



FISHERIES DIVISION

ANNUAL REPORT 2013-2014



INTRODUCTION

The Annual Report for this year is slightly changed in format as of the past years, the current format have group the main activities under the key fisheries base on the existing sections of the Fisheries Division. The key activities for this fiscal year continues to be dictated from the MAF Sector Plan 2011-2015 and committed to the Divisional mission which is to *Promotes the optimum and ecologically sustainable use of the country's fishery resources and the development of suitable alternatives to harvesting of depleted resources in order to maximize benefits to Samoa.*

The Fisheries Division continued to face challenges to effectively execute its programs set out; as it is in the past with limited budget and high staff turnovers as major constraints. Never the less, the Division managed to achieve above 90% of its set out activities for this fiscal years.

The changing of hand for the Assistant CEO position also changed the leadership of the Fisheries Division after 9 years. There were many important achievements and good work achieved by the former ACEO Mr Mulipola Atonio Mulipola and certainly left a huge gap to be filled in terms of leadership, experience and technical expertise.

This Annual Report is in two main parts, the first part as Highlights showcase the key achievements for this fiscal year and the Main Programs which is more details on the main activities and outcomes for this fiscal year.

A HIGHLIGHTS

1 Fisheries Management

- **Licensing of Fishing Vessels:** Sixty four (64) commercial fishing licenses were issued to local fishing vessels to fish in Samoa's EEZ for the 2013-2014 licensing period. Fifty four (54) were *alia* vessels and 10 commercial longline vessels. This was a drop of licenses issued compare to the 71 licenses issued in the last fiscal year.
- **Community-Base Fisheries Management Program (CBFMP):** Five (5) village fisheries management plans were approved and adopted this fiscal year for Mataututai Lefaga, Sapunaoa, Fogapoa which are newly developed plans and Faleapuna, Faleula with reactivated plans. This brought the total of ninety nine (99) coastal villages in the CBFMP for this fiscal year.
- **New Villages Fish Reserves:** Four (4) new fish reserves (Mataututai Lefaga, Sapunaoa, Fogapoa, Faleapuna) were demarcated and declared with permanent posts. Eighteen (18) signboards were provided to villages to maintain existing fish reserves.
- **Village Fisheries Bylaws:** Seven (7) new bylaws for Sapo'e, Sapulu, Vaimaga i Fusi, Fogapoa, Mataututai Lefaga, Salamumu, Sapunaoa were formulated by the village members and the Fisheries Division. These are currently with the Attorney General Office for the endorsement process.

2 Fisheries Development

- **Fish Aggregating Devices (FADs):** A total of eight submerged nearshore FAD were fabricated and four units were deployed at the Falealili and Falelatai districts at depths of about 45m to 100m, the other four are planned for deployment at Faga and the Asau districts in Savaii.
- **Tilapia farming:** A total of twenty (20) new tilapia farms were established within this fiscal year including a community farm being reactivated. This increased the number of tilapia farms in Samoa from forty four (44) to sixty four (64).
- **Freshwater prawn farming:** Two (2) new prawn farms were set up at Lotofagā Safata and Lotofaga Aleipata to trial the capture based culture technique introduced by the Secretariat of the Pacific Community (SPC) targeting the local species, *Macrobrachium lar* (ulavai). The intention of such method is to introduce prawn farming other than the usual capture from the wild technique which is the current practice of prawn harvest in Samoa.
- **Marine Multispecies Hatchery-Toloa:** The new Marine Multispecies Hatchery in Toloa was opened on the 21st February, 2014. The facility included a laboratory, wet-lab, office, 3 cement raceways, water and air-blower systems, bedrooms and showering facilities. Two giant clam spawning were conducted within this fiscal year, however was unsuccessful due to bad weather stressing out the clams before they could spawn. The availability of the hatchery has now enable the Fisheries Division to conduct spawning, growth trials and research for marine and freshwater commodities.

3 Fisheries Enforcement and Surveillance:

- **Fisheries Multilateral Surveillance Operations:** There were 3 multilateral surveillance for Samoa fishery waters and with participating FFA members to operation. Fisheries Divisions participated in all 3 operations, Ika Moana on August 2013, Kurukuru on November 2013, TuiMoana on May 2013 with regional FFA members and QUAD providers. This contributed immensely in improving the capacity for the Pacific region to monitor and detect any possible Illegal Unreported and Unregulated fishing activities.
- **Transshipment Operation:** Eighteen (18) port transshipment operations completed at Apia Port for this fiscal year. There has been 100% coverage of transshipment operation in Samoa and an estimate of 791,298 kg of fish was transhipped from these vessels via Samoa Port for overseas markets for this fiscal year.
- **Fisheries Prosecutions:** Six (6) fisheries reported violation cases registered for Court Prosecution in 2013 – 2014. Four (4) cases were successful in favor of Prosecution, MAF Legal Adviser as Prosecutor, with supporting role from authorized authorities from Ministry of Police and Ministry of Works Transport & Infrastructure.

4 Fisheries Statistics

- **Long line Fishery Landings:** The long line fleet landed an estimated 1,046 metric tons of fish this fiscal year. This is a decline of about 42% compared to the past fiscal year.
- **Bottom fish and Trolling Fisheries Landings:** Total market landings from bottom fishing and trolling were estimated at 252 metric tons valued at 2,185,285.00 tala. This is an increase in volume by 12% as compared to last fiscal year.
- **Exports:** Fish exported this fiscal year was estimated to be 1,035 metric tons valued at about 7million tala. This is a decrease in volume by 36% as compared to last fiscal year.
- **Inshore Fisheries Landings:** An overall estimated of inshore landings fishery products traded at the local market outlets was recorded at 113 metric tons with an estimated value of \$1.3million tala for this fiscal year. In comparison to the last fiscal year, the value was decreased by 8% and volume by 7%.

B MAIN PROGRAMS

1 Community Base Fisheries Management Program (CBFMP)

This bottom up approach to village fisheries management takes form with villages identifying the threats and challenges that are affecting their fishing needs and with the technical support from the Fisheries Division, identify and develop management tools to effectively manage the sustainability of their fisheries and the marine resources.

Key activities from the Fisheries Division include:

- Conduct official village meetings to seek/gain unanimous support from the village chief councils for the program.
- *Facilitate consultations with villages and village groups to discuss and share understandings on the threats and challenges faced on fishing.*
- *Conduct awareness and trainings programs on issues ranging from impacts of overfishing, natural disasters and man-made actions on marine resource to fisheries management and development initiatives.*
- *Take lead in the compilation and oversee processes on approval of village fisheries management plans and village by-laws.*
- *Conduct periodic assessments on the marine area to provide up to date information on the ecological status of the fish stocks and other key resources.*
- *Liaise with outside donors for support funding for villages to advance prioritized management activities.*

Five villages unanimously agreed to join this program for this year and detailed by table 1. The total number of villages currently establishes management plans has been increased to 99 in which 56 in Upolu and 43 in Savaii. Approximately, 84% of the total villages are actively implementing their Village Fisheries Management Plans.

Table 1: Progress of meetings conducted in each village within this fiscal year

	Villages	1 st Fono meeting	Group meetings	Fmac meeting	Final fono
1	Mataututai Lefaga	30 Oct 2013	30 Oct 2013	11 Nov 2013	19 Nov 2013
2	Sapunaoa	12 Nov 2013	12 Nov 2013	21 Nov 2013	16 Dec 2013
3	Fogapoa	27 Feb 2014	6 Mar 2014	13 Marc 2014	21 Marc 2014
4	Faleula	14 Apr 2014	14 Apr 2014	14 May 2014	7 June 2014
5	Faleapuna	26 May 2014	26 May 2014	30 May 2014	5 June 2014

The Village Management Plan requires periodic reviews to assess the performance of the villages in implementing the undertakings within their plans. This is an important function of the Fisheries Division and the table below shows the outcomes of the 35 Village Plans reviewed carried out for this fiscal year in which eighteen (18) villages in Upolu and 17 in Savaii.

Table 2: Result of the 6 monthly reviews conducted in fiscal year 2013/14.

Percentage of performance (%)	No. of villages and their performance	Cumulative Percentage (%)
-------------------------------	---------------------------------------	---------------------------

80 and over	21	60
79 – 50	12	34
< 50	2	6
	35	100

1.1 Nearshore Fish Aggregating Devices (FADs)

The introduction of nearshore FADs was identified as a potential alternative to alleviate fishing pressure within lagoon and reefs. The FADs were to move fishing away from the reef areas to the immediate outside of reef slopes and close enough to be accessible by village fishermen in canoes. The objective is to utilise pelagic and semi pelagic fish species while allowing the reef and lagoon habitats to rejuvenate and improve reef fish stocks. The FAD positions and depth deployed are tabulated below.

Table 3: Deployment details of coastal submerge FADs

Sites	Position	Depth (m)	Distance from land	Time/Date	Weather
Satalo	Lat 14 03.952° S Lon 171 38.134° W	100	2000 meters	10:58am 1/5/2014	Fine
Salesatele	Lat 14 03.204° S Lon 171 36.842° W	50	1400 meters	11:45am 1/5/2014	Fine
Samatau	Lat 13.91710° S Lon 172.05975° W	46.5	0.95nm	11:51:20am 24/6/2014	Very fine
Siufaga i Falelatai	Lat 13.91957° S Lon 172.05164° W	44.5	0.93nm	12:24:42pm 24/6/2014	Fine

2 Coastal Fisheries Management and Development

2.1 Fish Reserve Assessments

A total of 14 fish reserves were assessed within this fiscal year 2013-2014 and included three initial assessments at Fogapoa Savaii, Sapunaoa and Matautu Lefaga Upolu while the rest of the sites were reassessments after their previous monitorings in the last 2 – 3 years including reactivated villages such as Fagalii. As usual, Point Intercept Transect Method was used for assessing the substrate coverage while the BELT Transect Method for invertebrate and fish count and length estimation.

Sixty four percent (64%) of fish reserves assessed this year shows live coral coverage of more than 50%. However, the data revealed that Matautu Lefaga and Fogapoa were recorded showing outstanding live coral growth with with more than 80% and 71% coverage respectively. The rest of the sites were dominated by algae and abiotic factors (Table 4). Bleaching was also observed and the major cause of this could have been the high numbers of the crown of thorns (*Acanthaster planci*) in the marine areas. Dead Corals and Dead Corals with Algae were presence but quite moderate and remains stable due to the control of herbivorous reef fish species.

Table 4: Major group of substrate coverage in percentage for each fish reserve assessed within this fiscal year

Sites	Live Corals	Abiotic	Algae	Dead Corals	DCA	Bleached	Others
Fagalii	56.4	25.4	7.6	0	10.7	0	0
Malaemalu	33.01	35.89	1.62	7.37	22.11	0	0
Satalo	47.93	35.16	9.23	1.28	5.38	1.02	0
Safa'ato'a	50.42	16.7	0.42	24.35	4.7	0	3.1

Saleapaga	49.12	26.02	0	5.12	18.9	0.84	0
Gagaifolevao	68.97	5.14	1.55	4.62	14.1	2.55	3.07
Satafao Saipipi	52.6	16.7	0	9.3	19.2	1.3	0.96
Saasaai	49.5	28.7	2.31	9.5	10	0.8	0
Sapini	56.2	34.4	4.3	0.51	3.3	1.3	0
Sale Saipipi	47.16	39.23	0	5.13	8.21	0.26	0
Matautu Lefaga	88.78	6.73	2.56	0	0	0	1.92
Sapunaoa	62.56	14.11	7.17	1.02	10.77	4.37	0
Fogapoa	71.72	18.91	7.32	0	0	2.05	0
Vailoa Aleipata	69.6	13.1	7.1	0.32	9.9	0	0
Average Mean	57.42643	22.6	3.655714286	4.8942857	9.805	1.035	0.6464286

Overall fish count sums up to 43 different types of species recorded from each of the fourteen fish reserves. The most abundant of all was the black damsel (*Neoglyphidodon melas*) of the *Pomacentridae* family. Nine species of the *Pomacentridae* family were recorded from the monitored sites. Majority of the species are edible while others are non consumable which mainly includes the leading *Pomacentridae* family.

Table 5: Fish species abundance recorded from fish reserve assessments for the FY2013-14

Fish species (Scientific names)	# of Individuals	Abundance %
Black damsel (<i>Neoglyphidodon melas</i>)	921	16.6
Bullethead parrotfish (<i>Chlorurus sordidus</i>)	740	13.3
Whiteband damsel (<i>Plectroglyphidodon leucozonous</i>)	657	11.8
Blue green chromis (<i>Chromis viridis</i>)	542	9.7
Onespot damsel (<i>Chrysiptera unimaculata</i>)	413	7.4
Brown surgeonfish (<i>Ctenochaetus striatus</i>)	391	7.0
Humbug dascyllus (<i>Dascyllus aruanus</i>)	341	6.1
Dark capped parrotfish (<i>Scarus oviceps</i>)	294	5.3
Dick's damsel (<i>Plectroglyphidodon dickii</i>)	176	3.2
Parrotfish (<i>Scarus sp.</i>)	160	2.9
Threespot damsel (<i>Pomacentrus tripunctatus</i>)	144	2.6
Blue devil (<i>Chrysiptera cyanea</i>)	137	2.5
Oval butterflyfish (<i>Chaetodon lunulatus</i>)	114	2.0
Lined surgeonfish (<i>Acanthurus lineatus</i>)	102	1.8
Convict surgeon (<i>Acanthurus triostegus</i>)	70	1.3
Vagabond Butterflyfish (<i>Chaetodon vagabundus</i>)	66	1.2
Manybar goatfish (<i>Parupeneus multifasciatus</i>)	62	1.1
Ember parrotfish (<i>Scarus rubroviolaceus</i>)	38	0.7
Chevroned butterflyfish (<i>Chaetodon trifascialis</i>)	27	0.5
Littlepinefoot (<i>Siganus spinus</i>)	27	0.5

Butterflyfish (<i>Chaetodon spp.</i>)	22	0.4
Forktail Rabbitfish (<i>Siganus argenteus</i>)	21	0.4
Checkerboard wrasse (<i>Halichoeres hortulanus</i>)	20	0.4
Tripletail wrasse (<i>Cheilinus trilobatus</i>)	15	0.3
Threespot wrasse (<i>Halichoeres trimaculatus</i>)	14	0.3
Scissortail sergeant (<i>Abudefduf sexfasciatus</i>)	11	0.2
Brushtail tang (<i>Zebrasoma scopas</i>)	9	0.2
Dot and dash goatfish (<i>Parupeneus barberinus</i>)	4	0.1
Blacktail snapper (<i>Lutjanus fulvus</i>)	3	0.1
Honeycomb grouper (<i>Epinephelus merra</i>)	3	0.1
Moorish idol (<i>Zanclus cornutus</i>)	3	0.1
Pacific doublesaddle butterflyfish (<i>Chaetodon ulietensis</i>)	3	0.1
Total	5550	100.0

From the fourteen assessments, thirteen (13) different types of invertebrates were observed with sea urchins (tuitui), greenfish (maisui), lollyfish (loli) and crown of thorns (alamea) in high numbers within the 14 fish reserves.

Table 6: Invertebrate distribution and abundance

Invertebrate species (Scientific names)	Abundance	Abundance %
Lollyfish (<i>Holothuria atra</i>)	51	4.18
Greenfish (<i>Stichopus chloronotus</i>)	86	7.05
Blackteatfish (<i>Holothuria nobilis</i>)	1	0.08
King seacucumber (<i>Synapta maculata</i>)	2	0.16
Leopardfish (<i>Bohadschia argus</i>)	44	3.61
Rock boring urchin (<i>Echinometra mathaei</i>)	930	76.23
Crown of thorns (<i>Acanthaster planci</i>)	93	7.62
Bluestarfish (<i>Linckia laevigata</i>)	6	0.49
Pin cushion star (<i>Culcita spp.</i>)	2	0.16
Longspine urchin (<i>Echinothrix diadema</i>)	1	0.08
Cowrie (<i>Cypraea tigris</i>)	1	0.08
Giant Clam (<i>Tridacna squamosa</i>)	2	0.16
Octopus (<i>Octopus cyanea</i>)	1	0.08
Total	1220	100.00

2.2 Ciguatera Fish Poisoning Algae Sampling

The Fisheries Division continues to sample algae species suspected of carrying ciguatoxic microscopic animals in selected reefs of Samoa. Two bi-annual collection of algae samples were carried out at the selected sites including Fagaloa (Taelefaga, Maasina and Lona), Siumu (Aganoa),

Lefaga (Faleseela and Matafaa) and Manono (Faleu-uta) and Mulifanua (Lalovi) in Upolu and the districts of Palauli Falefa (Tafua Tai), Gagaemauga 3 (Fagamalo, Safune), and Vaisigano (Falealupo) in Savaii. The main algae species collected and sampled were that of *Halimeda sp.*, *Turbinaria sp.*, *Padina gymnospora*, and *Sargassum sp* most common tropical seaweeds. Other samples were also collected from Fagalii and Malaemalu to expand the coverage area.

No presence of the ciguatoxic *Gambierdiscus toxicus* was sited from the samples collected during this fiscal year. Furthermore there were modifications to the methodology used to determine better results. However, the team will seek further assistance in identifying the best sites for sampling which are common ciguatera toxic areas; the algae species that are the favourable hosts and other possible toxins that could exist to obtain best results.

2.3 Upolu Assessment for Trochus

Since its restocking in the early 2000s, the gastropod shell trochus known as *Trochus niloticus* (*aliao lapo'a*) had successfully established in Upolu reefs, revealed by a recent island wide assessment by the Fisheries Division with assistance from the SPC. The survey for the Upolu Island was conducted from 9th-27th June 2014.

The species naturally absent in the Samoan reefs was first introduced in the 1990s south of Upolu island but was unsuccessful because the stock of shells dropped from a plane fell in the ocean. Later introductions in 2003 and 2006 from Fiji and Vanuatu were released more appropriately at the reefs of Saleapaga and Saoluafata South of Upolu Island and these batches of introduction have led to the spread of the commercial shellfish along the northern side of Upolu Island.

Harvesting of trochus (*aliao lapo'a*) began to appear at the roadside markets in 2009 with an estimated meat volume of 410kg and 764kg in 2010 mainly from Manono uta, Leauvaa, Faleasiu and Samusu.

In 2010, further translocation was conducted as part of the tsunami disaster relief effort and over 5000 live trochus shells from Fagalua and Saoluafata were distributed to affected villages along the south of Upolu Island.

The assessment employed scuba diving along the reef slope and back reefs covering a total of 48 sampling stations and recorded 741 live trochus (Table.6). The result of the surveys was promising, trochus was recorded in 90% of the stations assessed and comprising young and mature shells. While the reef system of Upolu is very suitable for the species to multiply to high population, natural predators such as hermit crabs which feeds on juvenile trochus were also abundant.

Now that the resource had established, the next step is to put in place management system to ensure the stock is fished sustainably. The SPC also assisted the Fisheries Division to develop a management plan for the management of the trochus fishery that documented in a management and development plan. Hence, measures that are worth considering included the minimum and maximum size preferably at 80-110mm and control on fishing activity through enforcement of size limit, collection and analysis of catch data to understand trends and ban the use of SCUBA for trochus collection. Samoa's trochus resource is relatively young and needs to be well protected to allow the stock to reach full population capacity.

Table 7: Trochus niloticus baseline assessment data

Site	Live Trochus	Dead Trochus	No of Stations
Fagaloa	117	8	8
Fusi Saolua fata	168	53	8
Fagalii	65	20	7
Apia - Faleula	121	18	6
Faleula - Fasitoo	185	8	10
Faleolo - Mulifanua	85	10	9
Total	741	117	48

2.4 Coral replanting assessments

A total of four sites with cemented fish houses and replanted corals were assessed during this fiscal year. The assessed sites included Aufaga, Matautu Falealili, Saleilua and Faleu Manono uta to monitor the growth of the coral population as a result of these artificial means. The establishment of these structures was to rebuild the coral communities damaged by the 2009 Tsunami.

Results obtained from the monitoring as expected varied from sites, with Aufaga Aleipata with the least number of fish houses identified, and bleached corals were recorded possibly due to over exposure to sunlight at low tides. Other sites such as Matautu and Saleilua showed moderate growth of *Acropora* corals where most of the widest and lengthiest corals grown above the structured fish houses.

Table 8: Results of coral monitoring from four sites

Sites	Dates	Live Corals Avg Width (cm)	Live Corals Avg Length (cm)	Nō of fish house sampled	Nō of coral garden sampled
Aufaga Aleipata	13/2/14	0.4	0.9	1	0
Faleu uta Manono	18/2/14	0.7	1.25	4	0
Matautu Falealili	25/2/14	3.4	6.7	6	3
Saleilua Falealili	13/3/14	1.5	6.1	7	0
Total				18	3

These results aimed to advise the villages on how to improve the locations within their fish reserves for possible future replanting activities.

2.5 Inshore Fish Landings

The overall estimated of inshore landings fishery products traded at the local market outlets was \$1.3million tala with a volume of 113 metric tons during this fiscal year. In comparison to the last fiscal year, the value was decreased by 8% and volume by 7%.

These figures were attained from our surveys conducted at four main market outlets, such as Fugalei Agriculture market, Apia fish market, Salelologa fish market, in three sampling days randomly selected and Roadside once a week. Average monthly catches was estimated at 9.34mt and valued at \$113,003.60 with May 2014 both highest in values and volumes. These are detailed below.

Table 9. Total annual inshore fisheries in major groups landed and traded locally during FY2013-2014

Group	Total Estimated Value (SAT)	Total Estimated Volume (mt)	% Weight	% Value	Average Price/kg
CRUSTACEAN	\$60,055.59	2.352	2.08	4.4	\$26.37
ECHINODERMS	\$5,916.22	3.265	2.89	0.43	\$1.86
FINFISH	\$885,473.96	83.794	74.16	64.83	\$10.65
MOLLUSCS	\$30,552.30	9.746	8.63	2.24	\$4.02
OTHER	\$95,238.96	8.54	7.56	6.97	\$11.45
PROCESSED	\$288,581.66	5.297	4.69	21.13	\$47.42
	\$1,365,818.69	112.994	100.01	100	

Table.10: Annual catches of inshore fisheries species at the main market outlets FY2013-2014

Market	Total Estimated Value (SAT)	Total Estimated Volume (mt)	% Weight	% Value	Average Price/kg
Apia Fish Market	\$565,511.68	48.453	42.88	41.4	\$11.67
Fugalei Agriculture	\$144,590.53	5.776	5.11	10.59	\$24.95
Roadside	\$489,383.93	42.23	37.37	35.83	\$11.57
Salelologa Market	\$166,332.56	16.537	14.64	12.18	\$10.00
	\$1,365,818.70	112.996	100	100	

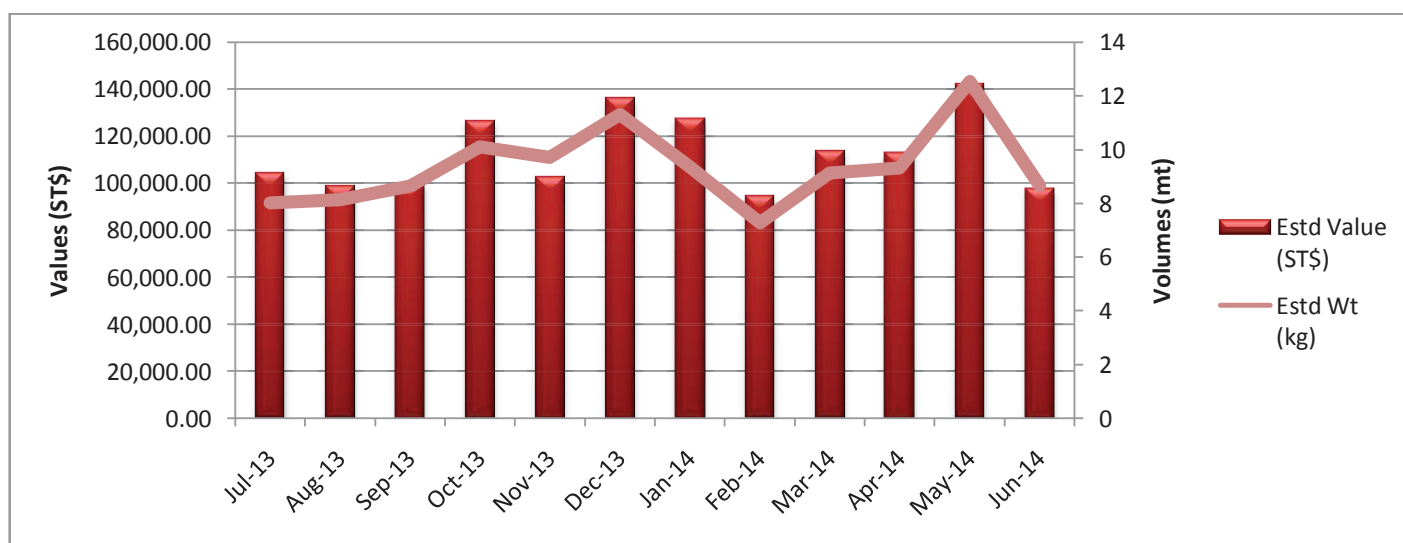


Figure.1: Monthly catches in values and volumes FY2013-2014

3 Tuna Commercial Fisheries

3.1 *Licensing of Fishing Vessels*

Licensing of 2013-2014 of 64 fishing vessels has not yet reached licensing caps as stated in Samoa's Tuna Management and Development Plan 2011-2015. Estimated revenue collected from licensing was ST\$89,400 where 54% was contributed by Class D vessels.

Table 11: Lengths of the 5 Vessel classes with its license caps, fees and number of vessels licensed in Jul2013-Jun14

Vessel Class	License Caps	Licensing Fees (\$ST)	Licensed Vessels 2013-14
A (Up to 11m)	100	200	54
B (> 11-12.5m)	10	1,000	0
C (>12.5-15m)	10	5,500	2
D (>15-20.5m)	12	8,000	6
E (>20.5m)	5	10,000	2

3.2 *Fish Processing Establishments*

Two audit assessments were carried out this fiscal year as part of the license renewal process. The audit was focused on the pre-requisite requirements for a Fish Processing Establishment which included the quality of the facilities and equipments used for exporting fish.

The Apia Export Fish Packers (AEFP) company was assessed on the 14th January, 2014 followed by Tradewinds on the 11th February. Both passed the audit and their Fish Processing License for 12 months was issued.

3.3 *Commercial Fisheries Management Advisory Committee (CFMAC)*

Two (2) Commercial Fisheries Management Advisory Committee meetings were conducted this fiscal year on the 19th July 2013 (46th Meet) and the 27th February 2014 (47th Meet). Key decisions and results of the two meetings were:

- *New alia design:* A new alia design was completed by the FAO architect and completed a two year project for a new alia designed that caters for the high price of fuel through efficient engine system and the need to travel further for fishing through a larger fish hold capacity. The design was endorsed by the CFMAC for trials and proposal to Cabinet was approved on the basis for MAF to find funding for the construction and trialing of the new alia.
- *Southern Albacore Catch Limit:* The CFMAC endorsed the propose catch limit for south Pacific albacore put forward by the Secretariat for the current FFA work in securing an effective regional framework for the management of the SP albacore fishery. The limit of 4280metric tone was later endorsed by Cabinet. The limit was taken from the highest ever volume of albacore caught in Samoa's EEZ between the 2000- 2012 period.
- *Shot Value Assessment:* FFA with the Fisheries Division conducted assessed the performance of the local alia vessels and the breakeven point per fishing trip. The findings were very useful for the local fishermen as it is an important information for their fishing operations.

Lastly, a study recently conducted by Forum Fisheries Agency (FFA) and Samoa Fisheries in October 2011-12 in identifying the breakeven shot value of alia fishery (catamarans) was also presented to the committee and it was followed by a recommendation of moving the study further into conducting a bioeconomic modeling and its potential and application to Samoa's longline fishery.

3.4 Mid- Term Review of Tuna Management and Development Plan 2011-2015

Consultation for the review of the Tuna Management and Development Plan 2011-2015 was addressed during the visit by FFA for the Institutional Strengthening project (20th-23rd January, 2014) in Samoa. The key outcomes from the review were the inclusion of

- New WCPFC conservation management measures (CMMs)
- Management plans of sharks and turtles
- Albacore harvest strategy, purse seine limit
- Licensing conditions of foreign fishing vessels
- Monitoring control surveillance strategy

As well as to consider review of licensing caps for current licensed vessels have not yet reached the cap mainly for Class A and B. Other recommended reviews were the transshipment fees, fishing zonation and consideration of a management arrangement for sport fishing. Once all round of consultations have been finalized a new plan will be drafted in the beginning of the next fiscal year.

3.5 Fishing Boat Census

This boat census is to take record of the active fishing vessels per day, and the number of fishing vessels in a given period is used for the calculation of catch per unit efforts in that given period.

For this fiscal year, an estimate of 36 Class A, 3 Class C and 7 Class D&E vessels were noted to actively fish in Samoa's EEZ. From February to March, all Class C vessels and 4 vessels of Class D+E halted fishing. On the other hand the Class A vessels were noted to have consistent number of active vessels throughout the months including the February and March of 2014.

Table 12: Number of vessels that were recorded out fishing by months in Oct 2013-Jun 2014

YEAR	MONTH	CLASS A	CLASS C	CLASS D + E
2013	Oct	3	1	2
	Nov	27	3	6
	Dec	23	2	6
2014	Jan	35	2	5
	Feb	33	0	4
	Mar	36	0	4
	Apr	29	2	3
	May	25	2	4
	Jun	24	2	7

Note: Most of the surveys were limited to Apia Fisheries Port, limitation of coverage to rural areas of Upolu and Savaii

3.6 Longline Fishery Catches

Estimated catches from longliners for this fiscal year was 1046 metric tons of tuna and other fish species. This is a decrease of about 43% as compared to that of the last fiscal year. The albacore tuna accounted for 74% of total catches, yellowfin tuna made up 18% of catches with bigeye tuna and other fish species accounted for the rest as tabulated in the table below.

Table 13: Estimated longliner catches by species for Jul 2013-Jun 2014

FISH NAME	FISH SPECIES	WEIGHT (MT)	COMPOSITION
ALBACORE	<i>Thunnus alalunga</i>	777	74.0
YELLOWFIN	<i>Thunnus albacares</i>	186	18.0

BIGEYE TUNA	<i>Thunnus obesus</i>	20	2.0
SKIPJACK	<i>Katsuwonus pelamis</i>	7	0.7
BY CATCH	<i>Other species</i>	58	6.0
TOTAL		1048	100.0

Throughout the year, July recorded the highest catches of about 245 metric tons while February recorded the lowest of 15 metric tons. The first quarter of each calendar year are considered the “off season” (Jan-Mar) resulting in low catches of tuna, however with this year, catches were at all time low which resulted in most commercial longliners docking as fishing was non-profitable. This was also reflected from the catch per unit effort calculated as shown below.

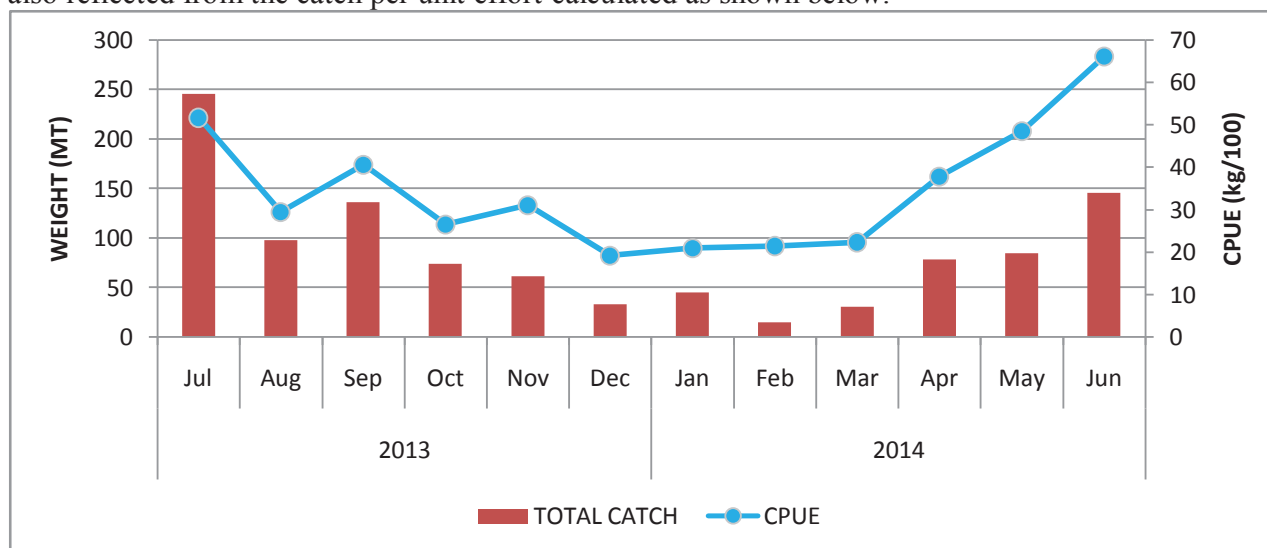


Figure 2: Estimated catches in weight (MT) of longliners by month and catch per unit effort in Jul2013-Jun2014

3.7 Offshore Fish Landings for Domestic Markets

Total market landings from bottomfishing, trolling and longlining operations for this fiscal year were estimated at 252 metric tons with a total value of 2,185,285.00 tala. This is an increase in volume by 12% as compared to last fiscal year. As detailed in Table 7 trolling operations contributed to 85% of weight which comprised heavily of skipjack and yellowfin tuna. Bottom fishing activities landed the least fish, consisting mainly of jobfish, snappers and emperors.

Table 7: Estimated offshore landings at domestic markets by fishing gear for Jul 2013-Jun 2014

FISHING METHOD	WEIGHT (MT)	VALUE (\$SAT)
BOTTOM FISHING	10.60	192,093.28
TROLLING	215.62	1,632,742.62
LOGLINE	26.19	360,448.82
TOTAL	252.41	2,185,284.72

June recorded the highest market landings of about 37 metric tons (Figure 3) followed by May and October. Throughout the fiscal year, catches from troll fishing dominated the catches however values from such catches are low compared to longline catches, which were mainly albacore and yellowfin tuna. This was illustrated in October, when there was an increase in longline catches and the value of market landings increased and the highest valued market landings of this year as ST\$375,226.

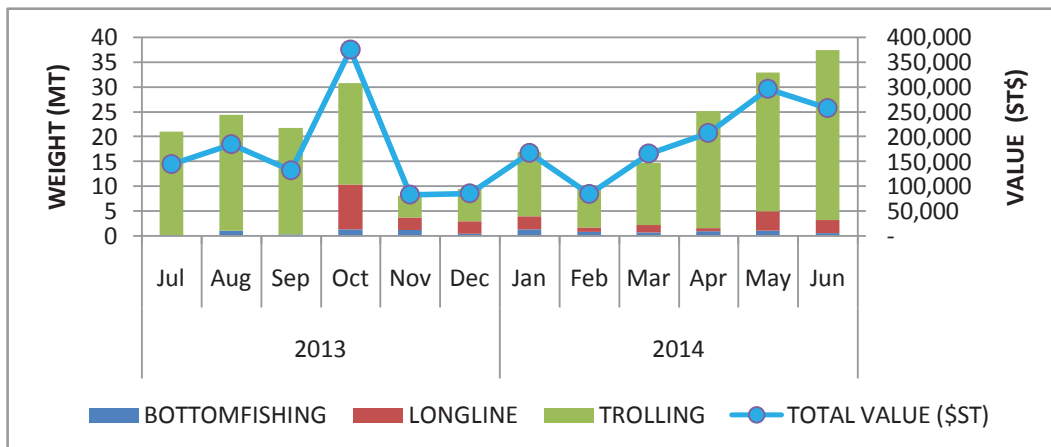


Figure 1: Domestic market landing by fishing gear and by month in estimated weight and value

3.8 Commercial Fish Exports

Fish exported for this fiscal year was estimated at 1,035 metric tons earning an estimated 7 million tala. This is a decrease in volume by 36% as compared to last fiscal year. The bulk of the export was exported to American Samoa as frozen albacore. Fresh chilled fish was also exported to American Samoa but this were mainly non pelagic fish species. Details are tabulated below.

Table 13: Total exported fish in Jul2013-Jun2014 by weight, value, type and destination

DESTINATION	TYPE	WEIGHT (MT)	VALUE (ST\$)
Am. Samoa, New Zealand	FRESH-CHILLED	2.17	27,197.00
Am. Samoa	FROZEN	1,033.54	7,184,051.00
TOTAL		1,035.71	7,211,248.00

3.9 Data storage development and management

Existing Offshore server that was set up in 2011 had some accessibility problems in April 2014 where the SPC assistance was seek by the Fisheries Division to resolve the issue. On the 25th-29th April, 2014 SPC Information Technician worked with the Offshore Section and MAF IT is resolving such problem as well as updating of existing database TUFMAN and reinstallation of the updated version of TUFART. Furthermore to this work, an offshore network folder was developed in the server in order for all offshore computers to access the databases and shared reports for smooth and sound data storage and entry, analysis and reporting.

3.10 Samoa's National Tuna Data Procedure Document

Samoa's Tuna Data Procedure Document is a follow up from the National Tuna Data Workshop held in Samoa in September, 2013. The document states the different tuna data collection currently in place and serves somehow as a manual for the Samoa Fisheries Division. With the objective that Samoa's tuna data collection system is transparent, well defined and well planned in order for smooth operation and clarification for the new recruits within the Offshore Section.

3.11 Ice – Making Machine

There are currently 3 operational ice making machines servicing fisheries in Apia, Mulifanua and Salelologa in Savaii. These machines continue to provide sufficient ice supply for the fishermen and there is now work underway in constructing another ice making machine in Siumu to expand this service to the fishermen in the Siumu, Safata and Falealili fishermen.

3.12 Fish Aggregating Devices (FADs)

One (1) new oceanic FAD was fabricated and constructed on the 28th April – 9th May 2014 with deployed at the Apia area on the 11th June.

A monitoring of the existing FADs was conducted on the 18th – 20th March 2014 and confirmed that three (3) FADs were still in place, these were at Gataivai, Siumu and Leulumoega.

Funding have now been secured for (6) additional FADs for deployment in the next fiscal year.

4 Research Studies and Projects

4.1 Coping with Climate Change in Pacific Island Region Project

The Government of Germany under the GIZ SPC Coping with Climate Change in Pacific Island Region program (CCCPIC) and DEVFISH 2 project to assist local canoe fishermen to improve livelihood, increase food security and diversify fishing technology. The program started with community awareness consultations on FAD fabrication, deployment and usage, monitoring and safety at sea.

4.2 Giant clam (*Tridacna maxima*) mantle tissue collection

The Fisheries Division with the SPC carried out an assessment for the collection of giant clam tissues from the *Tridacna maxima* for DNA analysis. A total of eighteen (18) samples were collected from various clam nurseries in Upolu such as Matautu Falealili, Savaia, Gagaifo and Salimu Savaii.

This genetic studies undertaken by the SPC was to confirm that there might be two or more species of *T.maxima* in the Pacific as people believed to be only one. It was mentioned that if this can be confirmed that more than one species being called *T.maxima*, this has an implications in hatchery work, e.g. spawning, fertilization and more importantly for wild stock management.

The samples were stored in vials of 80% ethanol and delivered to the SPC for DNA analysis. Results are yet produced as samples were collected from many Pacific countries to confirm this genetic analysis of the *T.maxima*.

4.3 Seagrape Farm Trial Project

This ACIAR project has its own implementation plan in which continued the farming of seagrape that was initiated by the JICA follow-up scheme program where funding finished in February 2014 after two years of implementation. This project is in collaboration with the James Cook University, SPC and three partner countries Fiji, Samoa and Kiribati.

Six new seagrape sites were set up during this fiscal year at Sapulu, Asaga and Vaisala in Savaii, Faleula, Faleu Manono tai and Savaia in Upolu. All six selected sites were stocked with 60kg in total with 10kg per tray. Three of those trays were stocked with about 4kg of *Halimeda* sp as a basement. Blaster balls were also deployed of about 4-5 at each site to determine the currents flow

and Hobo loggers to obtain sunlight and temperature data from each site. The control site for the blaster balls was set up using one of the raceways at the Marine Multispecies Hatchery at Toloa.

There were modification of the methodology undertaken by the team to minimize problems that observed during the monitoring included the fish grazing and the loss of biomass within the trays. There were mix results with improvement of growth shown by farms in Vaisala, Asaga, Sapulu and Savaia and none in Faleula and Faleu-tai.

Seagrape samples were also collected, dried and sent to the James Cook University for nutrient properties analysis. In addition samples of the brown seaweed (limu aau) were also sampled to analyse for its potential application for new bioproducts. The brown seaweed shows and is abundant nearshore in Vaiala. All the data from the blaster balls, Hobo-loggers and bio-chemical analysis were sent to JCU for further analysis and would be reported back to Fisheries Division. This project is still ongoing for next two years to determine the success of culturing seagrape in Samoa.

5 Aquaculture

5.1 Tilapia Production

A total of three (3) spawning for tilapia were conducted and produced a total of 3298 baby (fingerlings) tilapia. These were distributed to the 21 new farms and restocked 3 existing farms.

5.2 Tilapia Farm Monitoring:

One of the services provided by the Fisheries Division is the monitoring of tilapia farms. Through this the technical support for the farmers on key issues such as pond maintenance, feeding and assessing the growth of tilapia for production estimation are provided. A total of 16 farms were assessed in this fiscal year and results are tabulated below.

Table 14: Estimated production from ponds sampled during maintenance activity FY2013-2014

	Farmer	Village	Date sampled	Number of pond	Avg. wt. (kg)	Avg. length (cm)	Total no. of fish	Estimated Production (kg)
1	SVSG	Tuanaimato	18-Mar	1	0.1	16.7	60	48
2	Vaifale Soe	Leauvaa	18-Mar	1	0.07	15.17	~610	488
3	Tafaigata Prison	Tafaigata	18-Mar	4	0.493	29.5	~1000	800
4	Motootua Lolotai	Laulii	19-Mar	1	0.087	16.2	30	24
5	Mataniu Viliga	Luatuanuu	19-Mar	1	0.08	13.95	30	24
6	Letasi Faalupega	Laulii	19-Mar	1	0.05	13.2	30	24
7	Oloamanu Prison	Mulifanua	19-Mar	1	0.087	14.57	~2000	1600
8	Solomona Sofeni	Luatuanuu	19-Mar	1	0.13	18.04	30	24
9	Tulima Pio	Luatuanuu	19-Mar	1	0.15	19.22	35	28
10	Faigalotu Muliaga	Luatuanuu	19-Mar	1	0.2	22.1	3	2.4
11	Eneliko Lome	Luatuanuu	19-Mar	1	0.1	16.5	~30	24
12	Lau Pepese	Lotofaga	16-Apr	2	0.125	20.79	36	288
13	EFKS youth	Luatuanuu	01-Apr	1	0.206	20.90	~399	319.2
14	Community Pond	Sapapalii	16-Apr	1	1.335	27.2	200	160
15	Sapulu Community	Salelologa	16-Apr	1	0.214	19.4	1000	800
16	EFKS youth	Leulumoega-tuai	29-Jun	1	0.6072	16.79	1400	1120
Total				20	4.0342	300.23	6863	5773.6

5.3 Freshwater Prawn farming:

The freshwater prawns capture based farming technique was introduced for the first time in Samoa this year in collaboration with the Secretariat of the Pacific Community. An assessment was initially conducted to confirm the type of freshwater prawns now found in Samoa and to estimate a population count of the main local species *Macrobrachium lar*. The results in table 10 shows the abundance of the main species *M. lar* from the assessment.

The Fisheries staff and stakeholders were trained on the construction and deployment of wooden cages, creating pond substrate, collection methods, identification of the targeted species and acclimate and releasing of prawn in ponds at night/day.

Table 15: Assessments and collections of M.lar prawns from various sites

	Assessment site- River/stream	Area	Target species	Non- target species
1	Lotofaga (river)1	Papapapa	3 adults	100
2	Vai (stream)	Papapapa	3 adults	5
3	Lotofagā/Safata (river/stream) 2	Papapapa	4 adults	Over 350
-	Collection site	-	-	-
1	Niuvai stream	Papapapa	7 juveniles, 5 adults	20
2	Vaipu stream (1)	Vai tele	98 adults/juveniles	4 2 tilapia fish
	Vaipu stream (2)	Vai tele	83 adults/juveniles	Not many

NB: All the sites covered are from South– Southeast side of Upolu Island

6 Fisheries Information and Trainings

6.1 Library Information Services:

The Fisheries library continues to provide fish information to students, stakeholders and the public on a daily basis. Public awareness materials such brochures, posters and displays were set up in various occasions such as Agriculture Shows for Savaii and Upolu (July, October), Pacific Health Minister’s Meeting (July), USP Alafua Open Day (August), PSC Open Day (September) and MESC Annual Meeting Open Day (January 2014). Information sheets, pamphlets, posters and newsletter on fisheries management, conservation and development were displayed and disseminated to the public. There were also onsite public presentations and talks and demonstration provided to our stakeholders.

The Fisheries library have digitised publications, reports and manual it holds and they can be accessible on the Pacific Island Marine Resource Information System (PIMRIS) at the University of the South Pacific. There is current work to link this to our Ministry of Agriculture and Fisheries website for more accessibility.

6.2 Trainings and Workshops:

Providing trainings, workshops, consultations and seminars continue to be the many tools use by the Fisheries Division in providing awareness, technical advice and capacity buildings for the our stakeholders. These include:

- National workshops in Upolu and Savaii to encourage community participation on strengthening Community Base Fisheries Management Program
- Demarcation of village fish reserves and its’ important to food security
- Importance of village bylaws to coastal fisheries
- Climate Change Adaptation and coral reef resilience.
- Nearshore FAD fabrication methodology, deployment
- Village Fisheries Management Plans review, and consultations
- Coral Reef resilience and climate change impacts on coastal fisheries
- Two Samoas Exchange Program
- Coastal fisheries and Aquaculture techniques
- FAD train the trainers training on FAD module, fabricating and deployment
- Sea safety training.

There were also quite a trainings, workshops and seminars both national and overseas available for the staff for their capacity buildings for this year. The training workshops conducted for our stakeholders within this fiscal year include:

- Data Analysis and Stock Assessment Training
- Boarding and Dockside Inspection Trainings,
- Observer Trainings
- Monitoring Control and Surveillance Trainings
- Prosecutions of fisheries offences training
- Coral Reef Monitoring Trainings
- Tilapia Farming and Farm Maintenance Training
- GIS Map Info software program
- Induction training for new staff
- Marine library Refresher Training

There annual meetings in which Fisheries Division staff represented Samoa both regional and international forums which discuss and negotiate decisions on shared fisheries resources such as the tuna fisheries. Samoa fisheries priorities and interests are the priorities for the staff representing Samoa to these meetings:

- 9th Forum Fisheries Committee Ministerial Meeting
- 9th Science Committee Meeting for the WCPFC
- 9th Technical Compliance Committee for the WCPFC
- 88th Special Forum Fisheries Committee Official Meeting
- 10th Western Central Pacific Fisheries Commission Annual Meeting
- 17th Monitoring Control and Surveillance Working Group Meeting
- 16th Sub Committee for the South Pacific Tuna and Billfish Meeting
- 89th Special Forum Fisheries Committee Official Meeting

ACKNOWLEDGEMENT

The ability for the Fisheries Division to achieved most of its annual activities is much owed to the financial support of funding donors and development partners, the Government of Germany, Australia, Japan, EU and New Zealand, and the ongoing and valuable technical support from our regional fisheries management organizations the SPC Fisheries Aquaculture and Management of Ecosystem Program, the Forum Fisheries Agency and the Western Central Pacific Fisheries Commission.

The hard work of the Fisheries staff for the fiscal year 2013-14 should also be commended as there was a high turnover with a total of nine staff leaving the Division within this year and the remaining staff stepped up for the up extra workload as there was an increase of national activities and regional obligations however exacerbated by the slow recruitment process. A big faamalō to all.

Soifua,

Joyce Samuelu Ah Leong
Assistant Chief Executive Officer