)	1	4.0 kg	45cm	20.00	\$40.00
Ume (<i>Naso spp</i>)	1	2 kg	35cm	15.00	\$30.00
Snapper	1	2 kg	40cm	15.00	\$40.00
Palusina (<i>Aphareus rutilans</i>)	1	2 kg	53cm	20.00	\$50.00
Malauli (<i>Carangidae spp</i>)	1	2.8 kg	55cm	\$30.00	\$70.00
Masimasi (<i>Coryphena hippurus</i>)	1	20 kg	124cm	\$150.00	\$200.00
Asiasi (<i>Thunnus thunnus</i>)	1	20 kg	97cm	\$120.00	\$180.00
Mudcrab (<i>Scylla serrata</i>)	1	1 kg	53cm	\$30.00	\$60.00

Table 17: The number of fish seller using the market and total revenue generated

Period	Month	No of Fish sellers	Revenue Collected (ST\$)
2007	July	507	\$5070.00
	August	464	4640.00
	September	587	5870.00
	October	580	5800.00
	November	557	5570.00
	December	687	6870.00
2008	January	482	4820.00
	February	557	5570.00
	March	634	6340.00
	April	596	5960.00
	May	700	7000.00
	June	541	5410.00
	TOTAL	6,892	\$68,920.00