

6. FISHERIES MANAGEMENT

6.1 Licensing of fishing vessels

6.1.1 Licensing of foreign fishing vessels

Since 1991, licences are issued to foreign longliners, purse seiners, mid water trawlers and to hand line fishing vessels operating in the Exclusive Economic Zone (EEZ) of Mauritius against payment of the appropriate fee.

Mauritius has signed fishing agreements with different parties for the issue of licences. Details of licences issued under the agreements and including those to individual vessels granted are presented in table 6.1. The number of foreign fishing licences issued outside fishing agreements is summarized in table 6.2 and the total number of licences issued over the last five years is presented in table 6.3.

Licence fees from EU vessels amounted to Euros 118 000 and it amounted to US\$ 1 171 000 for the other nationalities. Three foreign banks fishing vessels licences amounted to Rs 40 000.

Table 6.1: Licences issued to foreign vessels under fishing agreements

Licences issued under fishing agreement	Purse seiners		Longliners	
	Maximum number of allowable licences	No. of licences issued	Maximum number of allowable licences	No. of licences issued
EU	41	32	49	38
Japan	---	---	30	15
Seychelles	15	5	30	2

Table 6.2: Licences issued to other foreign vessels

Licences issued to vessels of various nationalities (outside Fishing Agreements)	Longliners	Trawlers	Banks fishing vessels
Belize	2	---	---
Korea	1	---	---
Indonesia	20	---	---
Japan	22	---	---
Malaysia	11	---	---
Taiwan	77	---	---
Thailand	---	2	---
Madagascar	---	---	3
Mauritius (foreign owned)	1	---	---

Table 6.3: Licences issued by category (2002 – 2006)

Year	Longliner	Purse seiner	Handline	Trawler	Banks	Total
2002	182	34	1	0	0	217
2003	156	39	1	0	0	196
2004	181	34	1	0	0	216
2005	175	39	0	0	3	217
2006	183	43	0	2	3	231

6.1.2 Licensing of Mauritian fishing boats/vessels

During the year, there were 27 Mauritian fishing vessels/boats licensed to carry out different types of fishing operations for the production of chilled fish and frozen fish as detailed in table 6.4.

Table 6.4: Number of licensed Mauritian fishing boats/vessels by category

Category	Number
Banks fishery	5
Demersal chilled fish fishery	13
Surface longlining (swordfish fishery)	5
Fish carriers from St. Brandon	2
Banks drop-off fishery	2

6.2 Monitoring of boats/vessels

6.2.1 Monitoring of local fishing boats/vessels

The movement of local fishing vessels/boats is closely monitored for fishery management purposes. All local vessels require a clearance from the Ministry prior to leaving for a fishing trip. Before a clearance is issued, it is ensured that the vessel is seaworthy, it has the appropriate insurance covers and has the required licence.

During the year, 140 clearances were issued to vessels involved in the demersal chilled fish fishery, 116 to vessels involved in the pelagic chilled fish fishery, 28 to carrier vessels from St Brandon and 15 to bank fishing vessels.

Clearances for unloading the catch are issued to the fishing vessels after inspection of the fish quality and checking of logbooks.

6.2.2 Monitoring of foreign fishing vessels

During the year, 803 foreign fishing vessels called at Port Louis for loading/unloading/export of fish and fish products, transshipment, bunkering, change of crew, provisions and repairs. Table 7.5 gives details of the different categories of vessels having called at the port.

Table 6.5: Details of calls of foreign vessels

Type of vessel	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Reefers	2	3	3	5	3	3	8	6	3	3	2	7	48
Squid vessels	3	-	-	-	-	1	-	-	-	-	-	3	7
Bottom gill netters	-	-	1	-	-	-	-	-	-	--	-	-	1
Tuna longliners	69	80	31	31	53	59	67	47	105	60	39	60	701
Trawlers	2	-	-	2	-	1	1	2	-	3	-	2	13
Patagonian toothfish	1	3	1	2	2	1	3	3	-	-	2	3	21
Purse seiners	1	-	-	1	1	1	-	1	1	2	1	-	9
Others (lobster, trap)	-	-	-	-	-	-	-	-	-	-	-	1	1
Total	78	86	36	41	59	66	79	59	109	68	44	76	801

The nationalities and the number of calls of fishing vessels at Port Louis are given in tables 6.6 and 6.7 respectively.

Table 6.6: Details of vessels calling at Port Louis

Type of vessel	Flag country	Number of calls
Reefer	Mauritius	13
	Panama	13
	Taiwan	9
	Netherlands	5
	Malaysia	5
Squid	Taiwan	2
	Vanuatu	1
	Korea	1
Bottom gill nets	St Kitts & Nevis	1
Tuna longliners	Mauritius	11
	Taiwan	361
	Spain	31
	Indonesia	135
	Japan	59
	Togo	2
	Portugal	4
	Great Britain	1
Seychelles	14	

	Belize	7
	Oman	2
	Thailand	7
	China	2
	France	1
	Korea	14
	Madagascar	1
	Malaysia	41
	Philippines	7
	Bolivia	1
	Cambodia	2
	Vanuatu	4
Trawlers	Mauritius (foreign owned)	3
	Cooks Islands	4
	Thailand	6
Patagonian toothfish	France	18
	Australia	3
Purse seiner	France	7
	Seychelles	1
	Panama	1
Other (trap)	France	1
Banks fishing vessels (Mauritian vessels with foreign flag)	Madagascar	9
Total		810

Table 6.7: Calls of vessels at Port Louis

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2002	51	38	32	30	72	27	46	34	104	38	37	46	555
2003	39	53	40	20	29	58	34	42	64	51	37	44	511
2004	45	35	33	18	42	63	33	31	73	59	40	40	512
2005	61	69	55	36	45	68	54	44	83	75	50	66	706
2006	78	86	36	41	59	66	79	59	109	68	44	76	801

6.2.3 Monitoring of patagonian toothfish fishing vessels

There were 21 calls of toothfish fishing vessels out of which three called for transshipment of 241 tonnes of fish. The quantities of toothfish transshipped during the past five years are presented in table 6.8.

Table 6.8: Transshipment of patagonian toothfish (tonnes)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2002	0	122	980	289	739	1 153	1 232	0	1 184	221	0	0	5 920
2003	753	235	0	99	71	246	1 174	195	0	0	106	0	2 879
2004	0	68	206	0	493	540	214	0	0	0	0	0	1 521
2005	0	0	0	0	0	0	410	0	0	580	0	0	990

2006	0	46	0	0	18	0	177	0	0	0	0	0	241
------	---	----	---	---	----	---	-----	---	---	---	---	---	-----

6.2.4 Calls and transshipment of deep-sea trawlers

Four trawlers of different nationalities made thirteen calls and 3 883 tonnes of deep-sea demersal fishes was transshipped. The main species were alfonsino, cardinal, orange roughy, blue nose, spiky dory, smooth dory, butter fish, boar fish and black dory. The quantities of fish transshipped or landed are given in table 6.9.

Table 6.9: Transshipment by trawlers

Year	Qty transhipped (t)	Qty for local market (t)
2002	3 746	428
2003	2 581	175
2004	3 463	0
2005	4 395	0
2006	3 883	0

6.3 Tuna fisheries

Tuna fisheries are monitored through the collection, processing and analysis of fishing and biological data obtained from local and foreign licensed vessels.

6.3.1 Sampling of catch from licensed purse seiners

Length frequency data were obtained from the catches of licensed purse seiners. A total of 4 470 tuna comprising 3 366 skipjack, 771 yellowfin and 333 bigeye were sampled.

6.3.1.1 Length frequency distribution of skipjack tuna (*Katsuwonus pelamis*)

The length frequency distribution of skipjack tuna is shown in figure 6.1. The length of the fish ranged

from 38 to 70 cm with the mode at around 49 cm.

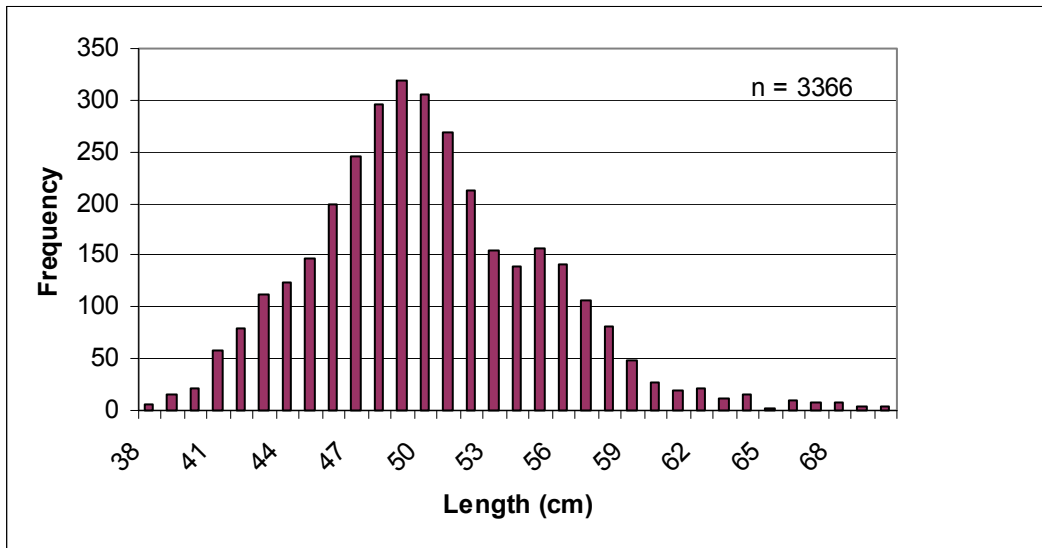


Figure 6.1: Length frequency distribution of skipjack tuna

6.3.1.2 Length frequency distribution of yellowfin tuna (*Thunnus albacares*)

The length frequency distribution of yellowfin tuna is presented in figure 6.2. The fish had a length range between 48 and 168 cm. Most of the fish sampled was below 100 cm in length representing fish which had not reached sexual maturity. Yellowfin tuna caught by purse seiners comprised mostly juvenile fish which is typical of catches made on schools associated with logs.

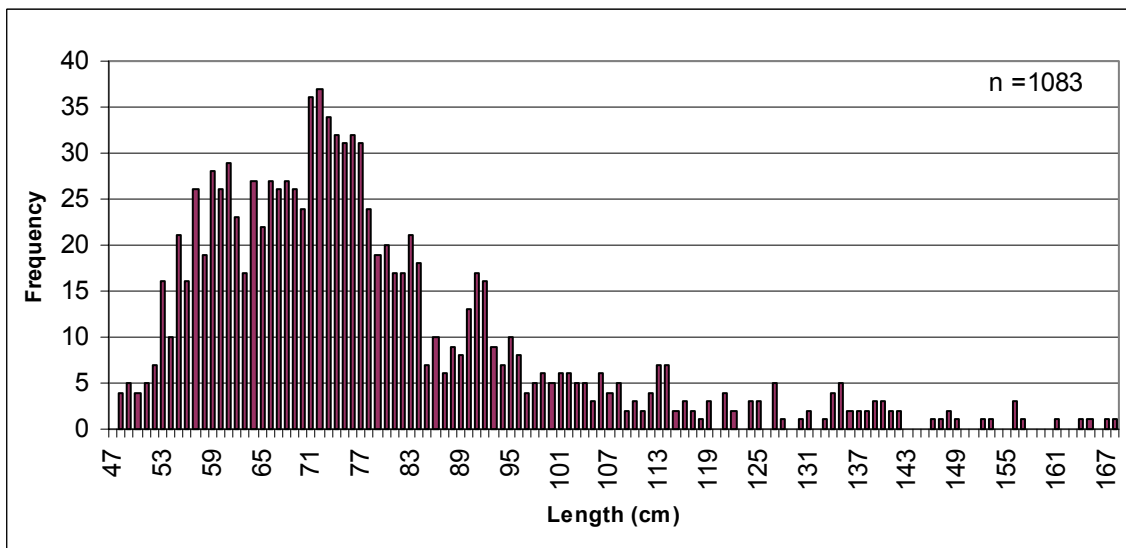


Figure 6.2: Length frequency distribution of yellowfin tuna

6.3.1.3 Length frequency distribution of bigeye tuna (*Thunnus obesus*)

The length of the bigeye tuna ranged between 45 and 132cm; the length frequency distribution is presented in figure 6.3. The bigeye tuna caught by the purse seiners was mostly juvenile fish measuring less than a metre, typical of catches made on log schools.

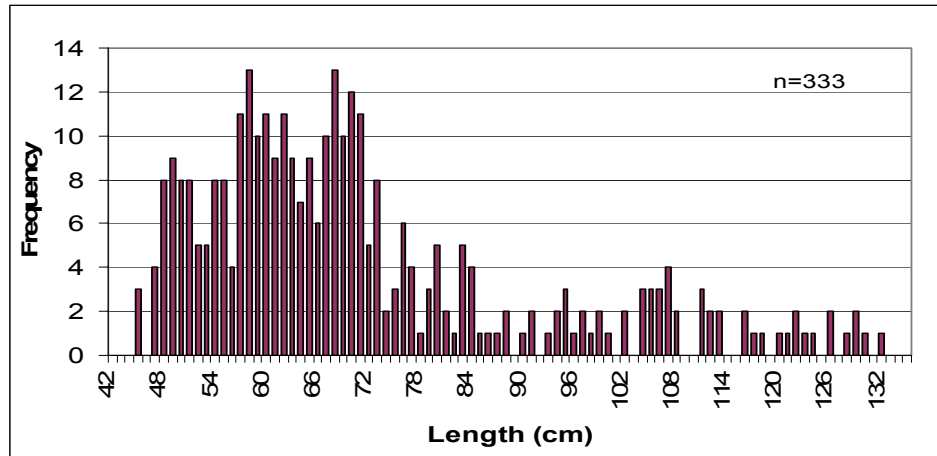


Figure 6.3: Length frequency distribution of bigeye tuna

6.3.2 Species composition

The catch was composed of 63% skipjack, 33% yellowfin, 3.5% bigeye and 0.5% miscellaneous fish. The species composition of the purse seine catch unloaded in Mauritius for the past five years is presented in table 6.10.

Table 6.10: Species composition of purse seiners catch (%)

Year	Species			
	Skipjack	Yellowfin	Bigeye	Miscellaneous
2002	60	32	7	1
2003	68	25	6	1
2004	60	31	8	1
2005	55	38	5	2

2006	63	33	3.5	0.5
------	----	----	-----	-----

6.3.3 Reproductive biology of skipjack tuna

Samples for the studies on reproductive biology of skipjack tuna were obtained at the local cannery. Gonads and livers from 410 skipjack tuna were removed for determining maturity stages, spawning period, reproductive index, sex ratio, seasonal sexual variation and length at first maturity. These samples were collected during 2005 and 2006 and were merged to provide a better view and consistency in the estimation of different biological parameters.

6.3.3.1 Gonado-somatic Index (GSI)

The GSI for both males and females was maximum during February, May, September and November and minimum during January, March and August. The average monthly variations of the GSI (2005-2006) are presented in figure 6.4, showing four peaks of intense sexual activity and spawning. The reproductive cycles of the males and females were synchronous as observed in previous years.

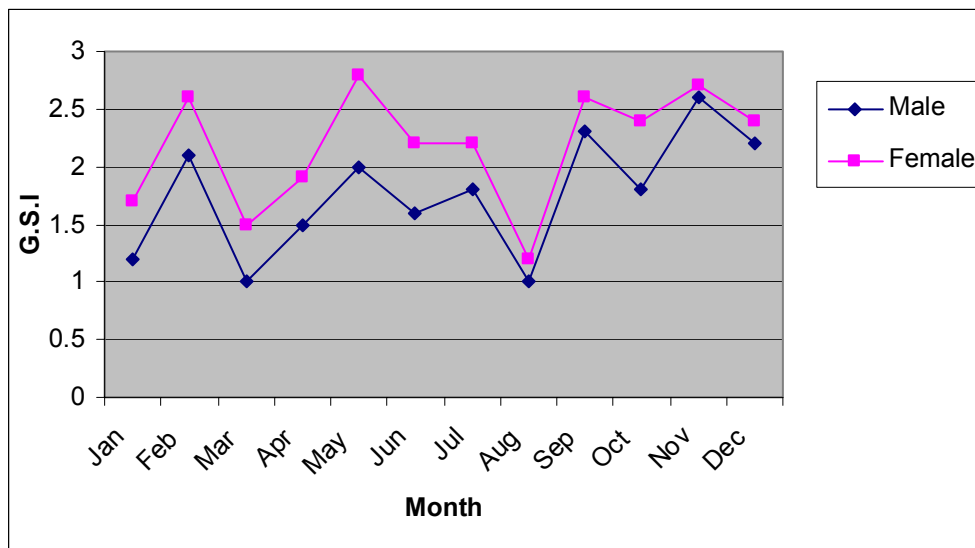


Figure 6.4: Gonado-somatic Index (GSI) of skipjack tuna (2005-2006)

6.3.3.2 Spawning period

The skipjack tuna spawned throughout the year with certain periods of intense sexual activity. More than 80 % of females sampled had ovaries in the terminal stage of maturation at any time of the year.

6.3.3.3 Sex ratio

The sex ratio calculated for 2005-2006 was 1:1.1, showing that males and females sampled were present in almost equal proportions.

6.3.3.4 Length at first maturity (Lm_{50})

Length at first maturity is defined as the length at which 50 % of the fish population has attained sexual maturity and was calculated for each size class starting from 41cm as shown in figure 6.5. Lm_{50} for males and females sampled was found to be at 44 cm and 45 cm respectively.

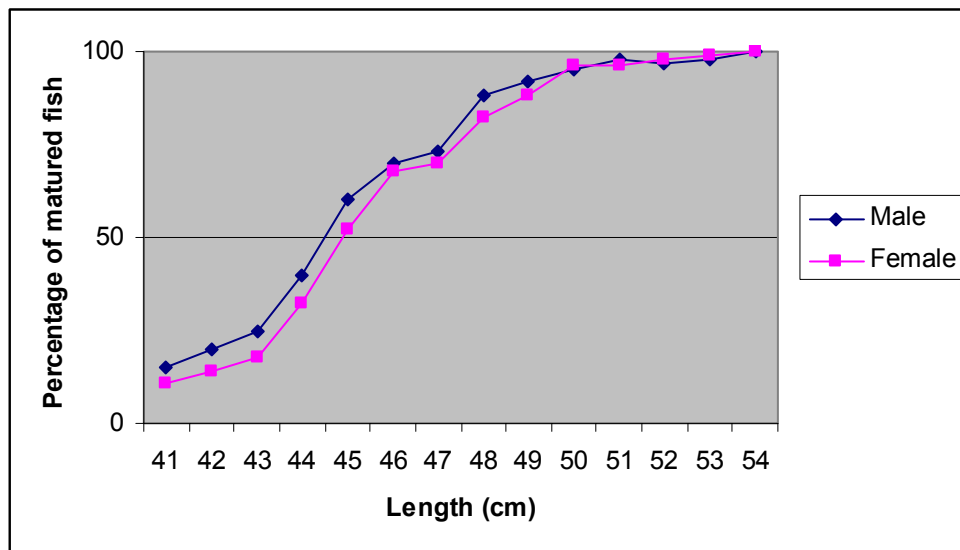


Figure 6.5: Length at first maturity of skipjack tuna

6.3.4 Monitoring of the catch of licensed longliners

Log returns were collected for licensed vessels. These vessels transhipped 9 638 tonnes of tuna and tuna-like species including 3 297 tonnes caught by licensed European longliners and 1 023 tonnes caught by three mauritian flagged vessels. A total of 173 logbooks was received, of which 163 were considered for processing while the remaining contained inconsistencies. The catches made in the mauritian EEZ based on the correct returns amounted to 4 176 tonnes.

6.3.4.1 Species composition of the catch of licensed longliners

The species composition of the catch of the licensed foreign longliners is shown in table 6.11.

Table 6.11: Species composition of the catch of licensed foreign longliners

Species	Scientific name	Catch (t)	%
Albacore	<i>Thunnus alalunga</i>	2 971	30.8
Swordfish	<i>Xyphias gladius</i>	2 148	22.3
Yellowfin	<i>Thunnus albacares</i>	1 712	17.7
Bigeye	<i>Thunnus obesus</i>	962	10.0
Sharks		958	9.9
Others		676	7.0
Other billfishes		133	1.4
Sailfish	<i>Istiophorus albicans</i>	44	0.5
Skipjack	<i>Katsuwonus pelamis</i>	27	0.3
Bluefin	<i>Thunnus maccoyii</i>	7	0.1
	Total	9 638	100.0

The major part of the catch was composed of albacore and swordfish. Albacore was the target species of most of the Asian longliners. A high volume of swordfish was also present in the catch as the EU surface longliners targeted mostly that species.

6.3.4.2 Spatial distribution of the catch of licensed longliners

The fishing area of the licensed longliners was spread widely in the Western Indian Ocean between 06° N and 35° S and 41° E and 88° E as depicted in figure 6.6.

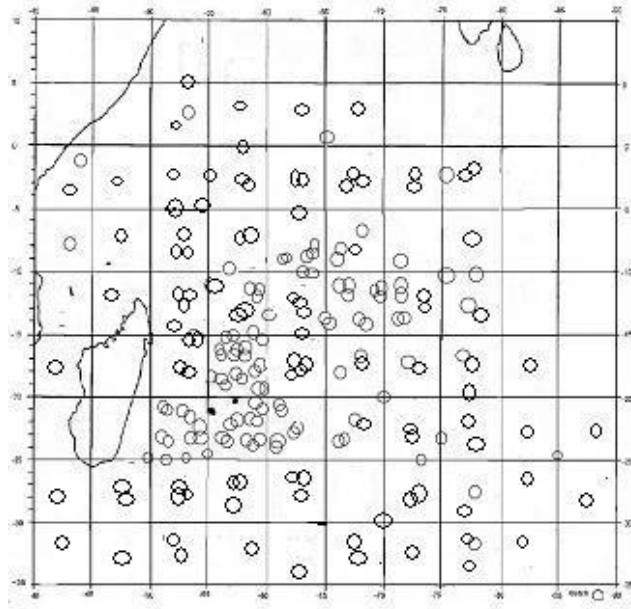


Figure 6.6: Catch distribution of licensed longliners

6.3.4.3 Sampling of catch of licensed longliners

Length frequency distribution of 4 088 albacore tuna sampled is shown in figure 6.7. The length varied from 69 to 132 cm. The major part of the catch comprised fish in the range of 93 to 109 cm.

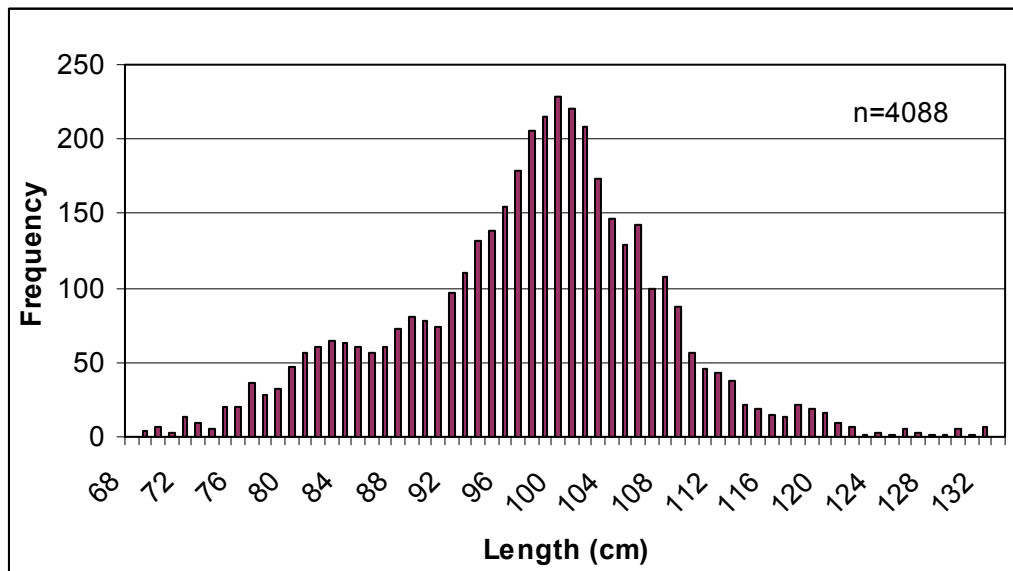


Figure 6.7: Length frequency distribution of albacore tuna

6.3.5 The local longline fishery

Three vessels operating under the Mauritian flag were engaged in the fishery, undertaking 6 fishing trips and unloading 1 023 tonnes of fish. The species composition of the catch is shown in figure 6.8. Most of the catch composed of swordfish (58%), which was the target species of the vessels. The catch per unit effort was 1.1 kg per hook. The fishing area was spread between latitudes 21° S and 36° S and longitudes 35° E and 83° E.

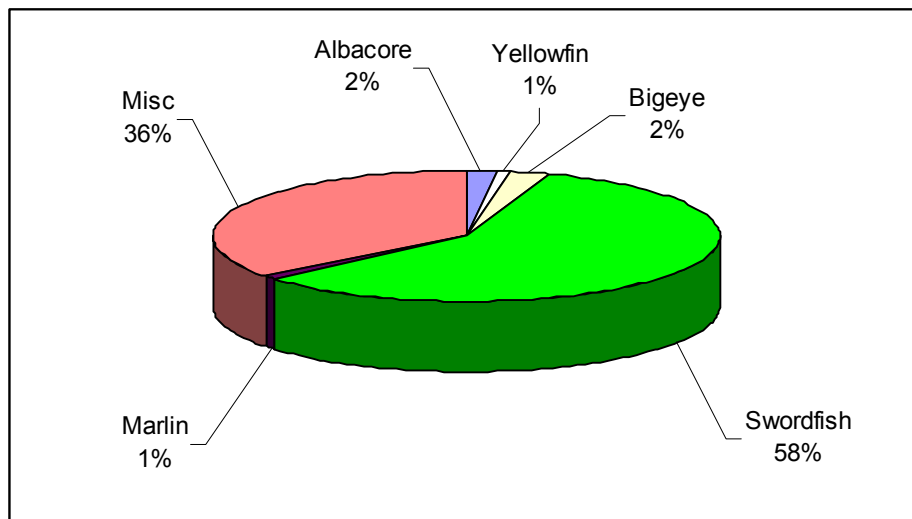


Figure 6.8: Catch composition of Mauritian longliners

6.3.6 Transshipment by tuna longliners

A total of 29 231 tonnes of tuna and tuna-like species was transshipped at Port Louis by licensed and non-licensed longliners which, made 583 calls. The species composition of the fish transshipped is shown in table 6.12. Albacore tuna constituted 20 307 tonnes. The rise in the volume of albacore tuna transshipped was mainly due to an increase in the number of calls of Taiwanese vessels which targeted that species. The percentage of the three main species which were transshipped is shown in figure 6.9.

Table 6.12: Species composition of fish transshipped (t)

Year	Albacore	Yellowfin	Bigeye	Skipjack	Swordfish	Blue-fin	Marlin	Sailfish	Shark	Misc.	Total
2002	13 584	2 505	528	-	228	-	267	20	-	315	17 447
2003	6 225	1 280	415	25	2 126	3	187	59	1 657	456	12 433
2004	4 633	4 110	1 361	3	1 595	1	172	6	2 022	352	14 255

2005	4 947	3 887	1 413	-	3 357	-	318	35	2 473	1 237	17 667
2006	20 307	1 995	359	127	1 934	230	242	131	1 890	2 017	29 231

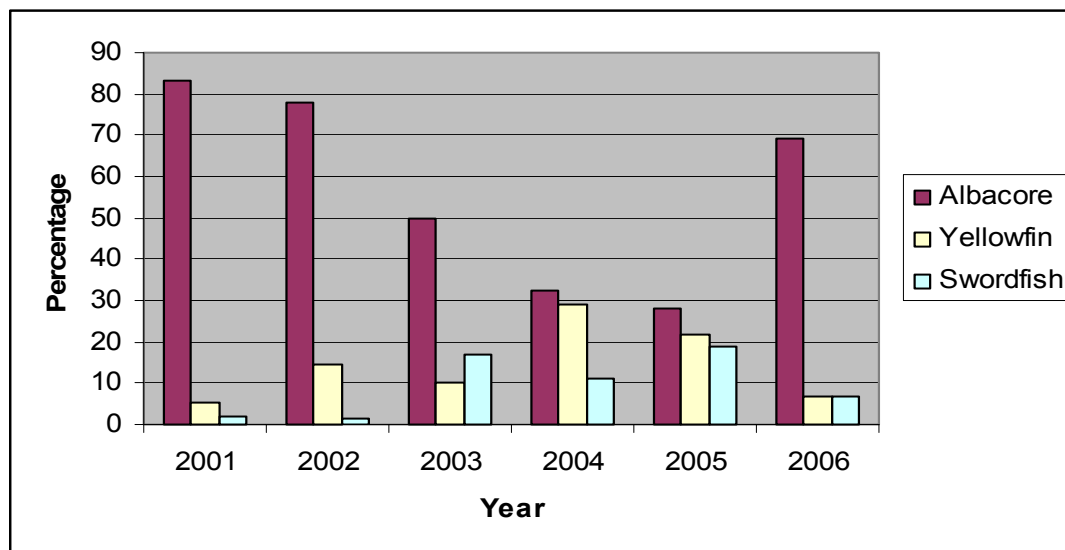


Figure 6.9: Percentage of the three main species transshipped by longliners

6.4 Swordfish fishery

Five fishing vessels made 116 trips and landed 247 tonnes of chilled fish as compared to 177.6 tonnes last year. This increase in catch could be attributed to a rise in the number of trips effected. Swordfish constituted 29% of the catch. The fishing areas were spread around Mauritius, between latitudes 16⁰S and 20⁰S and longitudes 57⁰E and 58⁰E. The catch and species composition are shown in table 6.13 and figure 6.10.

Table 6.13: Catch composition of the local swordfish fishing vessels (kg)

Year	Swordfish	Yellowfin	Bigeye	Albacore	Marlin	Shark	Sailfish	Misc.	Total
2002	26 248	5 288	2 152	7 242	1 162	220	-	4 108	46 492
2003	35 123	21 395	2 190	14 003	2 413	228	-	3 986	79 338
2004	51 844	12 597	4 412	19 864	2 236	538	-	5 876	97 187
2005	86 069	35 219	11 059	29 774	4 298	578	1 549	9 033	177 581

2006	74 157	102 632	15 444	40 840	6 508	1 212	1 590	4 873	247 256
------	--------	---------	--------	--------	-------	-------	-------	-------	----------------

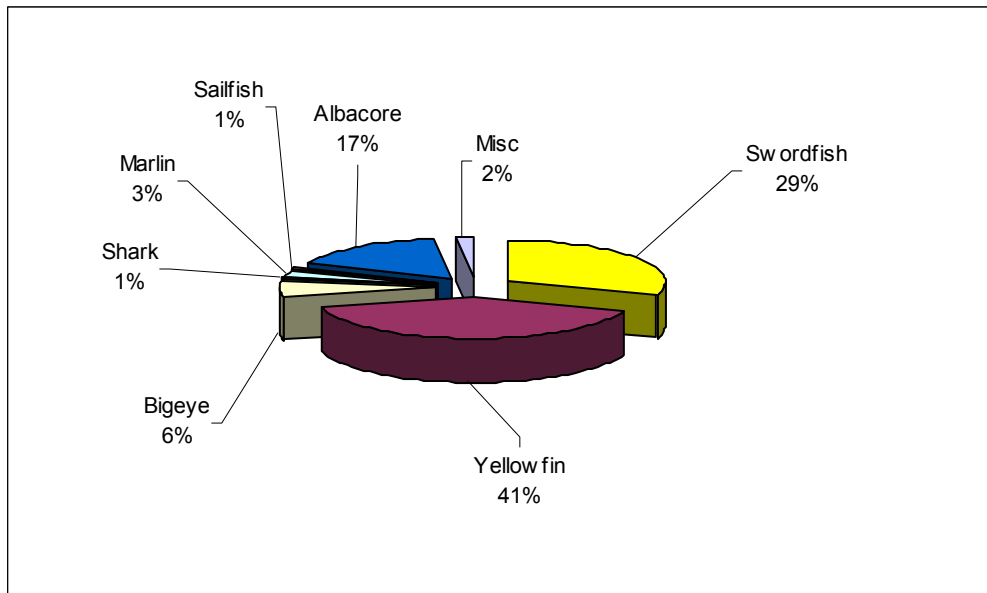


Figure 6.10: Species composition of the catch

6.4.1 Length frequency distribution of swordfish

The length frequency of the swordfish obtained during the landings of the local vessels is shown in figure 6.11. The length measured from the operculum to the keel ranged between 45 and 175cm with the majority between 71 and 115 cm.

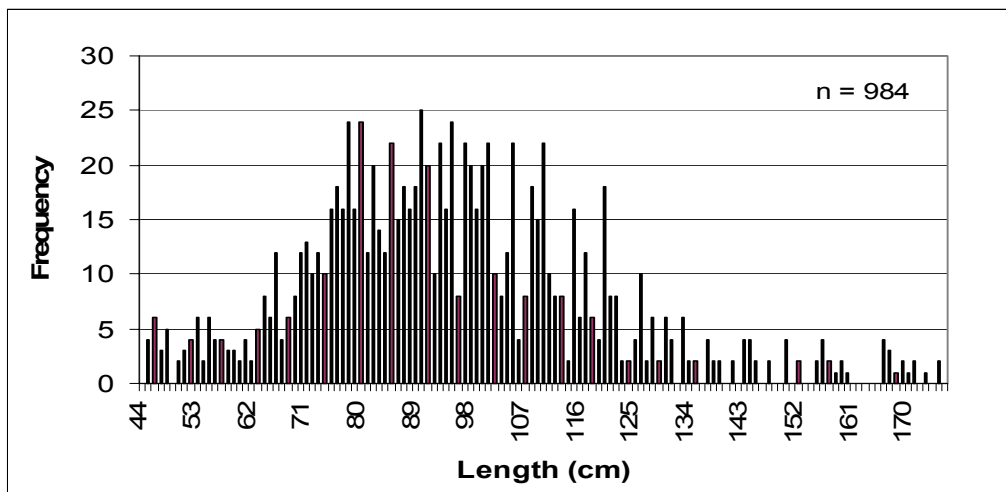


Figure 6.11: Length frequency distribution of swordfish

6.5 Vessel Monitoring System

The Fisheries Monitoring Centre (FMC) at AFRC monitored the positions, speeds and directions of fishing vessels by means of Inmarsat and Argos satellite-based tracking through the Vessel Monitoring System (VMS). Data sent to the Land Earth Station (Switzerland) were processed and transmitted to and stored in a database of the server at the FMC.

One hundred and eighty six fishing vessels reported to the FMC comprising 27 local and 159 foreign vessels (including EU). The table 6.14 shows a breakdown of the fishing vessels by nationality and transponder type (either Inmarsat or Argos), which reported at the FMC.

Table 6.14: Number of fishing vessels reporting at the FMC

Vessel	Transponders		Total
	Inmarsat	Argos	
Foreign: Taiwanese	34	57	91
Japanese	0	24	24
Indonesian	10	2	12
Malaysian	11	0	11
Malagasy	2	0	2
Korean	0	1	1
EU: Spanish	*	*	15
Portuguese	*	*	2
Italian	*	*	1
Sub total			159

Local	25	2	27
Total			186

* The FMC has no information on the transponders that the EU vessels have on board

A total of 125 logbooks, both local and foreign fishing vessels were received and checked against positions available at the FMC.

6.6 Import and export of fish and fish products and fish processing

6.6.1 Import of fish and fish products

A total of 1 867 permits were issued for the import of fish and fish products, including 17 permits for the import of fish samples and fish bait. Proceeds from issue of permits amounted to 3.7 million rupees.

Random samples were collected from imported fish and fish products at the airport and at the harbour and forwarded to the Division of Veterinary Services Laboratory for bacteriological analysis. A total of 60 samples was analysed and the results were found to be within established norms.

The import of fish and fish products amounted to 111 583 tonnes out of which 9 983 tonnes representing about 9.0% were for direct consumption. The tuna cannery and tuna loins processing plant imported 58 010 and 42 628 tonnes of frozen tuna respectively from French and Spanish vessels transshipping mainly in Seychelles. A total of 962 tonnes of frozen barracouta was imported for the production of salted snoek from New Zealand. The pie chart at figure 6.12 gives the details.

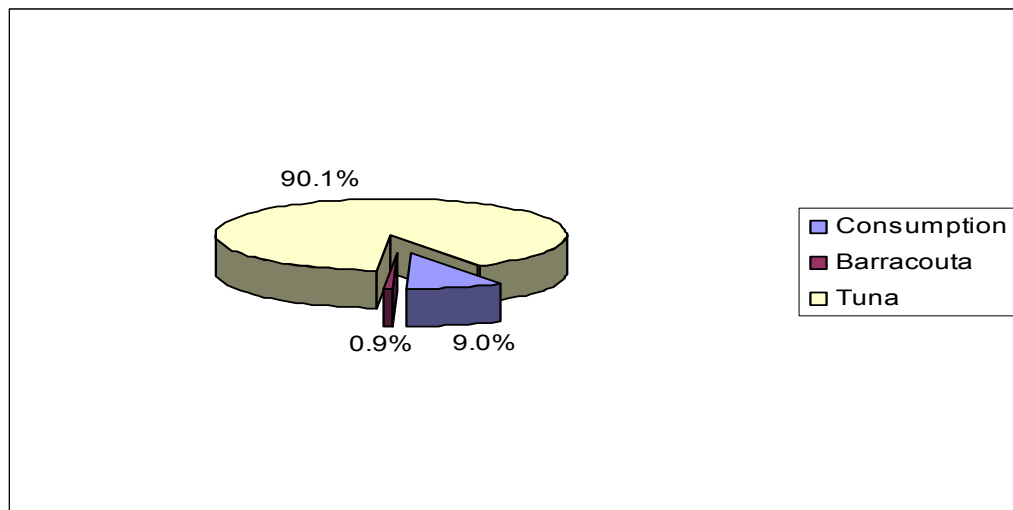


Fig 6.12: Details of total imports in percentage

Fish and fish products imported for consumption (9 983t) has been classified into four groups namely fish, crustaceans, cephalopods and shellfish. Fish represented 78.9%; crustaceans (13.5%) comprised prawn, shrimps, crabs and lobsters and cephalopods (7.1%) consisted of octopus, squid and cuttlefish. Mussels, oysters, clam and scallop which constituted the shellfish type was only 0.5%. Details are given in figure 6.13.

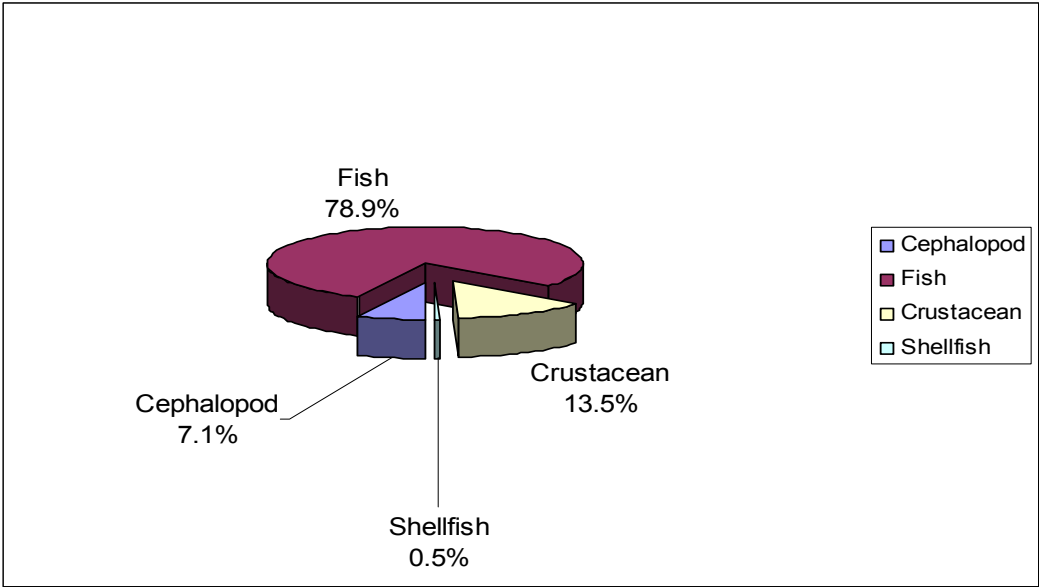


Figure 6.13: Details of import for direct consumption

The fish and fish products (9 983t) imported were in various forms namely frozen, chilled, canned, dried, smoked and live. Frozen and canned products constituted the main imports with 6654 and 2 897 t respectively as shown in figure 6.14

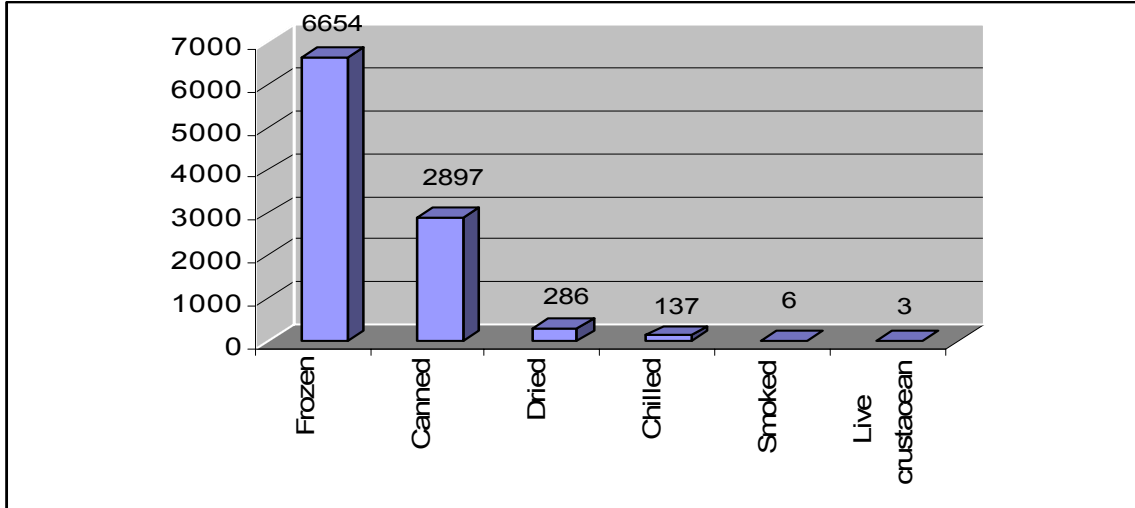


Figure 6.14: Import of fish & fish products

Fish and fish products for direct consumption (9 983t) were imported mainly from India, South Africa, Madagascar, Morocco and Chile and foreign vessels calling at the harbour represented 77 % of the imports. The imports from Morocco and Chile were mainly canned pilchards, sardines, mackerel and tuna. Imports from India, South Africa, Madagascar and the foreign vessels were mainly frozen fish with a small percentage of dried bombay duck and prawn from India. Details are presented in figure 6.15.

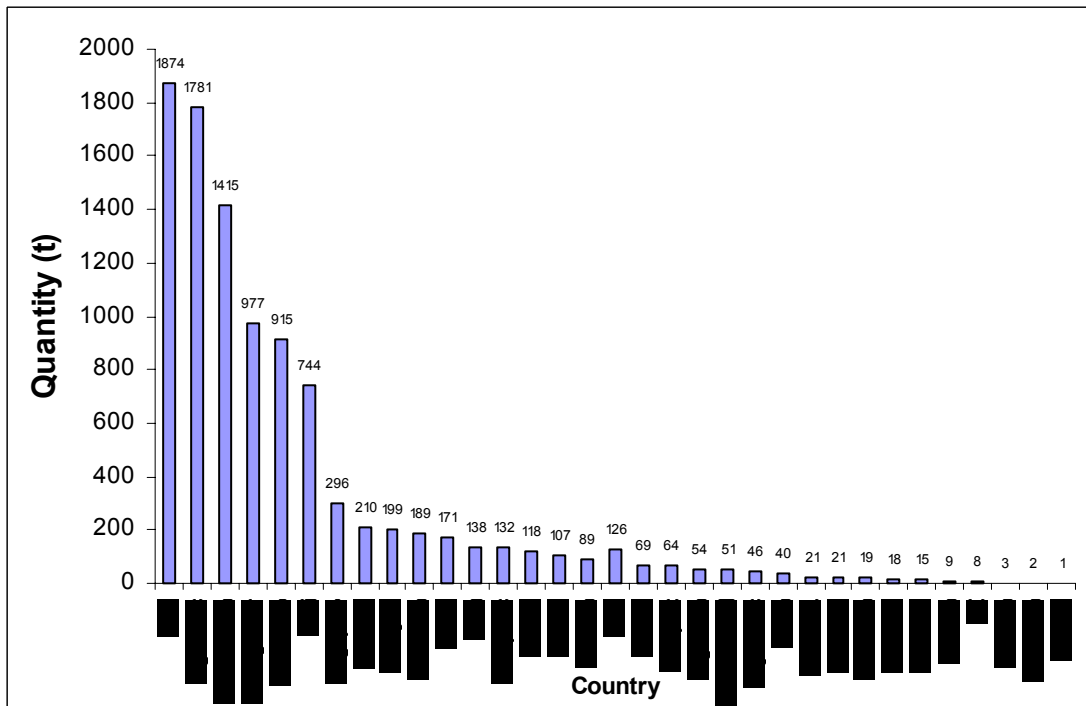


Fig 6.15: Import of fish and fish products by country of origin for direct consumption

6.6.1.1 Chilled fish and fish products

Chilled fish and fish products were mainly imported from India, United Arab Emirates, France and Seychelles. The imports comprised salmon, capitaine, sole, trout, anchovy, hareng, vacoas, sacrechien, bourgeois, giant prawn (*rosenbergii*), shrimps, lobsters, crab, squid, oyster, mussel, clams and scallop. The fish products comprised “roll mop, rape de mer, terrine de poisson, jambon de mer, batonnet de crabe, oeuf de lompe, crevette rose”. The total import of chilled fish and fish products amounted to 137 tonnes. Details for the last five years are shown in table 6.15.

Table 6.15: Import of chilled fish and fish products (t)

Product Year	Fish	Crustacean	Shellfish	Squid	Total
2002	21	27	5	3	56
2003	21	14	8	1	44
2004	48	27	0	0	75
2005	95	10	15	0	120
2006	110	22	5	0	137

6.6.1.2 Frozen fish and fish products

Imported frozen fish and fish products for direct consumption amounted to 6 654 tonnes. These products were imported mainly from India, Oman, Madagascar, South Africa, New Zealand, Vietnam, Tanzania, Belgium, USA, Indonesia, Thailand, Australia, France, Mauritius Free Port and fishing vessels calling at Port-Louis. Details on import for the past five years are presented in table 6.16.

Table 6.16 Import of frozen fish and fish products (t)

Product Year	Fish	Crustacean	Cephalopod	Shellfish	Total
-------------------------	-------------	-------------------	-------------------	------------------	--------------

2002	2 141	819	1 005	19	3 984
2003	2 690	991	776	23	4 480
2004	3497	1216	822	21	5 556
2005	4 721	1 326	1 174	55	7 276
2006	4 848	1 061	696	49	6 654

The species composition of frozen fish imported is shown in figure 6.15. Fin fish commonly imported were capitaine, blue nose, ruby fish, boarfish, cateau, marlin, oil fish, sail fish, seabream and tuna. By-catch from tuna longline fishing vessels purchased by the Mauritius Agricultural Marketing Board (AMB) comprised tuna, oil fish, sailfish, moonfish, marlin, becune, shark and dorade. Fish products included fish fingers, fish cakes, fish fillets, fish balls and other breaded products. The total import amounted to 6 654t as shown in table 6.16. The amount of capitaine included catch of vessels from the banks, flying Malagasy flags.

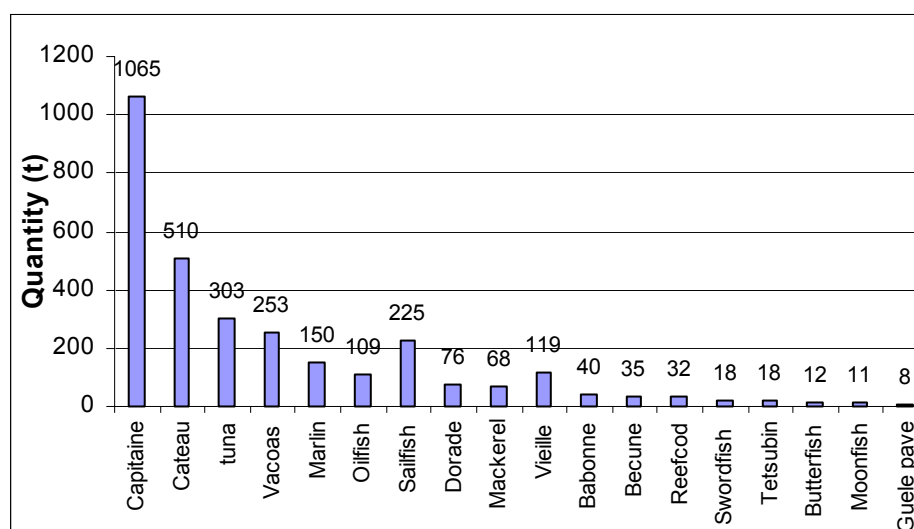


Figure 6.16: Import of frozen fish

6.6.1.3 Dried fish and fish products

Dried fish and fish products were imported from India, China, Malaysia, Indonesia and Singapore. The total import amounted to 286 tonnes. Details for the last five years are presented in table 6.17.

Table 6.17: Import of dried fish and fish products (t)

Product Year	Fish	Bombay duck	Squid, cuttlefish	Octopus	Prawn	Others	Total
2002	2	154	1	38	105	0	300
2003	4	157	1	0	132	1	295
2004	2	189	2	0	127	2	322
2005	23	136	1	0	97	0	257
2006	2	175	0	0	109	0	286

6.6.1.4 Smoked fish and fish products

Smoked fish and fish products were imported from France, Denmark, South Africa and Australia for the supermarkets, hotels and restaurants. Smoked fish comprised hareng, trout, salmon, haddock, surimi, morue and mackerel and amounted to 6 tonnes.

6.6.1.5 Canned fish and fish products

Canned fish and fish products such as sardines, pilchards, mackerels, anchois, foie de morue, salmon and tunas were imported from Morocco, Chile, Peru, South Africa, Thailand, Indonesia, Malaysia, China, France and UK. With the exception of tuna, these products are not produced locally. Morocco was the main country for the supply of canned sardines while Chile and South Africa were the main suppliers of canned pilchards. A total of 2 897 tonnes of canned fish and fish products was imported during the year. Details on canned fish and fish products imported for the past five years are presented in table 6.18.

Table 6.18: Import of canned fish and fish products (t)

Product Year	Sardines	Pilchards	Mackerel	Tuna	Others	Total
2002	1 115	1 490	679	31	11	3 326
2003	1 073	1 360	742	243	84	3 502
2004	1 022	1 102	994	107	193	3 418
2005	804	624	1 015	118	63	2 624
2006	900	889	838	230	40	2 897

6.6.1.6 Live crustaceans

The import of live lobster from South Africa and crab from Madagascar amounted to 1 180 kg and 1 400 kg respectively.

6.6.1.7 Live ornamental fish

A total of 466 471 units of live fresh water ornamental fishes were imported from Singapore and Malaysia. Common aquarium fish include gold fish, tetra, guppies, mollies, cichlids and terrapins.

6.6.1.8 Live fish for culture

The import for culture purposes of live red drum and barramundi fry/fingerlings from Reunion Island and Singapore amounted to 300 000 units and 160 000 units respectively. A barramundi encephalitis virus (BEV) free certificate was imposed as a condition for the import of barramundi.

6.6.1.9 Fish meal

A total of 389 tonnes of dried fish meal and 22 tonnes of soluble fish protein concentrate were imported from Argentina, France and South Africa. These products were used in the manufacture of animal feed.

6.6.1.10 Sea shells

A total of 80 282 units of sea shells were imported from Madagascar, Philippines and South Africa.

6.6.2 Export of fish and fish products

6.6.2.1 Export of chilled fish

Two companies namely Aurifla Co. Ltd. and Vieille Fishing Ltd. exported a total of 24 419 kg of chilled fish to Reunion Island. The species exported were vieille rouge (*Epinephelus fasciatus*), croissant queue blanc (*Variola albimarginata*), vieille laboue (*Epinephelus morrhua*), sacréchien (*Pristipomoides filamentosus*, *Etelis carbunculus*) and vivano (*Pristipomoides zonatus*).

6.6.2.2 Export of ornamental marine fish

Two companies exported live ornamental marine fish to Japan, Reunion, USA, Hong Kong, UK, Germany, and France. Out of the allocated quota of 6 500 units only 4 771 units of ornamental marine fish were exported.

6.6.3 Fish processing

6.6.3.1 Canned tuna

The local cannery imported 58 010 tonnes of raw tuna from European vessels. Most of the canned tuna produced was exported to the European countries (34 463 t) and the remaining (1 077 t) was put for sale on the local market. Export and local sale of the produce for the past five years is presented in table 6.19. Pet food was not produced during the year 2006. The sale for the year represents the stock from the year 2005

Table 6.19: Export and local sale of canned tuna and pet food (t)

Product / Year	2002	2003	2004	2005	2006
----------------	------	------	------	------	------

	Local	Export	Local	Export	Local	Export	Local	Export	Local	Export
Canned tuna	1 083	27 411	643	30 787	1 005	30 555	1 142	31 674	1 077	34 463
Pet food	179	2 951	183	3 301	231	3 070	195	2 394	201	447
Total	1 262	30 362	826	34 088	1 236	33 625	1 337	34 068	1 278	34 910

6.6.3.2 Fish meal production

One company was involved in fish meal production using parts of the fish not used in the canning process at the tuna cannery. All fish meal produced by the company was used in the manufacture of livestock feeds. A total of 10 265 tonnes of fish meal was produced indicating an increase of 56 % compared to last year. The production for the last five years is given in table 6.20.

Table 6.20: Production of fish meal (t)

Year	2002	2003	2004	2005	2006
Production	5 114	5 189	5 263	6 584	10 265

6.6.3.3 Tuna loin production

Thon des Mascareignes and its sister company Transfroid Ltee were engaged in the production of tuna loins for export purposes. The two companies imported 42 628 tonnes of frozen raw tuna from Spanish vessels transshipping in Seychelles for the processing of tuna loins. A total of 23 415 tonnes of tuna loins were produced and exported to Spain, Italy, Greece, Israel and USA.

6.6.3.4 Salted fish

Two companies are engaged in the production of salted snoek. A total of 962 tonnes of frozen barracouta (*Thyrsites atun*) were imported for salting. The amount produced was 644 tonnes out of which 107 tonnes

were exported to UK, Reunion and France. Details of the import of raw materials, production of snoek and their sale for the past five years are presented in table 6.21.

Table 6.21: Import, production and sale of salted fish (t)

Year	2002	2003	2004	2005	2006
Import of barracouta	1 115	1 105	1 183	1 126	962
Production of snoek	770	717	958	772	644
Local sale of snoek	710	632	672	570	486

6.7 Fish production, consumption and trade balance

6.7.1 Total fish production

A decrease of the total fish production in the artisanal fishery was noted in 2006. The total annual fish production is shown in table 6.22.

Table 6.22: Fish production in tonnes (fresh-weight equivalent)

Sector	Type	2002	2003	2004	2005	2006
Artisanal fishery						
Mauritius	Fresh	1 302	1 166	1 043	947	950
Rodrigues	Fresh	1 404	1 664	1 500	1 500	1 067
Agalega	Fresh	30	30	30	30	30
Sports fishery	Fresh	650	650	650	650	650
Amateur fishery	Fresh	300	300	300	300	300
Barachois	Fresh	7	6	4	5	2
Ponds (prawn & fish)	Fresh	39	27	32	23	0

Marine aquaculture (cage)	Fresh	--	--	325	367	436
Sub-total		3 732	3 843	3 884	3 822	3 435
Offshore demersal fishery						
Shallow water banks	Frozen	3 943	3 713	3 216	2 178	3 112
Banks deep water snappers	Frozen	5	--	7	--	0
St Brandon inshore	Frozen, chilled & salted	491	578	204	414	235
Semi-industrial chilled fish	Chilled	204	234	284	223	311
Tuna fishery	Frozen	219	1 118	1 640	1 402	1 380
Semi-industrial pelagic fish	Chilled	45	111	97	177	247
Demersal trawlers	Frozen	2 113	1 806	1 595	2 584	1 112
FAD Fishery						214
Sub-total		7 020	7 560	7 043	6 978	6 611
Grand Total		10 752	11 403	10 927	10 800	10 046

6.7.2 Per capita consumption of fish

Table 6.23: Per capita consumption of fish (kg)

Year	Quantity
2002	20.3
2003	18.7
2004	19.8
2005	18.8
2006	17.6

6.7.3 Trade balance in relation to total imports and exports

The import and export of fish and fish products and trade balance are given in the table 6.24. In 2006 a positive trade balance of Rs. 395.5 M was noted.

Table 6.24: Import and export of fish and fish products and trade balance

Year	Import		Export		Balance
	Qty(t)	Value (MR)	Qty(t)	Value (MR)	Value (MR)
2002	63 032	3 984.7	49 560	4 081.0	249.0
2003	62 323	2 560.1	48 719	3 178.4	618.3
2004	80 943	3 170.1	54 241	3 358.1	188.0
2005	104 830	4 265.7	67 249	4 842.1	580.9
2006	150 728	6 720.9	79 707	7 120.4	395.5

MR – Milli