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**SEYCHELLES NATIONAL REPORTS TO THE SCIENTIFIC COMMITTEE
OF THE INDIAN OCEAN TUNA COMMISSION**

November 2011

Executive Summary

The Seychelles national report summarizes activities of the purse seine, longline and semi-industrial fishery for the past 5 years. The total catch for the whole Purse Seine fleet in 2010 is estimated at 279,244 MT, representing increase of 6% over the catches reported for 2009. The mean catch rate stands at 28.243 MT/ fishing day for 2010. CPUE has been on an increasing trend from 15.69 MT /fishing day in 2007. For the Seychelles fleet the total catch for 2010 is estimated at 75,787 MT, representing an increase of 11% and the mean catch rate stand at 29.26 MT/ fishing days. Skipjack remained the dominant species accounting for 55% of the total catch and 58% for the Seychelles catch. Similar to 2009, the year 2010 saw increasing effort on FADs associated schools whereas effort on free swimming schools dropped.

For the longline fishery, a decrease of 39% was recorded in licensed issued and a remarkable increase to 83% in logbook return to SFA. The total catch for the Seychelles fleet in 2010 is estimated at 6,659 MT obtained from a fishing effort of 18 million hooks, representing a 16% drop in catch and 12% drop in fishing effort when compared to 2009.

The total catch for the local semi industrial vessel targeting tuna and swordfish stands at 295MT representing a decrease of 10%. The fishing effort increase slightly by 4% from 484,597 hooks to 506,334 hooks. This fishery has been experiencing declining CPUE trends since 2007. The decline has been more significant over the past 2 years. Reported shark catches in the semi-industrial fishery has also decreased significantly since 2008.

Seychelles has taken various actions to implement the Scientific Committee recommendations and IOTC Resolutions. Some of the actions include; modification of logbook format to meet mandatory minimum statistic requirement, particularly with regards to data recording of sharks in longline fishery, steps to implement a National Scientific Observer Programme, collaboration with other institutions on research projects focusing on bycatch mitigation, and swordfish (stock structure/ movement).

1.0. GENERAL FISHERY INFORMATION

The Seychelles Fishing Authority (SFA) was incorporated in August 1984, coinciding with the immense expansion of industrial fishing activities in the Western Indian Ocean, to coordinate and manage the development of the fisheries sector. Since it was set up, the SFA has been collecting catch and effort information via a logbook system as a result of licensing requirements agreed under the various fishing agreements with foreign fishing fleets. Purse seining and longlining are the two main fishing methods used to target tuna and tuna-like species. The fishing activities of purse seiners in the western Indian Ocean are covered 100% whereas the coverage of longliners' activities is restricted to the Seychelles EEZ, unless the vessels are registered in Seychelles. Those Distant water longline vessels do not use Port Victoria as their port of transshipment making it difficult to obtain good logbook coverage and to collect size frequency data. Collection of size frequency data for purse seiners is conducted in collaboration with the Spanish Fishing Agency through Instituto Español de Oceanografía (IEO) and IRD (Institut de Recherche pour le Développement). A fisheries data collection and sampling programme for the semi-industrial longline fishery has also been in place since this fishery started in 1995.

The Seychelles National Report summarizes the past 5 years' activities of the industrial purse seine and longline fleet licensed to operate inside the Seychelles EEZ, emphasizing on Seychelles-registered vessels. Activities of the local "semi-industrial" monofilament longline fishery targeting mainly swordfish are also incorporated. Statistics include licences issued, number of vessels active, catch, effort and spatial distribution of catch and effort.

2.0 PURSE SEINE FISHERY

2-1. Licences issued and fleet composition

The purse seine fishery in the WIO is dominated by vessels from the European Community (France, Spain). This continued in 2010 where 66% of licences were taken by those vessels. Seychelles currently has 8 registered purse seiners, all of Spanish origin.

Table 1a shows the number of licences issued to purse seiners to operate inside of the Seychelles EEZ and the number of vessels that were active over the past five years. It must be noted that the number of vessels active may be more than the number of licenses issued as some licenses may overlap between years. The total number of licenses issued to purse seiners has been on a decline for the past 2 years. In 2010 a decrease of 26% was recorded compared to 2009.

Tables 1b to 1e show the number of purse seiners according to their size category (carrying capacity) by fleet. The total number of vessel active decrease from 45 in 2009 to 35 in 2010.

2-2. Fishing effort

Table 2a shows the total carrying capacity (GRT) and the nominal fishing effort (fishing days) for the whole purse seine fleet and the Seychelles' fleet. The annual trend in nominal effort shows a decreasing trend from 2007 to 2010 for both the whole fleet and the Seychelles fleet. A

19% and 9% decrease was reported in the nominal effort for the whole fleet and Seychelles fleet respectively in 2010 when compared to the previous year. This coincides with a decrease in carrying capacity both for the whole fleet and for the Seychelles fleet, resulting from a reduction in the number of vessels.

Table 2b shows the number of purse seine sets according to school types. In 2010, the overall number of sets made by the whole purse seine fleet dropped by 4% (figure 1). For sets by school type, overall a 20 % decrease was reported for free swimming schools and 2% increase for FAD associated schools compared to 2009. A similar trend was also observed for the Seychelles fleet whereby the total number of sets made increased by 7% compared to the previous year and the number of sets made on free swimming schools decreased by 11% whilst the number of sets made on FAD associated schools increased by 13%.

2-3. Catch

Table 3a shows the total yearly catch by species reported for the whole fleet and for the Seychelles' fleet and table 3b and 3c show that same information by fishing mode. The total catch recorded by the purse seine fleet during 2010 is estimated at 279,244MT, representing an increase of 6% over the catches reported for 2009 (Figure 5). Only a 2% increase was reported in skipjack catches in 2010 compared to 2009. Decreases of 56% and 18% were reported in catches of albacore and bigeye respectively whilst the catch of yellowfin increased by 22%. For the Seychelles fleet, in 2009, an increase of 11% was recorded in the overall catches, particularly 40% and 19% increases in catches of albacore and yellowfin tuna respectively (figure 6).

Figures 7 to 10 illustrate catches by fishing mode. Overall a decrease of 10 % were observed in catches on free swimming schools with catches of albacore, bigeye, and yellowfin tuna decreasing by 58% , 29% and 10% respectively (figure 7). For Seychelles fleet, a decrease of 25% was reported with catches of bigeye, yellowfin and skipjack tuna decreasing by 39%, 28% and 11% respectively (figure 8). Catches on FAD's associated school increased by 10% for the whole fleet and 18% for the Seychelles fleet (Figure 9 and 10). Increases were reported in catches of yellowfin, and skipjack tuna (table 3b and 3c).

2-4. Yield

Table 4a shows catch rates by species and table 4b and 4c show that same information by fishing mode. Figure 11 shows that the overall CPUE was on an increasing trend between 2007 to 2010 from 15.69 MT /fishing day in 2007 to 28.24 MT/ fishing day in 2010. Similarly the CPUE for the Seychelles fleet shows an increasing trend between the year 2007 to 2010 from 14.26 MT/fishing day in 2007 to 29.26 MT /fishing day in 2010 (Figure 12).

2-5 Fishing grounds

Maps 1 to 4 show the distribution catches reported by the whole purse seine fleet and Seychelles for 2010 compared to 2009. There were reported increases in catches in 2010 in the North West Seychelles area and the East Somalia area, however away from the Somalia Coast.

Table 1a. Number of licenses issued by country to fish inside of the Seychelles EEZ.

Year	Spain	France	Seychelles	Others	Total Licences	Number of vessels active
2006	22	18	10	2	52	52
2007	21	17	10	3	51	51
2008	19	17	10	7	53	51
2009	16	15	9	7	47	45
2010	14	9	8	4	35	35

Table 1.b. Spanish purse seiners by category (carrying capacity) licensed to fish inside of the Seychelles EEZ.

Year	50 -400	401-600	601-800	801-1200	1201-2000	>2000	Total
2006	0	0	1	5	11	5	22
2007	0	0	1	4	11	5	21
2008	0	0	0	3	10	4	17
2009	0	0	0	2	9	4	15
2010	0	0	0	1	9	4	14

Table 1.c. French purse seiners by category (carrying capacity) licensed to fish inside of the Seychelles EEZ.

Year	50 -400	401-600	601-800	801-1200	1201-2000	>2000	Total
2006	0	0	2	11	5	0	18
2007	0	0	2	10	5	0	17
2008	0	0	2	10	5	0	17
2009	0	0	0	10	6	0	16
2010	0	0	0	6	2	0	8

Table 1.d. Seychelles purse seiners by category (carrying capacity) licensed to fish inside of the Seychelles EEZ.

Year	50 -400	401-600	601-800	801-1200	1201-2000	>2000	Total
2006	0	0	0	2	5	3	10
2007	0	0	0	2	5	3	10
2008	0	0	0	2	5	3	10
2009	0	0	0	2	5	2	9
2010	0	0	0	1	5	2	8

Table 1.e. NEI purse seiners by category (carrying capacity) licensed to fish inside of the Seychelles EEZ.

Year	50 -400	401-600	601-800	801-1200	1201-2000	>2000	Total
2006	0			2	1	0	3
2007	0			2	1	0	3
2008	0	1	3	2	1	0	7
2009	0	1	3	2	1	0	7
2010	0	0	0	4	0	0	4

Table 2a. Purse seine fishing effort (carrying capacity and fishing days) reported on all school type

CARRYING CAPACITY AND FISHING EFFORT (WHOLE FLEET)		
YEAR	C.CAPACITY	FISHING DAYS
2006	65,829	15,225
2007	66,305	15,661
2008	60,275	13,696
2009	50,408	11,222
2010	44,829	9,122
CARRYING CAPACITY AND FISHING EFFORT (SEYCHELLES' FLEET)		
YEAR	C.CAPACITY	FISHING DAYS
2006	15,877	3,094
2007	16,818	3,501
2008	15,337	2,998
2009	12,957	2,686
2010	13,037	2,437

Table 2b. Purse seine fishing effort (number of sets by school type)

SETS BY SCHOOL TYPE (ALL COUNTRIES)												
YEAR	COMBINED			LOGS			FREE SCHOOL			UNSPECIFIED		
	Total	Positives	Null	Total	Positives	Null	Total	Positives	Null	Total	Positives	Null
2006	13,418	9,807	3,611	6,371	6,068	303	6,991	3,718	3,273	56	21	35
2007	12,121	8,656	3,465	6,184	5,745	439	5,915	2,900	3,015	22	11	11
2008	11,626	8,871	2,755	6,017	5,722	295	5,580	3,147	2,433	29	2	27
2009	9,522	8,112	1,410	6,791	6,506	285	2,708	1,603	1,105	23	3	20
2010	9,151	7,722	1,429	6,958	6,549	409	2,169	1,170	999	24	3	21
SETS BY SCHOOL TYPE (SEYCHELLES)												
YEAR	COMBINED			LOGS			FREE SCHOOL			UNSPECIFIED		
	Total	Positives	Null	Total	Positives	Null	Total	Positives	Null	Total	Positives	Null
2006	2,124	1,672	452	1,175	1,106	69	949	566	383	0	0	0
2007	2,085	1,603	482	1,291	1,152	139	794	451	343	0	0	0
2008	1,892	1,506	386	1,016	956	60	876	550	326	0	0	0
2009	1,983	1,787	196	1,563	1,494	69	420	293	127	0	0	0
2010	2,129	1,900	229	1,762	1,698	64	364	201	163	3	1	2

Table 3a. Purse seine species composition of total catch

TOTAL CATCH BY SPECIES (ALL COUNTRIES)					
YEAR	YFT	SKJ	BET	ALB	TOTAL
2006	145,596	224,065	18,106	1,199	389,935
2007	92,034	132,238	20,455	665	245,670
2008	112,724	137,330	26,951	1,574	278,956
2009	84,821	150,420	26,987	421	262,719
2010	103,127	153,782	22,102	187	279,244
TOTAL CATCH BY SPECIES (SEYCHELLES)					
YEAR	YFT	SKJ	BET	ALB	TOTAL
2006	28,054	47,515	3,496	46	79,342
2007	16,085	29,727	3,857	136	49,936
2008	20,681	30,036	5,369	128	56,382
2009	21,330	40,156	6,821	10	68,339
2010	25,330	43,828	6,602	14	75,787

Table 3b. Purse seine species composition of catch reported on free-swimming schools

CATCH ON FREE SCHOOLS BY SPECIES (ALL COUNTRIES)					
YEAR	YFT	SKJ	BET	ALB	TOTAL
2006	79,625	36,988	6,304	1,180	124,206
2007	51,753	25,340	5,590	641	83,366
2008	73,283	17,113	9,663	1,417	101,488
2009	34,969	10,357	5,360	335	51,021
2010	31,579	10,396	3,796	142	45,913
CATCH ON FREE SCHOOL BY SPECIES (SEYCHELLES)					
YEAR	YFT	SKJ	BET	ALB	TOTAL
2006	13,246	5,143	1,072	46	19,511
2007	8,314	3,944	855	119	13,237
2008	13,222	2,673	1,757	128	17,780
2009	7,629	2,274	1,295	8	11,206
2010	5,531	2,018	787	14	8,349

Table 3c. Purse seine species composition of catch reported on FADs associated schools

CATCH ON FLOATING OBJECTS BY SPECIES (ALL COUNTRIES)					
YEAR	YFT	SKJ	BET	ALB	TOTAL
2006	65,478	186,867	11,790	20	265,014
2007	40,248	106,768	14,861	25	162,138
2008	39,411	120,149	17,278	158	177,361
2009	49,839	140,042	21,626	85	211,663
2010	71,495	143,369	18,295	45	233,249
CATCH ON FLOATING OBJECTS BY SPECIES (SEYCHELLES)					
YEAR	YFT	SKJ	BET	ALB	TOTAL
2006	14,808	42,372	2,424	-	59,831
2007	7,771	25,783	3,003	16	36,699
2008	7,460	27,364	3,612	-	38,603
2009	13,701	37,883	5,527	2	57,134
2010	19,795	41,806	5,814	-	67,427

Table 4a. Purse seine catch rate (MT/fishing day and MT/positive set) by species reported on all school type

YEAR	Overall CPUE, MT/fishing day (ALL COUNTRIES)					Overall CPUE, MT/positive set (ALL COUNTRIES)				
	YFT	SKJ	BET	ALB	TOTAL	YFT	SKJ	BET	ALB	TOTAL
2006	9.56	14.72	1.19	0.08	25.61	14.85	22.85	1.85	0.12	39.76
2007	5.88	8.44	1.31	0.04	15.69	10.63	15.28	2.36	0.08	28.38
2008	8.23	10.03	1.97	0.11	20.36	12.71	15.48	3.04	0.18	31.45
2009	7.41	13.13	2.36	0.04	22.94	10.46	18.54	3.33	0.05	32.39
2010	10.43	15.55	2.23	0.02	28.24	13.35	19.91	2.86	0.02	36.16
YEAR	Overall CPUE, MT/fishing day (SEYCHELLES)					Overall CPUE, MT/positive set (SEYCHELLES)				
	YFT	SKJ	BET	ALB	TOTAL	YFT	SKJ	BET	ALB	TOTAL
2006	9.07	15.36	1.13	0.01	25.64	16.78	28.42	2.09	0.03	47.45
2007	4.59	8.49	1.1	0.04	14.26	10.03	18.54	2.41	0.08	31.15
2008	6.9	10.02	1.79	0.04	18.81	13.73	19.94	3.56	0.08	37.44
2009	7.94	14.95	2.54	0	25.44	11.94	22.47	3.82	0.01	38.24
2010	9.78	16.92	2.55	0.01	29.26	13.33	23.07	3.47	0.01	39.89

Table 4b. Purse seine catch rate (MT/fishing day and MT/positive set) by species reported on free-swimming schools

	CPUE FREE SCHOOLS, MT/fishing day (ALL COUNTRIES)					CPUE FREE SCHOOLS, MT/positive sets (ALL COUNTRIES)				
YEAR	YFT	SKJ	BET	ALB	TOTAL	YFT	SKJ	BET	ALB	TOTAL
2006	5.23	2.43	0.41	0.08	8.16	21.42	9.95	1.70	0.32	33.41
2007	3.30	1.62	0.36	0.04	5.32	17.85	8.74	1.93	0.22	28.75
2008	5.35	1.25	0.71	0.10	7.41	23.29	5.44	3.07	0.45	32.25
2009	3.05	0.90	0.47	0.03	4.45	21.81	6.46	3.34	0.21	31.83
2010	3.19	1.05	0.38	0.01	4.64	26.99	8.89	3.24	0.12	39.24
	CPUE FREE SCHOOLS, MT/fishing day (SEYCHELLES)					CPUE FREE SCHOOLS, MT/positive sets (SEYCHELLES)				
YEAR	YFT	SKJ	BET	ALB	TOTAL	YFT	SKJ	BET	ALB	TOTAL
2006	4.28	1.66	0.35	0.01	6.31	23.40	9.09	1.89	0.08	34.47
2007	2.37	1.13	0.24	0.03	3.78	18.44	8.74	1.90	0.26	29.35
2008	4.41	0.89	0.59	0.04	5.93	24.04	4.86	3.19	0.23	32.33
2009	2.84	0.85	0.48	0.00	4.17	26.04	7.76	4.42	0.03	38.24
2010	2.14	0.78	0.30	0.01	3.22	27.52	10.04	3.91	0.07	41.54

Table 4c. Purse seine catch rate (MT/fishing day and MT/positive set) by species reported on FADs associated schools

	CPUE FADS, MT/fishing day (ALL COUNTRIES)					CPUE FADS, MT/positive sets (ALL COUNTRIES)				
YEAR	YFT	SKJ	BET	ALB	TOTAL	YFT	SKJ	BET	ALB	TOTAL
2006	4.30	12.27	0.77	0.00	17.41	10.79	30.80	1.94	0.00	43.67
2007	2.57	6.82	0.95	0.00	10.35	7.01	18.58	2.59	0.00	28.22
2008	2.88	8.77	1.26	0.01	12.95	6.89	21.00	3.02	0.03	31.00
2009	4.35	12.23	1.89	0.01	18.48	7.66	21.53	3.32	0.01	32.53
2010	7.23	14.50	1.85	0.00	23.59	10.92	21.89	2.79	0.01	35.62
	CPUE FADS, MT/fishing day (SEYCHELLES)					CPUE FADS, MT/positive sets (SEYCHELLES)				
YEAR	YFT	SKJ	BET	ALB	TOTAL	YFT	SKJ	BET	ALB	TOTAL
2006	4.79	13.69	0.78	0.00	19.34	13.39	38.31	2.19	0.00	54.10
2007	2.22	7.36	0.86	0.00	10.48	6.75	22.38	2.61	0.01	31.86
2008	2.49	9.13	1.20	0.00	12.88	7.80	28.62	3.78	0.00	40.38
2009	5.10	14.10	2.06	0.00	21.27	9.17	25.36	3.70	0.00	38.24
2010	7.64	16.14	2.24	0.00	26.03	11.66	24.62	3.42	0.00	39.71

Fig 1. All purse seiners number of sets by fishing mode

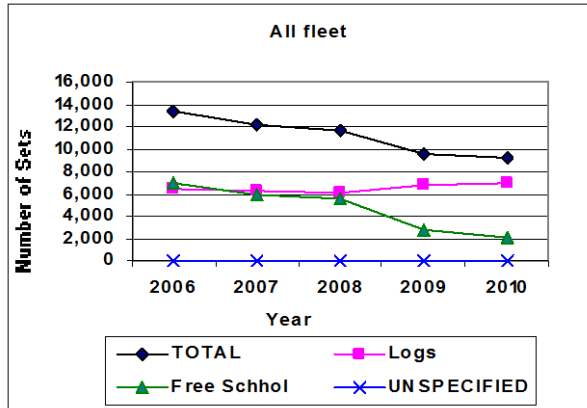


Fig 2. Seychelles purse seiners number of sets by fishing mode

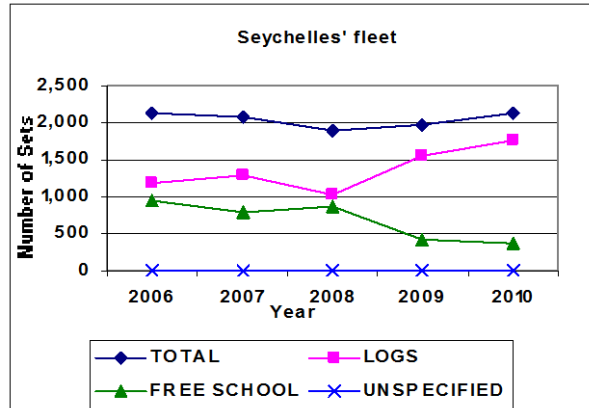


Fig 3. All purse seiners proportion of positive and null sets

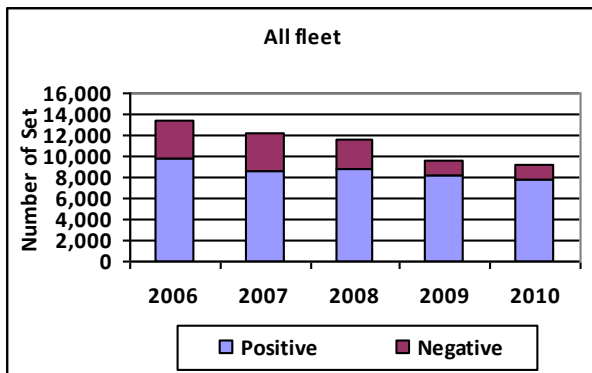


Fig 4. Seychelles purse seiners proportion of positive and null sets

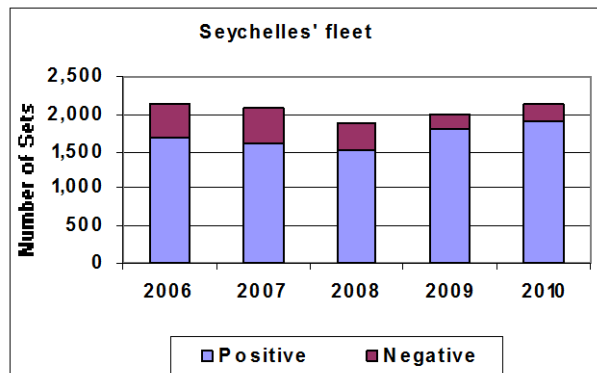


Fig 5. All purse seiners total reported catch by species

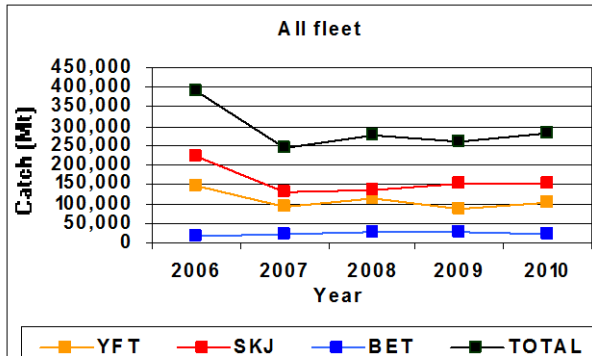


Fig 6. Seychelles purse seiners total reported catch by species

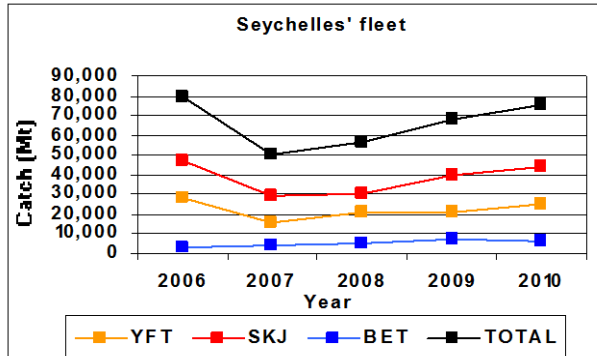


Fig 7. All purse seiners total catch by species reported on free swimming schools

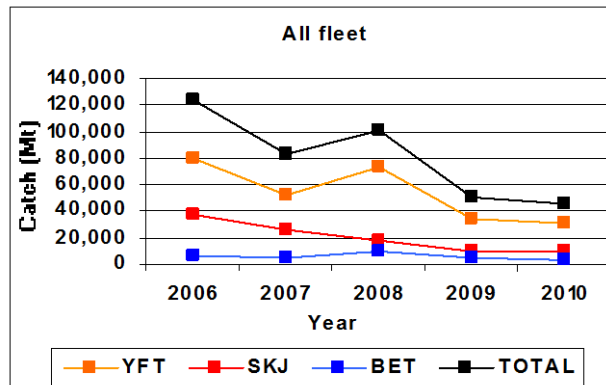


Fig 8. Seychelles purse seiners total catch by species reported on free swimming schools

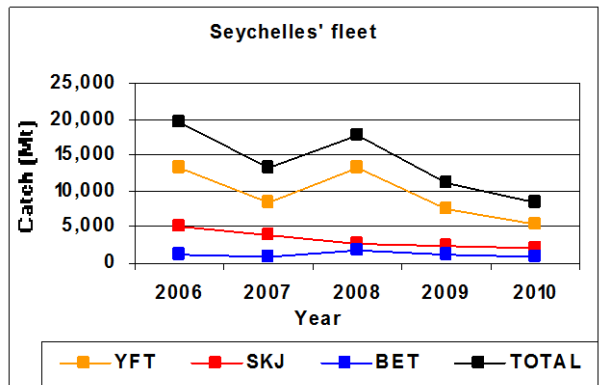


Fig 9. All purse seiners total catch by species reported on FADs associated schools

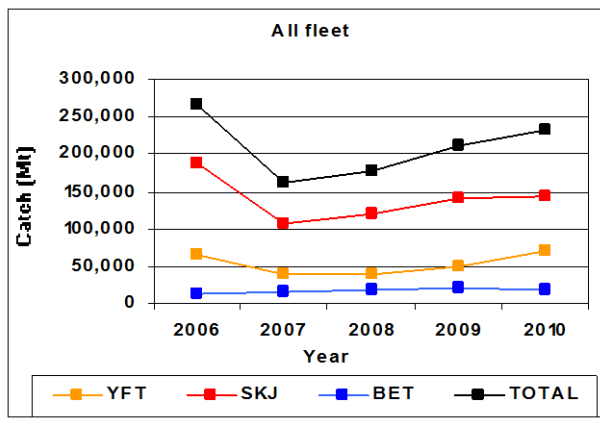


Fig 10. Seychelles purse seiners total catch by species reported on FADs associated schools

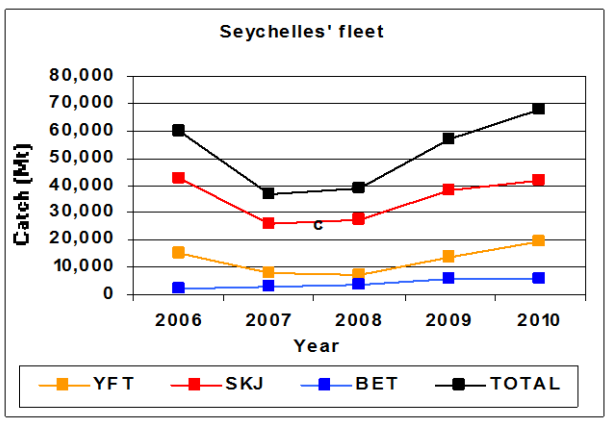


Fig 11. All purse seiners CPUE by species reported on all school types.

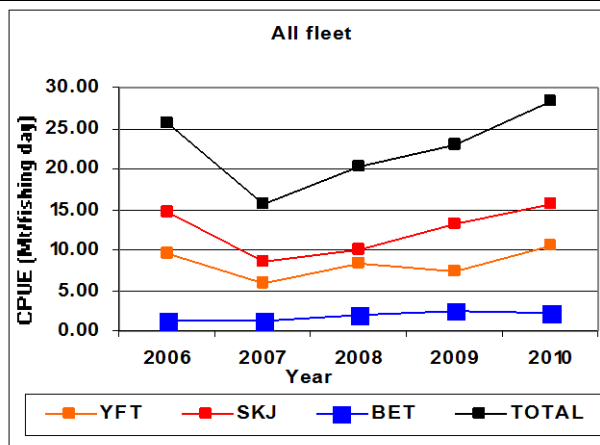
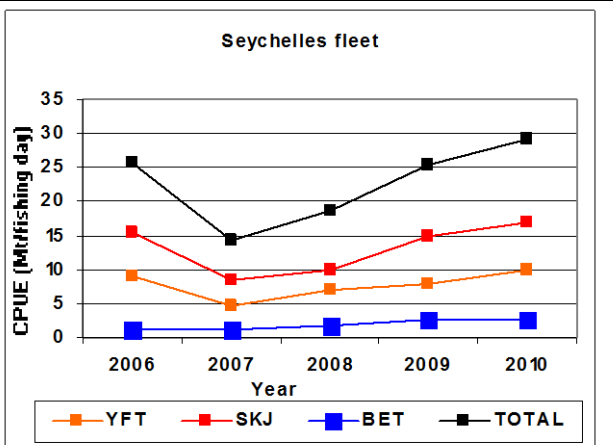
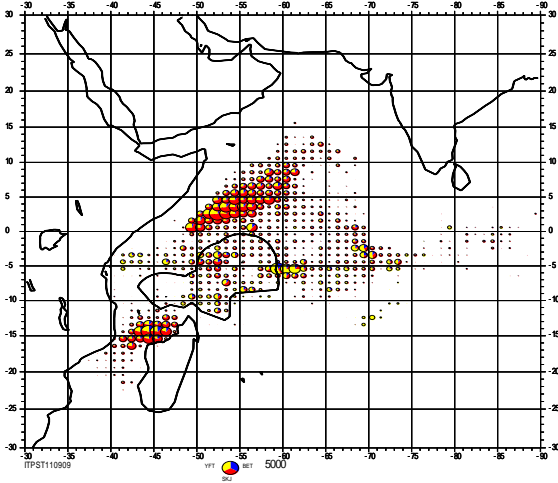


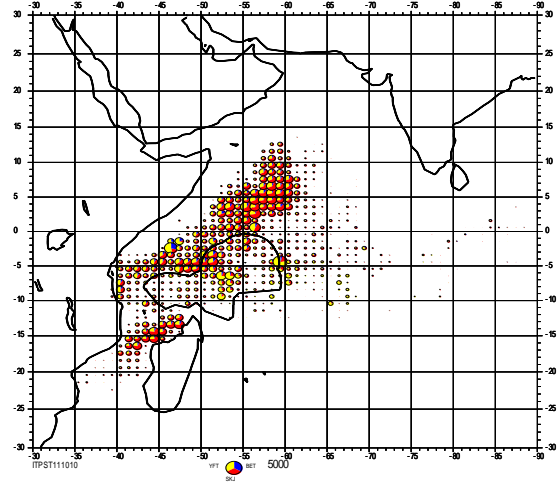
Fig 12. Seychelles purse seiners CPUE by species reported on all school types.



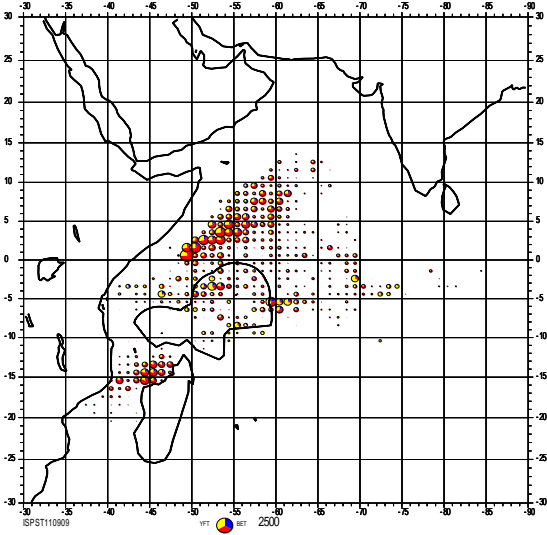
Map 1. Distribution of reported catches (Mt) for 2009.



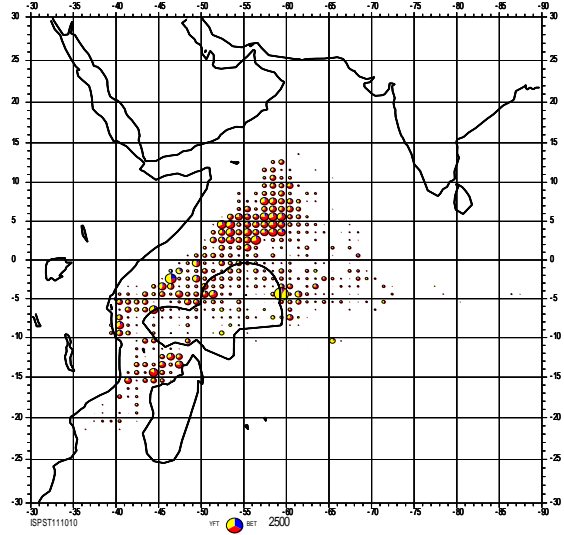
Map 2. Distribution of reported catches (Mt) for 2010.



Map3. Distribution of reported catches (Mt) for 2009.
(Seychelles fleet)



Map 4. Distribution of reported catches (Mt) for 2010.
(Seychelles fleet)



3.0 LONGLINE FISHERY

3-1 Licenses issued and fleet composition

Table 5a and 5b show the number of licenses issued and the number of vessel active by country respectively. It must be noted that a vessel may be registered in Seychelles and operate in the Western Indian Ocean but may not be licensed, as licences are only required if the vessel wishes to operate inside the Seychelles EEZ. Hence the number of active Seychelles registered vessels may exceed the number licensed.

In 2010 a total of 42 licences were taken by longliners to fish inside the Seychelles EEZ, representing a decrease of 39% from the 69 licenses taken in 2009. 69% of the licences taken in 2010 were by Taiwanese longliners and 26% by Seychelles registered vessel. In 2010 there were 25 Seychelles registered vessels, all of Taiwanese origin.

3-2 Logbook coverage

In 2009 SFA continued with its effort to improve the returns of logbooks by distant water longliners to the Authority. Logbook returns increased from 75% in 2006 to an average of 84% over the past three years (Table 6).

3-3 Fishing effort

It should be noted that the statistic presented here represent only a sample of longliners activities in the WIO as activities are restricted to the Seychelles EEZ unless the vessels are Seychelles registered.

The fishing effort both in terms of fishing days and number of hooks set shows a decreasing trend since 2006 for all fleet licensed to operate inside the Seychelles EEZ. There was a decrease of 12% in fishing effort (hooks) for all fleet in 2010 from 25 million hooks in 2009 to 22 million hooks. The mean number of hooks per set has however remained constant throughout the 2006 to 2010 period.

For the Seychelles registered longliners, the fishing effort (number of hooks set) decreased by 11% in 2010 when compared to 2009 (Table 7 and figure 13).

3-4 Catch

The total catch reported by all fleet has been on the decrease since 2006 (Table 8 and figure 14) corresponding to a decrease in the number of vessels active (table 5b) and in fishing effort. The total catch reported by all fleet has decreased by 16% in 2010 when compared to the previous year.

The Seychelles registered vessels also reported a decrease of 20% in total catch in 2010 from 8,323 MT in 2009 to 6,659 MT in 2010 (Table 8 and figure 15).

3-5 Species Composition

Since 2006 bigeye tuna has been the dominant species caught by all longline fleet licensed to operate inside the Seychelles EEZ. During 2010, bigeye tuna again dominated the catches of all fleet accounting for 54% of the total catch, followed by others species category with 22% and yellowfin 10%. Catches of swordfish, bigeye and yellowfin decreased by 30%, 10% and 5% respectively whilst catches of albacore increased by 89% (table 8).

Similar observations were made for the Seychelles fleet with bigeye tuna dominating the catch, accounting for 51%, followed by other species (24%) and albacore 10%. Yellowfin tuna accounted for only 8% of the total catch. A decrease of 42% and 29% was reported in other species category and swordfish catches respectively, whilst albacore recorded a 98% increased in catches.

3-6 Yield

The overall catch rate for all fleet has remained more or less constant (around 0.40 MT/1000 hooks) over the past 5 years. Similarly the catch rate for bigeye tuna and swordfish has remained more or less stable, whilst that of yellowfin has been decreasing from 0.15MT/1000 hooks in 2006 to 0.04 MT/1000 hooks in 2010. (Table 9 and figure 16).

The CPUE of the Seychelles' fleet has remained more or less constant over from 2006 to 2008 (around 0.46 MT/1000 hooks) (table 9 and figure 17). In 2009, the CPUE decrease slightly to 0.41 MT/1000 hooks and further decrease to 0.38 MT/1000 hooks in 2010. Species wise, bigeye tuna catch rate for the Seychelles fleet has been much higher than for yellowfin tuna throughout. In 2010, the catch rate of bigeye tuna by the Seychelles fleet decreased to 0.19 MT/1000 hooks from 0.21 MT/1000 in 2009 whilst that of yellowfin tuna increased slightly from 0.02 MT/1000 hooks in 2009 to 0.04 MT/1000 hooks in 2010.

3-7. Fishing grounds

Maps 5 to 8 show the distribution catches reported by the whole longliners fleet and Seychelles fleet for 2010 compared to 2009. In both years reported catches were distributed mainly between latitude 5 North and 15 South. However in 2009 the reported catches were more widely distributed.

Table 5a. Number of licenses issued to longliners to fish inside of the Seychelles EEZ by country.

Year	CHINA	JAPAN	REPUBLIC OF KOREA	SEYCHELLES	TAIWAN ROC	OTHERS	TOTAL LICENCES
2006	11	138	40	17	96	10	312
2007	4	77		11	55	4	151
2008	5	29	5	10	21	6	76
2009	2	23	8	5	28	3	69
2010				11	29	2	42

Table 5b. Number of vessels active (with licenses to fish inside of the Seychelles EEZ) by country and number of Seychelles registered vessels.

Country Year	CHINA	JAPAN	REPUBLIC OF KOREA	SEYCHELLES*	TAIWAN ROC	OTHERS	TOTAL VESSELS ACTIVE
2006	9	58	9	28	112	4	217
2007	4	49	3	27	63		146
2008	2	36		25	43	1	107
2009	5	27	3	27	31	2	95
2010				25	29	2	56

Table 6. Logbooks (%) returned to SFA by country.

Country Year	CHINA	JAPAN	REPUBLIC OF KOREA	SEYCHELLES	TAIWAN ROC	OTHERS	TOTAL
2006	37	65	39	96	80	24	75
2007	62	90	60	94	83	10	82
2008	51	90	0	82	92	37	84
2009	23	92		93	92	15	84
2010	71	76		93	67	30	83

Table 7. Longline fishing Effort (Million hooks and fishing days) and average hooks per set.

TOTAL EFFORT (ALL COUNTRIES)			
YEAR	HOOKS (Million)	FISHING DAYS	MEAN HOOKS PER SET
2006	45	13,950	3,244
2007	41	12,484	3,254
2008	30	9,416	3,228
2009	25	7,730	3,245
2010	22	6,803	3,220
TOTAL EFFORT (SEYCHELLES)			
YEAR	HOOKS (Million)	FISHING DAYS	MEAN HOOKS PER SET
2006	17	5,567	3,105
2007	19	5,795	3,247
2008	15	4,672	3,157
2009	20	6,047	3,263
2010	18	5,324	3,299

Table 8. Longline Species composition of total catch

TOTAL CATCH BY SPECIES (ALL COUNTRIES)						
YEAR	YFT	BET	SWO	ALB	OTH	TOTAL
2006	6,562	8,614	1,231	162	1527	18,096
2007	4,145	8,933	1,110	502	1879	16,601
2008	1,833	6,832	862	834	1441	11,806
2009	881	5,112	694	394	3125	10,221
2010	840	4,603	485	743	1883	8,594
TOTAL CATCH BY SPECIES (SEYCHELLES)						
YEAR	YFT	BET	SWO	ALB	OTH	TOTAL
2006	2,763	3,834	722	92	963	8,374
2007	1,775	4,511	690	303	1363	8,642
2008	580	4,009	559	765	881	6,795
2009	468	4,117	581	338	2804	8,323
2010	528	3,387	411	669	1631	6,659

Table 9. Longline catch rate (MT/1000 hooks) by species

CPUE (MT/1000 HOOKS) (ALL COUNTRIES)						
YEAR	YFT	BET	SWO	ALB	OTH	TOTAL
2006	0.15	0.19	0.03	0.00	0.03	0.40
2007	0.10	0.22	0.03	0.01	0.05	0.41
2008	0.06	0.23	0.03	0.03	0.05	0.39
2009	0.03	0.20	0.03	0.02	0.12	0.40
2010	0.04	0.21	0.02	0.03	0.08	0.39
CPUE (MT/1000 HOOKS) (SEYCHELLES)						
YEAR	YFT	BET	SWO	ALB	OTH	TOTAL
2006	0.16	0.22	0.04	0.01	0.06	0.48
2007	0.09	0.24	0.04	0.02	0.07	0.46
2008	0.04	0.27	0.04	0.05	0.06	0.46
2009	0.02	0.21	0.03	0.02	0.14	0.42
2010	0.03	0.19	0.02	0.04	0.09	0.38

Figure 13. Longline fishing effort (1000 hooks and fishing days)

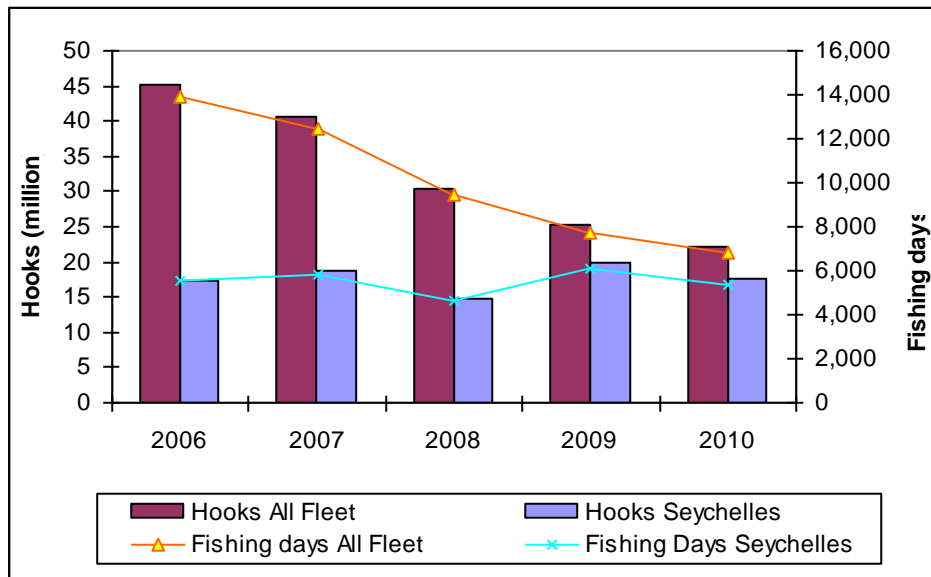


Fig 14. All longliners catch by species.

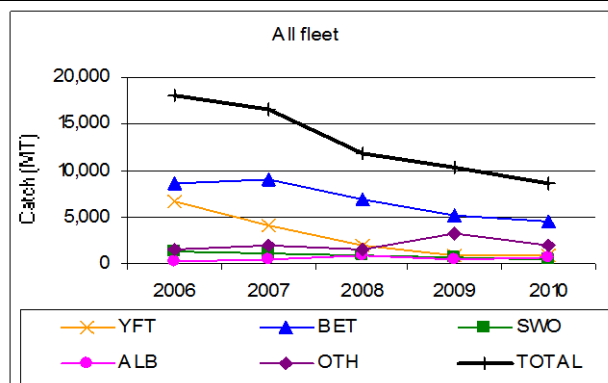


Fig 15. Seychelles longliners catch by species

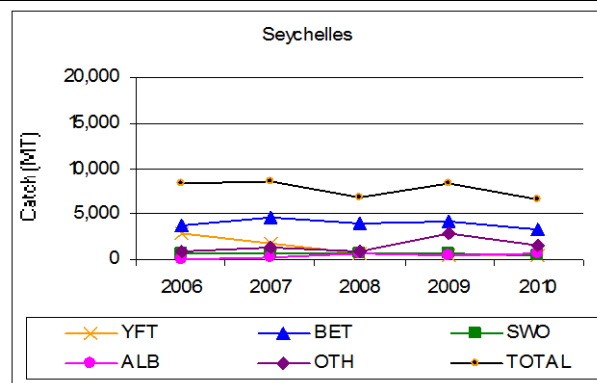


Fig 16. All longliners CPUE by species.

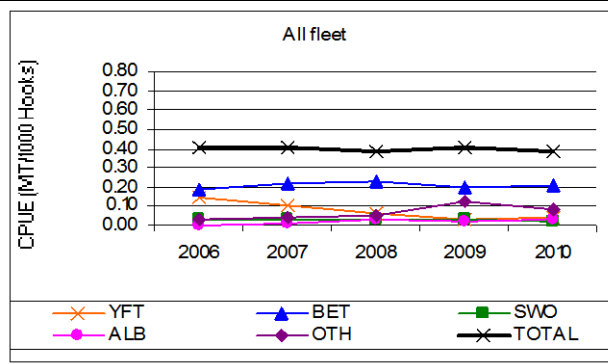
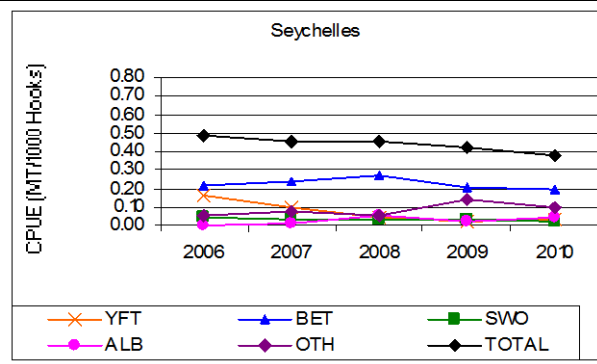
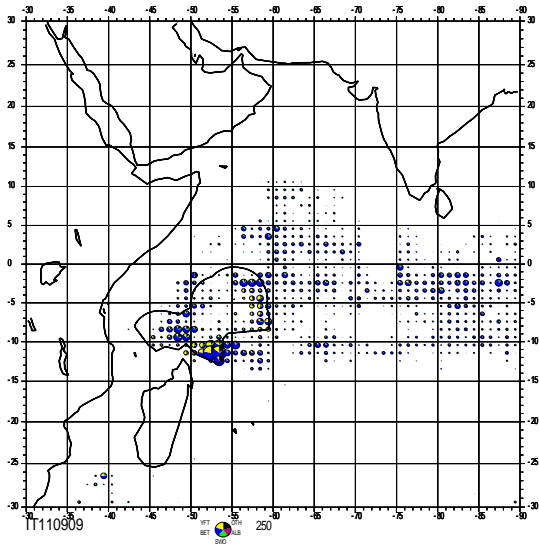


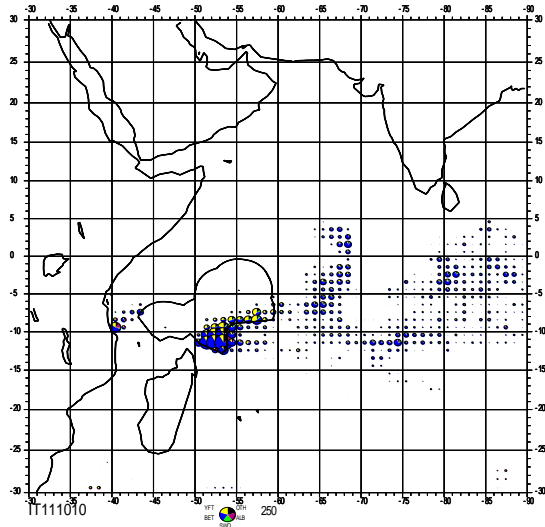
Fig 17. Seychelles longliner CPUE by species



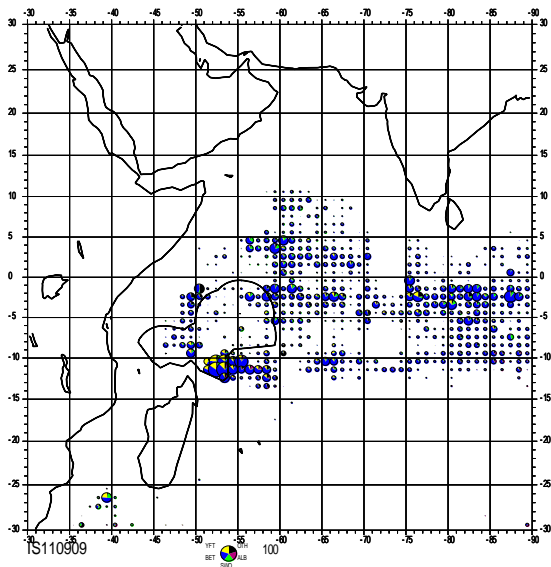
Map 5. Distribution of reported catches (Mt) for 2009.
(All fleet)



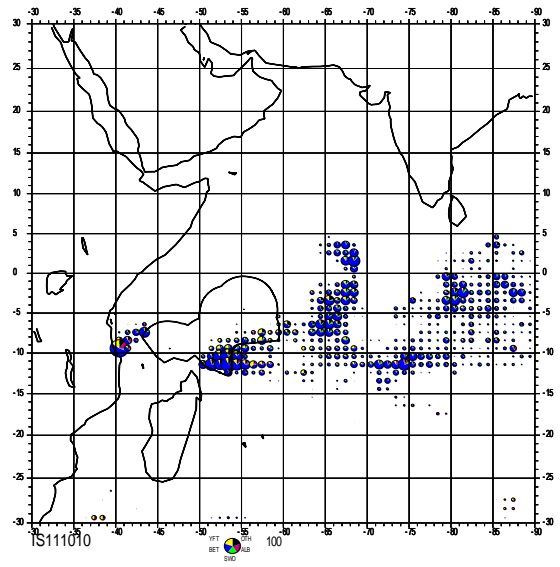
Map 6. Distribution of reported catches (Mt) for 2010.
(All fleet)



Map 7. Distribution of reported catches (Mt) for 2009.
(Seychelles fleet)



Map 8. Distribution of reported catches (Mt) for 2010.
(Seychelles fleet)



4.0 SEMI-INDUSTRIAL FISHERY

It must be noted that figures presented in this report might differ from previously presented figures. In the current report the data have been raised to take into consideration missing logbooks and missing landings. Furthermore logbooks and landings data have been raised to round weights. In December 2007, all data of the semi industrial shark fishery (year 2004 to 2007) were transferred into FINSS and in the process some trips were eliminated or combine to trips already in FINSS as these trips were either duplicate or overlaps with other trips.

4-1 Vessels active and fishing effort

Table 10 summarizes the fishing activities of the semi-industrial fleet from 2006 to 2010. In September 2008, the government of Seychelles stopped providing subsidies on fuel to fishing vessels landing in excess of 15% by weight of sharks. This have reduced the number of fishing trips targeting sharks, however reporting of shark related activities has always been low and it is believe that underreporting is still occurring. In 2010, 9 semi-industrial vessels conducted a total of 107 longline fishing trips (for tuna and swordfish) compared with 113 trips conducted by 9 local vessels in 2009. The fishing effort (number of hooks) increased slightly by 4%, from 484,597 hooks in 2009 to 506,334 hooks in 2010.

4-2 Catch

The total catch by the local semi-industrial fleet for 2010 is estimated at 295 Mt compared to 329 MT in 2009 (Table 10). This represents a decrease by 10%.

4-2 Species Composition

The species composition reported since the beginning of the fishery is given in table 11. In 2010, swordfish dominated the catch accounting for 63% of the total catch whilst yellowfin and bigeye tuna accounted for 20% and 9% of the total catch respectively. A decrease from 12 MT to 6 MT of shark bycatches was observed in 2010.

4-3 Yield

The catch rate estimated for 2010 is 0.58 MT/1000 hooks compare to 0.68 MT/1000 hooks for the previous year (figure 18). This is the lowest CPUE recorded since the beginning of the fishery.

Swordfish CPUE increased slightly from 0.35 MT/1000 hooks in 2009 to 0.37 MT/1000 hooks in 2010. Yellowfin CPUE decrease slightly from 0.14 MT/1000 hooks to 0.11 MT/1000 hooks in 2010. There was a decreased also in the CPUE of bigeye tuna from 0.12 MT/1000 hooks in 2009 to 0.05 MT/1000 hooks in 2010. Analysis of the monthly data reveals lower CPUE trends over the past 2 years, particularly in August and September (figure 19).

Table 10. Summary of fishing activities of the semi-industrial fleet.

	2006	2007	2008	2009	2010
Number of vessels active	6	4	7	9	9
Number of Trips	40	40	71	113	107
Number of set	293	299	539	889	838
Gross Catch (Mt)	217	249	233	329	295
Effort (1000' Hooks)	194	192	345	481	506
Catch Rate (Mt/1000Hooks)	1.12	1.29	0.68	0.68	0.58

Table 11. Catch (Mt) reported by the semi industrial fishery from 2000 to 2010.

Year	Swordfish	Yellowfin	Bigeye	Sailfish	Marlin	Shark	Others	Total
2000	264	51	50	37	14	78	6	501
2001	270	96	58	21	12	71	7	536
2002	135	42	24	8	4	15	3	230
2003	65	13	11	0	0	0	0	90
2004	68	7	7	0	0	3	0	85
2005	168	50	56	5	2	9	2	290
2006	106	40	47	3	2	19	0	217
2007	111	70	55	3	2	5	3	249
2008	98	44	59	7	3	22	1	233
2009	170	68	59	15	5	12	1	329
2010	186	58	26	5	12	6	2	295

Table 12. Catch rate (Mt/1000 hooks) by species reported by the semi industrial from 2006 to 2010.

SPECIES	2006	2007	2008	2009	2010
SWORDFISH	0.55	0.58	0.28	0.35	0.37
YELLOWFIN	0.2	0.36	0.13	0.14	0.11
TUNA					
BIGEYE	0.24	0.29	0.17	0.12	0.05
TUNA					
OTHER	0.13	0.06	0.1	0.07	0.05
SPECIES					
GRAND TOTAL	1.12	1.29	0.68	0.68	0.58

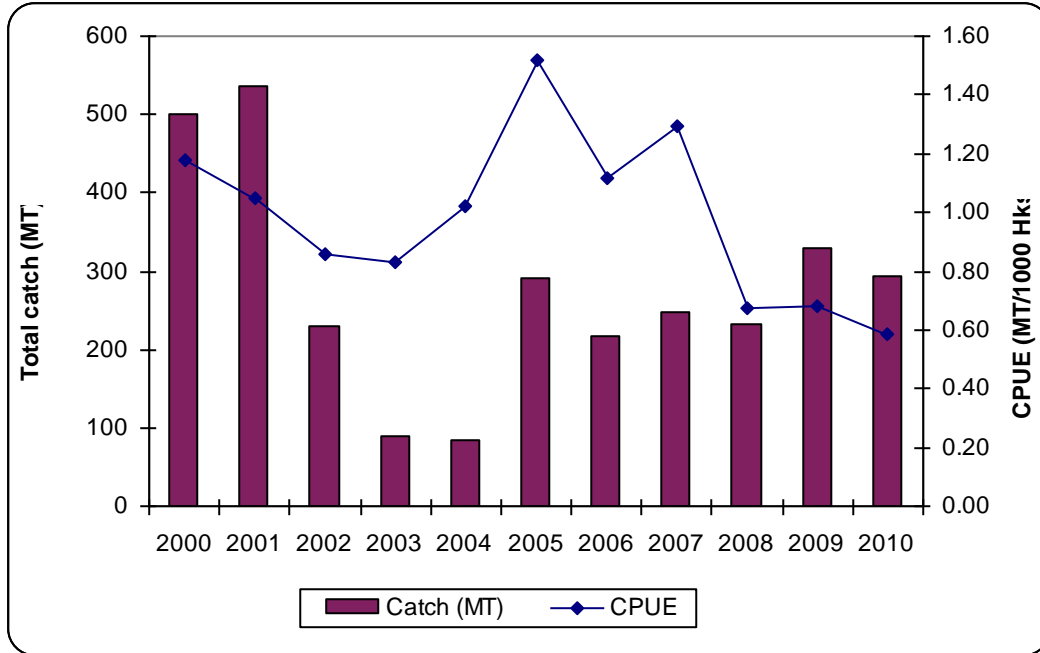


Figure 18. Total catch and catch rates reported from 2000 to 2010.

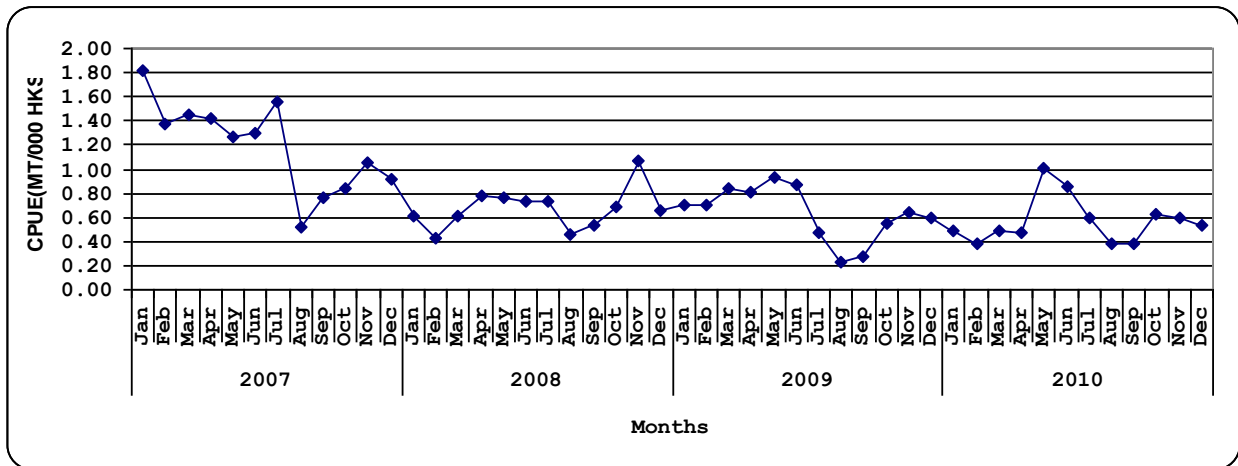


Figure 19. Monthly trend in catch rates for the last 4 years.

5.0. RECREATIONAL FISHERY

A logbook system was introduced several years ago for the Seychelles Recreational Fishery. However returns were relatively low and subsequently drop to zero. The management of vessel involved in recreational fishing activities does not fall under the responsibility of the Seychelles Fishing Authority, making it difficult to implement the logbook system. The Fisheries Act is in the process of being revised and will address this issue.

6.0 ECOSYSTEM AND BYCATCH ISSUES

The Seychelles Shark NPOA, in accordance with FAO guidelines under its International Plan of Action (IPOA), was developed in April 2007 by the Seychelles Fishing Authority under the umbrella of the then Ministry of Environment and Natural Resources (MENRT). This development of the Seychelles Shark NPOA was undertaken in a participatory manner by different government organizations and NGOs. The establishment of the steering committee took place in April 2008, consisting of 23 members from different organizations who meet regularly to oversee the implementation of the NPOA. This provides a useful tool for fishers, tourism operators and managers making decisions about the long-term management and conservation of Seychelles shark resources. The NPOA is divided into 11 work programmes and 59 actions, each with a different level of priority. Funds are being secured by both NGOs and the government (Seychelles Fishing Authority, Seychelles National Park Authority and Department of Environment) in order to address the activities identified under the various work programmes. To date, the majority of the Work Programme has been completed with a few areas requiring urgent attention. The Seychelles Shark NPOA will be reviewed at the end of 2012. It is expected that most of the planned activities would be completed by then. It is worth noting that following the fatal shark attacks reported in the Indian Ocean in 2011, there has been impetus both at national and regional level for more research on sharks to better understand their behaviour. This will be done in line with our Shark NPOA.

7.0 NATIONAL DATA COLLECTION AND PROCESSING SYSTEMS

a. Logbook data collection and verification (including date commenced and status of implementation);

A logbook system exist for the following fisheries targeting tuna and tuna like species

- I. Industrial longline: From early 50's to date (70 – 90% annual coverage) 2010 coverage 84%
- II. Industrial Purse seine: 1984 to date (95 – 100% annual coverage)
- III. Semi-industrial fishery: 1995 to date (95 – 100% coverage)

b. Vessel Monitoring System (including date commenced and status of implementation);

- I. A prerequisite for any vessel targeting tuna and tunalike species requesting a licences to operate inside of the Seychelles EEZ or to be a Seychelles registered vessel, is to have an operational Vessel Monitoring System (2003 to date)

c. Scientific Observer programme;

- I. Seychelles is actively involve in the IOTC observer programme for transshipment at sea.
- II. The National Scientific observer programme is in the process of being implemented. To date Seychelles has 7 trained observers (4 trained under SWIOFP and 3 under the COI). The SFA is in the process of purchasing equipment to be used by the observers. Furthermore a training course for 3 logistic coordinators for the Obsever programe is scheduled for December 2011. It is expected that the programme will begin in January 2012.

d. Port sampling programme;

An ongoing activity for the purse seine fishery and the semi-industrial longline fishery.

Distant water Seychelles registered longliners does not land in Port Victoria, hence there are currently no port sampling programme for those vessels. However Size frequency information are taken by the crew and transmit to the Seychelles Fishing Authority,

- e. **Unloading/Transshipment;** Ongoing collection of transshipment and landing forms from fish processing companies for the purse seine fishery and the semi-industrial longline fishery.

8.0 NATIONAL RESEARCH PROGRAMS

The Seychelles Fishing Authority currently has no major research programme on tuna and tuna-like species, mainly as a result of security threats from piracy. However we are collaborating with various international institutions on a number of projects particularly MADE, IOSSS, SWIOFP, etc.

9.0 IMPLEMENTATION OF SCIENTIFIC COMMITTEE RECOMMENDATIONS AND RESOLUTIONS OF THE IOTC RELEVANT TO THE SC.

Seychelles ensure that all its fisheries are conducted in responsible and sustainable manners with due regards to longterm stability of fish stock as well as that of the ecosystem that they inhabit. With regards to tuna, tunalike species and other associated species (sharks, turtle's e.t.c.), Seychelles ensure that fisheries targeting /catching those species are conducted in accordance with IOTC conservation and management measures and with consideration of IOTC Scientific Committee's recommendations.

Swordfish stock: Seychelles is actively involved in the IOSSS and the SWIOFP projects. Those 2 regional projects should provide better information on the swordfish stock of the Indian ocean (stock structure and movement).

Bycatch mitigation: Seychelles is also involve in the MADE project looking at means to mitigating bycatches of none targeted species particularly turtles and sharks by purse seine and longline; including promoting the use of ecological and biodegradable FADs in the purse seine fishery and looking at setting strategies for longline vessels.

Depredation; The Seychelles has not undertaken any research programme on depredation mitigation since 2008, mainly as a result of piracy. However data on depredation are still being collected through logbooks.

Data on sharks: *On the addition of shark species and species groups to Resolution 08/06 concerning the recording of the catch by longline fishing vessels in the IOTC area,* The longline logbook was previously modified to cater for 4 sharks species. No further modification has been made so far to cater for additional species.

Scientific Observer programme: Seychelles is in the final stages of implementing its National Scientific Observers Programme. 7 observers have been trained and equipment to be used by observers has been procured. A training course for 3 observer logistic coordinators is expected to take place in December 2011. It is expected that the programme will begin in January 2011. In addition the SFA is expected to begin a pilot project looking at electronic monitoring (sensors and video cameras) in 2012.

01/06 Concerning the IOTC big eye tuna statistical document programme Collection of import data of big eye tuna for the period of 1 January – 30 June of the current year: Seychelles provides both export and re- export big eye tuna statistical documentation.

05/03 Relating to the establishment of an IOTC programme of inspection in port. (Supersedes and replaces 02/01): Inspection is conducted and the information is reported to the IOTC in a timely manner.

10.0 LITERATURE REFERENCES

Seychelles national plan of action for the conservation and management of sharks. Seychelles Fishing Authority, Victoria, Seychelles, **2007. 59 p.**