Seychelles Fishing Authority

2013 Annual Report

Responsible Fishing for Sustainability

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The Government of Seychelles,
Ministry of Natural Resources and Industry

Seychelles Fishing Authority

Annual Report

2013

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Contents

Acronyms viii

Foreword x

Chapter 1 - Structure And Functions 1

Chapter 2 - Economic Contribution of The Fisheries Sector 3

2.1 General Observation 3

2.2 Employment 5

2.3 Production of Fish and Fish Products 5

2.4 Revenue from Industrial Tuna Fishing Activities 8

2.5 Trade in Fish and Fish Products 11

2.5.1 Exports of fish and fish products 11

2.5.2 Imports of fish and fish products 13

2.6 Foreign Currency Flows 15

Chapter 3 - Industrial And Semi Industrial Tuna Fishing Activities 16

3.1 The Purse Seine Fishery 16

3.1.1 Catches, fishing effort, catch rates and species composition 16

3.1.2 Spatial distribution of catch 18

3.1.3 Transhipment and landings in Port Victoria 20

3.2 The Longline Fishery 21

3.2.1 Catches, fishing effort, catch rates and species composition 22

3.2.2 Fishing Grounds Exploited 24

3.3 The Semi-industrial Fishery 26

3.3.1 Vessels active and fishing effort 26

3.3.2 Total catch and catch rates 26

3.3.3 Species composition 27

Chapter 4 - Artisanal Fishery 29

4.1 Catch 29

4.2 Fishing Effort 31

4.3 Species Composition 32

4.4 Lobster fishery 33

4.5 Sea Cucumber Fishery 34

Chapter 5 - Aquaculture 36
5.1 Aquaculture Production 36
5.2 The Mariculture Master Plan Project 36
Chapter 6 - Research Projects 38
6.1 Monitoring and Assessment of the Lobster Stocks on the Mahé Plateau Using a Multidisciplinary Approach 38
6.2 Understanding the Residency, Movement and Habitat Use of Grey Reef Sharks (*Carcharhinusamblyrhyncos*) along the West Coast of Mahé, Seychelles 39
6.3 Assessment of the Sea Cucumber Stock and Determination of Length/Weight Index as a Size Limit Control Towards a Management Measure 40
6.4 Seychelles Ocean Temperature Network 41
6.5 Balancing Risks with Benefits Associated with Consumption of Swordfish: From Local to Global Case Study (CONSWO) 42
6.6 Estimation of Maternal Effects on the Sustainability of Large Pelagic Populations (EMOTION) and Changes in the Biochemical Composition of Tropical Tunas and its Effects on Meat Quality (CANAL) 43
6.7 Understanding the Ecology, Demographics and Physiology of the Spine Foot Shoemaker in Support of Improved Fisheries Management 44
6.8 Tagging of Large Bull and Tiger Sharks 47
Chapter 7 - Fisheries Development 48
7.1 Credit Facilities to the Fisheries Sector 48
7.2 Fisheries Incentives 49
7.2.1 GST and Trade Tax Concessions 49
7.2.2 Registration 50
7.2.3 Fisheries Development Fund 50
7.3 Fisheries Development Facilities 51
7.3.1 Ile du Port Zone 14 51
7.3.2 Providence Fishing Port Zone 6 52
7.3.3 Bel Ombre Fisheries Development Project 53
7.3.4 Victoria Quay Facility 53
7.4 Ice Plants 54
7.5 Promoting Value Addition 54
7.5.1 Participation in Unifest 55
7.5.2 Refurbishment of the Fish Processing Lab 55

7.5.3 Consultation with potential investors *55*
7.5.4 Participating in the SEAFEX International Seafood exhibition in Dubai *56*
Chapter 8 - Fisheries Management 57
8.1 Implementation of the National Plan of Action for Sharks (NPOA-Sharks) 57
8.2 Sea Cucumber Fishery Management 58
8.3 EAF-Nansen Project 60
8.4 Seychelles National Scientific Observer Programme 61
Chapter 9 - Monitoring Control And Surveillance 63
9.1 Fisheries Monitoring Centre (FMC) 64
9.1.1 Vessel Monitoring System (VMS) *64*
9.1.2 VMS on local fishing fleet *66*
9.1.3 VMS on industrial fishing vessels *66*
9.1.4 Innocent passage *66*
9.1.5 Entry and exit reports *67*
9.1.6 Transhipment *67*
9.1.7 Longliner transhipment *67*
9.1.8 Purse seiner transhipment *68*
9.1.9 Statistical documents *69*
9.1.10 Data exchange *72*
9.2 Fisheries Control 73
9.2.1 Industrial sector *73*
9.2.2 Local fishing licences *75*
9.2.3 Sea cucumber licences *75*
9.2.4 Lobster licences *76*
9.3 Fisheries Surveillance 76
9.3.1 Port state control *77*
9.3.2 Compliance inspection *78*
9.3.3 Land patrol *78*
9.3.4 Regional fisheries surveillance *79*
9.3.5 Patrol vessels *80*
9.3.6 Aircrafts *80*
9.3.7 Vessels apprehended *80*
9.3.8 Piracy *81*
9.3.9 Regional MCS effort *81*
Chapter 10 - International Co-Operation 82
10.1 EU/Seychelles Fisheries Partnership Agreement 82

10.2 British/Seychelles Fisheries Commission (BSFC) 84
10.3 Indian Ocean Tuna Commission (IOTC) 85
10.4 South West Indian Ocean Fisheries Commission (SWIOFC) 87
Chapter 11 - Information And Technology Services 88
11.1 Documentation Services 88
11.1.1 Acquisitions 88
11.1.2 Library management 88
11.1.3 Publications 2013 88
11.2 Information Technology 90
11.2.1 Software 90
11.2.2 Hardware 91
11.2.3 Security 91
Chapter 12 - Finance 92
Chapter 13 - Staffing And Administration 94
13.1 Staffing 94
13.2 Staff Movement 95
13.3 Training and Development 95
13.4 Overseas Training 96
13.5 Overseas Duty Trip 97
13.6 Long Serving Staff - 10 to 25 Years Continuous Service 99

LIST OF TABLES

Table 2.1 *Total production of fish and fish products 2009-2013(MT)* 6

Table 2.2 *Total revenue from industrial fishing activity 2010-2013 (SR million)* 9

Table 2.3 *Vessels activity in Port Victoria* 9

Table 2.4 *Volume and value of fish and fish products exported, 2011-2013* 13

Table 2.5 *Volume and value of fish and fish products imported, 2012-2013* 14

Table 2.6 *Gross inflow of foreign exchange generated by the fisheries sector, 2011-2013* 15

Table 3.1 *Tuna catch statistics by country of registration for 2012 to 2013* 17

Table 3.2 *Catch statistics reported by country for 2012 to 2013* 23

Table 4.1 *Maximum monthly fishing vessels in operation: 2004 to 2013* 32

Table 7.1 *Number and value of loans approved by DBS and CCA/SBFA 2011-2013* 49

Table 7.2 *Application for concessions under AFIA (2011 - 2013)* 49

Table 7.3 *Registration and renewal of certificates under the AFIA* 50

Table 7.4 *Average monthly berthing of fishing boats at the Providence and Victoria Quay over the last three years* 53

Table 7.5 *Sale of ice from 2008 - 2013* 54

Table 9.1 *VMS data transmission records per vessels flags* 65

Table 9.2 *Breakdowns and maritime distress alerts received by the Coast Guard for 2012 – 2013* 66

Table 9.3a *Total number of transhipments carried out at sea during 2011 – 2013* 67

Table 9.3b *Total quantity of species transhipped in 2013* 68

Table 9.4 *Total quantity of species transhipped or landed in 2013.* 69

Table 9.5 *Destination of the catch for semi-industrial and artisanal fishing vessels* 70

Table 9.6a *Export to EU countries for 2013* 71

Table 9.6b *Export to Non-EU countries for 2013* 72

Table 9.7 *Number of industrial fishing licenses issued per country and by type of fishing vessel for 2012 and 2013* 74

Table 9.8 *Licence Fees* 74

Table 9.9 *Type of local licenses issued for 2012 - 2013* 75

Table 9.10 *Number of sea cucumber landed and exported at the first closure of the season in June 2013* 76

Table 9.11 *Number of fishing vessels inspected in Port Victoria by country and type of vessel for 2013* 77

Table 9.12 *Seychelles flagged fishing vessel compliance inspection in foreign ports for 2013* 78

Table 9.13 *Number of land and coastal patrols carried out in 2013* 79

Table 9.14 *Records of patrol conducted between 2007 and 2013* 79

Table 9.15 *Records of vessels apprehended in 2013* 80

Table 12.1 *Fuel Incentive Scheme* 93

Table 13.1 *Staffing for 2013* 95

Table 13.2 *Overseas Training* 96
Table 13.3 *Overseas Duty Travel* 97
Table 13.4. *Long Serving Staff* 99

LIST OF FIGURES

Figure 2.1 *Trends in fisheries sector GDP between the year 2009 and 2013 (SR Million)* 3
Figure 2.2 *Consumer price index for fish 2009 - 2013* 4
Figure 2.3 *Trends in the production of fish and fish products 1990-2013 ('000 MT)* 8
Figure 2.4 *Price of fuel quoted by SEYPEC Jan 2004 –Nov 2013* 10
Figure 2.5 *Trend observed in total revenue since 2000* 11
Figure 3.1 *Total catch reported by purse seiners licensed to fish in the Seychelles waters from 2004-2013* ... 17
Figure 3.2. *Total effort (fishing days) and catch rates (MT/fishing day) reported by purse seiners licensed to fish in the Seychelles waters from 2004 – 2013* 18
Figure 3.3a *Distribution of catches reported by purse seiners by 1º square, 2012* 19
Figure 3.3b *Distribution of catches reported by purse seiners by 1º square, 2013* 19
Figure 3.4 *Transshipment and landings in Port Victoria in Mt. between 2004 and 2013* 20
Figure 3.5 *Transshipment and landings in Port Victoria by vessel flag between 2004 and 2013* 21
Figure 3.6 *Total catch reported by longliners licensed to fish in the Seychelles waters from 2004 – 2013* 22
Figure 3.7 *Total effort (fishing days) and catch rates (MT/1,000 hooks) from logbooks submitted to SFA by longliners licensed to fish in the Seychelles water, from 2004 – 2013* 24
Figure 3.8a *Distribution of catches reported by industrial longliners by 1º square, 2012* 25
Figure 3.8b *Distribution of catches reported by industrial longliners by 1º square, 2013* 25
Figure 3.9 *Trend in number of vessels operating in the semi-industrial longline fishery and fishing effort (No. hooks deployed) from 2004 – 2013* 26
Figure 3.10 *Total landed catch and catch rates reported in the semi-industrial longline fishery between 2004 to 2013* 27
Figure 3.11 *Species composition of the total catch reported from 2004 to 2013* 28
Figure 4.1 *Artisanal fisheries catch (MT) for Mahé and Praslin/La Digue: 2004 to 2013* 29
Figure 4.2 *Artisanal fisheries catch (MT) by gear category for 2004 to 2013* 30
Figure 4.3 *Percentage of annual landed catch (Mt) by vessel type for 2004 to 2013* 30
Figure 4.4 *Fishing effort for major gear type for 2004 to 2013* 31
Figure 4.5 *Species composition of artisanal fishery for 2004 to 2013* 32
Figure 4.6 *Historical seasonal catch (MT) of spiny lobsters from 1992 to 2014* 34
Figure 4.7 *Number of sea cucumber harvested from 2007 to 2013.* 35
Figure 4.8 *Composition of sea cucumber harvested for 2013* 35
Figure 5.1 *Pearl and Giant Clam Farming on Praslin* 36
Figure 7.1 *Ile du Port Fishing Quay* 52

Figure 7.2 *SEAFEX International Seafood Exhibitions.....56*
Figure 8.1 *An observer collecting data on a tuna purse seiner.....62*
Figure 9.1 *Screen capture of Themis viewer platform.....65*
Figure 9.2 *Graphical illustrations of validated catch certificates for the period 2013.....70*
Figure 12.1 *Recurrent budget expenditure for 2013.....92*

Acronyms

ACD	Average Chart Datum
ADZ	Aquaculture Development Zone
AFIA	Agricultural and Fisheries Incentives Act (2005)
AMSSI	Association of Members of the Seychelles Sea Cucumber Industry
ASFA	Artisanal Shark Fishers Association
BSFC	British/Seychelles Fisheries Commission
CANAL	Changes in the Biochemical Composition of Tropical Tunas and its Effects on Meat Quality
CAS	Catch Assessment Survey
CBS	Central Bank of Seychelles
CCA	Concessionary Credit Agency
CPUE	Catch Per Unit of Effort
COA	Certificate of Authorisation
DBS	Development Bank Seychelles
EAF	Ecosystem Approach to Fisheries
EC	European Commission
EDF	European Development Fund
EEZ	Exclusive Economic Zone
EMOTION	Estimation of Maternal Effects on the Sustainability of Large Pelagic Populations
ESA	Eastern and Southern Africa
EU	European Union
FAO	Food and Agriculture Organisations
FADs	Fish Aggregating Devices
FBOA	Fishing Boat Owners Association
FDF	Fisheries Development Fund
FIDECO	Fisheries Division and Fishing Development Company
FIA	Fisheries Incentives Act
FMC	Fisheries Monitoring Centre
FPA	Fisheries Partnership Agreement
GST	Goods and Services Tax
IOC	Indian Ocean Commission
IOTC	Indian Ocean Tuna Commission
IOTTP	Indian Ocean Tuna Tagging Programme
IRD	Institut de Recherche pour le Developpement

IUU	Illegal, Unreported and Unregulated
MAC	Management Advisory Committee
MCS	Monitoring, Control and Surveillance
MLUH	Ministry of Land Use and Habitat
MMP	Mariculture Master Plan
MNR	Ministry of Natural Resources
MNRI	Ministry of Natural Resources and Industry
MoU	Memorandum of Understanding
MPA	Marine Protected Area
MRAG	Marine Resources Assessment Group
NDEA	National Drug Enforcement Agency
NPOA	National Plan of Action
NSB	National Statistics Bureau
NEPAD	New Partnership for Africa's Development
NORAD	Norwegian Agency for Development Cooperation
NTG	National Task Group
ODINAFRICA	Ocean Data and Information Network for AFRICA
PLMP	Participatory Lobster Monitoring Programme
PSM	Port State Measure
PV	Patrol Vessel
RFMO	Regional Fisheries Management Organisation
RFSP	Regional Fisheries Surveillance Project
SADC	Southern African Development Community
SBFA	Small Business Financing Agency
SCG	Seychelles Coast Guard
SEYPEC	Seychelles Petroleum Company
SFA	Seychelles Fishing Authority
SIB	Seychelles Investment Bureau
SIFA	Seychelles Industrial Fishing Authority
SLA	Seychelles Licensing Authority
SOTN	Seychelles Ocean Temperature Network
SPA	Seychelles Port Authority
SPDF	Seychelles People Defence Force
SWIOFC	South West Indian Ocean Fisheries Commission
SWIOFP	South West Indian Ocean Fisheries Project
TACs	Total Allowable Catch
VMS	Vessel Monitoring System
WIOMSA	Western Indian Ocean Marine Sciences Association

Foreword

By Mr Philippe Michaud, Chairman of the Board of Directors

It gives me great pleasure to present the Seychelles Fishing Authority's Annual Report for 2013. This report reviews the main achievements of the Authority during the year as well as that of the fishing sector in Seychelles.

Negotiations concerning two fisheries agreements with the European Union were concluded during the year. The new and revised Fisheries Partnership Protocol which provides for tuna fishing opportunities in Seychelles EEZ for 40 purse seiners and 6 longliners will apply for six years, as from 18 January 2014. Another landmark agreement which was negotiated with the EU was a fishery access agreement that will allow Seychelles flagged tuna purse seiners to continue fishing operations in the waters of Mayotte under the jurisdiction of the EU.

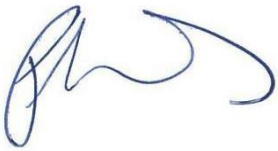
SFA placed a lot of emphasis on maritime training and it is important to note that some funds under the EU fisheries agreement for the support and implementation of Seychelles' sectoral fisheries policy were used for the building of a training vessel to be utilised by the Maritime Training Centre.

In 2013 Seychelles because the first African country to accede to the Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing. This illustrates Seychelles' commitment to better manage and control its maritime resources, and those of the region, from unscrupulous operators.

SFA has been actively engaged not only in the promotion of the Blue Economy concept but also in turning that concept into an operational policy which offers a holistic approach for

development. This is why SFA has been very much involved in activities such as the preparation of the Mariculture Master Plan and the review of fisheries legislation, both of which should be finalized towards the end of 2014.

Finally I would like to avail myself of the opportunity to thank all the staff of the Authority and my fellow directors for their invaluable contribution in the development of the fisheries sector.



Philippe Michaud

Chapter 1 -
Structure And Functions

The SFA was incorporated on the 31st August 1984 by the Seychelles Fishing Authority (Establishment) Act, although it had physically been in existence since September 1983 when the Seychelles Industrial Fishing Authority (SIFA) was formed. The first Chief Executive of SFA was Mr Maxime Fayon. The Authority was established at a time of intense fisheries development, especially in foreign industrial tuna fishing. It was created to develop the fishing industry to its fullest potential and to safeguard the resource base for sustainable development. It absorbed personnel from the defunct Fisheries Division and the Fishing Development Company (FIDECO) and became the executive arm of the Government in the field of fisheries.

SFA works closely with the Ministry of Natural Resources (MNR), which replaced the Ministry of Natural Resources and Industry (MNRI) in 2010. The functions of the SFA, as defined in article (5) of the Seychelles Fishing Authority (Establishment) Act, are:

- To promote, organise and develop fishing, fishing industries and fishing resources in Seychelles.
- To assist in the formulation of national policy with respect to fishing, fishing industries and fishing resources and in the implementation of that policy.
- To conduct negotiations, engage in meetings, seminars or discussions, with regard to fishing or fisheries and the establishment or operation of fishing industries, whether at a national or international level, on behalf of the Republic.
- To identify the manpower training requirements of Seychelles with regard to fishing and fishing industries.

Subject to this Act, the Authority has the power to do all things necessary or convenient in connection with, or incidental to, the performance of its functions and, in particular, the Authority may:

1. Own, lease or dispose of movable or immovable properties.
2. Form companies under the Companies Act.
3. Enter into partnerships or joint-ventures.
4. Act as agent for the purpose of the management of any business or enterprise, or for any other purpose.
5. Hold shares in, or debentures of any company.
6. Carry on any business or enterprise for or in connection with:
    a. fishing or fisheries
    b. processing, transporting, handling, marketing or distributing fish or fish products
    c. exporting fish or fish products
    d. the sale of equipment or apparatus to be used for fishing, or
    e. Any other matter relating to its functions where, in the opinion of the Authority, the carrying out of such a business or enterprise is in the best interest of the Republic.
7. Conduct surveillance operations, in conjunction with the Department of Defence, in relation to fishing operations in the Exclusive Economic Zone (EEZ) or in waters adjacent to the continental shelf.
8. Monitor the catch of all fishing vessels, and
9. Carry out scientific and development research

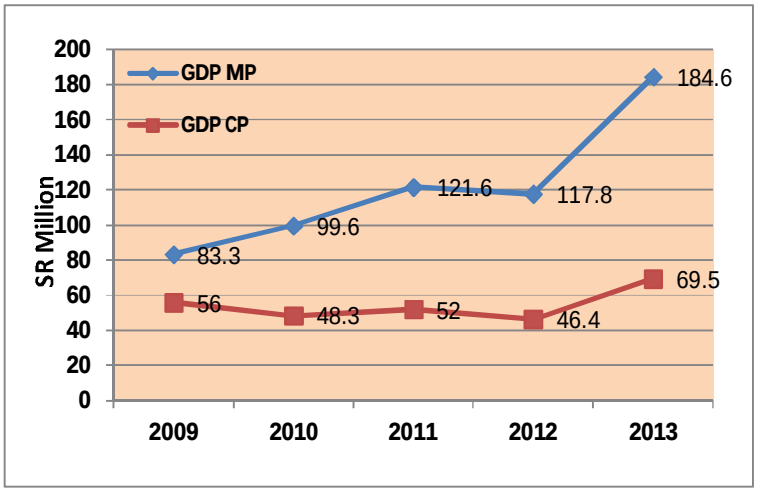
SFA is unique in that it is an organization with management, planning, development, scientific and training functions. SFA is a Parastatal Organisation whose Board of Directors is appointed by the President.

Chapter 2 -
Economic Contribution of The Fisheries Sector

2.1 General Observation

Very positive results were observed in the fisheries sector for the year 2013, in line with broader national economic performance. According to Central Bank of Seychelles (CBS) official figures for fisheries, Gross Domestic Product (GDP) at constant 2006 prices rose from SR46.4 million in 2012 to SR69.5 million (+50%) in 2013, whilst the same indicator at current market prices rose from SR117.8 million to SR184.5 million (+57%) (Figure 2.1). Note that these indicators consider only the artisanal and semi-industrial fisheries, which contributed merely 1.1% of GDP in 2013. The contribution of other fisheries related activities in the calculation of fisheries sector GDP would increase it to 7%- 8% of total GDP.

Figure 2.1 Trends in fisheries sector GDP between the year 2009 and 2013 (SR Million)

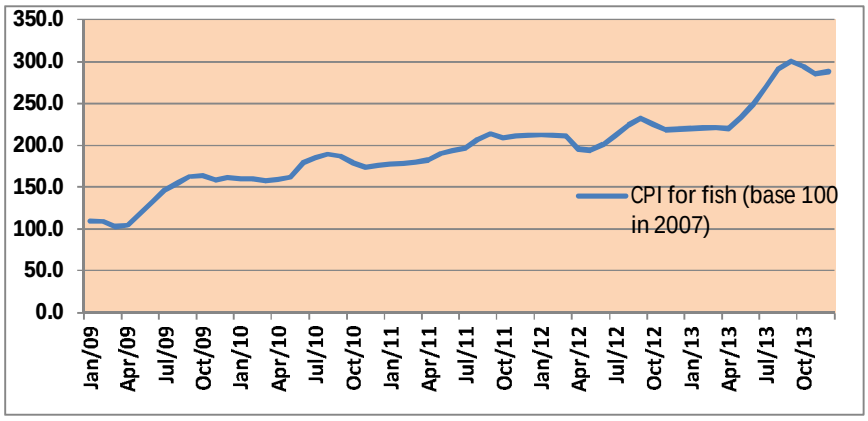


Total domestic production recovered slightly, albeit remaining lower than 2009-2011 output, and there was a steep rise in the total volume of fish and fish products exported. The value of exports increased significantly whilst imports showed a rise in volume but a fall in value, demonstrating a lower price-per-unit paid.

In contrast, revenues generated from the industrial tuna fishing activity, namely revenue from vessels' expenditure, continued to decline.

The most notable feat was from the artisanal sector which saw the catch increased by 64.2% in 2013, after a decrease of 13% in 2012 (Table 2.1). This performance can be perhaps explained by the constant increase in the price of fish on the local market as shown in Figure 2.2 below, which could have stimulated local fishermen to increase their fishing efforts and attracted new entrants in the fishing business. In general, in 2013, the price of fish was on average 21% higher than in 2012.

Figure 2.2 Consumer Price Index for Fish 2009-2013



Source: NBS (Jan 2014)

Finally, there was an overall increase in gross revenue generated by the fisheries sector and related activities. According to figures published by the Central Bank of Seychelles, the fisheries sector generated a gross foreign currency inflow of SR 5.467 billion in 2013, which surpassed that generated by the tourism industry.

2.2 Employment

Direct and indirect employment in fisheries and related sectors was estimated to be between 5,000 – 6,000 people in 2013, representing around 10% of total formal employment in the country. This estimate also includes people employed in fish processing, export activities, net repairs, ship chandelling, stevedoring, etc.

The Indian Ocean Tuna (IOT) canning factory was by far the largest single employer, with a workforce of over 2,500 workers of which over 60% were foreign nationals. The number of full and part-time commercial fishers varied between 1,300 and 1,400 primarily due to seasonal mobility associated with the sector.

In 2013, 143 people were directly employed in the sea cucumber fishery as divers, skippers and apprentices. The Seychelles Fishing Authority employed 151 people. During 2013, a maximum of 45 Seychellois seamen made at least one trip on board purse seiners (19 aboard Spanish vessels and 26 aboard French vessels).

2.3 Production of Fish and Fish Products

Total domestic production of fish and fish products, including the production of fish meal and fish oil recorded an increase from 104,838 Mt in 2012 to 115,429 Mt in 2013. This represents a year-on-year increase of 10.1%. (Table 2.1) *(Note: Catch for Seychelles flagged longliners is not yet fully available).*

Table 2.1 Total production of fish and fish products 2009-2013(MT)

(MT)	2009	2010	**2011**	**2012**	**2013**	**% change 2012 – 2013**
Artisanal Catch	3,019.10	2,595.00	2,875.00	2,502.00	4,143.00	65.59%
Semi-Industrial Catch	329.00	295.00	237.70	270.80	262.20	-3.18%
Canned Tuna	30,824.00	30,338.00	30,152.00	31,400.00	36,826.00	17.28%
Smoked Fish	28.40	29.60	29.40	27.69	40.10	44.82%
Others	60.20	70.00	110.00	68.00	48.80	-28.24%
Total Domestic Production	**34,260.70**	**33,327.60**	**33,404.10**	**34,268.49**	**41,320.10**	**20.58%**
Purse Seine Catch*	68,339.40	75,786.60	63,211.60	50,938.00	55,516.00	8.99%
Longliner Catch*	8,323.10	6,659.00	7,565.80	12,164.00	10,565.00**	n/a
Subtotal (2)	**76,662.50**	**82,445.60**	**70,777.40**	**63,102.00**	**66,081.00**	**4.72%****
Fish Meal	5,168.00	7,663.00	6,986.00	6,597.00	7,337.00	11.22%
Fish Oil	826.00	915.00	767.00	871.00	691.00	-20.67%
Subtotal (3)	**5,994.00**	**8,578.00**	**7,753.00**	**7,468.00**	**8,028.00**	7.50%
Grand Total	**116,967.20**	**124,351.20**	**111,934.50**	**104,838.49**	**115,429.10**	10.10%

***sey flagged vessels only**

****provisional figures**

Source: SFA

The artisanal catch, which experienced a drop of 12.97% in 2012, recorded an increase of 64.2% in 2013. Artisanal catch estimate for 2013 is in par with the long-term average in this fishery but higher than for the last 4 years when total landings reduced substantially. This could be explained by higher fish prices on the local market which encouraged fishermen to increase their fishing effort, as well as prompting new entrants into the sector. Another explanation is the fact that there has been a restructuring of the unit involved in onsite sampling which has resulted in better coverage of fish landing sites.

Following a peak in landings in 2009, output from the semi-industrial fishery has remained more or less stable over the last 4 years. In 2013, a year-on-year decrease of 3.2% was registered following a year-on-year increase of 13.9% in 2012. Lower landing in 2013 can be explained by a decrease of one vessel targeting tuna and swordfish in 2013 and a lower catch rate.

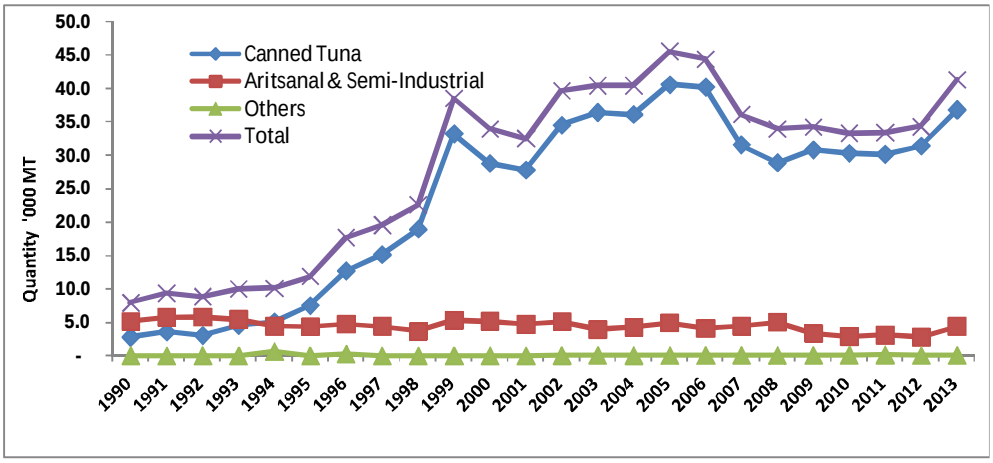
Canned tuna remained the dominant produce with a total output of 36,826 Mt (almost 90% of domestic production). The year 2013 was considered to be particularly positive with an increase in production of 17.3%. Dried sea cucumber and shark fins production stood at 48.8 Mt, whilst production of smoked fish stood at 40.1 Mt, 45% more than the 27.7 Mt produced in 2012. The total domestic production of consumable fish and fish products, (i.e. excluding fish meal and fish oil) increased by 20.7% in 2013 compared to an increase of only 2.6% from the previous year.

Total tuna catch by Seychelles registered, foreign owned fishing vessels recorded a provisional year-on-year increase of 4.7% to reach 66,081 metric tons in 2013. This is expected to increase as more longliners' log books are received and their catches are incorporated in the database.

During 2013, eight Seychelles registered purse seiners caught a total of 55,516 Mt of tuna, representing a 9% rise from 2012 when catch stood at 50,938 Mt. The catch from the 27 Seychelles registered longliners is expected to be stable for the year, after a spectacular rise in 2012 (+60.24%). With 90% of log books returned and captured in the database, the corresponding catch stood at 10,565 Mt and it is expected that the year-on-year change will not be significant.

Fish meal is a by-product produced from the tuna factory trimmings. Fish oil is obtained during the reduction process by which fish meal is produced. They are both important by-products of the tuna canning industry. Production of fish oil decreased by 20.7 to 691 Mt in 2013, while the production of fish meal increased by 11.2% to 7,337 Mt..

Figure 2.3 Trends in the production of fish and fish products 1990-2013 ('000 MT)



Source: SFA

Figure 2.3 above illustrates the trend in the domestic output of fish and fish products over the last two decades, revealing the high correlation between total output and canned tuna output. The total output, which had remained fairly constant for the past four years, increased sharply in 2013 as a result of the increase in canned tuna production. The production of dried sea cucumber, shark fins and smoked fish remained relatively insignificant in contrast to their economic importance. The artisanal and semi-industrial catch decreased in 2009 but has remained stable throughout the subsequent years.

2.4 Revenue from Industrial Tuna Fishing Activities

Industrial tuna fishing remains one of the most important sources of foreign currency earnings in the economy. Gross income from the sector is derived mainly from foreign fishing vessels' expenditure on goods and services in Port Victoria, as well as through payments for licenses and financial compensation. In 2013, gross expenditure reached SR1.020 billion, a 19% decrease from the SR1.264 billion registered in 2012 (Table 2.2).

Table 2.2 Total revenue from industrial fishing activity 2010-2013 (SR Million)

(SR Million)	2010	2011	2012	2013	% change (2012 – 2013)
Vessel Expenditure	1,145.00	1,290.00	1,054.00	903.227	-14%
Company Expenditure	19.55	19.84	18.24	17.591	-4%
Seamen Compensation	0.51	0.58	0.84	0.671	-20%
License Fees, Excess Catch & EU Compensation	132.15	146.13	191.72	98.908	-48%
Total	**1,297.21**	**1,456.55**	**1264.80**	**1020.379**	**-19%**

Source: SFA

Spending by vessels remained the most important outlay from industrial tuna fishing activities. Vessel's expenditure fell by 14%, principally due to a drop in both the number of port calls and number of days spent in port. Overall vessels spent fewer days in port per call, as shown in Table 2.3.

Although total port calls decrease only slightly, from 559 in 2012 to 529 in 2013, the number of days vessels spent in port fell by approximately 60%, from 3,107 in 2012 to 1,259 in 2013.

Table 2.3 Vessels activity in Port Victoria

Year	Port Calls	Sum of Days in Port	Average of Days in Port
2009	435	2,687	6
2010	401	1,908	5
2011	373	2,017	5
2012	559	3,107	6
2013	529	1,259	4

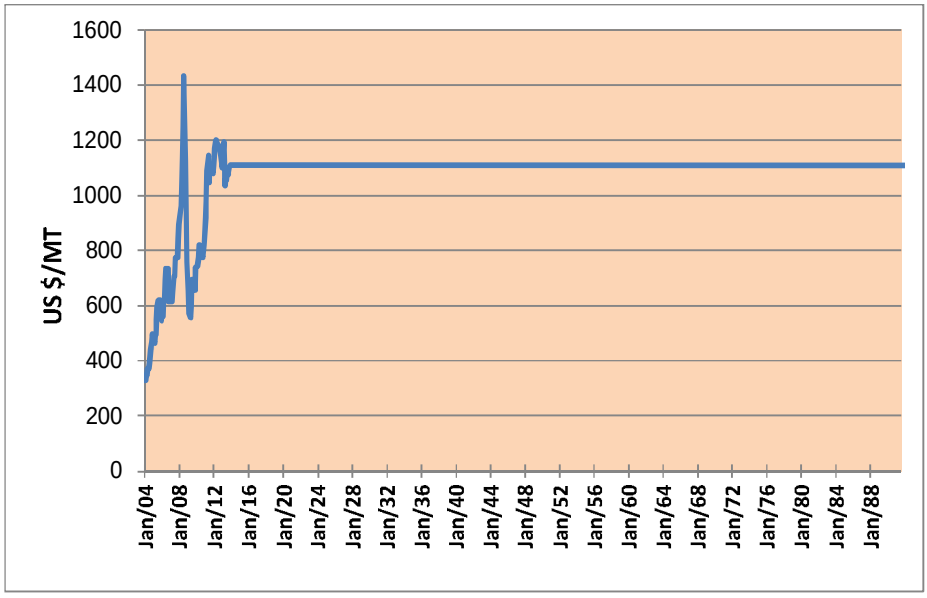
Source: SPA

Additionally, a significant drop was registered in the license fees collected in 2013. This figure dropped by 48%, from SR191.7 million in 2012 to SR98.9 million in 2013, as a result of fewer vessels taking up licenses. The number of licenses issued dropped from 207 in 2012 to 158 in 2013.

In 2013 the figures provided by SEYPEC showed that a total of 60,221 Mt of gasoil were purchased by industrial tuna fishing vessels and reefers. This compares to a total procurement of 64,240 metric tons in 2012 (-6.7%). The total value of fuel purchased in 2013 dropped by 16.5% from SR940.667 million in 2012 to SR785.501 million in 2013.

As seen in Figure 2.4, there has been a continuous increase in the price of fuel since January 2009, but prices have remained fairly constant over 2011, 2012 and 2013.

Figure 2.4 Price of fuel quoted by SEYPEC Jan 2004 –Nov 2013

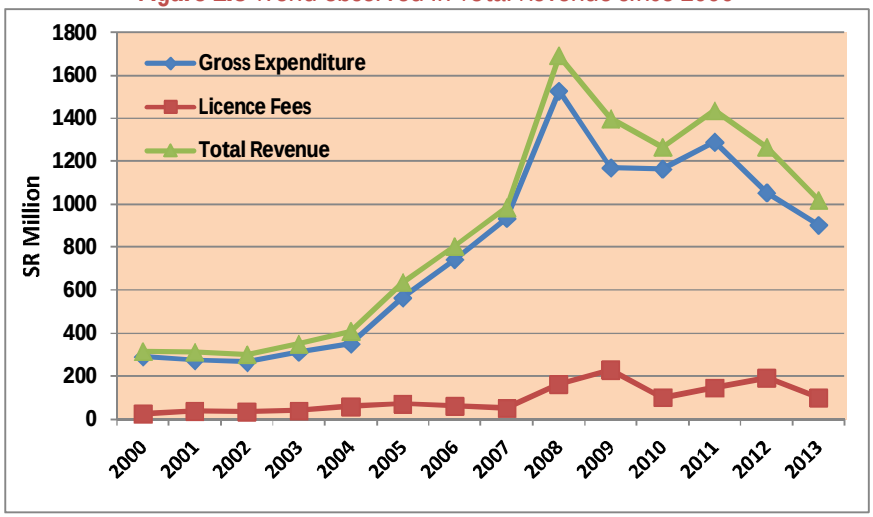


Source: SEYPEC

(**Note:** These figures do not take into account various discounts offered by SEYPEC on fuel purchase by vessel-owners)

Figure 2.5 shows the trend observed in total revenue since the 1990s. Up until 2009, there was a general upward trend in total revenue earned from industrial tuna fishing activities. Due to the threat of piracy, activity in the sector decreased in 2009 and 2010, but showed signs of recovery as revenue increased slightly in 2011. However, in 2012, figures dropped to reach similar levels to 2010, followed by a further decline in 2013. A fall in gross expenditure, namely vessel expenditure, accounted for this decrease in total revenue in 2012 and 2013.

Figure 2.5 Trend observed in Total Revenue since 2000



Source: SFA

2.5 Trade in Fish and Fish Products

Trade in fish and fish products and related activities constituted an important growth and income generating activity for the national economy in 2013. These activities have a major influence on the country's balance of payment, as a substantial portion of the country's current inflow of foreign exchange is derived from fish trading activities.

2.5.1 Exports of fish and fish products

Exports of fish and fish products constitute a vital source of foreign currency earnings for the country. In addition, processing of fish into exportable products generates a significant amount of employment and income and contributes positively to the national trade balance. The volume of fish and fish products exported increased by 16.8% in 2013 and the value of exports increased by 23.6%. In 2013, 45,000 Mt of fish and fish products, with a corresponding value of SR4.447 billion was exported, compared to 39,154 Mt, valued at SR3.600 billion, exported in 2012.

Dried shark fin and **sea cucumber** exports decreased by 46.5%, with their value decreasing by 48.0%. Due to the limited number of countries supplying the global market with sea cucumbers, there has been a continuous rise in prices paid for these products over recent years, which has positively impacted on their export price. There are a number of management measures in place, such as a closed season, and restrictions on the number of boats operating in the fishery to prevent over-exploitation of this resource.

In 2013, a significant increase of 17.02% was recorded in the volume of **canned tuna** exported, bringing the volume of canned tuna exported to 36,400 metric tons in 2013. The value of canned tuna exports increased, from SR3.411 billion in 2012 to R4.228 billion in 2013, a 23.95% increase. This translates into a 5.91% increase in the price per ton, from SR109,663 per metric ton in 2012 to SR116,153 per metric ton in 2013.

The volume of **fish meal** exported increased by 5.86%, from 6,931 Mt in 2012 to 7,337 Mt in 2013. The export value of fish meal increased between 2012 and 2013 as a 5.86% increase in volume translated into a 22.92% increase in value with SR82.8 million of fish meal exported in 2012 and SR101.8 million in 2013. The export of fish oil was markedly different, with a decrease of 20.74%, from 871 metric tons in 2012 to 690 metric tons in 2013. The value of fish oil exports has increased by 22.18% over the years from SR40.0 million in 2010 to SR48.9 million in 2013.

In 2013, the value of exports of fish and fish products constituted 95% of the total value of domestic exports. This illustrates the importance of marine product exports for foreign exchange earnings. Europe remained Seychelles' primary market for fish and fish products, with canned tuna being the dominant commodity. Other than exporting to the EU, Seychelles also exported to Reunion, Mauritius, U.S.A and the Middle East. East Asian markets such as China, Japan and Singapore also constituted an important market for Seychelles, particularly for dried sea cucumber and shark fins.

Table 2.4 Volume and value of fish and fish products exported, 2011-2013

	2011		2012		2013		% change	
	MT	SR ,000	MT	SR ,000	MT	SR'000	MT	SR ,000
Fresh and Frozen Fish	203	18,788	226	24,150	241.86	22,831.45	6.80%	-5.46%
Fish Fillet	15	1,421.84	0.03	2				
Canned Tuna	31,283.00	3,001,272	31,105	3,411,050	36,400.00	4,228,000.00	17.02%	23.95%
Other Processed Fish (Tuna Loins)	0	0	166	13,743	202.68	18,682.00	22.42%	35.94%
Dried Shark fin & sea cucumber	110	53,902	91	51,928	48.84	26,990.55	-46.52%	-48.02%
Total	**31,611**	**3,075,384**	**31,588**	**3,477,034**	**36,893.38**	**4,296,504.00**	**16.79%**	**23.57%**
Total Domestic Exports		**3,284,052**		**3,723,503**		**4,508,374.00**		21.08%
% of Domestic Exports		**94%**		**93%**		**95%**		2.06%
Fish Meal	6,645	91,302	6,931	82,842	7337	101,831.00	5.86%	22.92%
Fish Oil	767	32,379	871	40,016	690	48,893.00	-20.74%	22.18%
Grand Total	**39,023**	**3,199,065**	**39,390**	**3,599,892**	**44,920.38**	**4,447,228.00**	14.04%	23.54%

Source: NSB

Total exports of consumable fish and fisheries products by volume increased by 16.7% to reach 36,893 metric tons in 2013, whilst the value increased by 23.6% to reach SR4.297 billion. Canned tuna accounted for 36,400 metric tons and a total value of SR4.228 billion. This represents 98.7% of the total export of consumable products and 98.6% of the value.

In 2013 the value of export of consumable fish and fish products represented 95% of Seychelles' total merchandise exports. When fish residues (fish meal and fish oil) are included this value increases to about 98.5%. This highlights the economic importance of canned tuna which in 2013 accounted for 93.7% of merchandise export.

2.5.2 Imports of fish and fish products

During 2013, there was an increase in both the volume and value of fish and fish products imported into the country. The main product, frozen tuna, was destined for the IOT canning factory for canning and fish-meal production. The other commodities imported were supplies for the hotel and local market and bait for the domestic fishing industry.

The volume of fish and fish products imported increased by 15.89% to reach 78,163 Mt in 2013 but total expenditure on imports increased by only 1.25%, from SR2.198 billion in 2012 to a record SR2.226 billion, implying that in 2013 fish imports cost less per unit tonnage in line with a small decline in raw tuna prices from the Indian and Atlantic Ocean.

As the main raw material for the canning factory, frozen fish, namely tuna, remained the dominant import commodity, accounting for over 99% of total imports of fish and fish products in terms of volume and approximately 98% in terms of value. In 2013, frozen tuna imports amounted to 77,631 Mt, a 16.45% increase from 2012.

Table 2.5 Volume and value of fish and fish products imported, 2012-2013

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	2012		2013		% change	
	MT	SR '000	MT	SR '000	MT	SR '000
Fish, Fresh or Chilled	9.3	1,007	20.8	376.9	123.65	-62.57
Fish, Frozen	66,663	2,146,649	77,631	2,211,123	16.45	3.00
Fish, Fillets, and other fish meat	8.5	984	8.02	402.5	-5.6	-59.09
Fish, dried, salted	35.4	4,455	57.8	2,480	63.27	-44.33
Molluscs and Crustaceans	705.2	42,392	32.35	3.25	-95.4	-99.99
Fish prepared and preserved	14.34	2,187	360.8	11,204	2416.0	412.3
Molluscs and Crustaceans preserved	7.3	1,091	52.56	834.1	620	-23.54
Total	**67,443**	**2,198,765**	**78,163**	**2,226,423**	**15.89**	**1.25**

Import of fresh or chilled fish showed interesting results with the volume increasing by 124% and the value decreasing by 62.6%, implying again that the import was of lower valued fish. Figures from the National Bureau of Statistics reveal increases of 2.416% and 412.3% in the volume and value respectively of imports of prepared and preserved fish.

2.6 Foreign Currency Flows

In 2013, the volume of consumable domestic production of fish reached 41,320 Mt, increasing by 20.58% over 2011. The volume of exports of fish and fish related products increased by 14.04% to reach 44,920 Mt, whereas the volume of imports increased by 15.89% to reach 78,163 Mt.

For the year 2013, the total gross inflow generated by the fishing sector and related activities increased by 12.4% to reach SR5.467 billion, compared to total inflow of SR 4.865 billion in 2012. This allowed the fishing sector and related activities to increase their contribution to total current account receipts from 30.5% in 2012 to 40% in 2013. Besides the increase in gross inflow, the percentage increase in the share of current account receipts was also due to a total decrease in current receipts.

Table 2. 6 Gross inflow of foreign exchange generated by the fisheries sector 2011 – 2013

Foreign Currency Flows (SR '000)	2011	2012	2013	% change (2012 – 2013)
Visible Exports	3,199,065	3,599,892	4,447,228.00	23.54%
Revenue from Industrial Tuna Fishing	1,456,550	1,264,799	1,019,726.42	-19.38%
Gross Inflow from fisheries (a)	4,655,615	4,864,691	5,466,954.42	12.38%
Current Account Receipts (b)	14,126,000	15,959,800	13,692,724.12	-14.20%
(a) as a % of (b)	33.00%	30.50%	40%	

According to the Central Bank of Seychelles' annual report, 2013 earnings from tourism amounted to US$343.8 million. In 2013 the total inflow from the fisheries sector amounted to US$451 million. This clearly shows the vital importance of fisheries and related activities to the national economy and in the development of the country. In addition, there is future potential in to further develop the sector through value addition and the continued development of the semi-industrial fishing industry.

Chapter 3 - Industrial And Semi Industrial Tuna Fishing Activities

3.1 The Purse Seine Fishery

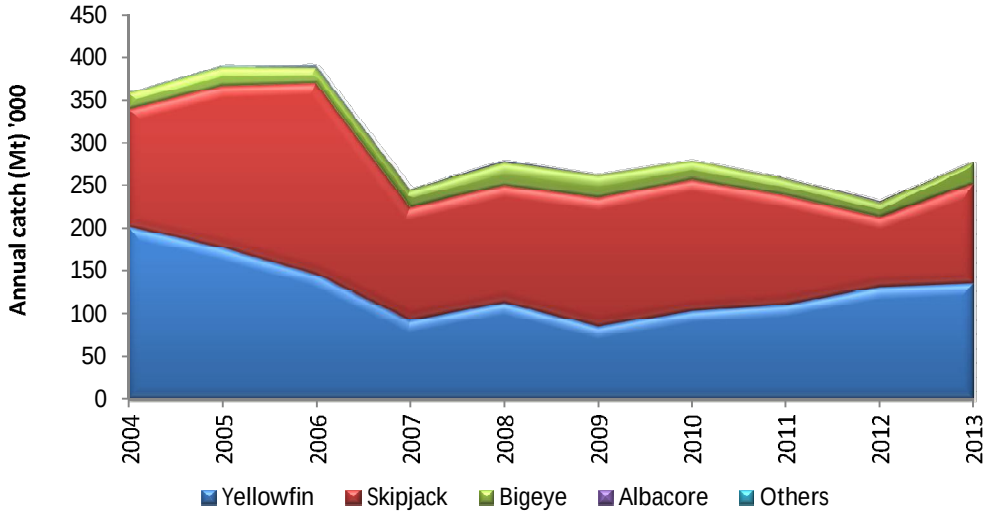
3.1.1 Catches, fishing effort, catch rates and species composition

An estimated total catch of 277,879 Mt was made in the Western Indian Ocean by purse seiners licensed to fish in Seychelles EEZ. This represents a 20% increase in the total reported catch from 2012, which was 231,477 Mt.

The fishing effort in 2013 was estimated at 10,184 fishing days, 5% higher than in 2012. The average catch rate also increased from 23.87 Mt/fishing day in 2012 to 27.29 Mt/fishing day in 2013. However, monthly catch rates in 2013 remained highly variable and ranged from 15.27 to 39.25 Mt/fishing day.

Yellowfin (*Thunnus albacares*) and skipjack (*Katsuwonus pelamis*) tuna accounted for 49% and 42% of the total purse seine catch respectively. The catches of bigeye (*Thunnus obesus*) and skipjack tuna increased by 45% and 42% respectively from 2012, whilst the catch of yellowfin increased by only 3%, (Figure 3.1).

Figure 3.1 Total catch reported by purse seiners licensed to fish in the Seychelles waters, from 2004 – 2013



In terms of catches by flag state, the Spanish, French and Seychellois fleet all recorded increase in catches. The largest year-on-year increase in total catch (32%) was recorded by the Spanish fleet which landed 146,983Mt in 2013 compared to 111,644 Mt in 2012. Total year-on-year catch of the Seychelles fleet increased by 13%, from 50,938 MT in 2012 to 57,324 Mt in 2013. Total year-on-year catch of the French fleet increased by 7%, from 37,155Mt in 2012 to 39,862 Mt in 2013 (Table 3.1).

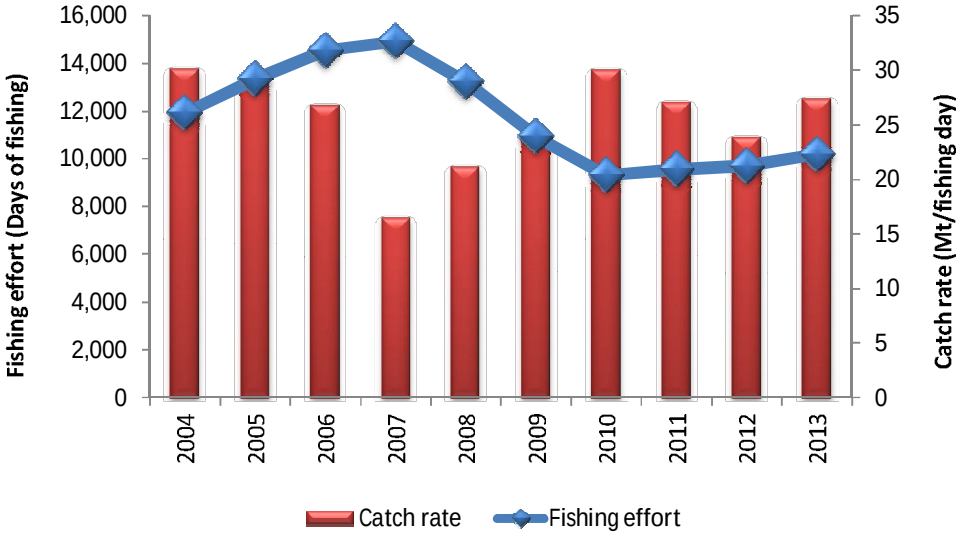
Table 3.1 Tuna catch statistics by country of registration for 2012 to 2013

	2012			2013		
Country	**Catch (Mt)**	**Effort**	**CPUE**	**Catch (Mt)**	**Effort**	**CPUE**
Spain	111,644	4,112	27.15	146,983	4,224	34.80
France	37,155	1,944	19.11	39,862	2,291	17.40
Seychelles	50,938	2,133	23.88	57,324	1,809	31.69
Others*	31,740	1506	21.08	33,710	1860	18.12
Total	**231,477**	**9,696**	**23.87**	**277,879**	**10,184**	**27.29**

***Others represent other countries and include Korea (2012-2013), Mayotte (2012-2013) and Mauritius (2013)**

Analysis of the trend in fishing effort over the past 10 years shows a yearly increase in fishing effort from 2004 (11,928 fishing days) to 2007 (14,930 fishing days). This was followed by almost constant decrease between 2007 and 2010 (9,318 fishing days) when fishing effort more or less stabilised with minimal year-on-year increase up to 2013. In contrast, trends in CPUE showed more fluctuations a decreasing trend from 2004 reaching a minimum of 16.45 MT/fishing day in 2007 followed by an increasing trend reaching a high of 29.97 MT/fishing day in 2010. The CPUE then decrease to 23.87 MT/fishing days in 2012. In 2013 both the fishing effort and CPUE increased to 10,184 fishing days and 27.29 MT/fishing days respectively, (Figure 3.2).

Figure 3.2 Total effort (fishing days) and catch rates (MT/fishing day) reported by purse seiners licensed to fish in the Seychelles waters, from 2004 – 2013



3.1.2 Spatial distribution of catch

Figures 3.3a and 3.3b show the distribution of catches reported by purse seiners (holding licenses to operate in Seychelles waters) in the Western Indian Ocean by 1º square, for 2012 and 2013 respectively. In both years the majority of the catch came from the area immediately east of Somalia.

Figure 3.3a Distribution of catches reported by purse seiners by 1º square, in 2012

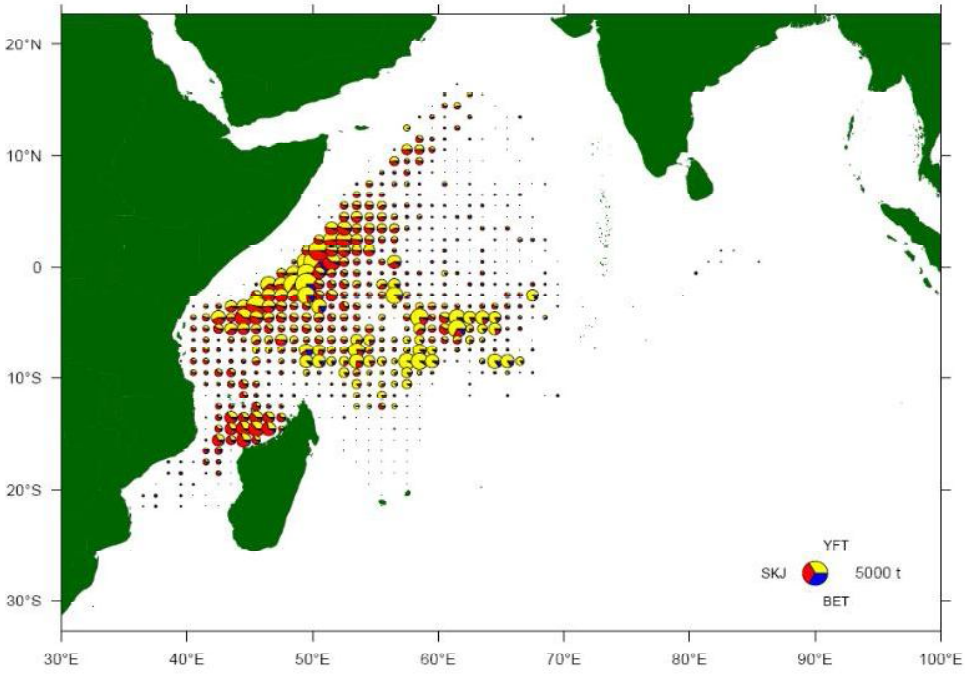
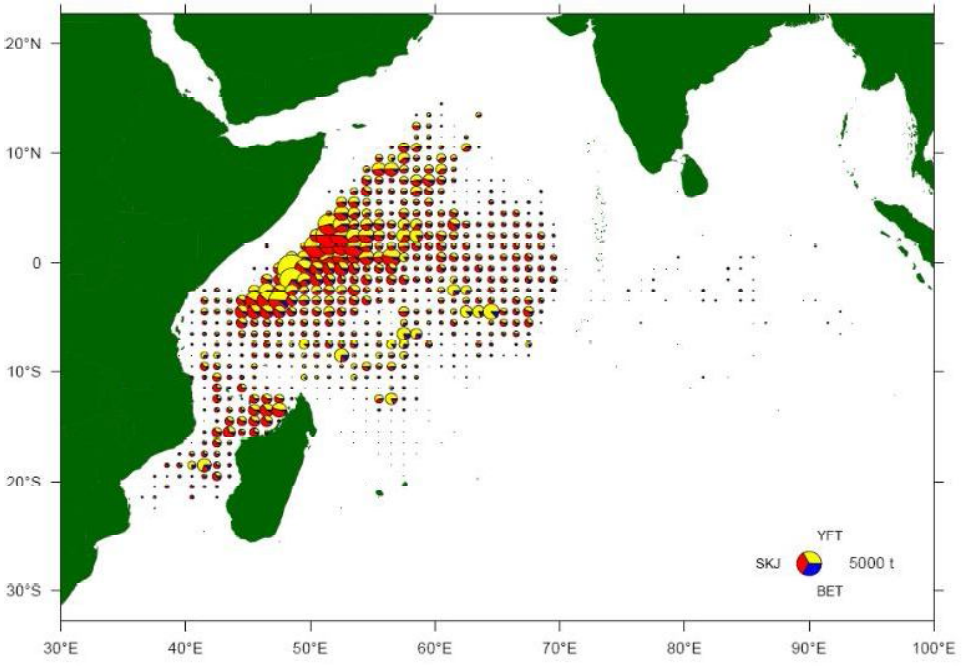


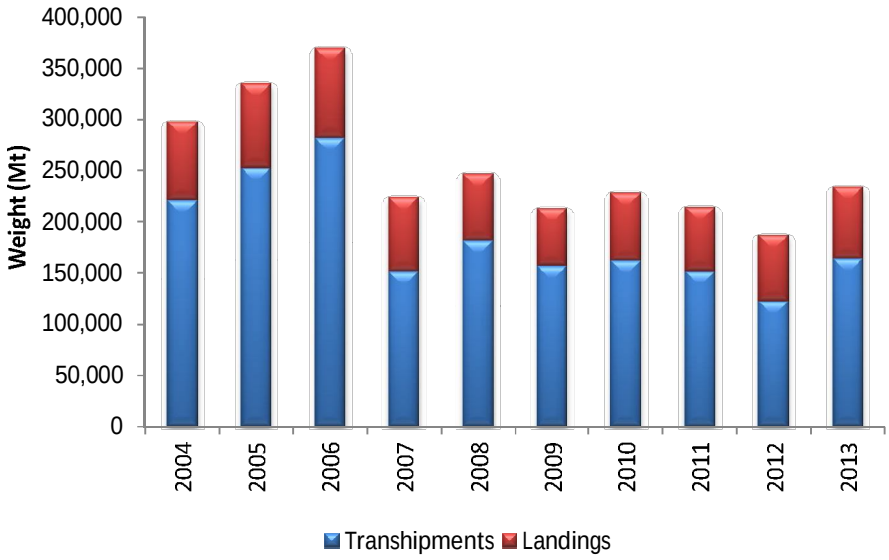
Figure 3.3b Distribution of catches reported by purse seiners by 1º square, in 2013



3.1.3 Transhipment and landings in Port Victoria

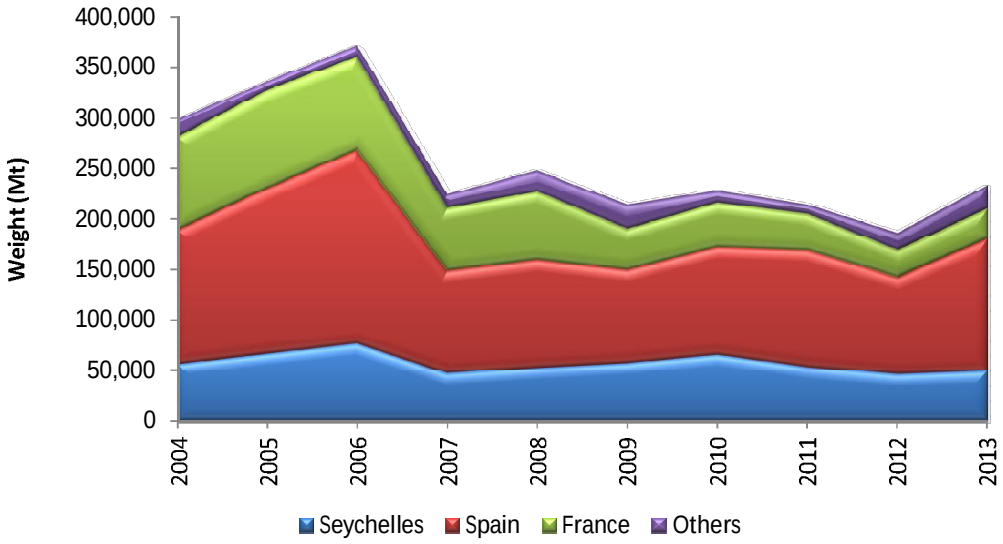
A total of 233,574 Mt of purse seine catches were landed or transshipped in Port Victoria in 2013, compared to 186,743 Mt in 2012. This represents a year-on-year increase of 25% in landing/transshipment in Port Victoria and accounts for 84% of the total catches of purse seiners licensed to fish in Seychelles EEZ for the year 2013. Overall, average total catch and amount of fish landed or transshipped in Port Victoria has remained more or less stable since 2007 but is about 150,000 Mt less than maximum recorded level made in 2006 (Figure 3.4). The amount of discards in port has remained low (<1%) throughout the last decade and represented <0.1% of catch landed or transshipped in Port Victoria in 2013.

Figure 3.4 Transshipment and landings in Port Victoria in Mt between 2004 and 2013



Spanish flagged vessels accounted for the majority of landing and transshipment in Port Victoria (56%), followed by Seychelles (21%), French (13%) and others, which includes Korea, Mayotte and Mauritius flagged vessels (Figure 3.5).

Figure 3.5 Transshipment and landings in Port Victoria by vessel flag between 2004 and 2013



3.2 The Longline Fishery

This section summaries the activities of Seychelles flagged and international longliners licensed to operate inside the Seychelles EEZ between the year 2004 and 2013. Figures presented here for the years 2004 to 2013 may be different to those provided in subsequent SFA publications due to recent incorporation of data from previously outstanding logbooks.

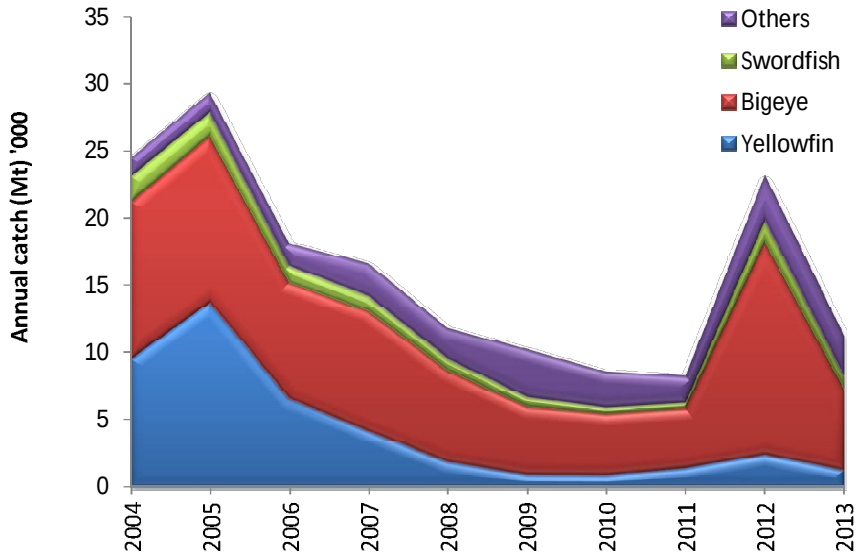
The number of logbook returns from Seychelles flagged and international longliners licensed to fish in the Seychelles EEZ was very low prior to 2004 (<50%). However, since 2004 the number of logbook returns has increased remarkably. Increase logbook returns have increased the level of confidence in the data in the industrial longline fishery.

3.2.1 Catches, fishing effort, catch rates and species composition

Statistics presented in this section for the year 2012 and 2013 are based upon an 83% and 34% logbook return rate respectively. There are often extensive delays in the return of logbooks by industrial longliners to SFA.

Total catch reported by industrial longliners licensed to fish inside the Seychelles EEZ was estimated at 11,224 Mt in 2013. An estimated 23.9 million hooks were deployed by these vessels giving a mean catch rate of 0.47 Mt/1000 hooks (Table 3.2). Catch rate over the last decade has remained more or less constant apart from 2012 when a large increase was observed. However, fishing effort has been showing a long-term declining trend since 2005. In terms of catch composition, Bigeye tuna remained the dominant species caught in this fishery, accounting for 54% of the total catch. Yellowfin tuna and swordfish were the second and third most dominant species, comprising 11% and 9% of the total catch respectively. The remaining 27% of the catch in 2013 comprised of species grouped as others*, which includes marlins, sailfish and sharks (Figure 3.6).

Figure 3.6 Total catch reported by longliners licensed to fish in Seychelles waters from 2004 – 2013



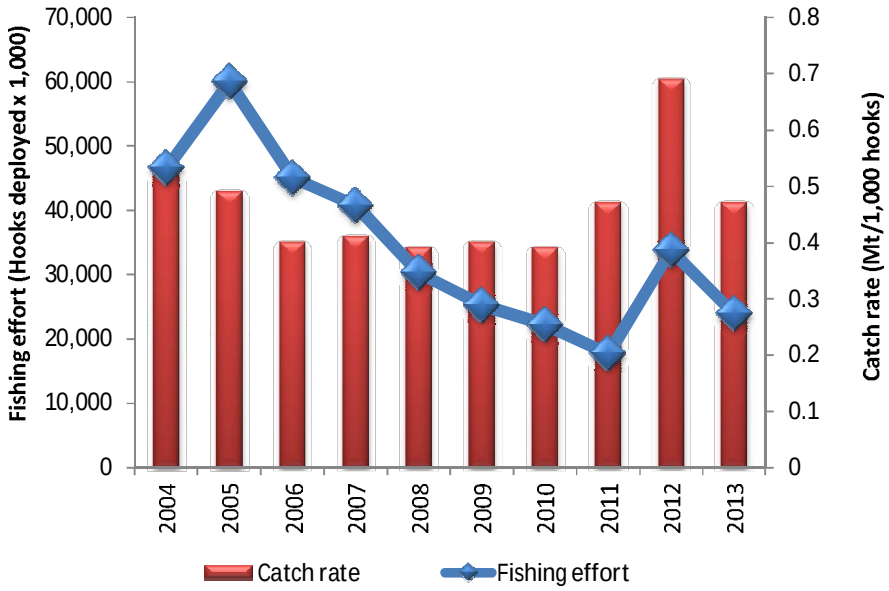
The catch reported for the Seychelles fleet was estimated at 10,565 Mt which was achieved from a fishing effort of 22.3 million hooks compared to 14,692 Mt achieved from a fishing effort of 18.97 million hooks reported for the year 2012. This gives a mean catch rate of 0.47 Mt/1000 hooks in 2013 compared to 0.77 Mt/1000 hooks for the previous year. For Seychelles flag vessels the logbook return rates were 95% and 89% for the year 2012 and 2013 respectively (Table 3.2).

Table 3.2 Catch statistics reported by country for 2012 and 2013

	2012				2013			
Country	**Logbook %**	**Fishing Effort (Million Hooks)**	**Catch (Mt)**	**Catch Rate (Mt/1000 Hooks)**	**Logbook %**	**Fishing Effort (Million Hooks)**	**Catch (Mt)**	**Catch Rate (Mt/1000 Hooks)**
Seychelles	95	18.97	14,692	0.77	89	22.33	10,565	0.47
Taiwan (POC)	79	12.59	7,174	0.57	14	1.31	540	0.41
China	91	0.49	201	0.41	9	0.12	47	0.40
Japan	57	0.58	424	0.73	44	0.09	31	0.34
Oman	92	0.14	80	0.56	60	0.04	23	0.61
Philippines	83	0.90	545	0.61	9	0.04	18	0.43
Tanzania	100	0.11	56	0.49	0	-		-
Grand Total	**83**	**33.79**	**23,172**	**0.69**	**34**	**23.92**	**11,224**	**0.47**

Trend analysis from logbooks submitted to SFA shows that between 2005 and 2011 the catch rate of longliners operating in the Seychelles waters has remained more or less constant ranging between 0.39 Mt/1,000 hooks and 0.49 Mt/1,000 hooks, whilst the fishing effort has been on a decreasing trend from 60 million hooks in 2005 to 17.7 million hooks in 2011. In 2012, both the fishing effort and catch rate increased significantly to 33.8 million hooks and 0.69 Mt/1,000 hooks.

Figure 3.7 Total effort (fishing days) and catch rates (Mt/1,000 hooks) from logbooks submitted to SFA of by longliners licensed to fish in the Seychelles waters, from 2004 – 2013



3.2.2 Fishing Grounds Exploited

Figures 3.8a and 3.8b show the distribution of catches reported by longliners (holding licenses to operate in Seychelles waters) in the Western Indian Ocean by 1º square, for 2012 and 2013 respectively. The maps show that the 2013 fishing pattern appears to be the similar to that of the previous year with significant decrease in catches the Indian Ocean Monsoon gyre, and increase in catches of species reported as 'others' in the Indian Ocean subtropical gyre between 30°S and 40°S and 30°E and 40°E and in Albacore between 30°S and 40°S and 80°E and 100°E.

Figure 3.8a Distribution of catches reported by industrial longliners by 1º square, 2012

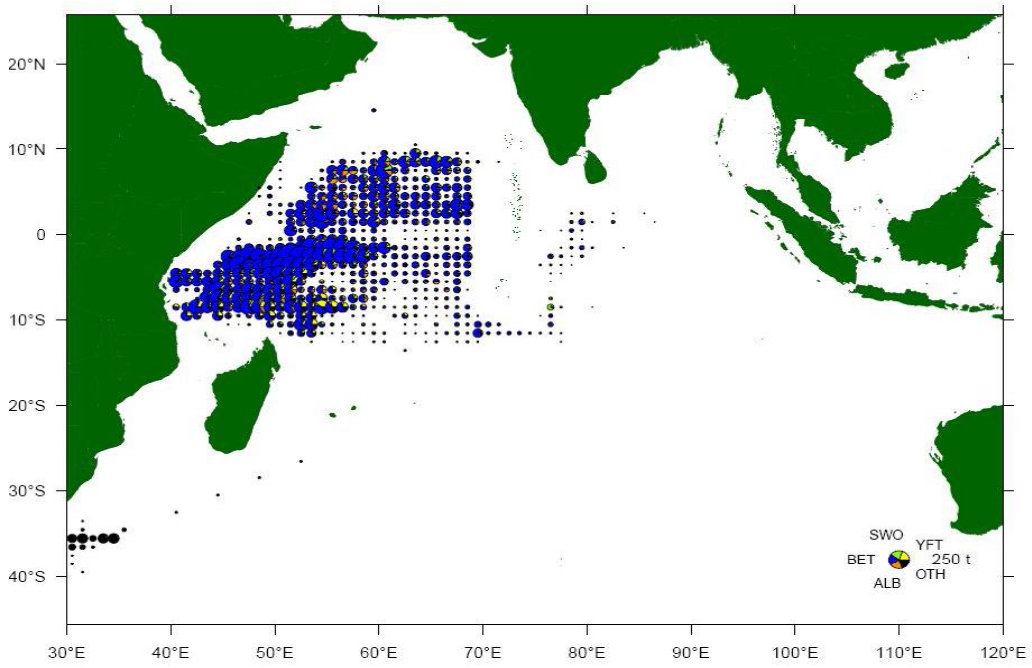
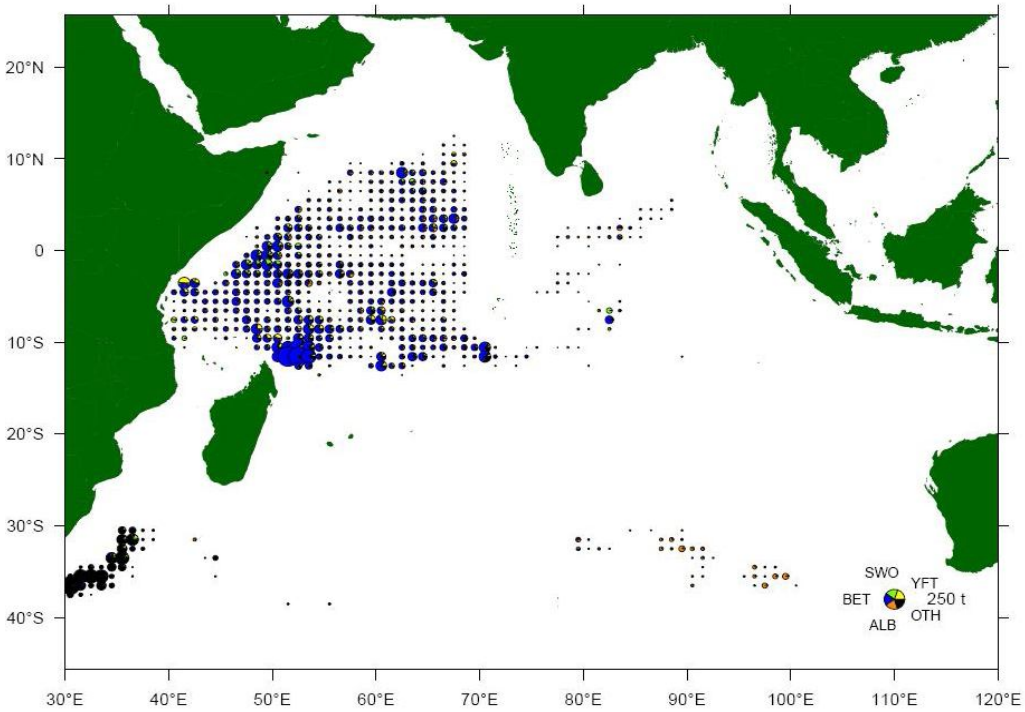


Figure 3.8b Distribution of catches reported by industrial longliners by 1º square, 2013



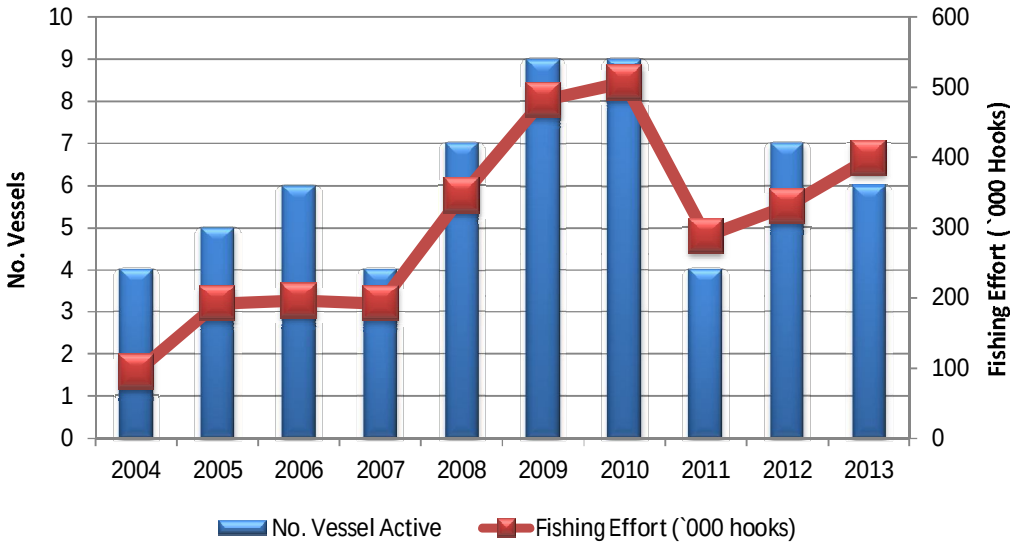
3.3 The Semi-industrial Fishery

3.3.1 Vessels active and fishing effort

There was a slight increase in the number of fishing trips targeting tuna and swordfish in 2013 compared to 2012. In 2013, the 6 vessels that were operating in the semi-industrial longline fishery undertook 68 fishing trips compared to the 63 trips conducted by 7 local vessels in 2012. This represents an 8% increase in the number of fishing trips targeting tuna and swordfish.

Fishing effort (number of hooks) in the fishery increased by 21%, between 2012 to 2013 from 330,466 to 398,770 hooks (Figure 3.9).

Figure 3.9 Trend in number of vessels operating in the semi-industrial longline fishery and fishing effort (No. hooks deployed) from 2004 – 2013

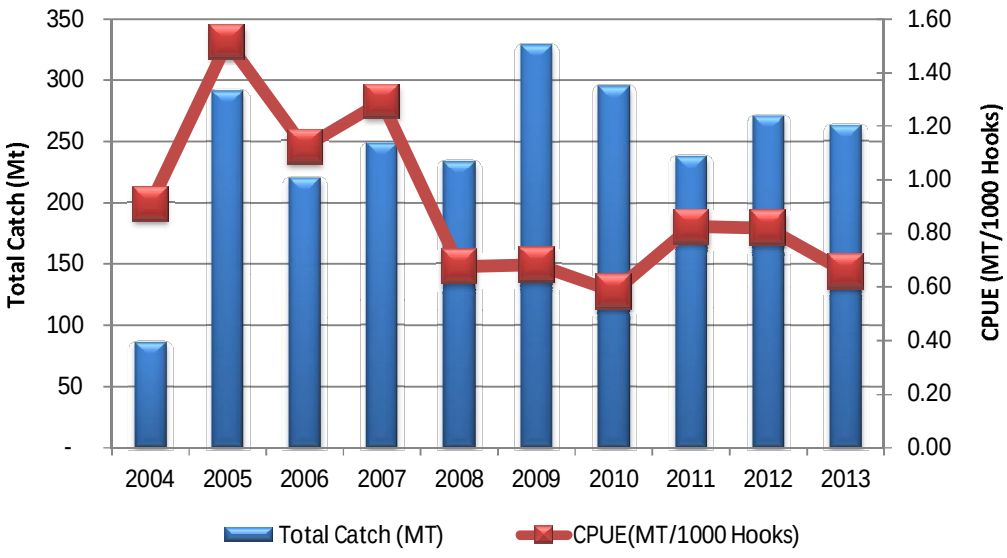


3.3.2 Total catch and catch rates

The total catch by the local semi-industrial fleet decreased by 3% between 2012 (270.8 Mt) and 2013 (262.2 Mt) (Figure 3.10).

The catch rate for 2013 was estimated at 0.66 Mt/1,000 hooks. This is a reduction from 2012 level when catch rates of 0.82 Mt/1,000 hooks were recorded (Figure 3.10). The 2013 catch rate remains within the long-term average for the last 6 years but is far less than what was being recorded between 2004 and 2007 during which time average catch rate as high as 1.5 Mt/1,000 hooks were being recorded. Decreasing catch rates were observed for both swordfish and bigeye between 2012 and 2013. Catch rates for swordfish decreased from 0.48Mt/1,000 hooks in 2012 to 0.41 Mt/1,000 hooks in 2013 whereas those of bigeye decreased from 0.12 Mt/1,000 hooks in 2012 to 0.06 Mt/1,000 hooks in 2013. In contrast, catch rates of yellowfin tuna remained unchanged at 0.14 Mt/1,000 hooks between 2012 and 2013.

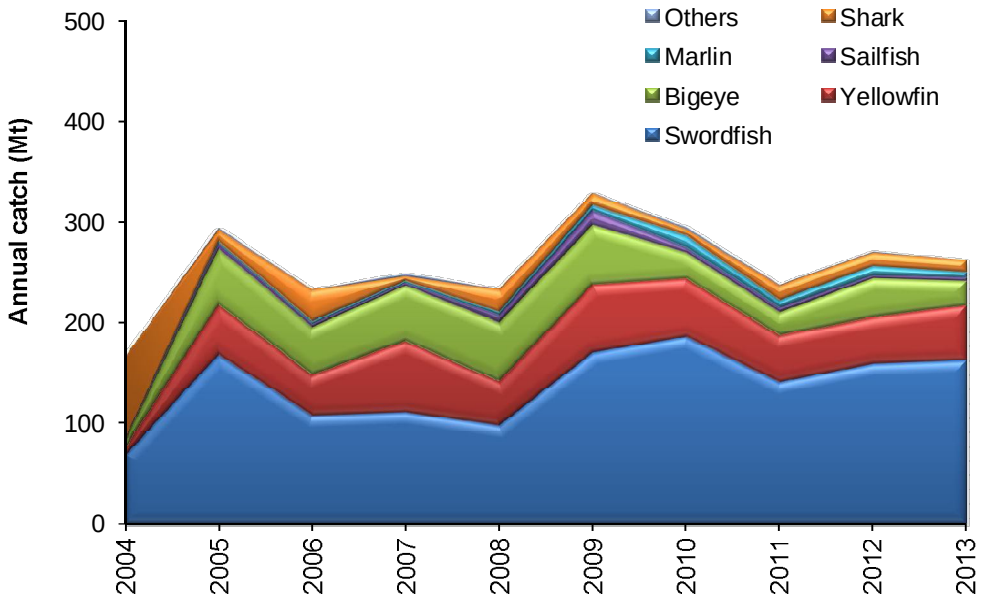
Figure 3.10 Total landed catch and catch rates reported in the semi-industrial longline fishery between 2004 to 2013



3.3.3 Species composition

Percentage species composition reported for the period 2004 to 2013 is illustrated in Figure 3.9. In 2013, swordfish remained the dominant species caught in the semi-industrial fishery, accounting for 62% of the total catch whilst tuna (yellowfin & bigeye) consist of 30% of the total catch.

Figure 3.11 Species composition of the total catch reported from 2004 to 2013

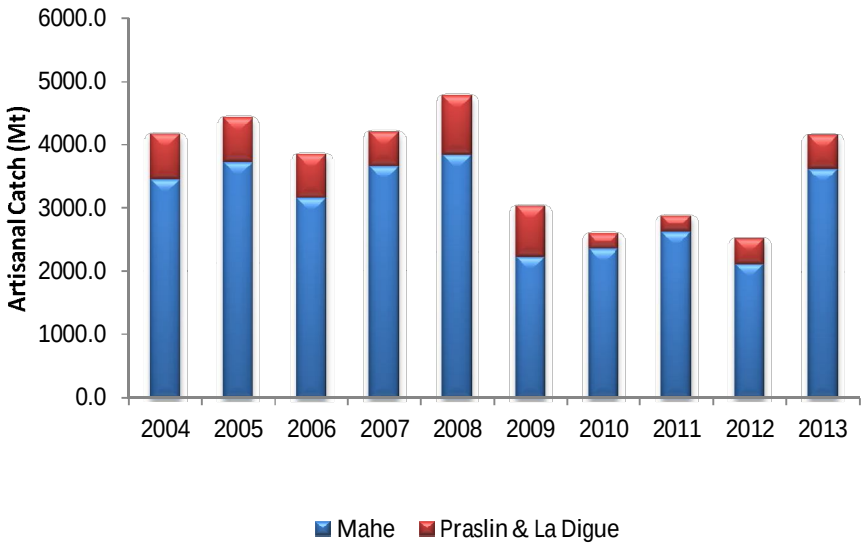


Chapter 4 - Artisanal Fishery

4.1 Catch

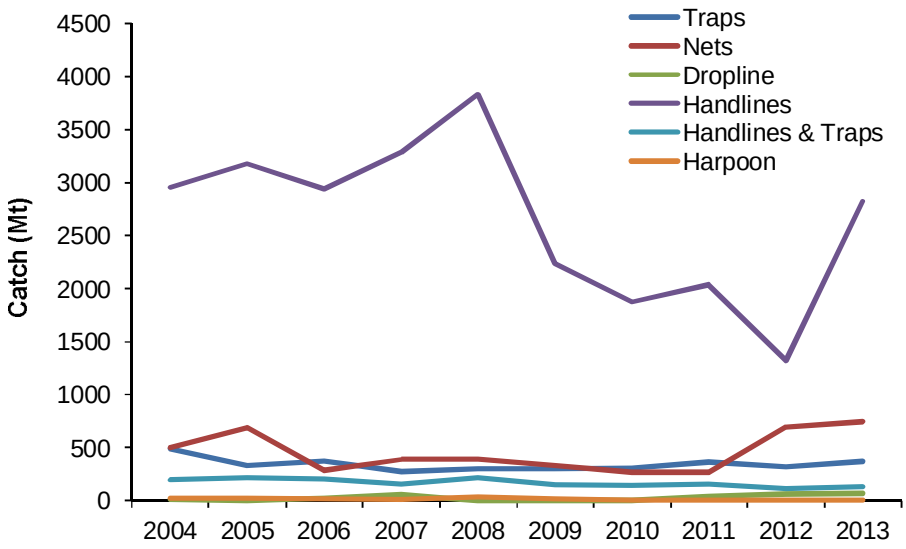
The total artisanal catch for 2013 was estimated at 4,135 Mt, roughly similar to pre-2009 level before large decrease in annual catch was observed (Figure 4.1). Since 2009, total artisanal catch has been below the long-term average at less than 3,000 Mt per year. Artisanal catch landing in 2013 was 65% over 2012 level when an estimated 2,511 Mt of fish was landed (Figure 4.1). Compared to 2012, total landings in 2013 increased by 1,494 Mt (71%) on Mahé and by 129 Mt (33%) on Praslin.

Figure 4.1 Artisanal fisheries catch (MT) for Mahé and Praslin/La Digue: 2004 to 2013



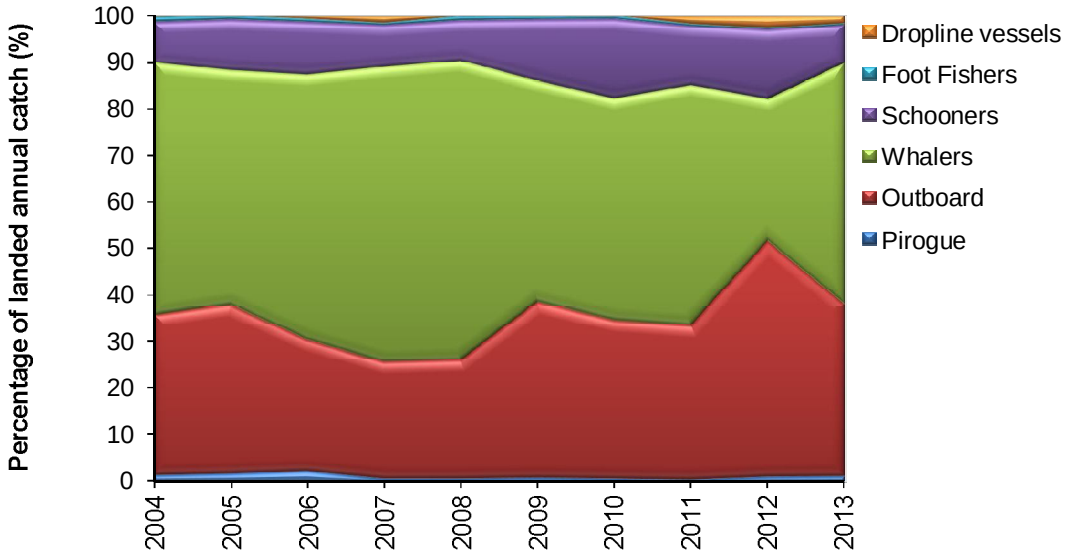
All gear categories recorded increase in catches in 2013 compared to the previous year. Catch in handline fishery, handline & trap fishery and the trap fishery recorded year-on-year increase of 114%, 18% and 16% respectively (Figure 4. 2).

Figure 4.2 Artisanal fisheries catch (Mt) by gear category for 2004 to 2013



In 2013, the total artisanal catch by vessel category was dominated by whaler (51.8%), followed by outboard (36.8%) (Figure 4.3). The dominance of catch from the whaler fleet in 2013 is consistent with most years of the time series, but markedly different from 2012 when the outboard fleet accounted for the majority of fish landed.

Figure 4.3 Percentage of annual landed catch (Mt) by vessel type for 2004 to 2013



4.2 Fishing Effort

Overall fishing effort in the artisanal fisheries increased in 2013 compared to 2012. Effort in the handline fishery increased by approximately 42% in 2013 compared to 2012 from an estimated 33,203 men days of fishing in 2012 to 47,082 men days of fishing in 2013. Similar year-on-year increase in fishing effort (~14%) was observed in the trap fishery from an estimated 85,203 trap sets in 2012 to 97,082 trap sets in 2013 (Figure 4.4). This increase in fishing effort is accompanied by slight increases in the monthly maximum number of outboards and schooners in operation and slight decrease in the monthly maximum number of whalers in operation. The maximum number of pirogues in operation did not differ between 2012 and 2013. The rate of logbook returns from the sport fishery continued to be poor, precluding estimation of the number of vessels engaged in that fishery (Table 4.1).

Figure 4.4 Fishing effort for major gear type for 2004 - 2013

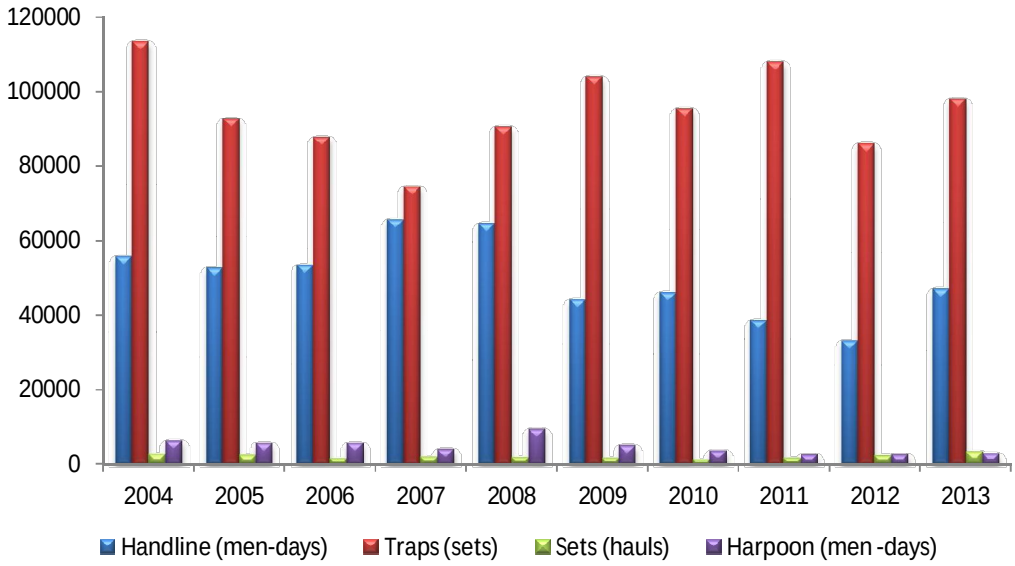


Table 4.1 Maximum monthly fishing vessels in operation: 2004 to 2013

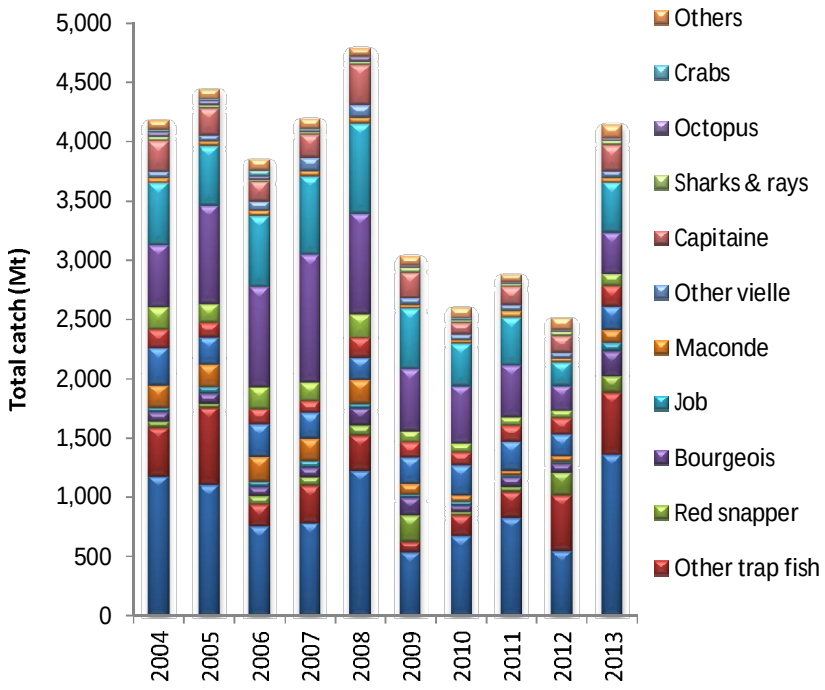
Vessel Type	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Pirogue*	33	30	27	22	19	19	16	15	15	15
Outboard*	239	234	242	243	293	324	316	294	298	306
Whaler	93	83	94	105	107	113	105	106	106	102
Schooner	20	18	26	22	22	27	27	32	28	29
Sport	**	**	**	**	**	**	**	**	**	**
Dropline	4	2	4	5	3	2	1	3	5	4

***Includes part time fishing vessels. ** Data not available due to poor logbook returns**

4.3 Species Composition

Trevallies (*Carangoides* and *Caranx spp.*), mackerel (*Rastrelliger spp.*) and jobfish dominated the artisanal catch for 2013 accounting for 33%, 13% and 12% of the total respectively. In 2013, all species with the exception of crabs and "other maquereau" recorded increases in catches compared to the previous year (Figure 4.5). The largest increase in catch between 2012 and 2013 was recorded in trevallies, carangues (806 Mt), job (221 Mt), bonite (145 Mt) and bourgeois (138 Mt).

Figure 4.5 Species composition of artisanal fishery for 2004 to 2013

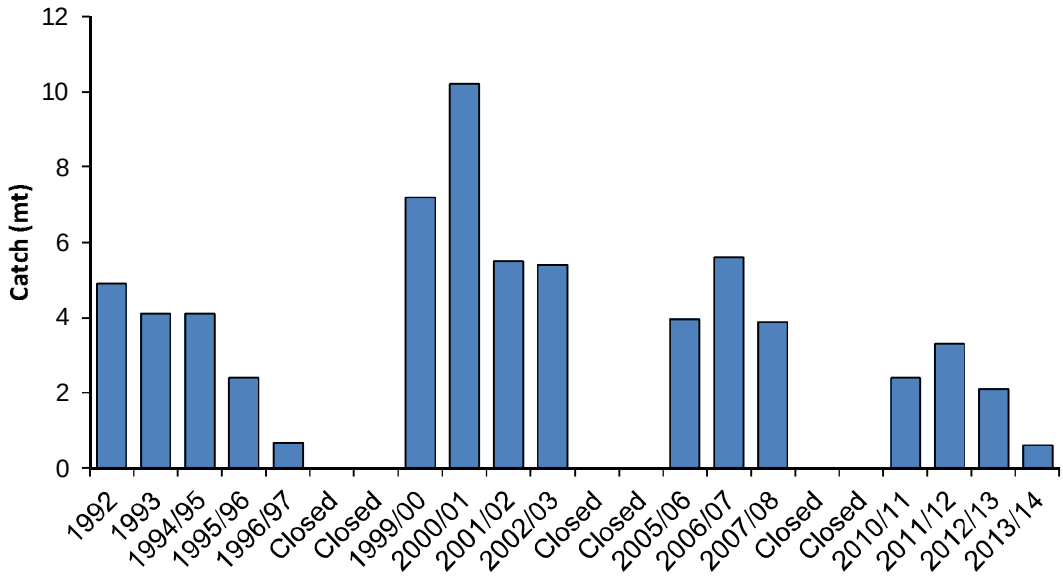


4.4 Lobster fishery

The 2013/2014 lobster season was open from the 20th of December 2013 to the 20th of January 2014. In contrast to previous seasons when the fishery was opened for a period of three months, the 2013/2014 season was opened for a period of only one month, to reduce the fishing pressure on the stock. A total of 8 fishers were issued with a licence, of which 6 were from Mahé and 2 from Praslin. The species targeted were Pronghorn spiny lobster (*Panulirus penicillatus*) Long-legged spiny lobster (*P. longipes*) and Painted spiny lobster (*P. versicolor*). Noting that the fishery was opened for only one month, the estimated total catch for the 2013/2014 fishing season was 608.52 kg. In contrast, for the 2012/2013 season, the total catch was 2.11t. (Figure 4.6). This represents a decline of 71% in the estimated total catch. The snorkelling technique was the only method used to catch lobsters during the 2013/2014 season. The most abundant species caught for this season was *P. penicillatus* with 421.53 kg recorded followed by *P. longipes* with 184.68 kg. A total of 33 fishing trips were recorded compared to 208 trips in the 2012/2013 season, this represents a decrease of 84% in the total effort. The estimated CPUE for the 2013/2014 season was 18.44 kg/trip. This represents an increase of 82% in the CPUE compared to the last season whereby the CPUE was 10.14 kg/trip.

Fisheries independent surveys were carried out in 2013 to monitor the recovery and status of the stocks to provide advice on the decision to open or close the next fishing season.

Figure 4.6 Historical seasonal catch (metric tonnes) of spiny lobsters from 1992 to 2014



4.5 Sea Cucumber Fishery

The Sea Cucumber fisheries have experience a rapid development since it commercialisation due to the increase in demand, and consequently the higher prices being paid, on Asian and even local markets, for dried sea cucumbers. Currently the fishers target mainly four species of sea cucumber which are White Teat Fish (Kokosye Blan) Black Teat Fish (Kokosye Nwar), Flower Teat Fish (Pentard) and Prickly Red Fish (Sanpye), due to the highest price on the market and a few other species such as Black Fish, Red Surf Fish, Yellow Surf and Sand fish. The number of sea cucumber harvested annually has shown an overall increased from 330,658 pieces in 2007 to 642,404 pieces in 2011 (Figure 4.7). However in 2012 and 2013 there were a decrease in the harvest number to 618,554 pieces and 489,314 pieces which highlight a decrease of 4% and 21% respectively. The decrease in number of harvested sea cucumber, in 2013 was observed in all the main targeted species and the highest, a 24% decrease was in Flower Teat Fish. For 2013 Flower Teat Fish was the dominant species accounting for 63% of the total sea cucumber harvested, followed by white Teat Fish, 15%.

There was concern raised due to the decrease in the number of sea cucumber harvested from 2011, and not being able to obtain a good CPUE from the data obtain in Catch & Effort logbook. Thus in June 2013, SFA in collaboration with the Association of Members of the Seychelles Sea Cucumber Industry (AMSSI), put in place new data collection and management practices, which included newly designed logbook and a new database, with the intention of better capturing and obtaining finer quality catch and effort data on the sea cucumber fishery.

Figure 4.7 Number of Sea Cucumber Harvested from 2007 to 2013

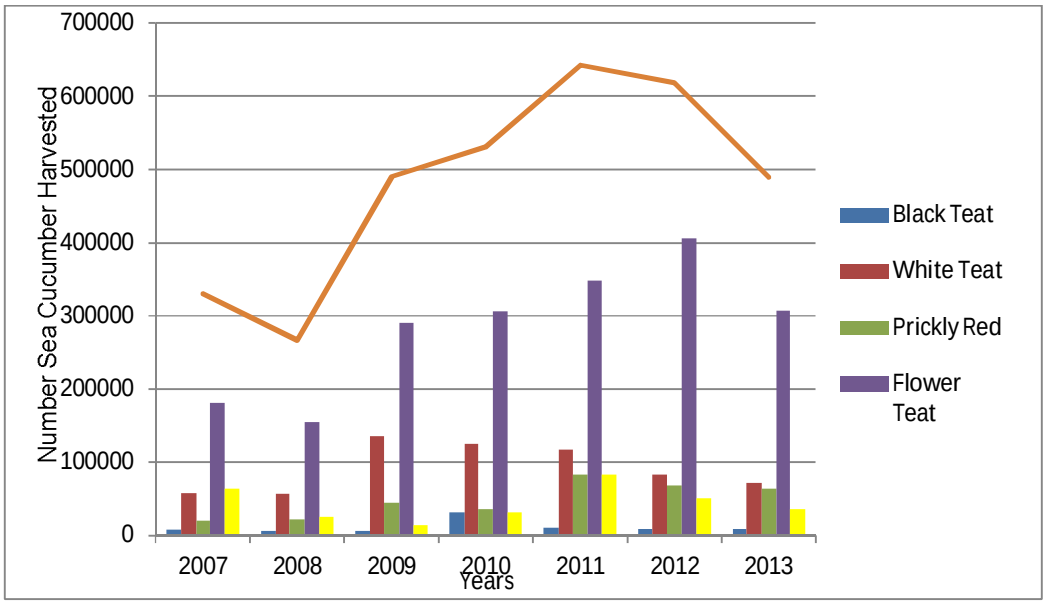
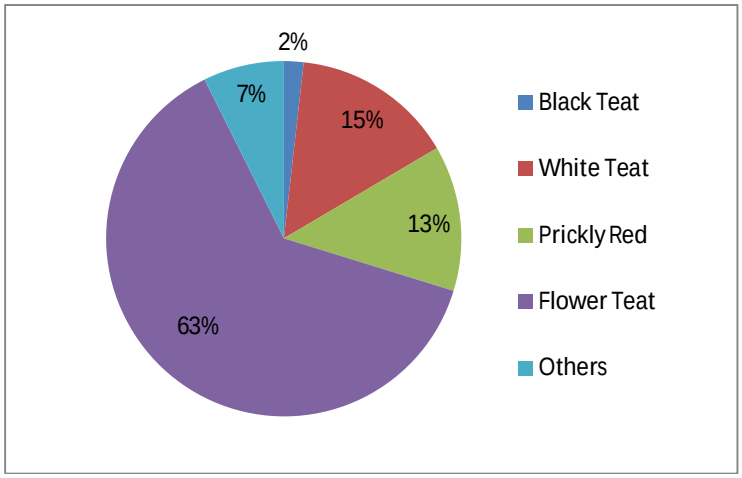


Figure 4.8 Composition of sea cucumber harvested for 2013



Chapter 5 - Aquaculture

5.1 Aquaculture Production

Aquaculture production in 2013 remained nil, with the Black Pearl Seychelles Ltd. farm on Praslin expected to harvest their three-year batch of pearl oyster in early 2014. The farm has been in a more or less constant performance over recent years with some trials carried out on the grow-out technology at its grow-out site in the Curieuse Marine National Park. A new submersible frame-type grow-out system is being trialled for the next batch of pearl oysters. The new submersible frames are being assessed as a new way to farm pearl oysters at the farm which is expected to reduce the amount of stress to the oysters with the aim of getting the best quality pearls.

Figure 5.1 Pearl and Giant Clam Farming on Praslin

5.2 The Mariculture Master Plan Project

In 2013 the Mariculture Master Plan (MMP) project was given renewed support when the New Partnership for Africa's Development (NEPAD) Agency approved a grant of US$168,000 (SCR2.01 million) for the second phase, to be undertaken by SFA. The Agreement was signed

on behalf of the SFA by the CEO, Mr. Finley Racombo and on behalf of NEPAD by the CEO, Dr. Ibrahim Assane Mayaki on June 14 2013.

The "Marine Aquaculture Regulations", which were drafted as part of the activities under Phase 2, are expected to become effective upon promulgation of the newly proposed Fisheries Bill. During Phase 2 the technical team also analysed the requirements for establishing Aquaculture Development Zones (ADZ), which essentially will provide areas for developing hatcheries and other associated facilities for aquaculture farms. The ADZs for the inner islands were proposed to be located on the east coast of Mahé as it was found to have the most feasible site for such developments with sufficient water quality, while being close to essential infrastructure and transportation. Phase 2 was successfully completed in November 2013 and the technical team is now entering the next phase of the project which is Phase 3; *Outer Island Mariculture Development* from January to June 2014.

During the second phase a Steering Committee was set-up which included important stakeholders from the tourism and environment sectors and conservation NGOs. The Steering Committee, which is chaired by the SFA, has the mandate of providing guidance on the preparation of the Mariculture Master Plan and to ensure that their views are incorporated into the process.

Chapter 6 - Research Projects

6.1 Monitoring and Assessment of the Lobster Stocks on the Mahé Plateau Using a Multidisciplinary Approach

The Seychelles lobster fishery is managed in a cyclical pattern of 3-5 consecutive open seasons marked by decreasing stock abundance and catch, followed by a period of closure during which stocks rebuild. The main species caught in Seychelles are Homard Grosse Tete (*Panuliruspenicillatus*), Homard Rouge (*P. longipes)*, Homard Vert (*P. versicolor*) and Porcellene (*P. ornatus*). Monitoring and assessment of lobster stocks is an integral part of assessing the status of the stock, enabling informed decision making in the management of the fishery. It is necessary to develop an improved understanding of the biology and ecology of the main target species to develop improved management practices, such as implementation of minimum size at capture and closed seasons.

This project builds on the Participatory Lobster Monitoring Programme (PLMP) which was set up in 2005 by the SFA. The PLMP is a fisheries-independent survey through which fishers collaborate with researchers from SFA to monitor lobster stocks during the closed seasons. A total of 20 monitoring sites located in the northwest, west and south parts of Mahé are surveyed during the closed season to monitor the status of lobster stocks.

The main objectives of the project are to (i) establish the abundance and monitor recovery of lobster stocks (ii) establish appropriate minimum size at first capture for *P. Penicillatus* and *P. longipes* based on length at first maturity and (iii) set up a tagging programme to monitor growth and movement of lobsters.

The most recent survey was carried out in October 2013. A total of 137 lobsters were caught and measured to determine morphometric characteristics associated with functional maturity. Moreover, a total of 132 lobsters were tagged using Hallprint anchor tags. Results show that the relative abundance of lobster is stable over time, however, relative biomass has decreased. The next survey will take place in March 2014.

6.2 Understanding the Residency, Movement and Habitat Use of Grey Reef Sharks (*Carcharhinusamblyrhyncos*) along the West Coast of Mahé, Seychelles

Growing concerns about the conservation status of reef associated sharks around the world have heightened the need for research to find effective solutions for the protection of such species. Due to their life history, traits of slow growth, late sexual maturity and low reproductive output, sharks are vulnerable to a number of anthropogenic threats, in particular to overfishing. In Seychelles, information gathered from stakeholders involved in the shark fishery and historical accounts of shark abundance indicates that there has been a significant decline in shark stocks (Seychelles National Plan of Action for the Conservation and Management of Sharks, 2007).

In order to protect a species it is important to first understand their movement and habitat use patterns. Defining movement patterns within reef shark populations is vital to interpreting results of sampling, such as catch data and underwater visual census surveys, which have been used to infer reductions in reef shark populations. Information on the biology and ecology of sharks is important for the effective management of shark stocks and the shark fishery. Currently in Seychelles such information is lacking, impeding the effective management of shark stocks. The grey reef shark, *Carcharhinusamblyrhyncos*, described as near threatened, is a shark species that is important for both the tourism and fishing industry. Grey reef sharks are the second most sighted shark species by divers (NPOA) and are occasionally caught by artisanal fishermen.

This project aims to use acoustic telemetry to provide key information on the ecology of grey reef shark. The main objectives of the project are, (i) determine the extent of movement of grey reef sharks between several fishing banks and coastal reef habitats, (ii) determine the level of fidelity to fishing banks, (iii) determine if there are ontogenetic differences in fidelity and movement patterns and (iv) identify the potential mechanism driving the fidelity and movement of sharks. Sharks will be tagged with an external ID tag and surgically implanted with either a Vemco V13 or V16 tag.

A total of 18 acoustic listening stations (VR2W) were deployed in September 2013 at Pilot patch, Stork patch and along the coast near Grand Anse. A total of 12 sharks (11 Grey reef sharks, 1 Tiger shark) were tagged during October and November with the help of a local fisherman. The sharks tagged ranged from 73 cm to 137 cm fork length. Tagging will continue during the first quarter of 2014.

6.3 Assessment of the Sea Cucumber Stock and Determination of Length/Weight Index as a Size Limit Control Towards a Management Measure

Sea cucumbers have been fished in Seychelles in very small quantities for more than 100 years. Intense exploitation did not commence until the late 1990s. Seychelles is unique in the Indian Ocean, as it is the only example in the region where formalised approaches to management of the sea cucumber fishery have been demonstrated, and a stock assessment for the resource has been undertaken. Reduced catches in recent years, however, have raised concern about the sustainability of the fishery, which has come to represent a significant source of income for the country. To address these concerns, the SFA and the Sea Cucumber Association have been working together to assess the current status of exploited sea cucumbers in Seychelles; and provide management advice. From a research aspect it was recommended to undertake a sea cucumber fishery independent survey and to potentially set a minimum size/weight for sea cucumber harvesting.

SFA and the association are still in discussion on how to effectively initiate the sea cucumber fishery independent survey, based upon previous surveys, however in November 2013, SFA were able to initiate preliminary research to capture and obtain information on the length/weight variation of sea cucumber from harvesting to final processing level. We were able to sample sixty four (64) sea cucumber; comprising the commercial species which are; Spork, White Teat fish, Prickly Red fish and Black Teat, measuring the variation in length and weight throughout the harvesting process at sea through to exportation. The result will be used to support management measures introduced concerened with the implementation of minimum harvest size, monitored or enforced at any point from harvesting to final processing stage. Furthermore the information collected can provide indicative information on the size distribution and density of sea cucumber in Seychelles' waters.

6.4 Seychelles Ocean Temperature Network (SOTN)

Oceanography encompasses the scientific study of all aspects of the marine environment. It involves the four main disciplines, which are; Geological, Chemical, Physical and Biological Oceanography as well as other interdisciplinary sciences which provide us with a detailed understanding of the ocean. Climate and environmental variation have a potential impact on our marine resources. Thus a better understanding of these phenomenon will allow enable us to better implement effective management, adaptation and mitigation measures for our marine resources.

The establishment of the Seychelles Ocean Temperature Network under the Seychelles Second National Communication to the United Nations Framework Convention on Climate Change, in 2007 has supported such initiatives. The Seychelles Ocean Temperature Network is a collaboration between public sector organisations, private sector companies and NGOs in Seychelles for monitoring and sharing of ocean temperature data. The network had 16

members by 2010 and had deployed over 49 temperature loggers within Seychelles since 2007; 37 around the Inner Islands, ten in the Amirantes and two at the Farquhar Atoll. This long term ocean temperature monitoring program will provide important information on ocean temperature trends and variations within Seychelles waters which can be linked and used to determine the potential impact ocean temperatures have on our marine resources, coral reef ecology, marine habitat, and predict possible bleaching. In 2013 SFA was able to replace 14 ocean temperature loggers within the inner islands and deployed two new loggers on the west coast of Mahé for the sustainability of the network.

6.5 Balancing Risks with Benefits Associated with Consumption of Swordfish: From Local to Global Case Study (CONSWO)

SFA in collaboration with IRD (Institut de Recherche pour le Développement) and FBOA (Fishermen and Boat Owners Association) is implementing a project to investigate factors which affect the level of metallic and organic composition of large pelagic species targeted by the Seychelles semi-industrial longliner sector, with particular focus on swordfish. The project arose from concern expressed by semi-industrial longliners over standards set by the international market on the level of heavy metals (cadmium in 2003 and mercury in 2013) in pelagic fish, especially swordfish. The presence of heavy metal in fish has long been a concern for consumers and over recent years the concern has grown to include not only the presence of heavy metals but also organic substances. At present the level of these substances within swordfish, and the marine environment of the Seychelles EEZ, is largely unknown. The substances are present in marine environments as trace compounds but tend to bioaccumulate in living organisms and biomagnify as they move up the ecological food chain. Top level, large predators with long life spans will therefore have higher levels of the substances present in their bodies. The project will be look at variability of levels of these substances within swordfish (comparing different types of tissues such as white muscle, liver and gonads); seek to establish whether size, age and sex has an effect on the level observed;

and also determine if the level within the Indian Ocean and other oceans are homogeneous. The project will also aim to educate the public on the benefits on swordfish consumption.

In September 2013 we conducted a training course with the skipper of the longliners on how to collect and take sample of their catch for the analysis. Sampling is done onboard the longliner vessels where the fishermen collect and store white muscle, gonads, liver and viscera, which are collected upon landing. Other information being taken by the fishermen includes fork length and fishing location. Landing mass, stomach and viscera mass, liver, gonads and muscle mass are also taken upon landing of the samples. Collection of samples will be conducted till 2014 and analysis will begin at the end of 2014 to early 2015. From September 2013 a total of 44 swordfish were sampled, including 22 females, 14 males and 8 juveniles.

6.6 Estimation of Maternal Effects on the Sustainability of Large Pelagic Populations (EMOTION) and Changes in the Biochemical Composition of Tropical Tunas and its Effects on Meat Quality (CANAL)

EMOTION is an IRD (Institut de Recherche pour le Dévelopement) project in collaboration with the SFA and other international institutions which aims at testing and quantifying the maternal effect on large pelagic species. It will address several interrelated questions about growth, body condition and reproduction. The study is targeting females of 3 main exploited tuna species from the Indian Ocean i.e. yellowfin (*Thunnus albacores)*, skipjack (*Katsuwonus pelamis*) and bigeye (*Thunnus obesus*).

Alongside the EMOTION project is the CANAL project which aims to find out why tropical tunas collected from March to June in the Mozambique Channel and processed by the Indian Ocean Tuna cannery (IOT) have meat with lower quality compare to tunas fished during the rest of the year. Unlike EMOTION which will be targeting only females, CANAL will be targeting immature and mature male and female tunas. Under both projects biometric

measurements including total weight, fork length, predorsal distance and thorax girth, along with samples of white and red muscle, liver and gonads are collected. Tissue samples are tested for bioenergetics tracers such as total lipid content, lipid class composition and fatty acid profiles. In addition information regarding tuna reproduction and diet will be obtained through histological and stable isotope analyses. Estimation of age and individual growth will be done using otolith readings. Growth models will also be developed using the dataset of the Indian Ocean Tuna Tagging Programme (IOTTP).

The main sampling activities ended in December 2013, but there will be small sampling activities carried out throughout 2014 to cover the months in which not all the targeted numbers of samples were obtained in 2013. From February to December 2013 a total of 625 tuna were sampled (217 bigeye, 178 skipjack and 230 yellowfin) from 12 purse seiners unloading in Port Victoria. In 2013 there have been a total of around 175 histological analyses done by SFA staff on the sample collected.

6.7 Understanding the Ecology, Demographics and Physiology of the Spine Foot Shoemaker in Support of Improved Fisheries Management

The spinefoot shoemaker (*Siganus sutor*) forms a large component of the annual fishery catch around the island of Praslin, where a fishery targeting its spawning aggregation has been operating for over 200 years. Spawning aggregations of the spinefoot shoemaker form at specific sites around the full moon over an 8 months spawning season between September and April. The location and timing of these spawning aggregations are well known by fishermen and are heavily fished. As a result of high fishing effort and large catches made at spawning aggregation sites during spawning periods the long-term sustainability of this species is a cause of concern. The aim of the project is to improve understanding of different aspects of the ecology, demographics and physiology of the spinefoot shoemaker in order to appropriately determine the management control rules that should be introduced as part of the fishery co-management initiative that is being piloted on Praslin. This project has three

components and is being implemented in collaboration with the Praslin Fishers Association (PFA). Details of each component are as follows:

Component 1: Understanding the factors that influence fidelity to spawning aggregation sites.

Past research undertaken by SFA using acoustic tagging and monitoring has shown that the spine foot shoemaker tends to display high but not absolute fidelity to spawning aggregation sites. High spawning site fidelity has also been shown to occur in many other species of coral reef fishes that spawns as part of transient spawning aggregations. However, the mechanism by which site fidelity in coral reef fishes is maintained has seldom been discussed. Larger scale studies around Praslin using plastic conventional dart tags suggest that fidelity may not be to individual spawning sites but to a group of spawning sites within a particular geographical area. The fishery that targets the spinefoot shoemaker spawning aggregations off Praslin, fish a number of spawning aggregation sites located at various distances from each other. There is also certain degree of segregation in the spawning sites which are fished by fishermen from the east and west part of the island. Management actions undertaken at the spawning aggregation sites fished by fishermen from the east of the island may have repercussions for those fishing the sites on the west of the island and vice versa. Understanding the factors that affect fidelity to spawning aggregation sites is consequently important in determining whether the various spawning aggregation sites should be managed as one unit or by sectors.

To determine whether the spawning aggregation sites chosen are determined by social interaction or the particular location at which the fish is found before the onset of spawning migration, we tagged 28 spinefoot shoemaker with Vemco V9 acoustic tags. In addition, we deployed an array of 22 acoustic listening stations at 7 spawning aggregation sites to monitor the presence and absence of the tagged fish at those sites. Fish were caught, tagged and

released at only 2 spawning aggregation sites (Pate Polite and Pate Dividi). Half of the fish caught at Pate Polite were tagged and released at the same site whilst the other half was translocated to Pate Dividi and vice versa. The listening stations are to be removed in May 2014 to determine whether any acoustic detection of the tagged fish was made and if the project was successful.

Component 2: Can length- and age-frequency data from spawning aggregation catches be used for stock assessment purposes?

Stock assessments determine the condition and productivity of fish stocks at given points in time. By knowing the proportion of fish of different size and/or age in a particular stock, biological parameters such as growth, mortality and recruitment rate can be calculated, which can in turn be used to calculate the amount of fish that can be sustainably captured from the stock. To get a good representation of size and age distribution of fish in a stock, scientists undertaking stock assessment need to collect a large number of length and/or age data from fish caught in the fishery. As catch per trap during spawning aggregations are usually several folds higher than during non-spawning aggregation periods, collecting length and age data during the spawning period may be a cheaper and less time consuming way of collecting the amount of data required for stock assessments.

In this project we are comparing length and age frequency data of spinefoot shoemakers caught in the normal fishery and those caught in the spawning aggregation fishery. Sampling started in October 2013 and will continue for one whole year with samples collected during the new moon (normal fishery) and full moon (spawning aggregation fishery) period.

Component 3: Change in body condition, fecundity and gonado-somatic index through a spawning season.

Preliminary data from acoustic tagging suggest that an individual spinefoot shoemaker may reproduce on every month of a reproductive season. Based on the high energy demand required for reproduction the body condition of fish may decrease as the spawning season progress. This might have important implications for individual fecundity and the contribution that individual spawning months make to stock replenishment. The aim of the project is to investigate change in body condition and fecundity in spinefoot shoemaker caught during spawning periods over the length of a spawning season. Field sampling started in October 2013 and will continue to September 2014. Body condition will be assessed through fat content analysis in muscle, gonad and liver tissue. Parameters to be measured include total fat, triacylglycerols (main reserve lipid) and sterols (structural lipids) g^{-1} of wet weight. These results may explain patterns observed in component 2 concerning the contribution of different spawning months to stock structure. If there is ever a need to control fishing efforts at the spawning aggregation sites during some months, these results may also help to identify the months in which fishing of spawning aggregations could be restricted to bring the greatest fisheries benefits.

6.8 Tagging of Large Bull and Tiger Sharks

Eight bull (*Carcharhinusleucas*) and tiger (*Galecerdocuvieri*) sharks were tagged in 2012/13 using Wildlife Computers Mini-PAT tags. These tags were programmed to detach from the animal after one year, float to the sea surface and broadcast geolocation, temperature and depth data collected to ARGOS satellites. A major problem encountered with this project is the premature detachment of tags. One tag was relocated after it was prematurely released and indicates that the breaking of the pin at the guillotine might be the source of the problem. This may be the result of sharks attempting to rub the tags off their back against rocks and corals. Efforts will continue to tag more sharks in 2014 with slight modification to the tag to reduce incidences of premature release.

Chapter 7 - Fisheries Development

7.1 Credit Facilities to the Fisheries Sector

Table 7.1 summarises the number of loans and their values approved for investment in the fisheries sector, for years 2011 to 2013. The table only provides information of loans from the Concessionary Credit Agency (CCA) – which changed its name to the Small Business Financing Agency (SBFA) in 2013 – and the Development Bank of Seychelles (DBS), as no information could be obtained for loans granted by other lending institutions. According to Central Bank figures, total loans and advances to the fisheries non-government sector in 2013 stood at SR15.0 million compared to SR17.3 million the previous year. However, the end of year outstanding loans to the sector contracted by 24% compared to an increase of 17% the previous year.

In line with the Development Bank of Seychelles' decision to put all lending activities on hold in February 2012, due to difficulties to raise finances to meet demand, no loans were approved by DBS in 2012. Towards the end of 2013, however, DBS renewed its engagement in providing loans to all sectors and 5 loans were approved for investment in the fisheries sector for a total value of SR1.143 million.

The CCA/SBFA grants soft loans of up to SR300,000 for the purchasing of new and second hand boats and engines, fishing gears and for the refurbishment of fishing vessels. In 2013, SBFA approved a total of 43 loans compared to 21 in the previous year. The value of loans approved by SBFA in 2013 grew by almost 250% as a result of the inability of DBS to issue loans throughout most part of the year.

In 2013 both the number and value of loans approved by both lending institutions increased. The number of loans approved more than doubled in 2013 compared to 2012, increasing from 21 to reach 48. The value of loans, however increased by more than 300%, from SR2.063 million in 2012 to SR8.317 million in 2013. Reasons for this could be an increase in demand for higher value loans in 2013 as fishermen and entrepreneurs' confidence in the fisheries sector is slowly being restored due to ongoing efforts to eliminate piracy, and more favourable market conditions which resulted in the expansion of the fishing fleet in 2013.

Table 7.1 Number and Value of Loans Approved by DBS And CCA/SBFA (2011 - 2013)

	2011			2012			2013		
	CCA	DBS	Total	CCA	DBS	Total	SBFA	DBS	Total
Number of Loans Approved	36	25	61	21	0	21	43	5	48
Value of Loans Approved (SR M)	2,485	4,898	7,383	2,063	0	2,063	7,174	1,143	8,317

7.2 Fisheries Incentives

7.2.1 GST and Trade Tax Concessions

As indicated in Table 7.2, 157 applications with a CIF value of SR16.8 million were received under the Agricultural and Fisheries Incentive Act (AFIA) in 2013 for VAT and Trades Tax concessions on imported materials for fisheries related businesses. These included various items such as fishing vessels, engines, commercial vehicles, equipment and spare parts. Applications were received from boat owners (individuals as well companies) and companies processing and exporting fish and other fish related products.

Table 7.2 Application for Concessions under the AFIA (2011 – 2013)

	2011	**2012**	**2013**	**% change**
No Applications	239	190	157	-23.16%
Est. Value (SR M)	18.8	11.3	16.8	48.67%

As can be further observed the number of applications received fell by 23.2% whereas the estimated CIF value grew by almost 50% indicating that the CIF value of the applications were higher in 2013.

7.2.2 Registration

In 2013, the total numbers of new registrations and renewals with SFA were as follows; 84 fishermen, 52 fishermen/boat owner, and 10 companies including processors.

There are various incentives for registering with SFA including the "Sickness Benefit Scheme" for fishermen, which compensate full time fishermen if they fall sick or are unable to work, and the fuel incentive scheme for boat owners. Registered fishing companies, including processors/exporters, benefit from VAT, and Trades Tax exemption on imported goods, Business Tax concessions as well as GOP exemptions for foreign workers employed.

Table 7.3 Registration and Renewal of Certificates under the AFIA

	2011	2012	2013
Fishermen	120	92	84
Boat owners	59	84	52
Company	1	13	10

7.2.3 Fisheries Development Fund

The Fisheries Development fund (FDF) was launched in July 2009 and had an allocation of €2.7 million. It is funded through the European Union's sectorial support to Seychelles, under the EU/Seychelles Fisheries Partnership Agreement. This fund aims to boost investment in fisheries value addition and processing, purchasing of new longline vessels, and upgrading existing longline vessels.

Loans under this fund attract a 3% annual rate of interest, with a period of repayment that should not exceed 10 years and are available exclusively to Seychellois investors or joint partnerships where the majority shareholder is Seychellois. Investors are asked to contribute a minimum of 5% of the total project cost.

By the end of 2013 a total of 13 loans had been approved under the Fisheries Development Fund for a total value of SR50.626 million. However one loan for a value of SR5.032 million was declined by the applicant. The total amount disbursed stood at SR29.618 million.

7.3 Fisheries Development Facilities

7.3.1 Ile du Port Zone 14

The contract for the quay construction project, which was awarded to the Vijay Construction Company, was completed within the scheduled timeframe. The quay, measuring 120 metres long with 9.5 metres draft at Average Chart Datum (ACD), was handed over by the contractor to the client (SFA) at the end of September 2013, exactly one year after the signing of the contract. The facility is equipped with twelve 50 - 60 tons bollard bites and twenty four trapezoidal fenders for accostage, berthing and working of the existing generation of purse seiners. The space provided alongside will principally be used for unloading of nets, salt and tuna landings. The new quay is expected to greatly assist in reducing port congestion specially during peak fishing periods and will improve Port Victoria's competitiveness regionally. In order to optimize the usage of this quay it is planned to install four new bollards laterally on land east and west of the quay so that two ships will be able to berth and work simultaneously (Figure 7.1).

Figure 7.1 Ile du Port Fishing Quay

Land Management and Site Survey Works at Ile du Port: From April 2013 the SFA was assigned the task of managing net repair activities on a site earmarked for that purpose. In addition, some spaces were used for stacking of nets for the purse seiners. By December 2013, after only six months of operation, the sum of over SR1.7 million was collected.

A site survey exercise was executed to determine the land topography at Ile du Port. The task included survey works and delimitation of new plots of land to be lease out. And moreover, in close collaboration and consultation together with MLUH/SPA, the scope of works for the selection and appointment of a consultant were prepared. The job of the consulting firm to be appointed, principally will be for the preparation, design, planning and supervision of the construction works that are to be undertaken, which includes the provision of various utilities such as water, electricity, sewage, road layout, drainage and the service corridors for Ile du Port.

7.3.2 Providence Fishing Port Zone 6

Processing Building Facility: Work on the project, which consists of nine units each measuring 400m^2 is progressing as planned. When completed, during the second quarter of 2014, the project will allow aspiring fish processors to enter the business of adding value to fish and fishery products. Commissioning of the processing building is expected to provide a boost to the industry especially during the post harvest period.

7.3.3 Bel Ombre Fisheries Development Project

Work on the facilities consisting of the Processing Building, Fishermens' Gear Store and Fuel Depot were delayed and this is due to the fact that the site was not connected to the main sewer system as a solution had to be found to treat effluent from the factory before eventually disposing in the sea.

Dredging of the Bel Ombre Harbour Basin: Due to accumulation of silt and sediment in the basin, some larger fishing boats were experiencing difficulties with manoeuvring and accessing the basin during low tides. After a bathymetric survey of the area was completed, excavation work to dredge over 20,000 cubic meters of silt and sediment was conducted hence making access and manoeuvring in the area more feasible for fishing and other boats.

7.3.4 Victoria Quay Facility

Berthing of Fishing Boats: During 2013, there were two main fishing ports in the country where artisanal and semi-Industrial fishing boats were able to berth and moor alongside the quay for servicing. They were the Victoria Artisanal Fishing Port and the Providence Fishing Port. The facility in Victoria consisting of 60 metres long demersal quay (opposite Oceana Fisheries) and 271 metres long jetty from the Oceana Fisheries fence to the Nation Newspaper fence, with water depth -3.5 metres facilitated most of the existing longliners/artisanal fishing boats' fleet with accostage, berthing and servicing. On the other hand though the quay facility at Providence Fishing Port is shorter in length thus measuring 100 metres the berth occupancy rate was relatively higher (Table 7.4) refers.

Table 7.4 Average monthly berthing of fishing boats at the Providence and Victoria Quay over the last three years

Average Monthly Berthing	2011	2012	2013
Providence	644	705	680
Victoria	998	1087	1119

7.4 Ice Plants

The SFA managed and operated five ice plants in 2013, four on Mahé and one on Praslin. The ages of these ice plants and their production capacities vary extensively. The Praslin plant, built in 1991, has a daily production capacity of 3 tons. The Anse a La Mouche plant, built in 1995, produced 2 tons daily, while the Anse Royale plant, built in 2002, produced 5 tons daily. Providence and Bel Ombre, with production capacities of 10 and 5 tons daily, were built more recently, in 2010. These ice plants provide most of the ice needed by fishermen on Mahé, Praslin and La Digue in 2013. Service was interrupted from April to August 2013 at the Baie Ste Anne Praslin ice plant as a result of a major breakdown with its compressor. Table 7.5 indicates revenues from the sale of ice from 2008 to 2013.

Table 7.5 Sales of Ices from 2008 - 2013

PLANTS	2008 SR	2009 SR	2010 SR	2011 SR	2012 SR	2013 SR	TOTAL SR
Anse A La Mouche	58,040.00	81,510.00	208,180.00	195,920.00	194,590.00	172,825.00	**911,065.00**
Anse Royale	168,100.00	65,660.00		354,680.00	283,740.00	135,430.00	**1,007,610.00**
Baie Ste Anne		149,475.00		271,850.00	281,254.00	272,135.00	**974,714.00**
BelOmbre			100,930.00	275,930.00	392,420.00	277,325.00	**1,046,605.00**
Providence			163,085.00	1,069,540.00	1,247,210.00	752,320.00	**3,232,155.00**
TOTAL	**226,140.00**	**296,645.00**	**472,195.00**	**2,167,920.00**	**2,399,214.00**	**1,610,035.00**	**7,172,149.00**

7.5 Promoting Value Addition

During the course of 2013 one of the main objectives of the Development and Evaluation Section was to work alongside the Fish Inspection Unit to assist the private sector in developing new fish processing activities based on the required international standards. The long-term objective of the sub-sector is to Seychelles the prime fish processing centre in the Indian Ocean.

The activities carried out by this section throughout 2013 include:

7.5.1 Participation in Unifest

During the second quarter of 2013, SFA participated in the Unifest activity organized by the University of Seychelles. The activity, which was conducted over a period of two days, was intended to make known to students and the general public, the functions of various work organizations.

SFA showcased all its sections, its purposes and importance. Since Seafood Value Addition is a subject that is not well known among the public, the Development and Evaluation Section within SFA attended with the intention of explaining its purpose, importance and its benefits to the economy of Seychelles. Materials used included posters, leaflets and interactive games.

7.5.2 Refurbishment of the Fish Processing Lab

From the second quarter up until the time of writing, major renovation work had been undertaken on the Fish Processing laboratory to improve safety and working conditions. In addition to the renovation, new machinery, notably the smoke fish machine was installed. Other renovation and installation works, such as installation of a more powerful air condensing unit and wall cladding, are on-going. The repairs and renovations were necessary to ensure adherence to local and international food laws.

7.5.3 Consultation with potential investors

Throughout 2013 several meetings were organized with business persons wishing to venture into fish processing and value addition. The aim of these meetings was to learn about each

investors intended project so as to ensure that they are in line with SFA's requirements and national standards and regulations such as the Food Act and the requirements of the Seychelles Investment Bureau (SIB).

The section was also engaged in providing technical support and expertise in drafting investor's plant layout, defining and organizing production process and setting up quality and hygiene measures.

7.5.4 Participating in the SEAFEX International Seafood exhibition in Dubai

In mid-November 2013, delegates from the Seychelles Fishing Authority, The Fishing Boat Owners Association (FBOA) and Oceana Fisheries participated in the international Seafood exhibition in Dubai (Figure 7.2). The aim was to promote the high quality of the Seychelles' fish and create new market access with African and Asian countries.

Figure 7.2 SEAFEX International Seafood Exhibitions

Chapter 8 - Fisheries Management

8.1 Implementation of the National Plan of Action for Sharks (NPOA-Sharks)

The Seychelles National Plan of Action for the conservation and management of sharks was approved in May 2007. The NPOA was developed as per the FAO guidelines under its International Plan Of Action For Sharks and through a consultative, stakeholder driven process. As specified under Section 9.5. of the plan, it was intended to have an initial 4-year duration (2007- 2010) with an independent review during year four, to provide the basis for a consultative revision of the NPOA, so as to enable an adaptive management approach and the optimal attainment of its strategic objectives. However, due to a lack of funds the plan is yet to be reviewed. The SFA will seek funds for this activity to be undertaken in 2014.

SFA has been working in collaboration with various other institutions (including NGO's) to implement the plan, most especially the research component. Various research programmes have been implemented to address the lack of information on shark biology, ecology and their movements in Seychelles waters. Throughout 2012 the SFA has worked with the Artisanal Shark Fishers Association (ASFA) to gather catch and size data of sharks at various landing sites. A digital database is being compiled. The catch data will improve the estimation of shark catches by the artisanal fishery sector. Furthermore the size data will be used to develop models which will allow species identification as well as size estimates based on measurement(s) taken from dressed carcases. This work is expected to be completed in 2014.

Another research project which started in 2010 used acoustic telemetry (acoustic receivers and tags) to study the distribution and migration of coastal sharks around the inner granitic islands. The initial strategy of the project was to tag several species such as grey reef sharks (*Carcharhinusamblyrhynchos),* tiger sharks (*Galeocerdocuvier*), bull sharks (*Carcharhinusleucas*) and hammerhead sharks (*Sphyrnidae* sp.) so as to reflect the multispecies component of the shark community in these waters. As of August 2013 the target of 40 sharks was attained. Most of the tagged sharks were in the average of 1m total length, with the biggest being a 3.6m tiger shark. The level of detection of the tagged animals was not as high as it was anticipated. Data analysis is ongoing.

The project achieved much better results in examining the activity patterns and area use of juvenile sickle-fin lemon sharks, *Negaprionacutidens*, in a small marine protected area (Baie Ternay Marine National Park). Nineteen individuals were successfully tagged and preliminary data analysis revealed that juvenile sickle-fin lemon sharks show high fidelity to this particular marine protected area and were occupying the site for a period of several weeks up to 5 months before leaving. This suggests that the MPA is an important nursery site for this species.

8.2 Sea Cucumber Fishery Management

Over recent years, the Seychelles Fishing Authority has been working in close collaboration with the Association of Members of Seychelles Sea-Cucumber Industry (AMSSI) through a Management Advisory Committee (MAC), to sustainably manage the sea cucumber fishery. Throughout 2013 this collaboration continued with the main aim for the year to undertake a comprehensive stock assessment of the sea cucumber resources. Due to the security threat posed by piracy, the partners agreed that the stock assessment would be conducted using fishery dependent data collected over the last 10 years through the logbook system.

An international tender was published and Marine Resources Assessment Group (MRAG Limited), a consultancy firm based in the UK with considerable world-wide experience of natural resource assessment and management for marine species including sea cucumber, was selected for the assessment. Unfortunately the available data collected on the fishery was not reliable enough to parameterise models sufficient to provide robust estimates of yield in order to establish a sustainable catch level or Total Allowable Catch (TACs.) MRAG however provided in its final report a set of recommendations guiding management of the fishery, as well as to improve the quality and reliability of the data being collected via the logbook system in order to achieve more comprehensive stock assessment in the future.

MRAG emphasized the fact that even though the data was not adequate for a comprehensive stock assessment, Seychelles is a model for other countries with similar fishery, by having clearly defined and effective policies for the management of sea cucumbers fishery.

Through the MAC the SFA and AMSSI have worked together on a work plan to address various shortcomings. A Memorandum of Understanding (MoU) to formalise collaboration between the two parties on the project "Implementation of measures to enhance Sea Cucumber Fishery" was also drafted. The MoU contains step-by-step, short and long term actions and shared responsibilities for effective and efficient development and implementation of management measures for the Sea Cucumber Fishery. The MoU addressed 3 main areas; (i) improve monitoring of the fishery to allow a comprehensive stock assessment; (ii) improve safety at sea and raise awareness of inherent risks; (iii) and evaluate and implement precautionary management measures for the fishery.

The SFA and the association agreed on new measures for the fishery which included maintaining the number of license holder at 24 with the same license holders for at least 3 fishing seasons in order not to introduce any biase in the data collection system.

An increase in the number of diving accidents, which resulted in one fatality in the sea cucumber fishing operations, prompted the SFA and AMSSI to take urgent actions to address this emerging risk and danger in the fishery. Since September 2013 the SFA and AMSSI, in collaboration with other local and international partners (MoH, Smart-Fish-FAO project), has been implementing a compulsory comprehensive medical examination programme for all sea cucumber divers as well as a training and education and awareness programme. Furthermore, with the assistance of an international expert the SFA will develop a Diving Manual with established standard recommendations for sea cucumber harvesting operations using SCUBA gear. The diving manual is expected to be ready for the opening of the 2014-2015 sea cucumber fishing season which starts in October 2014. The action plan and MoU will be valid for an initial period of three years.

8.3 EAF-Nansen Project

Launched in 2008, the EAF-Nansen project is a joint project between FAO, as the implementing agency, and the Norwegian Agency for Development Cooperation (NORAD), as the funding agency. The project adopts the increasingly utilized principles of an Ecosystem Approach to Fisheries (EAF), which considers the entire ecosystem, with all its interactions and associated benefits, in adopting a bottom up approach to the sustainable management of fisheries resources. As a result, to a large extent, it requires stakeholder involvement through better communication and consultation with parties directly involved or closely linked to the fisheries industry, particularly in the decision making process, in order to ensure better compliance with the agreed resolutions. The approach differs considerably from the conventional way of fisheries management, which tends to focus mainly on target species (known as a single-species approach).

In Seychelles, the EAF project began in 2010 with the formation of a National Task Group (NTG). The NTG agreed to concentrate on the demersal handline fishery, as it is a fishery of significant socio-economic importance to Seychelles. The demersal handline fishery is also

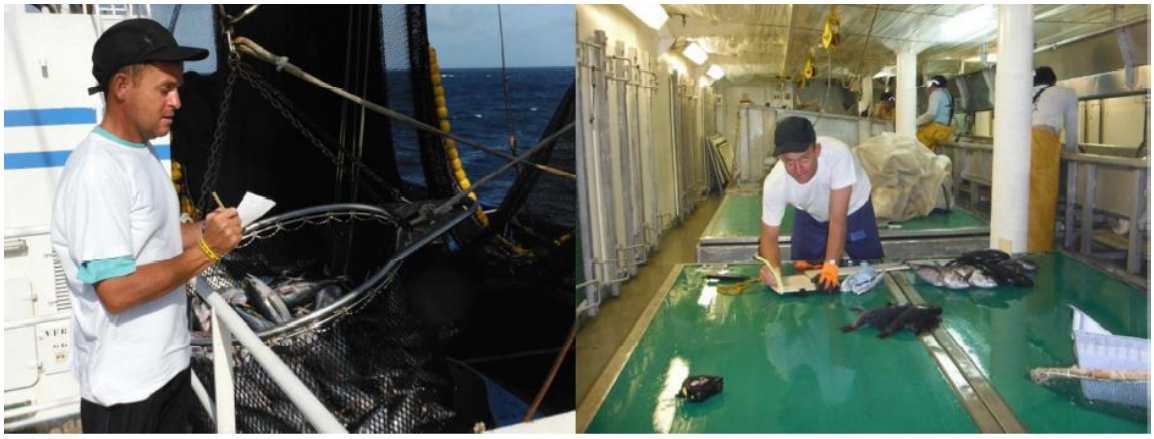
vulnerable to overfishing as many of the primary target species are slow growing and late to mature groupers and snappers. One of the most highly valued and targeted species is the emperor red snapper (*Lutjanus sebae;* known locally as Bourzwa). This species is vulnerable to high fishing pressure as it matures very slowly and much of the handline catch comprises of juveniles. Furthermore, there is a high level of targeting of spawning aggregations (the species aggregate to a particular location for group spawning).

Two consultative meetings were held, one on Praslin (in February 2013) and one on Mahé (in April 2013), to gather stakeholders' views on the status of demersal fishery resources and how they would like to see the demersal handline fishery being managed in the future. On Praslin there was a good turn-out, unlike on Mahé. Following the stakeholders' consultation, an action plan, with step by step actions required to develop a management plan for the demersal fisheries resources, was drafted and sent to different stakeholders for more views and comments. The action plan will be used as a guiding document in developing a management plan for the demersal fisheries resources.

8.4 Seychelles National Scientific Observer Programme

During 2012 the Seychelles Fishing Authority made all the necessary preparations (training, purchase of equipment etc.) for the implementation of a National Scientific Observer Programme. As per the IOTC binding resolution 11/04 contracting parties are under the obligation to implement a regional observer scheme covering at least 5% of the activities of their fishing fleet, by gear types, targeting tuna and tuna-like species in the IOTC area of competence. As an active member of this Regional Fisheries Management Organisation (RFMO) Seychelles needs a programme for its tuna fishing fleet to at least, meet the 5% coverage as required by this resolution. The programme will provide fine scale scientific information on fishing activities taking place inside as well as outside of the Seychelles EEZ, information required to improve stock assessment and the decision making process in regards to the management of the Indian Ocean tuna and tuna-like resources.

Figure 8.1 An observer collecting data on a tuna purse seiner



The first at-sea deployment of a Seychellois observer onboard a Seychelles registered Purse seiner occurred in July 2013, followed by a second deployment in September – October. A total of 66 days of observation have been completed so far. The observer reports will be submitted to the IOTC secretariat. Training of more observers for the expansion of the programme is anticipated in early 2014.

Chapter 9 -
Monitoring Control And Surveillance

The Monitoring Control and Surveillance (MCS) Section is comprised of two sub-units. These are: The Monitoring and Control Unit and the Enforcement Unit.

The Monitoring and Control Unit is composed of the Fisheries Monitoring Centre (FMC) and the Fisheries Control Unit.

The Fisheries Monitoring Centre (FMC) deals with the compliance of all fishing vessel's reporting requirements, Vessel Monitoring System (VMS), validation of statistical documents for ICCAT, IOTC, EU and Non-EU catch certificates.

The Fisheries Control Unit is responsible for the processing of fishing licences.

The Enforcement Unit carries out all inspectorate duties with regards to port state inspection, land inspection, sea and air surveillance duties pertaining to national and regional requirements.

The main objectives of MCS Section are:

- To ensure compliance with the fisheries Act and regulations, Fisheries agreement and protocols;

- To provide support to local partners such as the Seychelles Coastguard (SCG) and the National Drug Enforcement Agency (NDEA);

- To work with countries of the region to improve MCS implementation in a regional effort to eliminate IUU fishing activities;

- To ensure compliance to the Licensing Act and Regulations;

- To ensure compliance to international legal framework, plus the IOTC resolutions that have been endorsed by Seychelles.

9.1 Fisheries Monitoring Centre (FMC)

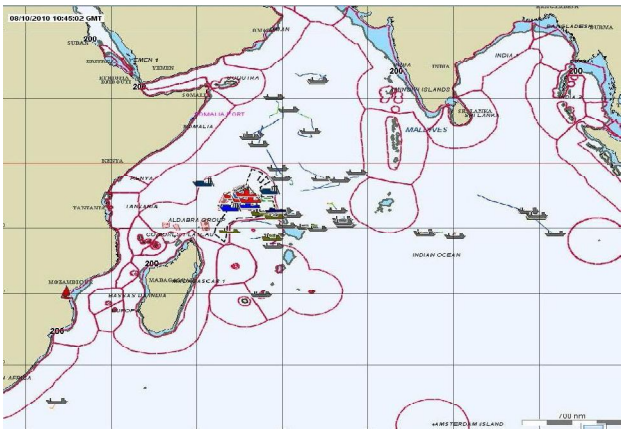
9.1.1 Vessel Monitoring System (VMS)

With the integration of our VMS software (Themis), the SFA VMS data transfer operation became fully capable to send and receive data through HTTPS and SMPT protocols. The Themis platform was introduced in 2009 and further upgrades work has been done since then to improve the operation of the server. The software enables the FMC to monitor licenced fishing vessels on a larger scale.

In 2013 the SCG was installed with the THEMIS software so they have round the clock surveillance of all the vessels operating within the EEZ.

A technical team from the FMC ensures the operation of the FMC servers on a daily basis, plus the installation and maintenance of VMS mobiles on the local fleet and the inspection of VMS mobiles on Seychelles flagged fishing vessels. The technical team also ensure that the Foreign Flagged vessels sends their automatic report to the FMC whiles in the Seychelles EEZ through their FMC or their service provider as per their respective fisheries agreement.

Figure 9.1 Screen capture of Themis viewer platform



The total VMS data transmission has continued to increase over recent years and Table 9.1 illustrates data transmission records for different fleets which took licences to fish in Seychelles waters, in addition to Seychelles' flagged vessels, during 2013.

The increase of data reporting is due to the increase of vessels applying for fishing licenses and the increase in licences is due to the decrease of pirate activities within the northern zone of the Seychelles EEZ.

Table 9.1 VMS data transmission records per vessels flags

VESSELS FLAG	YEAR			
	2010	**2011**	**2012**	**2013**
Belize	0	0	0	0
China	55	897	12825	21,261
France	99557	89981	75136	56,153
Japan	384	0	8781	9,152
Seychelles (Artisanal)	548902	563362	579012	627,493
Seychelles (Industrial)	296895	327297	563154	671,234
Mayotte	23408	20799	31626	14,114
Spain	51262	45864	52710	38,460
Taiwan	189070	159433	354624	349,629
Panama	0	0	0	0
Oman	2545	2233	10797	2,075
Netherland	0	0	0	0
Phillippines	0	732	2123	8,566
Italy	0	0	0	0
Korea	0	0	15804	30,120
Thailand	5548	0	0	0
Tanzania	0	0	0	46,933
TOTAL	1,219,636	1,212,609	1,708,604	1,877,203

9.1.2 VMS on local fishing fleet

The number of local vessels installed with Inmarsat-C transceivers continues to increase each year due to the arrival of new vessels. The maintenance of the VMS terminals on local fishing vessels remains one of the main challenges for the centre. The centre continues to provide VMS maintenance services to boat owners on a daily basis. Till 2013 only 215 vessels in total were installed with VMS, of which 9 were newly installed vessels and 15 were vessels which required replacement terminals.

Table 9.2 shows the number of maritime distress alerts received by the Seychelles Coast Guard. From 2012 to 2013 there was an increase in the amount of distress alerts recorded.

Table 9.2 Breakdowns and maritime distress alerts received by the Coast Guard for 2012 - 2013

YEAR	2012	2013
Breakdowns	9	0
Distress	11	32
Total	20	32

9.1.3 VMS on industrial fishing vessels

All industrial vessel reports were satisfactory during 2013 and no major compliance actions were undertaken.

9.1.4 Innocent passage

A total of 34 requests of innocent passage were approved in 2012.

The increase of innocent passage in 2012 is partly due to the increase of fishing activities in the north and northwest of the southern Western Indian Ocean area. In 2013 there were only 43 vessels which requested innocent passage.

9.1.5 Entry and exit reports

There has been a major improvement in Entry and Exit reporting by the EU and Taiwanese fishing vessels during the years 2012 and 2013. The total numbers for Entry and Exit in 2012 were 3,543 and in 2013 were 3,049.

9.1.6 Transhipment

The SFA has continued to authorise transhipment at sea in line with IOTC resolution 12/05, in combination with the IOTC observer programme of which Seychelles is a participant. We are making sure that all the Seychelles LSTLV (Large Scale Fishing Vessel) has all the necessary documents on-board before the authority can acknowledge a request for transshipment from a vessel.

9.1.7 Longliner transhipment

All Seychelles longliners that carry out transshipment at sea or in foreign ports have to seek prior authorisation from SFA in accordance with IOTC resolution 12/05. A total of 130 transshipments were carried out in 2012 and a slight decline of 120 carried out in 2013, though the quantity transshipped has generally increased.

Table 9.3a Total number of transhipments carried out at sea during 2011 – 2012

YEAR	2011	2012	2013*
Total No. of Transhipments	112	130	120
Total No. of kg Transhipped	6,985	36,727	9,263,083

***Data for 2013 include both transhipments in port and at sea**

Table 9.3b Total quantity of species transshipped in 2013

YEAR 2013	
SPECIES	**TOTAL (KG)**
Albacore	138,330
Yellowfin	989,170
Skipjack	0
Bigeye	5,797,201
Southern Bluefin	0
Blue Marlin	35,239
Marlin	123,749
Black Marlin	60,641
Stripped Marlin	72,148
Sailfish	146
Swordfish	708,013
Shortfinmako shark	0
Shark	179,553
Blue shark	0
Sharks fins	0
Oil fish	770,712
Other	388,181
TOTAL	9,263,083

9.1.8 Purse seiner transhipment

All Seychelles and EU seiners' carried out the majority of their transshipment in Port Victoria, maintaining Port Victoria's status as the most active transshipment and landing fishing port in the region.

Table 9.4 shows the quantity per species, per flag, which were either transshipped or landed in Port Victoria for 2013.

Table 9.4 Total quantity of species transshipped or landed for 2013

FLAGS	SPECIES IN TOTAL (KG)			
	YELLOWFIN	SKIPJACK	BIGEYE	ALBACORE
SEYCHELLES	31,415,213	18,353,533	4,809,615	525,566
SPAIN	41,604,139	26,713,625	8,418,467	272,244
FRENCH	5,541,966	4,582,174	961,921	48
MAYOTTE	4,025,817	2,563,498	453,856	260
KOREA	1,908,517	2,953,821	726,832	-

9.1.9 Statistical documents

Since 2002, Seychelles has been validating statistical documents for ICCAT and IOTC. As of the 1st January 2010 when COUNCIL REGULATION (EC) No 1005/2008 came into force, SFA has successfully implemented the catch certificates as per article 12 of the regulation. During 2010-2011 there was continuous improvement in the EU/IUU regulations, especially for processed products for which partial certificates were introduced for partial processing of products from the industrial tuna fishery.

During 2012 a total of 2,348 catch certificates and statistical documents were validated for export. All requests for validation are scrutinised for their authenticity in relation to VMS data, logbook, landed catch and transshipment declaration, where appropriate.

In 2013 a total of 2,774 catch certificates and statistical documents were validated for export, of which 113 were Non-EU catch certificate, 115 EU catch certificate for local vessel, 1,652 EU IUU catch certificate, 246 EU foreign catch certificate, 141 EU Seychelles catch certificate, 495 statistical certificates and 12 re-export catch certificates.

Figure 9.2 Graphical illustrations of validated Catch Certificates for the period 2013

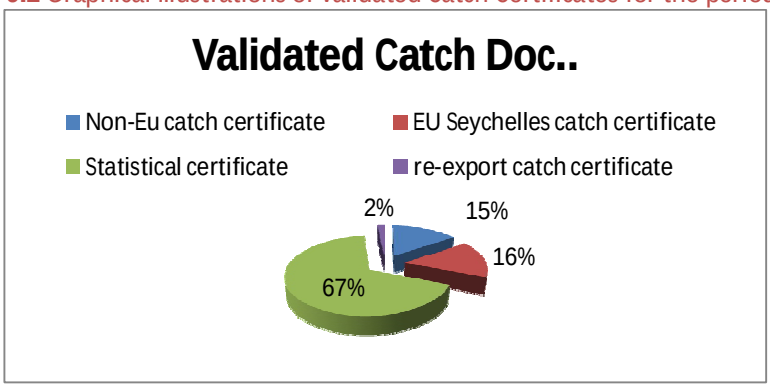


Table 9.5 shows the total number of fish exported in 2012 and 2013 by country as per validated catch certificates. In 2013 there was a slight increase in the total exported, but generally there are decreases per exported countries compared to 2012.

Table 9.5 Destination of the catch for the semi-industrial and artisanal fishing vessels

	2012	2013
Country of Export	**Quantity (Kg)**	**Quantity (Kg)**
United Kingdom	83,825.17	68,297.16
Reunion	22,752.60	16,728.60
Germany	11,393.50	5,309.80
France	4,403.60	2,373.60
Italy	407.70	0.00
Mauritius	41,790.66	39,544.65
Australia	3,605.90	6,233.00
U.A.E	11,749.60	4,047.80
Sri Lanka/Colombo	0.00	37,075.70
Hong Kong	0.00	21.40
Iran	0.00	0.00
China	0.00	0.00
USA	16,054.50	17,895.10
Pakistan	9,481.40	0.00
Spain	0.00	1,067.80
South Africa	14,772.32	26,014.57
Kenya	0.00	28.70
Japan	0.00	7,930.00
Czech Republic	102.10	386.30
TOTAL	**220,339.05**	**232,954.18**

Table 9.6a Export to EU Countries for 2013

COMMON NAME	U.K	GERMANY	REUNION	FRANCE	SPAIN	CZECH REPUBLIC	TOTAL EXPORTED 2013 (KG)
Swordfish	34739.3	183.7	0	0	0	183.7	35106.7
Bourgeois	23685.4	2335.9	12510.45	1237	0	49.9	39818.65
Tuna	4729.6	984.3	106.5	966.2	1067.8	101.5	7955.9
Vielle Plate	244.3	271.6	1728.55	0	0	0	2244.45
VielleMaconde	140.35	0	952.3	4.9	0	0	1097.55
Vielle Rouge	27.9	0	205.6	0	0	0	233.5
VielleBabonne	0	0	10.8	0	0	0	10.8
Green Jobfish	0	0	153.9	0	0	0	153.9
VielleThioffe	0	0	103.4	0	0	0	103.4
White Blotch Grouper	0	0	52.8	0	0	0	52.8
Vielle Croissant	45.2	0	0	0	0	0	45.2
Job	319	0	0	0	0	0	319
Variola Louti	42.46	0	0	0	0	0	42.46
Madame Dilo	0	0	121	0	0	0	121
Job Gris	407.1	0	64.8	0	0	0	471.9
Job Jaune	317.2	0	758	0	0	0	1075.2
Captain Blanc	812.2	27.1	1	26.3	0	0	866.6
Blue Lined Large Eye Bream	0	0	0	0	0	51.2	51.2
Makonde	61.5	0	0	0	0	0	61.5
VarVara	269.2	0	0	0	0	0	269.2
Marlin	429.9	0	0	139.2	0	0	569.1
Vivaneau	0	0	103.2	0	0	0	103.2
Bordomar	0	0	99.3	0	0	0	99.3
Sailfish	218	0	0	0	0	0	218
Kingfish	25.8	0	0	0	0	0	25.8
Therese	109.6	0	47.1	0	0	0	156.7
Etelis	0	0	32.7	0	0	0	32.7
Barucuda	0	81.2	0	0	0	0	81.2
Dorado	20.1	0	0	0	0	0	20.1
TOTAL	**66644.11**	**3883.8**	**17051.4**	**2373.6**	**1067.8**	**386.3**	**91407.01**

Table 9.6b Export to Non-EU Countries for 2013

COMMON NAME	MAU	UAE	USA	HONG KONG	KENYA	JAPAN	S.AFRICA	SRI LANKA	AUS	TOTAL EXPORTED 2013 KG
Big Eye Tuna	0.00	0.00	1,822.60	0.00	0.00	234.60	0.00	0.00	0.00	2,057.20
Bordomar	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	83.80	83.80
Bourgeois	4,455.0	720.0	52.20	0.00	0.00	0.00	0.00	0.00	2,982.0	8,211.80
Capitaine Blanc	74.00	0.00	37.10	0.00	0.00	0.00	0.00	0.00	622.20	733.30
Capitaine Rouge	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.00	39.00
Dorade	0.00	0.00	0.00	0.00	8.90	0.00	26,014.57	0.00	0.00	26,023.47
Guele longue	0.00	0.00	0.00	0.00	8.90	0.00	0.00	0.00	0.00	8.90
Job Gris	818.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	390.50	1,209.00
Job Jaune	132.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	186.00	318.00
King Fish	0.00	1,501.80	0.00	0.00	8.90	0.00	0.00	39.50	0.00	1,550.20
Sailfish	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.50	29.50
Swordfish	0.00	3,613.70	13,218.45	11.30	1.00	7,937.80	0.00	0.00	1,052.20	25,834.45
V.Croissant	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.20	80.20
V.Maconde	157.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	157.60
V.Platte	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	272.00	272.00
V.Thiof	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	12.40	12.40
VaraVara	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.40	5.40
Yellowfin Tuna	0.00	0.00	5,428.75	10.10	1.00	1,174.20	0.00	0.00	1,375.80	7,989.85
TOTAL	**5,637.90**	**5,836.40**	**20,559.0**	**21.40**	**28.70**	**9,346.60**	**26,014.57**	**39.50**	**7,131.90**	**74,616.07**

9.1.10 Data exchange

During 2012, data exchange between Seychelles and Reunion (CROSS REU) has continued to progress with weekly exchanges. In addition, data exchange also took place during regional fisheries surveillance missions.

The SFA is optimistic of further data exchanges under the SADC regional MCS program and the Smart Fish MCS component of the 10th EDF for ESA IO member states.

Stop Illegal Fishing has launched a new initiative **Fish-I**. It is a regional partnership between southeast African countries to combat fisheries crimes. The initiative was launched in December 2012 in Seychelles. Due to sharing of information and cooperation between countries, in March 2013 Seychelles denied permission to a South Korean tuna Purse seiner to offload or transship her catch in Port Victoria as the vessel was under investigation for illegal fishing in Liberian territorial waters. The South Korean purse seiner was denied the use of port under the IOTC Port State Measure Resolution (PSMR) (10/11).

In 2013 the member states of the IOC signed the contract for the launching of the new Regional VMS System within the Indian Ocean between the 5 member states (Seychelles, Mauritius, Madagascar, Reunion and Comoros) which will be operational in 2014.

9.2 Fisheries Control

In the past SFA's responsibility was limited to compliance verification and approval of licences. To issue or revoke a fishing licence was the responsibility of the Seychelles Licensing Authority (SLA).

Since 25th September 2010, the SFA has been legally responsible for the issuance of fishing licences. Due to limited office space and human capacity constraints, however, the SFA is unable to discharge this responsibility until such time as these constraints are addressed.

9.2.1 Industrial sector

The number of licences issued by SFA in 2012 and 2013 is reflected in Table 9.7. There has been a decrease in the number of licences issued in 2013 compared to 2012. In 2012 207 licences were issued while in 2013 there were 158 in total. The slight decrease in licences for 2013 was due to the amount of licences issued to the Taiwanese flagged vessels. In 2012 there was 48 Longliners that applied for a fishing licence compared to 2013.

Table 9.7 Number of industrial fishing licenses issued per country and by types of fishing vessels for 2012 and 2013

Country	2012				2013			
	Longliner	Purse Seiner	Supply vessel	Total	Longliner	Purse Seiner	Supply Vessel	Total
Spain	0	14	5	**19**	0	14	6	20
Belize	0	0	0	**0**	0	0	0	0
Iran	0	0	0	**0**	0	0	0	0
Oman	2	0	0	**2**	0	0	0	0
China	13	0	0	**13**	8	0	0	8
France	0	8	0	**8**	0	8	0	8
Italy	0	0	0	**0**	0	0	0	0
Korea	0	1	0	**1**	0	3	0	3
Japan	2	0	0	**2**	2	0	0	2
Mayotte	0	5	0	**5**	0	9	0	9
Mauritius	0	0	0	**0**	0	3	0	3
Philippines	7	0	0	**7**	2	0	0	2
Seychelles	29	9	3	**41**	27	8	4	39
Taiwan Republic of China (ROC)	108	0	0	**108**	60	0	0	60
Tanzania	1	0	0	**1**	1	0	0	1
Thailand	0	0	0	**0**	**0**	**0**	**0**	**0**
Total	**162**	**37**	**8**	**207**	**100**	**45**	**10**	**158**

Longliners from the Far East continue to dominate the number of licence applications per year.

Table 9.8 Licence Fees

Type of vessel	Duration	Amount	Currency
Longliner			
Sey/Taiwan	1 Year	24,000	USD
	6 Month	17,500	USD
Purse Seiner			
Sey. Flagged	1 Year	90,000	USD
French/Spanish (EU Agreement)	1 Year	61,000	EURO
Private Agreement	1 Year	120,000	USD
Supply Vessel	1 Year	5,000	USD

9.2.2 Local fishing licences

In 2012, a total of 381 local fishing licences were issued. In 2013, 69 licences were issued. Open deck Mini Mahé fishing vessels still remain the dominant type of licence issued.

Table 9.9 shows a sharp decrease from 2012 to 2013 due to the fact the vessels were not operating or exporting their catch.

Table 9.9 Type of local licensed issued for 2012 – 2013

Boat Type	**2012**	**2013**
Catamaran	2	0
Seadog	9	3
Longliner (semi-industrial)	18	4
Lekonomi	16	3
Lavenir	20	3
Schooner	61	11
Whaler	36	4
Mini Mahe	219	39
Others	0	2
Total	**381**	**69**

9.2.3 Sea cucumber licences

The number of sea cucumber licences has remained constant over recent years due to the cap of 25 licences. The total number of sea cucumber exported by processors for 2013 was 489,332 and the total Kg was 268,288.56.

Table 9.10 Number of sea cucumber landed and exported at the first closure of the season in June 2013

Sea Cucumber Season Closure Data for 2013 in June			
ACTION	**MONTH/NAME**	**NUMBER**	**QUANTITY (KG)**
LANDING	January to March	225,635	
	April to June	153,463	
TOTAL		**379,098**	
EXPORT	January to December	157,429	21,081.51
		132,173	22,694.25
		128,201	30,586.6
		71,529	11,825.80
TOTAL		**489,332**	**268,288.56**

9.2.4 Lobster licences

Lobster fishing season was re-opened in 2010/2012. A limit of 20 licences was given to the three main islands Mahé, Praslin and La Digue. In 2013 a limit of 20 licences was also provided for a limited time period of only 1 month.

9.3 Fisheries Surveillance

Fisheries Surveillance is an area that is lacking in both manpower and equipment though there have been major improvements in sea patrol and port state control. Land based monitoring remains an area that needs to be reviewed, as well as the type of inspection.

Under the regional fisheries surveillance programme, SFA inspectors have had training in inspection at sea, radio telecommunication, and procedures for safety at sea. Compliance observer training and port state inspections are areas identified for future training.

9.3.1 Port state control

Port state control has been one of the strong points of Seychelles even prior to the creation of the MCS section. Despite this, the approach to port state control was reviewed in 2009, concentrating on an investigative rather than an informative approach. The results have been positive, with detection of infractions, in one case resulting in the capture of the Sri Lankan flag fishing vessel Lucky Too in 2012. The vessel was fined SCR100,000.00. In 2013 two Malagasy catamarans was captured practising illegal fishing of sea cucumber in the Alphonse islands and were fined SCR1,500,000.

Nevertheless, there is still a need to improve port state inspection to bring it in line with the requirements of the FAO Port State Measure (PSM) and the IOTC PSM resolution.

Table 9.11 Number of fishing vessels inspected in Port Victoria by country and type of vessel for 2013

	2013			
Flag	**Purse Seiner**	**Longliner**	**Supply Vessel**	**Others**
China		0		
France	75			
Italy				
Japan				
Korea	7			
Seychelles	43	2	12	
Spain	106		17	
Taiwan		5		
Thailand				
Iran				
Mayotte				
Dominica				
Phillipines				
Mauritius				
Total	**231**	**7**	**29**	

In 2013 enforcement officers along with FMC personnel were given training for Port State Measure (PSM) which will help to increase compliance inspection in ports.

9.3.2 Compliance inspection

Inspection is carried out on all Seychelles flagged industrial vessels to ensure compliance with FAO requirements for port state responsibility. Since most distant water longline fishing vessels do not use Port Victoria as their base port, the inspection is carried out when the vessel is registered and prior to issuance of the Certificate of Authorisation (COA) to fish outside of Seychelles waters. Most of the inspections are carried out in foreign ports, particularly Jurong in Singapore, Port Louis in Mauritius and Colombo in Sri Lanka. This inspection is repeated every two years to ensure continued compliance for all Seychelles flagged vessels.

Table 9.12 Seychelles' flagged fishing vessel compliance inspection in foreign ports for 2013

Year	Purse seiner	Longliner	Supply vessel
2013	0	11	0

9.3.3 Land patrol

Land patrols mainly target landing sites around the three main islands: Mahé, Praslin and La Digue. The main purpose of land patrols are:

- Inspection of boats upon licence application;
- Inspection with regards to fuel claims;
- Inspection of sea cucumber landing at authorised landing sites;
- Inspection at point of export of sea cucumber;
- Monitoring of the lobster fishery;
- Investigation on report of illegal activities;
- Periodic inspection at beach landing sites.

Table 9.13 Number of land and coastal patrol carried out in 2013

2013	
PATROL TYPE	**TOTAL**
LAND	43
COASTAL	9

9.3.4 Regional fisheries surveillance

The Regional Fisheries Surveillance Project (RFSP) financed by the EU and other member states under the management of the IOC was extended for another year in 2011. Another three year extension has also been proposed for the coming years.

Twenty nine regional patrols have been planned since November 2007 up to November 2011, covering all jurisdictions of the Indian Ocean Commission member states.

With the implementation of the RFSP and the allocation of a budget financed by the Seychelles Government for joint fisheries and piracy patrol, Seychelles has improved its efficiency in the surveillance of its EEZ, as illustrated in Table 9.14. In 2012 no patrol was conducted due to patrol vessel and aircraft availability. All fisheries patrols were postponed for 2013. In 2013 no regional patrol was carried out due to the delay in renewal of contract for the vessel to carry out the patrol. As a result only national patrols were conducted. A decline in the number of days of sea patrol occurred due to the cost of operations which increased.

Table 9.14 Records of patrol conducted between 2007 and 2013

Patrol	**YEARS**					
	2007	**2008**	**2009**	**2010**	**2011**	**2013**
Sea	7 days	38 days	107 days	110 days	91 days	36 days
Air	3.2 hrs	74.6 hrs	216. hrs	40 hrs	6hrs	8.0 hrs

9.3.5 Patrol vessels

The Seychelles Coast Guard have two long range patrol vessels, the 'PV Andromache' and 'PV Topaz'. The two vessels have been fully engaged in piracy patrols since February 2009. As a result, SFA was left with no alternative but to lease a vessel for fisheries patrol so as to meet national and regional objectives. The Patrol vessel that was leased was the "Maya Dugong", owned by Silhouette Cruise Com. Ltd.

9.3.6 Aircrafts

SFA has been utilising aircraft of the Seychelles' People Defence Force (SPDF) for fisheries surveillance. Availability of the aircraft was limited, in particular during 2011-2012 because of their use in piracy surveillance. The arrival of a new Twin Otter plane for the Seychelles Air Force of the Seychelles People Defence Forces did not alleviate this problem. Similarly, the arrival of a Dornier aircraft has given the fleet more resources but there was still limited availability of planes, as not all where operational during the course of the year.

9.3.7 Vessels apprehended

Table 9.15 Records of vessel apprehended since 2013

DATE	Vessel/ Captain/ Owner	NATIONALITY	CHARGE	ZONE	OUTCOME
25/02/2013		Malagasy	SR 1,500,000	Amirante Group, Seychelles Island	

9.3.8 Piracy

With the decrease in the threat of piracy since early 2012, the number of licence applications has increased. The number has risen to 207 licences in 2012 and 158 in 2013.

In the local fishery, the threat of piracy forced local, semi-industrial longliners to restrict their fishing activities to within or just beyond the Mahé plateau, thereby increasing fishing pressure within this area.

9.3.9 Regional MCS effort

Two main regional MCS projects are ongoing in the region. These are: the establishment of the SADC Regional MCS Centre based in Maputo, Mozambique and the MCS component of the EU 10th European Development Fund (EDF) for the ESA-IO countries.

The MCS component financed under the EDF has been named the Smart Fish project. The relevant protocol has been signed and equipment is being purchased for the project. The Indian Ocean Commission members will soon have an operational Regional VMS System.

Chapter 10 - International Co-Operation

10.1 EU/Seychelles Fisheries Partnership Agreement

The co-operation between the EU and Seychelles' under the framework of the Fisheries Partnership Agreement (FPA) continued fruitfully as in previous years.

The Joint Committee, as provided for under the FPA, met in Mahé in March to review the performance of the Protocol and the sectorial support for the prior year. This was the last Joint Committee meeting of the parties under the Protocol 2011 to 2013. Twenty two EU purse seiners, comprising of fourteen Spanish and eight French vessels, were licensed under the Protocol in 2013, and the combined catch of the fleet were within the reference tonnage of 52,000 tonnes, as set under the Protocol with a decrease of 30% in the level of catches compared from 2012. As in preceding years there were no licence requests from EU longline vessels.

The total budget of the sectorial support provided by the EU under the FPA for this budget year, which included accumulated funds brought forward from 2012, was €7.5 million. The Authority ended the year with a remaining balance of €2.4 million which was to be programmed together with the 2014 allocated budget under the new Protocol.

The Joint Committee was satisfied with the level of utilisation of the sectorial support funds, as most performance indicators programmed for the year were achieved. The three priorities identified by Seychelles for development under the sectorial support fund remained; financing for artisanal infrastructure projects for the districts; facilities for processing and

value addition, mainly from the semi-industrial sub-sector; and finance for completion of the nine processing units at Providence Fisheries Facilities to be leased out to private entrepreneurs. From the industrial sub-sector the funds were attributed for the completion of the biggest project under this priority, which was for the construction of a 120m quay for purse seiners on Ile Du Port, which has been designated as the purse seine fishing port.

As it remained for this Protocol year, the other two priorities were to improve fisheries management and industrial fisheries and capacity building.

Funds for the fisheries management objective were attributed to improving research, Monitoring Control and Surveillance (MCS), support for the Fishermen Associations, the National Parks Authority in relation to marine parks protection; University of Seychelles in the development of fisheries curriculum in their respective faculty; the Fish Inspection Quality Control Unit as the Competent Authority of Seychelles Bureau of Standards (SBS) with a spectrometer; and also the Maritime Training Centre for procurement of a training vessel to support the instruction of seafarers for the industry. Additional funds were also allocated to the revolving fund established for fisheries development such as semi-industrial boat building or conversion, value addition projects, etc.

The Joint Committee also discussed the significant difficulties Seychelles is facing with regards to export of swordfish to the EU – due to the applied standards relating to levels of mercury present in the fish – as this was impeding the development of the semi-industrial fisheries sector who's main target species is swordfish.

With regards to supporting the capacity building needs of the sector, funds were allocated for human resource development, including for training of SFA personnel. Three SFA staff following BSc courses and two are following MSc courses in fisheries supported under this financing. Three others are studying for a diploma in fisheries, of two of which are through long distance training.

As the current Protocol 2011-2013 to the Fisheries Partnership Agreement was in its final year, Seychelles and the EU had a series of bilateral negotiations for the renewal of the Protocol. The new Protocol is for a period of 6 years from 2014-2019 for a total amount of €30,700,000 for the duration of the Protocol, with specific annual amounts for access to Seychelles' EEZ by community vessels and specific annual amounts for the support and the implementation of Seychelles' sectoral fisheries policy and maritime policy.

10.2 British/Seychelles Fisheries Commission (BSFC)

The BSFC was established in 1995 to promote, facilitate and coordinate conservation and scientific research. As established by the Agreement, the Commission met for its yearly meetings as scheduled, alternating between Seychelles and the UK. The 18th meeting of the Commission, which was preceded by the 25th meeting of the Scientific Sub-Committee (SSC), was held in London.

Areas of focus of the SSC and Commission were on the status of the legislative, management and scientific frameworks for the BIOT Marine Protected Area (MPA), as well as an update on the Seychelles fisheries legislation under review.

The Commission also discussed the framework for the parties' continued collaboration and the existing collaboration, especially with regards to the conservation and management of the tuna stock in the Indian Ocean through the established framework under the Indian Tuna Commission (IOTC).

The Commission shared information on their respective monitoring, control and surveillance activities conducted with the aim of deterring and eliminating Illegal, Unreported and Unregulated (IUU) fishing, and their different experiences and constraints, with a view to harmonizing the procedures as far as possible. The Commission also agreed for the parties to

jointly develop and present a proposal for submission to the IOTC Commission on VMS coverage for vessels when transiting through IOTC Member States EEZs.

There were also exchanges on the different research projects being undertaken by both parties and presentation of analysis done and observation and results of the projects, including discussion of future field collaboration where possible.

10.3 Indian Ocean Tuna Commission (IOTC)

The IOTC meeting agenda began with the second session of the Technical Committee on Allocation Criteria in Muscat, Oman during which the 23 member countries which attended discussed the different proposals tabled by the European Union, Indonesia, Iran, Japan, Mozambique, Sri Lanka and Seychelles.

The two main principles tabled were criteria based on historical catch by flag vessels, supported mainly by distant water fishing nations, and another criteria based on a combination of historical catch by flag vessels and catches in the EEZ, proposed by Seychelles and supported by the majority of the coastal states of IOTC.

However the committee could not come to an agreement as to what criteria or set of criteria to present to the Commission for adoption, as a result of which the discussion was deferred.

The next main meetings on the IOTC agenda were the annual meetings of the 10th Session of the Compliance Committee, and the 17th Session of the Commission, both held in Grand Baie, Mauritius.

The Compliance Committee meeting was preceded by a closed session for coastal States of IOTC facilitated by Australia. These pre-IOTC closed sessions hosted by the Australian Government since 2012 have been an opportunity for like-minded coastal States in

attendance, to go through proposals submitted for the Commissions' approval so that, as a block, they can converge where possible during the deliberations in the Commission.

The Compliance Committee meeting was an opportunity for the members to assess the compliance of the Commission through a pre-assessment of each member's level of compliance to the Commission's conservation and management level, presented by the Secretariat. Seychelles has seen continual gradual improvement on its level of compliance, though with some constraints such as; the implementation of observer coverage on its' industrial fleet; and the domestication of the approved IOTC resolution, as a result of ongoing revision of fisheries legislation.

In total 11 resolutions where adopted at the Commission meeting of which Seychelles was a co-sponsor of a number. One of the proposals submitted by Seychelles was for a ban on discards of bigeye tuna, skipjack tuna, yellowfin tuna caught by purse seiners, which was adopted as a resolution at the session. Seychelles had attempted to push further, to have all discards of IOTC species caught by purse seiners banned, including that of the non-target species, however there was opposition to extending the proposal and this measure was adopted as recommendation rather than being made binding. The main targeted tuna species, in the whole of the Indian Ocean (comprising bigeye tuna, skipjack tuna, yellowfin tuna, and swordfish) were declared to be healthy as per the preceding year stock assessments.

SFA staff also participated in different workshops and training programmes organized by the IOTC Secretariat, such as in a training programme on procedures for the implementation of the IOTC Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated (IUU) fishing, a regional workshop to support the implementation of the resolutions of the IOTC, and a regional workshop to support compliance with IOTC requirements for the collection and reporting of fisheries data to the IOTC.

The last annual meeting on the IOTC agenda was the 16th Session of the Scientific Committee meeting which was held in Busan, South Korea. The Scientific Committee reported on the work of the different Working Parties which took place during the year, and on recommendations coming out of them for presentation at the next Commission meeting to be held in Colombo, Sri Lanka in 2014.

10.4 South West Indian Ocean Fisheries Commission (SWIOFC)

The first SWIOFC Working Party for collaboration and cooperation on Tuna Management, as established by the Commission in 2012 at their bi-annual meeting, was held in Mombasa, Kenya at the beginning of the year, followed by the second meeting of Parties towards year end, in Maputo, Mozambique.

The first meeting was timed to precede the upcoming second IOTC technical committee meeting on allocation, which was the main item on the agenda. Seychelles being the only SWIOFC member country with a proposal presented it with the aim of accommodating the other members' needs, so as to make it common proposal for the group.

These meetings of the Working Parties are used as a forum for members to be made aware of actions that each other has taken with regards to tuna development in the South West Indian Ocean. Member countries also discussed possible harmonization in administrative procedures with regards to issues such as the terms, conditions and issuing of licences.

Chapter 11 - Information And Technology Services

11.1 Documentation Services

11.1.1 Acquisitions

The library acquired 40 new publications in 2013, which will enhance the existing collection. In addition, the library is receiving publications in electronic format. Most of the publications received are through exchange programmes.

11.1.2 Library management

In 2013, 5,975 records from the InMagic library database were converted to AgriOcean DSpace with the support of the ODINAFRICA Project. A total of 120 documents were loaned to SFA staff and external users. The total number of records in the AgriOcean DSpace now stands at 6,600. The AgriOcean DSpace is operational within the SFA Network, and our goal is to make it available online to facilitate access to SFA publications and other reports related to marine resources of Seychelles.

11.1.3 Publications 2013

BIJOUX, J.P. (2013) Reef fish spawning aggregation sites: the ecology of aggregating and resident species – Thesis submitted for the Degree of Doctor of Philosophy. 247 pp.

BIJOUX, J.P.; DAGORN, L.; BERKE, G.; COWLEY, P. D.; SORIA, M.; GAERTNER, J.-C.; ROBINSON, J. (2013) Temporal dynamics, residency and site fidelity of spawning aggregations of a herbivorous tropical reef fish Siganussutor. ***In: Marine Ecology Progress Series Vol. 475: p.233-247***

BIJOUX, J.; DAGORN, L.; COWLEY, P. D.; SIMIER, M.; ADAM, P.-A.; ROBINSON, J. (2013) Spawning aggregation dynamics of brown-marbled grouper and camouflage grouper at a remote Indian Ocean atoll. ***In: Endangered Species Research Vol.22 p. 145-157***

BIJOUX, J. P.; DAGORN, L.; GAERTNER, J. C.; COWLEY, P. D.; ROBINSON, J. (2013) The influence of natural cycles on coral reef fish movement: implications for underwater visual census (UVC) surveys. ***In: Coral Reefs Vol.32(4) p.1135-1140***

CARIGLIA, N.; WILSON, S. K.; GRAHAM, N. A. J.; FISHER, R.; ROBINSON, J.; AUMEERUDDY, R.; QUATRE, R.; POLUNIN, N. V.C. (2013) Sea cucumbers in the Seychelles: effects of marine protected areas on high-value species. ***In: Aquatic Conservation: Marine and Freshwater Ecosystems Vol.23 (3) p.418-428***

GOVINDEN, R.; HOLLANDA, S. (2013) The Seychelles Spiny Lobster Fishery, Fishery & Stock Status: 2010-2013, SFA/ R&D/070 25 pp.

GRUSS, A.; KAPLAN, D. M.; ROBINSON, J. (2013) Evaluation of the effectiveness of marine reserves for transient spawning aggregations in data-limited situations***. In: ICES Journal of Marine Science p.1-15***

KING, M.; LUCAS, V. (2013) Fisheries Co-management Plan for the Praslin artisanal trap and line fishery, 37 pp.

ROBINSON, J.; SAMOILYS, M. (2013) Reef Fish Spawning Aggregations in the Western Indian Ocean: Research for Management, WIOMSA Book Series 13, 152 pp.

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SEYCHELLES FISHING AUTHORITY (2013) Overview of Management Projects.***In: Twenty-Fifth Meeting of the British/Seychelles Fisheries Commission Scientific Sub-committee Meeting, 3rd – 4th September 2013, 2 pp.***

SEYCHELLES FISHING AUTHORITY (2013) Overview of Research Projects.***In: Twenty-Fifth Meeting of the British/Seychelles Fisheries Commission Scientific Sub-committee Meeting, 3rd – 4th September 2013, 8 pp.***

SEYCHELLES FISHING AUTHORITY (2013) Result of the Catch Assessment Survey (CAS) 2012 and Research Activities for Artisanal Fisheries***. In: Twenty Fifth Meeting of the Scientific Sub-committee of the British/Seychelles Fisheries Commission, 3rd – 4th September 2013, 26 pp.***

SEYCHELLES FISHING AUTHORITY (2013) Summary of Activities of the Seychelles Industrial and Semi-Industrial Fisheries for the year 2012. ***In: Twenty Fifth Meeting of the British/Seychelles Fisheries Commission Scientific Sub-committee Meeting, 3rd – 4th September 2013, 17 pp.***

SEYCHELLES FISHING AUTHORITY (2013) Seychelles Fisheries Monthly Bulletin (January-December 2013)

11.2 Information Technology

In 2013 the IT section continued to maintain a high level of service throughout the organization and provide IT support to our collaborators, such as IRD, to ensure smooth organisational operation.

11.2.1 Software

A Corporate Antivirus System (Kaspersky) was purchased with the intention of keeping our network free of viruses.

An Asset Inventory was initiated followed by Asset Tracking.

The new SFA website was in development stage.

The main office was linked to Zone 6 at Providence through the Virtual Private Network (VPN). Consequently, senior managers and other key personnel's residences were also linked to the main office through the VPN. This was required to ensure business continuity and proper management by allowing staff to work from home.

11.2.2 Hardware

CEO and directors were each issued with an Ipad to help manage and communicate through emails and other referrals whilst away from their desks.

A new batch of computers were purchased to replace those which have become obsolete.

11.2.3 Security

A new Security Server was acquired to host the newly purchased Corporate Antivirus Software which will contribute top reventing intrusion and malicious activities such as viruses, spamwares, malwares. In addition, a Microtiks Router was also purchased to help in managing traffic shaping, firewalling and to complement the current security system in place to control what goes in and out of the network.

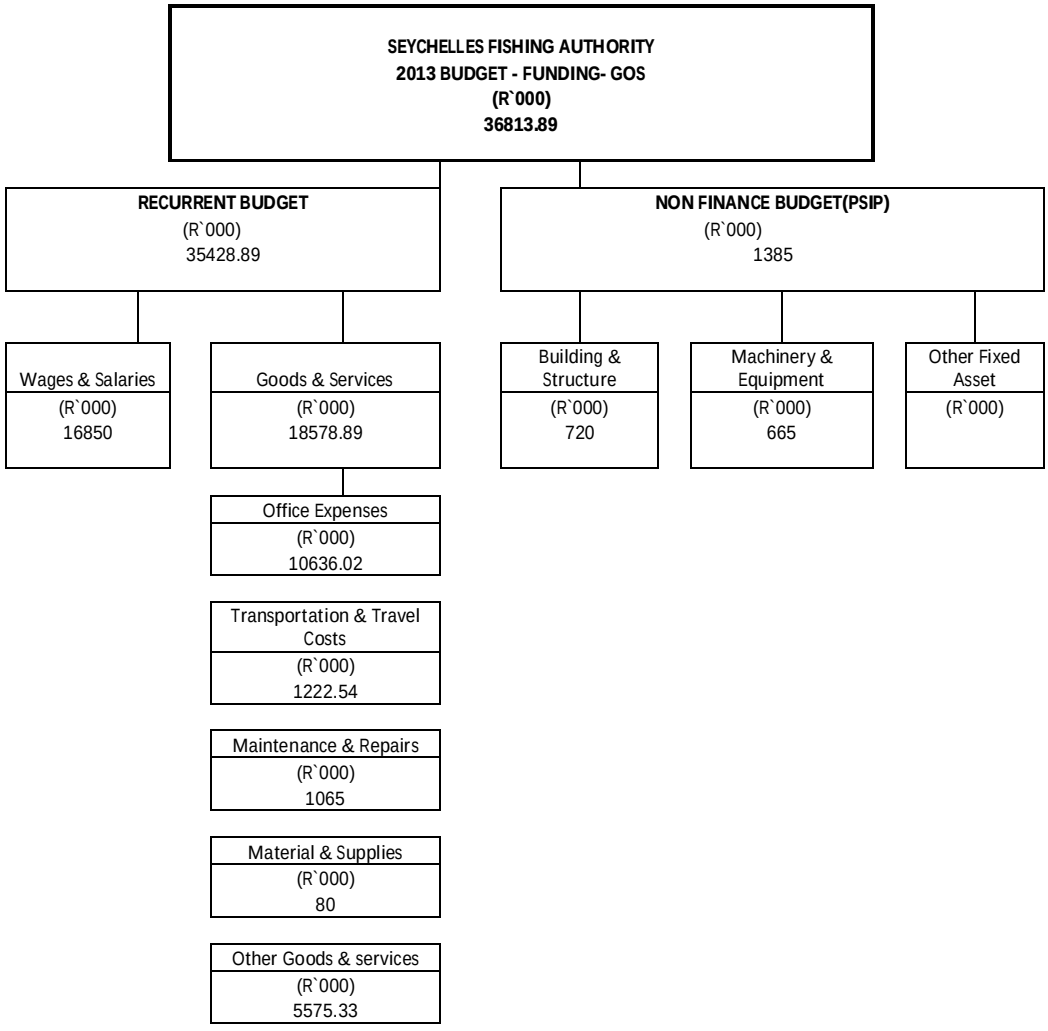
Chapter 12 - Finance

The Authority received a Total of **Rs.36,813,890.00**from the Government of Seychelles as subsidy towards it Recurrent & Minor Capital Expenditure for the year ending 31st December 2013.

This represented an increase of 12.56% in comparison with the previous year.

The Authority`s Recurrent Budget Expenditure for 2013 was made up as per the Figure 12.1.

Figure 12.1 Recurrent Budget Expenditure for 2013



The Authority continued to maintain its responsibility towards the Indian Ocean Tuna Commission (IOTC) in terms of contribution in 2013.

The Seychelles Government through Seychelles Fishing Authority paid a Total of **Rs.22,364,778.00** under the Fuel Incentive Scheme for Fishermen. The fund was disbursed on a monthly basis based on claims submitted by fishermen as detailed in the Table 12.1 below.

Table 12.1 Fuel Incentive Scheme

Month	Amount Paid Out	Budget 2013	Balance
Jan-13		21,164,778.00	21,164,778.00
Feb-13	2,856,664.00		18,308,114.00
Mar-13	1,979,385.50		16,328,728.50
Apr-13	1,962,491.88		14,366,236.62
May-13	1,824,015.12		12,542,221.50
Jun-13	2,355,890.76		10,186,330.74
Jul-13	2,159,124.20		8,027,206.54
Aug-13	2,652,341.27		5,374,865.27
Sep-13	1,517,914.64		3,856,950.63
Oct-13	1,953,324.92		1,903,625.71
Nov-13	2,005,791.92		(102,166.21)
Dec-13	1,097,833.79	1,200,000.00	
	22,364,778.00	**22,364,778.00**	

Through 2013 the maximum budget allocated to the Authority was executed.

Chapter 13 -
Staffing And Administration

13.1 Staffing

The Seychelles Fishing Authority's activities are expanding and there is a great need to augment the staffing level with more qualified technical personnel.

There has been discussion about the creation of a new Unit in the Fisheries Economic Information Division. The proposed Fisheries Intelligence Unit would collect, store, disseminate and analyse data with the aim to assist decisions and policy makers.

Presently data is collected by various sections of the organisation and is not readily available for compilation, analysis and use. The Unit will facilitate the research and analysis of records and information.

The Unit will also help leaders to prepare for future developments in the fisheries sector as well as to identify opportunities within the industry. SFA has a huge amount of data related to the fisheries sector in Seychelles which needs to be collected, monitored, assessed and processed.

The SFA is also in the process of drafting a mariculture master plan. This plan is presently completing the fourth phase out of a five phase programme. This will have the additional implication of adding more technical staff to implement the project.

The Project and Development Section is also expanding, especially in the Development and Assessment Unit which oversees post harvesting and value added fisheries products.

The construction of the fisheries facilities at Providence and possible expansion of the Fishing Port to cater for more fishing vessels for berthing and other fisheries activities will also increase staffing requirements, especially in technical aspects.

13.2 Staff Movement

The SFA is happy to note a very low turnover in its staffing for the year 2013. We have had only two resignations and one retirement. However, there has been an increase in recruitment.

The recruitments have been mostly technical staff. Among those recruited was a Consultant with a Doctorate qualification.

Table 13.1 Staffing for 2013

Divisions/Sections/Units	2012	2013
Secretariat	3	5
Fisheries Management &Evaluation	0	1
Monitoring Control & Enforcement	0	1
Fisheries Economic Information Management	0	5
Fisheries Research	6	2

13.3 Training and Development

Training is still a priority to strengthen the capacity of SFA staff especially the technical staff. With the new activities SFA will need more trained personnel to meet the demand of the organisation.

There has been a slight increase in staff attending long overseas training; 10 staff attended local and 10 attended international short courses/workshops during 2013.

13.4 Overseas Training

Table 13.2 Overseas Training

Participants	**Title /Country**	**Duration**
Mr. Aubrey Lesperance	Symposium on Eco-labeling in South Africa	13/02/13 to 18/02/13
Mr. Rodney Govinden	SWIOFC survey data analysis and stock assessment workshop in South Africa	13/02/13 to 18/02/13
Mr. Vincent Lucas/Mr. Gregory Berke/ Mr Rodney Govinden	Tag and longline analysis workshop in University of Cape Town, South Africa	13/02/13 to 18/02/13
Ms. Denise Mathiot	OTA Development and Management of E-Repositories, Oostende, Belgium	08/04/13 to 12/04/13
Mr. Calvin Gerry	5th ODINAFRICA Coastal and Marine Atlas Workshop, Nairobi, Kenya	22/04/13 to 24/04/13
Mr. Calvin Gerry/Ms Denise Mathiot	ODINAFRICA Websites Development Workshop, Nairobi, Kenya	25/04/13 to 27/04/13
Ms. Denise Mathiot	Digital Library Management Course, Mbabane, Swaziland	26/08/13 to 30/08/13
Ms. Denise Mathiot	ORDINAFRICA Marine Information Management and Websites Development workshop in Mombasa, Kenya	07/10/13 to 11/10/13
Mr. Khurlsen Gonsalves/Mr. Ricky William	IOTC Port States Measures training in Mauritius	23/10/13 to 29/10/13
Mr. Aubrey Lesperance	Community Based Marine Culture in Western Indian Ocean workshop in Zanzibar	15/11/13 to 18/11/13

13.5 Overseas Duty Trip

The following Officers attended overseas visits/meetings and workshops during the year 2013.

Table 13.3 Overseas Duty Trip

Participants	Country/Title	Duration
Mr. Khurlsen Gonsalves	Compliance Inspection in Singapore	01/01/13 to 06/01/13
Mr. Ricky William	Compliance Inspection in Mauritius	09/01/13 to 12/01/13
Mr. Roy Clarisse	SWIOFC 1st Party for collaboration and cooperation on Tuna Management in Mombasa, Kenya	29/01/13 to 31/02/13
Mr. Freddy Lesperance	"30eme Reunion de La Cellule de Coordination Regionale" in Mauritius	07/02/13/ to 08/02/13
Mr. Johnny Louys	VMS Inspection in Mauritius	10/02/13
Mr. Roy Clarisse	8th International Forum on IUU in London	11/02/13 to 12/02/13
Mr. Khurlsen Gonsalves	33rd Fishing Surveillance Mission- Regional Patrol in the South West Indian Ocean	15/02/13 to 12/03/13
Mr. Roy Clarisse/Mr. Philippe Michaud	2nd Technical Committee meeting on Allocation criteria in Muscat, Dubai	18/02/13 to 20/02/13
Mr. Aubrey Lesperance	6th Session of the SWIOFP Regional Policy and Steering Committee and Donor's Conference meetings in Dar Es Salaam, Tanzania	25/02/13 to 28/02/13
Mr. Roddy Allisop/Mr. Michel Marguerite	SADC Fisheries Technical Committee and Working Group in Namibia	25/02/13 to 28/02/13
Mr. Roy Clarisse/Ms. Antoinette Saminadin	01st Interpol International Fisheries Enforcement Conference in Lyon, France	26/02/13 to 28/02/13
Mr. Vincent Lucas	SWIOFP Regional Observer Strategy meeting in Mombasa, Kenya	25/03/13 to 29/03/13
Mr. Roy Clarisse/Mr.Glenny Savy/Mr. Philippe Michaud	EU Bilateral meeting	14/04/13 to 18/04/13
Mr. Ralph Jean-Louis	Inspection visit of portal steel frames for the construction of Fish Processing Factories in Qingdao, China	21/04/13 to 01/05/13
Mr. Aubrey Lesperance	Climate Change, Disasters & Crisis In Fisheries and Aquaculture in Southern and Eastern Africa in Mozambique	22/04/13 to 24/04/13
Mr. Finley Racombo/Mr. Vincent Lucas	SWIOFP Regional Observer Strategy meeting in Mombasa, Kenya	01/05/13/ to 10/05/13
Mr. Finley Racombo	SWIOFC Conversion and Regional Early Warning System for Fisheries and Coastal Communities meetings in Mauritius	11/05/13 to 12/05/13
Mr. Calvin Gerry	Emotion Project Meeting in San Sebastien, Spain	16/05/13 to 17/05/13
Mr. Finley Racombo/Mr. Calvin Gerry	ODINAFRICA Planning and Review meeting in Mozambique	29/05/13 to 02/06/13
Mr. Roddy Allisop/ Mr. Freddy Lesperance	"31eme Reunion de la Cellule de Coordination Regionale" in Moroni	05/06/13 to 06/06/13
Mr. Calvin Gerry	Modeling Marine Ecosystem from the Ocean to the Fish	18/06/13 to 29/06/13

Mr. Sonny Naiken	Compliance Inspection in Sri Lanka	19/06/13 to 20/06/13
Mr. Roy Clarisse	Seychelles Trade and Investment Forum in Hong Kong	23/06/13 to 28/06/13
Mr. Aubrey Lesperance	SADC Regional Aquaculture Strategy meeting in Luanda, Angola	24/06/ to 26/06/13
Mr. Finley Racombo	Regional Meeting for the COI Member States on the Technical Validation of the Regional Strategy for the Marine and Fisheries Ecosystem in Mauritius	25/06/13 to 27/06/13
Mr. Roy Clarisse	Fish-Task Force meeting and Symposium on Illegal Fishing in Southern African waters, Prevention and Law Enforcement in Cape Town, S. Africa	08/07/13 to 11/07/13
Dr. Jude Bijoux/Mr. Vincent Lucas/Mr. Rodney Govinden/Mr. Gregory Berke	2nd International Conference on Fish Bio-Telemetry in South Africa	11/07/13 to 19/07/13
Ms. Elisa Socrate/Ms Melissa Joseph/Mr. Calvin Gerry	IOC/FAO Smart Fish workshop in Zanzibar, Tanzania	17/07/13 to 19/07/13
Miss Marie-Antoinette Saminadin	Compliance Inspection in Singapore	20/07/13 to 25/07/13
Mr. Khurlsen Gonsalves	38eme Mission de surveillance des peches	20/07/13 to 25/07/13
Mr. Ralph Jean-Louis/Mr. Beatty Hoareau	Construction of the MTC Training Vessel in Sri Lanka	11/08/13 to 15/08/13
Ms. Elisa Socrate/Mr. Vincent Lucas/	Regional workshop to support the Implementation of the Resolution of the Indian Ocean Tuna Commission in Mauritius	27/08/13 to 30/08/13
Mr. Roy Clarisse	Vietnam Investment Forum in Hanoi, Vietnam	28/08/13 to 31/08/13
Mr. Carmel Rene	Compliance Inspection in Singapore	30/08/13 to 04/09/13
Mr. Roy Clarisse/Mr. Philippe Michaud/Mr. Rodney Govinden	British Seychelles Fisheries Commission meeting in London	03/09/13 to 05/09/13
Mr. Khurlsen Gonsalves	Compliance Inspetion in Sri Lanka	03/09/13 to 08/09/13
Mr. Finley Racombo	10th Session of the Seychelles-Mauritius Joint Commission meeting in Mauritius	04/09/13 to 5/09/13
Mr. Finley Racombo/Mr. Roddy Allisop	SADC Ministers for Natural Resources Management and Environment in Maputo, Mozambique	/09/13 to 03/10/13
Mr. Johnny Louys	VMS Inspection in Mauritius	16/09/13 to 18/09/13
Mr. Ricky William	Compliance Inspection in Mauritius	16/09/13/ to 18/09/13
Mr. Sonny Naiken	Compliance Inspection in Mauritius	23/09/13 to 25/09/13
Mr. Roy Clarisse/Mr. Philippe Michaud/Mr. Vincent Lucas/Ms. Elisa Socrate	10th Session of the IOTC Compliance Committee/17th Session if the IOTC in Mauritius	30/09/13 to 2/10/13
Ms. Elisa Socrate	2013 EAF-NANSEN Project Forum and Steering Committee meeting in Dar Es Salaam	07/10/13 to 10/10/13
Mr. Roy Clarisse/Mr. Philip Michaud	1st meeting of the Parties to the Southern Indian Ocean Fisheries Agreement in Melbourne, Australia	18/10/13 to 19/10/13
Mr. Roy Clarisse	SWIOFC 2nd working Party and Steering	22/10/13 to

	Committee for the DGF Grant and SWIOFISH meetings in Maputo, Mozambique	26/10/13
Mr. Sonny Naiken	37eme Mission de surveillance des peches a bord du PatrouilleurTendromaso"	22/10/13 to 06/11/13
Mr. Roddy Allisop/Ms. Marie-Antoinette Saminadin	Interpol Conference	06/11/13 to 08/11/13
Mr. Aubrey Lesperance/Ms. Dora Lesperance	Dubai Sea Food Expo in Dubai	16/11/13 to 19/11/13
Mr. Roy Clarisse	3rd Korean International Conference on Fisheries in Korea	20/11/13 to 22/11/13
Ms. Elisa Socrate	UNDP Seychelles Study visit in Rodrigues	23/11/13 to 28/11/13
Mr. Freddy Lesperance	"33eme Reunion de la Cellule de Coordination Regionale"-VMS regionale in Mauritius	24/11/13 to 28/11/13
Mr. Vincent Lucas/Mr. Jan Robinson	16th Session of the IOTC Scientific Committee meeting in Korea	02/12/13 to 06/12/13
Mr. Ralph Jean-Louis/Beatty Hoareau	Working visit - Construction Work of the 54 NMDE 31	07/12/13 to 11/12/13
Mr. Freddy Lesperance/ Mr. Roddy Allisop	"34eme Reunion de la Cellule de Coordination Regionale"- et reunion des technicians VMS in Reunion	16/12/13 to 18/12/13

13.6 Long Serving Staff - 10 to 25 Years Continuous Service

In 2013, SFA recognised the following staff who have been in continuous service for the past 10 to 25 years (Table 13.4).

Table 13.4 Long Serving Staff

10 years in service	15 years in service
Mr. Andrew Souffre – Enforcement Officer Mr. Justin Faure -	Mr.Allain Gabriel - Fuel Attendant
Mr. Fred Mondon – Gear Technician	Ms. Naddy Esparon - Senior Fisheries Statistical Technician
Ms. Maria Cedras – Research Technician	
Mr. Rupert Payet – Ice Plant Operator	