

STATUS OF IOTC DATABASES FOR TROPICAL TUNAS

IOTC Secretariat

ABSTRACT

This document describes the status of the information available on tropical tunas in the databases at the IOTC Secretariat as of 30 June 2006. It covers data on nominal catches, catch-and-effort, and size-frequency data.

Nominal Catch (NC) data

The nominal catch data series of yellowfin (YFT), bigeye (BET) and skipjack (SKJ) tunas are considered to be almost complete since 1950. Bigeye tuna are mainly caught by longlines and purse seines, while catches of yellowfin tuna are reported mainly by purse seines, longlines and gillnets and skipjack tuna by purse seines, gillnets and pole and lines (Figures 1-3, Tables 1-5). Large increases in the catches of these three species have been noted since the mid-1980's.

Figure 1: Catches of yellowfin tuna (YFT) per gear type and year in the IOTC Area from 1965 to 2005

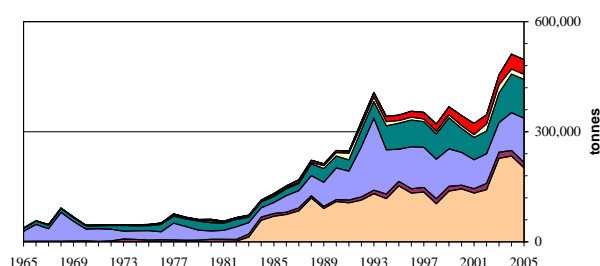
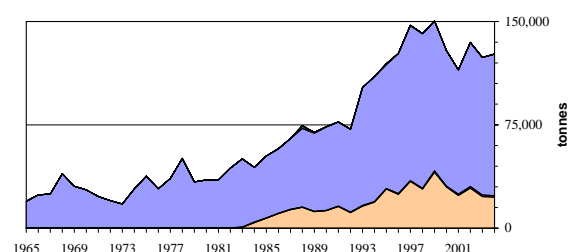


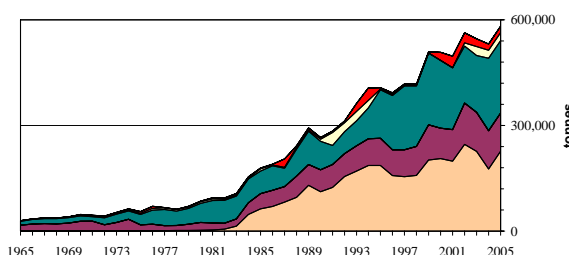
Figure 2: Catches of bigeye tuna (BET) per gear type and year in the IOTC Area from 1965 to 2005



Legend:

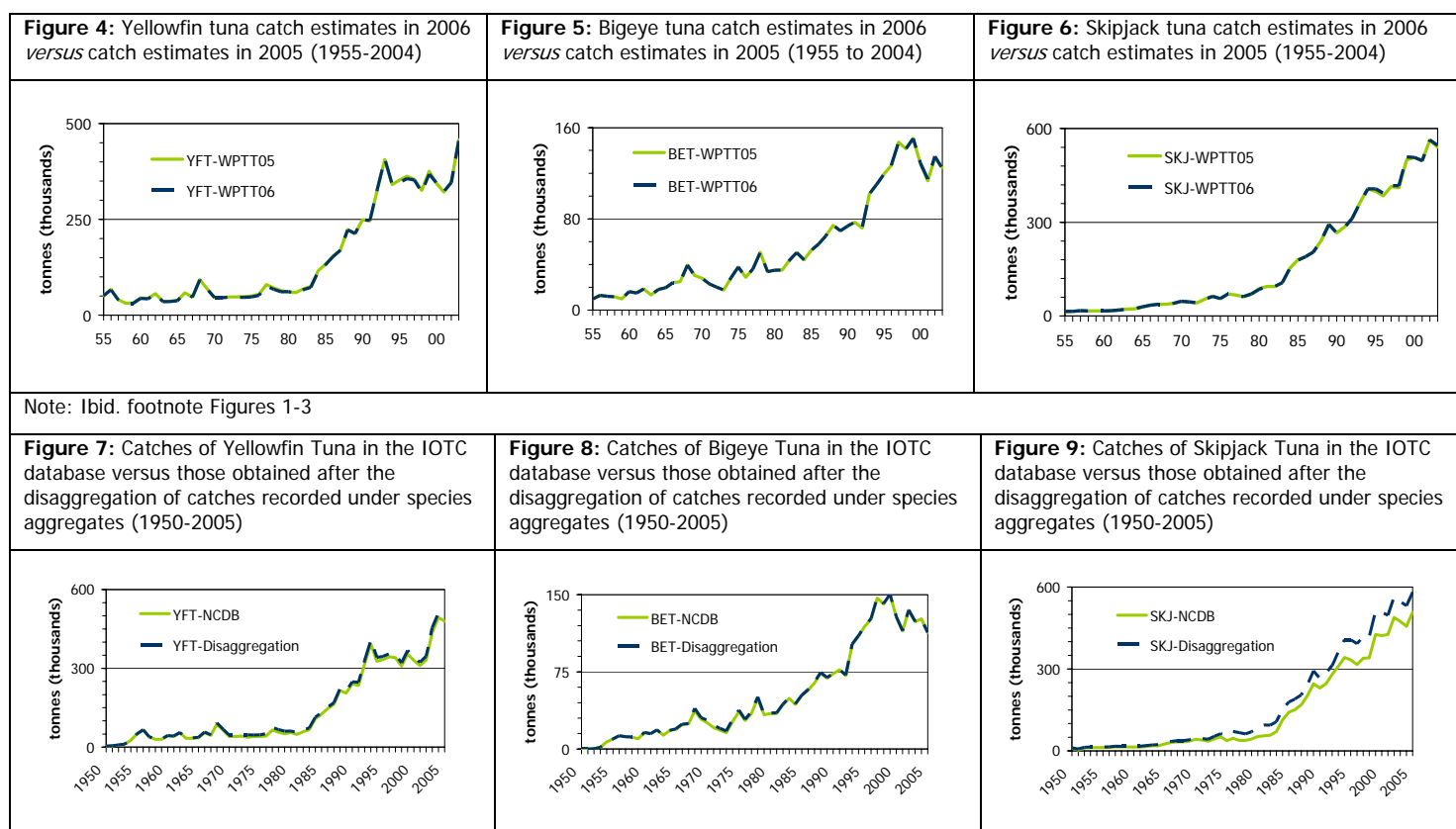


Figure 3: Catches of skipjack tuna (SKJ) per gear type and year in the IOTC Area from 1965 to 2005



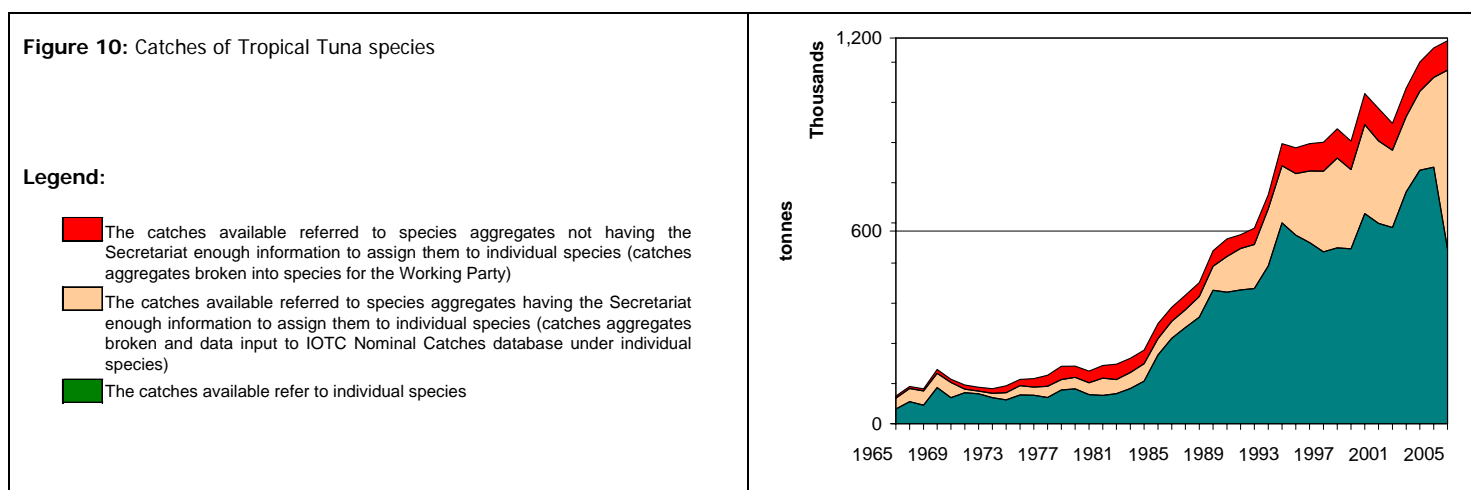
Note that the catches series estimated for 1950-2005 include catches assigned to each species after allocation of species aggregates to individual species by the Secretariat.

The Secretariat conducted several reviews of the NC database during 2005; however, the changes to the estimates of the catches of tropical tunas were only minor (Figure 4-6). The Secretariat conducted a review aiming at estimating catches when data were not available by species or gear in the IOTC database (IOTC-2004-WPTT-06). Table 2 shows totals per species used by the WPTT in 2003, 2004, 2005 and current catch estimates. Figures 7-9 show the changes in the catch estimates after the disaggregation exercise in which aggregated data were assigned to species. This led to marked changes in the catches of skipjack tuna (15%) but only small changes in the catches of yellowfin tuna (4%) and bigeye tuna (<0.5%).



Although the quality of the available information on the three tropical tunas is generally good, the representativeness of the data is compromised by:

Some catch data not being available: several countries were not collecting fishery statistics, especially in years prior to the early 1970's, and others have not reported their statistics to IOTC. In most cases, the catches of tropical tunas in those countries were probably minor.



Poor resolution of catch data: catches of tunas and tuna-like species are sometimes reported in an aggregated¹ form. The Secretariat estimates the species and gear composition of these aggregates using a range of information but the accuracy of the estimates is probably low. (Figure 10).

Considerable uncertainty associated with the catch estimates from the following fisheries:

- **Yemen artisanal fisheries:** The catch series for this species was reviewed in 2005 and the database updated with the new estimates; however, the new figures are likely to be highly uncertain due to the scarce information available on catch and effort in this country.
- **Sri Lankan gillnet (and longline) fishery:** The catches series for yellowfin and skipjack tunas in Sri Lanka were re-estimated for the period 1950-2004. Marked differences between the re-estimated catches and those produced in Sri Lanka are of concern.. The IOTC-OFCF Project signed an agreement with the National Aquatic Resources and Development Agency of Sri Lanka in 2004 to allow for an extension of the sampling activities in this country. The first results from this program suggest that the catches of tropical tunas, mainly skipjack tuna and yellowfin tuna, recorded in the IOTC database for the last decade are higher than those that really occurred.
- **Fresh tuna longliners based in Indonesia:** The data collected since June 2002 has allowed the estimation of catches of longline vessels based in Benoa for the period 2003--2005. The new catch estimates differ from those obtained by using the previous catch estimation procedure, therefore, the catch series is expected to change once more data become are available.. The catch series before 2002 is highly uncertain.
- **Other fresh tuna longline fleets:** Although the catches of fresh tuna longline vessels based in various ports of the Indian Ocean were re-estimated from data coming from past or recent sampling schemes, the catch estimates are generally considered to be poor se, especially for those fleets operating from ports not covered by these schemes, and where past catches have been estimated using recent catch levels.
- **Deep-freezing longline fleets:** The Secretariat re-estimated new catches for the period 1992-2004 using new information collected during 2005. These estimates remain uncertain due to the many assumptions made in estimating the total catches and species breakdown. The number of vessels operating under flags of non-reporting countries has decreased markedly since 2001. The reason for this decrease is not fully known and revisions to the catch estimates may be undertaken when more information become available.
- **Former-Soviet Union purse seiners:** The catches of 6 to 11 former Soviet Union purse seiners, operating under unknown flags in recent years, are not available for 1995-1997 and 2003-August 2005. Total catches and effort for 1998-2002 were reported in 2003 for this fleet but the new data did not include catch by species and type of school (consequently these will have to be estimated by the Secretariat). Since September 2005, six former Soviet Union purse seiners have been operating under the flag of Thailand.

Catch-and-Effort (CE) data

Catch-and-effort records are available for the main fleets fishing for tropical tunas in the Indian Ocean (Figures 11-15), namely pole and line (SKJ and YFT), purse seine (SKJ, YFT and BET) and longline (BET and YFT). Some gillnet fisheries produce substantial catches of tropical tunas, but the contribution of other gears to the total catches is small.

Pole and line: Catch-and-effort statistics from the Maldives are available by species, month and atoll for 1970-1993. Only catches and effort by species, year and atoll are available for 1993-2001. Baitboat Catch-and-Effort data are not available since 2002.

¹ This is the case notably when data are not reported to the Secretariat and have to be taken from the FAO nominal catch database.

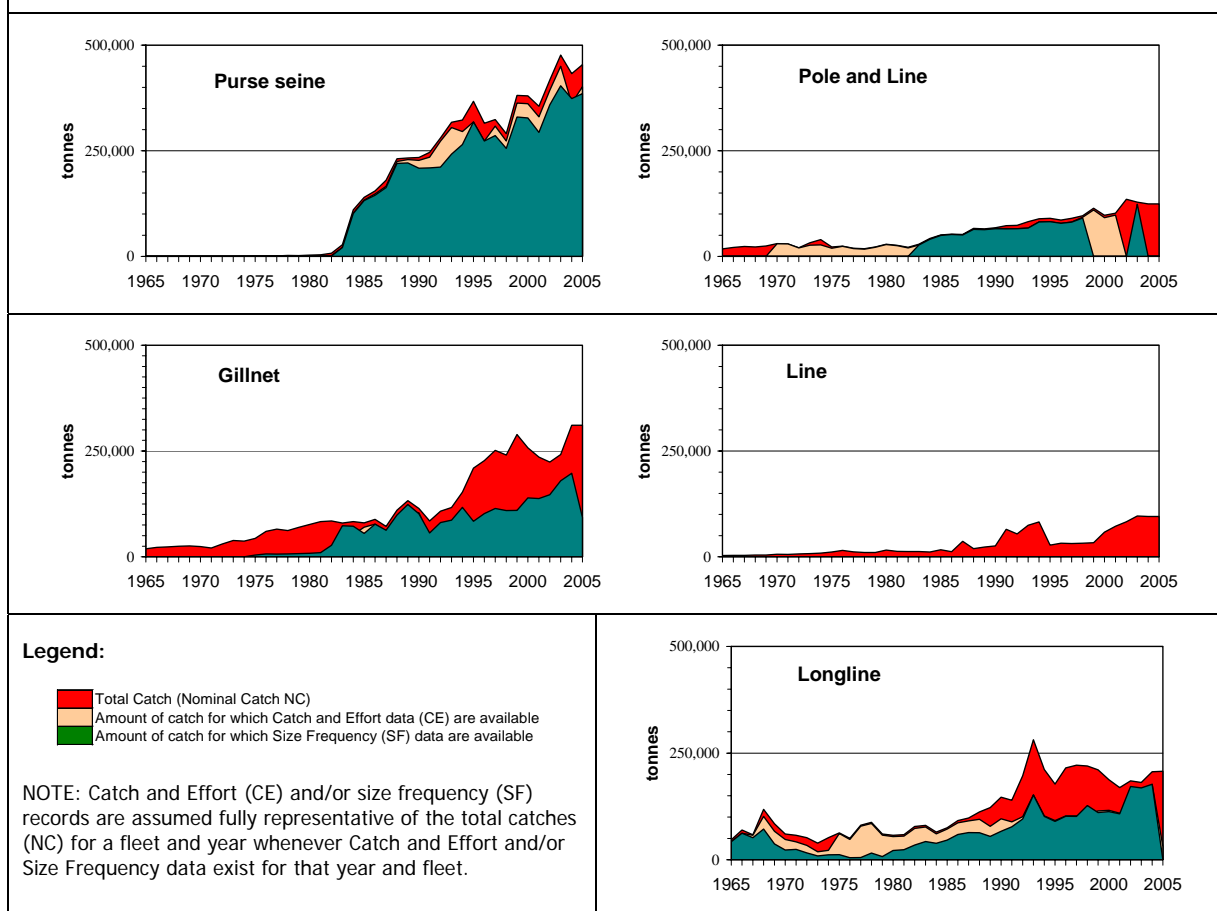
Longline: Catch-and-effort statistics are available since 1952 for Japan; since 1967 for Taiwan,China² and since 1975 for Korea. Catch and effort data for other fleets is scarce or inaccurate.

The catch and effort statistics provided by Japan and Taiwan,China are generally considered to be accurate. Nevertheless, some inconsistencies were found when comparing nominal catches and catch and effort data for Taiwan,China and Japan (Figures 16-19). These would indicate that either nominal catches or catches in the CE are not accurate or that size data are incomplete.

Korean CE statistics are considered to be highly inaccurate. Many inconsistencies have been found in the data, e.g. when comparing the catches in this database with those reported as nominal catches.

Purse seine: Catch-and-effort statistics are complete for European-owned purse seiners and those monitored by scientists from Europe and Seychelles. Statistics are also available for other fleets including the former Soviet purse seine fleet (1998-2002; under Belize and Panama flags), Mauritius and Japan. As is the case for the NC data, the CE data for the purse-seine fleet formerly under the Soviet Union flag are not considered to be accurate, especially the species composition and type of school fished information. Partial catch and effort data are available for the Iran purse seine fleet.

Figures 11-15: Amount of catches (NC) per gear and year for which catch and effort (CE) and size frequency (SF) data are available in the IOTC Databases



Gillnet: Few CE data are available for gillnet fisheries. This is of concern because gillnets have been used in both coastal waters and on the high seas in recent years.

² Taiwan,China refers to Taiwan province of China.

Figure 16-17: Average weights of yellowfin tuna per year estimated using available size data and catches available from the NC and CE databases and number of specimens from the CE database for the Japanese and Taiwanese longline fleets.

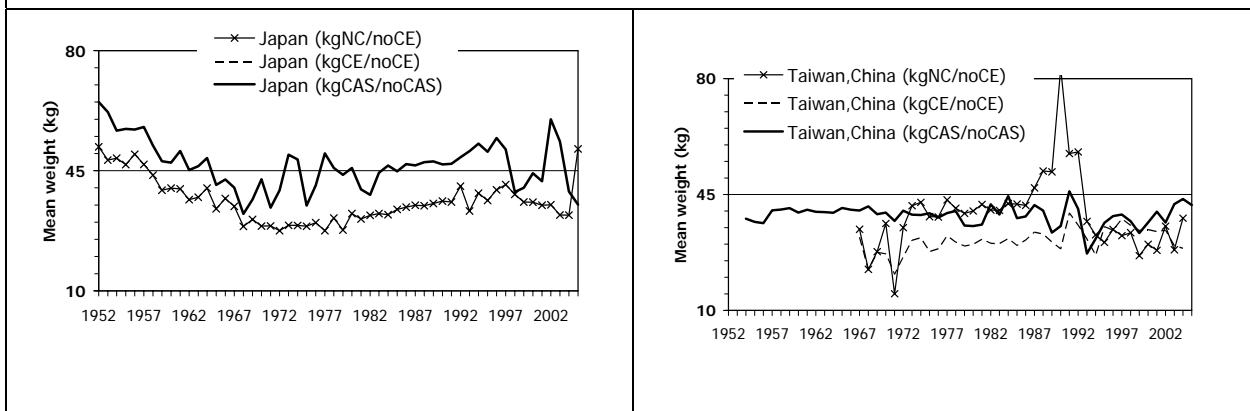
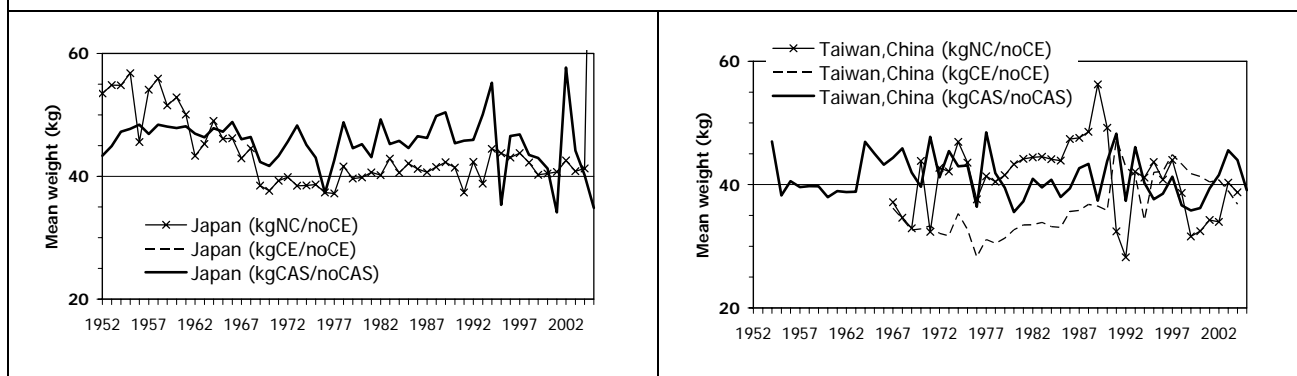


Figure 18-19: Average weights of bigeye tuna per year estimated using available size data and catches available from the NC and CE databases and number of specimens from the CE database for the Japanese (left) and Taiwanese (right) longline fleets.



Size-Frequency (SF) data

Purse seine (Figure 11): The quality of the data is considered to be good for fleets under European monitoring. Little or no data are available for Iranian, Japanese and ex-Soviet purse seiners. The size frequency statistics of Mauritian purse seiners since 1986 is complete.

Baitboat (Figure 12): The completeness and quality of the sampling on baitboat fisheries (Maldives) is considered to be good up to 1998. No data are available for 1999-2002 and 2004-05.

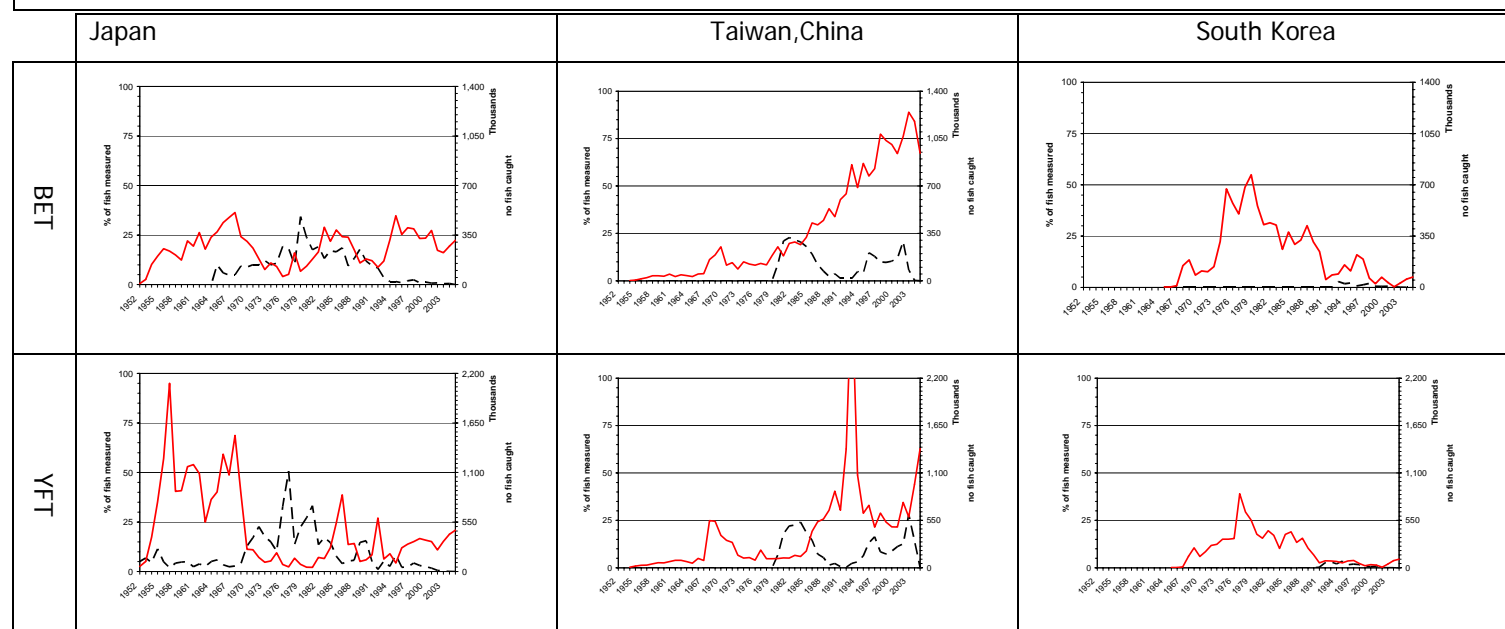
Longline (Figure 15): Only Japan has been reporting size-frequency since the beginning of the fishery. In recent years, the numbers of fish being measured is very low in relation to the total catch; furthermore they have been decreasing year by year (Figure 20-23). Coverage rates in some areas are very low. The size-frequency statistics available from Korea are inaccurate (Korea), which limits their use (Figure 22-25). The recovery of size data from port sampling of fresh tuna longline fleets operating in Thailand and Indonesia continued in 2005 and 2006. Coverage rates for the Indonesia are around 40% (number of fish). Catch-at-size tables were estimated for fresh tuna longline vessels operating in Indonesia during 2003-04 and other ports for 1998-2004.

In 2005, Taiwan,China provided size data for yellowfin tuna and bigeye tuna by year, quarter and 10 degrees latitude by 20 degrees longitude areas for 1980-2004 (Figure 21-24).

Gillnet (Figure 13): Although size data are available for some important gillnet fisheries (including Iran, Sri Lanka and Oman³) sample sizes are very low.

Other gears Few size data are available for other gears (Figure 14).

Figure 20-25: Proportion of Bigeye Tuna (above) and Yellowfin Tuna (below) measured (in number expressed as percentage, left abscissa axis) and total number of fish measured (right abscissa axis) per year for 1952-2005: Main Longline Fleets



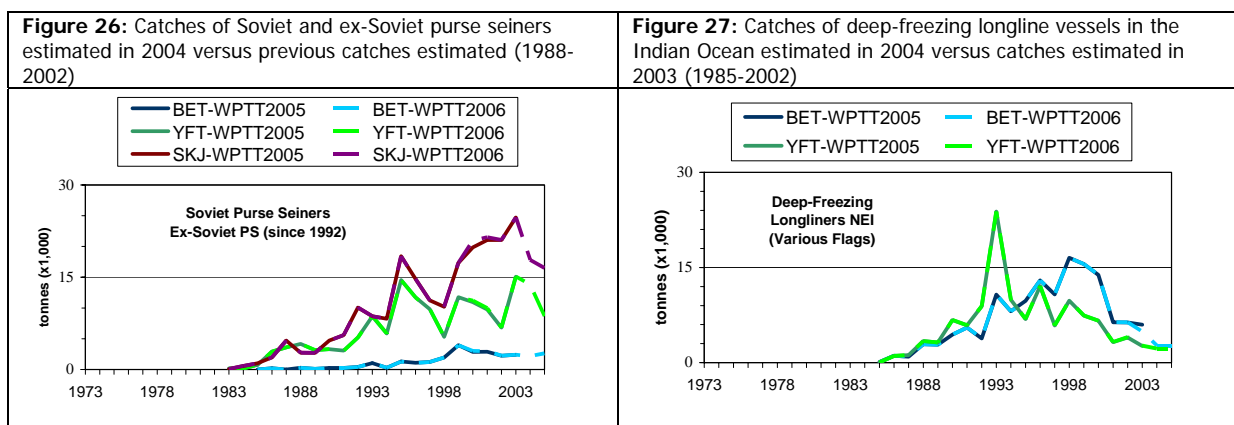
Estimation of catches of non-reporting fleets

The estimates of catches of non reporting fleets were updated in 2005:

The high number of non-reporting fleets operating in the Indian Ocean since the mid-1980s has led to large increases in the numbers of catches that need to be estimated. This reduces confidence in the catch estimates for yellowfin tuna and bigeye tuna, and to a lesser extent, skipjack tuna.

- **Purse seine** (Figure 26): Catches for former Soviet Union purse seiners were re-estimated for 1995-August 2005. Total catches were estimated using the number of vessels available, the average catches of the former Soviet Union purse seiners in previous years, and average catches available for other fleets for 1995-97 and 2003-05. Total catches for 1998-2002 were obtained from available catch and effort data. Total catches were assigned to species and type of school fished according to data available for European Community purse seiners during the same period (1995-2003). The new catch estimates (averaging around 30,000 t per year) are very similar to those estimated previously by the Secretariat.

³ Size frequency data of yellowfin tuna was collected during 2003 in Oman



- **Deep-freezing longline** (Figure 27): The catches by large longliners from several non-reporting countries were estimated using IOTC vessel records and the catch data from Taiwanese or Spanish longliners, based on the assumption that most of the vessels operate in a way similar to the longliners from Taiwan, China or Spain. The collection of new information on the non-reporting fleets during the last year, in particular the number and characteristics of longliners operating, led to improved estimates of catches. The number of vessels operating since 1999 has decreased and this has led to a marked decrease in catch levels. The reason for this decrease in the number of vessels (and catches) operating in the Indian Ocean is not fully explained. Nevertheless, this decrease is somewhat proportional to an increase in the number of vessels recorded under other flags whose catches are available, such as Philippines, Taiwan, China and the Seychelles.
- **Fresh tuna longline** (Figures 28-30): Fresh tuna longline vessels, mainly from Taiwan, China and Indonesia, have been operating in the Indian Ocean since the early 1970's. The catches of these fleets were, up to 2005, estimated by the IOTC Secretariat by using information from two sources:
 - Information on catches and vessel activity collected through several catch monitoring schemes implemented in the main ports of landing for these vessels, involving the IOTC-OFCF⁴ and/or institutions in the countries where the fleets are based and/or foreign institutions. This applies to Indonesia (2002 - to-date), Thailand (1998 - to-date), Sri Lanka (2002-03), Malaysia (2000-06), Oman (2004-05) and Seychelles (2000-02).
 - Information available on the number of fresh-tuna longline vessels operating in other ports or on the activity of those vessels (e.g. the number of vessel unloadings). This applies to Indonesia (1973-2001), Thailand (1994-97), Sri Lanka (1990-2001; 2004-05), Malaysia (1989-99), Singapore and Maldives (recent years). The catches in these ports and years were estimated from the known/presumed levels of activity of the vessels and the average catches obtained in ports covered through sampling.

In 2006 Taiwan, China provided total catches for its longline tuna fleet operating in the Indian Ocean for the period 2000 to 2005. The catches provided are higher than those estimated by the IOTC Secretariat for most years. The new catches provided for 2001-05 were used to replace those in the IOTC database. This was done on the assumption that vessels from Taiwan, China have been operating in ports from non-reporting countries and their catches have not been accounted for in previous estimates.

The catches for fleets other than Taiwan, China for 1973-2005 and for Taiwan, China in years prior to 2001 were estimated as explained in the two bullet points above.

⁴ Overseas Fisheries Cooperation Foundation of Japan

Figure 28: Catches of fresh-tuna longline vessels based in Thailand, Malaysia, Maldives, Seychelles, Singapore and Sri Lanka (mainly from Taiwan,China) estimated in 2004 versus catches estimated in 2003 (1988-2002)

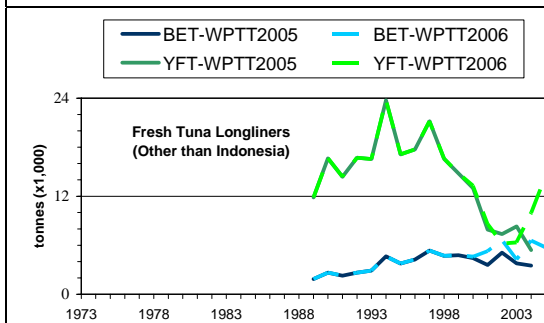
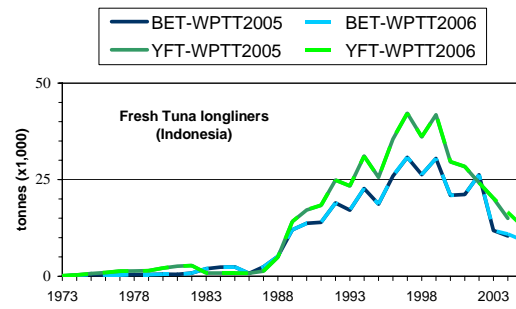


Figure 29: Catches of fresh-tuna longline vessels based in Indonesia (domestic and foreign) estimated in 2004 versus catches estimated in 2003 (1988-2002)



Data related issues for tropical tunas

Areas for concern:

- Poor knowledge of the catches, effort and size-frequency from fresh tuna longline vessels, especially from Taiwan,China, before 1998.
- Poor knowledge of the catches, effort and size-frequency from non-reporting fleets of deep-freezing tuna longliners, especially since the mid-1980's.
- Lack of accurate catch, effort and size-frequency data for the Indonesian longline fishery before 2002.
- Poor knowledge of the species composition and size-frequency data for former Soviet Union purse seine boats flying flags of convenience in recent years.
- Scarcity of data, especially size frequency data, for the Maldives hand line, troll line, gillnet and pole and line fisheries since 1998.
- Uncertainty about the catches, mainly gillnet, hand line and troll line, by domestic boats operating in Yemen and Sri Lanka.

Improvements have taken place in a number of areas. These include:

A better level of reporting: New NC, CE and SF datasets have been obtained for Sri Lanka domestic fisheries and Taiwan,China longline fisheries. ***Taiwan,China provided more detailed size data for its longline fleet for 1980-2004.***

Revision of the IOTC databases: Several revisions have been conducted during the last year on the IOTC databases. This has led to revised NC data for some countries.

An improved Vessel Record: More information has been obtained on the number and type of vessels operating under flags of non-reporting parties. This information comes mostly from various licensing schemes in the Indian Ocean and has become an important element in the estimation of the catches of non reporting fleets.

Improved estimation of catches of non-reporting fleets: The collection of historical and current information on the landings of small fresh tuna longliners in ports in the Indian Ocean has improved the accuracy of earlier estimates. The more complete Vessel Record also permitted the estimation by flag of the catches of deep-freezing longliners. The catches of the former Soviet Union purse seiners for 1998-2002 are considered to be more accurate.

Estimation of catch-at-size for Indonesia, Taiwan, China and China fresh tuna longliners: The collection of size data in Thailand, Sri Lanka and Indonesia underpins the estimates of catch-at-size for fresh tuna longliners for 1998-2004 (longliners based in ports other than Indonesia) and 2002-04 (longliners based in Indonesia). CAS tables for these fleets in 2005 are being estimated.

IOTC/OFCF sampling programmes: The collection of information on the activities of fresh tuna longliners landing in Phuket and Indonesia has continued during 2005. This has led to more complete and accurate estimates of the catches by these fleets. Other valuable data collected under these programmes include length frequencies (which will allow length-length, length-weight and weight-length relationships to be updated). Size data were also obtained for Sri Lanka (skipjack tuna and yellowfin tuna) artisanal fisheries since 2005.

Yemen NC: The catches of Yemen domestic fisheries were updated during 2004. New catch estimates are markedly higher than previous estimates, especially since the early 1990's.

The current status of the data for each of the tropical tuna species can be summarised as follows:

Yellowfin and Bigeye Tuna

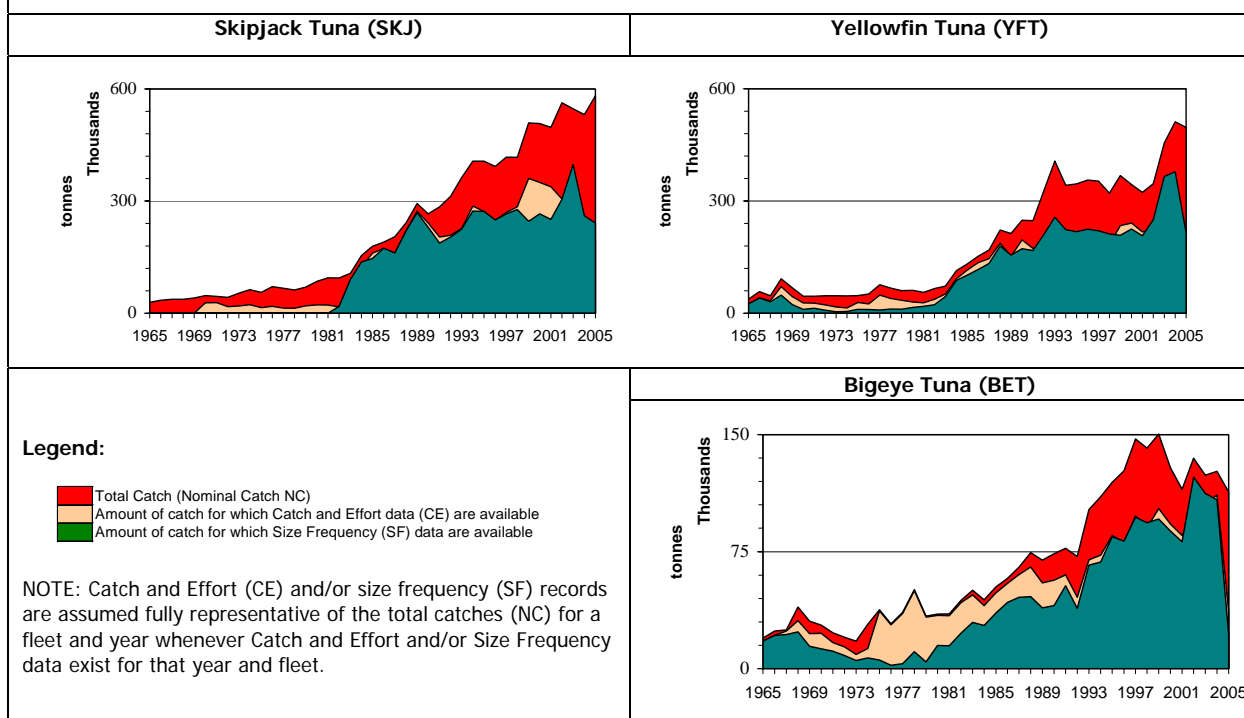
Nominal Catch data: Relatively well known for most purse-seine fisheries and the main longline fleets (Japan, Korea and Taiwan, China). Catches of non-reporting longline and purse seine fleets are still uncertain, although they are believed more accurate than the estimates reported in the past.

Artisanal catches of bigeye tuna are negligible. By contrast, the levels of yellowfin tuna catches by artisanal gears (mainly gillnets) while uncertain are believed to have increased markedly in recent years.

Catch and Effort data: Well known for the purse-seine fisheries and the main longline operations (Japan, Korea and Taiwan, China). Nevertheless, the Korean data are considered to be inaccurate. No catch-and-effort statistics are available for non-reporting longline, purse seine and most gillnet fisheries.

Size Frequency data: Sampling coverage from Japan and Korea has been low in recent years. Size data is not available at the five degrees square resolution. The only data available for non-reporting fleets come from sampling in Phuket, Penang, Sri Lanka and Indonesia. Little information is available on important artisanal catches (e.g. Pakistan, Yemen, Sri Lanka and Comoros).

Figures 30-32: Amount of catches (NC) per species and year for which catch and effort (CE) and size frequency (SF) data are available in the IOTC Databases



Skipjack Tuna

Nominal Catch and Catch and Effort data: Relatively well known for most purse-seine fisheries. Data are available for the important artisanal fishery in Maldives although only up to 2001. Artisanal components (not well known) are important for this species. In several coastal countries (e.g. Indonesia) the catches are not reported by gear or are uncertain (Sri Lanka)

Size Frequency data: Available for reporting purse seine fleets (1984-2005), Maldivian baitboats (1983-1998 and 2003) and some gillnet fisheries and years (Pakistan, Iran, Indonesia and Sri Lanka), although sample sizes are low in some cases.

Catch Tables

Leyend: AvC Mean catches of the Species for the last five years

 <2 Catches below 2,000 tons

 2-5 Catches from 2,000 to 5,000 tons

 >5 Catches above 5,000 tons

Table 1: Total Catches of Yellowfin Tuna (YFT), Skipjack Tuna (SKJ) and Bigeye Tuna (BET) in the Indian Ocean for the period 1956-2005 (in thousand of metric tonnes)

YFT

Gear	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	
Purse Seine								0.0	0.0	0.0										0.1	0.2	0.2	0.3	0.5	0.4	0.5	0.6	1.6	13.2	58.9	69.5	74.3	84.7	119.5	90.7	109.7	106.2	114.0	131.0	117.5	152.5	132.9	135.5	103.6	138.2	143.9	133.0	142.2	227.4	233.8	201.5
Baitboat	2.0	2.0	2.0	2.0	1.0	1.5	1.5	1.5	1.5	1.0	1.5	1.7	1.7	1.8	2.3	1.4	2.6	7.4	6.2	4.8	5.2	4.9	3.8	4.4	6.1	6.1	4.9	7.8	8.4	7.3	6.4	7.7	6.1	5.8	5.2	7.5	8.5	9.8	12.8	12.2	12.0	12.7	13.4	13.1	10.6	11.6	16.9	16.7	14.9	14.9	
Longline	60.6	33.1	24.5	24.6	38.3	35.6	47.7	25.4	25.3	27.7	45.7	34.0	78.6	53.9	32.4	34.4	31.5	21.7	23.5	25.4	21.9	45.4	37.0	26.9	22.8	24.4	34.5	31.1	25.5	30.5	45.3	47.0	55.0	65.3	86.1	78.8	136.7	195.7	120.7	87.6	113.8	109.3	107.8	101.9	89.0	79.2	80.6	81.0	103.1	120.7	
Gillnet	2.7	3.7	3.1	3.3	3.9	4.4	5.3	7.0	7.5	7.7	8.9	9.5	10.0	10.2	8.9	8.0	10.5	15.4	13.5	13.9	20.0	19.2	20.8	24.1	22.5	19.3	19.6	14.9	15.6	16.0	18.9	19.4	31.8	38.0	32.8	30.6	45.3	45.8	64.8	70.9	73.2	69.9	68.6	84.9	65.4	60.3	61.8	80.3	105.3	105.3	
Hand Line	0.3	0.3	0.4	0.4	0.4	0.5	0.7	0.9	0.9	0.9	1.0	1.1	1.2	1.3	1.1	0.9	1.1	1.3	1.2	0.9	1.6	1.7	1.9	2.3	5.4	2.6	3.7	2.9	2.4	4.4	3.1	3.0	3.5	8.0	9.6	18.5	12.6	12.9	11.6	7.3	8.0	7.7	7.9	7.7	8.0	8.1	20.0	22.4	13.9	13.9	
Troll Line	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.7	0.9	1.0	1.1	1.1	1.7	2.0	2.3	4.6	3.2	2.4	4.0	2.9	2.0	2.5	3.2	3.8	4.5	7.4	6.4	5.0	5.2	5.6	11.1	12.0	14.2	14.9	16.3	17.9	19.5	21.9	27.3	30.5	24.7	27.0	40.3	40.3
Other																																0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2			
Total	66	39	30	31	44	42	56	35	35	38	58	47	92	68	45	46	47	47	46	47	51	76	67	61	61	56	66	72	114	131	152	169	222	213	249	247	328	407	342	345	356	353	321	368	344	323	346	455	512	497	

SKJ

Gear	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	
Purse Seine								0.0	0.2	0.0										0.3	0.5	0.7	1.0	1.8	1.7	2.5	3.2	5.7	14.0	47.2	63.0	69.9	82.2	96.2	130.3	111.8	124.3	155.1	170.2	186.5	186.0	157.4	154.2	158.4	202.2	206.1	198.4	246.4	226.4	176.2	226.4
Baitboat	10.7	11.6	11.7	11.6	10.6	10.1	10.1	10.2	10.3	16.7	19.7	21.6	20.4	22.7	27.9	28.0	17.9	24.6	33.4	17.1	18.7	14.3	14.0	17.6	22.2	19.9	16.6	20.5	33.3	43.2	46.1	43.9	59.9	59.0	62.2	65.0	64.6	71.9	75.8	77.3	73.6	76.8	82.1	99.5	86.3	89.5	117.0	110.6	108.5	108.5	
Longline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.7	0.5	0.5				
Gillnet	3.3	4.7	4.0	4.1	4.9	5.8	7.7	10.2	10.9	11.2	13.2	13.8	14.8	15.4	15.0	12.9	19.7	23.3	23.4	29.5	40.3	46.2	41.0	45.5	54.0	63.8	65.0	65.2	67.6	64.4	69.4	52.5	76.5	94.2	80.9	54.1	62.2	70.7	87.8	137.9	154.0	181.1	171.5	203.7	192.1	175.5	161.8	161.2	205.5	205.5	
Hand Line	0.6	0.6	0.6	0.6	0.7	0.9	1.2	1.4	1.4	1.4	1.6	1.8	2.0	2.2	2.8	2.5	3.0	3.4	3.3	3.4	4.8	4.4	4.2	3.4	4.1	4.4	2.9	2.8	2.4	6.3	2.4	2.5	5.4	3.5	5.5	36.6	25.4	27.1	21.5	2.0	3.5	1.6	1.3	0.6	0.5	0.4	9.3	25.4	23.1	23.1	
Troll Line	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.4	1.4	1.8	1.9	2.7	5.1	6.3	0.8	0.8	1.8	2.2	3.1	3.9	4.0	3.5	2.0	2.2	23.7	3.9	6.2	5.5	4.2	5.2	22.4	35.2	3.6	4.3	3.9	3.6	2.9	22.6	33.0	28.6	21.5	17.6	17.6	
Other																																	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total	15	17	16	16	16	17	19	22	23	29	35	37	37	40	47	45	42	53	63	56	71	67	62	70	85	94	94	107	154	179	190	205	242	293	266	284	313	363	407	407	393	418	417	509	508	497	563	546	531	582	

BET

Gear	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	
Purse Seine																																																			
Baitboat																0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.4	0.3	0.2	0.3	0.3	0.3	0.3	0.5	0.4	0.5	0.5	0.5	0.6	0.5	0.6	1.0	0.6	0.9	1.1	1.1	1.0	1.0
Longline	12.8	12.0	11.7	9.9	16.1	15.0	18.5	13.3	18.0	19.5	24.1	24.8	39.5	30.4	27.8	23.0	20.0	17.4	28.4	37.7	28.5	35.9	50.5	33.5	34.9	34.8	43.4	49.5	39.7	44.9	46.7	51.2	57.1	56.7	60.5	60.8	60.2	85.4	90.6	89.8	101.5	112.4	112.1	108.6	98.4	90.3	104.6	99.8	102.6	86.3	
Gillnet																																0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.2	0.3	0.3	0.1	0.0	0.0	0.0	0.1	0.1	0.1
Hand Line	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2		
Troll Line	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Other																																																			
Total	13	12	12	10	16	15	18	13	18	20	24	25	40	30	28	23	20	18	28	38	29	36	51	34	35	35	44	50	44	52	58	65	74	69	74	77	72	102	110	119	127	147	141	150	129	115	135	124	127	113	

[illegible]

[illegible][illegible]

[illegible][illegible]

Table 4(ii): Catches of Bigeye Tuna (BET) in the Indian Ocean for the period 1956-2005 (in thousand of metric tonnes)

Gear	Fleet	AvC	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05
Hand Line	Sri Lanka	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1					
	Comoros	0.0																			0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
	France-Reunion	0.0																						0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	France-Territories	0.0																																																		
	Seychelles	0.0																																																		
	South Africa	0.0																																																		
	Kenya	0.0																																																		
	Australia	0.0																																																		
	Tanzania	0.0																																																		
Troll Line	Comoros	0.0																																																		
	Mauritius	0.0																																																		
	France-Reunion	0.0																																																		
	Australia	0.0																																																		
	France-Territories	0.0																																																		
	Sri Lanka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gear	Fleet	AvC	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05

Figure 33: Catches of Yellowfin Tuna (YFT) in the Indian Ocean for the period 1956- 2005

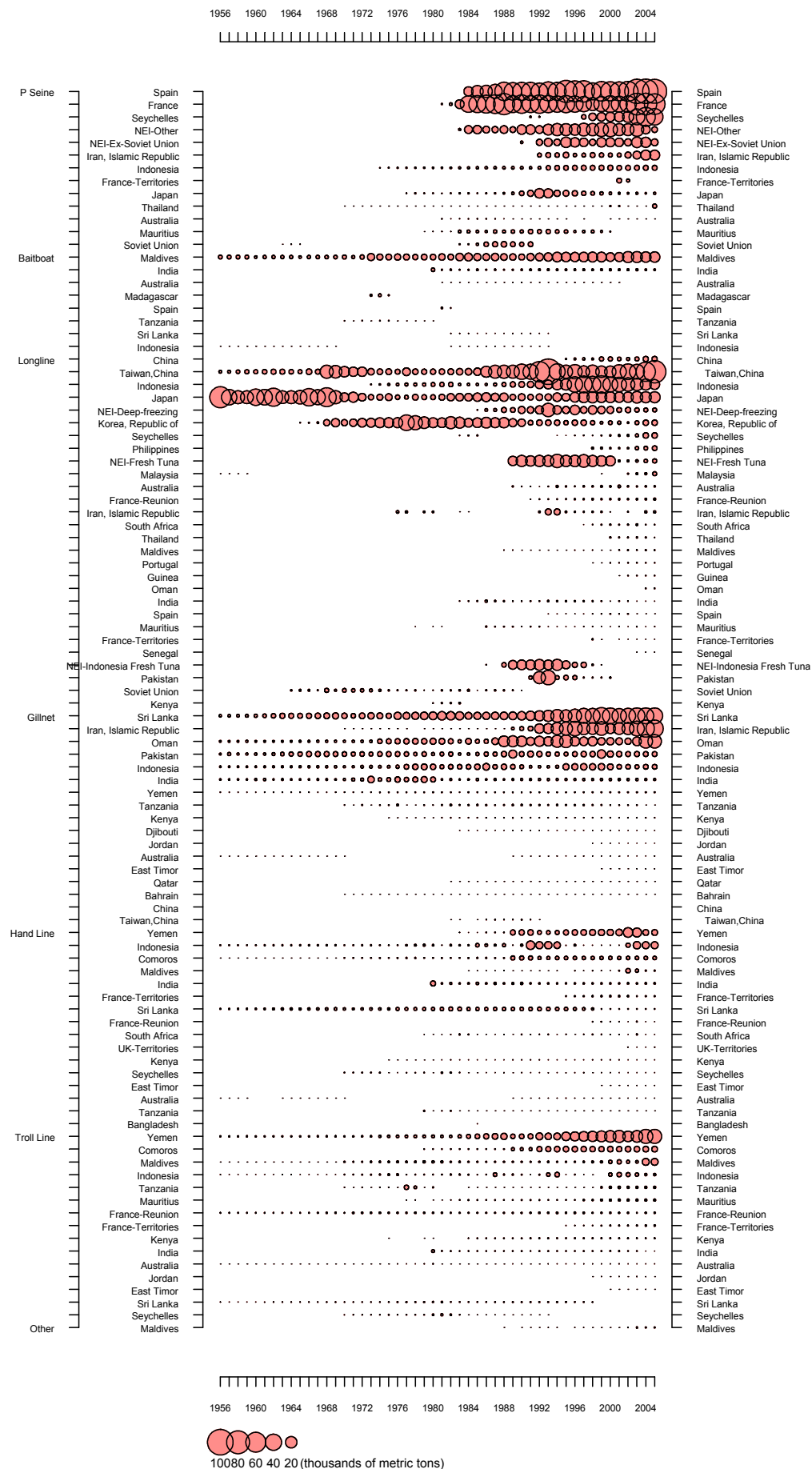


Figure 34: Catches of Bigeye Tuna (BET) in the Indian Ocean for the period 1956- 2005

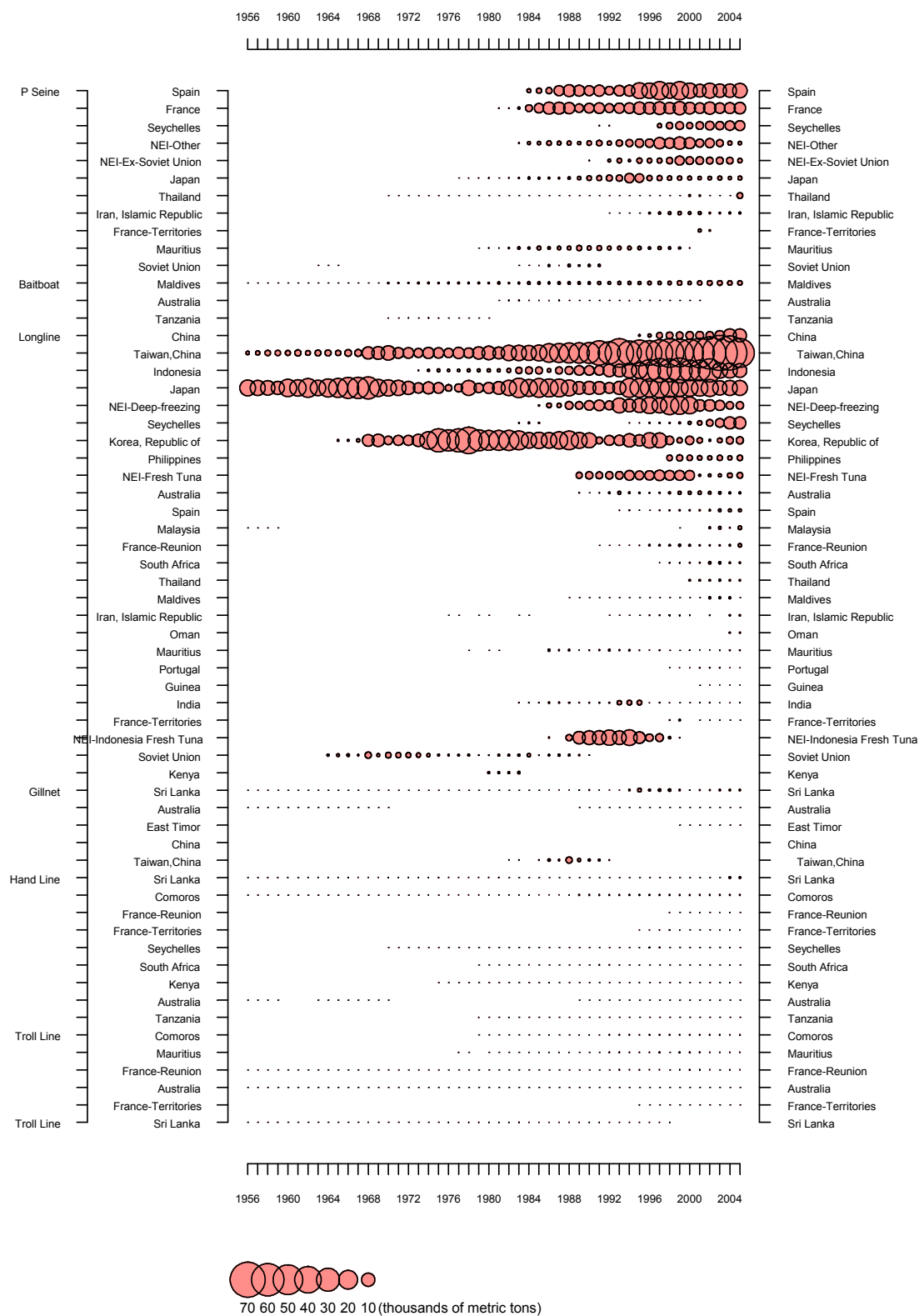
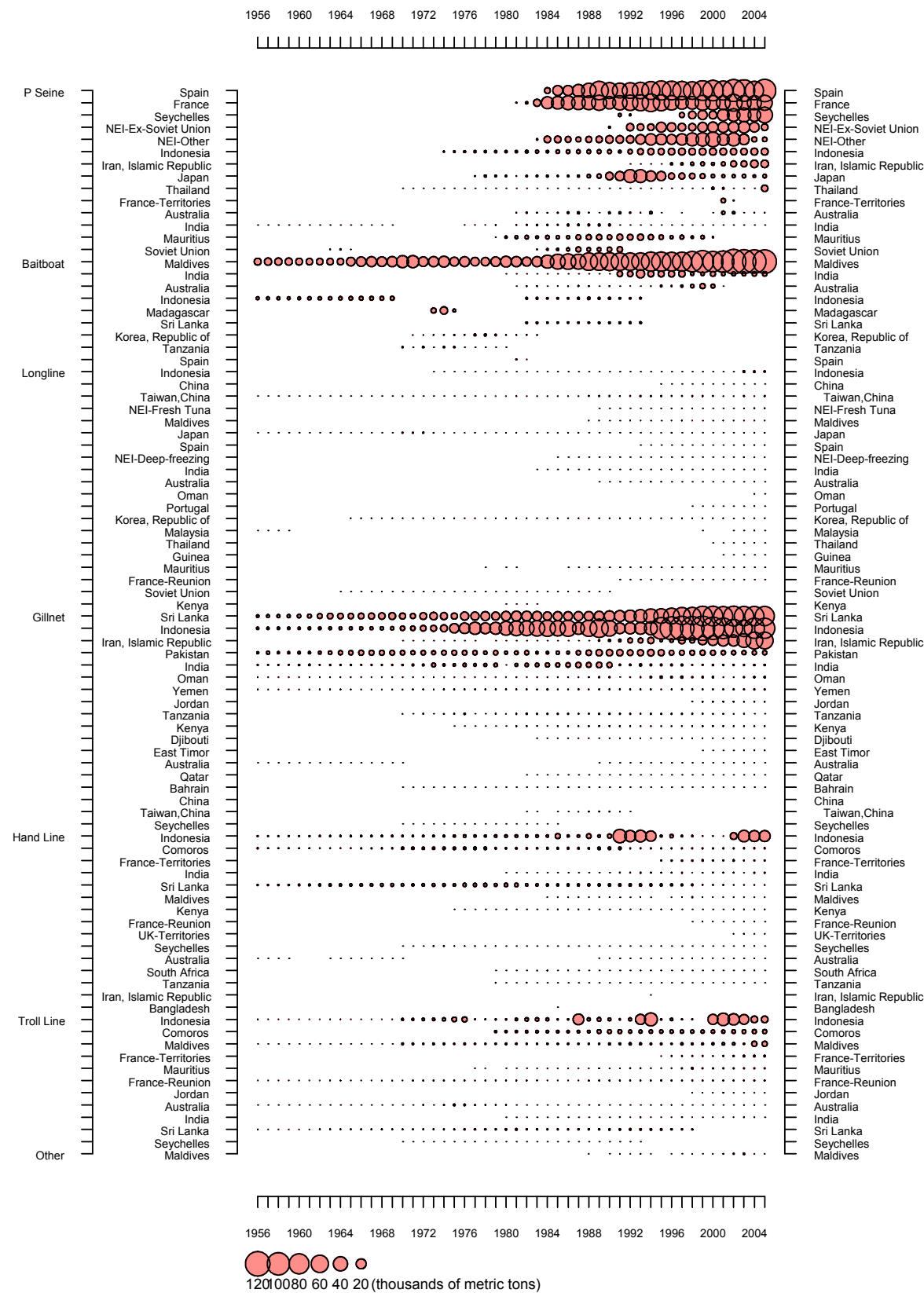





Figure 35: Catches of Skipjack Tuna (SKJ) in the Indian Ocean for the period 1956- 2005



Data Catalogues

1/ Availability

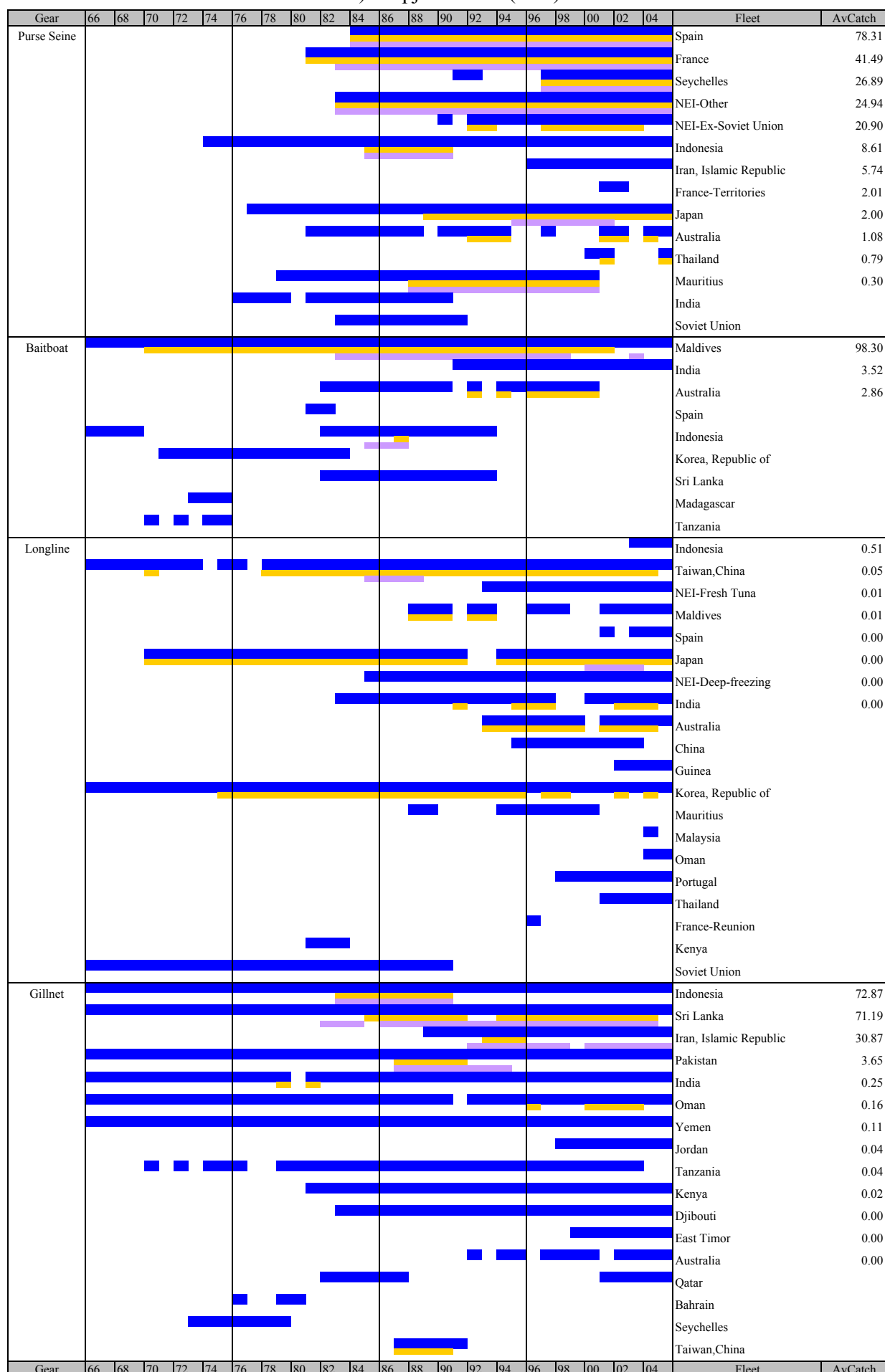
(Availability of Nominal Catches, Catch and Effort and Size Frequency Statistics in the IOTC databases)

Legend:	AvCatch	Mean catches of the Species for the last five years
		Nominal catches available
		Catch and Effort data available
		Size frequency data available

I) Bigeye Tuna (BET)

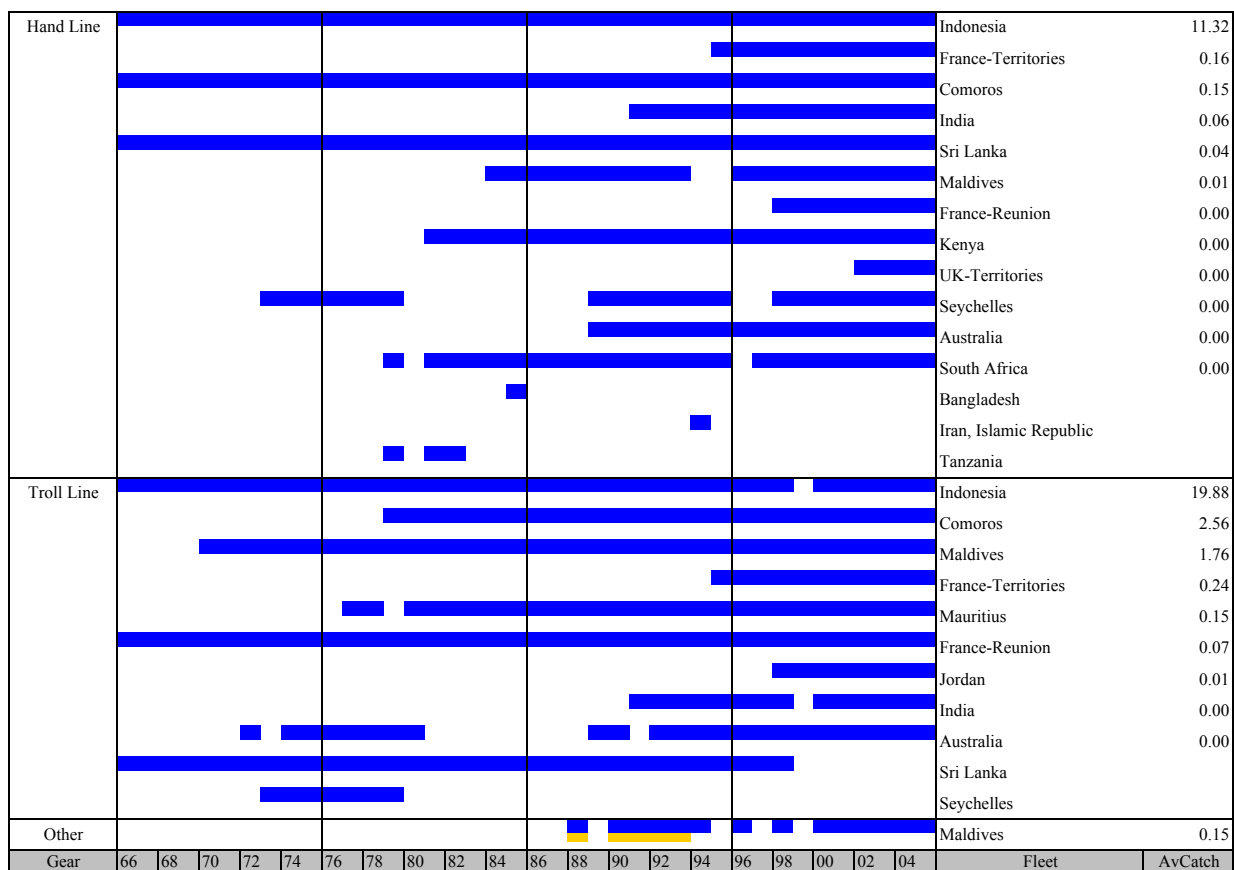
Gear	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	00	02	04	Fleet	AvCatch
Purse Seine																					Spain	9.43
																					France	6.12
																					NEI-Other	3.28
																					Seychelles	3.21
																					NEI-Ex-Soviet Union	2.51
																					Japan	0.67
																					France-Territories	0.29
																					Iran, Islamic Republic	0.24
																					Thailand	0.13
																					Mauritius	0.01
																					Soviet Union	
Baitboat																					Maldives	0.96
																					Australia	
																					Tanzania	
Longline																					Taiwan,China	49.13
																					Indonesia	18.21
																					Japan	12.29
																					NEI-Deep-freezing	6.83
																					China	4.33
																					Seychelles	2.86
																					Korea, Republic of	1.76
																					NEI-Fresh Tuna	1.38
																					Philippines	1.13
																					Australia	0.38
																					Spain	0.21
																					Malaysia	0.18
																					Maldives	0.17
																					South Africa	0.14
																					Thailand	0.13
																					France-Reunion	0.10
																					Oman	0.06
																					Iran, Islamic Republic	0.03
																					Portugal	0.01
																					Mauritius	0.01
																					Guinea	0.01
																					India	0.00
																					France-Territories	0.00
																					Kenya	
																					NEI-Indonesia Fresh Tuna	
																					Soviet Union	
Gillnet																					Sri Lanka	0.05
																					Australia	
																					East Timor	
																					Taiwan,China	
Hand Line																					Sri Lanka	0.14
																					Comoros	0.02
																					France-Reunion	0.00
																					France-Territories	0.00
																					Australia	
																					Kenya	
																					Seychelles	
																					South Africa	
																					Tanzania	
Troll Line																					Mauritius	0.01
																					Comoros	0.01
																					France-Reunion	0.01
																					Australia	
																					France-Territories	
																					Sri Lanka	
Gear	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	00	02	04	Fleet	AvCatch

IIa) Skipjack Tuna (SKJ)



IIb) Skipjack Tuna (SKJ)

Gear	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	00	02	04	Fleet	AvCatch
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IIIa) Yellowfin Tuna (YFT)

Gear	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	00	02	04	Fleet	AvCatch
Purse Seine																					Spain	62.06
																					France	46.99
																					Seychelles	24.64
																					NEI-Other	20.02
																					NEI-Ex-Soviet Union	11.29
																					Iran, Islamic Republic	6.16
																					Indonesia	3.30
																					France-Territories	2.22
																					Japan	0.60
																					Thailand	0.23
																					Mauritius	0.11
																					Australia	
																					Soviet Union	
Baitboat																					Maldives	13.59
																					India	0.55
																					Australia	
																					Spain	
																					Indonesia	
																					Sri Lanka	
																					Madagascar	
																					Tanzania	
Longline																					Taiwan,China	31.40
																					Indonesia	23.78
																					Japan	15.57
																					NEI-Deep-freezing	3.76
																					NEI-Fresh Tuna	3.38
																					China	2.36
																					Korea, Republic of	2.04
																					Seychelles	1.36
																					Philippines	0.93
																					Malaysia	0.46
																					Australia	0.45
																					France-Reunion	0.35
																					Iran, Islamic Republic	0.30
																					South Africa	0.23
																					Pakistan	0.22
																					Thailand	0.18
																					Oman	0.10
																					Spain	0.09
																					Maldives	0.08
																					Portugal	0.05
																					Guinea	0.04
																					India	0.03
																					Mauritius	0.02
																					France-Territories	0.01
																					Senegal	0.00
																					Kenya	
																					NEI-Indonesia Fresh Tuna	
																					Soviet Union	
Gear	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	00	02	04	Fleet	AvCatch

IIIb) Yellowfin Tuna (YFT)

Gear	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	00	02	04	Fleet	AvCatch
Gillnet																					Sri Lanka	31.92
																					Iran, Islamic Republic	23.91
																					Oman	10.72
																					Pakistan	3.88
																					Indonesia	3.18
																					India	0.75
																					Yemen	0.15
																					Tanzania	0.07
																					Kenya	0.04
																					Djibouti	0.00
																					Jordan	0.00
																					Australia	0.00
																					East Timor	0.00
																					Qatar	0.00
																					Bahrain	0.00
																					Taiwan, China	0.00
Hand Line																					Yemen	7.79
																					Indonesia	3.28
																					Comoros	1.71
																					Maldives	0.92
																					India	0.35
																					France-Territories	0.24
																					Sri Lanka	0.07
																					France-Reunion	0.04
																					South Africa	0.04
																					UK-Territories	0.03
																					Kenya	0.02
																					Seychelles	0.00
																					East Timor	0.00
																					Australia	0.00
																					Bangladesh	0.00
																					Tanzania	0.00
Troll Line																					Yemen	19.41
																					Comoros	4.18
																					Maldives	2.56
																					Indonesia	1.83
																					Tanzania	0.71
																					Mauritius	0.65
																					France-Reunion	0.24
																					France-Territories	0.17
																					Kenya	0.12
																					India	0.10
																					Australia	0.01
																					Jordan	0.00
																					East Timor	0.00
																					Sri Lanka	0.00
																					Seychelles	0.00
																					Sri Lanka	0.00
Other																					Maldives	0.08
Gear	66	68	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	00	02	04	Fleet	AvCatch

