

STATUS OF IOTC DATABASES FOR TROPICAL TUNAS

IOTC Secretariat

ABSTRACT

This document reviews the status of the information available on tropical tunas in the databases at the IOTC Secretariat. The review 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 1-4). Large increases in the catches of these three species have been noted since the mid-eighties.

Figure 1: Catches of yellowfin tuna (YFT) per gear type and year in the IOTC Area from 1963 to 2002

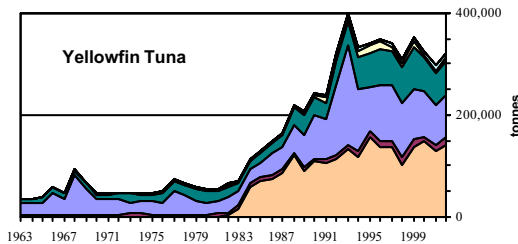


Figure 2: Catches of bigeye tuna (BET) per gear type and year in the IOTC Area from 1963 to 2002

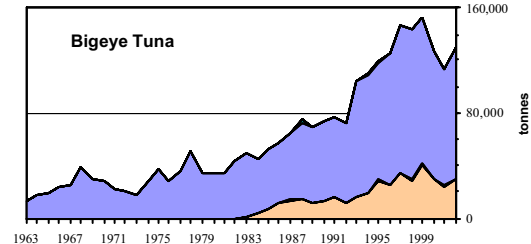
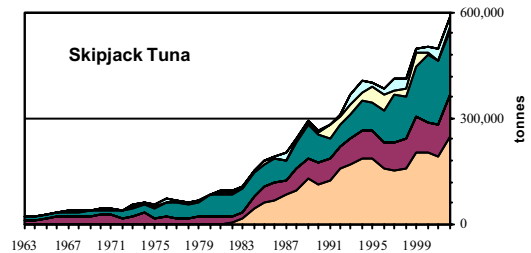


Figure 3: Catches of skipjack tuna (SKJ) per gear type and year in the IOTC Area from 1963 to 2002



Legend:

- Purse Seine
- Longline
- Pole and Line
- Gillnet
- Hand Line
- Troll Line

Note that the catches series estimated during 2003 include catches assigned to each species after allocation of species aggregates to individual species by the Secretariat (2002 catches series only accounted for catches recorded under individual species in the IOTC database).

The Secretariat conducted several reviews of the NC database during 2003. These revisions led to important changes in the estimates of catches of skipjack tuna (Figure 6) and, to a lesser extent, yellowfin tuna (Figure 4). The catches of bigeye tuna did not change but slightly (Figure 5). The difference between 2003 and 2002 catch estimates originates mainly in a review conducted at the IOTC Secretariat aiming at assigning the catches not available per species in the IOTC database to the corresponding species. More details about this review can be found in a separate document (WPTT-04-06).

Figure 4: Yellowfin tuna catch estimates in 2003 versus catch estimates in 2002 (1963-2001)

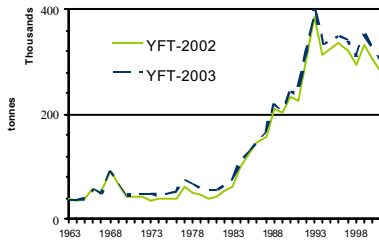


Figure 5: Bigeye tuna catch estimates in 2003 versus catch estimates in 2002 (1963 to 2001)

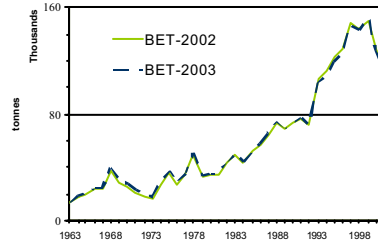
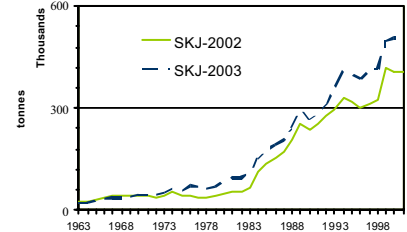


Figure 6: Skipjack tuna catch estimates in 2003 versus catch estimates in 2002 (1963-2001)



Note: Ibid. footnote Figures 1-3

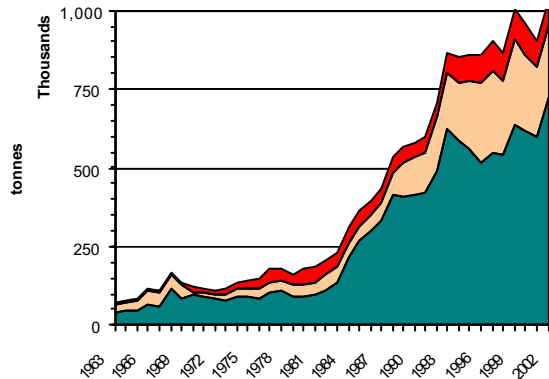
Although the quality of the information on the three tropical tunas is considered in general to be fairly good, the completeness and accuracy of the records are compromised by:

Catches not available: several countries were not collecting fishery statistics, especially in years prior to the early seventies, and others have not reported their statistics to IOTC. In most cases, the catches of tropical tunas in those countries were probably minor. Nevertheless, the catches of some important longline fleets are unknown, as it is the case with the foreign fresh tuna longliners operating from Maldives.

Figure 7: Catches status of Tropical Tuna species

Legend:

- The catches available referred to species aggregates not having the Secretariat enough information to assign them to individual species (catches aggregates broken into species for the Working Party)
- The catches available referred to species aggregates having the Secretariat enough information to assign them to individual species (catches aggregates broken and data input to IOTC Nominal Catches database under individual species)
- The catches available refer to individual species



Catches uncertain: catches of tunas and tuna-like species are sometimes reported aggregated¹. The Secretariat estimates the species and gear composition of these aggregates on the basis of all information available but the accuracy of the estimates is thought low for fisheries poorly or not at all documented (Figure 7).

Uncertainty may also occur with catches estimated for:

- **Yemen gillnet fishery:** The information collected during several missions to Yemen by FAO staff indicates that gillnet catches in Yemen may be well up 40,000 tons per year, with important catches of yellowfin tuna recorded in current years. This figure is five times higher than that recorded in the FAO database, the only information available so far to the Secretariat.

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.

- **Sri Lankan gillnet (and longline) fishery:** The catches series of yellowfin and skipjack tunas in Sri Lanka were re-estimated for 1950-2002. The dramatic discrepancies between the different catch estimates produced in the country are of concern and make it very difficult any attempt to estimate catches. The new catches series estimated are, nevertheless, thought more accurate than the previous.
- **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 2003. The new catch estimates differ from those obtained by using the previous catch estimation procedure (CSIRO-RIMF sampling). Therefore, the catch series is expected to change once that new catches are estimated for 2003 (all previous estimates were based on the catches obtained through CSIRO-RIMF sampling in Benoa). The current catch series are, therefore, not thought fully accurate.
- **Other fresh tuna longline fleets:** Although the catches of fresh tuna longline ships based in different ports of the Indian Ocean were re-estimated from data coming from past or recent sampling schemes operated, the accuracy of the estimates is still far from complete, especially in the case of fleets operating from ports not covered by these schemes or past catches estimated on the basis of recent estimates, very far in time.
- **Deep-freezing longline fleets:** The Secretariat estimated new catches for 1992-2002 using new information collected during 2003. The catches are thought not too accurate due to the many assumptions made in estimating the total catches and species breakdown. A dramatic decrease in the number of vessels operating under flags of non-reporting countries has been recorded since 2001. The reason for this decrease is not fully known and changes in the catch estimates may occur as more information become available.
- **Ex-Soviet purse seiners:** The catches of 9 to 11 ex-Soviet purse seiners, operating under the flags of Panama and Belize in recent years, are not available for 1995-1997. Total catches and effort for 1998-2002 were reported in 2003 for this fleet but the new datasets did not include catches per species and type of school, which needed to be estimated by the Secretariat.

Catch-and- Effort (CE) data

Catch-and-effort records are available for the main fleets fishing for tropical tunas in the Indian Ocean (Figures 8-12), namely baitboat (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 very small.

Baitboat: Catch-and-effort statistics from the Maldives are available by species, month and atoll for 1970-1993. Only catches and effort per species, year and atoll are available since then.

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 (e.g. non-reporting fleets, Philippines, etc.).

The statistics provided by Japan and Taiwan,China are in general considered accurate. Nevertheless, the inconsistencies found during the validation of data records for some years, involving the Taiwan,China data for the period 1990-92 and 2002, are still unsolved.

Korean CE statistics are thought to be highly inaccurate. Many inconsistencies were found in the data, when comparing the catches in this database with those reported as nominal catches, for instance.

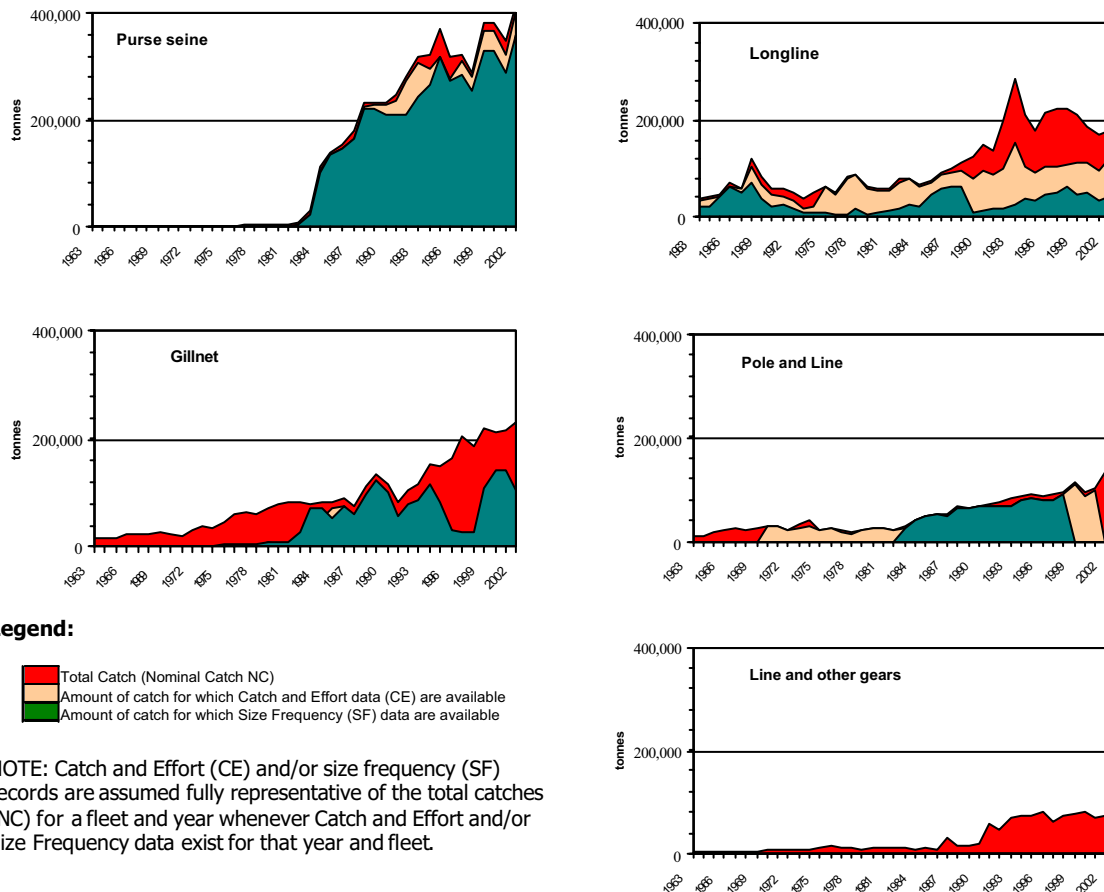
Purse seine: Catch-and-effort statistics are complete for European-owned purse seiners and those monitored by European scientists, as well as those from Seychelles. Statistics are also available for other fleets including the ex-Soviet purse seine fleet (1998-2002; under Belize and Panama flags), Mauritius and Japan. As is the case for the NC data, the CE data for the purse-seine fleet formerly under the Russian flag are not fully accurate, especially regarding the species

² Taiwan, China refers to Taiwan province of China.

composition and type of school fished. No catches and effort data for the Iran purse seine fleet are available.

Gillnet: Almost no data are available for gillnet fisheries. This is of concern taking into account that gillnets have been used not only in coastal waters, but also on the high seas in recent years.

Figures 8-12: 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



Size-Frequency (SF) data

Purse seine (Figure 8): The quality of the data is thought to be good for fleets under European monitoring. No or scarce data is available for Iranian, Japanese and ex-Soviet purse seiners. The size frequency statistics of Mauritian purse seiners is complete since 1986.

Baitboat (Figure 11): The completeness and quality of the sampling on baitboat fisheries (Maldives) is thought good until 1998. No data are available since 1999.

Longline (Figure 10): For longline fisheries, however, only Japan has been reporting size-frequency data since the beginning of the fishery. In recent years, the number of specimens measured is very low in relation to the total catch and has been decreasing year by year. The size-frequency statistics available from the two other main longline fleets are either very incomplete (Taiwan, China for which only four years are available) or inaccurate (Korea), which invalidates their use. The recovery of size data from port sampling regarding fresh tuna longline fleets operating in Thailand and Indonesia continued in 2003 and 2004, with many new records input to the IOTC database.

Gillnet (Figure 10): Although size data are available for some important (Iran, Sri Lanka and Oman³) gillnet fisheries sample sizes are thought very low.

Size data are almost or no available for other gears.

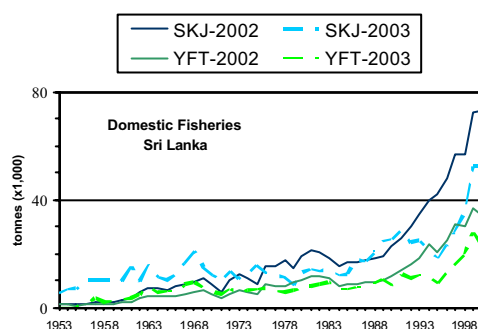
Estimation of catches of non-reporting fleets

The estimates of catches of non reporting fleets were updated in 2003 thanks to new information available during the year:

- **Sri Lanka and Oman:** The catches of Sri Lanka and Oman domestic fisheries, mainly gillnet, were re-estimated in 2003 for the period 1950-2002 and 1950-1984, respectively. The new catches of yellowfin and skipjack tunas estimated for Sri Lanka are higher than those recorded previously until the mid-seventies and lower after then.

The new estimates are based on information collected through different missions by IOTC and OFCF staff to this country. New catches were also estimated for Oman for the period 1950-1984, for which no data were available before. These estimates are based on 1985 catches in Oman and catch trend in neighbouring Yemen for 1950-1984. From 1,000 to 5,000 tonnes of yellowfin tuna were added to the database depending on the year.

Figure 13: Catches of domestic vessels in Sri Lanka estimated in 2003 versus catches estimated in 2002 (1953-2002)



- **Other non-reporting fleets (NEI):** The high number of non-reporting fleets operating in the Indian Ocean in recent times led to dramatic increases in the catches that need to be estimated, reducing in this way the quality of the data gathered regarding the yellowfin tuna, bigeye tuna and, less significantly, skipjack tuna.
 - **Purse seine:** The catches of ex-Soviet purse seiners were re-estimated for 1997-2002 on the basis of the new information available. Total catches available were assigned to species and type of school according to the species composition and type of school of European Community purse seiners. The new catches estimated are very close of those estimated before by the Secretariat averaging around 30,000 tons per year.
 - **Fresh tuna longline:** The catches of fresh tuna longliners were estimated according to the port where the different fleets were based. Most of the catches estimated are from Taiwanese longliners according to the information available.
 - **Indonesia:** The catches of Indonesian vessels during 2002 were estimated on the basis of previous reviews. The new information collected through the multilateral catch monitoring program in Indonesia will allow re-estimating the catch series for Indonesia. Changes in the total catches and species composition are expected in the future.
 - **Thailand:** The catches of fresh tuna longliners from Taiwan, China and Indonesia in Phuket were estimated according to the data collected through the AFRDEC (Andaman Sea Fisheries Research and Development Centre)-OFCF (Overseas Fisheries Cooperation Foundation of Japan)-IOTC Sampling Program.
 - **Malaysia and Singapore:** The catches of fresh tuna longliners based in Malaysia and Singapore were estimated on the basis of previous data recorded

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

(IPTP Sampling Program), new estimates from FRI (Fisheries Research Institute of Penang) and vessel activity in Singapore (Jurong), available since 1992.

- **Sri Lanka:** The catches of fresh tuna longliners unloading to processing plants in Sri Lanka were estimated on the basis of previous data collected by NARA (National Aquatic Resources Research and Development Agency) in Colombo and estimates from Phuket and Penang sampling.
- **Maldives:** The catches of fresh tuna longliners were not estimated due to lack of reliable information on their numbers and activity.

Figure 14: Catches of fresh-tuna longline vessels based in Thailand, Malaysia, Singapore and Sri Lanka (mainly from Taiwan,China) estimated in 2003 versus catches estimated in 2002 (1988-2001)

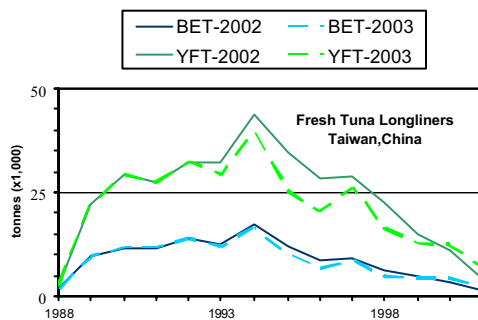
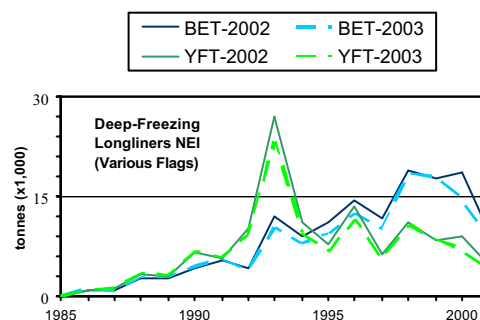


Figure 15: Catches of deep-freezing longline vessels in the Indian Ocean estimated in 2003 versus catches estimated in 2002 (1985-2001)



Deep-freezing longline: The catches of large longliners from several non-reporting countries were estimated according to the number of vessels estimated from the IOTC vessel record and the catches of Taiwanese longliners, on the assumption that most of the vessels operate as the longliners from Taiwan,China. The collection of new information regarding these non-reporting fleets during the last year, especially concerning the number and characteristics of longliners operating, led to better estimates of catches. A decrease in the number of vessel recorded operated since 1999 led to a dramatic decrease in the catches estimated. 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 operating under flags of reporting countries, such as Philippines and the Seychelles.

Data related issues for tropical tunas

A number of problem areas were identified in the data situation for tropical tunas:

- Poor knowledge of the catches, effort and size-frequency from fresh tuna longline vessels, especially from Taiwan,China and several non-reporting fleets.
- Poor knowledge of the catches, effort and size-frequency from non-reporting fleets of deep-freezing tuna longliners, especially since the mid-eighties.
- Lack of accurate catch, effort and size-frequency data for the Indonesian longline fishery before 2002.
- Poor knowledge of the species composition and lack of size-frequency data for ex-Soviet purse seine boats flying flags of convenience in recent years.
- Scarcity of data, especially size frequency data, for gillnet fisheries and pole and line fishery of Maldives since 1998.
- Uncertainty of catches, mainly gillnet, of 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 from several countries as for South Africa, Malaysia, Australia and Seychelles longline fisheries.

Revision of the IOTC databases: Several revisions have been conducted during the last year on the IOTC databases. This has led to new datasets being input, especially regarding new series of 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 ex-Soviet purse seiners for 1998-2002 are thought more accurate.

IOTC/OFCF sampling programmes: The collection of information on the activities of fresh tuna longliners landing in Phuket and Indonesia has continued during 2003. This has led to more complete and accurate estimates of catches of these fleets. Other valuable data collected in the scope of these programmes refer to length frequencies which will allow length-length, length-weight and weight-length relationships to be established.

IOTC/OFCF Regional Workshop on Data Collection and Processing Systems: New estimates of catches of tuna and tuna-like species for several countries were conducted during 2003 on the basis of the reports presented to the IOTC/OFCF Regional Workshop on Data Collection and Processing Systems (Seychelles, March 2004). The data collection and processing systems of ten countries in the Indian Ocean region were reviewed during the Workshop considerably increasing the knowledge on how fisheries statistics are generated in each case.

Sri Lanka and Oman NC: The catches of Sri Lankan and Omani domestic fisheries were updated during 2003 with the whole catch series added for Sri Lanka and 1950-1984 catches estimated for Oman.

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

Yellowfin and Bigeye Tuna

NC 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 past catches estimated.

Artisanal catches are negligible as regards bigeye tuna. On the contrary, catches of yellowfin tuna under artisanal gears, mainly gillnets, have dramatically increased in recent years being still uncertain in most cases.

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

SF data: Sampling coverage from Japan and Korea is low in recent years. The only data available regarding non-reporting fleets are from sampling in Phuket, Penang, Sri Lanka and Indonesia. No SF data are available from Taiwanese vessels since 1989. Little information is available on important artisanal catches (e.g. Oman, Pakistan, Yemen and Comoros).

Skipjack Tuna

NC and CE data: Relatively well known for most purse-seine fisheries. Data are available for the important artisanal fishery in Maldives. Artisanal components (not well known) are important for this species. In several coastal countries the catches are not reported by gear (Indonesia).

SF data: Available for reporting purse seine fleets (1984-2002), Maldivian baitboats (1983-1998) and some gillnet fisheries and years (Pakistan, Iran, Indonesia and Sri Lanka), although sample sizes are thought low in some cases.

Figure 16: Catches of Bigeye Tuna (BET) in the Indian Ocean for the period 1963-2002

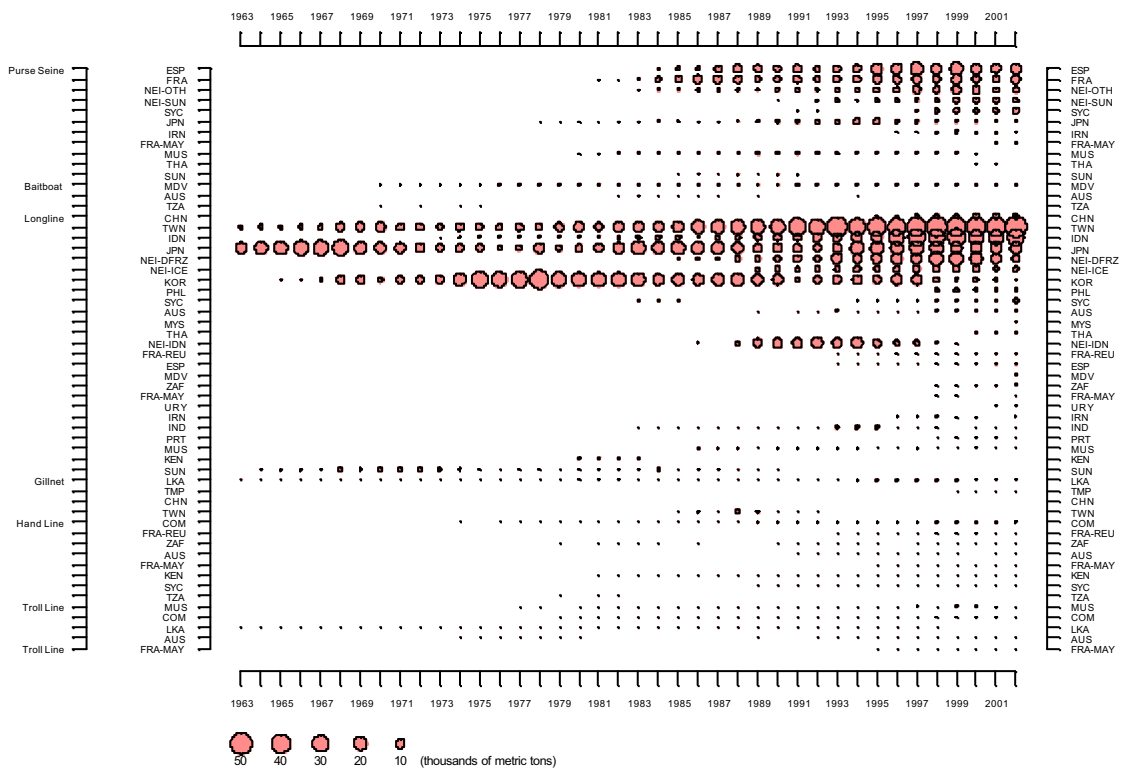


Figure 17: Catches of Skipjack Tuna (SKJ) in the Indian Ocean for the period 1963-2002

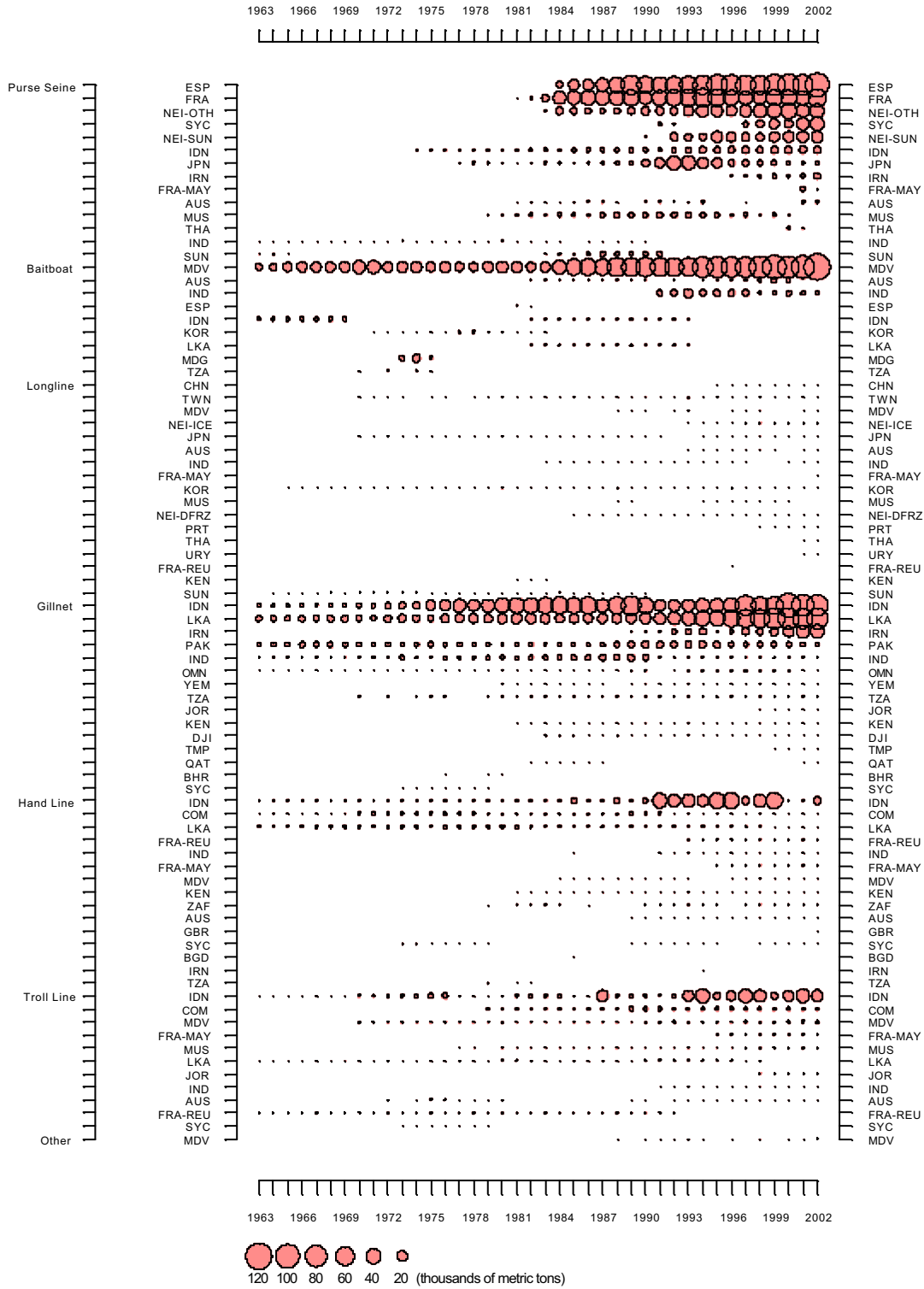
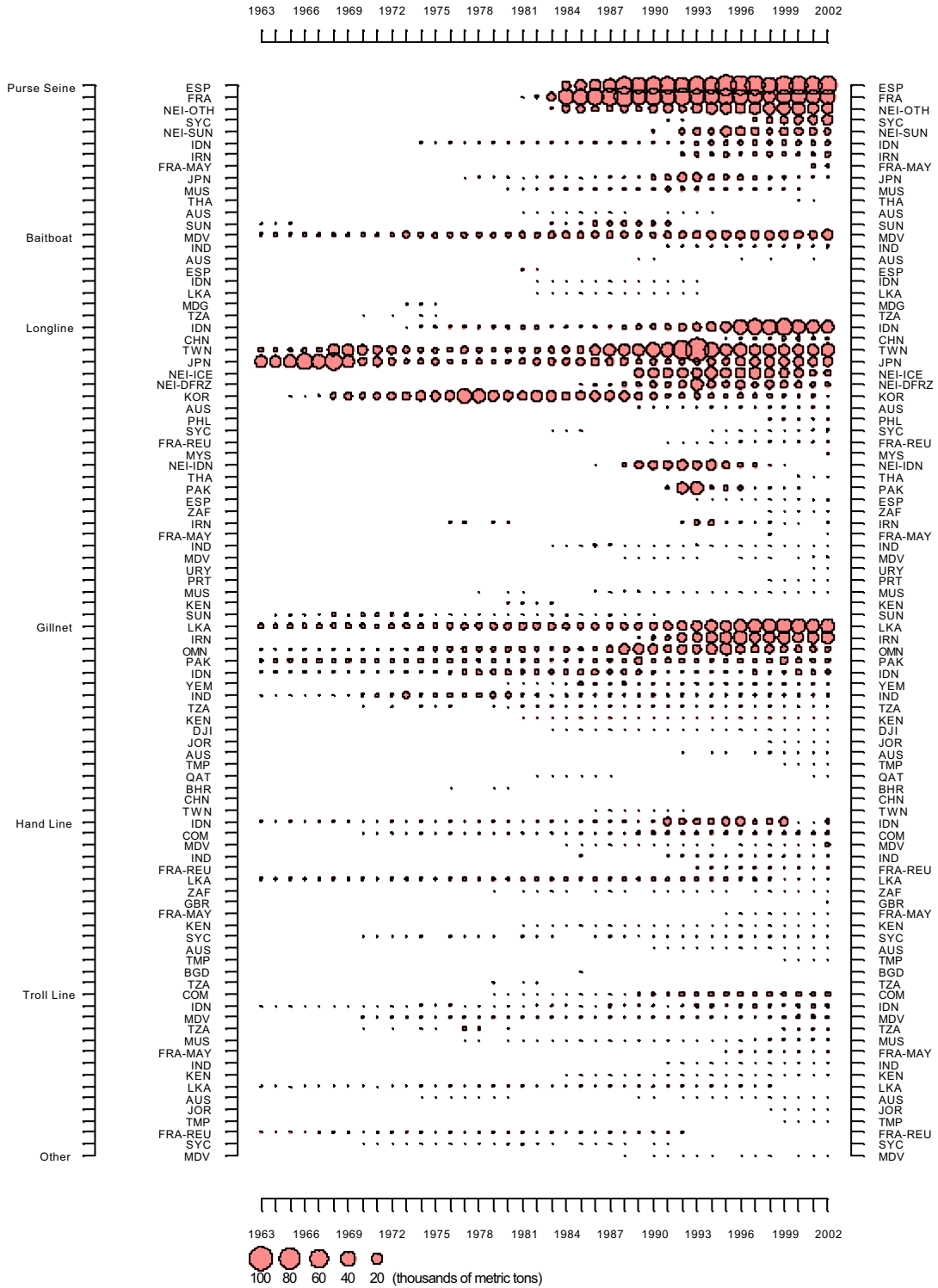


Figure 18: Catches of Yellowfin Tuna (YFT) in the Indian Ocean for the period 1963-2002






Data Catalogues

1/ Availability

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

Legend: SpC Mean catches of the Species for the last five years

	Nominal catches available
	Catch and Effort data available
	Size frequency data available

Bigeye Tuna

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	11.42
																					France	6.81
																					NEI-Other	5.16
																					NEI-Ex-Soviet Union	2.78
																					Seychelles	2.66
																					Japan	0.76
																					Iran, Islamic Republic	0.37
																					France-Territories	0.29
																					Mauritius	0.16
																					Thailand	0.13
																					Soviet Union	
																					Baitboat	
Australia																						
Longline																					China	2.57
																					Taiwan,China	38.91
																					Indonesia	24.98
																					Japan	14.20
																					NEI-Deep-freezing	13.11
																					NEI-Fresh Tuna	3.50
																					Korea, Republic of	1.59
																					Philippines	1.36
																					Seychelles	0.75
																					Australia	0.42
																					Malaysia	0.15
																					Thailand	0.14
																					NEI-Indonesia Fresh Tuna	0.14
																					France-Reunion	0.12
																					Spain	0.08
																					France-Territories	0.06
																					Maldives	0.06
																					South Africa	0.06
																					Uruguay	0.02
																					Iran, Islamic Republic	0.01
																					India	0.01
																					Mauritius	0.00
																					Kenya	
Soviet Union																						
Gillnet																					Sri Lanka	0.09
																					China	
																					Taiwan,China	
Line																					Comoros	0.03
																					Mauritius	0.03
																					France-Reunion	0.00
																					Sri Lanka	0.00
																					Australia	
																					South Africa	
																					Seychelles	

Skipjack Tuna

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	74.00
																					France	39.79
																					NEI-Other	32.79
																					Seychelles	18.85
																					NEI-Ex-Soviet Union	17.90
																					Indonesia	3.53
																					Japan	3.29
																					Iran, Islamic Republic	3.18
																					France-Territories	2.01
																					Australia	1.61
																					Mauritius	1.29
																					Thailand	0.79
																					Soviet Union	
																					Baitboat	
Australia	3.36																					
India	2.96																					
Spain																						
Indonesia																						
Korea, Republic of																						
Sri Lanka																						
Madagascar																						
Longline																					China	
																					Taiwan,China	0.05
																					Maldives	0.01
																					NEI-Fresh Tuna	0.01
																					Japan	0.00
																					Australia	0.00
																					India	0.00
																					Thailand	
																					Kenya	
																					Korea, Republic of	
																					Mauritius	
																					Gillnet	
Iran, Islamic Republic	18.81																					
Indonesia	7.94																					
Pakistan	3.94																					
Oman	0.17																					
India	0.10																					
Line																						
																					Maldives	0.92
																					Sri Lanka	0.15
																					Mauritius	0.10
																					France-Reunion	0.08
																					India	0.05
																					Australia	0.00
																					United Kingdom	0.00
																					South Africa	0.00
																					Iran, Islamic Republic	
Other																					Indonesia	38.99
																					India	0.11
																					Yemen	0.09
																					Jordan	0.05
																					Maldives	0.04
																					Australia	
																					Comoros	
																					Japan	
																					Seychelles	
																					South Africa	
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch

Yellowfin Tuna

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch		
Purse Seine																						Spain	48.69	
																						France	31.47	
																						NEI-Other	22.33	
																						Seychelles	11.66	
																						NEI-Ex-Soviet Union	8.92	
																						Iran, Islamic Republic	3.04	
																						France-Territories	2.22	
																						Indonesia	1.25	
																						Japan	1.09	
																						Mauritius	0.65	
																						Thailand	0.23	
																						Australia		
																						Soviet Union		
	Baitboat																						Maldives	12.60
																							India	0.54
																					Australia			
																					Spain			
																					Sri Lanka			
																					Madagascar			
Longline																						Indonesia	31.93	
																						China	1.64	
																						Taiwan,China	21.01	
																						Japan	15.03	
																						NEI-Fresh Tuna	10.89	
																						NEI-Deep-freezing	6.87	
																						Korea, Republic of	1.19	
																						Australia	0.50	
																						Philippines	0.45	
																						France-Reunion	0.30	
																						Seychelles	0.30	
																						Malaysia	0.20	
																						France-Territories	0.19	
																						NEI-Indonesia Fresh Tuna	0.19	
																						Thailand	0.19	
																						Pakistan	0.17	
																						Spain	0.15	
																						South Africa	0.11	
																						Iran, Islamic Republic	0.11	
																						India	0.08	
																						Maldives	0.05	
																						Uruguay	0.03	
																						Portugal	0.02	
																						Mauritius	0.02	
																						Kenya		
																					Soviet Union			
Gillnet																						Sri Lanka	27.41	
																						Iran, Islamic Republic	20.98	
																						Oman	7.45	
																						Pakistan	4.73	
																						Indonesia	0.81	
																						India	0.73	
																						Australia	0.00	
																						China		
																					Taiwan,China			
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch		

Yellowfin Tuna

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch		
Line																						Comoros	5.30	
																							Maldives	1.90
																							India	0.44
																							France-Reunion	0.29
																							Sri Lanka	0.22
																							Mauritius	0.13
																							Kenya	0.08
																							United Kingdom	0.03
																							South Africa	0.03
																							Australia	0.01
																							East Timor	0.00
																							Seychelles	0.00
	Other																						Yemen	0.82
																								Tanzania
																							Indonesia	0.32
																							Maldives	0.01
																							Jordan	0.00
																							Comoros	0.00
																							Australia	
																							Japan	
																							Seychelles	
																							South Africa	
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch		

Data Catalogues

2/ Quality





(Quality of the statistics held in the Nominal Catches, Catch and Effort and Size Frequency databases)

Nominal Catches Database: The higher or lower quality of each individual record (strata) was assigned depending on whether the catches reported (or estimated) in that strata (Country-RepCountry-Year-Gear-Area-Species-Source) were thought to accurately represent the actual catches occurred in the strata concerned.

Catch and Effort Database: The higher or lower quality of each individual record (strata) was assigned depending on whether the catches reported (or estimated) in that strata (Country-RepCountry-Year-Gear-Area-Species-Source) were thought representative of the total catches occurred in the strata concerned.

Size Frequency Database: The higher or lower quality of each individual record (strata) was assigned depending on whether the specimens sampled in that strata (Country-RepCountry-Year-Gear-Area-Species-Source) were thought representative of all specimens caught in the strata concerned.

Legend: SpC Mean catches of the Species for the last five years

	Poor quality
	Unknown quality
	Fair quality
	Good quality

Bigeye Tuna

Nominal Catches

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	11.42
																					France	6.81
																					NEI-Other	5.16
																					NEI-Ex-Soviet Union	2.78
																					Seychelles	2.66
																					Japan	0.76
																					Iran, Islamic Republic	0.37
																					France-Territories	0.29
																					Mauritius	0.16
																					Thailand	0.13
																					Soviet Union	0.13
Baitboat																					Maldives	0.85
																					Australia	0.85
Longline																					China	2.57
																					Taiwan,China	38.91
																					Indonesia	24.98
																					Japan	14.20
																					NEI-Deep-freezing	13.11
																					NEI-Fresh Tuna	3.50
																					Korea, Republic of	1.59
																					Philippines	1.36
																					Seychelles	0.75
																					Australia	0.42
																					Malaysia	0.15
																					Thailand	0.14
																					NEI-Indonesia Fresh Tuna	0.14
																					France-Reunion	0.12
																					Spain	0.08
																					France-Territories	0.06
																					Maldives	0.06
																					South Africa	0.06
																					Uruguay	0.02
																					Iran, Islamic Republic	0.01
India	0.01																					
Mauritius	0.00																					
Kenya	0.00																					
Soviet Union	0.00																					
Gillnet																					Sri Lanka	0.09
																					China	0.09
Line																					Taiwan,China	0.03
																					Comoros	0.03
																					Mauritius	0.03
																					France-Reunion	0.00
																					Sri Lanka	0.00
																					Australia	0.00
																					South Africa	0.00
Seychelles	0.00																					
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch

Catch And Effort Statistics

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	11.42
																					France	6.81
																					NEI-Other	5.16
																					NEI-Ex-Soviet Union	2.78
																					Seychelles	2.66
																					Japan	0.76
																					Iran, Islamic Republic	0.37
																					Mauritius	0.16
																					Indonesia	0.16
																					Australia	0.16
																					India	0.01
Baitboat																					Australia	0.85
																					Australia	0.85
Longline																					China	2.57
																					Taiwan,China	38.91
																					Japan	14.20
																					NEI-Deep-freezing	13.11
																					NEI-Fresh Tuna	3.50
																					Korea, Republic of	1.59
																					Philippines	1.36
																					Seychelles	0.75
																					Australia	0.42
																					Malaysia	0.15
																					France-Reunion	0.12
																					South Africa	0.06
																					India	0.01
																					Mauritius	0.00
																					China	0.00
Gillnet																					China	0.09
																					Taiwan,China	0.09
Line																					France-Reunion	0.00
																					Australia	0.00
																					South Africa	0.00
																					Indonesia	0.00
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch

Size Frequency Statistics

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	11.42
																					France	6.81
																					NEI-Other	5.16
																					Seychelles	2.66
																					Japan	0.76
																					Mauritius	0.16
																					Indonesia	
Baitboat																					Maldives	0.85
Longline																					China	
																					Taiwan,China	38.91
																					Japan	14.20
																					NEI-Fresh Tuna	3.50
																					Korea, Republic of	1.59
																					Seychelles	0.75
																					Australia	0.42
																					South Africa	0.06
Gillnet																					Mauritius	0.00
Line																					Sri Lanka	0.09
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch

Skipjack Tuna

Nominal Catches

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	74.00
																					France	39.79
																					NEI-Other	32.79
																					Seychelles	18.85
																					NEI-Ex-Soviet Union	17.90
																					Indonesia	3.53
																					Japan	3.29
																					Iran, Islamic Republic	3.18
																					France-Territories	2.01
																					Australia	1.61
																					Mauritius	1.29
																					Thailand	0.79
																					Soviet Union	
	Baitboat																					Maldives
																				Australia	3.36	
																				India	2.96	
																				Spain		
																				Indonesia		
																				Korea, Republic of		
																				Sri Lanka		
																				Madagascar		
Longline																					China	
																					Taiwan,China	0.05
																					Maldives	0.01
																					NEI-Fresh Tuna	0.01
																					Japan	0.00
																					Australia	0.00
																					India	0.00
																					Thailand	
																					Kenya	
																					Korea, Republic of	
																					Mauritius	
Gillnet																					Sri Lanka	60.94
																					Iran, Islamic Republic	18.81
																					Indonesia	7.94
																					Pakistan	3.94
																					Oman	0.17
																					India	0.10
																					Comoros	2.05
Line																					Maldives	0.92
																					Sri Lanka	0.15
																					Mauritius	0.10
																					France-Reunion	0.08
																					India	0.05
																					Australia	0.00
																					United Kingdom	0.00
																					South Africa	0.00
																				Iran, Islamic Republic		
Other																					Indonesia	38.99
																					India	0.11
																					Yemen	0.09
																					Jordan	0.05
																					Maldives	0.04
																					Australia	
																					Comoros	
																					Japan	
																					Seychelles	
																					South Africa	
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch

Catch And Effort Statistics

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	74.00
																					France	39.79
																					NEI-Other	32.79
																					Seychelles	18.85
																					NEI-Ex-Soviet Union	17.90
																					Indonesia	3.53
																					Japan	3.29
																					Iran, Islamic Republic	3.18
																					Australia	1.61
																					Mauritius	1.29
	Baitboat																					Maldives
																				Australia	3.36	
																				India	2.96	
																				Indonesia		
Longline																					China	
																					Taiwan,China	0.05
																					Maldives	0.01
																					Japan	0.00
																					Australia	0.00
																					India	0.00
Gillnet																					Sri Lanka	60.94
																					Iran, Islamic Republic	18.81
																					Indonesia	7.94
																					Pakistan	3.94
																					Oman	0.17
																					India	0.10
																					China	
Line																					Taiwan,China	
																					Maldives	0.92
Other																					Sri Lanka	0.15
																					France-Reunion	0.08
																					India	0.05
																					Australia	0.00
																					South Africa	0.00
																					Indonesia	
																					Indonesia	38.99
																				Maldives	0.04	
																				United Kingdom		
																				Sri Lanka		

Size Frequency Statistics

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	74.00
																					France	39.79
																					NEI-Other	32.79
																					Seychelles	18.85
																					Indonesia	3.53
																					Japan	3.29
																					Mauritius	1.29
Baitboat																					Maldives	89.90
																					Indonesia	
																					Sri Lanka	
Longline																					China	
																					Taiwan,China	0.05
																					NEI-Fresh Tuna	0.01
Gillnet																					Sri Lanka	60.94
																					Iran, Islamic Republic	18.81
																					Indonesia	7.94
																					Pakistan	3.94
Line																					Sri Lanka	0.15
																					Indonesia	
Other																					Malaysia	
																					Indonesia	38.99
																					Sri Lanka	

Yellowfin Tuna

Nominal Catches

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	48.69
																					France	31.47
																					NEI-Other	22.33
																					Seychelles	11.66
																					NEI-Ex-Soviet Union	8.92
																					Iran, Islamic Republic	3.04
																					France-Territories	2.22
																					Indonesia	1.25
																					Japan	1.09
																					Mauritius	0.65
																					Thailand	0.23
																					Australia	
																					Soviet Union	
																					Baitboat	
India	0.54																					
Australia																						
Spain																						
Sri Lanka																						
Madagascar																						
Longline																					Indonesia	31.93
																					China	1.64
																					Taiwan,China	21.01
																					Japan	15.03
																					NEI-Fresh Tuna	10.89
																					NEI-Deep-freezing	6.87
																					Korea, Republic of	1.19
																					Australia	0.50
																					Philippines	0.45
																					France-Reunion	0.30
																					Seychelles	0.30
																					Malaysia	0.20
																					France-Territories	0.19
																					NEI-Indonesia Fresh Tuna	0.19
																					Thailand	0.19
																					Pakistan	0.17
																					Spain	0.15
																					South Africa	0.11
																					Iran, Islamic Republic	0.11
																					India	0.08
																					Maldives	0.05
																					Uruguay	0.03
																					Portugal	0.02
																					Mauritius	0.02
																					Kenya	
																					Soviet Union	
																					Gillnet	
Iran, Islamic Republic	20.98																					
Oman	7.45																					
Pakistan	4.73																					
Indonesia	0.81																					
India	0.73																					
Australia	0.00																					
China																						
Taiwan,China																						
Line																					Comoros	5.30
																					Maldives	1.90
																					India	0.44
																					France-Reunion	0.29
																					Sri Lanka	0.22
																					Mauritius	0.13
																					Kenya	0.08
																					United Kingdom	0.03
																					South Africa	0.03
																					Australia	0.01
																					East Timor	0.00
																					Seychelles	0.00
																					Other	
Tanzania	0.64																					
Indonesia	0.32																					
Maldives	0.01																					
Jordan	0.00																					
Comoros	0.00																					
Australia																						
Japan																						
Seychelles																						
South Africa																						

Catch And Effort Statistics

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	48.69
																					France	31.47
																					NEI-Other	22.33
																					Seychelles	11.66
																					NEI-Ex-Soviet Union	8.92
																					Iran, Islamic Republic	3.04
																					Indonesia	1.25
																					Japan	1.09
																					Mauritius	0.65
																					Australia	
																					Soviet Union	
Baitboat																					Maldives	12.60
																					India	0.54
																					Australia	
																					Indonesia	
Longline																					China	1.64
																					Taiwan,China	21.01
																					Japan	15.03
																					NEI-Fresh Tuna	10.89
																					NEI-Deep-freezing	6.87
																					Korea, Republic of	1.19
																					Australia	0.50
																					Philippines	0.45
																					France-Reunion	0.30
																					Seychelles	0.30
																					Malaysia	0.20
																					South Africa	0.11
																					India	0.08
																					Maldives	0.05
																					Portugal	0.02
																					Mauritius	0.02
Oman																						
Gillnet																					Sri Lanka	27.41
																					Iran, Islamic Republic	20.98
																					Oman	7.45
																					Pakistan	4.73
																					Indonesia	0.81
																					India	0.73
																					China	
Taiwan,China																						
Line																					Maldives	1.90
																					India	0.44
																					France-Reunion	0.29
																					Sri Lanka	0.22
																					South Africa	0.03
																					Australia	0.01
																					Indonesia	
Other																					Indonesia	0.32
																					Maldives	0.01
																					Australia	
																					United Kingdom	
																					Sri Lanka	
Oman																						
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch

Size Frequency Statistics

Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch
Purse Seine																					Spain	48.69
																					France	31.47
																					NEI-Other	22.33
																					Seychelles	11.66
																					Indonesia	1.25
																					Japan	1.09
																					Mauritius	0.65
Baitboat																					Maldives	12.60
																					Indonesia	
Longline																					China	
																					Taiwan,China	21.01
																					Japan	15.03
																					NEI-Fresh Tuna	10.89
																					Korea, Republic of	1.19
																					Australia	0.50
																					Seychelles	0.30
																					South Africa	0.11
																					India	0.08
																					Mauritius	0.02
																					Sri Lanka	
Gillnet																					Sri Lanka	27.41
																					Iran, Islamic Republic	20.98
																					Oman	7.45
																					Pakistan	4.73
																					Indonesia	0.81
Line																					Sri Lanka	0.22
																					Indonesia	
Other																					Indonesia	0.32
																					Sri Lanka	
Gear	63	65	67	69	71	73	75	77	79	81	83	85	87	89	91	93	95	97	99	01	Fleet	AvCatch