CATCHES OF INDUSTRIAL FLEETS OPERATING UNDER FLAGS OF NON-REPORTING COUNTRIES IN THE IOTC AREA OF COMPETENCE: AN UPDATE

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ABSTRACT

This document presents estimates of catches and number of ships active of fleets operating under different non-reporting flags. The increase in the number of non-reporting fleets in recent times has led to dramatic increases in the catches that had to be estimated, reducing in this way the quality of the data gathered regarding the yellowfin tuna, bigeye tuna and, less significantly, skipjack tuna.

Background

About 30% of the catches of tuna and tuna like species in the IOTC Nominal Catches database has came from non-official sources in recent years. This includes two types of data:

Catches of vessels reported by persons or organizations other than the flag state or responsible organization: This includes all catches that are not reported directly (by the IOTC Liaison Officers) or indirectly (obtained through the FAO databases and/or Statistical Bulletins and/or scientific papers). The catches of European owned purse seiners flying flags of non-reporting countries are a good example for they have been reported by European scientists since these vessels started operating in the western Indian Ocean (1984). It is for this reason that the quality of this set of data is as good as that recording the catches of purse seiners flying EU flags (France, Italy and Spain). The Secretariat does not need in this case further estimate the catches being those submitted by EU scientists the same recorded in the Nominal Catches database.

Non-reported catches that the Secretariat has to estimate by using the sources available: Fleets not reporting on their fishing activities are widespread. Registries of Foreign Fishing Vessels, calls and landing statistics coming from countries in the region are helpful in assessing this issue. However, the information gathered at IOTC is still scarce and uneven being in some cases impossible to track the fleets down to the year their operations started. Catches of both ex-Soviet purse-seiners (now flying Panama and Belize flag) and high numbers of longliners operating under different flags (Taiwan,China, Belize, Panama, Honduras, Equatorial Guinea, etc.) have been fully estimated by the Secretariat.

The catches of non-reporting fleets estimated at the IOTC Secretariat are reviewed in this document.

Ex-Soviet purse seine vessels operating in the IOTC Area of Competence

From 4 to 11 non-reporting purse seiners have been operating in the Indian Ocean since 1992. Formerly operating under the Soviet Union flag, they shifted to Liberia in 1992, the year the Soviet Union broke apart. They remained under this flag until 1996, re-flagging to Panama and Belize, flags currently operated. The number of ships operated during 1992-2000 according to the flag operated is shown in Table 1 below.

Table 1. Number of ex-Soviet purse seiners operating in the Indian Ocean from 1992 to 2000 according to the flag under which they operated

** The change of flag from Liberia to Panama and Belize occurred in 1996*

Country /Year	1992	1993	1994	1995	1996*	1997	1998	1999	2000
Liberia	5	4	7	11	10				
Panama					10	9	9	10	10
Belize									
Total	5	4	7	11	10	9	9	10	10

The catches of ex-Soviet purse seiners needed to be estimated for the period 1995-2000. The catches from 1992 to 1994, reported by the former Soviet Liaison Officer to the IOTC, were left unchanged.

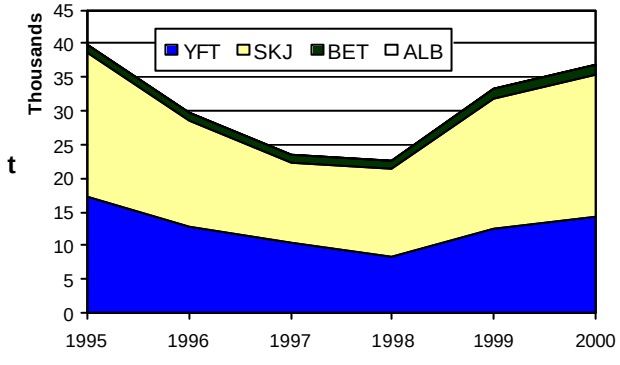

***Chart 1**: Catches of ex-Soviet purse seiners operating in the Indian Ocean from 1992 to 2000 according to the flag under which they operated*

The steps given for the calculation of the catches of Liberia, Panama and Belize ships operating from 1995 to 2000 are shown in Annex 1 along with the data used to estimate those catches. Different sources were used to estimate the catches as the data reported by the former Soviet IOTC Liaison Officer (regarding the catches, effort and number of purse seiners operating from 1996 to 2000), nominal catches and catch and effort statistics for the Soviet purse seine fleet in former years (especially from 1992 to 1994) and the nominal catches per

species of EU purse seiners from 1992 to 2000.

Total catches estimated for the period range from 20,000 and 40,000 tons, with skipjack tuna and yellowfin tuna making up the most of the catches

Longliners whose catches are not reported by the responsible countries or institutions

1985 was the first year for which catches of non-reporting longline fleets needed to be estimated. The number of longliners operating under flags of non-reporting countries has been increasing since then, this proportionally to the amount of information available on the activities of the vessels. Nevertheless, the amount of information available for the calculation of these catches is still scarce and uneven. This led to making many assumptions in the estimation process, especially in years far from present.

The catches estimates were conducted on the basis of the type of vessel and port, or country, of operation:

Freezing (FRZ) and deep-freezing (DFRZ) longliners

Large longliners, usually with GRT above 200 tons, have been operating in the Indian Ocean since the early fifties, their activities fully reported to the relevant organizations until the mid-eighties. The increasing number of longliners operating flags of non-reporting countries, usually because of re-flagging from flags of reporting countries, led to proportional increases in non-reported catches which the Secretariat needed to estimate since the mid-eighties.

The only data available are from calls and/or landing statistics in some ports of the Indian Ocean (as Port Louis in Mauritius, Jurong in Singapore and Victoria in Seychelles), from lists of vessels which catches were fully or partially sent to the Japanese or American markets, from the flag countries (Seychelles, Belize and Panama) or from countries licensing vessels to operate under charter or joint-venture arrangements (India). Nevertheless, this information is thought complete only since about 1995. The first reports of DFRZ longliners operating under the flag of a non-reporting country in the Indian Ocean are from the FSI (Fishery Survey of India) in 1985. Number of vessels and catches were, therefore, estimated since that year. Annexes 3, 4 (India) and 5 (Seychelles) include details about the estimation process. The catches of Honduran, Panama and Hong-Kong vessels operating in India under joint venture or charter arrangements were estimated separately, as well as the catches of Seychelles longliners only partially reported by Seychelles. The lack of available information regarding the activities of these vessels led to making many assumptions to estimate the catches, as considering the whole fleet as being formerly from Taiwan,China. Charts 2 and 3 show the catches of non-reporting longliners estimated per year and species and according to the flag operated, respectively.

The number of large longliners estimated operating in the Indian Ocean from 1985 to 2000 is shown in Table 2 (more details in relation with this estimate are given in Annexes 3 to 5). More than 150 non-reporting longliners have been operating in the Indian Ocean in recent years.

Table 2. Total number of DFRF Longliners operating in the Indian Ocean from 1985 to 2000

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Number of FRZ-DFRZ longliners	1	10	9	33	42	52	61	71	80	90	99	134	109	159	155	176

The catches of non-reporting DFRZ estimated in recent years exceed the 40,000 tons, being the bigeye tuna, yellowfin tuna, albacore and swordfish, in this order, the dominant species. The catches of Honduran, Belize and Equatorial Guinea longliners have been making up the most of the catches in recent years. All steps given for the calculation of the catches can be found in Annexes 3, 4 and 5.

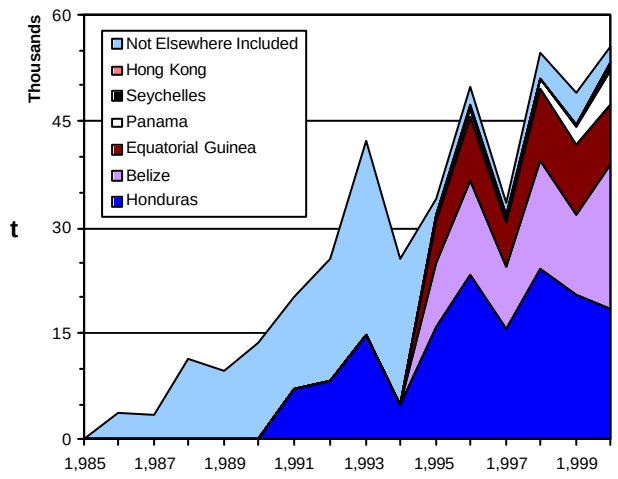

***Chart 2**: Catches of FRZ-DFRZ longliners from non-reporting countries operating in the Indian Ocean from 1985 to 2000 according to the flag under which they operated*

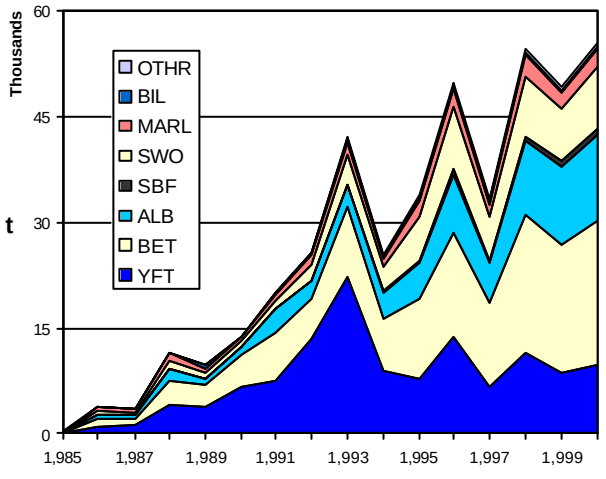

***Chart 3:** Catches of FRZ-DFRZ longliners from non-reporting countries operating in the Indian Ocean from 1985 to 2000 per species and year*

Fresh tuna longliners

Small longliners, usually with GRT below 200 tons, have been operating in the Indian Ocean since the early seventies, their activities almost never reported to the relevant organizations. Their numbers have been constantly increasing since they first appeared, exceeding the 1,000 vessels in recent years. This fleet is almost fully made up by Taiwanese and Indonesian owned longliners although some Chinese longliners are also operating since 1995. The characteristics of the vessels and the way of operating is very similar being the target species the yellowfin and the bigeye which are generally kept in crushed ice (seldom in refrigerated sea water) to be unloaded to processing plants in different ports of the Indian Ocean, where they are graded and, if complying with the 'sashimi' quality standards, air-freighted to Japan.

Fresh tuna was declared as main product for the Japanese 'sashimi' market in the end of 1986 (information from the Indonesian Company Perikanan Samodra Besar). This measure caused a sudden decrease in frozen tuna products and surely stimulated the operations of small fresh tuna longliners. Constant increases in the number and catches of fresh tuna longliners have been noted since then, with current catches exceeding the 100,000 tons (including Indonesia).

While the Chinese vessels have been reporting on its activities since they first operated in the Indian Ocean, this is not the case with the Taiwanese and Indonesian fresh tuna longliners. The estimation of the number of vessels and catches of fresh tuna longliners operating under the flag of Indonesia is presented in a separate document (WPTT-02-02).

Although the vessels have been using different ports of landing throughout the time, the most of the activity occurs in the Eastern Indian Ocean, being Indonesia, Malaysia, Thailand and Sri Lanka the countries whose ports are most visited. Only Seychelles and Maldives keep small fleets of fresh tuna longliners in the west.

The calculation of the catches of fresh tuna longliners has been conducted according to the country in which the vessels are based. The reasons for this are primarily two:

a. The data available for estimating the catches are usually different in each country as well as the sources consulted. Considering the different accuracy of the data obtained which depends upon the basic data used and the number of assumptions made throughout the process it was thought better to present the data separately.

b. Several sources were consulted to assess whether single vessels put in to ports in different countries to unload their catches. 1998 to 2000 vessel and call registries from Thai (Phuket), Malay (Pinang) and Indonesian (especially Benoa and Jakarta) ports were consulted in order to check this (the sources being the sampling programs and/or national registries) realizing that the vessels do not use to call to ports in different countries along the year. It is worth mention that, moreover, whenever it was possible the catches were estimated according to the number of landings reported in each port not on the basis of the number of longliners. This would prevent duplication in the case of vessels unloading the catches to ports in different countries.

The number of non-reporting fresh tuna longliner estimated to operate in the IOTC Area of Competence is shown in Table 3. Foreign fresh tuna longliners were licensed to operate in Indonesia from 1986 to 1999. The ban on foreign fishing put forward by the Indonesian government led to re-flagging of many ships from Taiwan,China to Indonesia with the subsequent increase in the Indonesian domestic fleet. The number of Indonesian longliners estimated to operate (WPTT-02-02) is shown in Table 3, as well as the total number of non-reporting fresh tuna longliners estimated to operate including this fleet. More than 1,500 vessels were estimated to operate in 2000.

Table 3. Number of non-reporting fresh tuna longliners operating in Indonesia and other countries of the Indian Ocean versus the total number of domestic longliners operating in Indonesia.

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Indonesia	2		71	274	334	342	413	478	292	223	84	86	10	1	
Other Countries				187	284	268	298	429	489	438	396	404	372	250	293
Total	2		71	461	618	610	711	907	781	661	480	490	382	251	293
Indonesia (domestic)	34	46	71	112	132	158	255	345	371	396	709	861	845	1095	1247
Total	36	46	142	573	750	768	966	1252	1152	1057	1189	1351	1227	1346	1540

Charts 4 and 5 show the catches of non-reporting fresh tuna longliners (excluding Indonesian longliners) estimated for the period 1986-2000 according to the flag under which they operated and the country whose ports were used for landing, respectively. After dramatic increases in the catches recorded from 1986 to 1993, with catches around the 70,000 tons in 1993, the re-flagging to Indonesia of many longliners led to decreasing catches of Taiwanese longliners until the about 20,000 tons recorded in 2000. Taiwan,China has been, by far, the most important fishing fleet in the Indian Ocean. The catches of Indonesian longliners estimated refer to ships operating in ports other than Indonesian, whose catches were not accounted for in the estimate of catches of Indonesian longliners, referring only to ships based in Indonesia. Most of the landings of Taiwanese fresh tuna longliners occurred in Malaysia and Indonesia since 1994, decreasing the importance of the landings in both ports since then, although much more dramatically in Indonesia. The activity in other ports like

Phuket, Colombo and Victoria has always been scarce if compared with the other two.

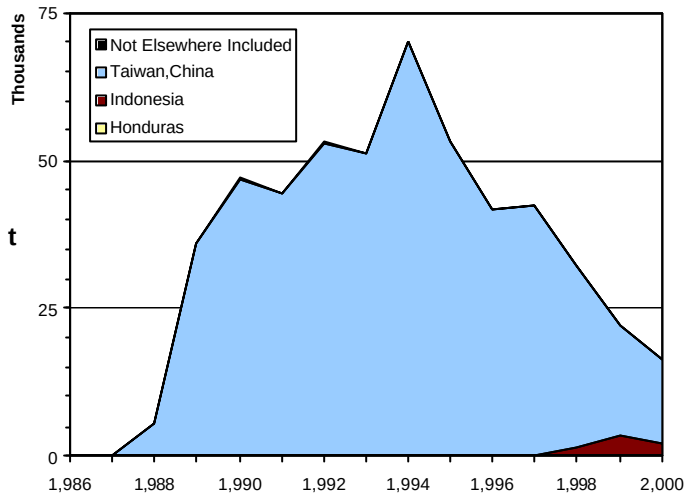

Chart 4: *Non reported catches of fresh tuna longliners operating in the Indian Ocean from 1986 to 2000 according to the flag under which they operated*

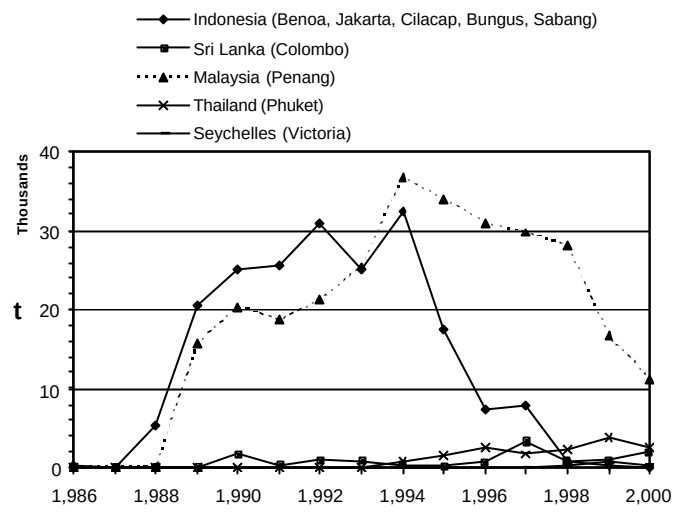

Chart 5: *Total landings of fresh tuna longliners operating in the Indian Ocean from 1986 to 2000 according to the country in which the catches were unloaded*

The catches of fresh tuna longliners from non-reporting fleets are shown in charts 6 and 7 per year and species. Chart 7 refers to catches of Indonesian longliners based in Indonesia, estimated in a previous review (WPTT-02-02). The catches of foreign fresh tuna longliners based in different ports of the Indian Ocean, including Indonesia (mainly Taiwanese longliners), are displayed in Chart 6. Yellowfin tuna and bigeye tuna are the species most caught by fresh tuna longliners, especially the former.

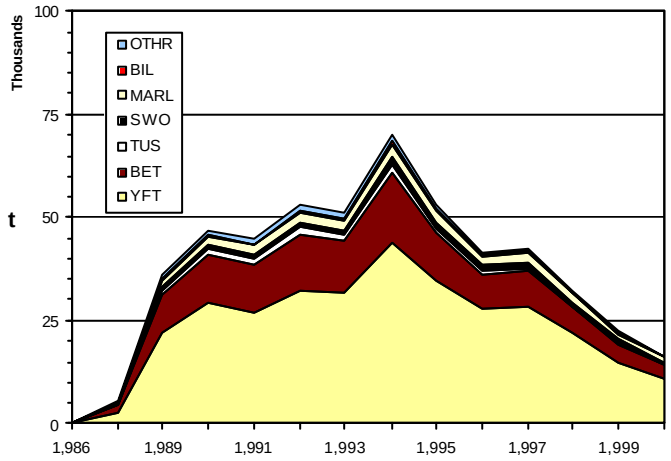

Chart 6: *Catches of fresh tuna longliners operating in the Indian Ocean from 1986 to 2000 per year and species*

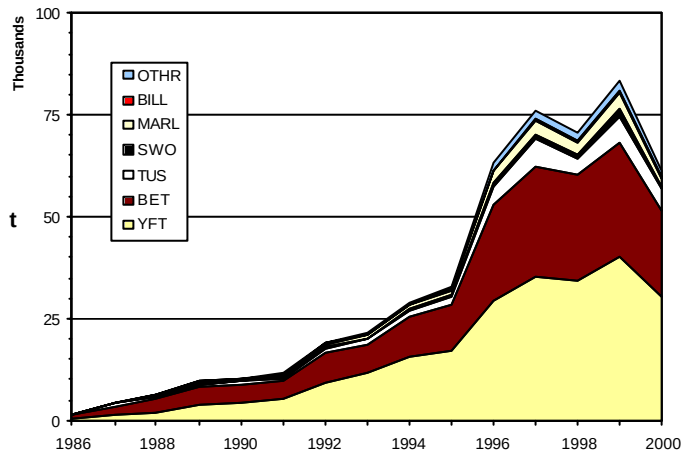

Chart 7: *Catches of Indonesian domestic fresh tuna longliners operating in the Indian Ocean from 1986 to 2000 per year and species*

MORE DETAILS ABOUT THE ESTIMATE CAN BE FOUND IN ANNEX 2 ([A] TO [G]).

New Estimates

The lack of complete and/or reliable catch data from the sources reviewed led to data from many sources used in the estimation, with high numbers of assumptions made throughout the process.

The recently incepted IOTC Sampling Programs have proved helpful to improve the estimates of vessel activity and catches of some fleets, especially fresh tuna longline fleets. Furthermore, historic information retrieved during field missions to several countries (Thailand, Malaysia, Sri Lanka and Indonesia) allowed conducting more accurate estimates on past catches and vessel activity. Nevertheless, the catches estimated are thought of lower quality in years far from

present.

The information available regarding the number of non-reporting deep-freezing longliners active in the Indian Ocean is also higher than that of previous years, although there is still lack of data as regards years far from present. The almost complete lack of data concerning the activities of DFRZ longliners (trip and landing information) adds a great deal of uncertainty to the estimates.

The following datasets were used to estimate the catches:

Fleet	Period	Fishing Craft	Nominal Catches		Assumptions
			Total Catches	Species Breakdown	
Ex-Soviet purse seiners	1995-2000	Former Liaison Officer Vessel Record	Former Liaison Officer (incomplete)	As ex-Soviet (1992) and EC purse seiners (1995-2000)	1-. Total catches estimated according to average catches 1992-94 and EC catches 1995-2000 2-. Species composition estimated according to 1992 Soviet catches and EC species composition 1995-2000
Fresh tuna longliners [A] Indonesia	1986-1999	Directorate General of Capture Fisheries, WASKI and Port Authority Indonesia	Same as non-PSB Indonesia (domestic fleet) (see WPTT-02-02)	Same as non-PSB Indonesia (domestic fleet) (see WPTT-02-02)	1-. Composition of the fleet according to 1992 and 1993 proportions. 2-. Total catches and catches per species same as Indonesia domestic (WPTT-02-02)
Fresh tuna longliners [B] Thailand	1994-2000	AFDEC-IOTC Sampling Program	AFDEC-IOTC Sampling Program	AFDEC-IOTC Sampling Program	1-. Catches 1994-99 estimated on the basis of 2000 catches
Fresh tuna longliners [C] Malaysia	1989-2000	Vessel Record Average Catches per Ship Indonesia	FRI-IPTP Sampling Program FRI-IOTC Sampling Program	FRI-IPTP Sampling Program FRI-IOTC Sampling Program AFDEC-IOTC Sampling Program	1-. Catches 1989-93 estimated on the basis of the number of vessels operating assuming fishing in the Indian Ocean all year round (as estimated by IPTP) 2-. Fleet composition same as Phuket TAIWAN,CHINA 3-. No changes in species composition from 1989 to 1992 (species composition from sampling program in Penang used to estimate the catches in those years) 4-. Species composition 2000 same as Phuket (AFDEC-IOTC Sampling Program) 5-. Gradual change in the species composition from 1992 to 2000 (species composition estimated by interpolation). INDONESIA 6-. Species composition same as Phuket 2000 (AFDEC-IOTC Sampling Program).
Fresh tuna longliners [D] Sri Lanka	1990-2000	Vessel Record Average Catches per Ship Indonesia	NARA (Fishery Bulletins and publications) FRI-IPTP Sampling Program	FRI-IPTP Sampling Program AFDEC-IOTC Sampling Program	1-. Proportion between fresh and frozen fish unloaded from fresh tuna longliners same as that recorded in Phuket and Penang 2-. Fleet composition same as Phuket 3-. Species composition same as above (Penang)
Fresh tuna longliners [E] Seychelles	1998-2000	SFA (Seychelles Fishing Authority)	Average Catches Indonesia domestic fleet	AFDEC-IOTC Sampling Program	1-. Average catches same as those of Indonesian longliners based in Indonesia 2-. Species composition same as Indonesian vessels based in Phuket
Fresh tuna longliners [F] Maldives	1997-2000	Ministry of Fisheries, Agriculture and Marine Resources	Ministry of Fisheries, Agriculture and Marine Resources	No data	1-. Data unreliable. No catches estimated.
Fresh tuna longliners [G] Fishing Craft (Taiwan,China [B], [C], [D])	1989-2000	Average catches Indonesia domestic longliners			1-. Indonesian longliners operating in ports out of Indonesia accounted for in the Indonesian vessel record. 2-. Average catches of Taiwanese vessels operating from Phuket, Colombo and Penang same as those of Indonesian longliners (domestic)
FRZ-DFRZ non-reporting Longliners	1985-2000	Vessel Record (many sources)	Average catches Taiwanese vessels	Species composition Taiwanese fleet	1-. Number of longliners raised or estimated by interpolation depending on the number of countries reporting lists of vessels to the IOTC (see Annex for details) 2-. Total catches estimated on the basis of the number of longliners estimated and average catches of Taiwanese longliners for the period 3-. Species composition same as Taiwanese longliners

NOTE: Detailed information about the estimation process can be found in Annex.

1 Estimation of the catches of ex-Soviet Purse Seiners in the Indian Ocean

BASIC DATA

T1 Total number of days fishing and catches of ex-Soviet (Panama and Belize) purse seiners in 1996

Total fishing days reported (1996)	1065
Catch reported (1996)	9974 MT
Av. catch per fishing day (1996)	9.37 MT/FDAY

Source: Personal Communication (Dr. Evgeny Romanov)

T2 Total catches and number of days at sea of Soviet and related purse seiners in the Indian Ocean (1985-93)

YEAR	EFFORT	CATCH	Av. / Day at sea
1985		432	
1986		3	
1987		42	
1988		14	
1989		143	
1990		7	
1991		8	
1992	826	8329	10.08
1993	716	8185	11.43
TOTAL	1542	16514	10.71

Source: IOTC Catches and Effort database (SUN & LBR)

T3 Total catches and number of days fishing per year of Soviet and related purse seiners in the Indian Ocean (1985-1992)

YEAR	CATCH	FDAYS	Av./Fday
1985	1513	172	8.80
1986	5095	841	6.06
1987	7663	937	8.18
1988	7009	629	11.14
1989	5281	678	7.79
1990	6769	1100	6.15
1991	8740	1048	8.34
1992	11123	931	11.95
TOTAL	53193	6336	8.40

Source: TWS/93/1/1, Sergei Leontiev. Russian Tuna fisheries in the Indian Ocean. Pg.1 Tables 2 & 3 (in Proceedings of the 5th Expert Consultation on Indian Ocean Tunas)

T4 Total number of ships and catches of Soviet and related purse seiners in the Indian Ocean (1990-2000)

YEAR	no PS	CATCH	Av./Ship
1990	9	6769	752
1991	9	8927	992
1992	5	15753	3,151
1993	4	18430	4,608
1994	7	14372	2,053
1995	11		0
1996	**10**		0
1997	9		0
1998	9		0
1999	10		0
2000	10		0
TOTAL	16	48,555	3,035

Source: IOTC Nominal catches and Fishing Craft Statistics Databases (SUN, LBR, PAN & BLZ)

The re-flagging of the Soviet Union (SUN) purse seine vessels in 1992 to Liberia (LBR) and subsequently to Panama (PAN) and Belize (BLZ), due to the Soviet Union breaking apart, make it the more and more difficult to obtain reliable statistics on the catches and crafts of ex-Soviet purse seiners in the Indian Ocean.

The last complete report on nominal catches from ex-Soviet vessels occurred in 1994 (**T4**) with detailed catch and effort statistics only reported in 1992 and 1993 (**T2**),

Yearly catch and effort statistics are available for the period 1985-92 (**T3** although catches and effort figures were not reported in detail. Only partial reports on the catches and effort figures from particular vessels have been available since 1992 (**T1**).

The fishing craft statistics, on the contrary, are well known for the entire period (**T4**), due to these being large vessels usually putting in to ports in countries reporting the Vessel Record and Foreign Tuna Vessels Activity information to the IOTC (Seychelles and Singapore).

Table **T1** shows figures provided by the former Liaison Officer, Mr. Evgeny Romanov, on the catches and efforts of several of the ex-Soviet Purse seiners operating in the Indian Ocean. The sources for the data were almost always the ship owners.

Table **T2** shows the data available in the IOTC catch and effort database regarding the Soviet purse seiners. The only years in which the catches and effort figures are thought complete and reliable are 1992 and 1993. Former records in the catch and effort database are so incomplete and unreliable (refer only to yellowfin tuna) that cannot serve to any purpose.

Table **T3** shows yearly catches and effort data as they were presented to the 5th Expert Consultation on Indian Ocean Tunas. The difference between the total catches in **T3** and **T4** is consequence of catch reviews occured after the publication of the data in **T3**, the catches in **T4** being the most up-to-date.

If the average catches per effort unit are estimated from the data in **T1, T2** and **T3**, the results obtained are very consistent. Average catches per fishing day range from 6 to 12 tons depending on the year. This stability in the average catches throughout the period would allow assuming constant average catches for years in which no catch information is available.

Table **T4** shows the data available at the IOTC regarding nominal catches and craft statistics of Soviet and ex-Soviet purse seiners operating in the Indian Ocean. The number of Russian owned purse seiners operating in the Indian Ocean was provided by the Soviet Liaison Officer along with the total catches between 1990 and 1994. The number of purse seiners operating during 1996, not provided, was estimated by interpolation between 1995 and 1997 numbers.

The average catches per vessel estimated for the period 1990-94 (**T4**) are not very consistent, especially for the years 1990 and 1991. Two facts could explain these low average catches:

1-. Seasonal operation in the Indian Ocean: Soviet purse seiners have been exploiting Atlantic, Pacific and Indian Ocean grounds for many years. It is known that Soviet purse seiners alterned fishing between the Pacific and Indian oceans for some years (TWS/93/1/1). Furthermore, it is known that fishing activities have been fully limited to the Indian Ocean between 1995 and 2000 (personal comunication from the Fleet Manager of the Panama and Belize ships). Finally, the average catches per fishing day issuing from the data in **T3** are consistent with this hypothesis for no major changes are noted among both periods (1990-91 and 1992).

2-. Underestimation of 1990-91 catches: The catches reported for the years 1990 and 1991 would be underestimated if it is assumed that all purse seiners were fishing in the Indian Ocean throughout the period. This, however, is not likely considering the average catches per fishing day obtained from **T3**.

NEW ESTIMATES

T5 Total catches, number of ships operating and number of days fishing of Spanish and French purse seiners (EC) operating in the Indian Ocean (1992-2000)

YEAR	no PS	CATCH	FDAYS	Av./Fday	Av./Ship	Multiplier
1992	33	185,184	8,211	23	5,612	0.96
1993	35	198,442	8,563	23	5,670	0.97
1994	39	212,341	8,411	25	5,445	0.94
1995	35	243,442	9,279	26	6,955	1.20
1996	39	222,067	9,569	23	5,694	0.98
1997	42	211,891	10,164	21	5,045	0.87
1998	35	168,296	9,206	18	4,808	0.83
1999	35	224,561	8,366	27	6,416	1.10
2000	32	225,402	7,775	29	7,044	1.21
TOTAL	325	1,891,627	79,544	24	5,820	1.00

Source: IOTC Nominal Catches, Fishing Craft and Catches and Effort Databases (FRA & ESP)

T6 Total catches of ex-Soviet purse seiners fishing in the Indian Ocean (1995-2000) according to the number of ships operated, average catches per ship for the period 1992-94 and EC multiplier (T5)

Year	no PS	Av.Catch	Multiplier	Total Catch
1995	11	3,035	1.1950	39,892
1996	10	3,035	0.9783	29,688
1997	9	3,035	0.8668	23,674
1998	9	3,035	0.8261	22,564
1999	10	3,035	1.1023	33,453
2000	10	3,035	1.2102	36,726

Source: T4 and **T5**

The total catches of ex-Soviet tuna purse seiners operating in the Indian Ocean during 1995-2000 were estimated using information from different sources:

A/ Number of purse seiners operating according to **T4**.

B/ Average catch per ship (**T4**): estimated from the total catches and ships recorded for the period 1992-94. The catches estimated for the period are **3035 tons per ship per year**. This figure is consistent with those shown in **T1** and **T3**. The 9.37 MT per fishing day recorded in 1996 would result on each purse seiner fishing around 324 days a year to be able to attain these catches. Considering that the Russian purse seiners are almost always at sea (even to transhipping their catches) the figure is thought consistent. These data match also quite well with those in the catch and effort database which result in average catches per day (day at sea) of about 10.71 MT for the years 1992 and 1993.

C/ EC (European Communittee) Multiplier (**T5**): The average catches per year of European Communittee purse seiners are shown in **T5**. These catches are much higher than those obtained for the Soviet and related purse seiners as it is the case when the catches per fishing day are compared. Nevertheless, the fishing methods and areas exploited by both fleets are known to be very close. Considering this it was assumed that the more or less succesful the fishing of EU purse seiners is the more or less it would be regarding the ex-Soviet fleet (i.e. increases in the catches per EU ship per year lead to proportional increases in the catches of ex-Soviet ships). This more or less successful fishing was estimated by dividing the average catches per ship per year by the average catches per ship for the period 1992-2000 (Multiplier in T5).

The total catches of ex-Soviet purse seiners for the period 1995-2000 are estimated as follows (**T6**):

Total number of ex-Soviet vessel operating in the Indian Ocean in Year$_x$ * Average catch per ex-Soviet purse seiner for the period 1992-94 * EU multiplier in Year$_x$

T7 Catches per species per year of Spanish and French (EC) purse seiners in the Indian Ocean (1992-2000). (Excluding the catches of frigate tuna.)

YEAR	YFT	SKJ	BET	ALB	TOTAL
1992	83,119	91,742	7,460	2,863	185,184
1993	87,331	99,464	10,433	1,214	198,442
1994	78,947	120,038	11,291	2,065	212,341
1995	104,778	118,240	19,513	911	243,442
1996	95,008	106,332	18,282	1,218	220,840
1997	92,204	94,190	23,721	1,568	211,683
1998	60,947	88,987	17,634	729	168,296
1999	82,674	116,951	24,551	386	224,561
2000	89,764	117,122	17,441	760	225,087
TOTAL	774,773	953,065	150,326	11,714	1,889,877

Source: IOTC Nominal Catches database

T8 Catches per species per year of ex-Soviet (LBR) purse seiners in the Indian Ocean (1992-94). (Excluding the catches of frigate tuna and other tunas reported aggregated.)

YEAR	YFT	SKJ	BET	ALB	TOTAL
1992	5149	9984	397	40	15570
1993	8079	7995	952	37	17063
1994	5836	8243	280	3	14362
1995					
1996					
1997					
1998					
1999					
2000					
TOTAL	19064	26222	1629	80	46995

Source: IOTC Nominal Catches database

T9 Proportion of yellowfin tuna, skipjack tuna, bigeye tuna and albacore per year according to the catches of EC purse seiners reported in the Indian Ocean and average proportions estimated for the period 1992-2000.

YEAR	YFT	SKJ	BET	ALB
1992	0.45	0.50	0.04	0.02
1993	0.44	0.50	0.05	0.01
1994	0.37	0.57	0.05	0.01
1995	0.43	0.49	0.08	0.00
1996	0.43	0.48	0.08	0.01
1997	0.44	0.44	0.11	0.01
1998	0.36	0.53	0.10	0.00
1999	0.37	0.52	0.11	0.00
2000	0.40	0.52	0.08	0.00
TOTAL	0.41	0.50	0.08	0.01

Source: T7

T10 Proportion of yellowfin tuna, skipjack tuna, bigeye tuna and albacore per year according to the catches of ex-Soviet (LBR) purse seiners reported in the Indian Ocean and average proportions estimated for the period 1992-94

YEAR	YFT	SKJ	BET	ALB
1992	0.331	0.641	0.025	0.003
1993	0.473	0.469	0.056	0.002
1994	0.406	0.574	0.019	0.000
1995				
1996				
1997				
1998				
1999				
2000				
TOTAL	0.406	0.558	0.035	0.002

Source: T8

T11 Calculation of EC multiplier: Proportion of yellowfin tuna, skipjack tuna, bigeye tuna and albacore per year re-estimated by dividing the proportion reported in each year by the average proportion estimated for the period 1992-2000 (**T9**)

YEAR	YFT	SKJ	BET	ALB	TOTAL
1995	1.050	0.963	1.008	0.604	3.624
1996	1.049	0.955	1.041	0.890	3.934
1997	1.062	0.882	1.409	1.195	4.549
1998	0.883	1.048	1.317	0.699	3.948
1999	0.898	1.033	1.374	0.277	3.582
2000	0.973	1.032	0.974	0.545	3.523

Source: T9

T12 Proportion of yellowfin tuna, skipjack tuna, bigeye tuna and albacore per year re-estimated by multiplying the average values obtained for the period 1992-94 (**T10**) by the multipliers estimated from catches of EC purse seiners (**T11**)

YEAR	YFT	SKJ	BET	ALB	TOTAL
1995	0.426	0.537	0.035	0.001	0.999
1996	0.426	0.533	0.036	0.002	0.996
1997	0.431	0.492	0.049	0.002	0.974
1998	0.358	0.585	0.046	0.001	0.990
1999	0.364	0.576	0.048	0.000	0.989
2000	0.395	0.576	0.034	0.001	1.005

Source: T10 - T11

The same data series used for the estimation of total catches of ex-Soviet purse seiners between 1995 and 2000 were used to assign the catches to the corresponding species:

The catches per species available in the nominal catches database regarding both EC and ex-Soviet purse seiners are shown in **T7** and **T8**, respectively. Totals for the series 1992-2000 (EC) and 1992-94 (ex-Soviet) can also be found in the referred tables. The catches of species other than yellowfin tuna, bigeye tuna, skipjack tuna and albacore were negliged due to them not being consistently reported (they do not represent but partial catches frequently.)

The estimation was conducted by following the steps below:

A/ Estimation of the yearly proportions per species (**T9** and **T10**) according to the catches in **T7** and **T8** and average proportions for the period

Catch of Species$_x$ in Year$_y$ / Total Catches Year$_y$

B/ Estimation of the EC multiplier (**T11**): Re-estimation of the yearly proportions by following the same procedure in T5 applied in this case to each individual species:

Proportion Species$_x$ in Year$_y$ / Average Proportion of Species$_x$ 1992-2000

C/ Re-estimation of the breakdown by species of ex-Soviet purse seiners (**T12-T13**): The average proportions per species obtained for the period 1992-94 (**T8**) were assigned to the corresponding years (1995-2000) according to the specific EC multipliers (**T11**).

Proportion Species$_x$ in Year$_y$ = Av. Proportion 1992-94 Species$_x$ * EC Multiplier Species$_x$ in Year$_y$

D/ Estimation of the catches per species (**T14**) of ex-Soviet purse seiners in the Indian Ocean (1995-2000): The final catches were estimated by using the total catches estimated in **T6** and the final proportions in **T13**:

Total catch Species$_x$ in Year$_y$ = Total Catches Year$_y$ * Proportion Species$_x$ in Year$_y$

T13 Final proportions estimated from **T12**

YEAR	YFT	SKJ	BET	ALB	TOTAL
1995	0.426	0.538	0.035	0.001	1.000
1996	0.427	0.535	0.036	0.002	1.000
1997	0.442	0.505	0.050	0.002	1.000
1998	0.362	0.591	0.046	0.001	1.000
1999	0.368	0.583	0.048	0.000	1.000
2000	0.393	0.573	0.034	0.001	1.000

Source: T12

T14 New catches of ex-Soviet purse seiners (PAN and BLZ) estimated for the period 1995-2000 according to the total catches estimated in **T6** and the species composition from **T13**

YEAR	YFT	SKJ	BET	ALB	TOTAL
1995	17,002	21,454	1,394	41	39,892
1996	12,689	15,879	1,075	45	29,688
1997	10,474	11,964	1,187	49	23,674
1998	8,165	13,331	1,040	27	22,564
1999	12,327	19,498	1,612	16	33,453
2000	14,420	21,038	1,234	34	36,726

Source: T6 and **T13**

2 Estimation of the catches of fresh-tuna longliners NEI (Not Elsewhere Included) operating in the Indian Ocean

[A] INDONESIA

a/ Craft Statistics

BASIC DATA

T1 Total number of foreign fresh-tuna longliners per flag, size class category and year (1992-93) based in ports in Indonesia in which the catches of tuna and tuna-like species unloaded are presumed to originate in the Indian Ocean

1992	Taiwan,China (TWN)		Honduras (HND)		Singapore (SGP)		St.Vincent & Gren.(VCT)		Thailand (THA)		Japan (JPN)		Rep. Of Korea (KOR)	
	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT
BENOA	5	321	1	1	2	1	1			7	3	23		
JAKARTA	8	85		2										
SABANG		3								96				
TOTALS	13	409	1	3	2	1	1	0	0	103	3	23	0	0
	TWN	422	HND	4	SIN	3	VCT	1	THA	103	JPN	26	KOR	0

1993	Taiwan,China (TWN)		Honduras (HND)		Singapore (SGP)		St.Vincent & Gren.(VCT)		Thailand (THA)		Japan (JPN)		Rep. Of Korea (KOR)	
	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT	>100 GT	<100 GT
BENOA	5	376	1	1	1	2	1			7	7	21		2
JAKARTA	8	92		1										
SABANG		3								183				
BUNGUS		3												
TOTALS	13	474	1	2	1	2	1	0	0	190	7	21	0	2
	TWN	487	HND	3	SIN	3	VCT	1	THA	190	JPN	28	KOR	2

Source: "Tentang Perkenbangan Kapal Perikanan Berbendera Indonesia Dan Assing Dengan Izin Direktorat Jenderal Perikanan" (DGCF, Indonesia)

T2 Total number of Indonesian fresh-tuna longliners operating in the Indian Ocean from 1973 to 2000

Year	Number	Year	Number	Year	Number
1973	3	1983	34	1992	255
1974	12	1984	34	1993	345
1975	18	1985	34	1994	371
1976	18	1986	34	1995	396
1977	18	1987	46	1996	709
1978	18	1988	71	1997	861
1979	18	1989	112	1998	845
1980	17	1990	132	1999	1095
1981	17	1991	158	2000	1247
1982	34				

Source: WPTT-02-02: Catches of Artisanal and Industrial fleets in Indonesia: An Update, **T2** (M. Herrera, IOTC Secretariat)

The primary data used to estimate the number of foreign fresh tuna longliners and landings to Indonesian ports originate in a former review on the catches and number of Indonesian fresh tuna longliners operating in the Indian Ocean from 1973 to 2000 (WPTT-02-02). The reasons why both the Indonesian and foreign fresh tuna longline fleets can be dealt together are:

[a] Re-flagging: Many fresh tuna longliners currently operating under the Indonesian flag were before operating under Taiwanese flag. This was the consequence of Regulations put forward by the Indonesian government leading to preventing fishing by foreign vessels in the Indonesian Economic Exclusive Zone (EEZ). The result was a major change of flag to Indonesia, especially important since the mid-nineties. No foreign fresh tuna longliners are operating currently in Indonesia. T2 shows the evolution of the domestic longline fleet in Indonesia, with dramatic increases in the number of ships operating since the mid-nineties, many of them due to re-flagging of Taiwanese longliners.

[b] Fishing strategy and area of operation (longliners not included in [a] above) : Fresh tuna longliners operating from Indonesia, irrespective of the flag under which they operate, have been using the same fishing techniques and exploiting the same fishing grounds over the years. Furthermore, both Indonesian and Taiwanese skippers command Indonesian ships having the Indonesian got the skills from Taiwanese skippers.

The fact that many of the vessel have shifted from foreign to Indonesian flag along with the similar way of operating of both fleets over time tends to indicate that both fleets can be considered as a single unit.

The number of foreign longliners licensed to operate in Indonesia during the years 1992 and 1993 is shown in **T1**. The data in **T1** refers not only to fresh-tuna longliners but also to deep-freezing longliners based in Indonesia. The following points were considered to separate fresh-tuna from deep-reezing longliners:

[1] Vessels from reporting countries: Taiwan,China (only the vessels above 100 GRT), Thailand, Japan and Korea have been reporting catches of tuna and tuna like species to the IOTC well before 1992. Thus, the vessels recorded under these flags were not accounted for as fresh tuna longliners. Nevertheless, the following should be noted:

Thailand: no catches under longlines were reported to the IOTC in 1992 or 1993. It is possible that the vessels referred to in **T1**, of very small size (almost all under 30 GRT), were in fact using botton longlines, thus not targeting tunas or billfish. The fleet, indeed, was mostly based in Sabang (Aceh), possibly fishing on shallow waters, taking into account the size of the vessels. The Thai liaison officer to IOTC confirmed that Thailand did not operate tuna longliners longliners at that time.

Japan: 23 and 21 longliners under 100 GRT were licensed to operate in Indonesia in 1992 and 1993, respectively. Nevertheless, no vessels below this size were reported by Japan in those years, being all crafts recorded in the IOTC databases above 100 GRT. Therefore, it this figures are true, it is possible that the catches of these vessels were not accounted for by Japan or not reported to the IOTC. This fact should be confirmed.

[2] Size class: Fresh tuna longline ships have not usually GRT above 100. Since the vessels whose GRT is above 100 are considered freezing or deep-freezing longliners, only those whose GRT were under 100 were considered.

NEW ESTIMATES

The total number of foreign fresh tuna longliners operating in Indonesia is shown in **T3**. The number of fresh tuna longliners whose catches need to be estimated is recorded in NEI. The totals in Foreign refer to both the former plus the fresh-tuna longliners whose catches were presumably reported by the responsible countries. The longliners recorded under Thailand were not accounted for due to them considered as not being tuna longliners (see above).

T3 Total number of fresh tuna longliners whose catches need to be estimated versus the total number of fresh-tuna longliners licensed to operate in Indonesia (1992-93).

1992	TWN	HND	SGP	NEI	FOREIGN
BENOA	321	1	1	323	358
JAKARTA	85	2	0	87	95
SABANG	3	0	0	3	3
TOTAL	409	3	1	413	456
1993	TWN	HND	SGP	NEI	FOREIGN
BENOA	376	1	2	379	417
JAKARTA	92	1	0	93	101
SABANG	3	0	0	3	3
BUNGUS	3	0	0	3	3
TOTAL	474	2	2	478	524

Source: T1

T4 Total number of fresh tuna longliners whose catches need to be estimated versus the total number of fresh tuna longliners operating in Indonesia from 1986 to 1993.

Year	Foreign	NEI	NEI/Foreign	TWN	HND	OTHR
1986	2	2		2	0	0
1987	0	0		0	0	0
1988	78	71		70	1	0
1989	302	274		271	2	1
1990	369	334		331	2	1
1991	378	342		339	2	1
1992	456	413	0.91	409	3	1
1993	524	478	0.91	474	2	2

Source: T3 and **WPTT/00/01** (Calculation of the nominal catches of vessels not elsewhere included (NEI) within the IOTC Area, IOTC Secretariat)

The number of foreign fresh tuna longliners operating in Indonesia from **1986 to 1993** is shown in **T4**. The information originates in a previous review of catches of vessels not elsewhere identified conducted by IOTC. The number of foreign fresh-tuna longliners whose catches need to be estimated (NEI) was obtained as follows:

[1] Number of NEI longliners operating from 1986 to 1991: The proportion of NEI longliners in 1992 was carried backwards to estimate the number of longliners NEI operating in previous years.

[2] Number of NEI longliners according to the flag under which they operated: The totals obtained from [1] were assigned to the different flags according to the proportion among the different flags recorded in 1992.

Thus, the bulk of the foreign fleet operating in Indonesia was made up by Taiwanese longliners. Landings of vessels under the flag of Honduras have been recorded in Indonesia and other places (IOTC Sampling Programs). This is not the case with the Singaporean longliners, whose activity was not confirmed by the Singaporean IOTC correspondant. The vessels were, for this reason, not recorded specifically under the Singaporean flag but left as NEI (OTHR in **T3**).

The proportion of foreign versus domestic longliners operating in Indonesia from **1995 to 2000**, shown in **T5,** originates in **WPTT-02-02**. The 1991-93 data was estimated according to **T2** and **T4** and the 1994 estimated by interpolation (no information available).

The number of NEI longliners operating in Indonesia from 1986 to 2000 is shown in **T6**. The estimate was conducted as follows:

1986-1993: same as **T4**

1994-2000: Total number of NEI longliners: **Number of IDN longliners (T2) in $Year_x$ * Proportion of NEI longliners among foreign longliners 1993 (0.91, T4) * Proportion of Foreign Longliners in $Year_x$ (T5) / Proportion of IDN longliners in $Year_x$**

Number of NEI longliners per flag: as 1993 (**T4**)

T5 Proportion of foreign versus domestic (IDN) longliners operating in Benoa (Indonesia) from 1995 to 2000.

Year	Foreign	IDN	Source	Estimation Process
1991	0.67	0.33	DGF	Estimated from individual vessel records (**T4**)
1992	0.69	0.31	DGF	
1993	0.55	0.45	DGF	
1994	0.46	0.54	IOTC	Estimated by interpolation
1995	0.38	0.62	WASKI	**WPTT-02-02**
1996	0.12	0.88	WASKI	
1997	0.10	0.90	WASKI	
1998	0.01	0.99	WASKI	
1999	0.00	1.00	WASKI	
2000	0.00	1.00	WASKI	

Source: T1, T4 and **WPTT-02-02**

T6 Number of fresh tuna NEI longliners operating in Indonesia from 1986 to 2000

Year	NEI	TWN	HND	OTHR
1986	2	2	0	0
1987	0	0	0	0
1988	71	70	1	0
1989	274	271	2	1
1990	334	331	2	1
1991	342	339	2	1
1992	413	409	3	1
1993	478	474	2	2
1994	292	290	1	1
1995	223	221	1	1
1996	84	84	0	0
1997	86	86	0	0
1998	10	10	0	0
1999	1	1	0	0
2000	0	0	0	0

Source: T2, **T4** (1986-1993) and **T5** (1994-2000)

b/ Nominal Catches

BASIC DATA

T7 Catches of domestic fresh tuna longliners (non Perikanan Samodra Besar longliners) in Indonesia from 1986 to 1992

Year	no LL	Catches Per Species											TOTAL
		ALB	BET	YFT	SBF	BLZ	BLM	MLS	SWO	SFA	SKH	WAH	OTHER
1986	17	26	460	630	47	38	8	5	19	10	28	0	1,270
1987	29	44	785	1,074	80	64	13	8	33	17	47	0	2,167
1988	54	82	1,461	2,001	150	120	25	15	62	32	88	1	4,035
1989	95	144	2,570	3,520	263	211	43	26	109	56	155	1	7,098
1990	117	177	3,165	4,335	324	260	53	32	134	68	191	2	8,742
1991	143	217	3,869	5,298	396	317	65	40	164	84	234	2	10,684
1992	243	368	6,574	9,003	674	539	111	67	278	142	397	3	18,156

Source: WPTT-02-02 (**T16**)

T8 Catches of domestic fresh tuna longliners (non Perikanan Samodra Besar longliners) in Indonesia from 1993 to 2000

Year	no LL	Catches Per Species											TOTAL
		ALB	BET	YFT	SBF	BLZ	BLM	MLS	SWO	SFA	SKH	WAH	
1993	185	196	3,495	4,787	358	287	59	36	148	76	211	2	9,653
1994	166	375	6,698	9,174	686	549	113	68	283	145	404	4	18,500
1995	252	403	7,187	9,842	736	589	121	73	304	155	434	4	19,849
1996	427	765	13,650	18,693	1,398	1,119	230	140	577	295	824	7	37,698
1997	515	962	17,166	23,509	1,759	1,408	290	176	726	371	1,036	9	47,410
1998	527	701	12,511	17,134	1,282	1,026	211	128	529	271	755	7	34,553
1999	536	934	16,672	22,832	1,708	1,367	281	170	705	361	1,007	9	46,045
2000	688	688	12,284	16,823	1,259	1,007	207	126	519	266	742	6	33,927

Source: WPTT-02-02 (**T32**)

The reason why the catches of vessels unloading to Perikanan Samodra Besar (PSB) were excluded is that the longliners belonging to this company are thought to be the only targeting bigeye tuna in Indonesia (information from the CSIRO). The species composition of the catches estimated is, therefore, different from that from Companies other than PSB. Considering that no NEI longliners unload to PSB premises, only the catches of Indonesian non-PSB longliners were used to estimate the catches of NEI longliners in this country.

NEW ESTIMATES

T10 Catches of fresh tuna longliners based in Indonesa operating under Taiwanese flag from 1986 to 2000

Year	no LL	Catches Per Species											TOTAL
		ALB	BET	YFT	SBF	BLZ	BLM	MLS	SWO	SFA	SKH	WAH	
1986	2	3	54	74	6	4	1	1	2	1	3	0	149
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	70	106	1,894	2,593	194	155	32	19	80	41	114	1	5,230
1989	271	411	7,331	10,040	751	601	124	75	310	159	443	4	20,248
1990	331	502	8,954	12,263	917	734	151	92	379	194	541	5	24,731
1991	339	514	9,171	12,560	940	752	155	94	388	198	554	5	25,329
1992	409	620	11,065	15,153	1,134	907	187	113	468	239	668	6	30,559
1993	474	501	8,936	12,238	916	733	151	91	378	193	540	5	24,680
1994	290	654	11,675	15,990	1,196	957	197	119	494	253	705	6	32,246
1995	221	354	6,314	8,648	647	518	106	65	267	137	381	3	17,440
1996	84	150	2,686	3,679	275	220	45	27	114	58	162	1	7,419
1997	86	161	2,867	3,926	294	235	48	29	121	62	173	1	7,918
1998	10	13	237	325	24	19	4	2	10	5	14	0	655
1999	1	2	31	43	3	3	1	0	1	1	2	0	86
2000	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: T6, T7 and **T8**

The data used for the estimation of the catches of fresh tuna NEI longliners operating in Indonesia are the same used for the estimation of the catches of domestic longliners in Indonesia (**WPTT-02-02**). The reasons why both estimates are conducted by using the same data were previously mentioned (See A/ Craft Statistics, Basic Data). Two sets of data from this review were used:

[a] 1986-1992 (**T7**): The number of craft and catches of Indonesian longliners unloading to processing plants other than Perikanan Samodra Besar (Benoa) are shown in **T7**.

[b] 1993-2000 (**T8**): The same figures are shown in **T8** in this case not including the Benoa non-PSB catches due to them not estimated separately in the referred document. The number of ships operating in ports other than Benoa needed, thus, to be estimated from the totals in **T2** and proportions in **T9**, the latter also from **WPTT-02-02**.

no LL $Year_x$ = Total no IDN LL $Year_x$ * Proportion LL catch in ports OTHER than Benoa in $Year_x$ (T9)

T9 Total landings of Indonesian fresh tuna longliners recorded in Benoa versus those recorded in other ports and proportions resulting from these amounts.

Year	Bali	Other Ports	TOTAL	Proportion	
				Bali	Other
1992	7842	9110	16952	0.46	0.54
1993	7841	6388	14229	0.55	0.45
1994	5325	9258	14583	0.37	0.63
1995	10781	16320	27101	0.40	0.60
1996	11417	16968	28385	0.40	0.60
1997	10268	17038	27306	0.38	0.62
1998	14166	13568	27734	0.51	0.49
1999	12513	15425	27938	0.45	0.55

Source: WPTT-02-02 (**T21**)

The catches of NEI fresh tuna longliners operating in Indonesia are shown in **T10** (China,Taiwan), **T11** (Honduras) and **T12** (other NEI), totals in **T13**. The following steps were given to estimate the catches:

[1] Total catches: estimated on the basis of the average catches per longliner from **T7** and **T8** and the proportion of vessels under the flag whose catches were to be estimated . The same average catches were, then, assumed for both fleets.

Total catch $Flag_x$ $Year_y$ = Total Catch IDN $Year_y$ / number LL IDN $Year_y$ (T7 & T8) * number LL $Flag_x$ $Year_y$ (T6)

[2] Catches per species: estimated according to the proportions of each species in **T7** and **T8**:

Catch $Country_x$ $Species_y$ $Year_z$ = Catch $Species_y$ IDN $Year_z$ / Total Catch IDN $Year_z$ * Total Catch $Country_x$ $Species_y$ $Year_z$

T11 Catches of fresh tuna longliners based in Indonesa operating under Honduran flag from 1986 to 2000

Year	no LL	Catches Per Species											TOTAL
		ALB	BET	YFT	SBF	BLZ	BLM	MLS	SWO	SFA	SKH	WAH	
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	1	2	27	37	3	2	0	0	1	1	2	0	75
1989	2	3	54	74	6	4	1	1	2	1	3	0	149
1990	2	3	54	74	6	4	1	1	2	1	3	0	149
1991	2	3	54	74	6	4	1	1	2	1	3	0	149
1992	3	5	81	111	8	7	1	1	3	2	5	0	224
1993	2	2	38	52	4	3	1	0	2	1	2	0	104
1994	1	2	40	55	4	3	1	0	2	1	2	0	111
1995	1	2	29	39	3	2	0	0	1	1	2	0	79
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: T6, T7 and **T8**

T12 Catches of fresh tuna longliners based in Indonesa operating under flags other than Taiwan,China and Honduras from 1986 to 2000

Year	no LL	Catches Per Species											TOTAL
		ALB	BET	YFT	SBF	BLZ	BLM	MLS	SWO	SFA	SKH	WAH	
1986	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	1	2	27	37	3	2	0	0	1	1	2	0	75
1990	1	2	27	37	3	2	0	0	1	1	2	0	75
1991	1	2	27	37	3	2	0	0	1	1	2	0	75
1992	1	2	27	37	3	2	0	0	1	1	2	0	75
1993	2	2	38	52	4	3	1	0	2	1	2	0	104
1994	1	2	40	55	4	3	1	0	2	1	2	0	111
1995	1	2	29	39	3	2	0	0	1	1	2	0	79
1996	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: T6, T7 and **T8**

T13 Total catches of fresh tuna longliners based in Indonesa operating under flags whose catches are not reported to the IOTC (NEI) from 1986 to 2000

Year	no LL	Catches Per Species											TOTAL
		ALB	BET	YFT	SBF	BLZ	BLM	MLS	SWO	SFA	SKH	WAH	
1986	2	3	54	74	6	4	1	1	2	1	3	0	149
1987	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	71	108	1,921	2,630	197	158	32	20	81	42	116	1	5,305
1989	274	415	7,412	10,151	759	608	125	76	313	160	448	4	20,472
1990	334	506	9,036	12,374	926	741	152	92	382	195	546	5	24,955
1991	342	518	9,252	12,671	948	759	156	95	391	200	559	5	25,553
1992	413	626	11,173	15,301	1,145	916	188	114	472	242	675	6	30,858
1993	478	505	9,011	12,341	923	739	152	92	381	195	544	5	24,888
1994	292	658	11,756	16,100	1,204	964	198	120	497	254	710	6	32,468
1995	223	357	6,371	8,726	653	523	107	65	269	138	385	3	17,597
1996	84	150	2,686	3,679	275	220	45	27	114	58	162	1	7,419
1997	86	161	2,867	3,926	294	235	48	29	121	62	173	1	7,918
1998	10	13	237	325	24	19	4	2	10	5	14	0	655
1999	1	2	31	43	3	3	1	0	1	1	2	0	86
2000	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: T10, T11 and **T12**

[B] THAILAND (Phuket)

a/ Craft Statistics

BASIC DATA

T14 Total number of fresh tuna longliners based in Phuket (Thailand) operating in the Indian Ocean (1994-2000)

Year	RCountry	Gear	noShips	CHN	IDN	TWN	UNCL
1994	THA	LL	66			66	
1995	THA	LL	95			95	
1996	THA	LL	121	20		101	
1997	THA	LL	232	90		127	15
1998	THA	LL	200	45	4	105	46
1999	THA	LL	271	42	24	162	59
2000	THA	LL	223	52	21	156	1

Source: IOTC Vessel Record (data from AFDEC-IOTC Sampling Program in Phuket)

1994 was the first year where landings of fresh tuna longliners were recorded in Phuket (**WPDCS-99-05**). Chinese, Taiwanese and Indonesian vessels (**T14**) have been unloading catches to Phuket since then. The Andaman Sea Fisheries Development Center (AFDEC) has been monitoring the activities of these fleets since they started operating. This monitoring was strenghtened through cooperation between AFDEC and the IOTC with a more extensive sampling program incepted in 2000. The following estimate completes that presented to the last Working Party on Tropical Tunas (**WPTT-01-19**) which referred only to the year 2000..

The number of fresh tuna longliners recorded to operate in Phuket from 1994 to 2000 is shown in **T14**. The information presented come from different sources, namely Customs, Fish Market Organization, Processing Plants and Shipping Agencies and AFDEC enumerators (only in 2000).

The high number of longliners whose country of registration (flag) is unknown, especially in 1998 and 1999, is due to the incompleteness of the records retrieved from the sources available. This fact might have led to overestimation of the number of longliners operating, due to single ships recorded under different names or national registration numbers by mistake and counted twice. It is important to note that this likely overestimation on the number of ships is not affecting further catch estimates because they are based on the number of landings.

NEW ESTIMATES

T15 Total number of fresh tuna longliners based in Phuket (Thailand) operating in the Indian Ocean (1994-2000)

Year	RCountry	Gear	noShips	CHN	IDN	TWN
1994	THA	LL	66			66
1995	THA	LL	95			95
1996	THA	LL	121	20		101
1997	THA	LL	232	96	0	136
1998	THA	LL	200	58	5	137
1999	THA	LL	271	53	30	188
2000	THA	LL	223	52	21	150

Source: T14

The total number of fresh tuna longliners operating in Phuket from 1994 to 2000 is shown in **T15**. The ships recorded under UNCL in **T14** were proportionally assigned to the different flags reported.

$$\textbf{Number LL Flag}_x\ \textbf{Year}_y = \textbf{Number LL Flag}_x\ \textbf{Year}_y + \left(\textbf{Number LL UNCL Year}_y * \frac{\textbf{Number LL Flag}_x\ \textbf{Year}_y}{\textbf{Total Number LL Excluding UNCL Year}_y}\right)$$

b/ Nominal Catches

BASIC DATA

T16 Total landings and catches of fresh tuna longliners based in Phuket during 1994-2000

Year	Month	Effort	Total	YF	BE	BILL	SWO	SHA	Year	Month	Effort	Total	YF	BE	BILL	SWO	SHA
1994	Aug	2	6	-	-	-	-	-	1998	Jan	54	362	231	118	9	3	1
	Sep	1	4	-	-	-	-	-		Feb	97	492	271	194	21	6	0
	Oct	-	-	-	-	-	-	-		Mar	86	445	408	22	11	4	0
	Nov	14	89	-	-	-	-	-		Apr	51	232	195	28	6	3	0
	Dec	55	523	254	127	56	66	20		May	28	113	103	8	1	1	0
	Total	**72**	**622**	**254**	**127**	**56**	**66**	**20**		Jun	23	90	86	3	0	1	0
1995	Jan	25	295	204	43	29	20	0		Jul	38	156	148	8	0	0	0
	Feb	16	161	133	2	13	13	0		Aug	48	177	163	11	2	1	0
	Mar	5	24	20	1	2	1	0		Sep	28	137	110	5	8	14	0
	Apr	7	41	33	3	3	2	0		Oct	29	109	82	2	7	18	0
	May	6	25	20	1	2	2	0		Nov	55	269	238	10	14	7	0
	Jun	5	23	17	3	1	2	0		Dec	118	433	400	23	5	5	0
	Jul	6	36	21	7	3	5	0		**Total**	**655**	**3,015**	**2,435**	**432**	**84**	**63**	**1**
	Aug	9	57	38	5	8	6	0	1999	Jan	95	449	265	182	1	2	0
	Sep	7	21	11	1	6	3	0		Feb	52	189	125	56	4	4	1
	Oct	18	161	136	14	6	5	0		Mar	84	357	262	94	0	0	0
	Nov	35	223	149	22	25	22	5		Apr	67	276	200	75	0	0	0
	Dec	48	348	176	98	35	31	8		May	23	94	51	35	7	0	0
	Total	**187**	**1,415**	**958**	**200**	**133**	**113**	**13**		Jun	40	140	43	91	5	2	0
1996	Jan	49	561	201	270	35	45	10		Jul	49	179	18	155	0	6	0
	Feb	49	439	161	172	39	50	17		Aug	38	183	48	119	16	0	0
	Mar	50	287	144	79	31	28	5		Sep	71	474	282	145	26	20	0
	Apr	30	221	65	102	26	22	6		Oct	84	442	174	196	36	35	0
	May	17	53	35	7	7	3	1		Nov	120	695	231	369	54	41	0
	Jun	26	103	55	22	8	18	0		Dec	160	896	425	391	51	30	0
	Jul	31	111	71	10	24	6	0		Total	883	4,373	2,124	1,909	200	140	1
	Aug	58	167	87	44	28	8	0	2000	Jan	104	582	176	360	29	17	0*
	Sep	53	138	31	32	23	52	0		Feb	109	531	230	257	27	17	0*
	Oct	58	100	41	12	17	20	10		Mar	96	357	97	244	8	7	1*
	Nov	64	226	39	83	50	54	0		Apr	37	162	67	70	14	8	3*
	Dec	82	497	108	132	138	119	0		May	19	65	18	31	8	3	5*
	Total	**567**	**2,903**	**1,038**	**965**	**426**	**425**	**49**		Jun	31	123	33	43	24	16	7*
1997	Jan	100	499	192	73	123	111	0		Jul	30	128	44	34	15	20	15*
	Feb	90	522	202	143	91	86	0		Aug	25	101	44	32	7	8	10*
	Mar	77	394	135	119	77	63	0		Sep	31	113	49	27	11	18	8*
	Apr	50	309	88	91	66	64	0		Oct	42	192	121	26	17	26	2*
	May	34	110	59	42	3	6	0		Nov	54	271	128	52	34	29	28*
	Jun	8	34	21	11	2	0	0		Dec	87	491	303	68	54	36	30*
	Jul	6	32	20	6	4	2	0		Total	665	3,116	1,310	1,244	248	205	109
	Aug	12	35	21	11	3	0	0									
	Sep	14	37	14	18	2	3	0									
	Oct	44	114	76	15	14	8	1									
	Nov	46	179	129	25	9	16	0									
	Dec	77	367	181	122	31	24	9									
	Total	**558**	**2,632**	**1,138**	**676**	**425**	**383**	**10**									

Source: WPTT-99-05 (Table 4) and Final report of the AFDEC-IOTC Sampling Program (2000-01)

T17 Total number of landings and catches of fresh tuna longliners based in Phuket during 2000

Year	Landing	Total	YFT	BET	BIL	SWO	SKH
1994	72	622	254	127	56	66	20
1995	187	1,415	958	200	133	113	13
1996	567	2,903	1,038	965	426	425	49
1997	558	2,632	1,138	676	425	383	10
1998	655	3,015	2,435	432	84	63	1
1999	883	4,373	2,124	1,909	200	140	1
2000	665	3,116	1,310	1,244	248	205	109

Source: T16

All data available regarding the landings of fresh-tuna longliners in Phuket originated in AFDEC:

[a] The total number of landings and catches landed per species and month in Phuket is shown in **T16**, totals per year in **T17**. The data in **T16**, mainly coming from Customs in Phuket, were completed by adding records from other sources (see Craft Statistics above) due to the Customs data being incomplete. While the number of landings recorded is thought complete, this is not the case with the catches, which turned to be underestimated when compared with the estimates issuing from sampling. This underreporting of catches is common in all ports as a consequence of different fees which are calculated on the basis of the catches reported unloaded.

[b] The number of landings and catches of fresh tuna longliners based in Phuket during the year 2000-01 is shown in **T18** (Totals), **T19** (Taiwan,China), **T20** (China) and **T21** (Indonesia). This information is from a previous review by AFDEC and IOTC (**WPTT-01-19**) referring to the year 2000. The total catches and species composition are considered more reliable than those in T17 for the former were estimated from sampling of fish unloaded to processing plants in Phuket (more information about how the estimation was carried out can be found in the referred document).

T18 Total landings and catches of fresh tuna longliners based in Phuket during 2000

		Landings		Contribution of the different species in the samplings to the total catches (kg)													
Year	Quarter	no	Catch	YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
2000	1	309	1,652,896	895,780	549,169	9,884	0	9,744	61,565	33,955	14,664	33,443	6,645	14,813	1,303	9,024	12,908
2000	2	87	317,589	89,626	163,643	594	29	0	21,247	2,298	2,893	6,785	21,610	135	0	3,660	5,069
2000	3	86	314,253	124,469	91,850	1,183	140	22	57,703	3,918	2,993	11,083	5,784	1,035	1,385	6,007	6,681
2000	4	183	1,129,081	871,571	132,082	5,273	0	252	47,559	21,731	4,786	14,332	8,589	14,317	828	6,077	1,685
Total		665	3,413,819	1,981,446	936,744	16,934	169	10018	188,074	61,902	25,336	65,643	42,628	30,300	3516	24,768	26,343

Source: WPTT-01-19 (IOTC Sampling Programmes: Status Report, Nootmorn, P. & M. Herrera)

T19 Total landings and catches of Taiwanese fresh tuna longliners based in Phuket from the second quarter of 2000 to the first quarter of 2001

			Contribution of the different species in the samplings to the total catches (kg)													
Year	Quarter	Total Catch (kg)	YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
2000	2	110,742	44,250	41,200	94	0	0	6,926	661	832	3,973	11,854	0	0	733	220
2000	3	199,732	80,803	55,937	166	0	0	37,699	2,826	2,434	9,328	2,714	608	1,264	4,581	1,372
2000	4	966,306	783,815	88,919	3,253	0	0	26,584	16,993	4,250	14,252	8,140	13,953	0	5,173	974
2001	1	1,208,240	743,956	320,289	5,314	0	9,661	28,246	27,813	13,534	29,910	3,736	12,944	0	8,812	4,026
TOTAL		2,485,020	1,652,824	506,345	8,827	0	9,661	99,455	48,293	21,050	57,463	26,444	27,505	1264	19,299	6,592

Source: WPTT-01-19 (IOTC Sampling Programmes: Status Report, Nootmorn, P. & M. Herrera)

T20 Total landings and catches of Chinese fresh tuna longliners based in Phuket from the second quarter of 2000 to the first quarter of 2001

			Contribution of the different species in the samplings to the total catches (kg)													
Year	Quarter	Total Catch (kg)	YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
2000	2	132,172	32,292	75,012	428	29	0	10,144	278	0	2,634	3,580	0	0	2,927	4,849
2000	3	100,277	36,237	31,089	945	140	0	19,065	945	368	1,688	2,608	382	112	1,412	5,286
2000	4	109,368	51,535	36,156	1,585	0	0	13,830	4,313	0	0	0	0	726	754	469
2001	1	171,864	51,907	95,154	1,971	0	0	13,083	2,554	0	1,565	0	792	589	85	4,163
TOTAL		513,681	171,971	237,411	4,929	169	0	56,122	8,090	368	5,887	6,188	1,174	1,427	5,178	14,767

Source: WPTT-01-19 (IOTC Sampling Programmes: Status Report, Nootmorn, P. & M. Herrera)

T21 Total landings and catches of Indonesian fresh tuna longliners based in Phuket from the second quarter of 2000 to the first quarter of 2001

			Contribution of the different species in the samplings to the total catches (kg)													
Year	Quarter	Total Catch (kg)	YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
2000	2	74,674	13,084	47,432	72	0	0	4,178	1,359	2,061	178	6,177	135	0	0	0
2000	3*	14,245	7,429	4,824	72	0	22	939	148	191	67	462	44	10	14	23
2000	4	53,408	36,221	7,007	436	0	252	7,145	425	537	79	448	364	103	149	242
2001	1	160,953	114,457	40,174	963	0	0	1,303	800	417	1,639	981	116	24	20	59
TOTAL		303,280	171,191	99,437	1,543	0	274	13,565	2,732	3,206	1,963	8,068	659	137	183	324

Source: WPTT-01-19 (IOTC Sampling Programmes: Status Report, Nootmorn, P. & M. Herrera)

NEW ESTIMATES

T22 Total number of landings of fresh tuna longliners from China, Indonesia and Taiwan,China based in Phuket during 1994-2000

Year	RCountry	Gear	Landing	CHN	IDN	TWN
1994	THA	LL	72	0	0	72
1996	THA	LL	567	94	0	473
1997	THA	LL	558	231	0	327
1998	THA	LL	655	190	16	449
1999	THA	LL	884	173	98	613
2000	THA	LL	665	155	63	447

Source: T15 and **T17**

T23 Total catches of fresh tuna longliners from China, Indonesia and Taiwan,China unloaded in Phuket during 1994-2000

Year	RCountry	Gear	Landing	CHN	IDN	TWN
1994	THA	LL	681	0	0	681
1995	THA	LL	1,550	0	0	1,550
1996	THA	LL	3,180	527	0	2,653
1997	THA	LL	2,884	1,194	0	1,690
1998	THA	LL	3,303	958	81	2,264
1999	THA	LL	4,791	938	531	3,322
2000	THA	LL	3,414	796	323	2,295

Source: T15 and **T17**

T24 Total landings and catches of Taiwanese fresh tuna longliners based in Phuket from 1994 to 2000

		Contribution of the different species in the samplings to the total catches (kg)													
Year	Total Catch tonnes	YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1994	681	453	139	2	0	3	27	13	6	16	7	8	0	5	2
1995	1,550	1,031	316	6	0	6	62	30	13	36	16	17	1	12	4
1996	2,653	1,765	541	9	0	10	106	52	22	61	28	29	1	21	7
1997	1,690	1,124	344	6	0	7	68	33	14	39	18	19	1	13	4
1998	2,264	1,506	461	8	0	9	91	44	19	52	24	25	1	18	6
1999	3,322	2,210	677	12	0	13	133	65	28	77	35	37	2	26	9
2000	2,478	1,648	504	9	0	10	99	48	21	57	26	27	1	19	7

Source: T23 and **T19**

The catches of fresh tuna longliners based in Phuket were estimated on the basis of the number of landings recorded (T17) and the catches per flag and species estimated from sampling (2000). The following steps were given to estimate the catches:

[1] Total number of landings per fleet: The total number of landings per year recorded in **T16** was redistributed among the different flags according to the number of ships operating per flag in **T15**. This was estimated by assuming the same levels of activity per ship irrespective of the flag under which it operated.

Nevertheless, the data in **T19**, **T20** and **T21** seems to indicate that while the Chinese fleet operates all year round in the Indian Ocean with similar catches unloaded per quarter, this is not the case with the Taiwanese vessels whose activities are highest during the first and fourth quarters of the year, decreasing in the other two quarters. There is not, however, any indication on whether the activities in years prior to 2000 were the same as in this year. If this were true, it might lead to overestimation of catches of Taiwanese longliners versus underestimation of catches of Chinese ships during 1994-99.

[2] Total catches unloaded per fleet: The total catches unloaded in Phuket by fresh tuna longliners under Taiwanese, Chinese and Indonesian flag is shown in **T23**. These landings were estimated by following the below steps:

[a] Estimation of 2000 landing Multiplier: The only catches available for the period 1994-99 come from Customs and are possibly underestimated, as it can be assessed when comparing the catches from Customs with those estimated from sampling in 2000. Thus, the catches from Customs for the period 1994-99 were raised according to the factor (multiplier) estimated for 2000. This was done by assuming a constant underreporting of catches to Customs over time.

Landing Multiplier = Total Catches Customs 2000 (T17) / Total Catches Sampling 2000 (T18)

[b] Calculation of the total catches per ship per year (1994-99): The catches from Customs were raised by the Landing Multiplier above and afterwards assigned to the respective countries proportionally to the number of landings estimated for each fleet (**T22**):

Total Catches $Year_x$ $Flag_y$ = Total Catches Customs $Year_x$ * Landing Multiplier * Number Landings $Year_x$ $Flag_y$ / Total Number Landings $Year_x$

These estimates were conducted by assuming that the catches unloaded per fleet per landing were the same over the period considered. This, however, is not supported by the data collected in 2000, where the landings from Taiwanese vessels were higher than those from Chinese.

If this were also true for years prior to 2000 it will lead to underestimation of catches of Taiwanese ships *versus* overestimation of catches of Chinese ships.

[3] Estimation of the catches per species per fleet: The final catches per species and fleet are shown in **T24** (Taiwan,China), **T25** (Indonesia) and **T26** (China), totals in **T27**. The total catches estimated in T23 were distributed according to the species composition issuing from the 2000 sampling for each fleet concerned.

Catch $Year_x$ $Flag_y$ $Species_z$ = Total Catch $Year_x$ $Flag_y$ * Catch 2000 $Flag_y$ $Species_z$ / Total Catch 2000 $Flag_y$

T25 Total landings and catches of Indonesian fresh tuna longliners based in Phuket from 1994 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	81	46	26	0	0	0	4	1	1	1	2	0	0	0	0
1999	531	300	174	3	0	0	24	5	6	3	14	1	0	0	1
2000	233	104	90	1	0	0	18	3	4	1	10	1	0	0	0

Source: T23 and **T21**

T26 Total landings and catches of Chinese fresh tuna longliners based in Phuket from 1994 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	527	177	244	5	0	0	58	8	0	6	6	1	1	5	15
1997	1,194	400	552	11	0	0	130	19	1	14	14	3	3	12	34
1998	958	321	443	9	0	0	105	15	1	11	12	2	3	10	28
1999	938	314	433	9	0	0	102	15	1	11	11	2	3	9	27
2000	703	229	342	7	0	0	71	11	0	8	6	2	2	5	19

Source: T23 and **T20**

T27 Total landings and catches of fresh tuna longliners based in Phuket from 1994 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1994	681	453	139	2	0	3	27	13	6	16	7	8	0	5	2
1995	1,550	1,031	316	6	0	6	62	30	13	36	16	17	1	12	4
1996	3,180	1,941	784	14	0	10	164	60	23	67	35	31	3	26	22
1997	2,884	1,524	896	17	0	7	198	52	15	53	32	21	4	25	39
1998	3,303	1,872	931	18	0	9	199	60	21	64	38	27	4	27	34
1999	4,791	2,823	1,284	23	0	13	259	84	34	91	61	40	5	36	36
2000	3,414	1,981	937	17	0	10	188	62	25	66	43	30	4	25	26

Source: T24, T25 and **T26**

[C] MALAYSIA (Penang)

a/ Craft Statistics (See para **[G]**)

b/ Nominal Catches

BASIC DATA

T28 Total catches of fresh tuna longliners based in Penang from 1989 to 1994

Port	Year	Area	YFT	BET	ALB	SKJ	KGX	SFA	SWO	BIL	OTH	TOTAL	SHK
Penang/Singapore	1989	F57	11,860	1,877	10	0	37	0	0	1,457	120	15,360	318
Penang/Singapore	1990	F57	15,360	2,430	13	0	48	0	0	1,886	155	19,892	411
Penang/Singapore	1991	F57	14,090	2,229	12	0	44	0	0	1,730	142	18,247	377
Penang/Singapore	1992	F57	15,963	2,526	13		50			1,960	161	20,674	427
Penang/Singapore	1993	F57	18,701	2,959	15	0	56	0	0	3,075	164	24,971	
Penang/Singapore	1994	F57	27,477	4,348	22	0	82	0	0	4,518	241	36,688	

Source: IOTC Nominal catches database (past review IPTP)

The first landings of fresh tuna longliners in Penang were recorded in 1989. The first estimates of activity and catches of this vessels were conducted by IPTP (**T28**) by using data issuing from joint activities between the Fisheries Research Institute (FRI) of Penang and IPTP (sampling program operating during 1992). The calculation of vessel activity and catches landed was conducted from data originating from the referred sampling program and previous data gathered by the FRI. These estimates were carried out by following the criteria below:

T29 Total catches of fresh tuna longliners (China and Taiwan,China) based in Penang from 1995 to 1999

PORT	YEAR	FLAG	BET	YFT	ALB	BIL	TOTAL
PENANG	1995	ALL	12769	20699	800	1644	35911
	1996	ALL	15311	16021	1326	2476	35135
	1997	ALL	13184	15684	2738	2752	34358
	1998	ALL	12912	15284	2775	2611	33582
	1999	ALL	10152	12017	2181	2053	26404

Source: WPDCS-00-01 (Calculation of the Nominal Catches of vessels Not Elsewhere included (NEI) within the IOTC Area, IOTC Secretariat)

[a] Vessels operating in the Indian Ocean all year round: In 1992 Penang was the only port in the Indian Ocean were the activities of fresh tuna longliners were monitored, thus also being the only where reliable estimates of catches and vessel activity could be obtained. Nevertheless, calls of fresh tuna longline vessels were also known to occur in other ports of the area, as Singapore (since 1989) and Phuket (since 1994). These activities of longliners in other ports were poorly known at the time of the estimate although it was believed that the longliners were not fully based in one port but put in to one or other according to different reasons, as the existence of flights to Japan on the day of landing, the availability of processing plants, etc.. This led to the assumption that the vessels based in Penang made up the whole fleet, putting in to Singapore or Phuket in the case that they did not put in to Penang.

Therefore, the catches were estimated by following the steps below:

1/ Estimation of the average number of trips per longliner and year: To estimate this value, only the vessels that unloaded all catches to processing plants in Penang during 1992 were considered. An average number of trips per longliner per year was assessed from the referred longliners.

2/ Re-estimation of catches: The average number of trips in 1/ was used to estimate the total number of trips in the three ports by multiplying it by the number of vessels recorded in each year. The catches were estimated accordingly, by raising then on the basis of the new total number of landings estimated.

[b] Species composition according to the data collected in 1992: The total catches obtained for years other than 1992 were distributed according to the species composition obtained from the sampling program in Penang.

T30 Total catches of Chinese fresh tuna longliners in the Indian Ocean reported by the Chinese Liaison Officer to the IOTC (1995-2000)

Flag	EName	Area	Year	Gear	Units	TOTAL	ALB	BET	BILL	SKH	SWO	TUX	YFT
CHN	China	IO_Eastern	1995	LL	MT	444		140			71	96	138
CHN	China	IO_Eastern	1996	LL	MT	1497		466			238	299	494
CHN	China	IO_Eastern	1997	LL	MT	2964		1652			255	307	750
CHN	China	IO_Eastern	1998	LL	MT	3080		2164			117	396	402
CHN	China	IO_Eastern	1999	LL	MT	5868	101	2113	287	187	262	712	2206
CHN	China	IO_Eastern	2000	LL	MT	4918		1822	344	95	294	309	2055
CHN	China	IO_Western	1999	LL	MT	294	88	69			8		129
CHN	China	IO_Western	2000	LL	MT	1589	3	877	142	4	79	179	306

Source: IOTC Nominal catches database

The catches for the period 1995-99 (**T29**) were estimated by IOTC on the basis of activity data from the FRI raised according to the criteria above. The species composition of the catches, however, was obtained from data collected by the RIMF and CSIRO in Benoa.

The catches reported by the Chinese Liaison Officer to the IOTC for the period 1994-2000 are shown in **T30**. It is important to note that the estimates conducted in Penang did not exclude the landings of Chinese vessels in this port. Indeed, the catches of Chinese longliners include not only those from fresh tuna longliners, but also some coming from deep-freezing ships, especially in recent years.

T31 Total catches of Chinese fresh tuna longliners based in Phuket from 1996 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)														
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1996	527	177	244	5	0	0	58	8	0	6	6	1	1	5	15
1997	1,194	400	552	11	0	0	130	19	1	14	14	3	3	12	34
1998	958	321	443	9	0	0	105	15	1	11	12	2	3	10	28
1999	938	314	433	9	0	0	102	15	1	11	11	2	3	9	27
2000	703	229	342	7	0	0	71	11	0	8	6	2	2	5	19

Source: T26

The catches of Chinese fresh tuna longliners unloaded in Phuket are shown in **T31**.

Considering that the catches of Chinese longliners in the Indian Ocean have been officially reported to the IOTC since the beggining of the fishery, and that the catches estimated in Penang include not only those from Indonesian and Taiwanese longliners but also those from the Chinese, the latter will need to be removed to avoid duplication.

T32 Proportion of the different species in the landings of fresh tuna longliners to processing plants in Phuket during the year 2000

SPECIES COMPOSITION	Total Catch (kg)	Contribution of the different species in the samplings to the total catches (kg)														
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
TWN	1.00	0.67	0.20	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.00
CHN	1.00	0.33	0.46	0.01	0.00	0.00	0.11	0.02	0.00	0.01	0.01	0.00	0.00	0.01	0.03
IDN	1.00	0.56	0.33	0.01	0.00	0.00	0.04	0.01	0.01	0.01	0.03	0.00	0.00	0.00	0.00

Source: T24, T25 and **T26**

Considering that the catches of Chinese longliners in the Indian Ocean have been officially reported to the IOTC since the beggining of the fishery, and that the catches estimated in Penang include not only those from Indonesian and Taiwanese longliners but also those from the Chinese, the latter will need to be removed to avoid duplication.

The distribution of the different species in the landings of Taiwanese, Chinese and Indonesian longliners to processing plants in Phuket during 2000 is shown in **T32** (AFDEC-IOTC Sampling Program).

T33 Proportion of the different species in the landings of fresh tuna longliners to processing plants in Penang during the year 1992

SPECIES COMPOSITION	Total Catch (kg)	Contribution of the different species in the samplings to the total catches (kg)														
		YFT	BET	ALB	SKJ	TUN	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
TWN	1.00	0.76	0.12	0.00	0.00		0.09							0.02	0.01

Source: IPTP Sampling Program in Penang

The same is shown in **T33**, although referring only to Taiwanese vessels unloading catches to processing plants in Penang during 1992 (FRI-IPTP Sampling Program).

NEW ESTIMATES

T34 Total catches of fresh tuna longliners based in Penang during 1993 and 1994

Port	Year	Area	YFT	BET	ALB	SKJ	KGX	SFA	SWO	BIL	OTH	TOTAL	SHK
Penang/Singapore	1993	F57	18,701	2,959	15	0	56	0	0	3,075	164	24,971	516
Penang/Singapore	1994	F57	26,967	4,267	22	0	80	0	0	4,434	237	36,006	744

Source: T28 and **T27**

The estimation of the catches of fresh tuna longliners based in Penang was conducted in three steps:

[1] Re-estimation of total catches: All previous estimates of catches of fresh tuna longliners based in Penang (**T28** and **T29**) were conducted to cover not only the catches unloaded to Penang, but also those unloaded to Singapore and Phuket. While this was true until 1993, this has not been the case since that year. The catches of fresh tuna longliners based in Phuket and those reported by the Chinese Liaison Officer to the IOTC have been reported since that year. Therefore, this catches need to be removed to avoid their duplication. New estimates of catches can be found in **T34** and **T35**.

New total catches and species composition for 1993 and 1994 are shown in **T34**. The only change in **1993** refer to the estimation of the catches of sharks, made on the basis of the proportion between the catches of sharks and total catches recorded the preceding year.

Catch Sharks $Year_x$ = Total Catch Species Other than Sharks $Year_x$ * Catch Sharks $Year_{x-1}$ / Total Catch Species Other than Sharks $Year_{x-1}$

The total catches recorded in **1994** were substracted from the total catches recorded in Phuket during that year and the species composition re-estimated according to the new total catches obtained. The catches of sharks were estimated afterwards in the same way as 1993.

Total Catch Penang 1994 = Total Catch Penang 1994 (IPTP) - Total Catch Phuket 1994

Catch Speciesx 1994 = Total Catch Penang 1994 (above) * Catch Speciesx 1994 (IPTP) / Total Catch Penang 1994 (IPTP)

The total catches recorded for the period **1995-1999** were re-estimated also following this criteria (**T35**):

Total Catch Penang $Year_x$ = Total Catch Penang $Year_x$ (IOTC) - (Total Catch China East IO $Year_x$ - Total Catch China Phuket $Year_x$) - Total Catch Phuket $Year_x$ (but CHN)

The total catches in the year 2000 were estimated on the basis of the 1999 catches and the trend between 1999 and 2000 in Phuket, due to lack of detailed information regarding this year.

Total Catch Penang 2000 = Total Catch Penang 1999 (IOTC) * Total Catch Phuket 1999 / Total Catch Phuket 2000 - (Total Catch China East IO 2000 - Total Catch China Phuket 2000) - Total Catch Phuket 2000 (but CHN)

[2] Estimation of the total catches per flag (**T36** and **T37**): The assignment of the catches to the different flags was made on the basis of the proportions obtained from Phuket (Sampling Program) due to lack of this type of data in Penang. The proportions between the different flags obtained from Phuket is shown in **T36**. The catches of Chinese vessels were removed before the estimation considering that no catches for this country needed to be estimated (catches officially reported). The catches recorded before 1995 were all assigned to Taiwanese vessels, which is in agreement with the proportions in **T36** (only Taiwanese longliners until 1998). The total catches of Indonesian and Taiwanese fresh tuna longliners based in penang are shown in **T37**.

Catch $Year_x$ $Country_y$ (T37) = Total catch $Year_x$ (T35) * Proportion $Country_y$ $Year_x$ (T36)

[3] Estimation of the catches per species: The catches per species were estimated depending on the flag of the ship and the year:

a/ Taiwan,China (**T38**): **1989-92**: Catches per species according to the sampling in Penang in 1992 (**T33**). Catches of billfish distributed according to the proportions among billfish in Phuket (**T32**)

2000: Catches per species according to the sampling in Phuket (**T32**).

1993-99: Proportions estimated by interpolation between 1992 (Penang) and 2000 (Phuket) data.

b/ Indonesia (**T32**): **1995-2000**: Catches per species according to the sampling in Phuket (**T32**).

The final catches can be found in **T39** (Taiwan,China) and **T40** (Indonesia), totals in **T41**.

T35 Total catches unloaded by fresh tuna longliners in Penang from 1995 to 2000

PORT	YEAR	PREV	CHN EAST	Phuket	NEW
PENANG	1995	35,911	444	1,550	33,917
	1996	35,135	970	2,653	31,512
	1997	34,358	1,770	1,690	30,898
	1998	33,582	2,122	2,345	29,115
	1999	26,404	4,930	3,853	17,620
	2000	18,814	4,215	2,710	11,889

Source: T29, T30 and **T27**

T36 Distribution of the catches unloaded to processing plants in Phuket according to the flag under which the longliners operated (excluding China)

Year	RCountry	Gear	Landing	IDN	TWN
1995	THA	LL	1.00	0.00	1.00
1996	THA	LL	1.00	0.00	1.00
1997	THA	LL	1.00	0.00	1.00
1998	THA	LL	1.00	0.03	0.97
1999	THA	LL	1.00	0.14	0.86
2000	THA	LL	1.00	0.12	0.88

Source: T23

T37 Total catches unloaded by fresh tuna longliners in Penang from 1995 to 2000 according to the country of registration

Year	RCountry	Gear	Landing	IDN	TWN
1995	THA	LL	33,917	0	33,917
1996	THA	LL	31,512	0	31,512
1997	THA	LL	30,898	0	30,898
1998	THA	LL	29,115	1,002	28,113
1999	THA	LL	17,620	2,429	15,191
2000	THA	LL	11,889	1,469	10,420

Source: T35, and **T36**

T38 Contribution of the species to the landings of Taiwanese fresh tuna longliners in Penang from 1989 to 2000

Year	Total	Proportions													
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1989	1.00	0.76	0.12	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1990	1.00	0.76	0.12	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1991	1.00	0.76	0.12	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1992	1.00	0.76	0.12	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1993	1.00	0.75	0.13	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1994	1.00	0.73	0.14	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1995	1.00	0.72	0.15	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1996	1.00	0.71	0.16	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.01
1997	1.00	0.70	0.17	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.01
1998	1.00	0.69	0.18	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.00
1999	1.00	0.68	0.19	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.00
2000	1.00	0.67	0.20	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.00

Source: T33 and **T32**

T39 Total catches of Taiwanese fresh tuna longliners based in Penang from 1989 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1989	15,678	11,860	1,877	10	0	0	515	250	109	297	137	142	7	318	157
1990	20,303	15,360	2,430	13	0	0	666	324	141	385	177	184	8	411	203
1991	18,624	14,090	2,229	12	0	0	611	297	129	353	163	169	8	377	186
1992	21,101	15,963	2,526	13	0	0	693	336	147	400	184	192	9	427	211
1993	25,487	18,990	3,319	26	0	12	860	417	182	497	229	238	11	476	231
1994	36,751	26,963	5,171	50	0	36	1,273	618	269	735	338	352	16	630	300
1995	33,917	24,496	5,129	59	0	49	1,205	585	255	696	320	333	15	528	245
1996	31,512	22,399	5,096	66	0	61	1,148	557	243	663	305	317	15	441	199
1997	30,898	21,610	5,322	76	0	75	1,153	560	244	666	307	319	15	385	167
1998	28,113	19,341	5,137	79	0	82	1,075	522	227	621	286	297	14	306	126
1999	15,191	10,277	2,936	48	0	52	594	289	126	343	158	164	8	142	54
2000	10,420	6,931	2,123	37	0	41	417	203	88	241	111	115	5	81	28

Source: T37 and **T38**

T40 Total catches of Indonesian fresh tuna longliners based in Penang from 1995 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	1,002	565	328	5	0	1	45	9	11	6	27	2	0	1	1
1999	2,429	1,371	796	12	0	2	109	22	26	16	65	5	1	1	3
2000	1,469	829	482	7	0	1	66	13	16	10	39	3	1	1	2

Source: T37 and **T32**

T41 Total catches of fresh tuna longliners based in Penang from 1989 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1989	15,678	11,860	1,877	10	0	0	515	250	109	297	137	142	7	318	157
1990	20,303	15,360	2,430	13	0	0	666	324	141	385	177	184	8	411	203
1991	18,624	14,090	2,229	12	0	0	611	297	129	353	163	169	8	377	186
1992	21,101	15,963	2,526	13	0	0	693	336	147	400	184	192	9	427	211
1993	25,487	18,990	3,319	26	0	12	860	417	182	497	229	238	11	476	231
1994	36,751	26,963	5,171	50	0	36	1,273	618	269	735	338	352	16	630	300
1995	33,917	24,496	5,129	59	0	49	1,205	585	255	696	320	333	15	528	245
1996	31,512	22,399	5,096	66	0	61	1,148	557	243	663	305	317	15	441	199
1997	30,898	21,610	5,322	76	0	75	1,153	560	244	666	307	319	15	385	167
1998	29,115	19,906	5,466	84	0	83	1,119	531	238	627	312	299	14	307	127
1999	17,620	11,648	3,732	61	0	54	703	310	151	359	223	170	9	143	57
2000	11,889	7,760	2,605	44	0	42	483	216	104	250	150	119	6	82	29

Source: T39 and **T40**

[D] SRI LANKA

a/ Craft Statistics (See para **[G]**)

b/ Nominal Catches

BASIC DATA

T42 Catches of Taiwanese fresh tuna longliners unloaded to processing plants in Colombo (Sri Lanka) from 1990 to 1992

Year	Area	YFT	BET	ALB	SKJ	KGX	SFA	SWO	BIL	OTH	TOTAL	SHK
1990	F51	1,286	204	1		4			158	13	1,666	
1991	F51											
1992	F51	715	113	1		2			88	7	925	19

Source: Former review IPTP (NEI NC 29-5-96.xls)

T43 Number of landing permits issued in Sri Lanka to foreign tuna longliners and amounts of tuna exported during 1991-2000

		Tuna Exported according to its Grade				CFC Fish	Proportion	
Year	Landings	First	Second	Third	Total	Colombo	Fresh	Frozen
1991		174	155	9	339			
1992		260	601	14	875			
1993		638	10	8	656	984	0.40	0.60
1994		180	12	45	237	824	0.22	0.78
1995		116	58	24	198	708	0.22	0.78
1996		511	118	12	641	282	0.69	0.31
1997		2324	375	116	2815	290	0.91	0.09
1998		507	199	9	715	247	0.74	0.26
1999	69	397	309	95	800	196	0.80	0.20
2000	272	1040	536	173	1750	217	0.89	0.11

Source: Sri Lanka Fisheries Year Book 1997 to 2000 issues (National Aquatic Resources Research and Development Agency). Tables VII a-3 (pag. 28) and VII b-9 (pag. 35) (1997) Tables VII a-3 (pag. 26) and VII (b)-9 (pag. 32) (1998), Tables VII a-3 (pag. 31) and VII (b)-8 (pag. 37) (1999), Tables 4.3 (pag. 30) Table 4.7 (pag. 40)

T44 Contribution of the species to the landings (dressed weights) in Penang according to the type of preservation (1992)

Type Preservation	ALB	BET	YFT	BIL	OTH	KGX	SHK	TOTAL	Proportion
Fresh (Export & Reject)	0.2	2,293.9	15,214.0	403.7	9.3	14.7	0.0	17,935.8	0.87
Frozen (By-catch)	13.3	232.0	749.0	1,556.7	151.7	35.0	427.4	2,737.7	0.13
Total	13.5	2,525.9	15,963.1	1,960.4	161.0	49.7	427.4	20,673.5	1.00
Proportion Fresh	0.00	12.79	84.83	2.25	0.05	0.08		100.00	
Proportion Frozen	0.42	7.33	23.67	49.18	4.79	1.11	13.50	100.00	

Source: FRI-IPTP Sampling Program in Penang (1992) (NEI NC 29-5-96.xls)

T45 Raising factors estimated in Penang to convert from dressed to round weight the landings of fresh and frozen tuna and tuna like species to processing plants in this port

Type	ALB	BET	YFT	BIL	OTH	KGX	SHK
Fresh	1.10	1.09	1.09	1.54	1.10	1.10	1.55
Frozen	1.10	1.16	1.15	1.54	1.10	1.10	1.55

Source: FRI-IPTP Sampling Program in Penang (1992) (NEI NC 29-5-96.xls)

The first catches of fresh tuna longliners to processing plants in Colombo (Mutwal Harbor) were recorded in 1990. The catches estimated by the IPTP regarding 1990 and 1992 are shown in **T42**. These estimates were conducted on the basis of vessel activity and total catches records from the National Aquatic Resources Research and Development Agency (NARA) and species composition from sampling data in Penang.

The number of landing permits and catches of fresh tuna longliners unloaded to processing plants in Colombo are shown in **T43**. The catches in **T43** are recorded according to their destination, corresponding the exports to fish going through grading at the processing plants, i.e. refrigerated sea water or fresh tunas and billfish, and the CFC (Ceylon Fisheries Corporation) fish to by-catch specimens, preserved frozen, as billfish, sharks and other non-*sashimi* species.

T46 Proportion of fish preserved fresh *versus* those preserved frozen according to the different species monitored through sampling in Phuket (2000)

		EXPORT & REJECT				FROZEN									
Year	Total Catch tonnes	YFT	BET	ALB	TUNA	SKJ	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1994	1.00	0.88				0.12									
1995	1.00	0.88				0.12									
1996	1.00	0.86				0.14									
1997	1.00	0.85				0.15									
1998	1.00	0.86				0.14									
1999	1.00	0.87				0.13									
2000	1.00	0.86				0.14									

Source: T27 (IOTC Sampling Program and estimates)

T47 Proportion of Catches Unloaded to processing plants in Phuket according to the Flag under which the longliner operated (1990-2000, excluding the Chinese)

Year	RCountry	Gear	Landing	IDN	TWN
1990	THA	LL	1.00	0.00	1.00
1991	THA	LL	1.00	0.00	1.00
1992	THA	LL	1.00	0.00	1.00
1993	THA	LL	1.00	0.00	1.00
1994	THA	LL	1.00	0.00	1.00
1995	THA	LL	1.00	0.00	1.00
1996	THA	LL	1.00	0.00	1.00
1997	THA	LL	1.00	0.00	1.00
1998	THA	LL	1.00	0.03	0.97
1999	THA	LL	1.00	0.14	0.86
2000	THA	LL	1.00	0.12	0.88

Source: T36

The state Company Ceylon Fisheries Corporation (CFC) has been collecting frozen fish from fresh tuna longliners since their activities started. Nevertheless, not all frozen fish unloaded from longliners are dealt by CFC, indeed, species caught under other gears are also collected. This explain the changing proportions between fresh and frozen fish assessed from **T43**, preventing that these data be used..

On the contrary, the catches going through grading (fresh and refrigerated sea water fish) do refer to total catches because the fresh specimens are always individually monitored at the processing plants and the landing sheets and packing lists (recording the fish exported to foreign markets) usually submitted to the relevant authorities in each country.

The proportions between fresh and frozen tuna and billfish obtained from sampling in Penang are shown in **T44**. The total figures obtained are very close to those from sampling in Phuket, which are shown in **T46**. These proportions are quite stable over the time which would allow using the figures from Phuket and Penang to estimate the catches in other ports of the region.

The factors estimated in Penang to raise the catches from dressed to round weight are shown in **T45**, according to the species and type of preservation undergone.

The data in **T47** and **T48** refer to the proportion of landings from Taiwanese and Indonesian vesels in Thailand and the species composition of the catches unloaded by Taiwanese ships in Penang.

The lack of detailed information on the activities of fresh tuna longliners unloading to processing plants in Colombo led to assuming similar operation for the fleets based in Sri lanka, Phuket and Penang. Nevertheless, it is possible that one or other port be used according to the proximity of the area where the fishing activity occurred. Thus, the activity would concentrate in Phuket and Penang from October to March and in Colombo from April to September. Although this is known to be the case in Phuket and Penang, it is currently impossible to assess what the activity is in Colombo, due to the lack of detailed information on landings in this port.

T48 Contribution of the species to the landings of Taiwanese fresh tuna longliners to processing plants in Penang from 1990 to 2000

Year	Total	Proportions													
		YFT	BET	ALB	TUNA	SKJ	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1990	1.00	0.76	0.12	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1991	1.00	0.76	0.12	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1992	1.00	0.76	0.12	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1993	1.00	0.75	0.13	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1994	1.00	0.73	0.14	0.00	0.00	0.00	0.03	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1995	1.00	0.72	0.15	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.02	0.01
1996	1.00	0.71	0.16	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.01
1997	1.00	0.70	0.17	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.01
1998	1.00	0.69	0.18	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.00
1999	1.00	0.68	0.19	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.00
2000	1.00	0.67	0.20	0.00	0.00	0.00	0.04	0.02	0.01	0.02	0.01	0.01	0.00	0.01	0.00

Source: T38 (**T33** and **T32**)

NEW ESTIMATES

T49 Catches of Taiwanese fresh tuna longliners unloaded to processing plants in Colombo (Sri Lanka) in 1990

Year	Area	YFT	BET	ALB	SKJ	KGX	SFA	SWO	BIL	OTH	TOTAL	SHK
1990	F51	1286	204	1		4			158	13	1666	34

Source: T42

T50 Total catches of fresh tuna longliners unloaded to plants in Sri Lanka according to the type of preservation of the fish unloaded

Year	Total Catch tonnes	FRESH (EXPORT & REJECT)				FROZEN									
		YFT	BET	ALB	TUNA	SKJ	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1991	386	339				48									
1992	998	875				123									
1993	748	656				93									
1994	271	237				33									
1995	226	198				28									
1996	741	641				100									
1997	3,321	2,815				507									
1998	835	715				120									
1999	925	800				125									
2000	2,028	1,750				278									

Source: T43 and **T46**

The catches of fresh tuna longliners unloaded to processing plants in Colombo were estimated by following the steps below:

[1] Estimation of the catches of Sharks in 1990 (**T49**): The estimation was conducted on the basis of the proportion of catches made up by sharks in 1992 *versus* the total catches reported in that year (excluding sharks):

Catch Sharks 1990 = Catch Sharks 1992 / Total Catch 1992 (but SKH Catch) * Total Catch 1990 (but SKH)

[2] Estimation of total catches and catches according the type of preservation (**T50**): The total catches were calculated on the basis of the catches of fresh tunas and billfish recorded in **T43** (Export), by following the two steps below:

1/ Estimation of catches of frozen tunas, billfish and other species: The catches made up by fresh specimens, from **T43**, were multiplied by the proportions in **T46**, to obtain the amount which the catches unloaded frozen represented. The 1994 proportions in **T46** were carried bacwards to estimate the 1991 to 1993 catches.

1991-1993: Catches Frozen Year$_x$ = Catches Fresh Year$_x$ (T50) * Catches Frozen 1994 (T46) / Catches Fresh 1994 (T46)

1994-2000: Catches Frozen Year$_x$ = Catches Fresh Year$_x$ (T50) * Catches Frozen Year$_x$ (T46) / Catches Fresh Year$_x$ (T46)

2/ Estimation of Total catches: Total catches were estimated by summing up Fresh and Frozen catches (**T50**).

[3] Estimation of total catches of Taiwanese longliners per year: The catches of Taiwanese (**T52**) longliners for the period 1990-2000 were estimated according to the proportions in **T47**, obtained from sampling in Phuket.

Total Catch Year$_x$ TWN = Total Catch Year$_x$ (T50) * Proportion Year$_x$ TWN (T47)

[4] Estimation of species composition of the catches: The species composition in the landings of Taiwanese (**T52**) and Indonesian (**T53**) fresh tuna longliners to processing plants in Colombo were carried out separately:

1/ Taiwan,China: The proportions in **T48,** obtained from sampling in Penang and Phuket, were used to estimate the catches of Taiwanese longliners.

Catch TWN Year$_x$ Species$_y$ = Total Catch TWN Year$_x$ (T52) * Proportion Year$_x$ Species$_y$ (T48)

2/ Indonesia: The catches were estimated by following the two steps below:

a/ Estimation of the contribution of each species to the landings of Indonesian fresh tuna longliners in Colombo according to the type of preservation (**T51**): The species composition obtained from sampling in Phuket for Indonesian longliners (**T32**) was recalculated by splitting the catches into fresh and frozen. This was carried out according to the species, considering as fresh those mostly preserved fresh or refrigerated on board and frozen those usually preserved frozen.

Proportion IDN 2000 Species$_x$ Fresh = Proportion IDN 2000 Species$_x$ / Sum (Fresh Species)

Proportion IDN 2000 Species$_x$ Frozen = Proportion IDN 2000 Species$_x$ / Sum (Frozen Species)

b/ Estimation of the species composition of the catches (**T53**): The catches were estimated according to the amounts in **T50**, the proportions in **T47** and those in **T51**:

Catches Year$_x$ Species$_y$ Preservation$_z$ IDN = Total Catches Year$_x$ Preservation$_z$ (T50)* Proportion Catches IDN Year$_x$ (T47) * Proportion Year$_x$ Species$_y$ IDN (T51)

c/ Estimation of total catches (**T53**): Total catches were obtained by adding the catches of the different species estimated in b/ above.

The total catches of fresh tuna longliners based in Colombo are shown in **T54**.

T51 Proportion of the different species in the landings of fresh tuna longliners to processing plants in Phuket during the year 2000

SPECIES COMPOSITION	Contribution of the different species in the samplings to the total catches according to the type of preservation of the different species unloaded															
	YFT	BET	ALB	TUNA	FRESH	SKJ	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC	FROZEN
TWN	0.76	0.23	0.00	0.00	1.00	0.00	0.03	0.32	0.16	0.07	0.19	0.09	0.09	0.00	0.06	1.01
IDN	0.63	0.36	0.01	0.00	1.00	0.00	0.01	0.44	0.09	0.10	0.06	0.26	0.02	0.00	0.01	1.00

Source: T32

T52 Catches of Taiwanese fresh tuna longliners unloaded to processing plants in Colombo (Sri Lanka) from 1990 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	TUNA	SKJ	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1990	1,700	1,286	204	1	0	0	56	27	12	32	15	15	1	34	17
1991	386	292	46	0	0	0	13	6	3	7	3	4	0	8	4
1992	998	755	119	1	0	0	33	16	7	19	9	9	0	20	10
1993	748	557	97	1	0	0	25	12	5	15	7	7	0	14	7
1994	271	199	38	0	0	0	9	5	2	5	2	3	0	5	2
1995	226	163	34	0	0	0	8	4	2	5	2	2	0	4	2
1996	741	527	120	2	1	0	27	13	6	16	7	7	0	10	5
1997	3,321	2,323	572	8	8	0	124	60	26	72	33	34	2	41	18
1998	806	554	147	2	2	0	31	15	7	18	8	9	0	9	4
1999	797	539	154	3	3	0	31	15	7	18	8	9	0	7	3
2000	1,777	1,182	362	6	7	0	71	35	15	41	19	20	1	14	5

Source: T47, T48, T49 and **T50**

T53 Catches of Indonesian fresh tuna longliners unloaded to processing plants in Colombo (Sri Lanka) from 1990 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	TUNA	SKJ	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1998	29	15	9	0	0	0	0	2	0	0	0	1	0	0	0
1999	127	69	40	1	0	0	0	8	2	2	1	4	0	0	0
2000	250	136	79	1	0	0	0	15	3	4	2	9	1	0	0

Source: T47, T50 and **T51**

T54 Total catches of fresh tuna longliners unloaded to processing plants in Colombo (Sri Lanka) from 1990 to 2000

Year	Total Catch tonnes	Contribution of the different species in the samplings to the total catches (kg)													
		YFT	BET	ALB	TUNA	SKJ	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1990	1,700	1,286	204	1	0	0	56	27	12	32	15	15	1	34	17
1991	386	292	46	0	0	0	13	6	3	7	3	4	0	8	4
1992	998	755	119	1	0	0	33	16	7	19	9	9	0	20	10
1993	748	557	97	1	0	0	25	12	5	15	7	7	0	14	7
1994	271	199	38	0	0	0	9	5	2	5	2	3	0	5	2
1995	226	163	34	0	0	0	8	4	2	5	2	2	0	4	2
1996	741	527	120	2	1	0	27	13	6	16	7	7	0	10	5
1997	3,321	2,323	572	8	8	0	124	60	26	72	33	34	2	41	18
1998	835	570	156	2	2	0	31	17	7	18	8	10	0	9	4
1999	925	609	194	3	3	0	31	23	8	20	9	13	1	8	3
2000	2,028	1,318	441	8	7	0	71	50	18	45	21	29	2	14	5

Source: T52 and **T53**

[E] SEYCHELLES

a/ Craft Statistics (See para **[G]**)

b/ Nominal Catches

BASIC DATA

T55 Number of Indonesian fresh tuna longliners operating in the Seychelles EEZ during 1998-2000

Year	no Licenses	noLL	noTrips
1998	4	4	
1999		9	
2000	8	8	25

Source: IOTC Vessel Record (from the Seychelles Fishing Authority)

T56 Average catches per ship for domestic fresh tuna longliners operating in Indonesia during 1998-2000

Year	noLL	Catch	Av
1998	845	68,706	81
1999	1,095	81,169	74
2000	1,247	59,805	48

Source: WPTT-02-02 (Catches of Artisanal and Industrial fleets in Indonesia: An Update, M. Herrera, **T2** and **T33**)

A small fleet of Indonesian fresh tuna longliners has been operating with base in Port Victoria (Seychelles) since 1998. The number of longliners operating for the referred period is shown in **T55**.

Although the activities of the fleet have been closely monitored by the Seychelles Fishing Authority (SFA), final estimates of catches have not been made available yet by this institution. The catches were, thus, estimated on the basis of information coming from other ports, namely average catches per ship per year of Indonesian longliners based in Indonesia (**T56**) and distribution of species in the catches according to data from sampling on Indonesian vessels in Phuket (**T57**). The final figures obtained, shown in **T58,** are thought preliminar and probably inaccurate due to the very distant fishing grounds exploited by this fleet and those which catches were used to estimate total catches and species composition.

Catch IDN LL Year$_x$ Species$_y$ = no LL IDN Year$_x$ (T55) * Average Catch IDN LL Year$_x$ (T56) * Proportion IDN Year$_x$ Species$_y$ (T57)

T57 Proportion of the different species in the landings of Indonesian fresh tuna longliners to processing plants in Phuket during the year 2000

SPECIES COMPOSITION	Contribution of the different species in the samplings to the total catches (kg)													
	YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
IDN	0.56	0.33	0.01	0.00	0.00	0.04	0.01	0.01	0.01	0.03	0.00	0.00	0.00	0.00

Source: T32

NEW ESTIMATES

T58 Catches of Indonesian fresh tuna longliners unloaded to processing plants in Victoria (Seychelles) from 1998 to 2000

Year	Total	YFT	BET	ALB	SKJ	TUNA	SWO	BLZ	BLM	MLS	MARL	SFA	SSP	SKH	MISC
1998	325	184	107	2	0	0	15	3	3	2	9	1	0	0	0
1999	667	377	219	3	0	1	30	6	7	4	18	1	0	0	1
2000	384	217	126	2	0	0	17	3	4	2	10	1	0	0	0

Source: T55, T56 and **T57**

[F] MALDIVES

T59 Number of ships, trips and total catches unloaded of EEZ ships based in Maldives (vessels licensed to operate in the Economic Exclusive Zone)

Year	Ships	Trips	Catch	AvC/Trip	AvC/Ship
1997	48	4,253	5,590	1.31	116
1998	46	3,990	2,994	0.75	65
1999	32	1,453	811	0.56	25
2000	49	4,445	3,521	0.79	72

Source: Basic Fisheries Statistics issues 1997 to 2000 (Economic Planning and Coordination Section, Ministry of Fisheries, Agriculture and Marine Resources, Table 3, Table 4, Table 6)

The Basic Fisheries Statistics of Maldives record catches of EEZ vessels (**T59**), referring to foreign fishing ships licensed to operate within the Economic Exclusive Zone of Maldives. Although they are believed to be fresh tuna longliners, little is know on their activities, countries of registration,etc.

Furthermore, the number of trips and catches reported are quite inconsistent over time, referring the former probably to fishing days (instead of number of trips) and the second exclusively to catches within the EEZ.

The catches recorded in the statistics from Maldives were not considered until more information becomes available regarding the type of ships and their activities.

[G] Number of Taiwanese Fresh Tuna Longliners based in ports in Thailand, Malaysia and Sri Lanka.

BASIC DATA

T60 Average catches per ship for domestic fresh tuna longliners operating in Indonesia during 1986-2000

Year	no	Catch	AvCatch/LL
1986	34	1,508	44
1987	46	4,274	93
1988	71	6,187	87
1989	112	9,405	84
1990	132	10,229	77
1991	158	11,190	71
1992	255	18,936	74
1993	345	21,112	61
1994	371	28,547	77
1995	396	32,258	81
1996	709	61,502	87
1997	861	74,099	86
1998	845	68,706	81
1999	1,095	81,169	74
2000	1,247	59,805	48

Source: WPTT-02-02 (Catches of Artisanal and Industrial fleets in Indonesia: An Update, M. Herrera, **T2** and **T33**)

The number of fresh tuna longliners from Taiwan,China operating in the Indian Ocean was estimated by assuming that:

[a] The longliners based in Indonesia (estimated in **2 [A]**) do not unload catches to ports out of this country: This is likely to be the case considering the proximity of the fishing grounds exploited by this fleet and the type of licenses issued in Indonesia, which bound the vessels to unload all catches to given ports in the country.

[b] The longliners from Taiwan,China not based in Indonesia unload their catches to different ports in the Indian Ocean, depending on the distance from the port to the fishing grounds, the availability of flights to Japan, etc. This has be confirmed from vessel activity records collected in Phuket, Penang and Colombo, with landings from given vessels recorded in the three ports.

The average catches of domestic fresh tuna longliners from Indonesia are shown in **T60**.

NEW ESTIMATES

The number of fresh tuna longliners from Taiwan,China operating in the Indian Ocean (besides Indonesia) was estimated according to average catches estimated for the Indonesian domestic fleet (**T60**) and the total catches of Taiwanese longliners estimated in the Indian Ocean (Phuket, Penang and Colombo) (**T61**):

no LL TWN $Year_x$ = Catches TWN (LKA, MYS, THA) $Year_x$ *Average Catch IDN $Year_x$

Some 200 to 500 longliners from Taiwan,China were estimated to operate in the Indian Ocean during 1989-2000, depending on the year.

T61 Number of Taiwanese fresh tuna longliners based in ports in Thailand, Malaysia and Sri Lanka from 1989 to 2000.

Year	TWN-THA	TWN-MYS	TWN-LKA	TOTAL	no LL
1989		15,678		15,678	187
1990		20,303	1,700	22,003	284
1991		18,624	386	19,011	268
1992		21,101	998	22,099	298
1993		25,487	748	26,235	429
1994	681	36,751	271	37,703	489
1995	1,550	33,917	226	35,693	438
1996	2,653	30,984	741	34,378	396
1997	1,690	29,705	3,321	34,716	404
1998	2,264	27,188	806	30,258	372
1999	3,322	14,383	797	18,502	250
2000	2,478	9,804	1,777	14,059	293

Source: T24, T39, T52 and **T60**

3 Estimation of the catches of deep-freezing longliners NEI (Not Elsewhere Included) operating in the Indian Ocean

a/ Craft Statistics

BASIC DATA

T1 Number of deep-freezing longliners operating in the Indian Ocean under flags of non-reporting countries (1988-2000)

Year	Gear	BLZ	GNQ	HND	PAN	BEL	CHE	CRI	GIN	HUN	KEN	KHM	LKA	MOZ	SGP	VCT	VEN	VUT	TOTAL	sum	factor
1988	LL			6															6	6	1.00
1989	LL			8															8	8	1.00
1990	LL																		0	0	
1991	LL			1															1	1	1.00
1992	LL			4															4	4	1.00
1993	LL			4															4	4	1.00
1994	LL			7															7	7	1.00
1995	LL	2		18															20	20	1.00
1996	LL	1		25	1														27	27	1.00
1997	LL	9	7	35	2	1	1		1					1		1		1	59	59	1.00
1998	LL	38	25	66	3			1			2	1			3	1	1		139	141	0.99
1999	LL	30	26	61	6	1					2	5	1		2	1	1		134	136	0.99
2000	LL	55	24	56	12					1		3			1	1			149	153	0.97

Source: IOTC Vessel Record

T2 Number of deep-freezing longliners putting in to Port Louis (Mauritius) operating in the Indian Ocean under flags of non-reporting countries (1988-2000)

Year	Gear	BLZ	CRI	GNQ	HND	HUN	KHM	MOZ	PAN	VCT	VUT	Other NEI	TOTAL
1988	LL				6								6
1989	LL				8								8
1990	LL												0
1991	LL				1								1
1992	LL				4								4
1993	LL				4								4
1994	LL				7								7
1995	LL				5								5
1996	LL				16							8	24
1997	LL	1		3	17			1			1		23
1998	LL	7	1	12	24					1			45
1999	LL	7		6	18		1		2				34
2000	LL	5		3	10	1	2		5				26

Source: Albion Fisheries Research Centre

T3 Number of deep-freezing longliners licensed to operate within the EEZ of India from 1989 to 2000

Year	Gear	HND	HKG	TOTAL
1989	LL	4		4
1990	LL	4		4
1991	LL	4		4
1992	LL	23		23
1993	LL	28		28
1994	LL	12		12
1995	LL	18		18
1996	LL		2	2
1997	LL		2	2
1998	LL	7		7
1999	LL	7		7
2000	LL	7		7

Source: Fishery Survey of India (FSI)

T4 Number of deep-freezing longliners putting in to Jurong fishing port (Singapore) operating in the Indian Ocean under flags of non-reporting countries (1995-2000)

Year	Gear	BLZ	GNQ	HND	PAN	BEL	CHE	GIN	KHM	LKA	VCT	TOTAL
1995	LL	2		18								20
1996	LL	1		25	1							27
1997	LL	6	5	6	1	1	1	1	0	0	1	22
1998	LL	15	3	10	2				1		1	32
1999	LL	5	7	13	2	1			3	1	1	33
2000	LL	15	3	7							1	26

Source: Agri-food and Veterinary Authority of Singapore (AVA)

T5 Number of deep-freezing longliners operating within the IOTC Area under the flag of Belize (2000)

Year	Gear	BLZ(IO)	BLZ(IPO)	BLZ(IPAO)	BLZ
2000	LL	40	13	46	62

Source: International Merchant Marine Registry of Belize (INMARBE)

The number of deep-freezing longliners under flags of non-reporting countries operating within the IOTC Area is shown in **T1**. The information in **T1**, from the Vessel Record, was obtained from several sources, in form of lists of ships licensed to operate in the countries EEZ, putting in to ports in the country or direct reports from the countries of registration of the ships. Although the completeness of the vessel record is thought fair for the last three years, this is not the case for years before 1998 in which the reporting of vessel records to the IOTC was not obligatory.

Honduras (HND), Belize (BLZ), Equatorial Guinea (GNQ) and Panama (PAN) are the most common flags under which non-reporting longliners operate in recent years. The vessels recorded under less common flags as Belgium (BEL), Switzerland (CHE), Costa Rica (CRI), Guinea (GIN), Hungary (HUN) and Venezuela (VEN) were possibly registered under different countries their identification mistakenly recorded in the country reporting the information to the IOTC.

It is worth mention that the total numbers recorded in **T1** are sometimes different (columns TOTAL and sum) due to individual vessels accounted for under two or more flags as a consequence of reflagging. In the column sum the actual total number of vessels operating is recorded.

The number of foreign longliners putting in to ports in Mauritius, India and Singapore is displayed in **T2**, **T3** and **T4**. The number of deep-freezing longliners operating under the flag of Belize within the IOTC Area is recorded in **T5,** as reported by the country of registration of the vessels. The total number needed to be estimated due to reporting of vessels licensed to operate in more than one ocean. The following method was used to estimate the total number:

no BLZ LL 2000 Indian Ocean = no BLZ LL 2000 licensed Indian Ocean + (1/2 * no BLZ LL 2000 licensed Indian and Pacific oceans) + (1/3 * no BLZ LL 2000 licensed Atlantic, Indian and Pacific oceans)

NEW ESTIMATES

T6 Number of deep-freezing longliners operating in the Indian Ocean under flags of non-reporting countries (1988-2000)

Year	Gear	BLZ	GNQ	HND	PAN	BEL	CHE	CRI	GIN	HUN	KEN	KHM	LKA	MOZ	SGP	VCT	VEN	VUT	TOTAL
1988	LL	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6
1989	LL	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8
1990	LL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1991	LL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
1992	LL	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1993	LL	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
1994	LL	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7
1995	LL	2	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
1996	LL	1	0	25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	27
1997	LL	9	7	35	2	1	1	0	1	0	0	0	0	1	0	1	0	1	59
1998	LL	37	25	65	3	0	0	1	0	0	2	1	0	0	3	1	1	0	139
1999	LL	30	26	60	6	1	0	0	0	0	2	5	1	0	2	1	1	0	135
2000	LL	54	23	55	12	0	0	0	0	1	0	3	0	0	1	1	0	0	150

Source: T1

T7 Number of deep-freezing longliners operating in the Indian Ocean under flags of non-reporting countries (1998-2000)

Year	Gear	BLZ	GNQ	HND	PAN	BEL	CHE	CRI	GIN	HUN	KEN	KHM	LKA	MOZ	SGP	VCT	VEN	VUT	TOTAL
1998	LL	42	29	74	3	0	0	1	0	0	2	1	0	0	3	1	1	0	159
1999	LL	34	30	69	7	1	0	0	0	0	2	6	1	0	2	1	1	0	155
2000	LL	62	26	63	14	0	0	0	0	1	0	3	0	0	1	1	0	0	172
						AGGREGATED AS NEI													

Source: T5 and **T6**

T8 Number of deep-freezing longliners operating in the Indian Ocean under flags of non-reporting countries (1998-2000)

Year	Gear	BLZ	GNQ	HND	PAN	NEI	TOTAL
1998	LL	42	29	74	3	10	159
1999	LL	34	30	69	7	15	155
2000	LL	62	26	63	14	7	172

Source: T7

T9 Proportion of longliners per flag and year operating within the IOTC Area of Competence from 1998 to 2000

Year	Gear	BLZ	GNQ	HND	PAN	NEI	TOTAL
1998	LL	0.27	0.18	0.47	0.02	0.06	1.00
1999	LL	0.22	0.19	0.44	0.04	0.10	1.00
2000	LL	0.36	0.15	0.37	0.08	0.04	1.00

Source: T8

The figures obtained from the IOTC Vessel Record (**T1**) were used as basis to estimate the number of deep-freezing longliners operating in the IOTC Area of Competence. Considering the uneven reporting over time, with numbers thought much more accurate in recent years, the information available from the different sources was used to obtain better estimates on the number of longliners operating. This was achieved by following the steps below:

[1] Removal of vessels reported to operate under different flags during single years (**T6**): The figures in **T1** were re-calculated by distributing proportionally the total number of vessels operating (in **sum**) among the different flags of operation:

no LL $Year_x$ $Flag_y$ = Total no LL $Year_x$ besides duplicates (T1 sum) * no LL $Year_x$ $Flag_y$ (T1) / Total no LL $Year_x$ with duplicates (T1 TOTAL)

[2] Re-estimation of 1998-2000 number of longliners operating (**T7** and **T8**): The number of longliners recorded in **T6** was raised according to the number of longliners reported operated within the IOTC Area in 2000 by Belize (**T5**). This was made on the assumption that the numbers reported by the country of registration represented the total number of longliners operating in the Area. The same was applied to other fleets, assuming the same levels of underreporting for all data gathered at the IOTC Vessel Record. The estimation was conducted as follows:

[a] Estimation of Belize Multiplier (2000): Obtained by dividing the number of longliners presumed to operate in the IOTC Area, from T5, by the number of longliners of Belize recorded in the Vessel Record:

BLZ Multiplier 2000 = Total no LL BLZ 2000 (T5) / Total no LL BLZ 2000 (T6) = 1.15

[b] Raising of 1998-2000 figures according to the Belize Multiplier in 2000 (**T7**): The number of vessels during 1998-2000 was raised according to the BLZ Multiplier on the assumption that the same levels of reporting occurred from 1998 to 2000. This is confirmed by the fact that the information in the vessel record come from the same countries and institutions during the referred period, especially Seychelles, Mauritius, Singapore and the International Commission for the Conservation of Atlantic Tunas (ICCAT), whose reports made up the bulk of the vessel record.

no LL $Year_x$ $Flag_y$ = no LL $Year_x$ $Flag_y$ Vessel Record (T6) * BLZ Multiplier 2000

[c] Aggregation of longliners reported under inconsistent or poorly represented flags (**T8**): The vessels reported under different flags were aggregated under NEI (Not Elsewhere Included) because of them thought to have originated from wrong reports or from poorly represented flags.

T10 Proportion of vessel records reported from Mauritius and Singapore in relation with the total number of vessels recorded in the IOTC vessel record for the period 1998-2000

Year	MUS	SGP
2000	0.17	0.17
1999	0.23	0.24
1998	0.32	0.23

Source: T1, T2 and **T4**

T11 Total number of longliners operating in the IOTC Area from 1995 to 1997 estimated according to the proportion between the number of longliners reported by Singapore and the total number in the Vessel Record during the referred period.

Year	Gear	NEI SGP	TOTAL	%
1995	LL	20	99	0.20
1996	LL	27	134	0.20
1997	LL	22	109	0.20
1998	LL	32	159	0.20
1999	LL	33	155	0.21
2000	LL	26	172	0.15

Source: T4 and **T8**

T12 Number of deep-freezing longliners operating in the Indian Ocean under flags of non-reporting countries (1995-1997)

Year	Gear	BLZ	GNQ	HND	PAN	NEI	TOTAL
1995	LL	26	18	47	2	6	99
1996	LL	36	24	63	3	9	134
1997	LL	29	20	51	2	7	109

Source: T11 and **T9**

[3] Re-estimation of 1995-1997 number of longliners operating (**T12**): The proportion of longliners reported to put in to Jurong (Singapore) and Port Louis (Mauritius) in relation to the total number of longliners in the Vessel Record from 1998 to 2000 is shown in **T10** (former data) and **T11** (new estimates). The fairly stable proportions obtained in the case of Singapore led to assuming that the 1998 proportion could be used to estimate the number of longliners operating for the period 1995-97. The new totals obtained are shown in T11 (1995-97). These totals were break to estimate the number of longliners according to the flag under which they operated also on the basis of 1998 proportions (**T9**). This was made on the assumption that the composition of the fleet had been more or less stable from 1995 to 1997. New estimates for 1995-97 can be found in **T12**.

SGP Multiplier Year$_{x\ (1998\text{-}2000)}$ (T11) = no LL calling to Jurong Year$_x$ / Total no LL Vessel Record Year$_x$

Total no LL Year$_{x\ (1995\text{-}97)}$ (T11) = no LL calling to Jurong Year$_x$ / SGP Multiplier 1998

no LL Year$_x$ Flag$_{y\ (1995\text{-}97)}$ (T12) = Total no LL Year$_x$ (T11) * Proportion Flag$_y$ 1998 (T9)

[4] Re-estimation of 1988-1994 number of longliners operating (**T13**): The reporting of vessel information during this years was very scarce, with almost all records coming from Mauritius and India. The number of vessels reported to operate in Mauritius in relation to the total number of longliners in the Vessel Record is shown in T13 (1995-2000). The lack of reliable data for the period, with a drop in the reporting of vessels from Mauritius before 1996 probably due to the only reporting of licensed vessels before that year, led to estimate the new numbers as follows:

Total no LL 1988 = no LL 1998 reported MUS * Average Proportion LL reported MUS from 1995-2000

Total no LL Year$_{x\ (1989\text{-}94)}$ = Total no LL Year$_{(x\text{-}1)}$ + (Total no LL 1995 - Total no LL 1988) / (1995-1988)

The final numbers obtained are shown in **T13**. Thus, a gradual increase in the number of longliners from non-reporting countries operating in the IOTC Area was assumed for the period 1988-94. No estimation on the number of vessels per flag was conducted for this period considering the lack of information available, aggregating all estimates under NEI (Not Elsewhere Included).

T13 Total number of longliners operating in the IOTC Area from 1988 to 1994 estimated according to the the number of longliners reported by Mauritius (1995-2000)

Year	Gear	NEI MUS	TOTAL	%
1988	LL	6	33	0.18
1989	LL	8	42	0.19
1990	LL	0	52	0.00
1991	LL	1	61	0.02
1992	LL	4	71	0.06
1993	LL	4	80	0.05
1994	LL	7	90	0.08
1995	LL	5	99	0.05
1996	LL	24	134	0.18
1997	LL	23	109	0.21
1998	LL	45	159	0.28
1999	LL	34	155	0.22
2000	LL	26	172	0.15
			Av. $_{95\text{-}00}$	0.18

Source: T2, T8 and **T12**

T14 Total number of foreign deep-freezing longliners licensed to operate in the EEZ of India from 1989 to 2000

Year	Gear	HND	HKG
1988	LL	8	
1989	LL	30	
1990	LL	58	
1991	LL	22	
1992	LL	23	
1993	LL	28	
1994	LL	17	
1995	LL	18	
1996	LL		2
1997	LL		2
1998	LL	7	
1999	LL	7	
2000	LL	7	

Source: IOTC Fishing Craft Statistics Database

T15 Number of deep-freezing longliners operating in the Indian Ocean under flags of non-reporting countries (1988-2000)

Year	Gear	BLZ	GNQ	HND	PAN	NEI	TOTAL
1988	LL					25	25
1989	LL					12	12
1990	LL					0	0
1991	LL					39	39
1992	LL					48	48
1993	LL					52	52
1994	LL					73	73
1995	LL	26	18	29	2	6	81
1996	LL	36	24	63	3	7	132
1997	LL	29	20	51	2	5	107
1998	LL	42	29	67	3	10	152
1999	LL	34	30	62	7	15	148
2000	LL	62	26	56	14	7	165

Source: T13 and **T14**

[5] Removal of deep-freezing longliners licensed to operate in India:(**T15**): The vessels from Honduras and Hong Kong reported to operate in India (**T14**) were removed from the final numbers estimateddue to the catches and craft statistics of these vessels estimated separately (see **[B]** below). Final estimates are shown in **T15**.

b/ Nominal Catches

BASIC DATA

T16 Proportion of deep-freezing longliners from non-reporting countries operating in the Indian Ocean according to the flag operated from 1988 to 2000

Year	Gear	BLZ	GNQ	HND	PAN	NEI	TOTAL
1988	LL					1.00	1.00
1989	LL					1.00	1.00
1990	LL						
1991	LL					1.00	1.00
1992	LL					1.00	1.00
1993	LL					1.00	1.00
1994	LL					1.00	1.00
1995	LL	0.32	0.22	0.35	0.03	0.08	1.00
1996	LL	0.27	0.18	0.47	0.02	0.05	1.00
1997	LL	0.27	0.18	0.48	0.02	0.05	1.00
1998	LL	0.28	0.19	0.44	0.02	0.07	1.00
1999	LL	0.23	0.20	0.42	0.05	0.10	1.00
2000	LL	0.38	0.16	0.34	0.08	0.04	1.00

Source: T15

The information available regarding the activities of deep-freezing longliners operating under flags of non-reporting countries is very incomplete. Besides some landing and trip information available for some vessels and periods, mainly referring to ships licensed to operate in the EEZ of third countries, no other records are available. Furthermore, these datasets usually refer to short periods covering only fishing in the EEZ of the countries, making it imposible to estimate total catches or vessel activity from them.

Nevertheless, it is known that the bulk of the fleet is made up by ex-Taiwanese longliners, still under Taiwanese ownership. This led to the assumption that the vessel activity and catches of Taiwanese longliners can be used to estimate the catches of non-reporting longliners. The total catches and contribution of the different species can be found in **T17**. The number of Taiwanese deep-freezing longliners active per year and average catches estimated per ship are shown in **T18**.

The proportion of deep-freezing longliners active each year according to the flag operated is shown in **T16**.

T17 Nominal catches of longliners of Taiwan,China operating in the IOTC Area of Competence from 1985 to 2000

Fleet	Gear	Year	Area	ALB	BET	BFT	BIL	BLM	BLZ	KGX	LOT	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	TOTAL	YEAR
TWN	LL	1985	F51	5,783	4,457		12	109	487			444				7	733		1,884	13,916	
TWN	LL	1985	F57	372	7,728		114	519	1,563			2,581				37	1,255	2	5,437	19,608	33,524
TWN	LL	1986	F51	7,008	9,374		140	369	2,583			2,363				28	2,025	1	12,318	36,209	
TWN	LL	1986	F57	4,044	7,462		60	390	1,039			2,394				4	1,206	1	3,898	20,498	56,707
TWN	LL	1987	F51	8,459	9,663		180	519	2,947			2,071				3	2,370	17	18,813	45,042	
TWN	LL	1987	F57	4,678	7,974		91	436	1,222			2,199				10	1,461	4	3,500	21,575	66,617
TWN	LL	1988	F51	8,440	13,293		173	405	2,082			1,990				21	3,897		18,907	49,208	
TWN	LL	1988	F57	2,608	6,072		62	331	753			912				38	1,504		3,823	16,103	65,311
TWN	LL	1989	F51	3,567	12,830		1,445	206	1,106			1,264				41	2,160		14,747	37,366	
TWN	LL	1989	F57	3,530	7,104		45	359	829			893				55	1,910	1	7,641	22,367	59,733
TWN	LL	1990	F51	5,232	14,805		247	202	937			787				86	3,067	1	28,163	53,527	
TWN	LL	1990	F57	524	5,942		81	69	245			123				19	777	31	3,387	11,198	64,725
TWN	LL	1991	F51	6,617	23,440		999	228	1,214	42	40	1,517		73		22	4,073	40	27,670	65,975	
TWN	LL	1991	F57	6,485	5,518		245	85	201		40	345		43		12	642	40	3,037	16,693	82,668
TWN	LL	1992	F51	2,824	19,891		600	878	2,163		17	1,371		47		29	7,953	17	51,345	87,135	
TWN	LL	1992	F57	8,279	4,116		370	52	578		20	326		35		47	1,040	20	4,642	19,525	106,660
TWN	LL	1993	F51	9,434	30,279		1,041	183	2,586			4,014		360	915	78	14,228	445	84,249	147,812	
TWN	LL	1993	F57	2,456	9,263		234	59	665			715		261	116	140	1,117	60	3,777	18,863	166,675
TWN	LL	1994	F51	8,404	16,845		533	357	1,127			2,333	248	555	593	57	10,190	170	26,789	68,201	
TWN	LL	1994	F57	6,003	10,887		142	65	293			482	101	106	75	31	2,264	23	7,195	27,667	95,868
TWN	LL	1995	F51	7,725	23,959		427	484	1,722			3,014	494	1,098	1,201	53	16,007	104	20,473	76,761	
TWN	LL	1995	F57	6,484	8,686		104	86	440			623	202	208	152	53	2,254	14	2,596	21,902	98,663
TWN	LL	1996	F51	11,492	19,989		137	288	1,681			2,037	328	1,195	929	46	13,419		24,800	76,341	
TWN	LL	1996	F57	5,438	9,831		34	140	499			929	42	258	72	13	4,201		3,050	24,507	100,848
TWN	LL	1997	F51	12,163	25,950		730	221	2,332			1,308	752	729	750	51	12,537		16,537	74,060	
TWN	LL	1997	F57	3,041	8,195		100	99	658			801	40	94	278	6	4,806		1,837	19,955	94,015
TWN	LL	1998	F51	16,179	30,964		579	306	2,598			1,221	498	938	563	75	12,117		18,264	84,302	
TWN	LL	1998	F57	5,393	8,734		163	151	1,113			1,041	15	369	36	10	4,712		5,152	26,889	111,191
TWN	LL	1999	F51	19,137	26,336		398	184	1,913			1,061	413	1,137	310	44	10,603		13,441	74,977	
TWN	LL	1999	F57	3,377	10,757		215	176	942			678	36	341	93	39	4,124		4,245	25,023	100,000
TWN	LL	2000	F51	18,403	25,852	2	391	153	1,876			989	540	1,231	345	5	10,923		13,199	73,909	
TWN	LL	2000	F57	3,248	10,559	1	210	147	924			633	47	369	103	5	4,248		4,168	24,662	98,571

Source: IOTC Nominal Catches Database

NEW ESTIMATES

T18 Total catches of deep-freezing longliners NEI operating in the IOTC Area of Competence estimated according to the toital number of NEI longliners and average catches of longliners from Taiwan,China operating in the IOTC Area

Fleet	Year	Gear	ClassLow	ClassHigh	ClassType	SHIPS	Catches	AvCatch	TOTAL NEI	CATCH
TWN	1985	LL	100	1000	GRT	127	33,524	264		
TWN	1986	LL	100	1000	GRT	153	56,707	371		
TWN	1987	LL	100	1000	GRT	168	66,617	397		
TWN	1988	LL	100	1000	GRT	187	65,311	349	25	8,707
TWN	1989	LL	100	1000	GRT	263	59,733	227	12	2,825
TWN	1990	LL	100	1000	GRT	272	64,725	238	0	0
TWN	1991	LL	100	1000	GRT	253	82,668	327	39	12,890
TWN	1992	LL	100	1000	GRT	296	106,660	360	48	17,281
TWN	1993	LL	100	1000	GRT	318	166,675	524	52	27,498
TWN	1994	LL	100	1000	GRT	340	95,868	282	73	20,575
TWN	1995	LL	100	1000	GRT	289	98,663	341	81	27,816
TWN	1996	LL	100	1000	GRT	272	100,848	371	132	49,050
TWN	1997	LL	100	1000	GRT	307	94,015	306	107	32,898
TWN	1998	LL	100	1000	GRT	310	111,191	359	152	54,578
TWN	1999	LL	100	1000	GRT	301	100,000	332	148	49,031
TWN	2000	LL	100	1000	GRT	300	98,571	329	165	54,135

Source: T17, IOTC Fishing Craft Statistics Database and **T15**

The catches of deep-freezing longliners operating under flags of non-reporting countries were estimated by following the steps below:

[1] Estimation of the total catches per year: The total catches per year were estimated on the basis of the total number of DFRZ longliners operating and the average catches per ship estimated for Taiwanese longliners (**T18**):

Total Catch DFRZ NEI Year$_x$ = no LL DFRZ NEI Year$_x$ * Average Catch LL TWN Year$_x$

[2] Estimation of area allocation and species breakdown (**T20**): The total catches of DFRZ NEI longliners (**T18**) and the proportions per area and species estimated for Taiwanese DFRZ longliners (**T19**) were used to estimate the catches per area and species of DFRZ NEI longliners:

Catch DFRZ LL NEI Year$_x$ Area$_y$ Species$_z$ = Total Catch DFRZ LL NEI Year$_x$ * Proportion DFRZ LL TWN Year$_x$ Area$_y$ Species$_z$

[3] Assignment of the catches to the respective flags (**T21** to **T26**): The catches estimated in T20 were assigned to the different flags according to the proportions estimated in T16. The following changes were also made:

[a] Catches of longtail tuna recorded aggregated under tunas nei (TUN)

[b] Catches of *Scomberomorus* nei (KGX) changed to wahoo (WAH): the latter is more likely to be caught on longline operations on the high seas

[c] Catches of bluefin tuna (BFT) and Southern bluefin tuna (SBF) recorded under SBF: it is thought that current reports of catches of BFT in the Southern Indian Ocean are made in order to escape from regulations on SBF (CCSBT)

Catch DFRZ LL NEI Flag$_t$ Year$_x$ Area$_y$ Species$_z$ = Catch DFRZ LL NEI Year$_x$ Area$_y$ Species$_z$ (T20) * Proportion DFRZ LL Flag$_t$ Year$_x$ (T16)

T19 Contribution of the different species to the catches of Taiwanese deep-freezing longliners according to the year and IOTC Area

Fleet	Gear	Year	Area	ALB	BET	BFT	BIL	BLM	BLZ	KGX	LOT	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	TOTAL
TWN	LL	1985	F51	0.17	0.13	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.06	
TWN	LL	1985	F57	0.01	0.23	0.00	0.00	0.02	0.05	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.04	0.00	0.16	1.00
TWN	LL	1986	F51	0.12	0.17	0.00	0.00	0.01	0.05	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.04	0.00	0.22	
TWN	LL	1986	F57	0.07	0.13	0.00	0.00	0.01	0.02	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.02	0.00	0.07	1.00
TWN	LL	1987	F51	0.13	0.15	0.00	0.00	0.01	0.04	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.04	0.00	0.28	
TWN	LL	1987	F57	0.07	0.12	0.00	0.00	0.01	0.02	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.05	1.00
TWN	LL	1988	F51	0.13	0.20	0.00	0.00	0.01	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.06	0.00	0.29	
TWN	LL	1988	F57	0.04	0.09	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.06	1.00
TWN	LL	1989	F51	0.06	0.21	0.00	0.02	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.04	0.00	0.25	
TWN	LL	1989	F57	0.06	0.12	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.03	0.00	0.13	1.00
TWN	LL	1990	F51	0.08	0.23	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.44	
TWN	LL	1990	F57	0.01	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.05	1.00
TWN	LL	1991	F51	0.08	0.28	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.05	0.00	0.33	
TWN	LL	1991	F57	0.08	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.04	1.00
TWN	LL	1992	F51	0.03	0.19	0.00	0.01	0.01	0.02	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.07	0.00	0.48	
TWN	LL	1992	F57	0.08	0.04	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.04	1.00
TWN	LL	1993	F51	0.06	0.18	0.00	0.01	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.09	0.00	0.51	
TWN	LL	1993	F57	0.01	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.02	1.00
TWN	LL	1994	F51	0.09	0.18	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.00	0.01	0.01	0.00	0.11	0.00	0.28	
TWN	LL	1994	F57	0.06	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.08	1.00
TWN	LL	1995	F51	0.08	0.24	0.00	0.00	0.00	0.02	0.00	0.00	0.03	0.01	0.01	0.01	0.00	0.16	0.00	0.21	
TWN	LL	1995	F57	0.07	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.03	1.00
TWN	LL	1996	F51	0.11	0.20	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.01	0.01	0.00	0.13	0.00	0.25	
TWN	LL	1996	F57	0.05	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.03	1.00
TWN	LL	1997	F51	0.13	0.28	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.13	0.00	0.18	
TWN	LL	1997	F57	0.03	0.09	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.02	1.00
TWN	LL	1998	F51	0.15	0.28	0.00	0.01	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.11	0.00	0.16	
TWN	LL	1998	F57	0.05	0.08	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.05	1.00
TWN	LL	1999	F51	0.19	0.26	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.11	0.00	0.13	
TWN	LL	1999	F57	0.03	0.11	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.04	1.00
TWN	LL	2000	F51	0.19	0.26	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.01	0.01	0.00	0.00	0.11	0.00	0.13	
TWN	LL	2000	F57	0.03	0.11	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.04	0.00	0.04	1.00

Source: T17

T20 Total catches estimated of deep-freezing longliners operating under flags of non-reporting countries during 1988-2000

Fleet		Gear	Year	Area	ALB	BET	BFT	BIL	BLM	BLZ	KGX	LOT	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	TOTAL
NEI	DFRZ	LL	1988	F51	1,125	1,772	0	23	54	278	0	0	265	0	0	0	3	520	0	2,521	
NEI	DFRZ	LL	1988	F57	348	810	0	8	44	100	0	0	122	0	0	0	5	201	0	510	8,707
NEI	DFRZ	LL	1989	F51	169	607	0	68	10	52	0	0	60	0	0	0	2	102	0	697	
NEI	DFRZ	LL	1989	F57	167	336	0	2	17	39	0	0	42	0	0	0	3	90	0	361	2,825
NEI	DFRZ	LL	1990	F51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NEI	DFRZ	LL	1990	F57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEI	DFRZ	LL	1991	F51	1,032	3,655	0	156	36	189	7	6	237	0	11	0	3	635	6	4,315	
NEI	DFRZ	LL	1991	F57	1,011	860	0	38	13	31	0	6	54	0	7	0	2	100	6	474	12,890
NEI	DFRZ	LL	1992	F51	458	3,223	0	97	142	350	0	3	222	0	8	0	5	1,289	3	8,319	
NEI	DFRZ	LL	1992	F57	1,341	667	0	60	8	94	0	3	53	0	6	0	8	168	3	752	17,281
NEI	DFRZ	LL	1993	F51	1,556	4,995	0	172	30	427	0	0	662	0	59	151	13	2,347	73	13,899	
NEI	DFRZ	LL	1993	F57	405	1,528	0	39	10	110	0	0	118	0	43	19	23	184	10	623	27,498
NEI	DFRZ	LL	1994	F51	1,804	3,615	0	114	77	242	0	0	501	53	119	127	12	2,187	36	5,749	
NEI	DFRZ	LL	1994	F57	1,288	2,337	0	30	14	63	0	0	103	22	23	16	7	486	5	1,544	20,575
NEI	DFRZ	LL	1995	F51	2,178	6,755	0	120	136	485	0	0	850	139	310	339	15	4,513	29	5,772	
NEI	DFRZ	LL	1995	F57	1,828	2,449	0	29	24	124	0	0	176	57	59	43	15	635	4	732	27,816
NEI	DFRZ	LL	1996	F51	5,589	9,722	0	67	140	818	0	0	991	160	581	452	22	6,527	0	12,062	
NEI	DFRZ	LL	1996	F57	2,645	4,782	0	17	68	243	0	0	452	20	125	35	6	2,043	0	1,483	49,050
NEI	DFRZ	LL	1997	F51	4,256	9,080	0	255	77	816	0	0	458	263	255	262	18	4,387	0	5,787	
NEI	DFRZ	LL	1997	F57	1,064	2,868	0	35	35	230	0	0	280	14	33	97	2	1,682	0	643	32,898
NEI	DFRZ	LL	1998	F51	7,941	15,199	0	284	150	1,275	0	0	599	244	460	276	37	5,948	0	8,965	
NEI	DFRZ	LL	1998	F57	2,647	4,287	0	80	74	546	0	0	511	7	181	18	5	2,313	0	2,529	54,578
NEI	DFRZ	LL	1999	F51	9,383	12,913	0	195	90	938	0	0	520	202	557	152	22	5,199	0	6,590	
NEI	DFRZ	LL	1999	F57	1,656	5,274	0	105	86	462	0	0	332	18	167	46	19	2,022	0	2,081	49,031
NEI	DFRZ	LL	2000	F51	10,107	14,198	1	215	84	1,030	0	0	543	297	676	189	3	5,999	0	7,249	
NEI	DFRZ	LL	2000	F57	1,784	5,799	1	115	81	507	0	0	348	26	203	57	3	2,333	0	2,289	54,135

Source: T18 and **T19**

T21 Total catches estimated of deep-freezing longliners operating under flags of non-reporting countries during 1988-2000 (after aggregation)

Fleet		Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
NEI	DFRZ	LL	1988	F51	1,125	1,772	23	54	278	265	0	0	0	3	520	0	2,521	0	
NEI	DFRZ	LL	1988	F57	348	810	8	44	100	122	0	0	0	5	201	0	510	0	8,707
NEI	DFRZ	LL	1989	F51	169	607	68	10	52	60	0	0	0	2	102	0	697	0	
NEI	DFRZ	LL	1989	F57	167	336	2	17	39	42	0	0	0	3	90	0	361	0	2,825
NEI	DFRZ	LL	1990	F51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
NEI	DFRZ	LL	1990	F57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NEI	DFRZ	LL	1991	F51	1,032	3,655	156	36	189	237	0	11	0	3	635	12	4,315	7	
NEI	DFRZ	LL	1991	F57	1,011	860	38	13	31	54	0	7	0	2	100	12	474	0	12,890
NEI	DFRZ	LL	1992	F51	458	3,223	97	142	350	222	0	8	0	5	1,289	6	8,319	0	
NEI	DFRZ	LL	1992	F57	1,341	667	60	8	94	53	0	6	0	8	168	6	752	0	17,281
NEI	DFRZ	LL	1993	F51	1,556	4,995	172	30	427	662	0	59	151	13	2,347	73	13,899	0	
NEI	DFRZ	LL	1993	F57	405	1,528	39	10	110	118	0	43	19	23	184	10	623	0	27,498
NEI	DFRZ	LL	1994	F51	1,804	3,615	114	77	242	501	53	119	127	12	2,187	36	5,749	0	
NEI	DFRZ	LL	1994	F57	1,288	2,337	30	14	63	103	22	23	16	7	486	5	1,544	0	20,575
NEI	DFRZ	LL	1995	F51	2,178	6,755	120	136	485	850	139	310	339	15	4,513	29	5,772	0	
NEI	DFRZ	LL	1995	F57	1,828	2,449	29	24	124	176	57	59	43	15	635	4	732	0	27,816
NEI	DFRZ	LL	1996	F51	5,589	9,722	67	140	818	991	160	581	452	22	6,527	0	12,062	0	
NEI	DFRZ	LL	1996	F57	2,645	4,782	17	68	243	452	20	125	35	6	2,043	0	1,483	0	49,050
NEI	DFRZ	LL	1997	F51	4,256	9,080	255	77	816	458	263	255	262	18	4,387	0	5,787	0	
NEI	DFRZ	LL	1997	F57	1,064	2,868	35	35	230	280	14	33	97	2	1,682	0	643	0	32,898
NEI	DFRZ	LL	1998	F51	7,941	15,199	284	150	1,275	599	244	460	276	37	5,948	0	8,965	0	
NEI	DFRZ	LL	1998	F57	2,647	4,287	80	74	546	511	7	181	18	5	2,313	0	2,529	0	54,578
NEI	DFRZ	LL	1999	F51	9,383	12,913	195	90	938	520	202	557	152	22	5,199	0	6,590	0	
NEI	DFRZ	LL	1999	F57	1,656	5,274	105	86	462	332	18	167	46	19	2,022	0	2,081	0	49,031
NEI	DFRZ	LL	2000	F51	10,107	14,198	215	84	1,030	543	297	677	189	3	5,999	0	7,249	0	
NEI	DFRZ	LL	2000	F57	1,784	5,799	115	81	507	348	26	203	57	3	2,333	0	2,289	0	54,135

Source: T20

T22 Total catches estimated of deep-freezing longliners NEI operating under flags of non-reporting countries during 1995-2000

Fleet		Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
NEI	DFRZ	LL	1995	F51	172	534	10	11	38	67	11	24	27	1	357	2	456	0	
NEI	DFRZ	LL	1995	F57	145	194	2	2	10	14	5	5	3	1	50	0	58	0	2,199
NEI	DFRZ	LL	1996	F51	283	492	3	7	41	50	8	29	23	1	330	0	610	0	
NEI	DFRZ	LL	1996	F57	134	242	1	3	12	23	1	6	2	0	103	0	75	0	2,482
NEI	DFRZ	LL	1997	F51	201	430	12	4	39	22	12	12	12	1	208	0	274	0	
NEI	DFRZ	LL	1997	F57	50	136	2	2	11	13	1	2	5	0	80	0	30	0	1,557
NEI	DFRZ	LL	1998	F51	538	1,029	19	10	86	41	17	31	19	2	403	0	607	0	
NEI	DFRZ	LL	1998	F57	179	290	5	5	37	35	0	12	1	0	157	0	171	0	3,696
NEI	DFRZ	LL	1999	F51	946	1,302	20	9	95	52	20	56	15	2	524	0	665	0	
NEI	DFRZ	LL	1999	F57	167	532	11	9	47	34	2	17	5	2	204	0	210	0	4,945
NEI	DFRZ	LL	2000	F51	421	592	9	4	43	23	12	28	8	0	250	0	302	0	
NEI	DFRZ	LL	2000	F57	74	242	5	3	21	14	1	8	2	0	97	0	95	0	2,257

Source: T16 and **T21**

T23 Total catches estimated of deep-freezing longliners operating under the flag of Belize during 1995-2000

Fleet		Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
BLZ	DFRZ	LL	1995	F51	708	2,195	39	44	158	276	45	101	110	5	1,467	10	1,876	0	
BLZ	DFRZ	LL	1995	F57	594	796	10	8	40	57	19	19	14	5	207	1	238	0	9,040
BLZ	DFRZ	LL	1996	F51	1,510	2,627	18	38	221	268	43	157	122	6	1,764	0	3,259	0	
BLZ	DFRZ	LL	1996	F57	715	1,292	4	18	66	122	6	34	9	2	552	0	401	0	13,254
BLZ	DFRZ	LL	1997	F51	1,154	2,462	69	21	221	124	71	69	71	5	1,189	0	1,569	0	
BLZ	DFRZ	LL	1997	F57	289	778	9	9	62	76	4	9	26	1	456	0	174	0	8,920
BLZ	DFRZ	LL	1998	F51	2,211	4,232	79	42	355	167	68	128	77	10	1,656	0	2,496	0	
BLZ	DFRZ	LL	1998	F57	737	1,194	22	21	152	142	2	50	5	1	644	0	704	0	15,196
BLZ	DFRZ	LL	1999	F51	2,184	3,006	45	21	218	121	47	130	35	5	1,210	0	1,534	0	
BLZ	DFRZ	LL	1999	F57	385	1,228	25	20	108	77	4	39	11	4	471	0	484	0	11,413
BLZ	DFRZ	LL	2000	F51	3,793	5,328	81	32	387	204	111	254	71	1	2,251	0	2,720	0	
BLZ	DFRZ	LL	2000	F57	669	2,176	43	30	190	130	10	76	21	1	876	0	859	0	20,317

Source: T16 and **T21**

T24 Total catches estimated of deep-freezing longliners operating under the flag of Equatorial Guinea during 1995-2000

Fleet		Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
GNQ	DFRZ	LL	1995	F51	478	1,483	26	30	107	187	31	68	74	3	991	6	1,267	0	
GNQ	DFRZ	LL	1995	F57	401	538	6	5	27	39	13	13	9	3	140	1	161	0	6,108
GNQ	DFRZ	LL	1996	F51	1,020	1,775	12	26	149	181	29	106	82	4	1,192	0	2,202	0	
GNQ	DFRZ	LL	1996	F57	483	873	3	12	44	82	4	23	6	1	373	0	271	0	8,955
GNQ	DFRZ	LL	1997	F51	780	1,664	47	14	149	84	48	47	48	3	804	0	1,060	0	
GNQ	DFRZ	LL	1997	F57	195	525	6	6	42	51	3	6	18	0	308	0	118	0	6,027
GNQ	DFRZ	LL	1998	F51	1,494	2,859	53	28	240	113	46	87	52	7	1,119	0	1,687	0	
GNQ	DFRZ	LL	1998	F57	498	807	15	14	103	96	1	34	3	1	435	0	476	0	10,268
GNQ	DFRZ	LL	1999	F51	1,893	2,605	39	18	189	105	41	112	31	4	1,049	0	1,329	0	
GNQ	DFRZ	LL	1999	F57	334	1,064	21	17	93	67	4	34	9	4	408	0	420	0	9,891
GNQ	DFRZ	LL	2000	F51	1,616	2,269	34	13	165	87	47	108	30	0	959	0	1,159	0	
GNQ	DFRZ	LL	2000	F57	285	927	18	13	81	56	4	32	9	0	373	0	366	0	8,653

Source: T16 and **T21**

T25 Total catches estimated of deep-freezing longliners operating under the flag of Honduras during 1995-2000

Fleet		Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
HND	DFRZ	LL	1995	F51	762	2,364	42	48	170	297	49	108	119	5	1,580	10	2,020	0	
HND	DFRZ	LL	1995	F57	640	857	10	8	43	61	20	21	15	5	222	1	256	0	9,736
HND	DFRZ	LL	1996	F51	2,653	4,615	32	66	388	470	76	276	214	11	3,098	0	5,726	0	
HND	DFRZ	LL	1996	F57	1,256	2,270	8	32	115	214	10	60	17	3	970	0	704	0	23,284
HND	DFRZ	LL	1997	F51	2,027	4,325	122	37	389	218	125	122	125	9	2,090	0	2,756	0	
HND	DFRZ	LL	1997	F57	507	1,366	17	17	110	134	7	16	46	1	801	0	306	0	15,670
HND	DFRZ	LL	1998	F51	3,519	6,735	126	67	565	266	108	204	122	16	2,636	0	3,973	0	
HND	DFRZ	LL	1998	F57	1,173	1,900	35	33	242	226	3	80	8	2	1,025	0	1,121	0	24,185
HND	DFRZ	LL	1999	F51	3,923	5,399	82	38	392	218	85	233	64	9	2,174	0	2,755	0	
HND	DFRZ	LL	1999	F57	692	2,205	44	36	193	139	7	70	19	8	845	0	870	0	20,500
HND	DFRZ	LL	2000	F51	3,434	4,824	73	29	350	185	101	230	64	1	2,038	0	2,463	0	
HND	DFRZ	LL	2000	F57	606	1,970	39	27	172	118	9	69	19	1	793	0	778	0	18,393

Source: T16 and **T21**

T26 Total catches estimated of deep-freezing longliners operating under the flag of Panama during 1995-2000

Fleet		Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
PAN	DFRZ	LL	1995	F51	57	178	3	4	13	22	4	8	9	0	119	1	152	0	
PAN	DFRZ	LL	1995	F57	48	65	1	1	3	5	2	2	1	0	17	0	19	0	733
PAN	DFRZ	LL	1996	F51	122	213	1	3	18	22	3	13	10	0	143	0	264	0	
PAN	DFRZ	LL	1996	F57	58	105	0	1	5	10	0	3	1	0	45	0	33	0	1,075
PAN	DFRZ	LL	1997	F51	94	200	6	2	18	10	6	6	6	0	96	0	127	0	
PAN	DFRZ	LL	1997	F57	23	63	1	1	5	6	0	1	2	0	37	0	14	0	723
PAN	DFRZ	LL	1998	F51	179	343	6	3	29	14	6	10	6	1	134	0	202	0	
PAN	DFRZ	LL	1998	F57	60	97	2	2	12	12	0	4	0	0	52	0	57	0	1,232
PAN	DFRZ	LL	1999	F51	437	601	9	4	44	24	9	26	7	1	242	0	307	0	
PAN	DFRZ	LL	1999	F57	77	246	5	4	22	15	1	8	2	1	94	0	97	0	2,283
PAN	DFRZ	LL	2000	F51	843	1,184	18	7	86	45	25	56	16	0	500	0	605	0	
PAN	DFRZ	LL	2000	F57	149	484	10	7	42	29	2	17	5	0	195	0	191	0	4,515

Source: T16 and **T21**

4 Estimation of the catches of deep-freezing longliners NEI (Not Elsewhere Included) licensed to operate in India

a/ Craft Statistics

T1 Number of deep-freezing longliners licensed to operate within the EEZ of India (1989-2000)

Country	RCountry	Year	Gear	ClassLow	ClassHigh	lassTypeCod	SumOfQty
HND	IND	1989	LL			UNCL	4
HND	IND	1990	LL			UNCL	4
HND	IND	1991	LL			UNCL	4
HND	IND	1992	LL	200	500	GRT	8
HND	IND	1992	LL	500	1000	GRT	15
HND	IND	1993	LL	200	500	GRT	9
HND	IND	1993	LL	500	1000	GRT	19
HND	IND	1994	LL	200	500	GRT	1
HND	IND	1994	LL	500	1000	GRT	11
HND	IND	1995	LL	200	500	GRT	5
HND	IND	1995	LL	500	1000	GRT	13
HKG	IND	1996	LL	500	1000	GRT	2
HKG	IND	1997	LL	500	1000	GRT	2
HND	IND	1998	LL	500	1000	GRT	7
HND	IND	1999	LL	500	1000	GRT	7
HND	IND	2000	LL	500	1000	GRT	7

Source: IOTC Fishing Craft Statistics Database (from Fishery Survey of India)

The number of ships operating under charter or joint venture arrangements in India recorded in the Fishing Craft Statistics database at the IOTC (**T1**) was completed and updated from information presented by the Fisheries Survey of India (FSI) during the 6th Expert Consultation on Indian Ocean Tunas (**T2**). These data were directly input to the database. Longliners from Panama, Honduras and Hong Kong operated within the Indian EEZ during 1985-2000. All longliners operating from 1985 to 1990 were recorded as NEI (Not Elsewhere Included) due to the lack of detailed information regarding the number of longliners under Panama and Honduras operated. Longliners from Honduras and Hong-Kong operated since that year and are recorded under the specific flag.

T2 Number of deep-freezing longliners licensed to operate within the EEZ of India (1985-2000)

Country	RCountry	Year	Gear	ClassLow	ClassHigh	ClassType	Qty
NEI	IND	1985	LL	200	400	GRT	1
NEI	IND	1986	LL	200	400	GRT	1
NEI	IND	1986	LL	400	600	GRT	9
NEI	IND	1987	LL	200	400	GRT	1
NEI	IND	1987	LL	400	600	GRT	3
NEI	IND	1987	LL	600	800	GRT	5
NEI	IND	1988	LL	200	400	GRT	2
NEI	IND	1988	LL	400	600	GRT	4
NEI	IND	1988	LL	600	800	GRT	2
NEI	IND	1989	LL	200	400	GRT	2
NEI	IND	1989	LL	400	600	GRT	13
NEI	IND	1989	LL	600	800	GRT	15
NEI	IND	1990	LL	400	600	GRT	13
NEI	IND	1990	LL	600	800	GRT	45
HND	IND	1991	LL	200	400	GRT	1
HND	IND	1991	LL	400	600	GRT	2
HND	IND	1991	LL	600	800	GRT	19
HND	IND	1992	LL	200	400	GRT	2
HND	IND	1992	LL	400	600	GRT	6
HND	IND	1992	LL	600	800	GRT	15
HND	IND	1993	LL	200	400	GRT	3
HND	IND	1993	LL	400	600	GRT	7
HND	IND	1993	LL	600	800	GRT	18
HND	IND	1994	LL	200	400	GRT	2
HND	IND	1994	LL	400	600	GRT	7
HND	IND	1994	LL	600	800	GRT	5
HND	IND	1994	LL	800	1000	GRT	3
HND	IND	1995	LL	200	400	GRT	2
HND	IND	1995	LL	400	600	GRT	7
HND	IND	1995	LL	600	800	GRT	6
HND	IND	1995	LL	800	1000	GRT	3
HKG	IND	1996	LL	600	800	GRT	2
HKG	IND	1997	LL	600	800	GRT	2
HND	IND	1998	LL	600	800	GRT	7
HND	IND	1999	LL	600	800	GRT	7
HND	IND	2000	LL	600	800	GRT	7

Source: T1 and IPTP Collective Volume 9, Proceedings of the Sixth Expert Consultation on Indian Ocean Tunas (The Oceanic Tuna Fishery in India - An Update, V.S.Somvanshi and M.E.John)

b/ Nominal Catches

BASIC DATA

T3 Number of deep-freezing longliners licensed to operate within the EEZ of India and total catches estimated (1989-2000)

Country	RCountry	Year	Gear	Qty	AvCatch	Total
NEI	IND	1985	LL	1	264	264
NEI	IND	1986	LL	10	371	3,706
NEI	IND	1987	LL	9	397	3,569
NEI	IND	1988	LL	8	349	2,794
NEI	IND	1989	LL	30	227	6,814
NEI	IND	1990	LL	58	238	13,802
HND	IND	1991	LL	22	327	7,189
HND	IND	1992	LL	23	360	8,288
HND	IND	1993	LL	28	524	14,676
HND	IND	1994	LL	17	282	4,793
HND	IND	1995	LL	18	341	6,145
HND	IND	1996	LL	0	371	0
HND	IND	1997	LL	0	306	0
HND	IND	1998	LL	7	359	2,511
HND	IND	1999	LL	7	332	2,326
HND	IND	2000	LL	7	329	2,300
HKG	IND	1996	LL	2	371	742
HKG	IND	1997	LL	2	306	612

Source: T2, **T18** (**3**)

T4 Catch (t dressed weight) statistics of chartered vessels operated in Indian waters, 1985 - 1994

Year	Yellowfin	Bigeye	Billfish	Other	Total
1985	3		2	2	7
1986	839	86	169	809	1,953
1987	473	66	263	104	906
1988	627	11	216	93	947
1989	2,891	56	609	434	3,986
1990	10,352	256	1,478	485	12,571
1991	3,784	343	705	366	5,198
1992	4,349	139	655	528	5,671
1993	2,071	62	461	174	2,768
1994	1,344	164	866	205	2,579

Source: IPTP Collective Volume 9, Proceedings of the Sixth Expert Consultation on Indian Ocean Tunas (The Oceanic Tuna Fishery in India - An Update, V.S.Somvanshi and M.E.John)

The FSI has been reporting the catches of Panama, Honduras and Hong-Kong longliners since the beginning of their activities. The catches reported for the period 1985 to 1994 are shown in **T4** and those from 1989-2000, recorded in the IOTC nominal catches database, in **T5**. When these catches are compared with those assessed from the total number of longliners operating and average catches of Taiwanese longliners (**T3**), whose way of operation is presumed similar, the results differ dramatically. This difference is thought to originating from partial reports of catches from the longliners skippers to the FSI, probably referring only to fishing in the Indian EEZ.

In light of these results, considering the similarities between these and the Taiwanese longliners, new total catches and catches per species were re-estimated (**T6**, **T7** and **T8**) according to the total number of longliners operating in India, average catches of Taiwanese longliners (**T3**) and species and area allocation for this fleet (**T19, [3]**).

The catches reported by the FSI in recent years are thought more reliable matching quite well with the catches estimated from the Taiwanese data. Thus, the 1998 to 2000 catches in the IOTC nominal catches database were left unchanged.

T5 Catch statistics of chartered vessels operated in Indian waters, 1989 - 2000

Country	ReportingCo	Area	Year	Gear	ALB	BET	BIL	BLM	BLZ	MARL	MLS	SFA	SKH	SKJ	SWO	TUX	YFT	TOTAL
HKG	IND	F51	1996	LL		4	62					9		1	53		179	308
HKG	IND	F57	1996	LL		7	125					19		2	107		362	622
HKG	IND	F51	1997	LL		4	62					9		1	53		179	308
HKG	IND	F57	1997	LL		7	125					19		2	107		362	622
HND	IND	F51	1989	LL	176	51		26			3	3			34	4	70	367
HND	IND	F51	1990	LL	205	58		26			2				36	6	69	402
HND	IND	F51	1991	LL	178	52		33			5	9			40	2	90	409
HND	IND	F51	1992	LL	222	53		39	4		5	9			109	12	94	547
HND	IND	F51	1993	LL	377	52	29	33			5	11		4	85	15	1,665	2,276
HND	IND	F57	1993	LL		71	681										806	1,558
HND	IND	F51	1994	LL		190	101					51			19		259	620
HND	IND	F57	1994	LL			550					80			497		1,286	2,413
HND	IND	F51	1995	LL		13	216					32		3	184		625	1,073
HND	IND	F57	1995	LL		26	439					66		6	373		1,268	2,178
HND	IND	F57	1998	LL		14				366		109	104	91	540		1,361	2,585
HND	IND	F57	1999	LL		24				246		720	101	1	206		1,295	2,593
HND	IND	F57	2000	LL		10				167		71	71	6	125		692	1,142

Source: IOTC Nominal Catches Database

NEW ESTIMATES

T6 Catch statistics of chartered vessels NEI operated in Indian waters, 1985 - 1990

Country	ReportingCo	Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
NEI	IND	LL	1985	F51	46	35	0	1	4	3	0	0	0	0	6	0	15	0	
NEI	IND	LL	1985	F57	3	61	1	4	12	20	0	0	0	0	10	0	43	0	264
NEI	IND	LL	1986	F51	458	613	9	24	169	154	0	0	0	2	132	0	805	0	
NEI	IND	LL	1986	F57	264	488	4	25	68	156	0	0	0	0	79	0	255	0	3,706
NEI	IND	LL	1987	F51	453	518	10	28	158	111	0	0	0	0	127	1	1,008	0	
NEI	IND	LL	1987	F57	251	427	5	23	65	118	0	0	0	1	78	0	188	0	3,569
NEI	IND	LL	1988	F51	361	569	7	17	89	85	0	0	0	1	167	0	809	0	
NEI	IND	LL	1988	F57	112	260	3	14	32	39	0	0	0	2	64	0	164	0	2,794
NEI	IND	LL	1989	F51	407	1,463	165	23	126	144	0	0	0	5	246	0	1,682	0	
NEI	IND	LL	1989	F57	403	810	5	41	95	102	0	0	0	6	218	0	872	0	6,814
NEI	IND	LL	1990	F51	1,116	3,157	53	43	200	168	0	0	0	18	654	0	6,005	0	
NEI	IND	LL	1990	F57	112	1,267	17	15	52	26	0	0	0	4	166	7	722	0	13,802

Source: T3 and **T19** (**[3]**)

T7 Catch statistics of chartered vessels from Honduras operated in Indian waters, 1991 - 1995

Country	ReportingCo	Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
HND	IND	LL	1991	F51	575	2,038	87	20	106	132	0	6	0	2	354	7	2,406	4	
HND	IND	LL	1991	F57	564	480	21	7	17	30	0	4	0	1	56	7	264	0	7,189
HND	IND	LL	1992	F51	219	1,546	47	68	168	107	0	4	0	2	618	3	3,990	0	
HND	IND	LL	1992	F57	643	320	29	4	45	25	0	3	0	4	81	3	361	0	8,288
HND	IND	LL	1993	F51	831	2,666	92	16	228	353	0	32	81	7	1,253	39	7,418	0	
HND	IND	LL	1993	F57	216	816	21	5	59	63	0	23	10	12	98	5	333	0	14,676
HND	IND	LL	1994	F51	420	842	27	18	56	117	12	28	30	3	510	9	1,339	0	
HND	IND	LL	1994	F57	300	544	7	3	15	24	5	5	4	2	113	1	360	0	4,793
HND	IND	LL	1995	F51	481	1,492	27	30	107	188	31	68	75	3	997	6	1,275	0	
HND	IND	LL	1995	F57	404	541	6	5	27	39	13	13	9	3	140	1	162	0	6,145

Source: T3 and **T19** (**[3]**)

T8 Catch statistics of chartered vessels from Hong-Kong operated in Indian waters, 1996 - 1997

Country	ReportingCo	Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	WAH	TOTAL
HKG	IND	LL	1996	F51	58	180	3	4	13	23	4	8	9	0	120	1	154	0	
HKG	IND	LL	1996	F57	49	65	1	1	3	5	2	2	1	0	17	0	20	0	742
HKG	IND	LL	1997	F51	70	121	1	2	10	12	2	7	6	0	81	0	151	0	
HKG	IND	LL	1997	F57	33	60	0	1	3	6	0	2	0	0	26	0	19	0	612

Source: T3 and **T19** (**[3]**)

5 Estimation of the catches of deep-freezing longliners operating under the flag of Seychelles not accounted for in the country statistics

T1 Number of deep-freezing longliners operating under Seychelles flag in 1999 and 2000

Year	IO	IAPO	TotalIO
1999	3		3
2000	3	3	4

Source: WPDCS-01-03 (Seychelles Industrial Fishery Statistical System, R.M. Bargain *et al*.)

T2 Catches of deep-freezing longliners operating under Seychelles flag in 1999 and 2000

Catches	Indian Ocean				Indian, Pacific and Atlantic oceans				
Year	YFT	BET	OTHR	TOTAL	YFT	BET	OTHR	TOTAL	TOTAL IO
1999	26	41	3	70				0	70
2000	158	146	63	367	223	522	122	867	656

Source: WPDCS-01-03 (Seychelles Industrial Fishery Statistical System, R.M. Bargain *et al*., Table 13)

T3 Average catches per ship od Taiwanese DFRZ longliners operating in the Indian Ocean in 1999 and 2000

Year	Flag	Gear	Av Catch
1999	TWN	LL	332
2000	TWN	LL	329

Source: T3 ([4])

T4 Catches of deep-freezing longliners operating under Seychelles flag in 1999 and 2000

Country	ReportingCo	Gear	Year	Area	ALB	BET	BIL	BLM	BLZ	MLS	NTAD	SBF	SKH	SKJ	SWO	TUN	YFT	TOTAL	TOTAL
SYC	DFRZ	LL	1999	F51	47.68	65.62	0.99	0.46	4.77	2.64	1.03	2.83	0.77	0.11	26.42	0.00	33.49	186.82	
SYC	DFRZ	LL	1999	F57	8.41	26.80	0.54	0.44	2.35	1.69	0.09	0.85	0.23	0.10	10.28	0.00	10.58	62.35	249
SYC	DFRZ	LL	2000	F51	245.37	344.69	5.21	2.04	25.01	13.19	7.20	16.44	4.60	0.07	145.64	0.00	175.99	985.45	
SYC	DFRZ	LL	2000	F57	43.31	140.79	2.80	1.96	12.32	8.44	0.63	4.93	1.37	0.07	56.64	0.00	55.57	328.83	1314

Source: T1, T3 and **T19** (**[3]**)

The catches of deep-freezing longliners operating under the Seychelles flag reported by the Seychelles Fishing Authority needed to be estimated due to underreporting of catches (**T2**). Three longliners operating all year round in the Indian Ocean and other three licensed to operate in the three oceans were reported to operate in 2000. The total number of longliners operating was estimated by assuming an even distribution of the longliners licensed to operate in more than one ocean (**T1**).

The catches in **T2** were not used but new catches estimated on the basis of the Taiwanese catches (**T4**). This was done on the assumption that the Seychelles vessels, formerly Taiwanese, operated in the same way as the Taiwanese. The vessels operating in 1999 were only active as Seychelles vessels during the last quarter. The catches were, therefore, estimated on the assumption of an even distribution of the total catches over the year.

no LL SYC $Year_x$ (T1) = no LL IO $Year_x$ + (1/3 * no LL SYC IPO $Year_x$)

Catch SYC LL 1999 (4^{th} Quarter) $Area_y$ $Species_z$ (T4)= 1/4 * (no LL SYC 1999 (T1) * Average Catch LL TWN 2000 (T3)* Proportion TWN LL 2000 $Area_y$ $Species_z$ (T19 [3]))

Catch SYC LL 2000 $Area_y$ $Species_z$ (T4)= no LL SYC 2000 (T1) * Average Catch LL TWN 2000 (T3)* Proportion TWN LL 2000 $Area_y$ $Species_z$ (T19 [3])

The final catches obtained are shown in **T4** above.