



**PULE'ANGA 'O TONGA**

**LIPOOTI**

**'a e**

**MINISITA**

**ki he**

**TOUTAI**

**ki he ta'u**

**2000**



GOVERNMENT OF TONGA

**REPORT**

**of**

**the**

**MINISTER**

**for**

**FISHERIES**

**for the year**

**2000**

# Table of Contents

	Page
<b>1. Strategic Plan</b>	<b>1</b>
1.1 Mission Statement	1
1.2 Philosophy Statement	1
1.3 Vision	1
1.4 Key Goals	2
<b>2. Divisions</b>	<b>2</b>
2.1 Executive Management and Administrative Support Division (EMAS)	3
2.1.1 Personnel and Human Resource Development (PHRD)	3
2.1.2 Policy and Planning	5
2.1.3 Finance	9
2.1.4 Information	12
2.2 Fisheries Research & Development (FRD)	14
2.2.1 Aquaculture and Research	14
2.2.2 Oceanic & Coastal Fisheries	18
2.2.3 Development of Commercial Fisheries	19
2.3 Fisheries Management (FMD)	21
2.3.1 Management and Licensing	21
2.3.2 Support Services	26
2.3.3 Marketing and Market Development	28
2.3.4 Post Harvest and Quality Control	32
2.3.5 Extension	32
2.3.6 Vava'u Fisheries	33
2.3.7 Ha'apai Fisheries	37
<b>3. Miscellaneous</b>	<b>42</b>
3.1 US Treaty on Fisheries	42
3.2 Conclusions	42

## LIST OF FIGURES

		Page
Figure 1:	Total Landing at Tuimatamoana by Longliner	9
Figure 2:	Total Landing at Tuimatamoana by other Fishermen	9
Figure 3:	Total landing at Tuimatamoana was exported	9
Figure 4:	Total landing at Tuimatamoana was sell/consumed locally	9
Figure 5:	Money spent (pa'anga) on established staff from 1998/1999 to 2000/2001 financial year	10
Figure 6:	Money spent (pa'anga) on unestablished staff from 1998/1999 to 2000/2001 financial year	10
Figure 7:	Expenditure (pa'anga) for Travel and Communication from 1998/1999-2000/2001 financial year	11
Figure 8:	Expenditure (pa'anga) on Maintenance and Operations from 1998/99-2000/2001 financial year	11
Figure 9:	Expenditure (pa'anga) for the purchase of Goods and Services from 1998/1999-2000/2001 financial year	11
Figure 10:	Capital Expenditure (pa'anga) from 1998/1999-2000/2001 financial year	11
Figure 11:	Total Recurrent Estimate of Ministry of Fisheries from 1998/1999-2000/2001 financial year	11
Figure 12:	Percentage of Total Catch by species composition	20

## LIST OF TABLES

		Page
Table 1:	Appointments during 2000	3
Table 2:	Promotions and Upgraded during 2000	3
Table 3:	Resignations, Retirement, study leave & dismissals during 2000	3
Table 4:	Established and Non-established Staff of the Ministry of Fisheries as of 31 <sup>st</sup> Dec. 2000.	4
Table 5:	Local/overseas short-term and training, workshop and meetings during 2000	4
Table 6:	Staff movement during 2000	5
Table 7:	Summary of Diesel Fuel granted by Fuel Concession Committee from Jun 19 <sup>th</sup> 2000-Dec.31 <sup>st</sup> 2000.	7
Table 8:	Total Catch (Kg) by species composition of good standing longline vessels under the Fuel Concession Scheme.	7
Table 9:	Total Catch (kg) by species composition of good standing Bottom Fishing Vessels under Fuel Concession Scheme	8
Table 10:	Total Landing of Fish at Tu'imatamoana Market	8
Table 11:	Percentage increase/decrease of the Expenditure Estimate (Pa'anga)	10
Table 12:	Percentage allocation of the Recurrent Estimate (pa'anga)	12
Table 13:	Selling Prices per Species	16
Table 14:	Market Demand and Size Distribution (size vs number)	16
Table 15:	Giant Clam Spawning, 2000	16
Table 16:	Record of hatchery produced snails already released	17
Table 17:	Number of snails in hatchery	17
Table 18:	Result of the recovery survey in April, 2000	18
Table 19:	New Recruitment trochus measurement and location	18
Table 20:	MFV Takuo Fishing Operation from January to Dec. 2000	19

<b>Table 21:</b>	Landing and Catch by Species Composition	19
<b>Table 22:</b>	Percentage of Total Catch by Species Composition	20
<b>Table 23:</b>	Quantity of Species composition per Voyage	20
<b>Table 24:</b>	Catch per unit effort (by 100 hks) by pieces and weight (CPUE)	21
<b>Table 25:</b>	List of Active Exporters of Marine Products	22
<b>Table 26:</b>	Quantity and FOB Value of Aquarium Fish & Invertebrates Exported in 2000	23
<b>Table 27:</b>	Summary of the Marine Products Export (by species) in 2000.	24
<b>Table 28:</b>	Ministry's Vehicles in 2000	28
<b>Table 29:</b>	Program Budget under Recurrent Estimate	29
<b>Table 30:</b>	Program Budget under Development Estimate	29
<b>Table 31:</b>	Revenue Income Collected: 1 <sup>st</sup> January-31 <sup>st</sup> Dec.2000	30
<b>Table 32:</b>	Type and Weight of products that were frozen and stored at the market cold store in 2000.	30
<b>Table 33:</b>	Weight of marine food products landed at Tu'imatamoana Market during 2000	31
<b>Table 34:</b>	Facilities and their working condition	31
<b>Table 35:</b>	Equipment and their condition	31
<b>Table 36:</b>	Total Revenue collected by the Ministry of Fisheries, Ha'apai	40

## LIST OF ABBREVIATIONS

<b>AB Fishermen</b>	:	Able bodied Fishermen
<b>AusAID</b>	:	Australian Agency for International Development
<b>CDS/ISIS</b>	:	Computerised Documentation System\Integrated Set Information System
<b>CITES</b>	:	Convention on the International Trade of Endangered Species
<b>CPUE</b>	:	Catch per Unit Effort
<b>DWFN's</b>	:	Distant Water Fishing Nations
<b>EMAS</b>	:	Executive Management and Administrative Support
<b>FAO</b>	:	Food and Agriculture Organisation of the United Nations
<b>FCC</b>	:	Fuel Concession Committee
<b>FFA</b>	:	Forum Fisheries Agency
<b>FFA VMS</b>	:	Forum Fisheries Agency/Vessel Monitoring System
<b>FMD</b>	:	Fisheries Management Division
<b>FMP</b>	:	Fisheries Management Plan
<b>F.O.</b>	:	Fisheries Officer
<b>FOB value</b>	:	Free-on- board – the price of the product source before freight and Insurance is added
<b>FRD</b>	:	Fisheries Research and Development
<b>FY</b>	:	Financial Year
<b>HACCP</b>	:	Hazard Analysis & Critical Control Point
<b>HP</b>	:	Ha'apai
<b>hp</b>	:	horse power
<b>ICLARM</b>	:	International Center for Living Aquatic and Research and Management.
<b>JICA</b>	:	Japanese International Co-operation Agency
<b>MHLC</b>	:	Multilateral High Level Conference

<b>MLCI</b>	:	Ministry of Labour Commerce and Industry
<b>MFV</b>	:	Motor Fishing Vessels
<b>MT</b>	:	Metric Tones
<b>NFS</b>	:	Niutoputapu Fisheries Sub-station
<b>NUK</b>	:	Nuku'alofa
<b>NTT</b>	:	Niutoputapu
<b>NZODA</b>	:	New Zealand Overseas Development Aids
<b>OIC</b>	:	Officer-in-Charge
<b>PHRD</b>	:	Personnel and Human Resources Development
<b>PP</b>	:	Policy and Planning
<b>SPC</b>	:	Secretariat of the Pacific Community
<b>SFO</b>	:	Senior Fisheries Officer.
<b>TOI</b>	:	Technical Officer Grade 1
<b>TOII</b>	:	Technical Officer Grade 11
<b>UNDP</b>	:	United Nation Development Programme
<b>USP</b>	:	University of the South Pacific
<b>VFS</b>	:	Vava'u Fisheries Section
<b>VV</b>	:	Vava'u



# 1. Strategic plan

## 1.1 Mission Statement

To utilize the marine resources of the Nation in a sustainable way to feed and contribute to the economic development of the Nation.

## 1.2 Philosophy Statement

The senior staff established the values of the Ministry of Fisheries as follows:

### (a) *Direction*

Establish a clear direction that is internally agreed to and is understood by all those who have dealings with the Ministry. The purpose, mission and objectives set will be easy to evaluate.

### (b) *Achieving*

Make a worthwhile contribution towards the sustainable development of fisheries resources in Tonga whilst meeting the needs of resource users (fishers, consumers, exporters, fish merchants, association, companies and markets).

### (c) *Caring*

Provide a people-oriented service with concern for well being of society, customers, employees, fisheries resources and the environment.

### (d) *Balanced*

Maintain a balanced concern towards the need of society and the individual against the sustainability of fisheries resources according to the best information available for conservation and management.

### (e) *Structured*

Create a framework of policies, procedures and rules according to identified strategies which will encourage competence, expertise and rewards through effective management practices.

## 1.3 Vision

In the year 2002, the Ministry of Fisheries will be an organization:

- (a) Whose staff has the required skills and expertise to analyze and formulate sound policies that would promote effective conservation and management of fisheries resources for their sustainable development.
- (b) Which continues to provide services that are essential for the progressive development of the fisheries sector.
- (c) That supports a viable fishing industry based on tuna and other fisheries resources.

- (d) That ensures Tonga is a leading country in the South Pacific in aquaculture development including the enhancement of fisheries resources.
- (e) That supports the sustainable development of small-scale fisheries that provide the principal supply of seafood for local consumption.

## 1.4 Key Goals

The Strategic Key Goals of the Ministry of Fisheries are to:

1. Improve the management systems of the organization and increase the number of qualified staff.
2. Improve the capacity of staff to analyze and formulate sound fisheries policies and undertake effective sectional planning and project evaluation.
3. Use an efficient accounting system and undertake effective financial control.
4. Improve the effectiveness of information/data collection and the safekeeping of the scientific, economic, technical and social database.
5. Improve the capacity of the Ministry to undertake and maintain routine assessment of fisheries resources, which support the country's fisheries management and development programme in order to provide a scientific basis for management decisions.
6. Develop an advanced and self-sustained national aquaculture programme.
7. Increase the availability and use of oceanographic information and data.
8. Develop improved systems of providing boat-building and engineering support services to other sub-programmes within the Ministry and to the fishing industry.
9. Create fisheries management conditions where the reasonable business and food-security aspirations of fishermen can be attained while safeguarding the fisheries resources.
10. Improve export market development, marketing systems and conditions to ensure increased export and local consumption of fish and other marine products.
11. Create fisheries quality control standards to ensure the health security of the consumers to improve quality of fish export and local sale.
12. Develop a self-managed fishing industry based on the sustainable exploitation of tuna and other offshore resources, and encourage greater private sector involvement in the operational aspects of fisheries.
13. Develop extension services programme that emphasizes effective delivery of services, and whose staff are identified with projects implemented by all sub-programmes.
14. Provide increased support toward the development of the special role and needs of small scale fishermen/women and coastal fishing communities.

## 2. Divisions

The Ministry is divided into 3 main divisions; Executive Management and Administrative Support (EMAS); Fisheries Research and Development (FRD); and Fisheries Management. The EMAS Division is further sub-divided into four main Sections; Personnel and Human Resources Development; Policy and Planning; Finance and Information.

## 2.1 Executive Management and Administrative Support Division (EMAS)

### 2.1.1 Personnel and Human Resources Development (PHRD)

The PHRD consist of 7 established staff members, all are given below:

Name	Post
'Akau'ola	Secretary for Fisheries
Mafi 'Akau'ola	Deputy Secretary for Fisheries
Losaline Tafea	Senior Fisheries Officer
Tonga Fifita	Senior Fisheries Assistant
Mele Fukofuka	Fisheries Trainee
'Asela Lausi'i	Fisheries Trainee
Telesia 'Uhatafe	Fisheries Trainee

#### *Appointments and Promotions*

Table 1: Appointments during 2000

Name	Post
Keasi Takau	Technical Officer Grade 11
Mele Fukofuka	Fisheries Trainee
'Asela Lausi'i	Fisheries Trainee
Siaosi Vaioleti	Fisheries Trainee
Telesia 'Uhatafe	Fisheries Trainee
Mafi Makasini	Fisheries Trainee
Mosese Mateaki	Fisheries Trainee
Siva'a Fetu'ani	Fisheries Trainee
Tevita Sonatane Ha'unga	Fisheries Trainee
Sauaki Talasinga	Fisheries Trainee
Falosita Loloa	Mate MV Takuo
Mangisi Tupou	Driver

Table 2: Promotions and Upgraded during 2000

Name	Former Post	New Post
Losaline Tafea	Senior Fisheries Officer	Principal Fisheries Officer
Viliani 'Anitimoni Petelo	Senior Fisheries Officer	Principal Fisheries Officer
Vilimo Fakalolo	Senior Fisheries Officer	Principal Fisheries Officer
Siliveinusi .M. Ha'unga	Technical Officer Grade 11	Fisheries Officer
Lomio Tonga	Technical Officer Grade 11	Fisheries Officer
Makalita.V. Mafile'o	Fisheries Assistant	Senior Fisheries Assistant
Losilini Loto'ahea	Computer Operator Assistant	Computer Operator Grade 111
Palu Faupula	Fisheries Trainee	Computer Assistant

#### *Resignations, Retire, study leave & dismissals*

Table 3: Resignations, Retirement, study leave and dismissals during 2000

Name	Post	Reason
Tevita Vaipuna	Accountant	Retirement
Taniela Koloa	Principal Fisheries Officer	Retirement
Sione Taufa Kolo	Fisheries Officer	Retirement
'Anaseini Hasiata	Fisheries Trainee	Resignation
Naita Manu	Technical Officer Grade 1	Dismissal
'Elenoa Kulikefu	Fisheries Trainee	Dismissal

Name	Post	Reason
Samiu Motuliki	Driver	Dismissal
Sione V. Matoto	Fisheries Officer	Study Leave, in Japan on a doctorate program
Siola'a Malimali	Technical Officer Grade 11	Study Leave, in Fiji USP doing a B.Sc. in Fisheries
Poasi Fale	Technical Officer Grade 11	Study Leave in Australia doing a B.Sc. in Aquaculture

### *Staffing*

The number of new staff posts were either new posts or posts that were redesigned and upgraded for Financial Year 2000/2001 as follows:

Posts	Number
Principal Fisheries Officer (upgraded)	3
Computer Programmer ( new post)	1
Fisheries Officer (upgraded)	3
Senior Fisheries Assistant (re-designated)	2
Fisheries Assistant (re-designated)	2

**Table 4:** Established and Non-established Staff of the Ministry of Fisheries as of 31<sup>st</sup> December 2000.

Job Category	Job Classification (JB)	Job Abbreviation	No. Posts	No. of Vacancies
L/1	Secretary for Fisheries	SF	1	-
L/2	Deputy Secretary	DS	2	1
L/5	Principal Fisheries Officer	PFO	5	1
L/7	Senior Fisheries Officer	SFO	2	-
	Senior Computer Programmer	SCP	1	-
L/9	Fisheries Officer	FO	8	2
	Technical Officer Grade 1	TOI	3	1
	Computer Programmer	CP	1	1
	Senior Accountant	ACC	1	-
L/11/9	Technical Officer Grade II	TOII	9	1
L/12	Master (Ekiaki, Takuo)	MA	2	-
	Chief Engineer	CE	2	-
	Second Engineer	SE	1	-
	Computer Operator Grade 1	COI	1	-
	Computer Operator Grade III	COIII	1	-
	Senior Fisheries Assistant	SFA	12	-
	Fisheries Assistant	FA	18	3
L/13/11	Mate/Leading Fishermen	M/LF	2	1
L/13/12	Computer Assistant	CA	2	-
L/13	Driver	D	2	-
	Fisheries Trainee	FT	29	1
L/14A/13A	AB Fishermen (non-established)	ABF	18	-
L/14	Greaser (non-established)	GRS	2	-
<b>Total</b>	<b>Established and Non-established Post</b>		<b>125</b>	<b>12</b>

### *Short-term training, workshops, local & overseas meetings*

Several members of staff attended short-term training programs and meetings both locally and abroad as follows:

**Table 5:** Local/overseas short-term training, workshops and meetings during 2000

Name	Course/Meeting/Workshop	Duration	Country
Matafonua Langi	Developing Multi Media applications for managers.	4 weeks	Kuala Lumpur, Malaysia
'Akau'ola and Mafi 'Akau'ola	44 <sup>th</sup> Annual Session Forum Fisheries Committee Meeting	5 days	Honiara, Solomon Island

Name	Course/Meeting/Workshop	Duration	Country
'Akau'ola	World Council of Whalers annual meeting	13 days	Nelson, New Zealand
'Akau'ola and Mafi 'Akau'ola	Workshop on the Implementation of the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific.	4 days	Apia, Western Samoa
'Akau'ola and Mafi 'Akau'ola	U.S Fisheries Treaty Extension Renegotiations	4 days	Vila, Vanuatu
'Akau'ola and Mafi 'Akau'ola	FFC 46 Meeting	1 day	Vila, Vanuatu
Viliami Vaka	Training of workers in the South Pacific (the use of the ozone depleting substances used in refrigeration and air-conditioning industry)	3 weeks	Auckland, New Zealand
Feauni Vi	First Course on the use of Underwater Visual Census for the Assessment of Reef Fish Resources.	11 days	Noumea
'Akau'ola and Mafi 'Akau'ola	Seventh Multilateral High level Conference (MHLC) on the conservation and Management of Highly Migratory Fish Stock in the Western and Central Pacific.	6 days	Hawaii
'Akau'ola	International Marine Debris Conference on Derelict Fishing Gear and the Ocean Environment	6 days	Hawaii
Sione Mailau	Regional Training Workshop for CBEMP National Participants and Peace Corps Volunteers	4 days	Samoa, Apia
Viliami Vaka	Training of Workers in the South Pacific (the use of ozone depleting substances used in refrigeration and air-conditioning industry)	2 weeks	New Zealand, Auckland
'Akau'ola and Mafi 'Akau'ola	U.S. Treaty Re-negotiation	3 days	Vanuatu, Vila
'Akau'ola and Mafi 'Akau'ola	FFC Meeting	1 day	Vanuatu, Vila
'Akau'ola	twenty-fifth FAO Regional Conference for Asia and the Pacific	5 days	Japan, Yokohama
'Akau'ola and Mafi 'Akau'ola	12 <sup>th</sup> Annual Treaty Consultation meeting of the Pacific Island Parties with the USA	10 days	Niue, Alofi
'Akau'ola	Conference on Aquaculture for the New Millennium	5 days	Bangkok
'Akau'ola	31 <sup>st</sup> Session of the Food and Agriculture Organisation	2 weeks	Rome

**Table 6:** Staff movement during 2000

Name	Post	Former station	New station transferred to
Tevita Tonga Valu	Fisheries Trainee	Nuku'alofa	Vava'u
Toma Kauvaka	Technical Officer Grade 11	Nuku'alofa	Vava'u
'Aisea Tu'ipulotu	Technical Officer Grade 1	Nuku'alofa	Vava'u

### 2.1.2 Policy and Planning (PP)

There is only two staff member in this section: Vilimo Fakalolo, Principal Fisheries Officer and Miss Keasi Konilia Takau, Technical Officer Grade II. Miss Takau was appointed to her post in March 2000 after completion her Diploma in Business and Management from Auckland Institute of Technology, New Zealand.

The Ministry of Fisheries Strategic Plan 1996 - 2000 reflects Fisheries core business as well as providing direction for the development of strategic goals that are practicable and achievable by the Ministry, Government, industry, and the community.

The last review of the Strategic Plan showed that some of the objectives set by each section to be completed in 2000 were not achieved due to a number of reasons due to limited funds and delays in assistance from overseas donor agencies.

#### *Consultancy works*

The following short-term consultations and studies were implemented in 2000.

### *Fisheries Regulations Workshop*

The Food and Agriculture Organization of the United Nations (FAO) and the Ministry of Fisheries conducted a one-week Workshop on Fisheries Regulations from 24-28 July 2000 at Dateline Hotel. This workshop is a component of the FAO Technical Co-operation Programme, which was approved to assist in Fisheries Legislation especially in reviewing, revising and updating the existing fisheries legislation.

Mr. Heiko Bammann of FAO Sub Regional Office made opening remarks on behalf of FAO. The Hon. Fielakepa, Governor of Ha'apai gave the workshop's opening address on behalf of His Royal Highness Prince 'Ulukalala Lavaka Ata, Prime Minister and Minister for Fisheries.

The purpose of the Fisheries Regulations Workshop was to consider the findings and results of the technical assistance on the revision of the Fisheries Act 1989.

The workshop have participants from government ministries, district and town officers, fishermen, Banks, fishing companies and representatives from SPC, FFA, Commonwealth Secretariat, Samoa Fisheries and FAO headquarters.

During the workshop the participants have learn more about the work carried out by the FAO team, the most relevant international regulations and about the work at regional and national level by FFA and SPC. Also, local fishing communities introduced the participants to the Samoan experiences in fisheries co-management. As the result of the Fisheries Regulations workshop the participants provide feed back and suggestions in order to enable the Ministry of Fisheries and the FAO team to finalize the draft legislation.

Discussions with AustAID regarding assistance to implement some recommendations from the Fisheries Sector Study Report of 1998 were continuing. The last group of AusAID consultants visited the Ministry of Fisheries in October 2000 and draw up a Project Design Documents that includes the following components:

- Capacity building and enhanced stakeholders
- Assistance to small scale fishers
- Development of commercial tuna long-line fishery
- Community inshore resource management
- Programme management

Both government's approved the Project Design Document which will be implemented over the next four years. The total financial resources allocated by the Australian Government for the project is approximately \$5 million pa'anga. Long term advisors and short-term specialist on specific issues will staff the project.

### *Projects*

The following projects were funded and implemented in 2000.

#### *(a) Replacement of ice block machine, Tuimatamoana Fish Market.*

In September 2000 the Taylor Refrigeration of Australia completed the installation of the new Ice Machine at Tuimatamoana Fish Market. The total budget of the project was T\$63,931.35 and was funded from the Project Development Fund administered by FFA.

**(b) Construction 3 boats with outboard engines**

This project was funded from the US Multilateral Fisheries Treaty money, which is administered by FFA. The 2 x 23 ft boats and 2 x 40 hp outboard engines for Nomuka and Ha'afeva was completed in November, 2000 and the boat for Niuatoputapu is expected to be completed in early 2001.

***Duty Free Diesel Fuel***

His Majesty's Cabinet confirmed on the 1<sup>st</sup> of June 2000 that all diesel fuel and lubricants for fishing industries would be free of duty and all other charges having equivalent effect.

The Fuel Concession Committee (FCC) was established to operate the duty free concession for the local commercial fishing sectors.

The FCC is under the chairmanship of the Secretary for Fisheries and consisting of representatives of the Ministry of Finance, Labour Commerce and Industries, Marine and Ports, as well as representative of the Fishing Industries and representative from fuel companies.

The FCC approved that all vessels in good standing (all necessary registration, surveys and licenses current) would apply for a quarterly allocation based on engine size and number of fishing trips undertaken.

Quarterly renewals is depended on proper catch data and trip report submitted as well as details of fish price on both local and export sales for previous quarter.

Summary of diesel fuel that was granted by Fuel Concession Committee from June 19<sup>th</sup>, 2000 to December 31<sup>st</sup>, 2000 as shown on Table 7.

**Table 7:** Summary of Diesel Fuel granted by Fuel Concession Committee from Jun 19<sup>th</sup> –Dec 31<sup>st</sup> ,2000.

Fishing Type	No. of Vessels	Diesel (Its)	SAE 30 (Its)	Hydraulic Oil (Its)	Refrigeration Oil	Others
Longliners	17	1,228,300	32,240	8,560	3,290	4,304
Bottom Fish	13	16,550	4,460	0	0	60
<b>Total</b>	<b>30</b>	<b>1,393,850</b>	<b>36,800</b>	<b>8,560</b>	<b>3,290</b>	<b>3,322</b>
Longliners	57%	88%	88%	100%	100	99%
Bottom Fish	43%	12%	12%	0%	0%	1%

The total catch (kg) by species composition of good standing longline vessels under the Fuel Concession Scheme is listed in Table 8.

**Table 8:** Total catch (kg) by species composition of good standing longline vessels under the Fuel Concession Scheme (Jun 19<sup>th</sup> –Dec 31<sup>st</sup> ,2000)

Species	Landing (mt)	Export (mt)	Local (mt)
Albacore	545.4	510	35.4
Big Eye	257.4	255	2.4
Yellowfin	36.92	20.4	16.52
Marlin	58.1	51	7.1
Swordfish	2.36	0	2.36
Others	355.9	183.6	172.3
<b>Total</b>	<b>1256</b>	<b>1020</b>	<b>236</b>
<b>% of Total catch</b>		<b>81%</b>	<b>19%</b>

**Table 9:** Total Catch (kg) by species composition of good standing Bottom Fishing Vessels under Fuel Concession Scheme (Jun 19<sup>th</sup> –Dec 31<sup>st</sup> 2000)

Species	Landing (mt)	Export (mt)	Local
Longtail red snapper	512.9	480.5	32.4
Red snappers	112.6	77.5	35.1
Sea bream	51.3	0	51.3
Sliver snappers	70.1	62	8.1
Yellow finned	21.6	0	21.6
Red Jobfish	86.7	54.3	32.4
Others	189.9	100.8	89.1
<b>Total</b>	<b>1045</b>	<b>775</b>	<b>270</b>
<b>% of Total catch</b>		<b>74%</b>	<b>26%</b>

### *Bid for Tuna Commission*

His Majesty's Cabinet approved on the 10<sup>th</sup> of May 2000 that Tonga make a bid for the site of the new Tuna Commission. A small committee was established to prepare Tonga's bid for the commission under the chairmanship of the Secretary for Fisheries and consisting of representatives of the Ministry of Foreign Affairs, Finance, Labour Commerce and Industries, Works, Chamber of Commerce and Reserve Bank.

An independent expert panel was chosen by the FFC to assess the bids from each member countries based on agreed criteria. In December 2000, the report of the evaluation panel showed that Tonga was awarded top ranks and Samoa placed second. The next FFC Committee meeting in March 2001 will discuss and consider the evaluation panel report and select a single bid for FFC to endorse.

### *Assessment of fish landings at Tuimatamoana Market*

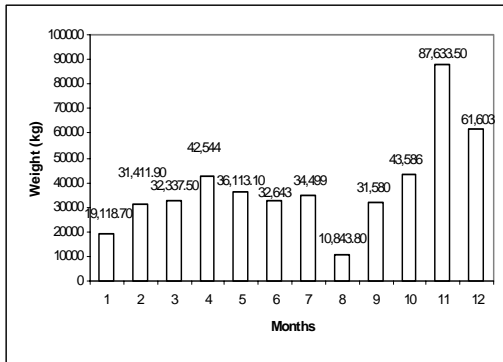
The total landing of fish at Tuimatamoana Market by month (excluding road-side sales, Vuna wharf site, Sea Star Fishing Company, Tonga Maritime Project, 'Alatini Fisheries and village markets) are as follows:

**Table 10:** Total landing of Fish at Tuimatamoana Market

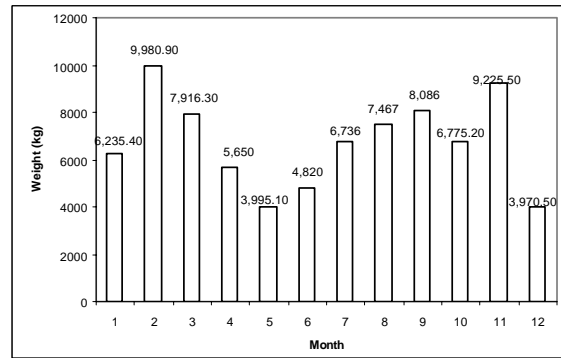
Month	Longliner	Others	Export	Local	Total
January	19,118.7	6,235.40	22,241.40	3,112.70	25,353.40
February	31,411.90	9,980.90	22,024	19,368.80	41,392.80
March	32,337.50	7,916.3	16,039.7	24,214.1	40,253.80
April	42,544	5,650	20,631.5	27,562.50	48,194
May	36,113.10	3,995.1	22,263.35	17,844.85	40,108.20
June	32,643	4,820	20,318.00	17,145	37,463.00
July	34,499	6,736	31,747	9,488	41,235
August	10,843.80	7,467	6,572.80	11,738.00	18,310.80
September	31,580	8,086	23,125.70	16,540.3	39,666.00
October	43,586	6,775.20	25,598	24,763.20	50,361.20
November	87,633.50	9,225.50	74,383.00	22,476.00	96,859
December	61,603	3,970.50	45,657.20	19,916.30	65,573.50
<b>Total</b>	<b>463,913.50</b>	<b>80,857.90</b>	<b>330,601.65</b>	<b>214,169.75</b>	<b>544,771.40</b>
<b>Percentage</b>	<b>85 %</b>	<b>15 %</b>	<b>61 %</b>	<b>39 %</b>	<b>100</b>



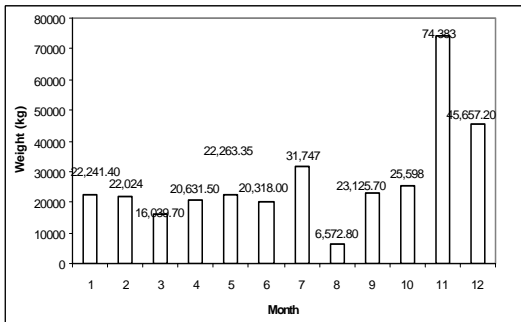
The following graphs indicate the Total Landings of fish (kgs) at Tuimatamoana Market by Month



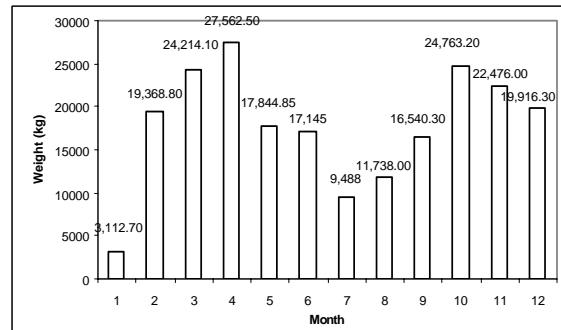
**Figure 1**  
Total Landing at Tuimatamoana by Longliner



**Figure 2**  
Total Landing at Tuimatamoana by other Fishermen



**Figure 3**  
Total Landing at Tuimatamoana that was exported



**Figure 4**  
Total Landing at Tuimatamoana was sell/consumed locally

### 2.1.3 Finance

The Finance section consists of two staff only with the assistance of Katalina T. Fifita when she is free. Tevita Vaipuna, Accountant retired from civil service after years of dedicated work and commitment.

Name	Post
Tevita Talakai	Acting Accountant
Siaosi Vaoleti	Fisheries Trainee

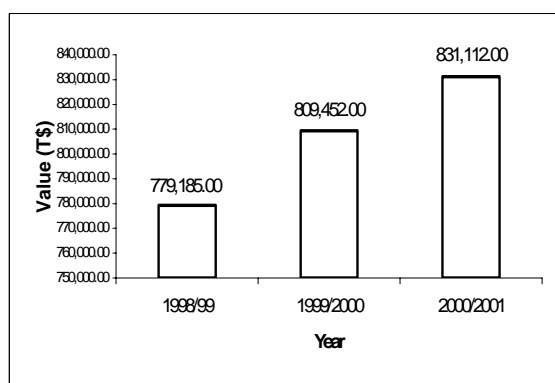
#### *Recurrent Estimate*

The Total Expenditure Estimate for the Financial Year (FY) 2000/2001 increased by 4.36% when compared with FY 1999/2000. The Establishment Vote was increased by 2.68% from \$809,452.00 (1999/200) to \$831,112.00 (2000/2001). Travel and Communication was increased by 40.18% as well as Maintenance and Operations by 8.10% respectively. Purchase of Goods and Services Vote was decreased by 41.81%

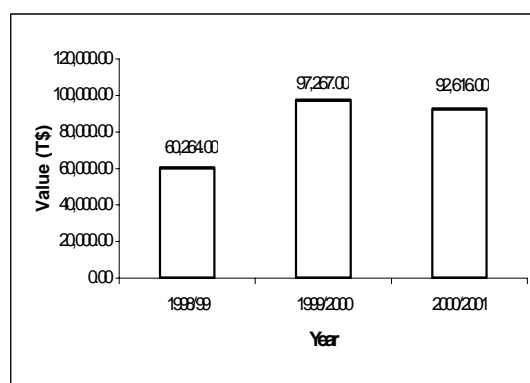
**Table 11: Percentage increase/decrease of the Expenditure Estimate (Pa'anga)**

Expenditure Estimate by Cash	1998/99	1999/2000	2000/2001
	T\$	T\$	T\$
Established staff	779,185	809,452	831,109
Unestablished staff	60,264	97,267	92,616
Travel and Communication	84,604	68,508	96,034
Maintenance and Operations	834,515	623,523	685,031
Purchase of Goods and Services	945,121	2,022,673	1,165,920
Capital Expenditure		25,008	25,006
<b>Total</b>	<b>2,703,689</b>	<b>3,646,412</b>	<b>2,895,716</b>
<b>Funding Source</b>			
Government of Tonga Fund	1,043,811	980,590	980,590
Government of Tonga: Revolving Fund	1,557,277	2,608,717	1,878,117
Overseas Donor Funding (Cash/Token)	102,601	57,105	37,009
Overseas Donor Funding (In – Kind)	0	0	0
<b>Total</b>	<b>2,703,689</b>	<b>3,646,412</b>	<b>2,895,716</b>
<b>Percentage Increase/decrease</b>			
Established staff	47.81	3.88	2.68
Unestablished staff	75.18	61.4	-4.78
Travel and Communication	43.14	-19.03	40.18
Maintenance and Operations	957.71	-25.29	8.10
Purchase of Goods and Services	386.49	116.65	-41.81
<b>Total</b>	<b>202.49</b>	<b>34.86</b>	<b>4.36</b>

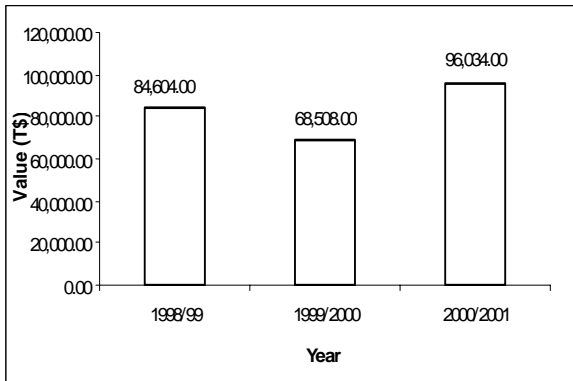
The following graphs indicate the changes in the spending pattern of the Ministry over the last three years:



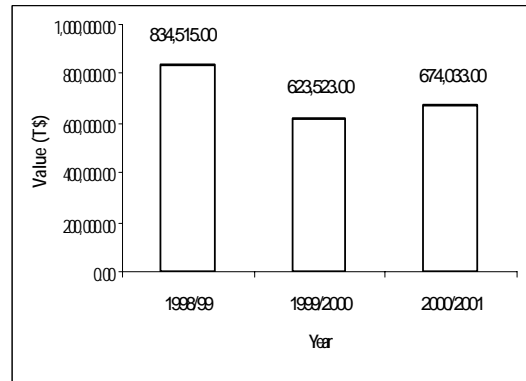
**Figure 5**  
Money spent (pa'anga) on established staff from 1998/99-2000/2001



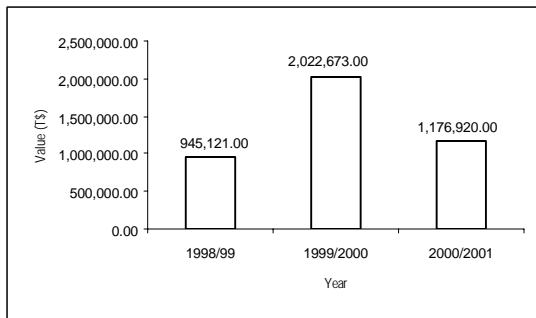
**Figure 6**  
Money spent (pa'anga) on Unestablished 1998/99-2000/2001



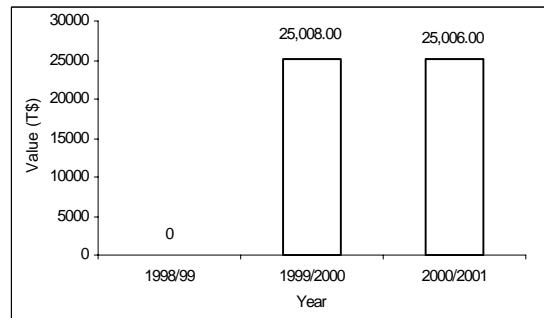
**Figure 7**  
Expenditure(T\$) for Travel and communication  
From 1998/99-2000/2001



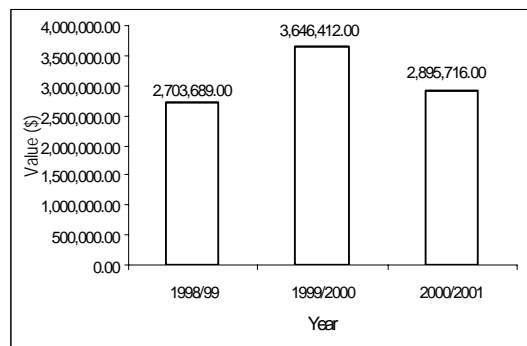
**Figure 8**  
Expenditure (T\$) on Maintenance and Operations  
from 1998/99-2000/2001



**Figure 9**  
Expenditure (T\$) for purchase of Goods and Services  
From 1998/99-2000/2001



**Figure 10**  
Capital Expenditure (T\$) from 1998/99-2000/2001



**Figure 11**  
Total Recurrent Estimate of Ministry of Fisheries  
From 1998/99-2000/2001

**Table 12:** Percentage allocation of the Recurrent Estimate (pa'anga)

Percentage allocation by vote	1998/99	1999/2000	2000/2001
	%	%	%
Established Staff	28.81	22.2	27.65
Unestablished Staff	2.23	2.67	3.08
Travel and Communication	3.13	1.88	3.20
Maintenance and Operations	30.87	17.1	22.42
Purchase of Goods and Services	34.96	56.15	42.82
Capital Expenditure			0.83
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>

### *Revenue estimate*

The major revenue source was the FFA Treaty Funds amounting to T\$228,915.00. In addition the revenue collected for the financial year 2000/2001 was approximately \$121,465.00 plus miscellaneous revenue collected from various Fisheries Centres in the Northern Islands.

#### **2.1.4 Information**

The Information Section continues to fulfill its obligations regarding the collation and dissemination of fisheries information to the Forum Fisheries Agency, the Secretariat of the Pacific Commission, FAO and other regional organizations.

The Section operated and maintained all computer hardware and software, provided computer services to all sections, trained Fisheries personnel on the use of computer equipment and applications, and co-ordinated the Ministry's inputs to regional computer, and network systems. The Section also maintained the library and the Audio Visual section.

### *Staffing*

There were five full-time staff in the year 2000

Name	Post
Sosaia Tulua	Computer Programmer
Lavinia Vaikona Vaipuna	Computer Operator Grade I
Silia Soakai	Computer Assistant
Palu Faupula	Computer Assistant
'Emeline Tupou	Fisheries Trainee (Librarian)

### *Information Network Services*

The operating system for *TOFISH* network is currently running under Windows NT Server 4. It is a fairly advanced system and easier to operate. The Network has one NT Domain file server called *ALBACORE* and one Backup Domain Server called *ALBACORE2*. The NT is installed with 50 client licenses per server, which means that there can only be 50 connections to the server *ALBACORE* at any time.

Vava'u and Ha'apai Fisheries are linked to the main island through e-mails and Network Dial-up via NT Server.

### *E-mail Server*

System Domain [tongafish.gov.to](http://tongafish.gov.to) is still operating in catering for the *TOFISH* heavy emails traffic.

### *Computer Hardware*

Location	TYPE	QTY	NOTES
Nuku'alofa	Server PIII	1	Domain Server
	Server P	1	Backup Server
	Pentium II	6	New Computers
	Pentium	9	From previous years
	486	1	From previous years
	Notebook PIII	1	New Notebook for Secretary
	Notebook PIII	1	New Notebook for Deputy
	Notebook PII	2	Only one is still working (SFO)
	Notebook Pentium	4	Only two working
	HP Laser 5si	1	Server Printer
	HP 5L	2	Only one is still working (Vilimo)
	HP LaserJet 110	3	One for 'Akau'ola, Tonga and 'Ulunga
	Apple Color Laser	1	Donated by JICA
Vava'u	Pentium II	1	New Computer
	Notebook PII	1	New Computer
	HP Laser 6L	1	From previous year
	HP 5L	1	From previous year
	Canon InkJet Printer	4	New Printer
Ha'apai	Pentium II	1	New Computer
	HP Laser 6L	1	From previous year

### *Computer Software*

Type	Program Name
Operating System	Windows NT
	Windows 98
	Windows 95
Mapping	MapInfo
Graphics	Adobe Photoshop 5
Word Processor	Word97
Spreadsheet	Excel97
Presentation Application	Powerpoint97
Database	Access97
Antivirus	Vet
E-mail Server	FTGate
Databases	Tuna database, Takuo Logbook database, VoteSystem Database, Staff Database, Aquarium Database, Vessel Registration Database, Export Marine Resource Database, Filing System Database, Hosts of system and software utilities.

### *The Library*

The Ministry's Library has begun computer cataloguing of all fisheries publications. About 1075 publications that have been catalogued into the computer. The software that is used for cataloguing is called CDS/ISIS.

### *Audiovisual Section*

The Audiovisual unit consist of only one staff member as shown:

Name	Post
Matafonua Langi	Fisheries Assistant

As a result of the newly established unit a permanent staff was appointed to be in charge of the unit. The Japanese Government has donated in mid year 2000 the current audiovisual equipment including video digital camera, video recorder, video editing machine, colour video monitor and accessories.

### *Main Objectives*

- Allows for the effective and efficient production of educational and awareness programme in order to educate fishermen and fishing community, schools in different levels and the general public.
- Promote and increase public's awareness of the activities and responsibilities of the Ministry of Fisheries, through the creation of documents and presentations.
- Vital information are stored in the computer such as documentaries and allows for the easy access and sharing information among the sections of the Ministry.

## **2.2 FISHERIES RESEARCH & DEVELOPMENT**

The Fisheries Division is subdivided into 3 main sections; Aquaculture & Research, Oceanic and Coastal Fisheries and Development of Commercial Fisheries

### **2.2.1 Aquaculture and Research**

#### *Background*

A number of projects involving the propagation and/or growing of marine organisms were identified as being suitable to condition in Tonga. Promotion of aquaculture is:

- To relieving pressure on over-exploited traditional inshore fisheries
- Convert unused areas of natural water or agriculturally poor areas to useful production
- Revival and enhancement of over-exploited resources and introduction of commercially exotic species
- Programs includes enhancement of giant clams
- Introduction of trochus and green snails to create new commercial fisheries, pearl oyster farming and seaweed culture to earn foreign currency

#### *Personnel*

The Aquaculture and Research Section consisted of 10 established staff and one Japanese Expert on Stock Survey and Shellfish Seed Production as shown below:

<b>Name</b>	<b>Post</b>
'Ulunga Fa'anunu	Principal Fisheries Officer
Vaiala Matoto	Fisheries Officer
Poasi Fale	Technical Officer Grade II
Feauini Vi	Fisheries Assistant
'Ofa Paongo	Fisheries Assistant
Sione Holopulu	Fisheries Assistant
Saia Niumeitolu	Fisheries Trainee
Sitiveni Sefesi	Fisheries Trainee
Tevita Sonatane Ha'unga	Fisheries Trainee
Makeleta Vaikaka	Fisheries Trainee(laboratory assistance)
K. Kikutani	Japanese Expert on Stock Survey and Shellfish Production

### *Training and Staff Development*

Training programmes were aimed at developing staff skills and both overseas and local training's were conducted as well as attachments. Mr. Vailala Matoto (Fisheries Officer), head of the Stocks Survey Program continues his Ph.D. in Fisheries Science, in Japan. Poasi Fale (Technical Officer Grade 11) attended a three months attachment on Inshore fisheries resources management in Okinawa, Japan.

The Ministry organized its 1<sup>st</sup> International Training Course on "Sustainable Use of Coral Reef Fisheries Resources with Special Emphasis on Shellfish Seed Production and Release" in co-operation with the Government of Japan through the Third Country Training Programme of JICA. It was held at the Mariculture Centre, Sopa from 12 February to 3 March. The objectives of the training were to:

- acquire practical skills in producing green snail, trochus, and giant clam seed and their safe release onto appropriate coral reef habitats through "hand-on" practice.
- acquire practical skills in carrying out underwater field surveys of appropriate grow out habitats for released seed and for monitoring the health and growth of released seeds over time.<sup>2</sup>

The participants from abroad were from Fiji, Vanuatu, Solomon, Kiribati, Samoa and Kosrae. The two local participants were from Vava'u and Tongatapu Fisheries.

### *Renovation of the Sea-water Supply System*

His Excellency Mr. Hisato Murayama, Japan's Ambassador to the Kingdom officially handed over the renovated sea water supply system at the Marine Research Centre to the Secretary of Fisheries, 'Akau'ola on March 31, 2000. A grant of about T\$3.2 million was provided by the Government of Japan to fund the improvement of this sea water system. The objective of this project was to secure the requisite volume of quality seawater for the Ministry's hatchery, which will contribute to the development of a stronger operating capabilities along with a viable aquaculture industry.

The Marine Research Centre is an indispensable facility for fisheries and aquaculture development in Tonga. The Centre was established in 1978 with grant aid funding from Japan. In 1991, Japan extended project-type technical co-operation based at the Centre which has contributed to research and development on breeding and cultivating of such species as giant clams, green snails and trochus. However, a succession of problems in recent years including unstable water quality resulting from water intake from the moat, superannuate seawater intake and drainage system, and inadequate water supply have cast major doubts on the future operations of the centre. Japan's funding assistance is still responding to funding requests from the Government of Tonga.

### *Shellfish Culture*

#### **Giant Clam**

The giant clam hatchery started in 1989 to enhance coral reefs and to revive wild stocks. Local demand for clam meat is under-supplied. The overseas aquarium market offers good prices for relatively young clams. Clams of 1 to 8 inches shell length were sold to aquarium exporters. A total of 13298 clams (4275 *T. derasa* or Tekanoa, 6630 *T. maxima* or Kukukuku and 2393 *T. squamosa* or Matahele) worth \$23,467.00 were sold. The monthly operational costs of the hatchery and income earned from sale of clams were \$1,500 and \$2000 respectively. The selling prices of the clams and size distribution of the market demand are given at Table 13 & 14 below.

**Table 13: Selling Prices per Species**

Shell Length (inch)	1	2	3	4	5	6	7	8	9	10
\$/ <i>T.squamosa</i>	1.00	1.5	2.25	3.5	5.0	6.75	8.75	10.00	11.25	-
\$/ <i>T.derasa</i>	1.00	1.25	2.00	3.5	5.0	6.75	8.75	10.00	11.25	12.50
\$/ <i>T.maxima</i>	1.00	1.5	2.5	3.25	4.75	6.25	-	-	-	-

**Table 14: Market Demand and Size Distribution (size vs number)**

Shell length (inch)	1	2	3	4	5	6	7	8	9	10	Total
<i>T. squamosa</i>	2165	225	3	-	-	-	-	-	-	-	2393
<i>T.derasa</i>	58	2471	911	125	282	211	112	75	14	16	4275
<i>T.maxima</i>	5612	669	313	36	-	-	-	-	-	-	6630

The demand for *T.derasa* was highest for 2 inches that represented 59% of the total sale. Followed by 3 and 5 inches, that represented 21% and 7% respectively. The demand for *T. squamosa* was higher for 2 and 3 inches but we had mostly one and one and half inches stock. In the last two and four years we failed to spawn *T.derasa* and *T.squamosa* respectively. As a consequence there were insufficient stocks of small size clams (1 and 2 inches) to meet the demand. The demand for *T.maxima* was higher due to its beautiful mantle colour, but stock on hand were mostly 1 to 2 inches shell length.

We spawned successfully for the first time the spawning of two new species, *T. gigas* and *Hippopus hippopus*. These species were introduced from Australia in 1990 while they were 3 months old. Record of spawning is given at table 15.

**Table 15: Giant Clam Spawning, 2000**

	Date	Species	Tank No.	Approx. No. Larvae
1	19.11.00	<i>T. derasa</i>	C 10	3 millions.
2	"	"	C 16	"
3	"	<i>T. maxima</i>	C 17	"
4	22.11.00	<i>T. squamosa</i>	C 13	"
5	"	"	C 18	"
6	15.12.00	<i>H. hippopus</i>	C 12	4 millions.
7	20.12.00	<i>T. gigas</i>	C 3	9 " .
8	"	"	C 7	8 " .
9	"	"	C 14	8 " .

At the end of the year the total number per species of clams at 'Atata, Kolonga, 'Euaiki and the Ministry's ocean nursery were as follows:

Species	Ministry	'Atata	Kolonga	'Eueiki
<i>T.derasa</i>	4,000 (2&3 yr. old)	400 (3 yr. old)	-	-
"	8,000 (6-9yrs old)	5,000 (6-9yrs old)	4,800 (3-8yrs old)	750 (3-8yrs old)
<i>T.gigas</i>	175 (10yrs old)	42 (10yrs old)	-	38 (10yrs old)
<i>T.squamosa</i>	5000 (2yrs old)	500 (7yrs old)	-	-
"	100 (7yrs old)			
<i>T.maxima</i>	6000 (2yrs old)	-	-	-
<i>T.tevoroa</i>	2 (5yrs old)	-	-	-
<i>H.hippopus</i>	24 (10yrs old)	-	-	-



*Green Snail, Turbo marmoratus ('Elili lanumata)*

The green snail seed production and release started in 1996 using brood stocks introduced from Vanuatu and Okinawa in 1995. Young snails are rearing in the hatchery for at least 2 years then release when they reach 60mm shell height. The number of young snails already released and those are still in hatchery are given at table16 and 17 respectively.

**Table 16:** Record of hatchery produced snails already released

TIME	NUMBER/YEAR			PLACE					LOCATION
	1998	1999	2000	TBU	VV	HP	N.T.T	Export	
Apr.	800			800					'Euaiki Is.
May	300			300					"
Jun.	400			400					"
Sept.	600			600					"
Oct.	400			400					Fukave Is.
Jun.	300				300				Coral Garden
"	400				400				Kenutu Is.
Oct.	350			350					'Euaiki Is.
"	500					500			Uoleva Is.
Nov.	300							300	Vanuatu
Jan.		500			500				Coral Garden
Apr.		300						300	Ponapei
"		300						300	SAMOA
Jun.		200		200					'Euaiki Is.
Jul.		300			300				Coral Garden
Feb.			300	300					'Euaiki Is.
Mar.			300				300		N.T.T
Apr.			500			500			Uoleva Is.
May.			300			300			Uoleva Is.
Aug.			300	300					'Euaiki Is.
"			250			250			Uoleva Is.
"			250		250				'Ene'io
Dec.			300	300					'Euaiki Is.
"			500			500			'Euaiki Is.
"			300	300					'Atata
<b>Total</b>	<b>4350</b>	<b>1600</b>	<b>3300</b>	<b>4250</b>	<b>1750</b>	<b>2050</b>	<b>300</b>	<b>900</b>	<b>9250</b>

**Table 17:** Number of snails in hatchery

Spawning Date	Ave. size (mm)	Number
Feb. 98	55	3,800
Feb. 99	45	5,200
Feb. 00	25	5,000
Sept. 00	3	45,000

The result of a recovery survey of the released hatchery produced green snails is given at table 18. The result indicated that in two years time after release they become mature for natural reproduction and reaches suitable size for harvest. The minimum size in Vanuatu and Japan are 15cm and 13cm respectively.

**Table 18:** Result of the recovery survey in April, 2000

No. recovered Shells	Releasing date	Average size (cm) when		Size (cm)
		released	Recovered	increment
2	Aug-94			
25	Jun-98	5.42	11.12	5.7
5	May-99	8.96	14.66	5.7
3	Feb-00			

*Trochus, Trochus niloticus (Takaniko)*

Spawning technique of trochus was demonstrated during the green snail seed production workshop. About 20,000 young trochus of more than 3cm-shell diameter from last years spawning were used in polyculture with giant clam. The trochus helps to clean the weed that grows on the tank and clams.

About 350 and 500 trochus of more than 50mm shell diameter from the spawning in December, 1998 were transferred and released at Fukave and Ha'apai respectively.

The recovery survey in June at Fukave Island recaptured 125 out of 400 brood stock released in 1994. This recovery rate of 31.1% indicated the good survival rate of the introduced trochus. A new recruitment survey was conducted in February in places other than the releasing sites 'Eueiki and Fukave Islands. The result indicates the natural reproduction of released shells and spread out to surrounding reefs and islands. The distribution of new recruitment shells is given at table 19.

**Table 19:** New recruitment trochus measurement and location

Locations	Shell Diameter (mm)				
	63.7	73.7	71.6	96.6	100.5
Pangaimotu Reef	63.7	73.7	71.6	96.6	100.5
Manima Reef	50.0	50.0	-	-	-
Kolonga	124.8	-	-	-	-

*Seaweed, Cladosiphon sp. or Limu Tanga'u, export*

Both Sea Star and H & H Company's mozuku farming was a success in this year's season. The weather was mainly fine throughout the season with favorable water temperature to boost the production per net from 50 to over 100 kgs per net. Both companies did not rely heavily on harvest from wild. The production from their farm alone was estimated at 175 tons.

**2.2.2 Oceanic & Coastal Fisheries**

The head of Oceanic and Coastal Fisheries, Vailala Matoto is continuing his Ph.D. in Aquaculture in Japan. Therefore 'Ulunga Fa'anunu, is also in charge of Oceanic and Coastal Fisheries.

*Inshore fisheries statistics*

The collecting of data from Inshore Fisheries Statistics was discontinued in 1999 due to financial constraints and lack of staff, this discontinuation was still conducted in the year 2000.

### 2.2.3 Development of Commercial Fisheries

The Development of Commercial Fisheries section consisted of four vessels (MFV Albacore, Ekiaki, Ngutulei and Takuo) of which two have been sold to public.

Senior staff are as follows:

Name	Post
Uanoa 'Ahoafi	Technical Officer Grade I
Martin Finau	Fisheries Assistant
Taniela Taungakava	Fisheries Trainee

The MFV Albacore and Ngutulei were sold through public tender. The main engine for MV Ekiaki was overhauled and needs repair and maintenance.

The staff members of the MFV Albacore and the MFV Ngutulei fishing vessels have been reallocated to other sections in the Ministry.

#### *MFV Takuo*

Principal Particulars			
Length (OA)	39.39m	<b>Capacities</b>	
Length (PP)	33.50m	Fish holds (bale)	137.63m <sup>3</sup>
Breadth (Mld)	7.50m	Fuel oil tanks	147.44m <sup>3</sup>
Depth (Mld)	3.10m	Fresh water tanks	24.07m <sup>3</sup>
Designed load draft(Mld)	2.70m	Lab. oil tanks	6.88m <sup>3</sup>
Gross tonnage	337t	Main engine (600PS x 420/309rpm)	1 set
Net tonnage	102t	Generator engine (204PS x 1500rpm)	2 sets
Speed (trial max)	11.03 knots	Generator (170kVA)	2 sets

The year 2000, was the Takuo's third year in operation. Takuo continued to operate on a semicommercial level. This Level is primarily required to provide training to local fishermen and to carry out research in the approved areas within the Tongan waters and marketing of catch at domestic and overseas markets in order to offset part of its Operational costs.

**Table 20: MFV Takuo Fishing Operation from January to December 2000**

	Voy 1	Voy 2	Voy 3	Total
Fishing days	54	54	26	134
Sunday at Sea	15	14	10	39
Steaming/ changing fishing ground	8	14	20	42
Total days at sea	77	82	56	215
Days at Port	42	48	60	150

**Table 21: Landing and catch by Species Composition**

Landing (mt)	Voy 1	Voy 2	Voy 3	Total
Overseas market	28.3	0	47.8	76.1
Local market	5.4	43.2	8.3	56.9
<b>Total</b>	<b>33.7</b>	<b>43.2</b>	<b>56.1</b>	<b>133.0</b>
Catch by species composition (kg)				
Albacore	2070.0	2656.3	3450.4	8176.6
Big Eye	221.3	284.0	368.8	874.1
Marlin	276.5	354.8	460.9	1092.3

Landing (mt)	Voy 1	Voy 2	Voy 3	Total
Skipjack	8.8	11.2	14.6	34.6
Swordfish	51.2	65.7	85.3	202.2
Yellowfin	405.5	520.4	675.9	1601.8
Others	334.8	429.6	558.0	1322.4
<b>Total</b>	<b>3368</b>	<b>4322</b>	<b>5614</b>	<b>13304</b>

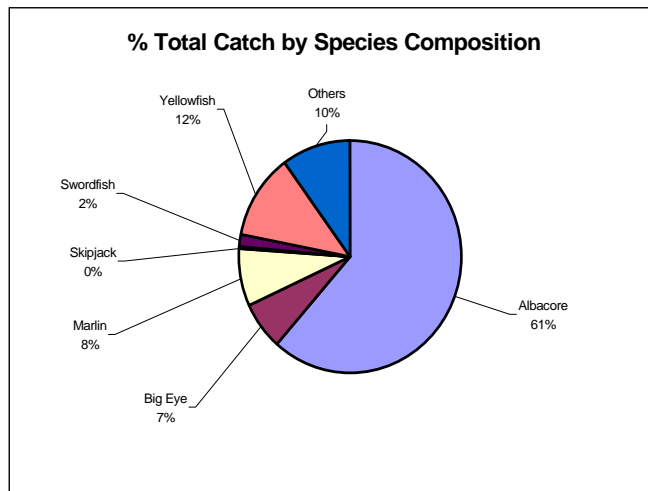
**Table 22:** Percentage of Total Catch by Species Composition

Species Composition	%
Albacore	61.46
Big Eye	6.57
Marlin	8.21
Skipjack	0.26
Swordfish	1.52
Yellowfin	12.04
Others	9.94
<b>Total</b>	<b>100</b>

**Table 23:** Quantity of Species Composition per Voyage (No. of fish)

Species Composition	Voy 1	Voy 2	Voy 3	Total
Albacore	819	1178	856	2853
Big Eye	83	181	44	308
Marlin	100	156	112	368
Skipjack	9	46	8	63
Swordfish	5	20	16	41
Yellowfin	202	374	110	686
Others	652	342	147	1141
<b>Total</b>	<b>1870</b>	<b>2297</b>	<b>1293</b>	<b>5,460</b>

**Figure 12 :** % Total Catch by Species Composition



**Table 24:** Catch per unit effort (by 100 hks) by pieces and weight (CPUE)

Species Composition	CPUE by pcs	CPUE wt (Kg)
Albacore	.86	13.71
Big Eye	.09	1.46
Marlin	.11	1.83
SkipJack	.01	.05
Swordfish	.01	.33
Yellowfin	.20	2.69
<b>Total</b>	<b>1.28</b>	<b>20.07</b>

## 2.3 Fisheries Management (FMD)

The Fisheries Management Division is further sub-divided into Management and Licensing, Support Services, Marketing and Market Development, Post Harvest and Quality Control, Extension, Vava'u and Ha'apai.

### 2.3.1 Management and Licensing

#### *Introduction*

The Management and Licensing Section is responsible for fisheries management, monitoring and control including surveillance, enforcement, licensing and legislation.

The Management and Licensing staff were also involve Extension and Quality Control are as follows:

Name	Post
Viliami 'Anitimoni Petelo	Principal Fisheries Officer
Tevita.F. Latu	Principal Fisheries Officer
Siliveinusi.M.Ha'unga	Fisheries Officer
Tevita 'Ahoafi	Technical Officer Grade 11
Silika Ngahe	Technical Officer Grade 11
'Inoke Mapuhola	Senior Fisheries Officer
Sailosi 'Alofi	Fisheries Assistant
Tu'inuia Tupou	Fisheries Assistant
Lupe Fakalelu	Fisheries Assistant
'Ana Tapu Latu	Fisheries Trainee
Siuva Tuaimel'api	Fisheries Trainee
Mafi Makasini	Fisheries Trainee

#### *Management duties include:*

- Preparation of fisheries management plan (FMP) in conjunction with other sections such as Planning and Research.
- Screening applications for licenses issued under the Fisheries Act 1989 and it's Regulations such as fishing vessels(local, commercial & sports fishing), fish processing establishment, fish fences, marine products,etc.
- Conveying views of the Ministry to the public/private sectors and other Government Institutions/Departments such as the Ministry of Labour, Commerce and Industries (MLCI) with regards to trading & development licenses, Ministry of Lands, Survey and Natural Resource

(MLSNR), and the Ministry of Marine and Ports for safety and seaworthiness of fishing boats and other departments such as Customs, Health and Tourism

Monitoring and Control responsibilities include:

- co-ordinating fisheries enforcement and prosecution in accordance with the Act and its Regulations eg. fishing with dynamite and other fisheries offences
- surveillance programs such as aircraft/boat patrolling in Tonga's 200 mile zone
- Observer Program in the FFA member countries under the Fisheries Treaty with the United States of America,
- Regional Register of foreign fishing vessels.
- Quality, control, examination and inspection of marine products for export.
- HACCP (Hazard Analysis and Critical Control Point)
- Licensing responsibilities include: (a) registration and licensing of fishing vessels and fish fences, (b) collection of 0.5% resource rent of the local value of marine products commercially exported and other license fees.
- Legislation responsibilities included co-ordinating the review of fisheries legislation.
- Other miscellaneous tasks of the Section included preparation of letters of authorisation for export of all marine products designated by Fisheries Act or required under CITES (Convention on the International Trade of Endangered Species).

**Table 25: List of Active Exporters of Marine Products**

Name of exporter	Address	Marine Products Exported	Year of establishment
Dateline Aquarium Fish Company Ltd. (Paula Vi)	Haveluloto	live tropical fish & invertebrates	1994
Walt Smith International (Walt Smith)	Ma'ufanga	live tropical fish & invertebrates	1980
Sesilia Trading	Fanga	Shark Fin	2001
Sea Star Fishing	Small Industries	fresh fish	1990
Maritime Projects Co. (Tonga) Ltd	Sopu	fresh fish, shark dried fin & beche de mer	1980
'Alatini Fisheries Co. Ltd (Bill Holden)	Small Industries	fresh fish	1990
Capricorn Fishing Co. Ltd (Peter Hurrell & Siotame Taunaholo)	Kolofo'ou	fresh tuna	1993
Sea Eagles Fishing (Tukua Tonga & Rev. Tanielia Moala)	Fasi	Lobster & tuna	1995
KM Fishing (Koli Moa)	Fanga	Fresh tuna	1994
Emerald Marine Products Ltd	Kolofo'ou	Shark fin	2000

Some new fishing vessels have been licensed to fish in Tongan waters including four locally based foreign fishing vessels.

#### *Marine exports from Tonga*

Fisheries products commercially exported, include dried sharkfin, aquarium fish, soft coral & coral rock, tuna, snapper, and grouper. Exports for home consumption include all forms of reef fish, octopus, pelagic

and marine products such as mollusc shells, turtle shells, and other souvenirs made from black coral and oyster shells. Although Tonga is not a party to CITES, destinations such as New Zealand, Australia and Japan, require letters of authorisation for clearance.

#### *Dried shark fin*

Sesilia Trading and Emerald Marine products Ltd exported about 1620kgs of dried shark fin in 2000 valued at 129600.00 dollars i.e. \$80per kgs compare to 1045 kgs in 1999 and 96 kgs in 1998. The f.o.b.value for 1999 and 1998 was 45.00 pa'anga per kilogram.

#### *Lobster ('uo)*

A total quantity of 43kgs of lobster {most of which were lobster tails} with a fob value of \$15 .00 per kilograms were exported in year 2000 as a sample. The Ministry of Fisheries do not encourage the commercial export of this marine products due to the depletion of stock caused by overharvesting.

#### *Snapper & grouper*

Two companies, 'Alatini Fisheries, Maritime Projects exported 140.12 metric tonnes of snappers and groupers (cc. 266.1 mt in 1999) valued at \$924792.00 fob. Both years were based on \$3.00 per pound fob value although the true returns to the kingdom are greater.

#### *Tuna*

786.10 metric tonnes of fresh tuna were exported and valued at \$5187936.60 compared to 375.06 metric tonnes in 1999 valued at \$1312710.00. The fob value for tuna was \$3.00 per pound. The f.o.b. value for tuna in 1998 and 1999 was 3.50 per kilogram compared to 3.00 per pound in year 2000 Exporters were Friendly Island Fishing, Sea Star Fishing, Alatini Fishing, Maritime Fishing and Discovery Co-operation.

The tuna operators were very fortunate to have duty free diesels. Some boats spend more time in port due to mechanical problems.

#### *Aquarium fish & coral rock*

Three companies collected and exported live tropical aquarium fish, coral rock and cultured giant clams (see section 3.2.1). They were Walt Smith International, Dateline Aquarium Fishing and Vanisi International. The live fish fob value ranged from TOP \$1.25 for Fiji devil and other fish to \$9 for flame hawk, \$20 for imperial angel, and \$25 for clown trigger. The mean value of 13.80 pa'anga is used to estimate fish. The invertebrates, and soft coral fob value of 3.50 pa'anga per piece. For cultured clam, slap, solid and branch corals 3.50 pa'anga, fob value is used. Live coral fob value depends on the species harvested and since most of the exports are small and medium pieces, the fob value used is the mean value between value of small and medium coral which is 6.00 pa'anga per piece. Each company was recommended to harvest within a ceiling of 100,000 fish and 100 tonnes coral rock per annum. The Table below summarises the number of fish and weight of coral (including branch, slap, soft coral and solid/ coral rock) exported in 2000.

**Table 26:** Quantity and FOB Value of Aquarium Fish & Invertebrates Exported in 2000.

Company	Species	Total Weight	Total pieces	Value per Kg	Total Value
Dateline Aquarium	Soft coral		21,555	3.50	\$75,442.50
	Live fish		12,056	13.80	\$166,372.80
	Invert		81,588	3.50	\$285,558.00
	Live Coral		16,335	6.00	\$98,010.00
	Dead Rock	30,501kg		3.00	\$91,503.00

Company	Species	Total Weight	Total pieces	Value per Kg	Total Value
	Giant Clam		7,212	3.00	\$21,636.00
<b>Total</b>		<b>30,501kg</b>	<b>138,746</b>		<b>\$738,522.30</b>
Walt Smith Inter	Soft coral		18,656	3.50	\$65,296.00
	Live fish		15,421	13.80	\$212,809.80
	Invertebrates		33,605	3.50	\$117,617.50
	Live Coral		10,100	6.00	\$60,600.00
	Dead Rock	99,396.07kg		3.00	\$298,188.21
	Giant Clam		1,050	3.00	\$3,150.00
<b>Total</b>		<b>99,396.07kg</b>	<b>78,832</b>		<b>\$757,7661.51</b>
Vanisi International	Soft Coral		102	3.50	\$357.00
	Live Coral		68	6.00	\$408.00
	Invertebrate		3	3.50	\$10.50
	Dead Rock	7,562kgs		3.00	\$22,686.00
	Giant Clam		200	3.00	\$600.00
<b>Total</b>		<b>7,562kgs</b>	<b>373</b>		<b>\$24,061.50</b>
<b>Grand Total</b>		<b>137,459.07kgs</b>	<b>217,951</b>		<b>\$8340045.31</b>

The aquarium production for 2000 was 48 % greater than 1999. The live coral harvest continued through out the year. There was an increase in the production of Walt Smith International and Dateline Aquarium Fish Company. The Vanisi International started exporting corals last year. It is estimated that 90% of their exports consisted of dead corals.

Aquarium industry generated exports valued at T\$1520230.00 pa'anga fob value in 2000 compared to T\$794729.40 pa'anga in 1999 and T\$485402.70 in 1998.

#### *Miscellaneous*

310 metric tonnes of seaweed were exported in year 2000. amounted to 108500.00 compared to second trial year amounting to \$95263.00 pa'anga. The production of seaweed for the year 2000 was the highest compared to previous years. Most of the seaweed that was exported is from the farms of the two companies Nano Merchandise and Sea Star Fishing Company Ltd.

**Table 27:** Summary of the Marine Products Export (by species) in 2000

Species/ Group	Fob Value (TOP) in 1998	Fob Value (TOP) in 1999	% Proportion Of Increase ( ↑ ) or Decrease ( ↓ ) Of Fob Revenue in 1998 Compared To 1999	Fob value TOP in 2000	% Proportion Of increase ( ↑ ) or Decrease ( ↓ ) Of Fob Revenue in 2000 Compared To 1999
Dried Shark fin	4,320.00	47,025.00	↑ 90	129600.00	↑ 64
Tuna	663,600.00	1,312,710.00	↑ 49	5187936.60	↑ 74
Fresh tuna					
Frozen locally	206,500.00	1,051,645.00	↑ 80	1076950.00	↑ 2
Cannery	58,150.00	281,740.00	↑ 79	1463880.00	↑ 80
Snapper & Grouper	639,800.00	931,350.00	↑ 31	924891.00	↓ 1
Aquarium fish & coral (including giant clams and live coral)	485,402.70	616,991.60	↑ 29	1520230.00	↑ 59
Seaweed	22,180.00	9,5263.00	↑ 76	108500.00	↑ 12
<b>Total</b>	<b>2,402,927.30</b>	<b>4,336,724.00</b>		<b>10346037.60</b>	



### *Export*

The export value for the marine products exported during the year 2000 were estimated to over 10 million pa'anga compared to T\$433,8224.60 in 1999. However the true return to the Kingdom is much higher because the price of fish in the overseas market is very high.

### *Fish fences*

A number of problems were encountered in the registration and licensing of fish fences as well as the decline in the highly valued species such as mullet and other coastal fish. Applicants for fish locations argued as to who was entitled to the best position. As the problems mounted together with the big decline of high valued mullet and other coastal fish, the Ministry decided that the current policy be reviewed. Factors such as mesh sizes, seasonal closure, distance from one fence to another, and total closure of breeding grounds were reviewed.

The licensing period is valid for only twelve months. After this period the Ministry of Fisheries take full control of all locations and also decides who will license the fish fence location for the next twelve months

### *Enforcement and prosecution*

The staff members were appointed as authorised officers and fisheries inspectors to monitor compliance with the Fisheries Act and its Regulations. These officers visited the landing sites twice every week to check the undersized lobsters and giant clams, as well as turtle fishing during the closed season from August to February. During the year 2000 there were no offences that was prosecuted.

### *Tuna Management and Development*

Currently Tonga has no access agreements with distant water fishing nations. There is however a multilateral access agreement (US Tuna Treaty) with the United States of America for tuna purse seiners to operate in Tongan waters. There is very little activity under this US Tuna Treaty in Tongan waters due mainly to the productivity of the zone.

In January 2000 a team from Forum Fishery Agency Secretariat and Secretariat of Pacific Community were in Tonga for two weeks drafting a Tuna Management and Development Plan for Tonga and also carried consultative meetings with MOF's Senior Officers, local fishermen and operators of local fishing vessels.

During those consultative meetings local fishermen and operators were briefed on:

- what the Management plan can do
- the structure of the plan
- objectives of the plan,
- strategies and
- stability

Though the plan is still in a draft situation, it is well supported by both fishermen and operators.

### *Monitoring Control Surveillance in Tonga*

For several years now the Ministry of Fisheries (MOF) considered the importance of having a Tonga National Monitoring Control and Surveillance (MCS) Network Committee to coordinate and guide fishery

activities in our waters. In October 1999 the Ministry of Fisheries arranged a meeting with heads of Government Departments and representatives from local fishing companies.

The main objective of the meeting was to establish a National MCS Network Committee in Tonga. MOF was very fortunate to have the Deputy Director of the Forum Fisheries Agency (FFA), Ian Cartwright in Tonga during that time, to provide a very clear and encouraging brief background to the MCS operations undertaken by the Agency on behalf of the Forum Fisheries member countries.

After that important meeting the Ministry of Fisheries and Tonga Defense Services (TDS) were given the task of preparing a Cabinet Memorandum. In August 2000, His Majesty's Cabinet approved the establishment of this committee as National Maritime Surveillance Committee, to be chaired by Commander of TDS.

### *VMS*

The Forum Fisheries Member Countries Vessel Monitoring System (FFA VMS) site in Tonga is the Ministry of Fisheries. As the FFA VMS was primarily aimed at distant water fishing nations (DWFNs) the status of Tongan waters regarding Foreign Fishing Vessels, limited the use of VMS in Tonga, as only our Patrol Boats can be monitored. Therefore it is important to continue to maintain and have effective communication with patrol boats, air patrol and other fishing vessels that are out at sea especially in times of emergency calls and queries that may concern foreign fishing vessels fishing within Tonga waters. Currently radiotelephoning is the only means of communication between the fisheries and its other branches in Ha'afeva, Nomuka and Niuatoputapu. The Ministry of Fisheries would like to see that effective and efficient communication is continued in the present time and into the future in the usage of radio-telephoning. In order for the Ministry to continue its usage of radio-telephoning it is important that it be maintained at all times especially when it breakdown, it is important that the users of this machine be able to fix it on the spot rather than having to seek assistance from outside which is costly, time consuming especially in times of emergencies. Therefore the Ministry considers this request to be one of priority as there is only one staff member at the moment who is qualified in skill and knowledge of how to fix the radio telephone the Ministry is eager to train one of its staff members so that he would gain the knowledge and skills to be able to fix the radio telephone.

Currently there is no direct problem with VMS in Tonga except on several occasions when communication is cut off due to telephone line problems.

Our newly established National MCS Network Committee is in support of the implementation of FFA VMS and looking forward for the FAO funded review of the Tonga Fisheries Act to be the avenue whereby all VMS requirements for Foreign Fishing Vessels can be enshrined and implemented.

### *Licensing*

As mentioned above Tonga have no access agreement with Distance Water Fishing Nations. Tonga may issue fishing license to Locally Based Foreign Fishing Vessels (LBFFVs) since the policy regarding the closure of Tongan Waters to all foreign fishing vessels was rescinded according to a Cabinet Decision on 9<sup>th</sup> September 1999. Several Local Fishing companies make use of this opportunity and have applied for fishing licenses in this respect. The decision to open the Tongan waters for such fishing license was to accommodate the needs of local fishing companies, as they can now be able to charter vessels from other countries. During the years before that Cabinet Decision was passed, all fishing vessels in the Tongan waters must be owned by Tongans or a local fishing company which have more than fifty percent of its shareholders as Tongans.

The LBFFVs license have several important terms and conditions to follow and comply with, and failure to do so may result in the suspension or loss of license in addition to other penalties that may incurred.

### 2.3.2 Support Services

The Support Services consist of Boatbuilding and Engineering Section to support other sections within the Ministry and to provide technical services for the private sector.

#### *Boatbuilding*

This section is responsible for the construction of small fishing vessels. It also provides maintenance and renovations for the Ministry's vessels.

In this Section, there are 5 staff and one labour as follows.

Name	Post
'Aisea Tupou	Senior Fisheries Officer
Tevita Taulafo	Technical Officer Grade 11
Toma Kauvaka	Technical Officer Grade 11
Sione Fine Tupou	Fisheries Trainee
Sekope Tiueti	Fisheries Trainee

#### *Staff movement*

Sioeli Valu (Fisheries Trainee) has been transferred to the Vava'u Fisheries

#### *Fishing Vessels*

The fishing vessels (23-footer) for Nomuka and Ha'afeva fisheries was successfully completed. The fishing vessel for Niuatoputapu is expected to be completed by early 2001.

This section also supports fishermen by providing them with free estimates on fishing wooden vessels.

#### *Future Needs*

- Training is required for staff
- New Tools and Equipments
- Renovations needed for Boatbuilding shed and Boatyard store

#### *Engineering*

The Engineering Section under took the overall mechanical responsibility for the Ministry of Fisheries fishing Vessels, refrigeration plants and vehicles.

Staff complement is 7 officers and two drivers.

Name	Post
Sioeli.K.Pasikala	Head of Engineering(FO) Fisheries Officer
Lomio Tonga	Fisheries Officer
Pala'a Mausia	Senior Fisheries Assistant
Viliami Tonga Vaka	Senior Fisheries Assistant
'Uluaki Vaipuna	Fisheries Assistant
Lisiate Pola	Fisheries Trainee

Fonua Kite Fanua	Fisheries Trainee
Mangisi Tupou	Driver
'Etuini Kaufusi	Driver

### *Training*

The Head of this section attended a training in Japan on how to operate the New Intake Sea Water Supply System. Lomio Tonga, Fisheries Officer started his rounds on observation and rechecking ice block machines in the outer islands that included Ha'apai and Vava'u Fisheries.

There was the opportunity to run an Outboard Motorboat training in the outer islands that included 'Eua, Ha'afeva, Pangai (Ha'apai) and Vava'u. The participants were mostly local fishermen. The New Zealand Government through NZODA funded this training.

Additional staff are needed the following areas:

- 1x refrigerator engineer

**Table 28:** Ministry's Vehicles in 2000

Years	Registration No.	Type	Location	Standard	Fund	Remarks
1984	P1015	Toyota Hilux van		Tendered	F.A.O	
1987	P125	Issue Truck		Tendered	JICA	
1990	P936	Toyota Hiace	Sopu	Fair	Treaty Fund	
1992	P149	Toyota Hilux	Sopu	Fair	JICA	On Public Tender
1992	P1118	Toyota Hilux	Tuimatamoana Market	Fair	JICA	Transferred from the main office.
1992	P1119	Toyota Hiace	Sopu	Fair	JICA	
1994	P1026	Toyota Hiace	Sopu	Good	Treaty Fund	
1997	P152	Toyota Hillux	Sopu	Good	Treaty Fund	
1997	P1120	Toyota Hillux	Sopu	Good	JICA	Secretary For Fisheries

### *Ice Plant*

Most our refrigeration facilities and ice block machines are in very poor condition and need to be replaced.

### *Constraints*

- Lack of Spare parts and the required working equipment

### **2.3.3 Marketing and Market Development Section**

The management and operation of the fish market (Tuimatamoana) during 2000 are considered under the following headings: Personnel, Financial Status, Magnitude of Market Services, Facilities and Equipment and Constraints/ Problems.

### *Personnel*

The market has four established staff and five laborers but during the year 2000, some temporary movement among the established staff took place as shown on the table below.

Names	Post	Responsibilities	Remarks
Po'uha Hasiata	Fisheries Officer	Market Manager and OIC of	Took 6 months vacation

		Tuimatamoana Fish Market.	leave 8/2 – 6/8/2000.
Silika Ngahe	Technical Officer Grade II	Acting on Mr. Hasiata while he was on leave.	Returned to Head Office.
Makalita V. Mafle'o	Senior Fisheries Assistant	Handle all financial aspects of the market and keep records.	
Mafi Toutai Havea	Fisheries Assistant.	Operate and control the cold storage facilities, fish sales and fish landing areas and also collect market fees and ice sales.	Take 4 months vacation leave 4/9/00-30/1/01
Siosua Tuamei'api	Fisheries Trainee	Handle all Mr. Havea's duties while he is on leave.	
Palu Faupula	Fisheries Trainee	Handle some clerical duties and statistic collection.	Promoted to Computer Assistance

### Financial Status

In the 2000 - 2001 FY, the Program Budget provides T\$58,747.00 under Recurrent Estimates for market operation and revolving fund amounted for T\$130,001.00 under the Development Estimates for market development.

**Table 29:** Program Budget under Recurrent Estimate

Program Codes	Description	Allocation	Exp.1/7-31/12/99	Bal. as at 31/12/99
24:042001:1001:0-00-0	Salaries	19,246.00	10295.39	8950.61
24:042001:1002:0-00-0	Staff Overtime	1,000.00	852.74	147.26
24:042001:1003:0-00-0	Staff Allowance	1,000.00	158.58	841.42
24:042001:1101:0-00-0	Labour Wages	3,000.00	2,821.85	178.15
24:042001:1102:0-00-0	Labour Overtime	1,000.00	855.42	144.58
24:042001:1203:0-00-0	Telecom Charges	2,000.00	172.34	1,827.66
24:042001:1301:0-00-0	Fuel	1,000.00	463.88	536.12
24:042001:1307:0-00-0	Maint. Office Building	2,500.00	843.60	1,656.40
24:042001:1310:0-00-0	Maint.Specialized Equip	4,000.00	1,804.88	2,195.12
24:042001:1402:0-00-0	Electricity Supply	15,000.00	13,537.39	1,462.61
Program Codes	Description	Allocation	Exp.1/7-31/12/99	Bal. as at 31/12/99
24:042001:1405:0-00-0	Water Supply	2,000.00	1,620.45	379.55
24:042001:1406:0-00-0	Office Supply	1,000.00	138.24	861.76
24:042001:1407:0-00-0	Printing & Stationery	1,000.00	58.20	941.80
24:042002:1310:0-00-0	Maint.Specialized Equip	5,000.00	-	5,000.00
24:042003:1420:0-00-0	Research	1.00	-	1.00
<b>TOTAL</b>		<b>58,747.00</b>	<b>33,622.96</b>	<b>25,124.04</b>

**Table 30:** Program Budget under Development Estimate

Program Codes	Description	Budgeted Allocation	Revenue deposited as from 1/7-31/12/00	Expenditure from 1/7/00-31/12/00	Remarks
24:042001:1002:0-92-0	Staff Overtime	3,000.00	1,353.97	-	
24:042001:1101:0-92-0	Labour Wages	7,000.00	10,531.78	1,626.44	
24:042001:1102:0-92-0	Labour Overtime	2,000.00	1,111.69	343.25	
24:042001:1307:0-92-0	Maint. Office Building.	5,000.00	333.95	-	

24:042001:1308:0-92-0	Maint. Office Equip.	1,000.00	1,007.84	100.00	
24:042001:1309:0-92-0	Maint. Of Vehicles	1,500.00	1,201.85	-	
24:042001:1310:0-92-0	Maint.Specialized Equip	5,000.00	-	-	No fund deposited.
24:042001:1402:0-92-0	Electricity	20,000.00	4,669.40	-	
24:042001:1406:0-92-0	Office Supply.	5,000.00	-	-	No fund deposited.
24:042001:1418:0-92-0	Training	500.00	-	-	No fund deposited.
24:042001:1420:0-92-0	Research	80,000.00	-	-	No fund deposited.
24:042002:1310:0-28-0	Maint.Specialized Equip	0	-	-	
24:042003:1420:0-61-0	Research	1.00	-	-	No fund deposited.
<b>Total</b>		<b>130,001.00</b>	<b>20,210.48</b>	<b>2,069.69</b>	

**Table 31: Revenue Income Collected:1st January - 31st December, 2000**

Revenue Codes	Sources	1/1-30/6/00	1/7-31/12/00	TOTAL 2000
	Cold Storage Fees	1,689.99	188.76	1,878.75
	Sale of Ice	-	12,670.44	12,670.44
	Table Rental Fees	2,683.62	3,109.71	5,793.33
	Hire of Weighing Scales	1,131.00	820.00	1,951.00
	Hire and use of Cooler Boxes	3,344.00	1,722.00	5,066.00
	Sundries	1,334.50	1,699.57	3,034.07
24:042001:1418:0-92-0	<b>Market Revolving Account</b>	10,183.11	-	
24:042000:0735:0-92-0	<b>Market Revolving Account</b>	-	20,210.48	
<b>Market Total Revenue</b>	<b>2000. *</b>	<b>10,183.11</b>	<b>20,210.48</b>	<b>T\$30,393.59</b>
MFV. Ekiaki	Fish Sales during 2000	4,415.90	1,020.78	5,436.68
MFV. Takuo	Fish Sales during 2000	6,105.95	15,181.19	21,287.14
24:031401:1012:0-92-0	<b>Ekiaki Revolving Account</b>	4,415.90	1,020.78	
24:031404:1012:0-92-0	<b>Takuo Revolving Account</b>	6,105.95	15,181.19	
<b>Fish Sales Total Rev.</b>	<b>2000 *</b>	<b>10,521.85</b>	<b>16,201.97</b>	<b>26,723.82</b>
<b>Total Revenue</b>	<b>* (Market Plus Fish Sales)</b>	<b>T\$20,704.96</b>	<b>T\$36,412.45</b>	<b>T\$57,117.41</b>

### *Magnitude of Market Services*

#### *Cold storage of goods*

The following table shows the type and weight of products that the market facilities could freeze and store during 2000. From the table, the 26.89 m/ton of 2000 compare to 171.7 m/ton of 1999 shows that these equipment were inefficient and too old for providing their services for the public and to collect more revenues for the market.

**Table 32: Type and weight of products that were frozen and stored at the market cold store in 2000**

Products	Weight in Kg.	Weight in M/Tons
Seafood (Fish,lobster etc.)	7,105.7	7.11
Fishing Bait	-	-
Livestock Meat	17,852.0	17.85
Agricultural Products	1,880.0	1.88
Others (Soft drinks )	51.0	0.05
<b>Total</b>	<b>26,888.7</b>	<b>26.89</b>

#### *Fish Landing*

The weight of marine food products landed at Tuimatamoana Market for export or local sales during 2000 is given in Table 33.

Sixty-one percent of the total landed products were exported and the remaining 39% were sold locally, more consumption and gifts for relatives and friends. There was a big increase in total landing in the year 2000, which was 544.8 mt compare to 211.7 mt of 1999. Increase in tuna fishing fleet and new companies interested and entered into the Fishing Industries basically caused it. About 85% of the total landing of 2000 were from Tuna Fisheries as shown on the table below and the remaining 15% were from bottom line and reef fisheries.

**Table 33:** Weight of marine food products landed at Tuimatamoana Market during 2000.

Products	Weight (kg)	Fisheries Landing	Weight (kg)
Export	330,0601.65	Tuna Fisheries	463,913.50
Local sales or family consume	214,167.75	Bottom line and Reef Fisheries	80,857.90
<b>Total</b>	<b>544,771.40</b>		<b>544,771.4</b>

### *Ice Production*

During the first three-quarters of the year, no ice was produced and sold to public at the market due to break-down of the old ice machine. A new ice machine has been bought and installed at the market to replace the old ice machine. This new machine can produce 2.5 m/ton of flake ice per 24 hours. At the end of the year 2000, the machine produced and sold for the public about more than 158 m/ton of ice.

### *Facilities and Equipment*

#### *Refrigeration Facilities*

**Table 34:** Facilities and their working condition

Items	Condition during the year	Condition at the end of the year
Air blast Freezer No. 1	Broken since 1998.	Broken (needs repair or replacement)
Air blast Freezer No. 2	Broken since January,2000.	Broken (needs repair or replacement).
Freezer Store No. 1	Broken since February,1999.	Broken (need new parts or replacement)
Freezer Store No. 2	Worked but broken on August,2000.	Broken (need to repair or a replacement).
Freezer/Chiller	Broken since 1998.	Broken (need new one to replace it).
Items	Condition during the year	Condition at the end of the year
Chiller Room	Worked well	Worked well but needs spareparts.
Ice Store	Worked well but not used.	Worked well but need spareparts.
Ice Making Unit No. 1	Broken-down	Dismantled and took to Sopu.
Ice Making Unit No. 2	Same as No.1	Same as No.1
New ice machine.	Installed & operated on September.	Worked well except power failure.

### *Fish Handling Equipment*

**Table 35:** Equipment and their condition

Items	Condition
6 Heavy duty trolley	Only three were working and three were broken.

2	Big fish cutting bandsaw	Old one worked but need repair and services, new one worked well.
1	Small fish cutting bandsaw	Broken and need to repair and service.
4	Manual pallet truck (load easier)	One worked well, one worked unsatisfactory and two were broken.
150	Blue fish crates	Most were broken and the rest are stored and used inside the market.
24	Blue cooler ice-boxes	All in a hiring pool and using inside the market. Some need repair.
8	Hanging weighing scales	6 were working well and using inside the market and 2 were broken.
2	Platform weighing scales	Both worked well.

### ***Vehicles***

#### ***Forklift Truck***

The forklift truck is in good working condition but needs maintenance services.

#### ***Double Cab van (P1118)***

This van was working well during the year but needs a body repair.

### ***Upgrade of Tuimatamoana Market***

The upgrading of Tuimatamoana market should focused on its cold storage facilities and fish retail area. A private fishing company will do the upgrading of a fish processing and packing area.

#### ***Constraints***

- Cold Storage facilities are too old and broken-down where repair and parts were/will be very expensive.
- Lack of fund to meet the operation and maintenance costs.
- Lack of qualified refrigeration engineers.
- Structure of market building doesn't meet the hygienic and overseas market requirement, e.g. HACCP.
- The main electric power supply failure and shut-down affected the machinery operation and services.

#### ***Future Needs***

- Most of cold storage facilities to be replaced to provide better services and increase revenue income.
- Improve the market building structure especially fish retail area and to equip with more hygienic and proper equipment. The roof of the main building requires renovation due to rust and leakage.
- A water blast compressor is required for the cleaning of the market
- A standby generator is very much needed and useful to smooth the machinery power requirement.

### **2.3.4 Post Harvest and Quality Control**

The Post Harvest and Quality Control section is responsible for quality control management to meet international requirements like *Hazard Analysis & Critical Control Point (HACCP)*.

Due to staff shortages, the Head of the Management, Surveillance, and Extension sections, Viliami A. Petelo, Senior Fisheries Officer has also taken over responsibility for Post Harvest and Quality Control. Only three fishing companies in Tonga have been certified as meeting HACCP requirements. They are 'Alatini Fisheries, Sea Star Fishing Company , Maritime Project and Discover Cooperation.



### 2.3.5 Extension

#### *Introduction*

Extension staffs were also involved in Management and Licensing work including surveillance, enforcement, legal matters, and quality control.

#### *Constraints*

One of the major problems faced by this section is the shortage of staff. There is also a need for designated replacement since the head of extension was dismissed and it also lacks a consistent work plan.

#### *'Eua Fisheries sub-station*

No staff is deployed in 'Eua but the Ministry is planning to re-establish the 'Eua Fisheries centre.

#### *Niuatoputapu Fisheries sub-station*

##### *Introduction*

There is only one staff member in Niuatoputapu Fisheries sub-station (NFS), 'Aisea Vailea, Fisheries Assistant. The remoteness of the island makes it difficult for annual servicing of machinery and equipment from Sopa. Despite this, Niuatoputapu Fisheries sub-section has been proceeding well throughout the years except some few improvements on the following areas;

- The ice-making plant was not overhauled during the year, but it is in good working condition.

##### *Equipment*

*Electric generator:* Only one electric generator is used to operate both the cooler and the ice machine. The other generator are broken and needs repair and service.

### 2.3.6 VAVA`U FISHERIES (VFS)

During 2000, these main activities were conducted by the Vava'u Fisheries

A) Major improvement work on the pearl oyster industry which include:

- Distribution of Giant Pearl Oysters to Pearl Farmers.
- Grafting of Round Pearl inside the Blacklip Oyster.
- Grafting of Round pearl inside the wing Oyster (trial).
- Deploying rafts for pearl farmers.
- Deploying spat collectors for Giant Pearl Oysters.
- Transferring the Black Lip Oysters from `Utungake to Koko ( Neiafu Bay).
- Harvesting of spat collectors.
- Harvesting of the Farmers Pearl Oyster

B) Extending and enlarging of long U.N.C.D.F Boats

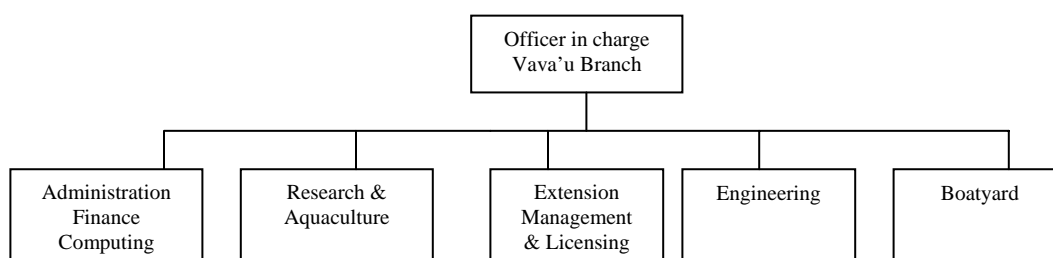
C) Inspection and Licensing of local fishing vessels

The Vava'u Fisheries Section has five subsections:

- 1) Administration, Finance and Computing
- 2) Aquaculture and Research
- 3) Extension and Management & Licensing
- 4) Engineering
- 5) Boatyard

### *Administration*

This subsection is responsible for implementing policy, finance, personnel and management in Vava'u. The administrative structure for VFS 2000 is given below:



Given are the established staff of VFS as at December 2000

Name	Post	Section
'Ofa Moala Fakahau	Fisheries Officer	Officer In-charge
'Aisea Tu'ipulotu	Technical Officer Grade 1	Head of Extension
'Otenili Fisi'ikava	Technical Officer Grade 2	Extension & Management
Toma Kauvaka	Technical Officer Grade 2	Head of Boatyard Section
Siola'a Maximal	Technical Officer Grade 2	Research (Study Leave)
'EpalahameTaufalele	Senior Fisheries Assistant	Extension & Management
Sio 'Ofanoa	Senior Fisheries Assistant	Research & Aqua culture
Koliniasi Hafoka	Fisheries Assistant	Engineer
'Alamoti Fa'uvaio	Fisheries Trainee	Research & Aqua culture
Tekiteki Vailea	Fisheries Trainee	Extension & Management
Sese Malimali	Fisheries Trainee	Research & Aqua culture
Siva'a Fetuani	Fisheries Trainee	Boatyard
Sauaki Talasinga	Fisheries Trainee	Research & Aqua culture
'Emeline Tonga	Fisheries Trainee.	Clerk & Typist

### *Trainings*

Several local and international trainings were conducted at the year 2000 as outlined below:

Participants	Workshop	Duration	Country
'Emeline Tonga	Development of Fisheries Cooperation	17 <sup>th</sup> -20 <sup>th</sup> Jan 2000	Tongatapu
Sauaki Talasinga	Fisheries Officer Training	7 <sup>th</sup> Feb-9 <sup>th</sup> June	New Zealand
Vea Kava	Whale Data Collection	3 <sup>rd</sup> -16 <sup>th</sup> March	New Zealand
	Data collection & Analysis	27 <sup>th</sup> -14 <sup>th</sup> April	Tongatapu
	Whale watching review	18 <sup>th</sup> -20 <sup>th</sup> Sept.	Vava'u
'Alamoti Fa'uvaio	Data Collection & Analysis	27 <sup>th</sup> -14 <sup>th</sup> April	Tongatapu

Ofa M Fakahau	Fisheries Resources & Management	15 <sup>th</sup> May- 25 <sup>th</sup> Sept	Japan
Tekiteki Vailea	Purseiner Observer	2 <sup>nd</sup> – 22 <sup>nd</sup> Nov	Pangopango
Mrs Siliika Ngahe	Sea Food Management	25 <sup>th</sup> - 28 <sup>th</sup> January	Vava'u
Lupe Fakalelu	do		
Ana Latu	do		
Roger Dickie (NZ) Master Fishermen. PIIDS.	Sea safety, radio telephone, GPS navigation( chart work, bottom long line for snapper and bottom long line for tuna)	27 <sup>th</sup> –31 <sup>st</sup> March.	Vava'u
Siouli Pasikala	Outboard Engines	30 <sup>th</sup> –1 <sup>st</sup> December.	Vava'u
Mr. David Lopper	do		

### *Visitors*

Visits to Vava'u in the year 2000.

Name	Reason of Visiting	Date
Mafi Akau'ola	Reviewing of Fisheries Regulations	19 <sup>th</sup> Feb 2000
Manu Tupou(Crown Law)	Reviewing of Fisheries Regulations	
Mr Blaise Kuemelangan (Rome)	Reviewing of Fisheries Regulations	
Akau'ola	Vava'u Royal Agriculture show	14 <sup>th</sup> August 2000

### *Aquaculture and Research*

The main focus of Aquaculture & Research Sub –section is Pearl Oyster Farming. This includes the collection and analysis of data from whales.

Experiments with new species known as *PIPI* in Hawaii or *PINCTADA NIGRA* in English has commenced. These are commercially feasible and abundant in the Vava'u waters. Another significant job was the transferring of the Pearl Oyster Project to the local association of pearl farmers.

The Ministry have a total of 986 mother oysters (Wing Oyster) for spawning, 11,523 spats (counting is September) which is collected from 1999 spawning season and 1,501 Black Lip( Mother Oyster). Some of the local farmers who deployed Spat Collector last year were encouraged by giving each one of them 200 spats of wing Oyster.

### *Extension and Management*

The Extension Section continues to provide technical assistance for Fishermen. Their assistance focuses on gear development and Fisheries information services.

The extension policy is aimed to encourage the production of fish and other marine resources for the domestic and export markets showed.

- Expand and improve fishermen training in gear technology and fishing business management
- Allow interaction between fishermen and the extension section through frequent exchanges of information and consultation

### *Local Fishing Vessels Licensing*

There were 4 local fishing vessels, that were licensed this year and their license is for bottom fishing only, except one, which is also using mini-long line for snapper.

Name of Vessel	Owner	Registration No.	License No.
Lutu he Palelei 1	Hola Blake	LFV 01V	BT 01 V
Lutu he Palelei 2	Hola Blake	LFV 013 V	BT 02 V
Leisina	Pafilio Tangitau	LFV 036	BT 017
Hakula	Jeff Le Stronge	LFV 08 V	GSF 01 V

### *Fish Fence*

Extension Section also responsible for registration and licensing of fish fence. Task included site survey and issues of license. The amount of \$200 were collected from the Fish Fence's License.

Four fish fences were licensed in Vava'u this year. Two of these are located at the Hihifo district (Taoa & Longomapu) and the other two at Hahake District (Koloa & Kenutu).

### *Agriculture Show*

The Ministry of Fisheries fully supported the Royal Agricultural Show this year by preparing some competition for the local fishermen and finding local funds as prizes for the winner of those competitions.

This show was held on August 15<sup>th</sup>, and the Ministry collected T\$1400.00 from the following companies that sponsored the competition.

Company	Amount (T\$)
Sailing Safari	100.00
Kiwi Magic	100.00
Bounty Bar	50.00
Bank of Tonga	50.00
Mooring	100.00
Tonga Development Bank	250.00
Richard Guttenbail	500.00
Pafilio Tangitau	100.00
MBF Bank	50.00
Melinda	100.00
<b>Total</b>	<b>1400.00</b>

### *Engineering*

This section is responsible for the overall mechanical management of the Ministry's vessels, outboard engine, vehicles. They also assist problems with outside private fishing vessels and outboard engines

Vava'u Fisheries Vehicles 2000

Motor Vehicles	Condition
Van L400	Sold by tender
Double cap van P39	Good Condition

Forklift	Not working, needs spare parts
Motor Bike	Not working, needs spare parts
<b>Outboard Engines</b>	
55 Hp Johnson	Still in good condition
60 Hp Marina	Broken, needs spare parts

#### ***BOATYARD***

Maintenance and repairing of local fishing vessel is a continuing and ongoing working process at the VFS. Major constraints of this section are lack of electrical tools and shortage of staff.

Such maintenance is outlined below:

<b>Job Description</b>	<b>Date</b>
Repair Hola Blake Fishing vessels.(UNCDF)	26 <sup>th</sup> Jan 2000
Repair the Free Wesleyan Church of Ovaka Fishing vessel(UNCDF)	9 <sup>th</sup> Feb 2000.
<b>Job Description</b>	<b>Date</b>
Repair Taniela Koli's fishing vessel	14 <sup>th</sup> , March 2000.
Extending of Valupe'i Vaisime fishing vessel.	26 <sup>th</sup> April 2000.
Upgrading of Fisheries Quarters (Boatyard Section).	2 <sup>nd</sup> May 2000.
New Furniture for the Fisheries Conference room.	29 <sup>th</sup> Sept 2000.

#### ***Future Development***

During the year 2000, several projects were planned using local funding while the Ministry seeks financial support from donor agencies abroad.

- Building a hatchery for Oyster Farming
- New local fish market
- New export facilities
- New Ice-Block machine
- New fishermen wharf
- A dry dock yard and facilities

#### ***Major Successes in 2000***

These are the major success of 2000 the major constraints of further developments were due to lack of funding.

- Distribution of Giant Pearl Oysters to Pearl Farmers
- Grafting of Round Pearl inside the Blacklip Oyster
- Deploying rafts for Pearl farmers
- Deploying spat collectors for Giant wing pearl Oysters
- Transfer the Black Lip Oysters from 'Utungake to Koko (Neiafu Bay)
- *Grafting of Round Pearl inside the Wing Oyster (TRIAL)*
- Harvesting of spat collectors
- Harvesting of the Farmers Pearl Oyster
- Extending and Enlarging of long U.N.C.D.F Boats
- Inspection and Licensing of local fishing vessel

### **2.3.7 Ha'apai Fisheries**

The scattered nature of the Ha'apai island group, coupled with other constraints, continued to pose challenges to the Ministry of Fisheries' efforts in Ha'apai. Revenue was earned through pilot commercial activities, the sale of ice, some boat and engine repairs, and miscellaneous sources. The Nomuka and Ha'afeva substations functioned primarily as providers of ice, while other ongoing projects, including work with pearl oysters and giant clams, were undertaken by the Pangai staff.

### *Personnel*

There were twelve established posts at the Ha'apai Fisheries office during the year 2000, as well as one Peace Corps Volunteer. Ten local staff were employed in the Pangai office, while the other two were stationed in Nomuka and Ha'afeva.

Following are the details of the Ha'apai staff, as at the end of 2000:

NAME	POST
Tala'ofa Loto'ahea	Senior FA, OIC Ha'apai
Sosefina Vili	Senior Fisheries Assistant
Fanueli Tonga'onevai	Senior Fisheries Assistant
Losilini Koloa Loto'ahea	Computer Operator Gr.III
Siosifa Fisi'ipeau	Fisheries Assistant
Sione Fine Tupou	Fisheries Assistant
Sione Tu'imoala Mailau	Fisheries Trainee
Talia'uli Napa'a	Fisheries Trainee
Moana Nau	Fisheries Trainee
Sione Faleta Fili	Fisheries Trainee
Tevita 'Atana	Senior Fisheries Assistant, OIC Ha'afeva
Fotu Tu'ionetoa	Fisheries Trainee, OIC Nomuka
Daniel Clem	Peace Corps

### *Staff Movements*

There were no staff transfers or changes in the year 2000. Sosefina Vili took three months leave from May to August of 2000.

### *Training*

The Ha'apai staff were represented at three different training programs in 2000:

Name	Course	Duration	Destination
Sione Faleta Fili & Losilini Loto'ahea	Data Collection	2 Weeks	Nuku'alofa
Tala'ofa Loto'ahea	Coastal Management	2 Month	Japan
Daniel Clem & Sione Mailau	Management of Natural resources	1 Week	Samoa

### *Aquaculture*

The Pangai staff continued its work in blacklip pearl oyster rearing and collection, as well as rearing of juvenile giant clams and release of green snails to local reefs.

### *Giant Clams*

Inspection of clam circles showed that two of the clam circles created previous to 1999 – one off Ha'ano and another at Ha'afeva - remained through the year. The Ha'apai Conservation Area Project have placed signs near both clam circles, which will hopefully deter any interference or theft while attracting the occasional tourist.

Storms in early 2000 disturbed the juvenile giant clams being reared near the Fisheries compound in early in 2000. Some of the clams were lost to the storms, but several hundred survived and are currently growing well.

### *Green Snails*

240 snails were released at the southwest end of Uoleva (Ava 'Auhangamea) in August, after releasing 800 snails in May. Surveys to recover snails released in the previous year yielded only a few snails. One snail that still had its tag was measured and compared to its size from the previous year, showing growth of 9 cm.

### *Blacklip Pearl Oysters*

The brood stock of blacklip oysters, comprised of oysters gathered locally or received from Nuku'alofa in the previous year, continued to grow and seemed to fare well by being moved further offshore to clearer waters. By early 2001 there were 238 blacklip oysters still living on our oyster raft line – a loss of 170 from late 1999. These oysters are monitored and cleaned every two or three weeks to try to minimize mortality.

In April, with the help of Idris Lane, consultant from ICLARM in the Solomon Islands, 11 spat collectors were constructed and deployed in the waters of the following islands: Lifuka, 'Uiha, 'Uoleva, Ha'afeva, Tungua, Teapua, Matuku, and Kotu. Four months later the collectors were harvested by the Fisheries staff to ascertain the presence of blacklip oysters. No blacklip spat were found. The collector line placed at Kotu was not recovered, and we believe it was stolen. A second harvest of the remaining collectors was to be undertaken in March, 2001.

### *Japanese winged pearl oysters*

500 Japanese winged oysters were received from Vava'u in August. They were first placed in trays in which they could grow safely until large enough to drill and be hung from our brood stock line. Approximately 50 oysters had died by the end of the calendar year. (By early 2001 all the oysters had reached the size appropriate for drilling and had been hung from lines, and were being routinely cleaned.)

### *Eucheuma (cottonii)*

The small raft of eucheuma, which was placed just off Pangai after being moved from Felemea, was removed after we found that all the eucheuma was eaten by fish.

### *Agriculture Show*

The majority of the Fisheries' time in the month leading up to the Agriculture Show was devoted to preparations for the seafood displays, competitions, and other duties related to the show. The Fisheries portion of the show featured displays of our aquaculture projects, displays of locally-caught seafood by both the staff and local communities, and competitions in fishing and seafood preparation.

### *Workshops and Trainings*

Two workshops dealing with seafood preparation were held in 2000, in both January and November, the first being held in Pangai and the second being held in Holopeka and Ha'ano. The first workshop, led by Silika Ngahe and several staff from Tongatapu, taught local women to process fish and prepare seafood in different ways, the idea being that these women would use the methods to enhance their small businesses, such as guesthouses, restaurants, and small shops.

The second workshop focused specifically on fish smoking. This workshop was funded by the Peace Corps through a Small Projects Assistance grant proposed by the staff Peace Corps volunteer, as a follow-up to the first workshop. The fund provided \$2,370 for purchase of materials for the construction of three smokehouses and other supplies for the workshop. One house was placed in Ha'ano, one in Holopeka, and the third will be kept at the Fisheries compound for future training. The houses placed in villages were done so with the understanding that if they are not used actively by the communities the houses can be repossessed by the Peace Corps and Fisheries and placed elsewhere.

In April a one-week training course was held in Pangai for local fishermen, led by Roger Dickie, masterfisherman from New Zealand. The course dealt with sea safety, navigation, and also bottom longline fishing techniques. Approximately twelve local fishermen participated in the program.

### *Fish Aggregating Devices*

A proposal was written and submitted to the FAO's Telefood Project to supply funds or materials to construct and deploy to deep water FADs in the waters of Ha'apai. At the conclusion of the year 2000 we had still not received a final word on our proposed project. Discussions with fishermen revealed that the provision of FADs is one of their main wants here in Ha'apai, so the search for funding for such provision should be ongoing.

### *Data Collection*

Fisheries staff continued with the collection of data from the local fishermen, primarily by meeting fishermen at boat landings or with fish buyers in Holopeka, Foa, and at the wharf in Pangai. Data on the number of individuals caught per species per fishermen were collected and entered into the Fisheries database program. Data collection was limited by the availability of Fisheries vehicles, so collection was irregular.

### *Meetings*

In February a meeting was held with local fishermen to discuss the Amendment of the Fisheries Act. The meeting was facilitated by Deputy Secretary for Fisheries Mafi 'Akau'ola, and two lawyers: Manu Matavai Tupou from the United Kingdom and Blaise Kuemlangan from the Food & Agriculture Organization, Rome.

A meeting was held with Lindsay Chapman, Fisheries Development Officer of SPC, to assess the potential and interest in development of tuna fishing and other fisheries development ideas here in Ha'apai. Approximately one dozen local fishermen attended the meeting, and expressed interest in more ice machines, FADs, and the development of small scale longlining for tuna.

### *Boatyard and Engineering*

Inboard and outboard engines were repaired by the staff engineer. Revenue collected from these activities is detailed in the table below.

**Table 36:** Total Revenue collected by the Ministry of Fisheries, Ha'apai



Month	Revenue from Ice-Block	Boatyard & Engineer	Fisheries Revenue	Total
Jan	3361.10		9.00	3370.10
Feb	1375.00	3.30		1378.30
Mar	1049.00	29.04		1078.04
April	231.00	6.00		237.00
May	925.60		6.00	931.60
Jun	1316.00		6.00	1322.00
Jul	878.50		19.20	897.70
Aug	2096.00	3.30	9.00	2108.30
Sep	2054.20			2054.20
Oct	1580.50			1580.50
Nov	834.30			834.30
Dec	137.52			137.52
<b>Total</b>	<b>15838.72</b>	<b>41.64</b>	<b>49.20</b>	<b>15929.56</b>

### *Ice Machine*

The ice machine suffered numerous breakdowns throughout the year 2000. Revenue collected from sale of ice is shown above.

### *Enforcement of Regulations*

No fishermen were prosecuted for fisheries violations. This is due primarily to the infrequency of enforcement and a policy of the staff to give violators as many as three warnings before pursuing prosecution. As was the case in the previous year, this policy of leniency was adopted in order to maintain amicable, working relationships with the fishermen. Very little staff time was devoted to enforcement of regulations or thorough examinations of fishermen's catches.

### *The Fisheries Compound, Pangai*

Strong winds or cyclones experienced in recent times inflicted damage upon the Fisheries compound in Pangai, suggesting that a more serious cyclone could threaten the office, boathouse, vessels, and housing in the future. Construction of a foreshore might help to protect the compound from serious damage.

Work done on the compound included construction of a fence around the Fisheries housing compound, replacement of windows in the office, installation of new shelves in the kitchen, and other minor improvements around the compound.

A Fisheries house was exchanged for a larger house that had been used by the Ministry of Agriculture & Forestry for many years. Renovation of this house was proposed to take place in 2001.

### *Vehicles and Vessels*

Both Fisheries trucks (P935 and P103) were in working condition for most of the year 2000, though P935 was sidelined by damage from a collision.

The MV *Vete* was disabled when its engine blew out at and at present is still awaiting the delivery of a replacement engine.

The fibreglass skiff, and the entire Fisheries' marine activities, depended on a single 25-hp. engine for most of the year 2000. (A new 40Hp engine was received in March 2001). Slight repairs to the hull of the skiff were performed as needed.

### *Other Equipment*

As mentioned, a smokehouse was constructed that is to be kept at the Fisheries compound. Two new 100-cm scuba tanks were ordered from Australia. Two used regulators and two used BCDs were received from the Vava'u Fisheries station. The used equipment is in fair to poor condition, and will likely need to be replaced in the near future.

### *Nomuka and Ha'afeva*

Selling of ice, and the various maintenance and upkeep activities to support the ice machine, demanded most of the time of the staff at the outer island substations, as both staff work alone at those sites.

### *Constraints*

There were numerous fundamental constraints on the activities of the Ha'apai Fisheries stations, due primarily to issues of funding, as well as a low level of training and relevant education amongst the staff on fisheries related matters. Lack of training and education spells low motivation to pursue projects, and the inadequacies of the budget make it difficult to do things when skill and motivation *are* in abundance.

The Ha'afeva and Nomuka stations could use a labourer at each site to allow the Officers-In-Charge to pursue other activities without having to abandon the ice machine. As of now, both OIC's are more or less required to be at the ice machines throughout each day, meaning all other missions of the Ministry have to be virtually abandoned at those sites.

## **3. Miscellaneous**

### **3.1 USA Treaty on Fisheries**

Since the implementation of the Treaty, Tonga received the following amounts under the 15 % shares in each licensing period. These funds were paid directly to general revenue each year.

Licensing Period	10 <sup>th</sup> (1997)	11 <sup>th</sup> (1998)	12 <sup>th</sup> (1999)	13 <sup>th</sup> (2000)
Amount (US\$)	149,722.98	148,446.53	148,661.22	148,131.22
T \$	230,769.00	2118,818.59	230,947.99	284,584.02

### *Project Development Fund*

The balance of Project Development Fund as at December, 2000 is T\$180599.25. The Forum Fisheries Agency for Fisheries projects administers these funds.

### **3.2 Conclusions**

Some of the objectives set out in our Strategic Plan goes unachieved due to some of the major constraints that makes it difficult for each sector to achieve their goals. These constraints mainly result from the lack of having qualified staff and limited funds.

However the Ministry of Fisheries continues to overcome these constraints mostly by providing recruitment to existing staff and seeking assistance from overseas donors agencies.

The Ministry is confident that the report will be a sound basis for much needed reform within the Ministry as a solid platform for the development of the fishing industry in the Kingdom.