

TRENDS IN THE LONGLINE AND PURSE SEINE FISHERY IN THE SEYCHELLES WATERS

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SUMMARY

Since 1997, there has been a downward trend in the number of longliners licensed to fish in the Seychelles. The main nationalities applying for licenses are; the Japanese fleet, the Taiwanese fleet and the South Koreans. Analysis of the logbooks reported from 1987 to 2001 shows that the Japanese fleet has been targeting Bigeye tuna until 1990 and from 1990 to 2001, yellowfin tuna became the targeted species.

Analysis of catch rates by species shows that since 1993 Yellowfin CPUE has been fluctuating from 0.25 kg/hook , to 0.30 Kg/ h and in 2001 a catch rate of 0.35 kg/h (12 fish/1000 hooks) was reported. The bigeye tuna catch rates has shown a decline from 0.20 kg/hook in 1994 to around 0.12 kg/hook in 2001. The average weight of Yellowfin tuna reported by the Japanese skippers varied from 26 kg to 28 kg for the last 4 years.

The catch composition of the Taiwanese data shows a predominance of bigeye tuna since the last 4 years. The catch rates of yellowfin tuna stabilised at around 0.10 kg/hook for the last 4 years, whereas catch rates of bigeye tuna stabilised at around 0.15 kg/hook. The same trend is observed for the South Koean fleet.

Analysis of data from the Seychelles longline fishery targeting swordfish since 1996 shows a fluctuation of yellowfin and bigeye catch rates of around 0.12 kg/hook. Length frequency distribution of yellowfin tuna from this fishery shows a decreasing trend of 20 cm in the fork length from 1996 to 2002. Analysis of predation rates by sharks and the false killer whales show that around 20 to 15% of the yellowfin catch were loss to predation during the last 2 years.

The number of EU purse seiners active in the Seychelles waters has increased from 30 to 49 vessels from 1984 to 2001. The Non EU vessels (Iran, Japan, Mauritius and Russian) applied for licenses to fish in the Seychelles waters in 1990. There has been a downward trend in the number of the non EU vessels active from 1992 to 2001.

Analysis of the Russian, Mauritian and Japanese data shows that these purse seiners have been fishing principally on FADS. The species composition of their catches is dominated by skipjack.

INTRODUCTION

This background statistical paper has been prepared to be presented at the fourth Meeting of the IOTC's Working Party on Tropical Tunas.

It presents the trends in the Longline fisheries (industrial and semi-industrial), and the purse seine fishery in the Seychelles waters. Regarding the purse seine fishery, analysis of catches is focalised on the non-EU vessels licensed in Seychelles.

THE INDUSTRIAL LONGLINE FISHERY

Industrial longline vessels from the main fishing fleets (Japanese, Taiwanese and South Koreans) started to apply for licences to fish in the Seychelles EEZ from 1981.

The number of licenses issued had steadily increased, but as shown in figure 1 below, from 1997 a downward trend in the total number of licenses issued and individual vessels licensed has been observed.

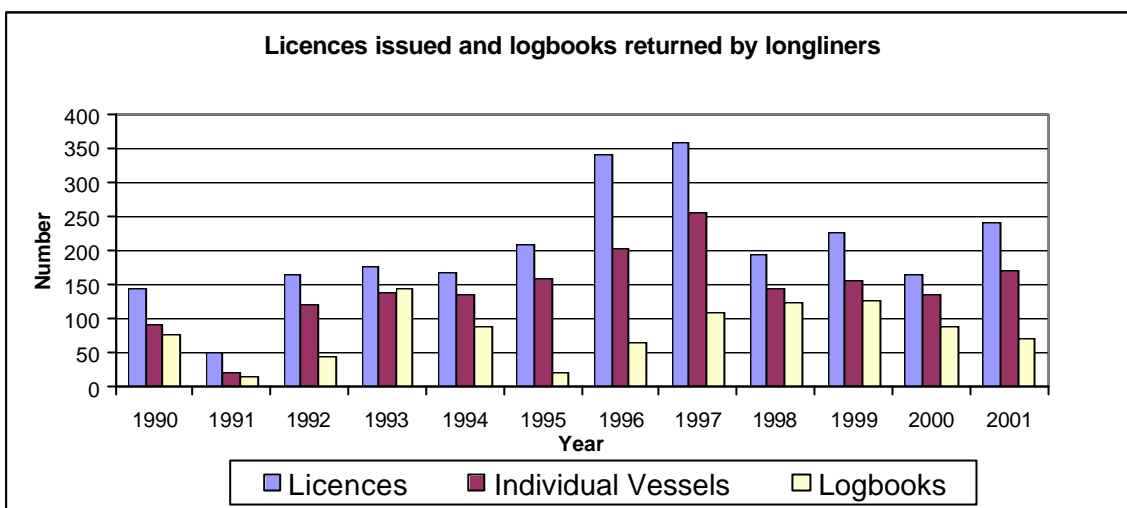


Fig 1. Licenses issued to industrial longliners to fish in the Seychelles waters

TRENDS IN THE FISHERY

1. THE JAPANESE LONGLINE FLEET

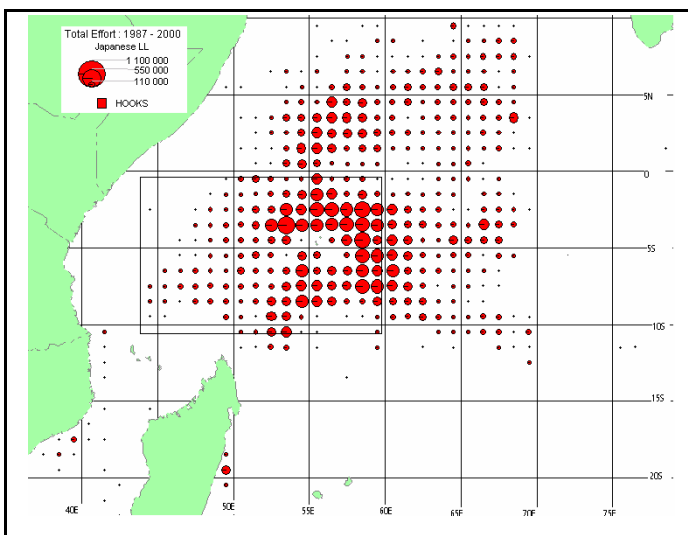
Logbooks received from 1987 to 2001 have been analysed. Table 1 below summarises the number of sets reported by year.

Table 1. Sets reported; Japanese LL

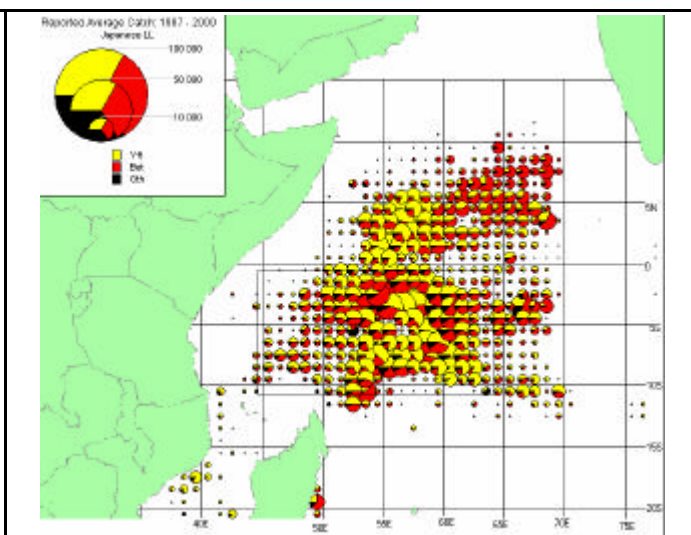
	87	88	89	90	91	92	93	94	95	96	97	98	99	20	21
Number of sets reported	205	571	901	1215	452	291	991	672	1686	1042	948	976	1721	865	1133

FISHING ZONES

Maps number 1a and 1b show the total effort by 1° square and average catch by 1° square reported by the Japanese longliners from 1987 to 2000.



Map 1a. Total effort, 1987 – 2000, Japanese fleet



Map 1b. Average catch, 1987 – 2000, Japanese fleet

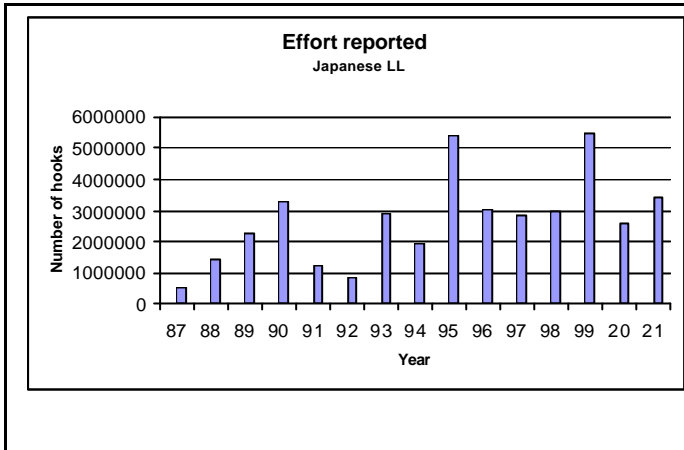


Fig 2. Effort Reported (number of hooks)

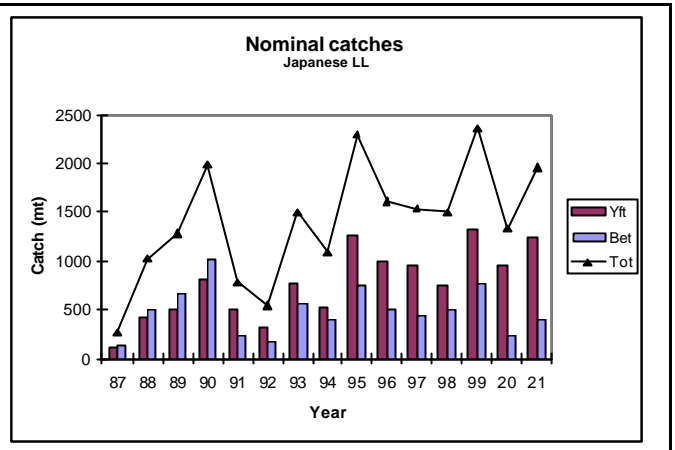


Fig 3. Nominal Catches

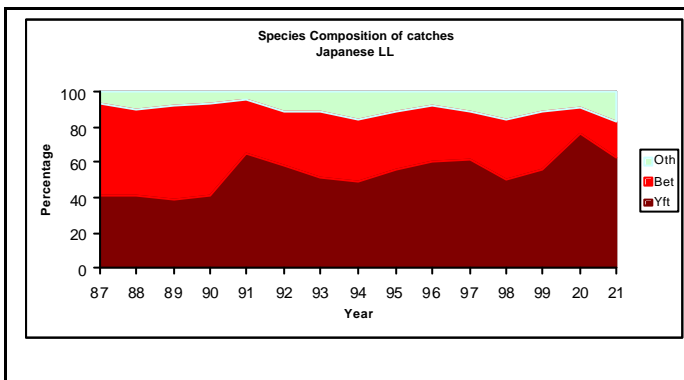


Fig 4. Species Composition

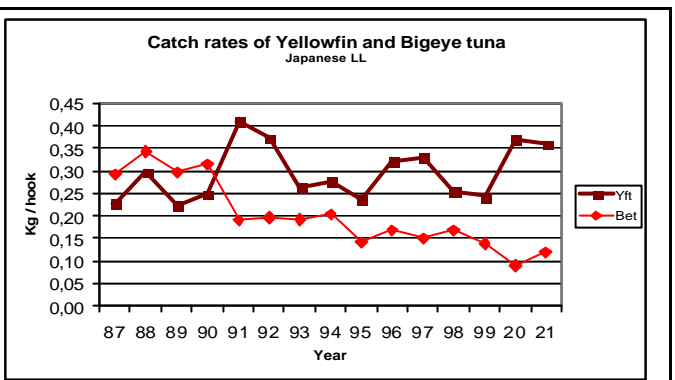


Fig 5. Catch rates

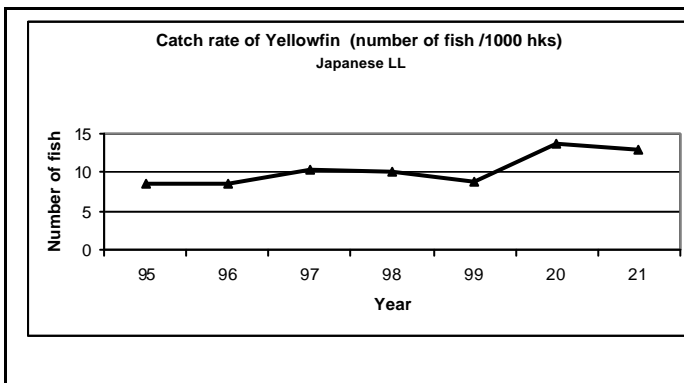


Fig 6

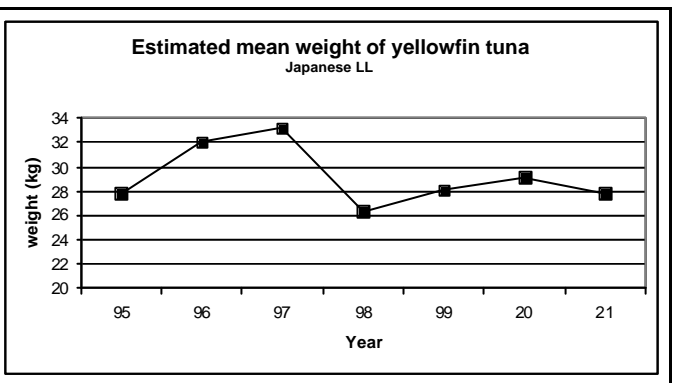


Fig 7.

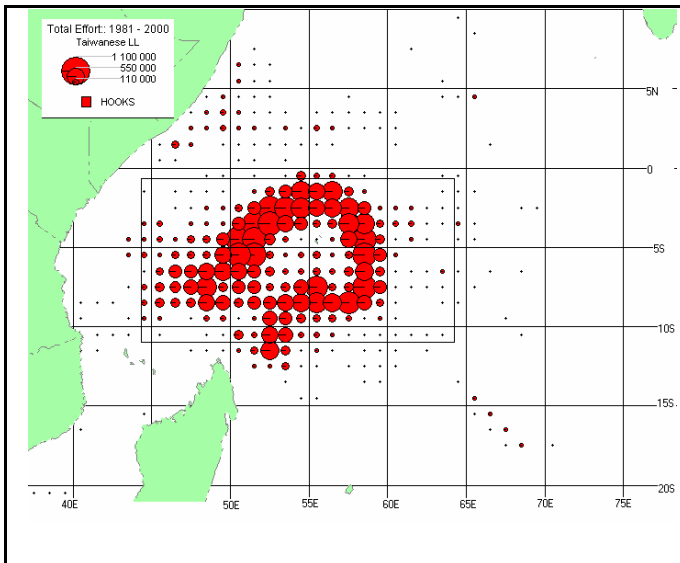
2. THE TAIWANESE LONGLINE FLEET

Table 2. Sets reported

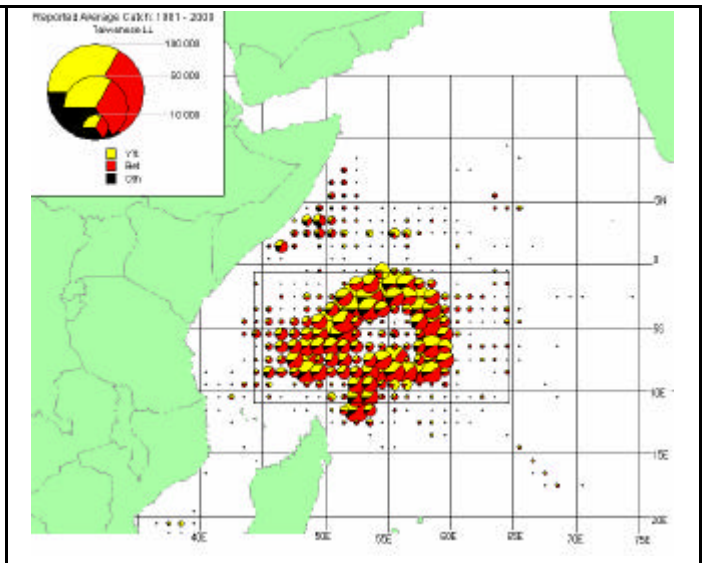
	81	82	83	84	85	87	88	89	90	91	92	93	94	95	96	97	98	99	20	21
Number of sets	344	150	55	250	14	22	76	22	38	65	435	1345	1356	2203	475	1218	2096	2832	2257	2833

FISHING ZONES REPORTED

Maps number 2a and 2b show the total effort by 1° square and average catch by 1° square reported by the Taiwanese longliners from 1981 to 2000.



Map 2a. Total effort, 1981 – 2000, Taiwanese fleet



Map 2b. Average catch, 1981 – 2000, Taiwanese fleet

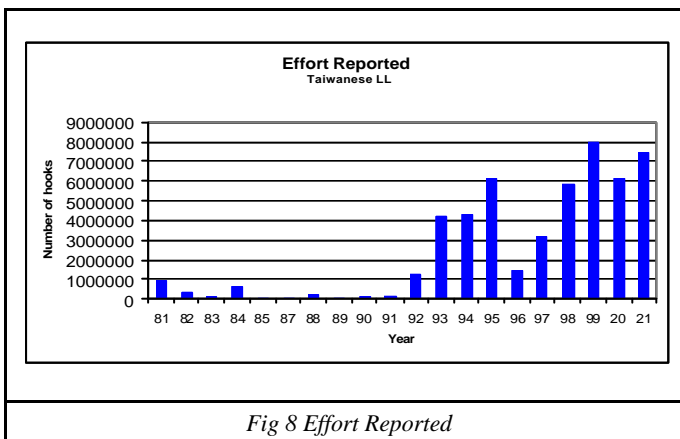


Fig 8 Effort Reported

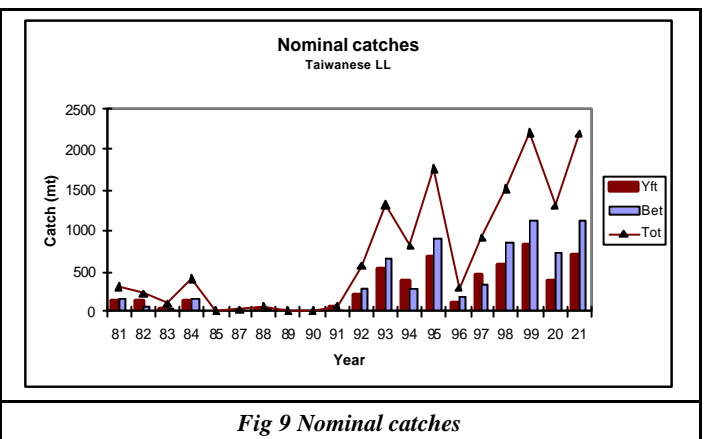


Fig 9 Nominal catches

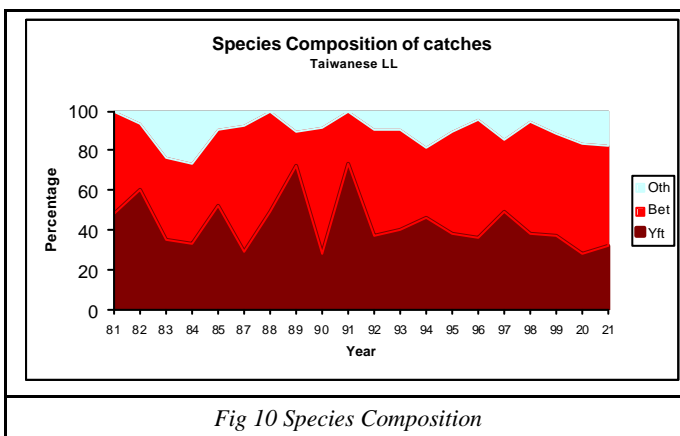


Fig 10 Species Composition

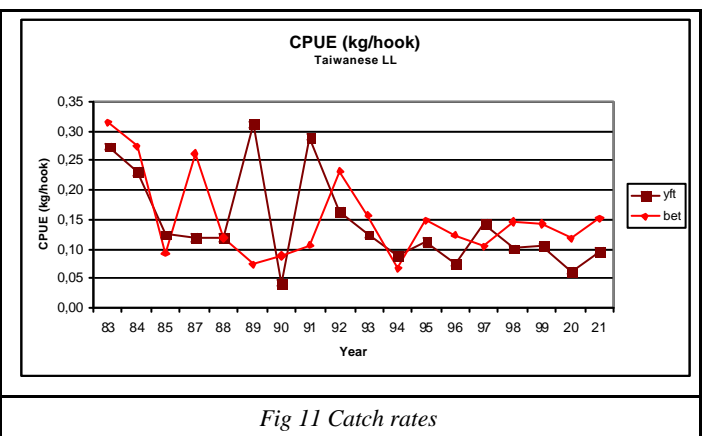


Fig 11 Catch rates

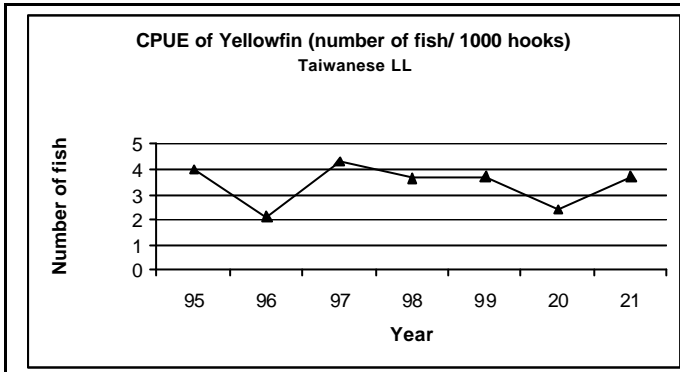


Fig 12

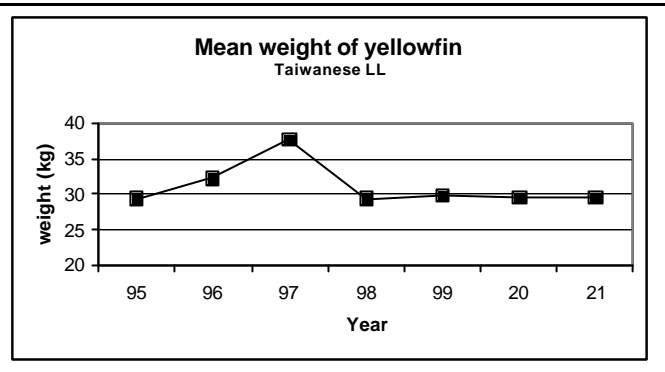


Fig 13

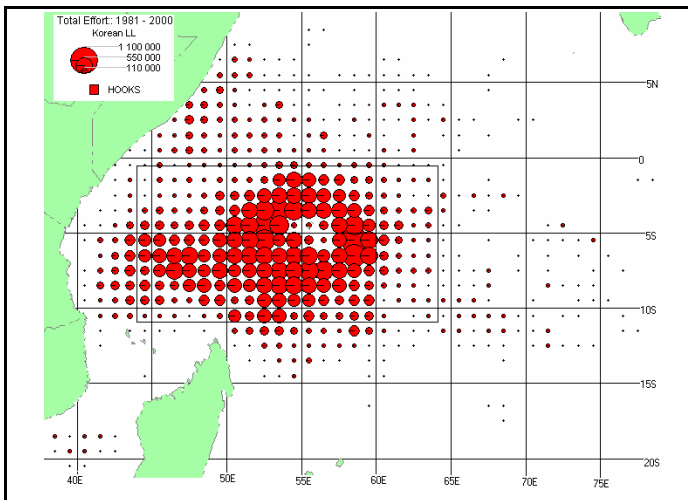
3. THE SOUTH KOREAN LONGLINE FLEET

Table 3 : Sets reported

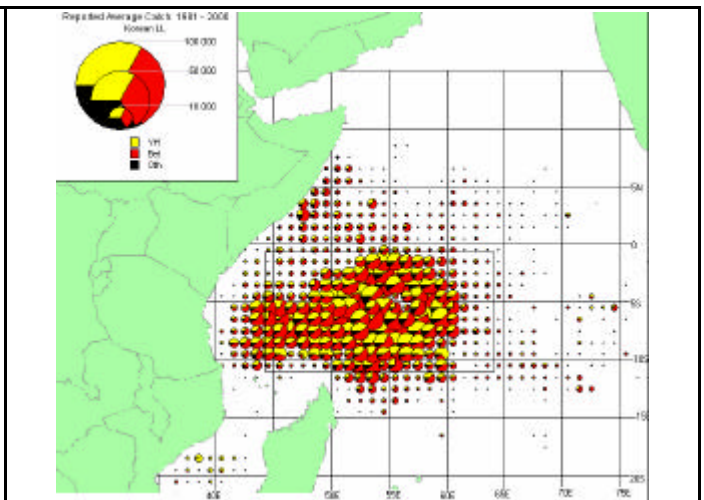
	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	20	21
Number of sets	333	874	140	1366	549	1248	3065	3866	3820	1693	233	746	397	239	102	173	70	14	102	53	6

FISHING ZONES

Maps number 3a and 3b show the total effort by 1° square and average catch by 1° square reported by the Korean longliners from 1981 to 2000.



Map 3a. Total effort, 1981-2000, Korean fleet



Map 3b. Average catch, 1981-2000, Korean fleet

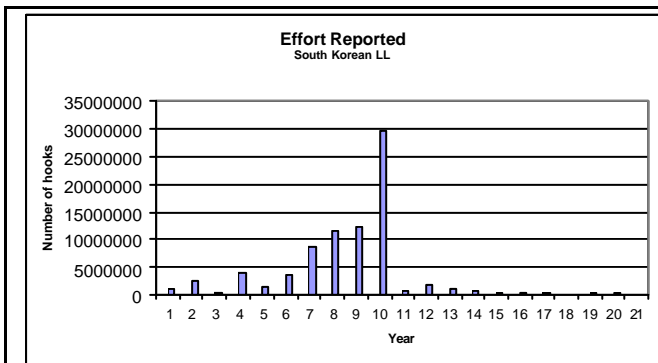


Fig 14 Effort Reported

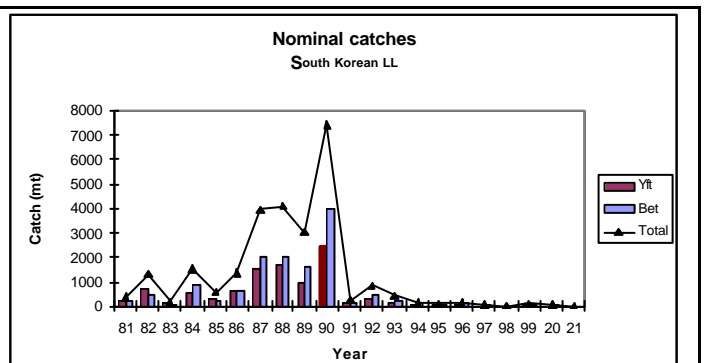


Fig 15 Nominal catches

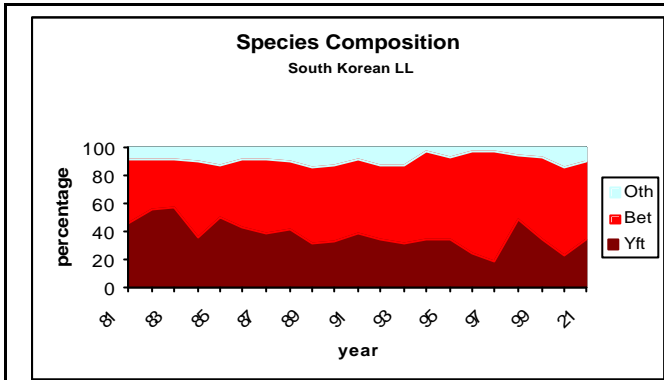


Fig 16 Species Composition

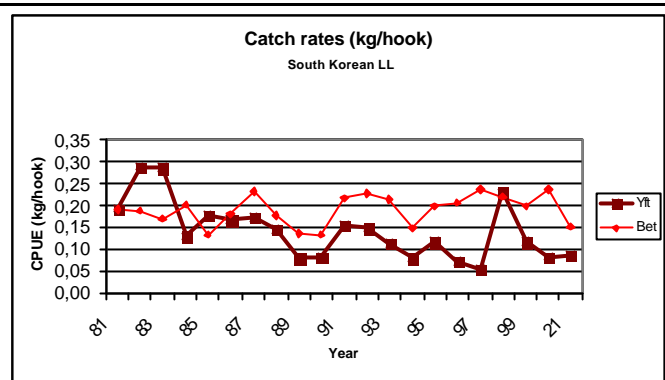


Fig 17 Catch rates

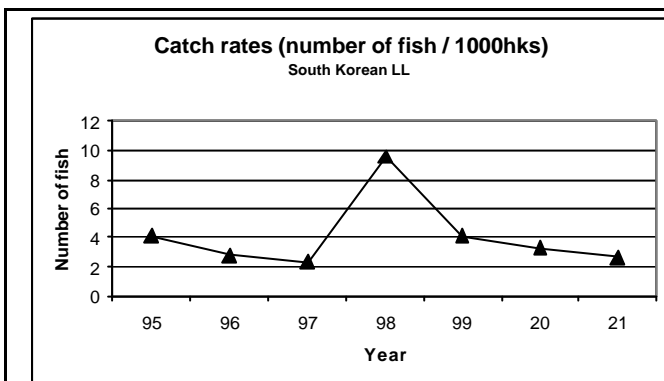


Fig 18

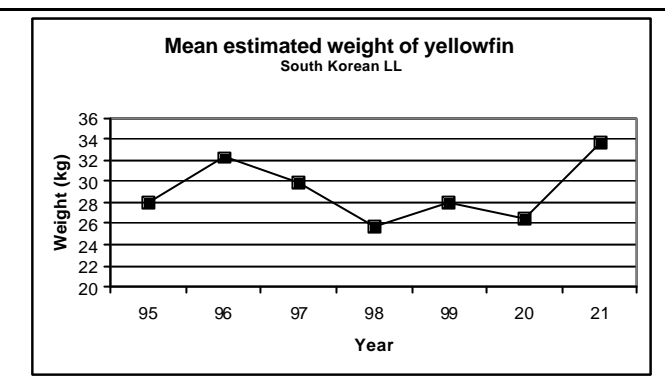


Fig 19

11. THE SEYCHELLES SEMI-INDUSTRIAL LONGLINE ACTIVITY

Since 1995 the Seychelles has developed a semi industrial fishery targeting swordfish.

From 2 vessels active in 1995 the fleet was increased to 10 vessels in 2001. Total catches varied from 26mt in 1995 to 411 mt in 2001.

The total landed catch of the major species caught from the beginning of the fishery is shown in figure 20.

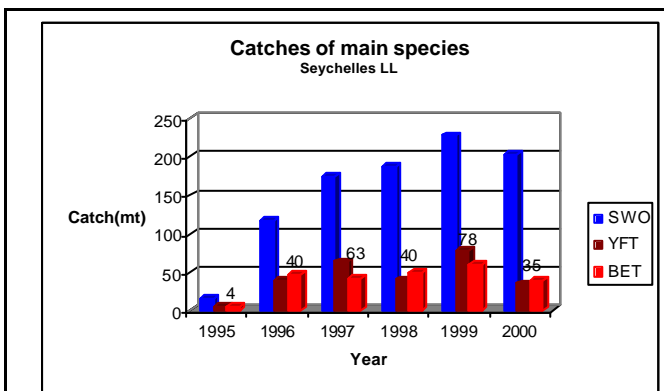


Fig 20

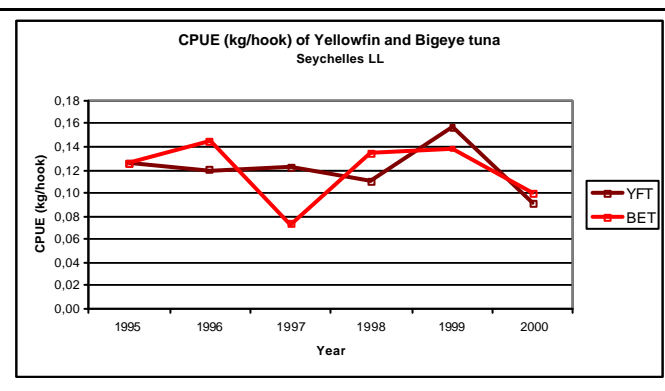
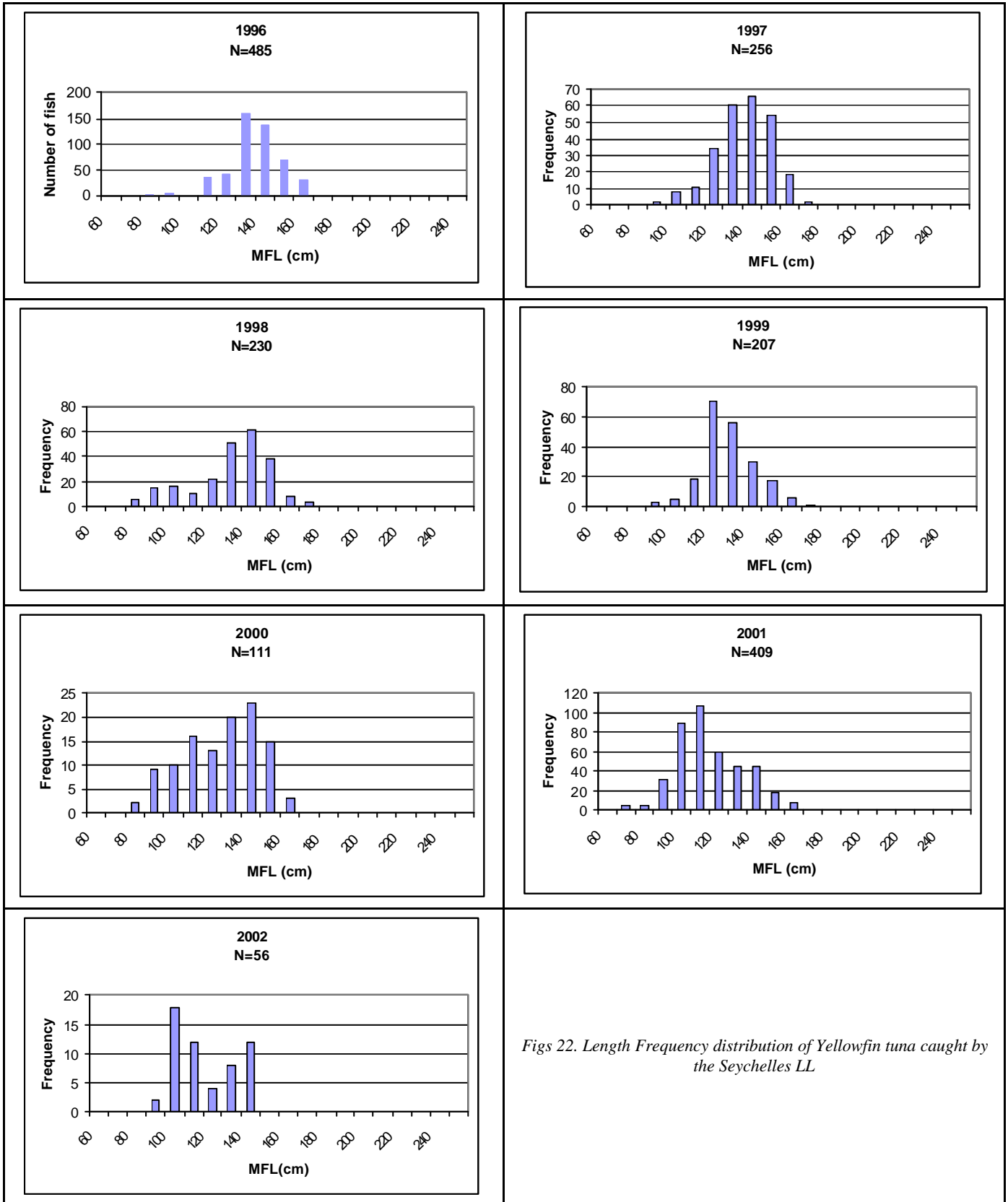


Fig 21



Figs 22. Length Frequency distribution of Yellowfin tuna caught by the Seychelles LL

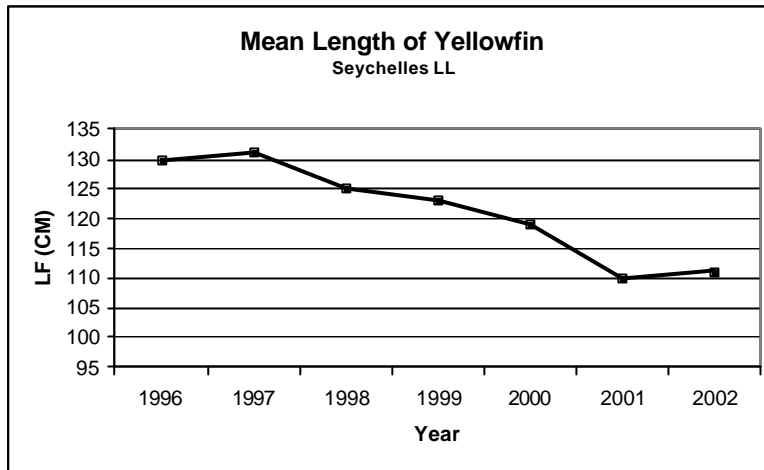


Fig 23 Average length of of yellowfin tuna

PREDATION BY THE FALSE KILLER WHALES (PSEUDORCA CRASSIDENS) AND SHARKS

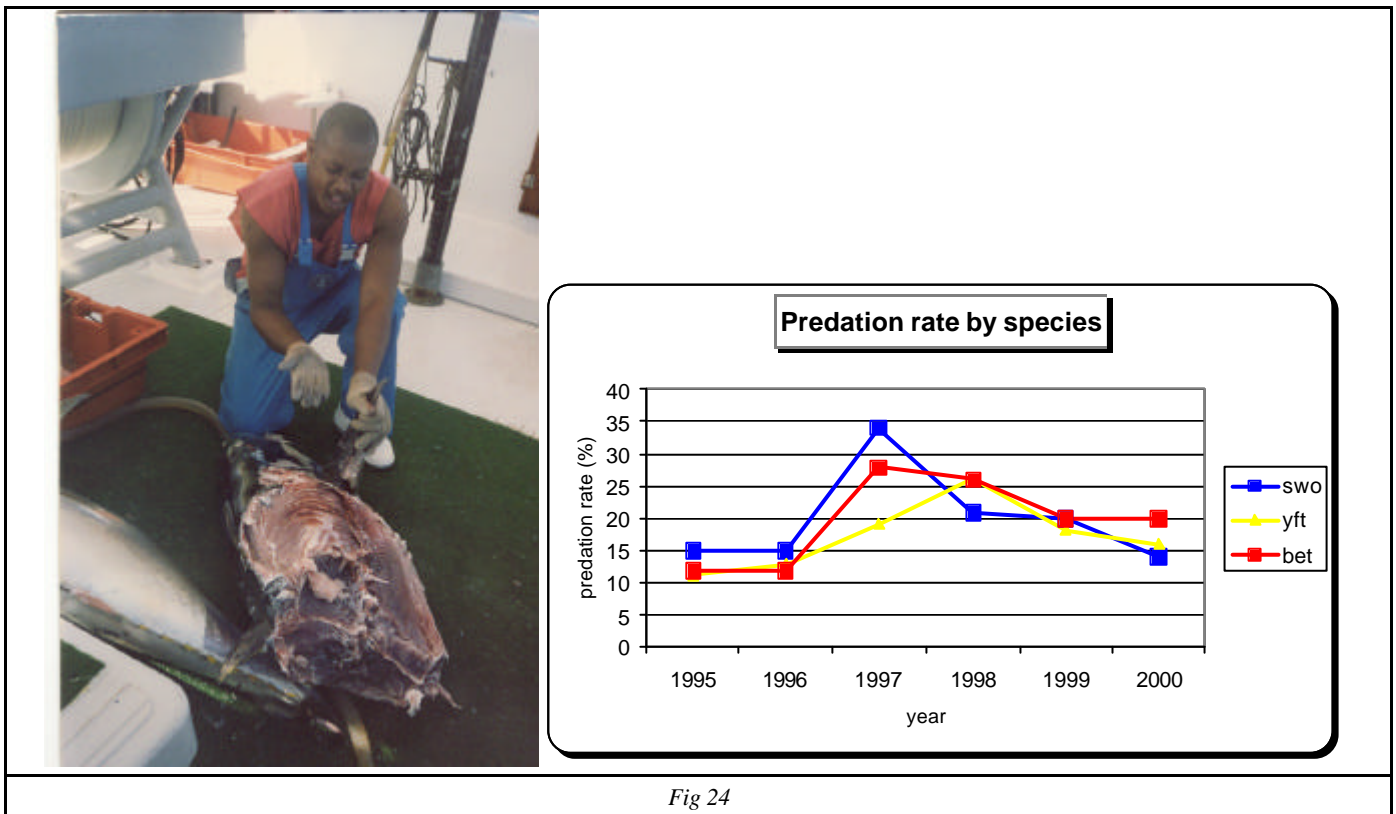


Fig 24

111. PURSE SEINERS ACTIVITY

European Vessels took licenses to fish in the Seychelles EEZ in 1984 well before the Non EU vessels. Table 1 and 2 below summarises the size and capacity of European and Non European licensed purse seiners.

Table 1. Specification of European licensed vessels.

AGREEMENT FLAG	COUNTRY OF ORIGIN	VESSEL SIZE	CARRING CAPACITY
SPAIN	SPAIN	65-106	988-3730
NETH. ANT	SPAIN	77-101	1499-4428
PANAMA	SPAIN	77-78	1370-2058
BELIZE	SPAIN	68-77	1445-2232
IVORY COAST	FRANCE	47-69	579-1446
FRANCE	FRANCE	54-108	645-3899
ITALY	ITALY	82-82	2140-2140
SEYCHELLES	SPAIN / FRANCE	54-108	1333-3899

Table 2. Specification of Non European vessels.

AGREEMENT FLAG	COUNTRY OF ORIGIN	VESSEL SIZE	CARRING CAPACITY
IRAN	IRAN	55-55	0136-1853
JAPAN	JAPAN	55-79	0347-1788
MAURITIUS	MAURITIUS	50-68	0535-1039
PANAMA	RUSSIAN	80-85	2109-2058
LIBERIA	RUSSIAN	80-85	2109-3679

VESSEL LICENSED AND VESSELS ACTIVE.

Figure 1. below shows the number of European and non European Vessels licensed and active between 1984 and 2001.

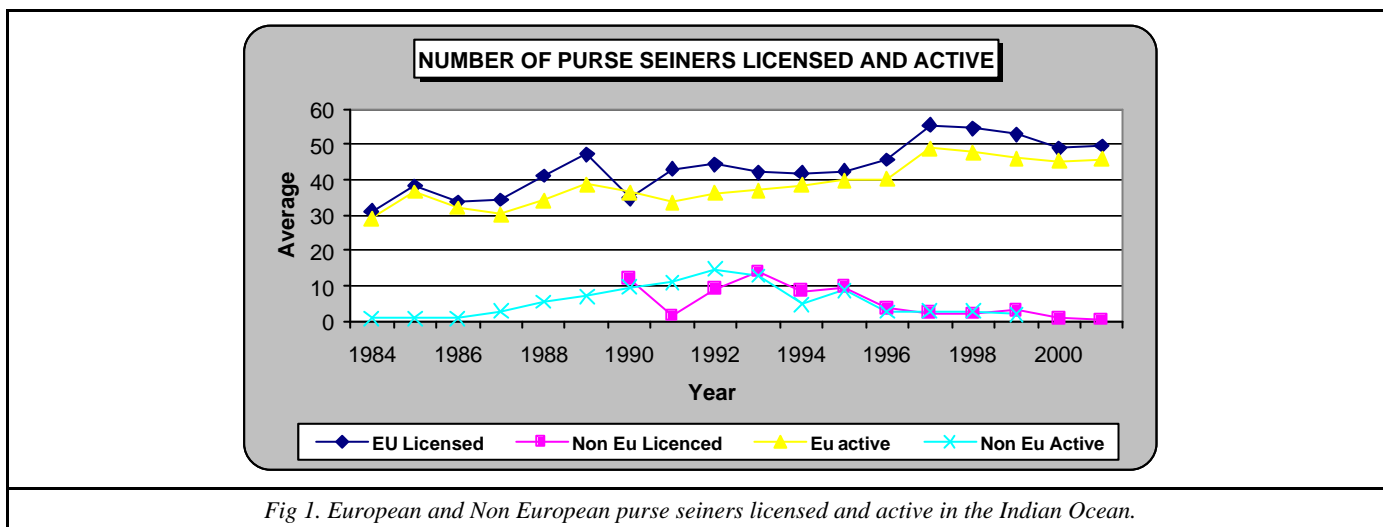


Fig 1. European and Non European purse seiners licensed and active in the Indian Ocean.

CATCH STATISTICS

Figure 2 below summarises the catches for European vessels in comparison to Non European vessels. Figure 3 shows the fishing effort and CPUE reported for European Purse Seiners.

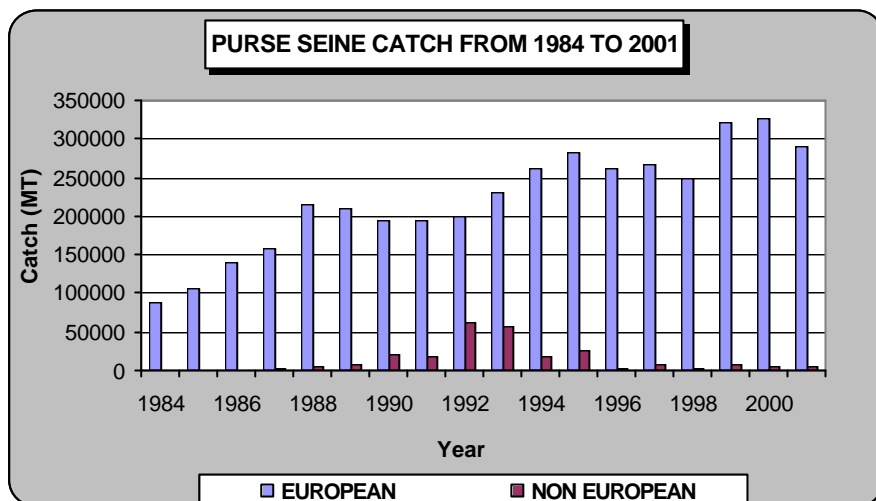


Fig.2. Purse seine catch for European and Non European vessels.

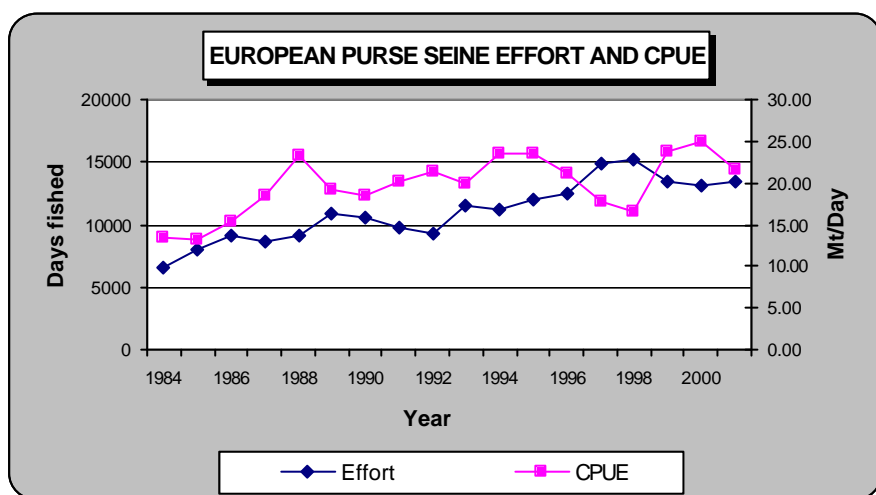


Fig 3 Effort and CPUE reported by European purse seiners.

NON-EUROPEAN VESSELS

a. Russian purse seiners

Russian vessels started operating in the WIO (international waters) in the late eighties. In the early nineties they applied for licenses to operate in the Seychelles waters. Between 1990 and 1996, they operated under Liberian FOC. In 1997 they operated under both Liberian and Panamanian FOC, however the following year, they switched to only Panamanian FOC. The number of vessel licensed per year ranged from 2 to 10, and between 1990 to 1995 they were active throughout the year, however the trend changed to 3 or 9

month a year after 1996. Between 1987 and 1989 Russian vessels fished exclusively on free schools, however after that between 52 to 89 % of their catches were taken on logs. Figure 4 below summarises their catches.

Figures 5 to 6 below shows the species composition of catches taken on free schools and on logs respectively. Free school catches were dominated by yellowfin. Skipjack was the second most caught species. Catches taken on logs were dominated by Skipjack. Figure 7 shows effort and catch rates.

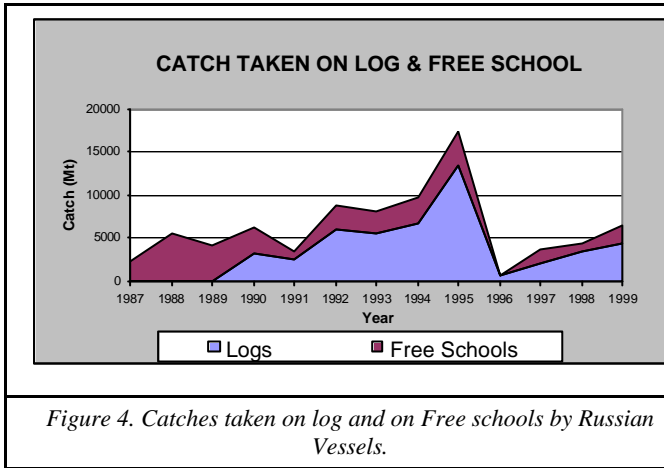


Figure 4. Catches taken on log and on Free schools by Russian Vessels.

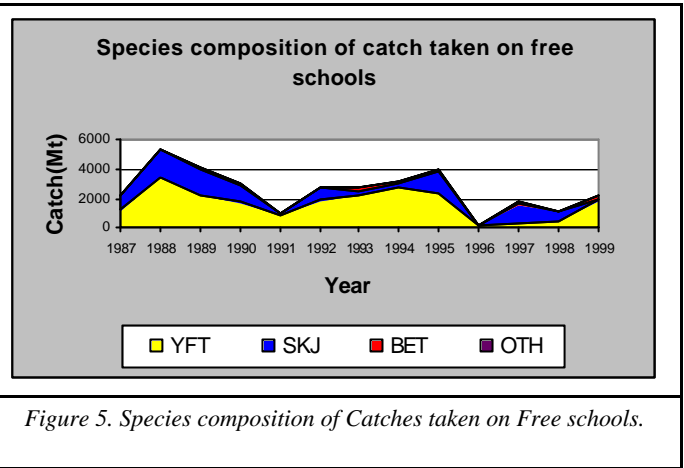


Figure 5. Species composition of Catches taken on Free schools.

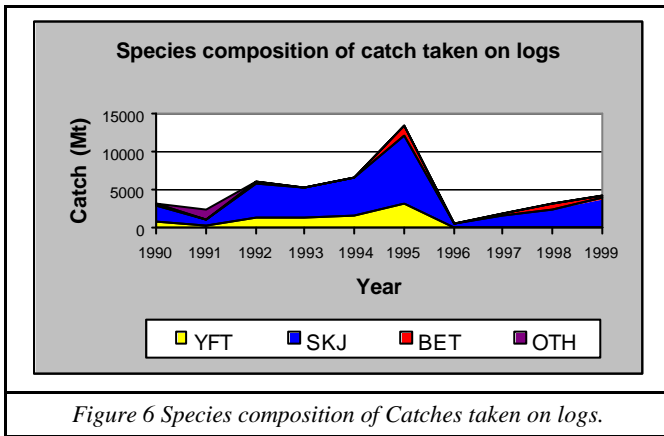


Figure 6 Species composition of Catches taken on logs.

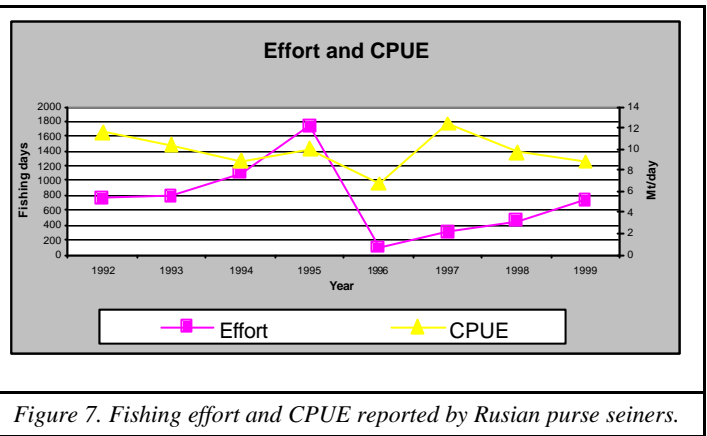


Figure 7. Fishing effort and CPUE reported by Russian purse seiners.

b. Mauritian purse seiners

Mauritian vessels were active in the WIO since 1984, however they only begin to operate in the Seychelles EEZ in 1990. The number of vessels licensed and active per year ranged between 1 and 3. Licenses were usually taken for an

average duration of one year. Catches were usually taken on logs. Figure 8 below summarises their catches.

Figures 9 to 10 below shows the species composition of catches taken on free schools and on logs respectively. Figure 11 shows effort and catch rates.

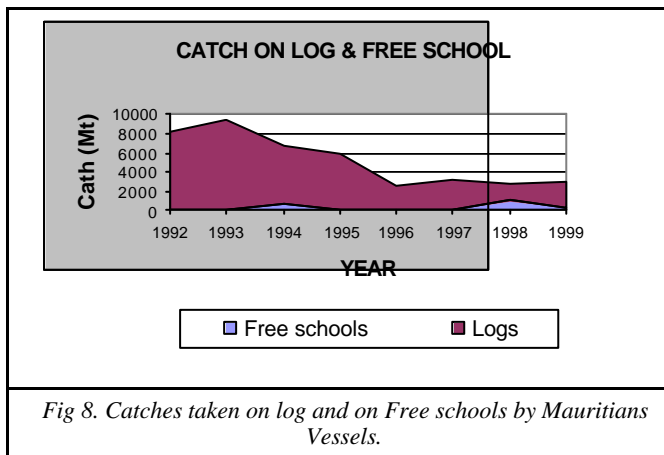


Fig 8. Catches taken on log and on Free schools by Mauritians Vessels.

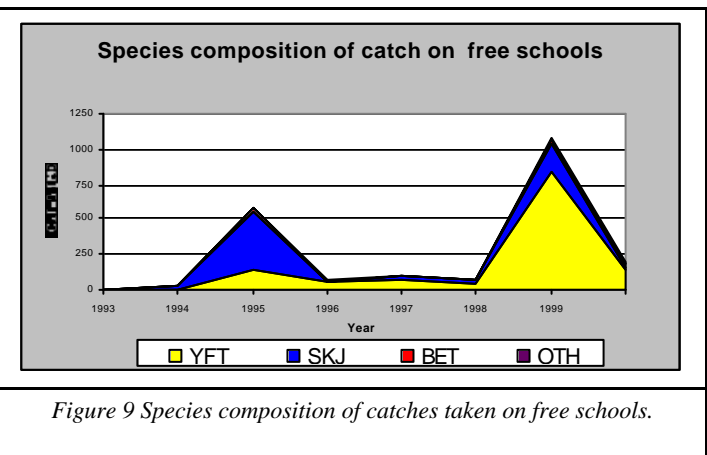


Figure 9 Species composition of catches taken on free schools.

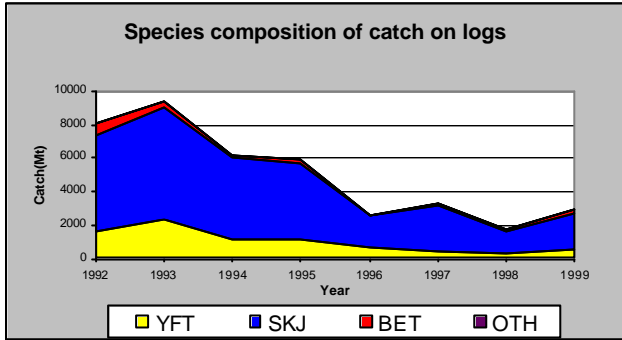


Figure 10 Species composition of catches taken on logs.

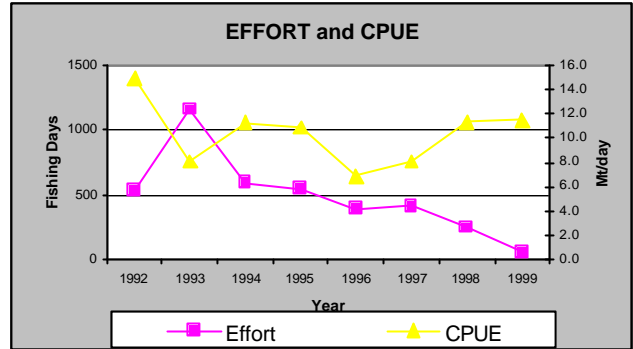


Figure 11. Fishing effort and CPUE reported by Mauritian purse seiners.

C. Japanese purse seiners

Japanese vessels started their operations in the WIO in 1987, however they took licenses to operate in the Seychelles EEZ in 1990. The number of vessels licensed per year ranged

between 1 (in 1989) and 8 (in 1993). Number of vessel active also varies, 1 (in 1994) and 11 (in 1992). Licences taken were usually for duration of one year. Fishing was exclusively on logs. Figure 12 below summarises the species composition of their catches.

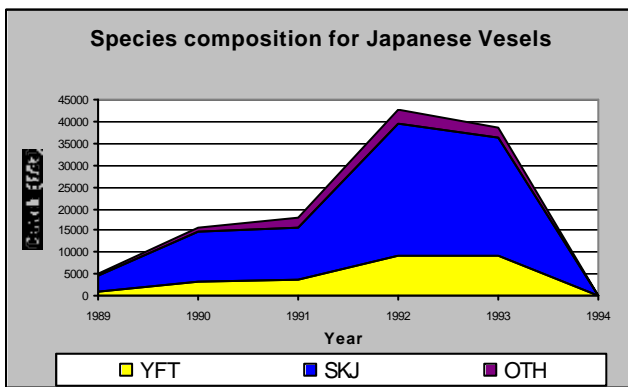


Figure 12. Species composition of Japanese purse seiners.

