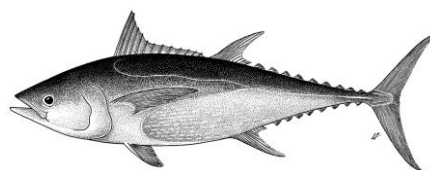


DRAFT: EXECUTIVE SUMMARY: LONGTAIL TUNA (*THUNNUS TONGGOL*)**Status of the Indian Ocean longtail tuna (LOT: *Thunnus tonggol*) resource****TABLE 1.** Longtail tuna: Status of longtail tuna (*Thunnus tonggol*) in the Indian Ocean

Area ¹	Indicators		2012 stock status determination
Indian Ocean	Catch ² 2011:	177,795 t	
	Average catch ² 2007–2011:	134,871 t	
	MSY:	unknown	
	F ₂₀₁₁ /F _{MSY} :	unknown	
	SB ₂₀₁₁ /SB _{MSY} :	unknown	
	SB ₂₀₁₁ /SB ₀ :	unknown	

¹Boundaries for the Indian Ocean stock assessment are defined as the IOTC area of competence.

²Nominal catches represent those estimated by the IOTC Secretariat. If these data are not reported by CPCs, the IOTC Secretariat estimates total catch from a range of sources including: partial catch and effort data; data in the FAO FishStat database; catches estimated by the IOTC from data collected through port sampling; data published through web pages or other means; data reported by other parties on the activity of vessels; and data collected through sampling at the landing place or at sea by scientific observers.

Colour key	Stock overfished (SB _{year} /SB _{MSY} < 1)	Stock not overfished (SB _{year} /SB _{MSY} ≥ 1)
Stock subject to overfishing (F _{year} /F _{MSY} > 1)		
Stock not subject to overfishing (F _{year} /F _{MSY} ≤ 1)		
Not assessed/Uncertain		

INDIAN OCEAN STOCK – MANAGEMENT ADVICE

Stock status. There remains considerable uncertainty about stock structure and about the total catches. A preliminary surplus production assessment undertaken in 2012 indicates that the Indian Ocean stock may be fully exploited/overexploited and the current spawning stock size levels may exceed S_{MSY} by 50% and spawning stock size levels currently and further work is urgently required in 2013. However, further exploratory analysis of the data available should be undertaken in preparation for the next WPNT meeting before the assessment results are used for stock status determination. Due to a lack of fishery data for several gears, only preliminary stock indicators can be used. Therefore stock status remains uncertain (Table 1). However, aspects of the biology, productivity and fisheries for this species combined with the lack of data on which to base a more formal assessment are a cause for considerable concern.

Outlook. The continued increase of annual catches for longtail tuna in recent years has further increased the pressure on the Indian Ocean stock as a whole, however there is not sufficient information to evaluate the effect this will have on the resource. The apparent fidelity of longtail tuna to particular areas/regions is a matter for concern as overfishing in these areas can lead to localised depletion. Research emphasis on improving indicators and exploration of stock structure and stock assessment approaches for data poor fisheries are warranted. The following should be noted:

- the Maximum Sustainable Yield estimate for the whole Indian Ocean is unknown.
- annual catches urgently need to be reviewed.
- improvement in data collection and reporting is required to assess the stock.

SUPPORTING INFORMATION

(Information collated from reports of the Working Party on Neritic Tunas and other sources as cited)

CONSERVATION AND MANAGEMENT MEASURES

Bullet tuna in the Indian Ocean is currently subject to a number of Conservation and Management Measures adopted by the Commission:

- Resolution 10/02 mandatory statistical requirements for IOTC Members and Cooperating non-Contracting Parties (CPC's)

- Resolution 10/08 concerning a record of active vessels fishing for tunas and swordfish in the IOTC area
- Resolution 12/03 on the recording of catch and effort by fishing vessels in the IOTC area of competence
- Resolution 12/07 concerning a record of licensed foreign vessels fishing for IOTC species in the IOTC area of competence and access agreement information
- Resolution 12/11 on the implementation of a limitation of fishing capacity of Contracting Parties and Cooperating Non-Contracting Parties

FISHERIES INDICATORS

Longtail tuna: General

Longtail tuna (*Thunnus tonggol*) is an oceanic species that forms schools of varying sizes. It is most abundant over areas of broad continental shelf. Table 2 outlines some key life history parameters relevant for management.

TABLE 2. Longtail tuna: Biology of Indian Ocean longtail tuna (*Thunnus tonggol*)

Parameter	Description
Range and stock structure	An oceanic species that forms schools of varying sizes. It is most abundant over areas of broad continental shelf. Feeds on a variety of fish, cephalopods, and crustaceans, particularly stomatopod larvae and prawns. No information is available on the stock structure of longtail tuna in the Indian Ocean.
Longevity	~20 years
Maturity (50%)	Age: n.a.; females n.a. males n.a. Size: females and males ~40 cm FL (Pacific Ocean).
Spawning season	The spawning season varies according to location. Off the west coast of Thailand there are two distinct spawning seasons: January-April and August-September.
Size (length and weight)	Maximum: Females and males 145 cm FL; weight 35.9 kgs. Most common size in Indian Ocean ranges 40–70 cm. Grows rapidly to reach 40–46 cm in FL by age 1.

n.a. = not available. Sources: Chang et al. 2001, Froese & Pauly 2009, Griffiths et al. 2010a, b, Kaymaran et al. 2011

Longtail tuna – Fisheries and catch trends

Longtail tuna is caught mainly by using gillnets and to a lesser extent, seine nets and trolling (Table 3; Fig. 1). The catch estimates for longtail tuna were derived from small amounts of information and are therefore uncertain¹. The catches provided in Table 3 are based on the information available at the IOTC Secretariat and the following observations on catches cannot currently be verified. Estimated catches of longtail tuna increased steadily from the mid 1950's to the year 2000 when over 100,000 t were landed. Catches then declined until 2005 (77,361 t). Since 2005, catch have increased continually with the highest catches ever recorded at around 180,000 t, landed in 2011.

In recent years (2009–11), the countries attributed with the highest catches of longtail tuna are Iran (42%) and Indonesia (29%) and, to a lesser extent, Oman, Pakistan, Malaysia, India and Thailand (25%) (Table 3; Fig. 2). In particular, Iran has reported large increases in the catch of longtail tuna since 2009. The increase in catches of longtail tuna coincides with a decrease in the catches of skipjack tuna and is thought to be the consequence of increased gillnet effort in coastal waters due to the threat of Somali piracy in the western tropical Indian Ocean.

TABLE 3. Longtail tuna: Best scientific estimates of the catches of longtail tuna by type of fishery for the period 1950–2011 (in metric tonnes) (Data as of October 2012)

Fishery	By decade (average)						By year (last ten years)									
	1950s	1960s	1970s	1980s	1990s	2000s	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Purse seine	44	204	999	4,388	8,195	13,379	15,348	13,369	11,223	9,333	13,107	17,552	14,215	16,404	15,483	23,972
Gillnet	2,960	6,751	11,225	30,740	50,398	74,182	63,255	69,692	62,421	57,765	68,953	74,632	87,204	105,659	127,015	144,094
Line	978	1,277	2,697	3,484	5,630	8,085	7,839	6,984	8,220	8,974	10,538	10,742	6,573	6,487	6,503	7,003
Other	290	489	1,054	2,164	2,500	1,802	1,710	1,603	1,665	1,290	1,338	1,890	2,090	1,804	2,306	2,726
Total	4,272	8,722	15,975	40,776	66,724	97,448	88,153	91,647	83,529	77,361	93,935	104,815	110,082	130,354	151,307	177,795

¹ The uncertainty in the catch estimates has been assessed by the IOTC Secretariat and is based on the amount of processing required to account for the presence of conflicting catch reports, the level of aggregation of the catches by species and or gear, and the occurrence of non-reporting fisheries for which catches had to be estimated.

The size of longtail tuna taken by IOTC fisheries typically ranges between 15 and 120 cm depending on the type of gear used, season and location (Fig. 9). The fisheries operating in the Andaman Sea (coastal purse seines and troll lines) tend to catch longtail tuna of small size (15–55cm) while the gillnet fisheries operating in the Arabian Sea catch larger specimens (40–100cm).

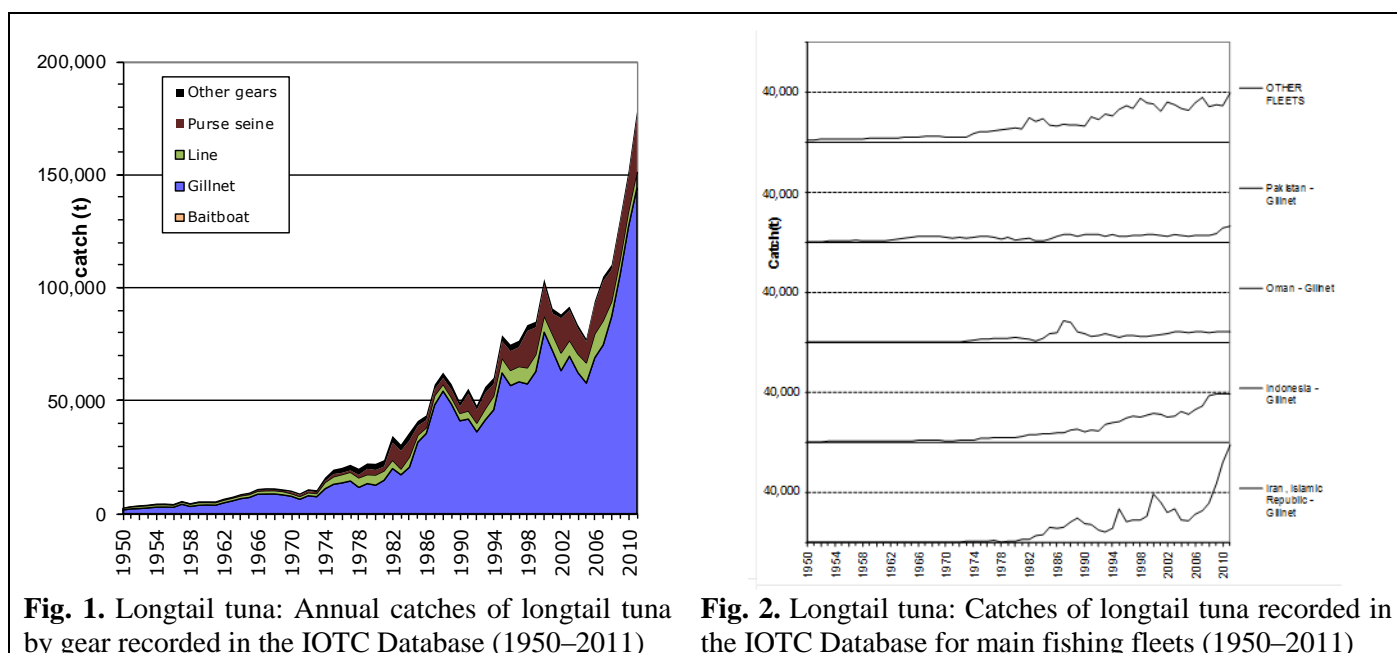


Fig. 1. Longtail tuna: Annual catches of longtail tuna by gear recorded in the IOTC Database (1950–2011)

Fig. 2. Longtail tuna: Catches of longtail tuna recorded in the IOTC Database for main fishing fleets (1950–2011)

Longtail tuna: uncertainty of catches

Retained catches are uncertain (Fig. 3), notably for the following fisheries:

- Artisanal fisheries of Indonesia: Indonesia did not report catches of longtail tuna by species or by gear for 1950–2004; catches of longtail tuna, kawakawa and other species were reported aggregated for this period. The IOTC Secretariat used the catches reported since 2005 to break the aggregates for 1950–2004 by gear and species. The catches estimated for the longtail tuna represent around 30% of the total catches of this species in the Indian Ocean in recent years.
- Artisanal fisheries of India and Oman: Although these countries report catches of longtail tuna, until recently the catches have not been reported by gear. The IOTC Secretariat used alternative information to assigning the catches reported by species. The catches of longtail tuna that had to be allocated by gear represented 9% of the total catches of this species in recent years.
- Artisanal fisheries of Mozambique, Myanmar (and Somalia): None of these countries have ever reported catches of longtail tuna to the IOTC Secretariat. Catch levels are unknown but are not considered substantial.
- Other artisanal fisheries: The IOTC Secretariat had to estimate catches of longtail tuna for the artisanal fisheries of Yemen (no data reported to the IOTC Secretariat) and Malaysia (catches not reported by species). The catches estimated for the longtail tuna represent 8% of the total catches of this species in recent years.
- Discard levels are believed to be very low although they are unknown for most fisheries.
- Changes to the catch series: There have not been significant changes to the catches of longtail tuna since the WPNT meeting in 2011.

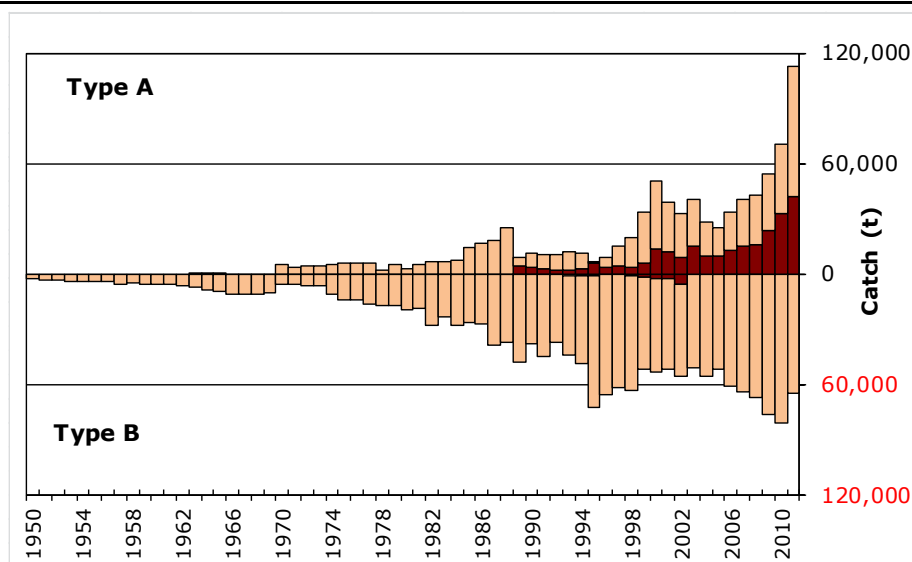


Fig. 3. Uncertainty of annual catch estimates for longtail tuna (1950–2011). Catches below the zero-line (Type B) refer to fleets that do not report catch data to the IOTC (estimated by the IOTC Secretariat), do not report catch data by gear and/or species (broken by gear and species by the IOTC Secretariat) or any of the other reasons provided in the document. Catches over the zero-line (Type A) refer to fleets for which no major inconsistencies have been found to exist. Light bars represent data for artisanal fleets and dark bars represent data for industrial fleets (Data as of October 2012)

Longtail tuna – Effort trends

Effort trends are unknown for longtail tuna in the Indian Ocean.

Longtail tuna – Catch-per-unit-effort (CPUE) trends

Standardised CPUE series have not yet been developed. Nominal CPUE series are however available from some fisheries but they are considered highly incomplete (Table 4). In most cases catch-and-effort data are only available for short periods of time. Reasonably long catch and effort series (extending for more than 10 years) are only available for Thailand small purse seines and gillnets (Fig. 4). No catch and effort data are available from sports fisheries, other than for partial data from the sports fisheries of Kenya.

TABLE 4. Longtail tuna: Availability of catches and effort series, by fishery and year (1970–2011)². Note that no catch and effort data are available for the period 1950–1971 in the IOTC Secretariat databases

Gear-Fleet	70	72	74	76	78	80	82	84	86	88	90	92	94	96	98	00	02	04	06	08	10	
PSS-Indonesia																						
PSS-Malaysia																						
PSS-Thailand																						
PS-Iran, IR																						
PS-Seychelles																						
PS-NEI																						
GILL-India																						
GILL-Indonesia																						
GILL-Iran, IR																						
GILL-Malaysia																						
GILL-Oman																						
GILL-Pakistan																						
GILL-Thailand																						
LINE-Australia																						
LINE-Indonesia																						
LINE-Malaysia																						
LINE-Yemen																						
OTHR-Australia																						
OTHR-Malaysia																						

² Note that the above list is not exhaustive, showing only the fisheries for which catches and effort are available in the IOTC database. Furthermore, catch-and-effort data are sometimes incomplete for a given year, existing only for short periods.

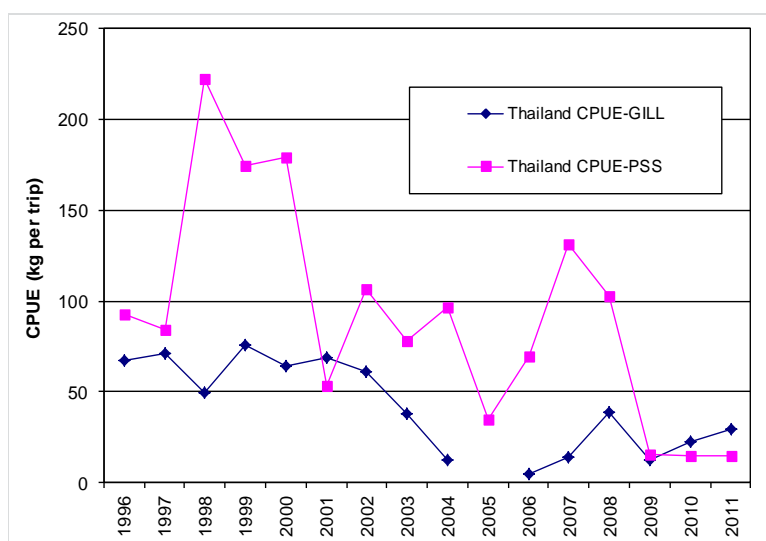


Fig. 4. Longtail tuna: Nominal CPUE series for the gillnet (GILL) and coastal purse seine (PSS) fisheries of Thailand derived from the available catches and effort data (1996–2011)

Longtail tuna – Fish size or age trends (e.g. by length, weight, sex and/or maturity)

- The size of longtail tuna taken by the Indian Ocean fisheries typically ranges between 15–120 cm depending on the type of gear used, season and location. The fisheries operating in the Andaman Sea (coastal purse seines and troll lines) tend to catch longtail tuna of small size (15–55cm) while the drifting gillnet fisheries operating in the Arabian Sea catch larger specimens (40–100cm).
- Trends in average weight can only be assessed for I.R. Iran drifting gillnets but the amount of specimens measured has been very low in recent years (Table 5). The length frequency data available from the mid-eighties to the early nineties was obtained with the support of the IPTP (Indo-Pacific Tuna Programme). Unfortunately, data collection did not continue after the end of the IPTP activities.
- Catch-at-Size(Age) tables are not available for the longtail tuna due to the paucity of size data available from most fleets and the uncertain status of the catches for this species. Length distributions derived from the data available for some selected fisheries are shown in Fig. 5.
- Sex ratio data have not been provided to the Secretariat by CPCs.
- Trends in average weight can only be assessed for Iranian gillnets but the amount of specimens measured has been very low in recent years (Table 5). The length frequency data available from the mid-eighties to the early nineties was obtained with the support of the IPTP (Indo-Pacific Tuna Programme). Unfortunately, data collection did not continue after the end of the IPTP activities.

TABLE 5. Longtail tuna: Availability of length frequency data, by fishery and year (1980–2011)³. Note that no catch and effort data are available for the period 1950–1982 in the IOTC Secretariat databases

Gear-Fleet	80	82	84	86	88	90	92	94	96	98	00	02	04	06	08	10
PSS-Indonesia				■	■											
PSS-Malaysia					■											
PSS-Thailand													■	■	■	
PS-Iran													■		■	■
GILL-Indonesia				■												
GILL-Iran							■	■	■	■	■	■	■	■	■	■
GILL-Malaysia												■	■	■	■	
GILL-Oman																■
GILL-Pakistan							■	■	■	■	■	■	■	■	■	■
GILL-Sri Lanka																■
LINE-Indonesia				■												
LINE-Iran																■
LINE-Malaysia			■	■	■	■										
LINE-Oman																■

Key

- More than 2,400 specimens measured
- Between 1,200 and 2,399 specimens measured
- Less than 1,200 specimens measured

³ Note that the above list is not exhaustive, showing only the fisheries for which size data are available in the IOTC database. Furthermore, when available size data may not be available throughout the year existing only for short periods

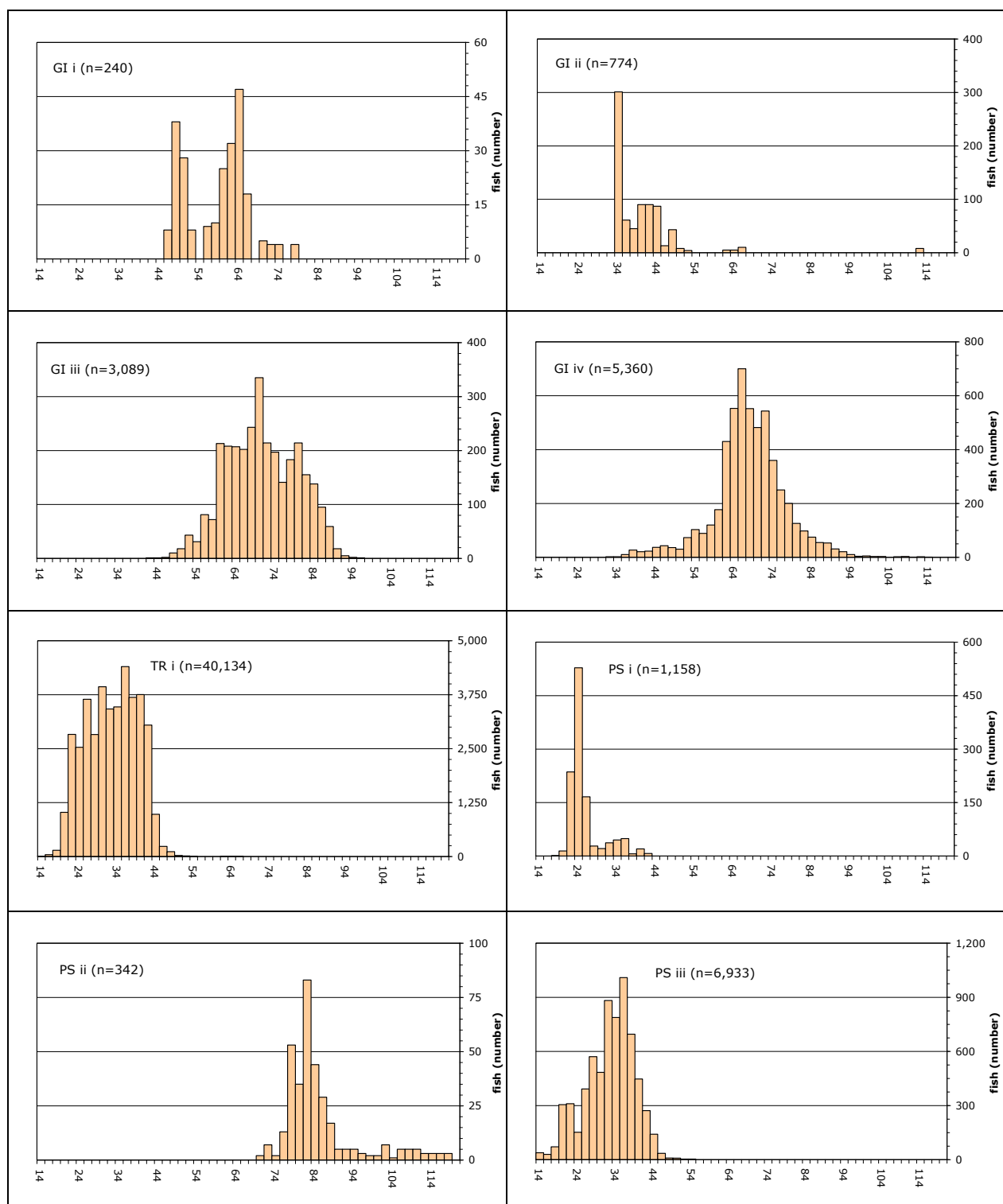


Fig. 5. Longtail tuna: Length frequency distributions (total amount of fish measured by 2 cm length class by decade) derived from the data available at the IOTC Secretariat for selected fisheries and periods. GI: Gillnet fisheries: i. Sri Lanka 1980–89, ii. Sri Lanka 1990–99, iii. Pakistan 1990–99, iv. Iran 2000–06. TR: Troll line fisheries: i. Malaysia 1980–89. PS: Coastal purse seine fisheries: i. Malaysia 1980–89, ii. Iran 2000–06, iii. Thailand 2000–06

STOCK ASSESSMENT

There are limited stock status indicators available for longtail tuna (although preliminary work by the IOTC secretariat, on a surplus production model in the Indian Ocean indicate that the stock may be fully exploited/overexploited and spawning stock size levels currently may exceed SMSY by 50%) and further work is urgently required in 2013. The preliminary estimation of stock indicators was attempted on the catch and effort

datasets from the Indian and Thailand gillnet and purse seine fisheries (described above). However, there is considerable uncertainty about the degree to which this and other indicators represent abundance as factors such as changes in targeting practices, discarding practices, fishing grounds and management practices are likely to interact in the depicted trends. Further work must be undertaken to derive additional stock indicators for this species, because in the absence of a quantitative stock assessment, such indicators represent the only means to monitor the status of the stock and assess the impacts of fishing.

TABLE 6. Longtail tuna (*Thunnus tonggol*) stock status summary

Management Quantity	Aggregate Indian Ocean
2011 catch estimate	177,795 t
Mean catch from 2007–2011	134,871 t
MSY (80% CI)	unknown
Data period used in assessment	–
F_{2011}/F_{MSY} (80% CI)	–
B_{2011}/B_{MSY} (80% CI)	–
SB_{2011}/SB_{MSY}	–
B_{2011}/B_0 (80% CI)	–
SB_{2011}/SB_0	–
$B_{2011}/B_{0, F=0}$	–
$SB_{2011}/SB_{0, F=0}$	–

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