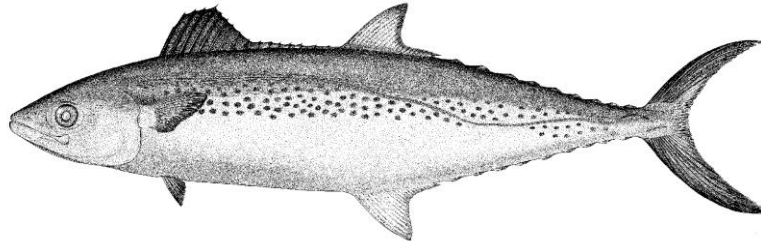


REVIEW OF FISHERIES STATISTICAL DATA AVAILABLE FOR INDIAN OCEAN INDO-PACIFIC KING MACKEREL

Author: [IOTC Secretariat](#)



Introduction

The overarching objective of the paper is to provide participants at the 14th Session of the IOTC Working Party on Neritic Tunas ([WPNT14](#)) with a review of the status of fisheries information available on Indo-Pacific mackerel (*Scomberomorus guttatus*) ([Bloch et al. 1801](#)) occurring in the Indian Ocean. The document describes the temporal and spatial trends in retained catches at global and ocean-basin scale and the main characteristics of the fisheries catching Indo-Pacific king mackerel in the Indian Ocean, as well as providing an assessment of the reporting quality of the data sets available at the IOTC Secretariat. A full description of the data sources, processing steps to generate the data sets, and key for reporting quality scores is available in IOTC Secretariat ([2023](#)).

Global catches

FAO data indicated that catches of Indo-Pacific king mackerel are exclusively from Indian and Pacific Oceans, with over 70% in Indian Ocean in recent years ([Fig. 1](#)).

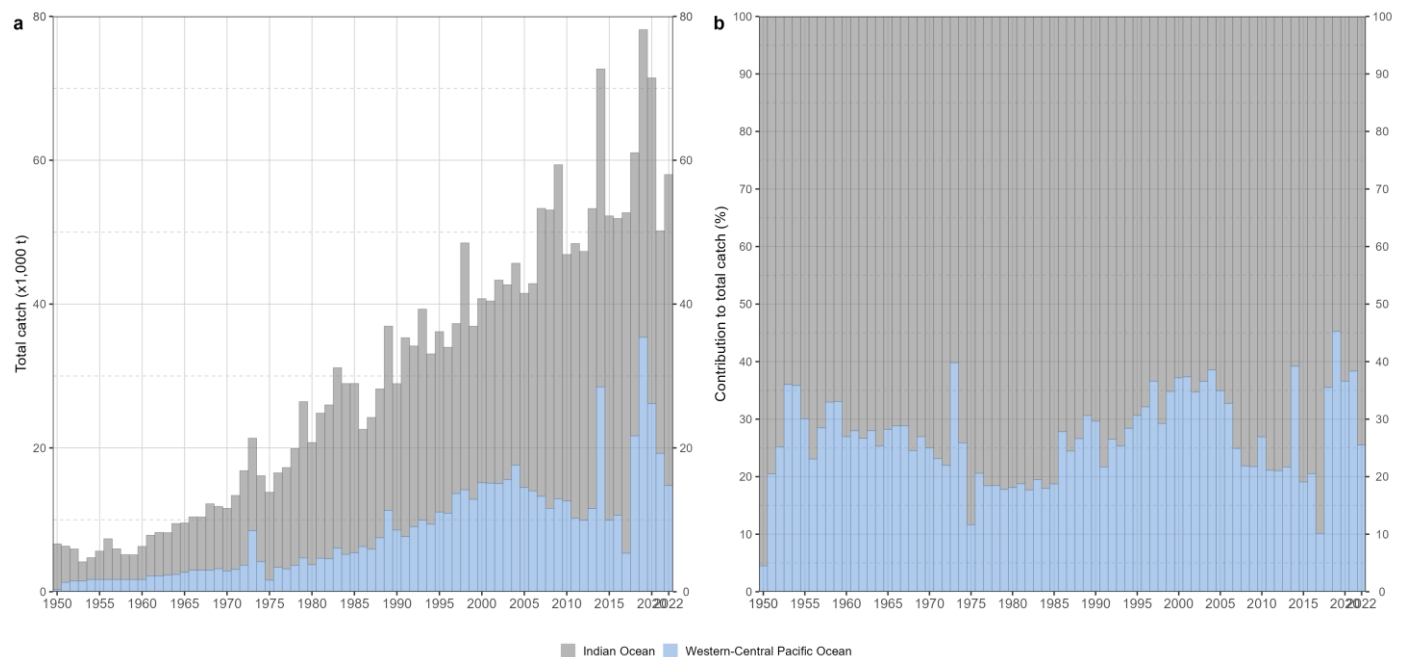


Figure 1: Annual time series of (a) cumulative retained catches (metric tonnes; t) and (b) contribution to the total retained catches (percentage; %) of Indo-Pacific king mackerel by ocean basin for the period 1950-2021. Source: [FAO global capture production database](#)

The main countries catching Indo-Pacific king mackerel are Indonesia in the Pacific Ocean, whereas in the Indian Ocean more evenly caught by countries in the Arabian areas, Indonesia, and India (Fig. 2).

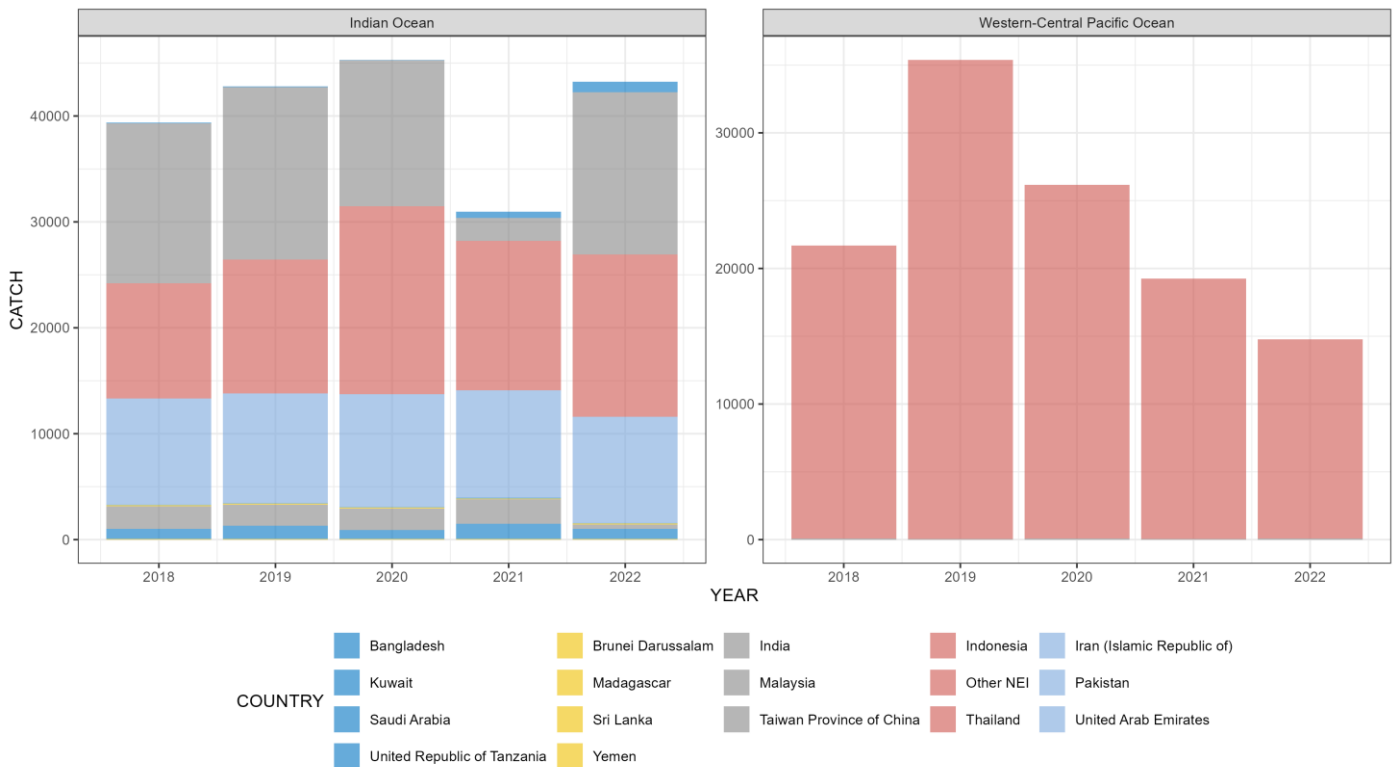


Figure 2: Annual time series of (a) cumulative retained catches (metric tonnes; t) and (b) contribution to the total retained catches (percentage; %) of Indo-Pacific king mackerel by ocean basin for the period 1950-2021. Source: [FAO global capture production database](https://www.fao.org/global-capture-production-database)

Indian Ocean retained catches

Historical trends (1950-2022)

Contrary to Bullet and Frigate tunas, Indo-Pacific king mackerel catches, increased significantly from the 1970s, attributed to increased in catches from India gillnet and trawl from the 1970s, furthermore, catches from purse seine fisheries from the same decade (Tab. 1 and Fig. 3). The rise of Indo-Pacific king mackerel, further exacerbated from catches from Myanmar with significant catches from 2008, sourced from SEAFDEC. Besides a drop in 2021, resulting from India aggregated catches of *Scomberomorus* spp in 2021, and database disaggregation procedure assigning significant catches to *s. commerson*, catches remained around 43,000t (Tab. 2 and Fig. 4).

Industrial fisheries reported negligible catches of *s. guttatus*. In recent years around 9844.762t (Fig. 5).

Table 1: Mean annual retained catches (metric tonnes; t) of Indo-Pacific king mackerel by decade and fishery for the period 1950-2019. The background intensity colour of each cell is directly proportional to the catch level. Data source: [best scientific estimates of retained catches](<https://www.iotc.org/meetings/14th-working-party-neritic-tunas-wpnt14-meetingData/03-NC>)

Fishery	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Purse seine Other	0	0	34	584	774	1,028	1,307
Longline Fresh	0	0	0	0	0	0	12
Longline Deep-freezing	0	0	0	14	6	3	3
Line Coastal longline	0	0	6	109	222	477	764
Line Trolling	247	344	751	1,195	1,443	1,846	3,105
Line Handline	6	8	17	30	169	181	99

Fishery	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Gillnet	4,365	6,895	13,942	16,488	19,435	21,687	28,985
Other	13	22	48	3,865	5,099	9,353	10,555
Total	4,630	7,268	14,798	22,286	27,148	34,574	44,830

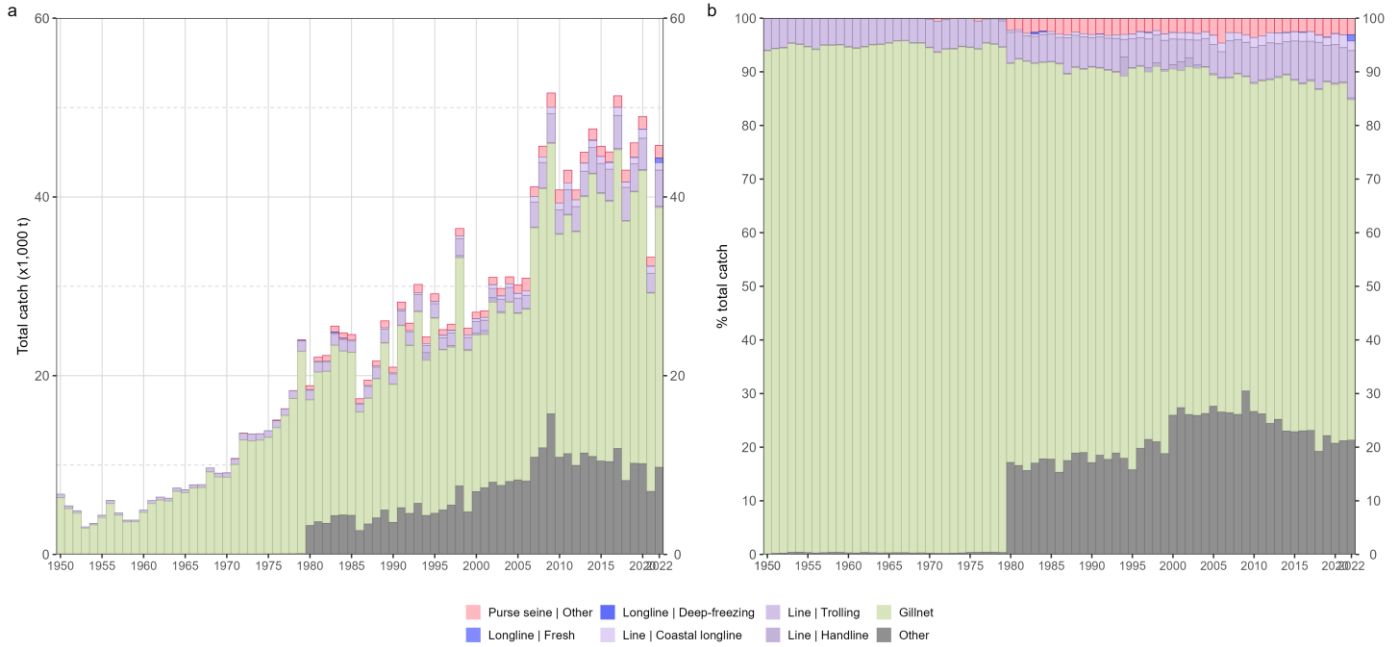


Figure 3: Annual time series of (a) cumulative retained catches (metric tonnes; t) and (b) cumulative contribution to the total retained catches (percentage; %) of Indo-Pacific king mackerel by fishery for the period 1950-2022. Data source: [best scientific estimates of retained catches](#)

Table 2: Annual retained catches (metric tonnes; t) of Indo-Pacific king mackerel by fishery for the period 2013-2022. The background intensity colour of each cell is directly proportional to the catch level. Data source: [best scientific estimates of retained catches](https://www.iotc.org/meetings/14th-working-party-neritic-tunas-wpnt14-meetingData/03-NC)

Fishery	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Purse seine Other	1,247	1,265	1,153	1,161	1,275	1,345	1,626	1,411	1,026	1,411
Longline Fresh	2	35	12	21	11	10	27	5	4	537
Longline Deep-freezing	0	0	1	20	1	4	3	8	3	2
Line Coastal longline	893	787	773	735	917	582	679	992	792	817
Line Trolling	2,757	2,875	3,275	3,495	3,680	3,718	3,077	3,519	2,121	4,030
Line Handline	107	94	93	110	162	72	82	121	97	168
Gillnet	28,671	31,602	29,925	29,122	33,408	29,010	30,363	32,774	22,172	29,054
Other	11,343	10,958	10,450	10,378	11,859	8,266	10,195	10,156	7,051	9,750
Total	45,021	47,617	45,682	45,043	51,313	43,007	46,053	48,986	33,266	45,769

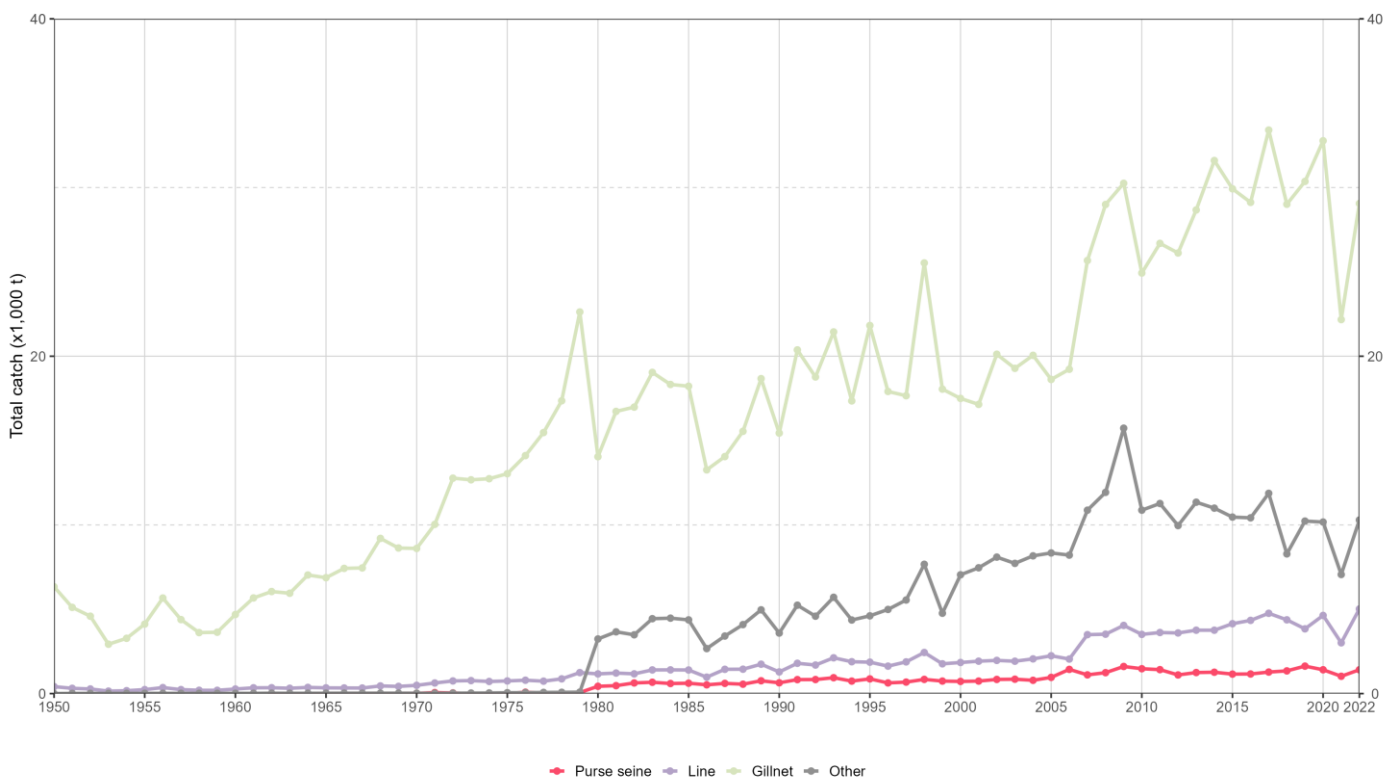


Figure 4: Annual time series of retained catches (metric tonnes; t) of Indo-Pacific king mackerel by fishery group for the period 1950-2022. Data source: [best scientific estimates of retained catches](#)

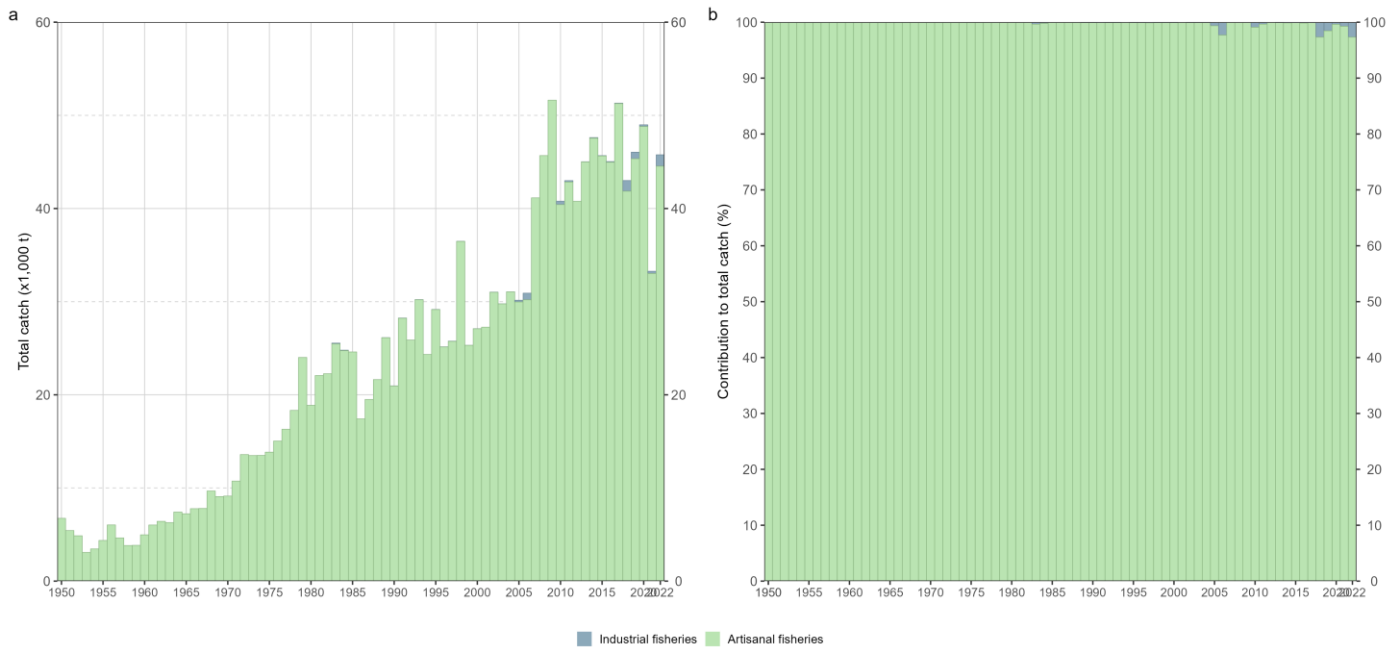


Figure 5: Annual time series of (a) cumulative retained catches (metric tonnes; t) and (b) cumulative contribution to the total retained catches (percentage; %) of Indo-Pacific king mackerel by type of fishery for the period 1950-2022. Data source: [best scientific estimates of retained catches](#)

Recent fishery features (2018-2022)

Recent years, *S. guttatus* catches are significantly from gillnet fisheries of Indonesia, India, and I. R Iran, accounted for over 66% and other small fisheries, like trawl with around 20% (**Tab. 3** and **Fig. 6**)

Inconsistencies in the catch of *S.guttatus* reflect (i) mis-identification of *Scomberomorus* species and (ii) aggregation of neritic species. Catches from gillnet fisheries show stable trends from I. R Iran, compared to Indonesia and India. Other fisheries and line fisheries, dropped of India catches in 2021 (**Fig. 7** and **Fig. 8**)

Table 3: Mean annual retained catches (metric tonnes; t) of Indo-Pacific king mackerel by fishery between 2018 and 2022. Data source: [best scientific estimates of retained catches](<https://www.iotc.org/meetings/14th-working-party-neritic-tunas-wpnt14-meetingData/03-NC>)

Fishery	Fishery code	Catch	Percentage
Gillnet	GN	28,674	66.0
Other	OT	9,084	20.9
Line Trolling	LIT	3,293	7.6
Purse seine Other	PSOT	1,364	3.1
Line Coastal longline	LIC	772	1.8
Longline Fresh	LLF	117	0.3
Line Handline	LIH	108	0.2
Longline Deep-freezing	LLD	4	0.0

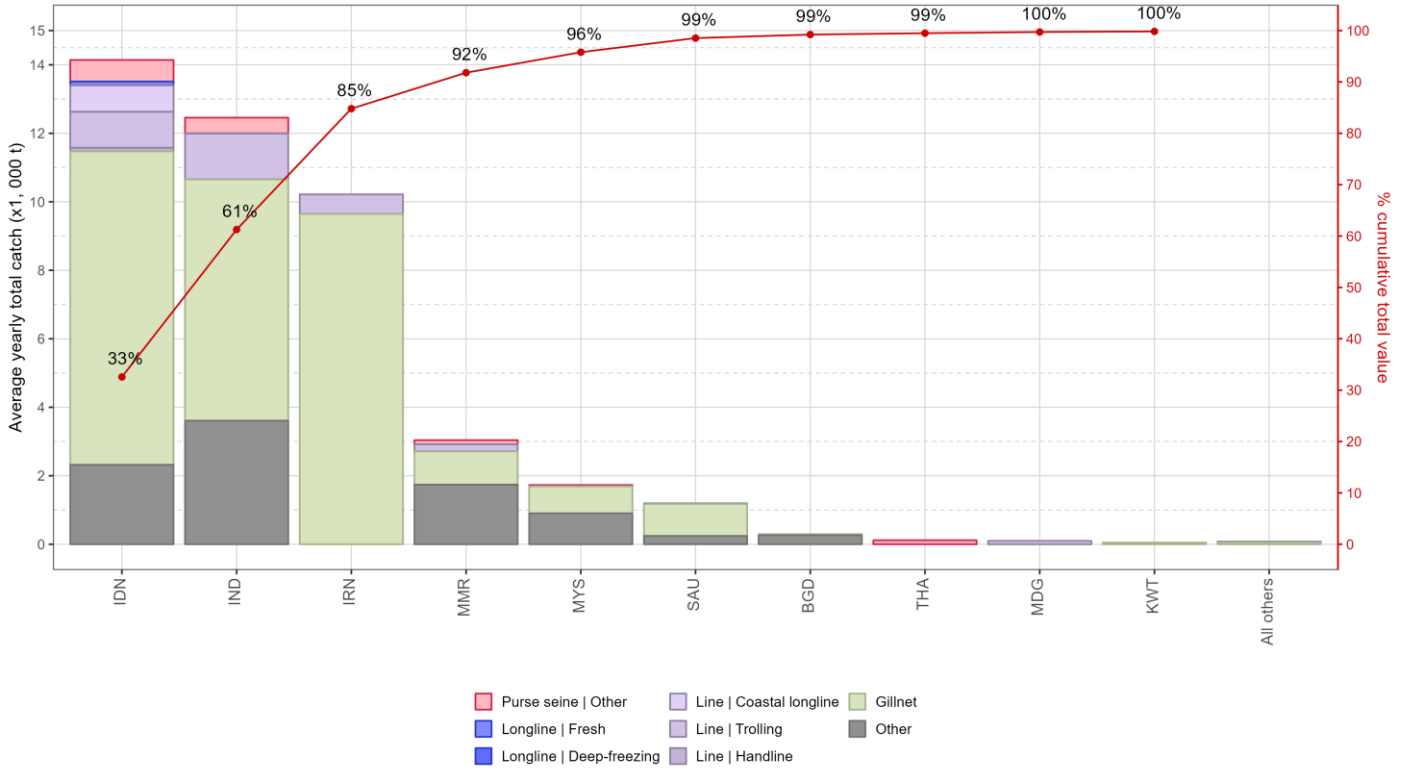


Figure 6: Mean annual retained catches (metric tonnes; t) of Indo-Pacific king mackerel by fleet and fishery between 2018 and 2022, with indication of cumulative contribution (percentage; %) of catches by fleet. Data source: [best scientific estimates of retained catches](#)

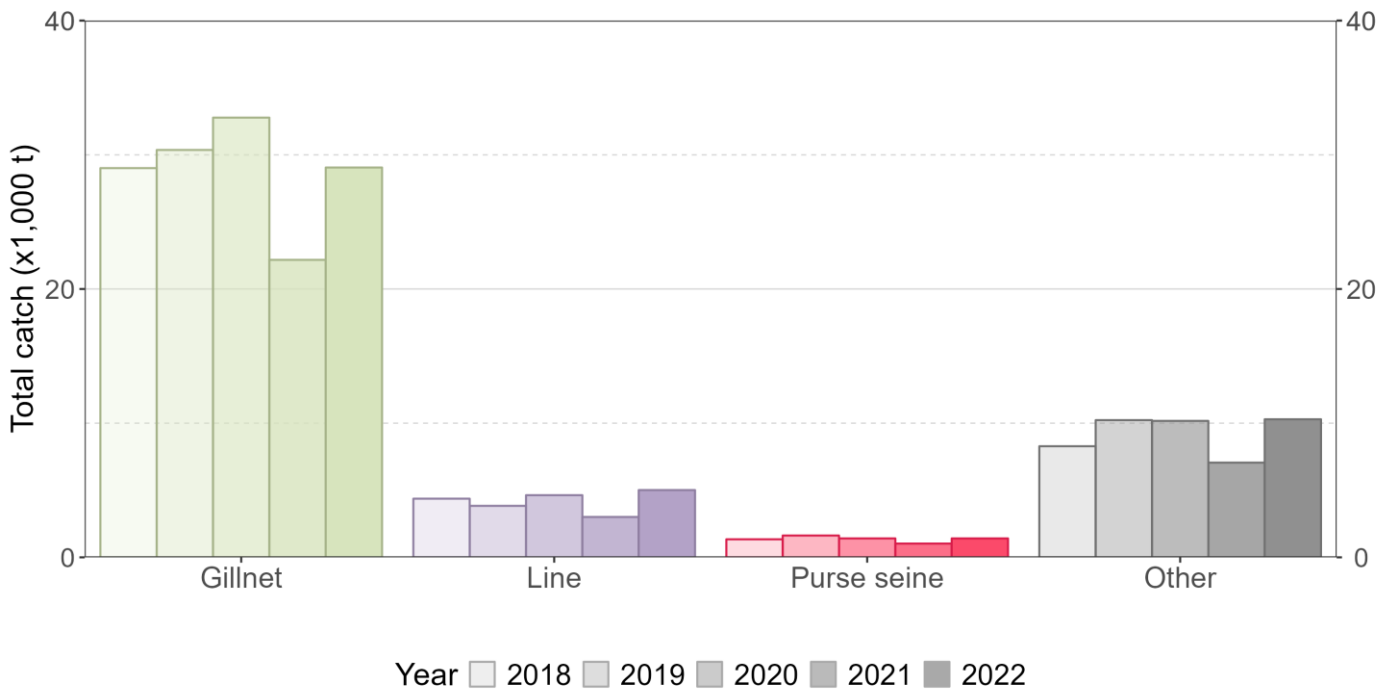


Figure 7: Annual trends in retained catch (metric tonnes; t) of Indo-Pacific king mackerel by fishery group between 2018 and 2022. Data source: [best scientific estimates of retained catches](#)

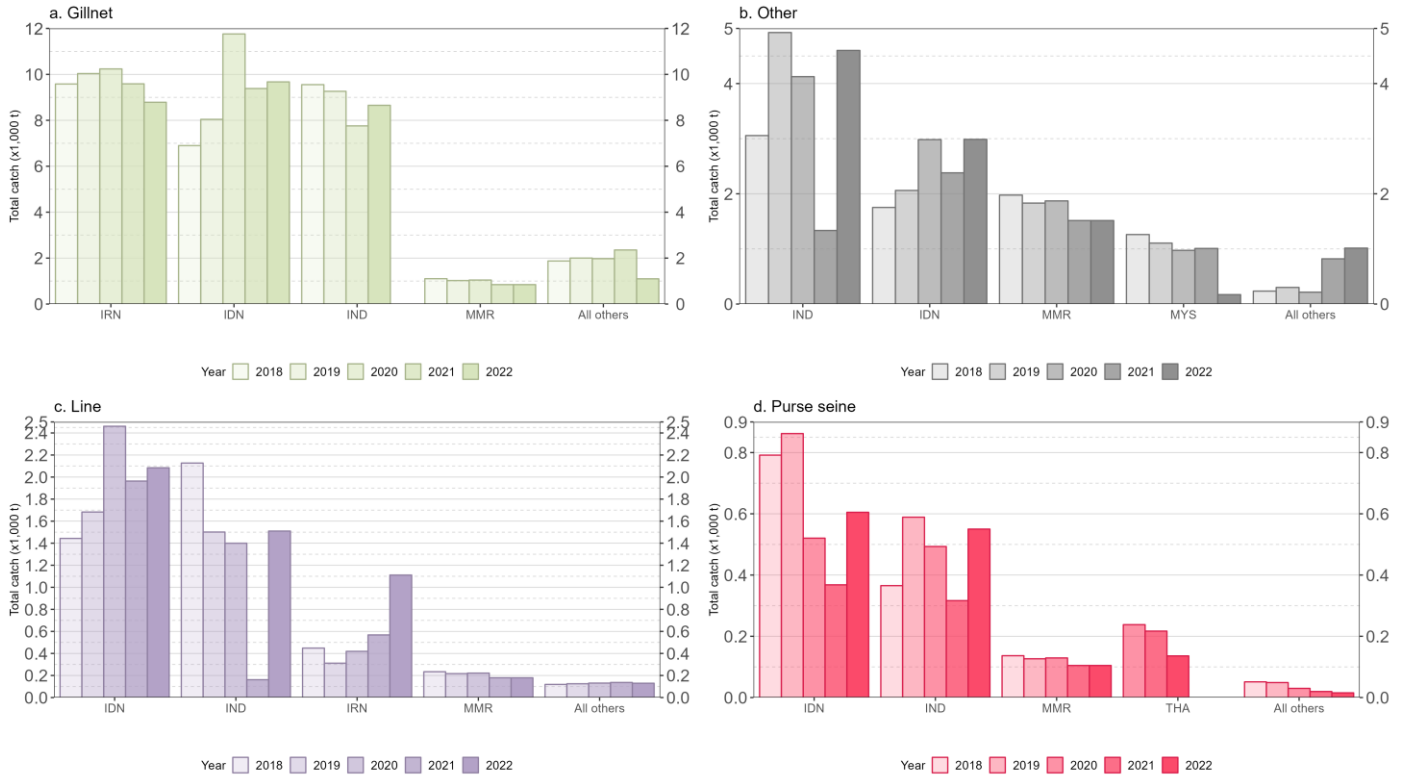


Figure 8: Annual trends in retained catch (metric tonnes; t) of Indo-Pacific king mackerel by fishery group and fleet between 2018 and 2022. Data source: [best scientific estimates of retained catches](#)

Changes from previous Working Party

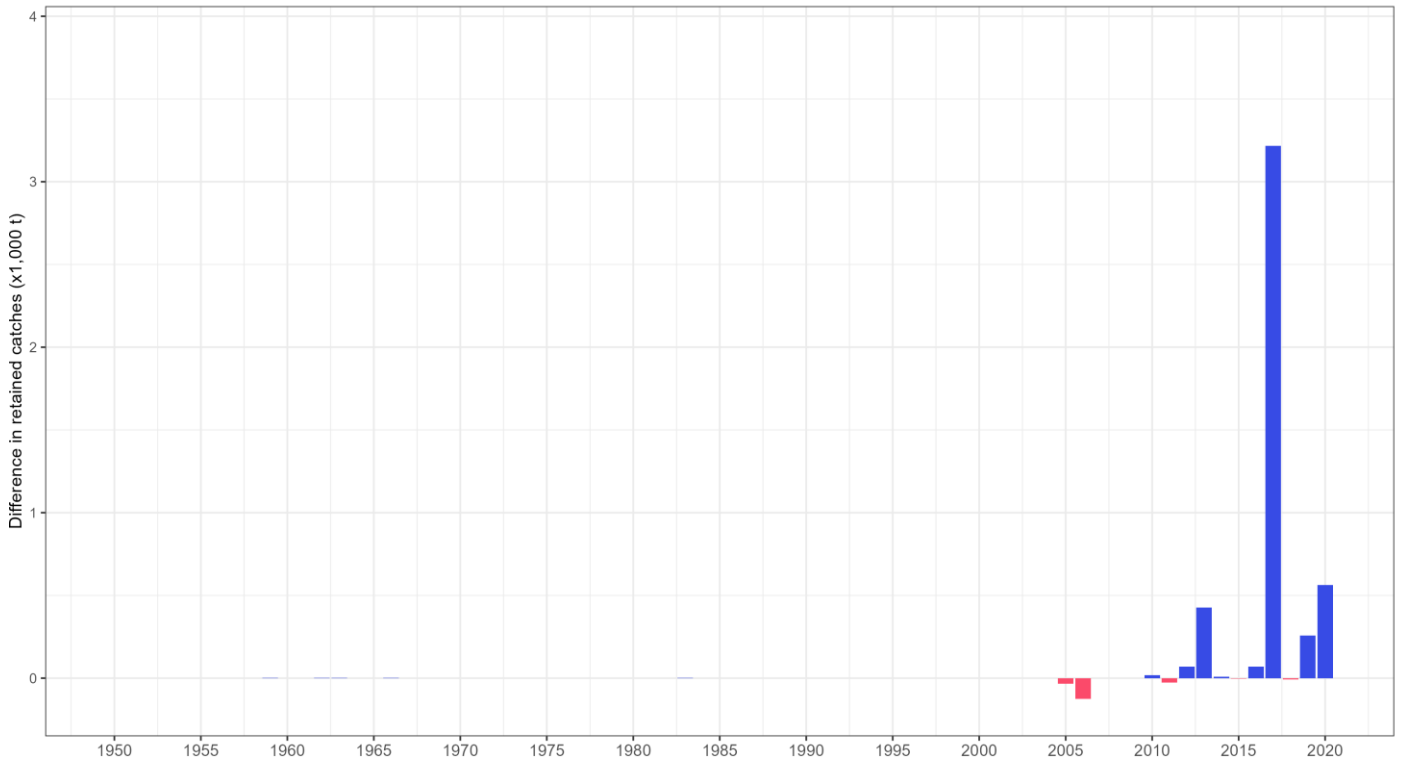


Figure 9: Differences in the annual retained catches (metric tonnes; t) of Indo-Pacific king mackerel available at this WPNT and its previous session (WPNT12 meeting held in July 2022). Details by year, fleet, fishery group, and Indian Ocean major area given in [Appendix II](#)

Uncertainties in retained catch data

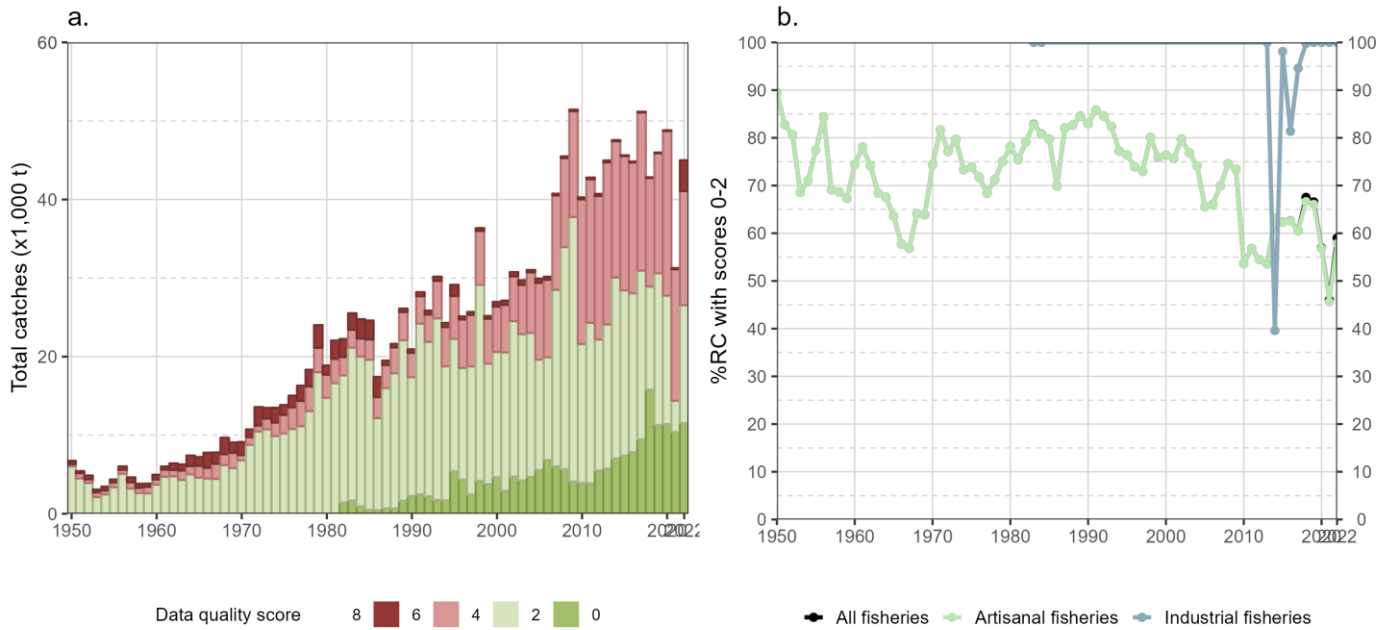


Figure 10: Annual time series of (a) cumulative retained catches (metric tonnes; t) estimated by quality score and (b) contribution of retained catches fully or partially reported to the IOTC Secretariat to all retained catches (percentage; %) of Indo-Pacific king mackerel for all fisheries and by type of fishery, for the period 1950-2022

Spatial distribution of catch

Geo-references catches

Compared to other species, where geo-referenced catches are available, for *S.guttatus*, negligible data are available, even recent years improvement do not how high geo-referenced catches (**Fig. 11**). Indonesia and Iran catch and effort data, which are not raised to total retained catches do not include *S. guttatus* in estimated geo-reference catch

Geo-referenced catches by fishery, last years (2018-2022) and decade (2010-2019)

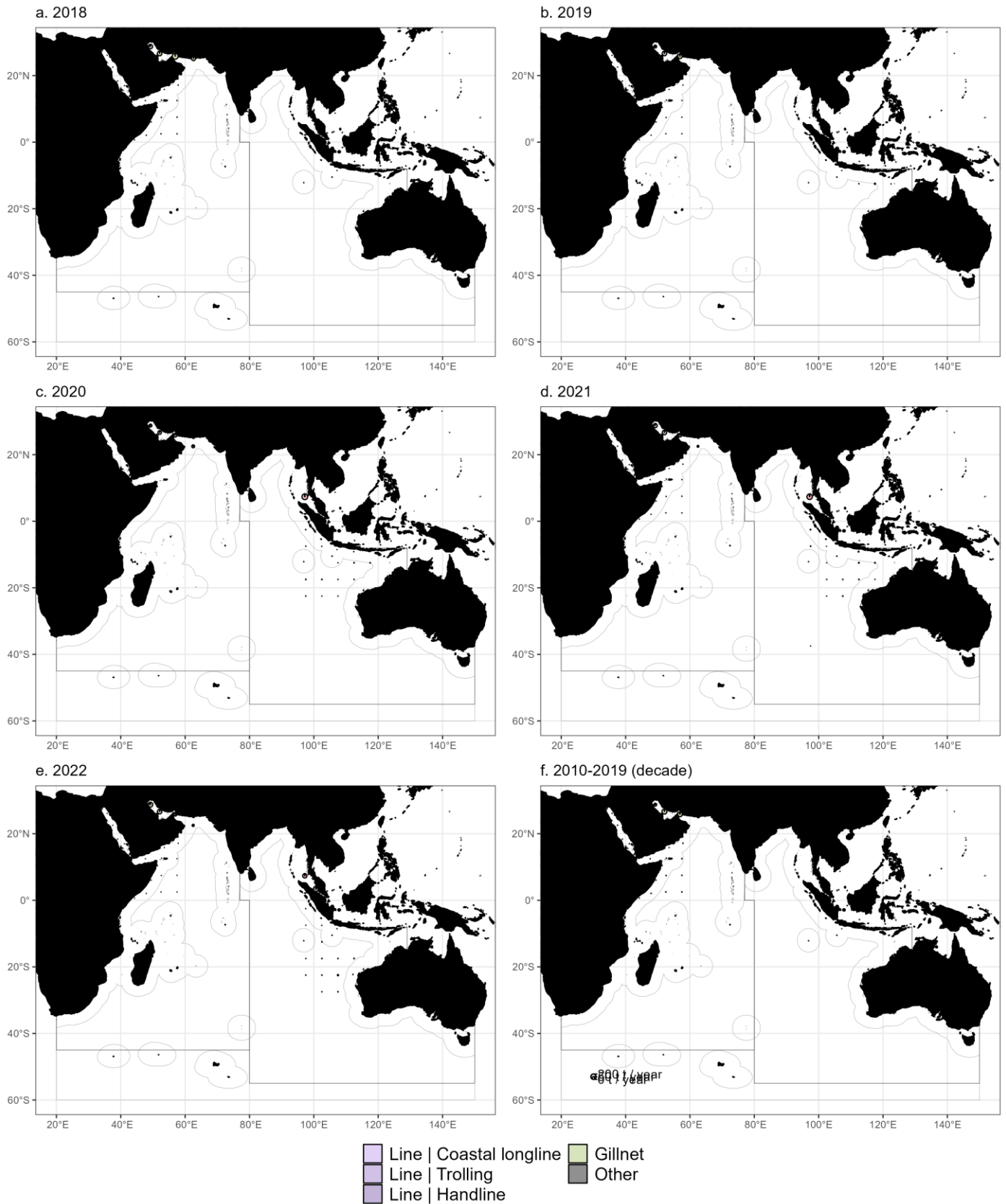


Figure 11: Mean annual time-area catches (metric tonnes; t) of Indo-Pacific king mackerel, by year and decade, 5-degree grid area, and fishery. Solid lines delineate areas beyond national jurisdiction. Data source: [time-area catches](#)

Uncertainties in geo-referenced catch and effort data

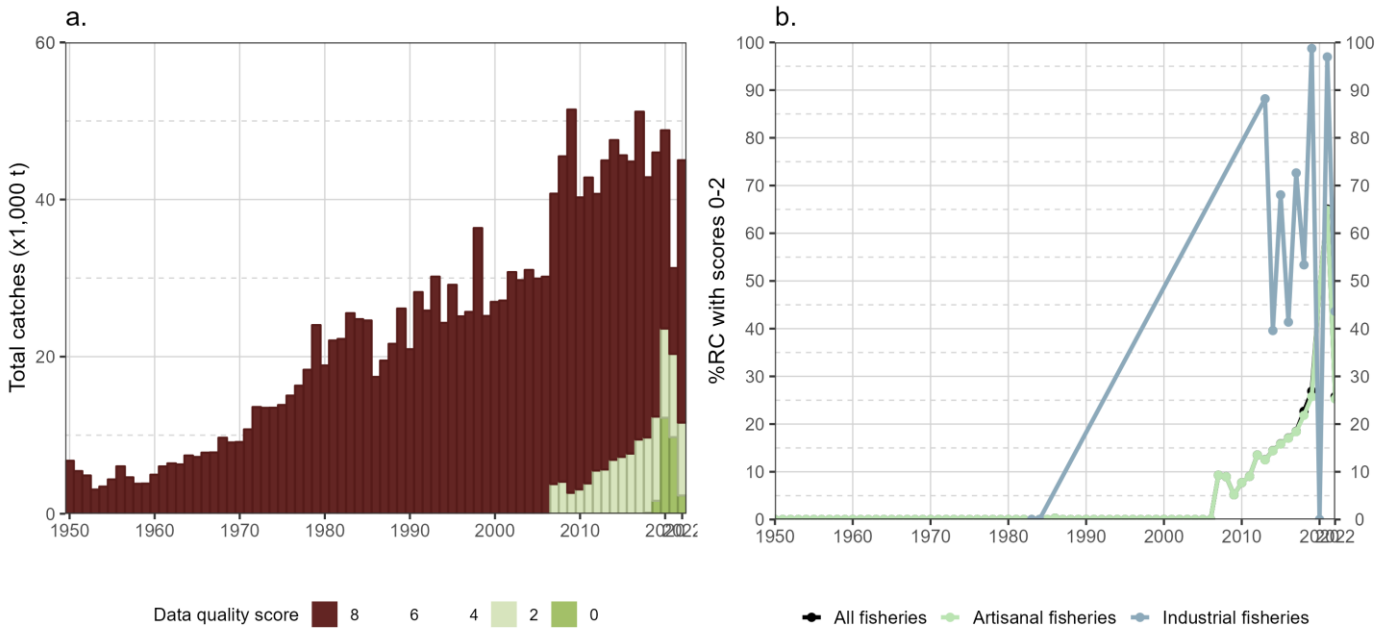


Figure 12: Annual time series of (a) cumulative retained catches (metric tonnes; t) estimated by quality score and (b) contribution of retained catches (percentage; %) with corresponding geo-referenced catch and effort data reported to the IOTC Secretariat in agreement with the requirements of Res. 15/02) to all retained catches of Indo-Pacific king mackerel for all fisheries and by type of fishery, for the period 1950-2022

Size composition of the catch

Samples availability

Contrary to other neritic species, limited size data are collected for *S. guttatus*, some samples collected from gillnet (Sri Lanka) in the past, and less from other fisheries (Malaysia) in recent years (Fig. 13)

By fishery group

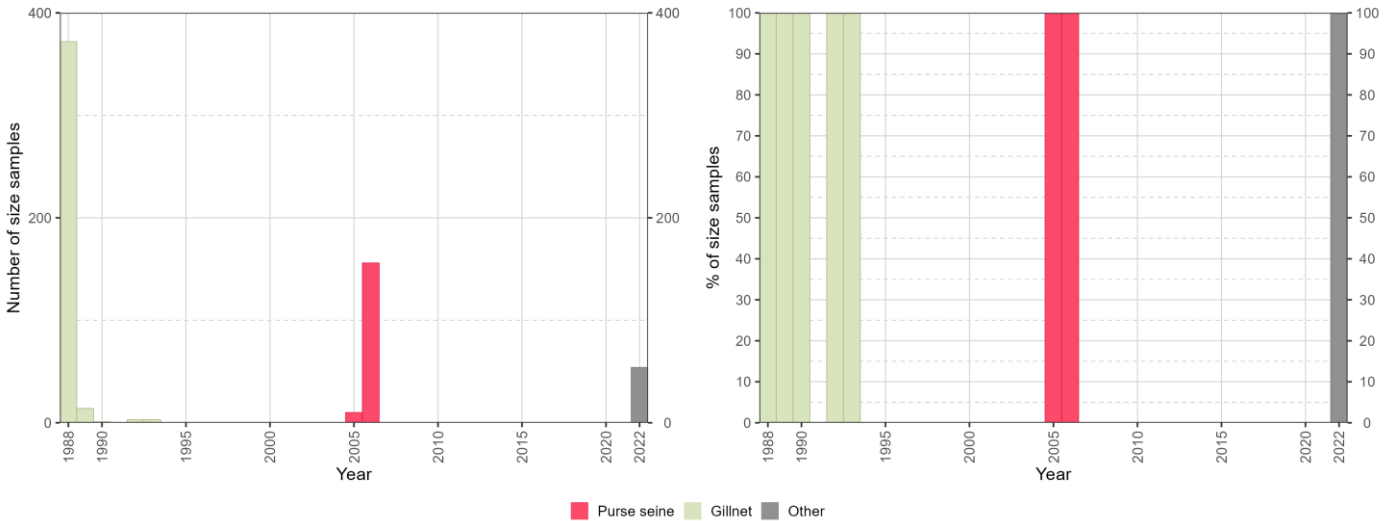


Figure 13: Availability of size-frequency data for Indo-Pacific king mackerel as (left) absolute and (right) relative number of samples per year and fishery group. Data source: [standardized size-frequency dataset](#)

Gillnet fisheries

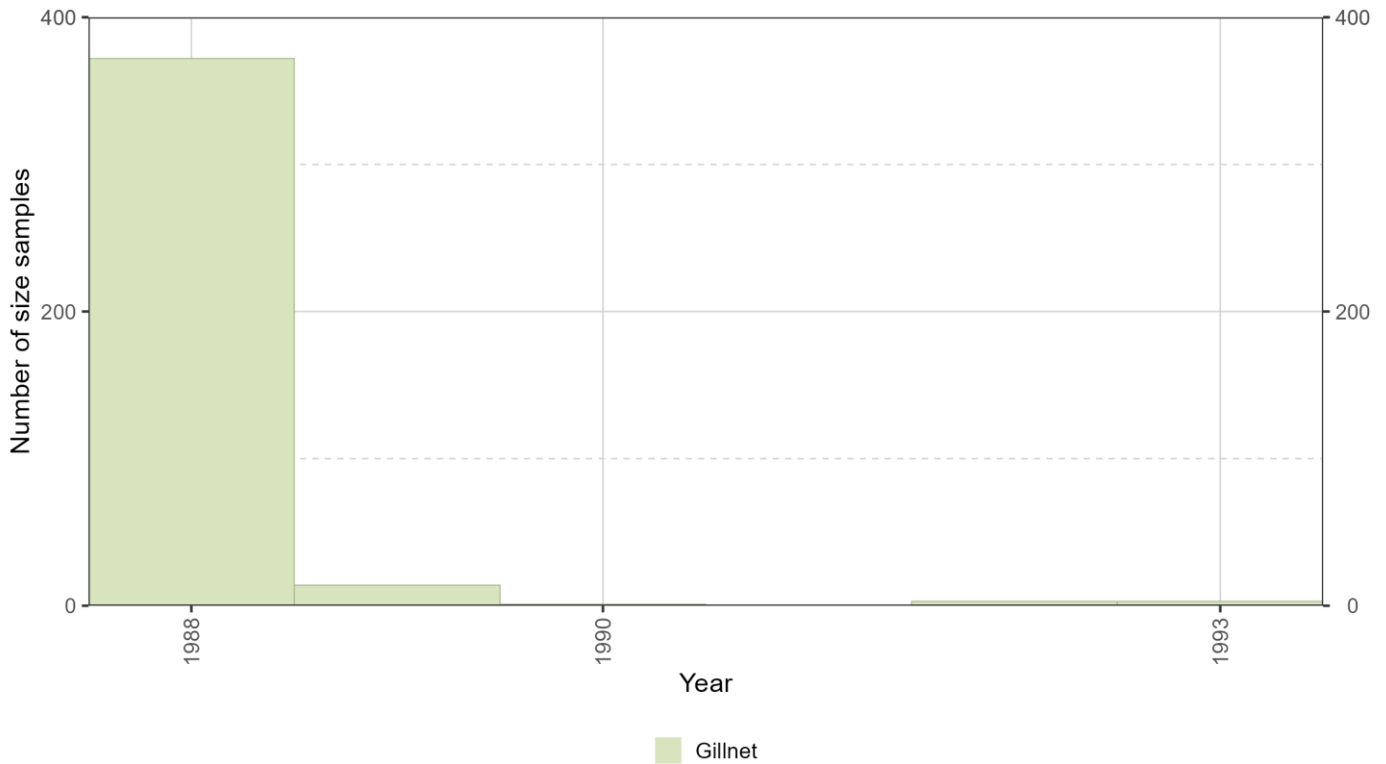


Figure 14: Availability of size-frequency data for Indo-Pacific king mackerel as absolute number of samples per year in gillnet fisheries. Data source: [standardized size-frequency dataset](#)

Uncertainties in geo-referenced size-frequency data

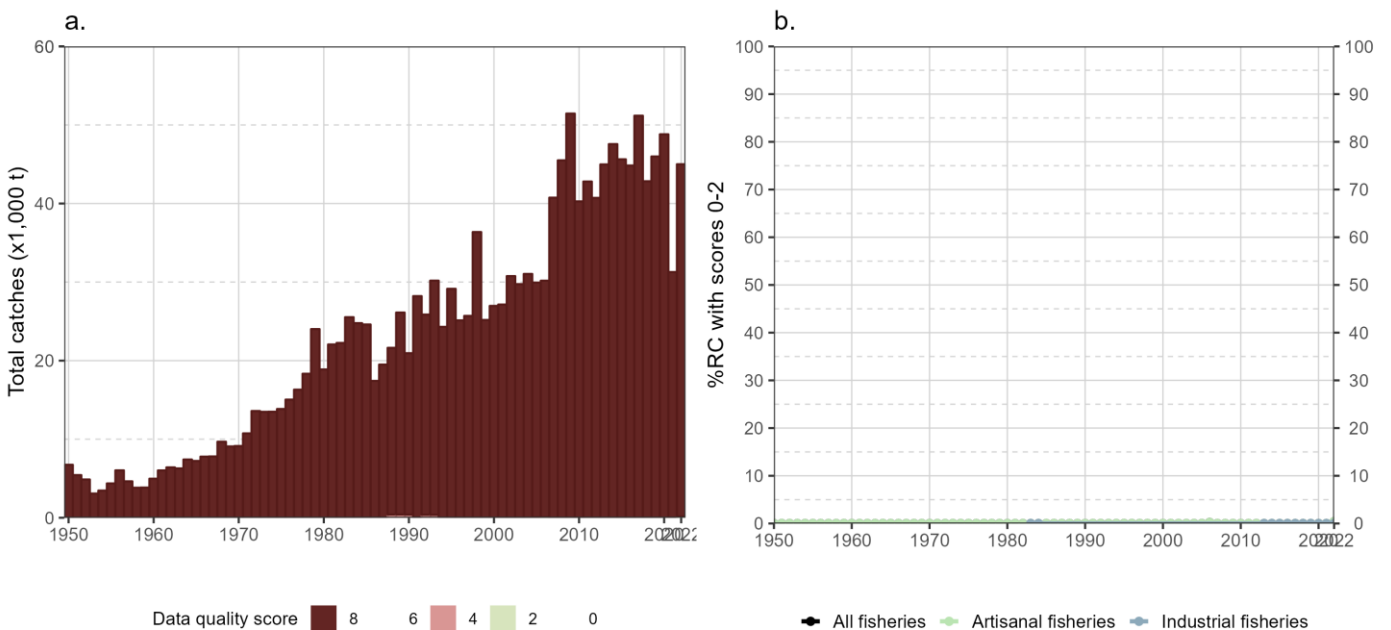


Figure 15: Annual time series of (a) cumulative retained catches (metric tonnes; t) estimated by quality score and (b) contribution of retained catches with corresponding geo-referenced size-frequency data reported to the IOTC Secretariat in agreement with the requirements of Res. 15/02 to all retained catches (percentage; %) of Indo-Pacific king mackerel for all fisheries and by type of fishery, for the period 1950-2022

References

Bloch ME, Hennig JF, Schneider JG (1801) [M.e. Blochii ... Systema ichthyologiae iconibus CX illustratum](#). Sumtibus auctoris impressum et Bibliopolio Sanderiano commissum, Berolini.

IOTC Secretariat (2023) [Review of the statistical data available for indian ocean neritic tuna and seerfish species under IOTC management](#). IOTC, Victoria, Seychelles, 3 - 7 July 2023, p 39

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Appendix II: Changes in best scientific estimates of retained catches from previous WPNT

Table 4: Changes in best scientific estimates of annual retained catches (metric tonnes; t) of Indo-Pacific king mackerel by fleet, fishery group, and main Indian Ocean area, limited to absolute values higher than 10 t

Year	Fleet	Fishery group	Area	Current (t)	Previous (t)	Difference (t)
2021	BGD	Other	Eastern Indian Ocean	560	0	560
	IDN	Gillnet	Eastern Indian Ocean	9,384	0	9,384
		Line	Eastern Indian Ocean	1,964	0	1,964
		Other	Eastern Indian Ocean	2,380	0	2,380
		Purse seine	Eastern Indian Ocean	368	0	368
		IND	Line	Western Indian Ocean	162	0
	Other		Eastern Indian Ocean	285	0	285
	Other		Western Indian Ocean	1,049	0	1,049
	Purse seine		Eastern Indian Ocean	316	0	316
	IRN	Gillnet	Western Indian Ocean	9,588	0	9,588
		Line	Western Indian Ocean	568	0	568
	KWT	Gillnet	Western Indian Ocean	50	0	50
	MDG	Line	Western Indian Ocean	99	0	99
	MMR	Gillnet	Eastern Indian Ocean	845	0	845
		Line	Eastern Indian Ocean	179	0	179
		Other	Eastern Indian Ocean	1,515	0	1,515
		Purse seine	Eastern Indian Ocean	105	0	105
	MYS	Gillnet	Eastern Indian Ocean	1,263	0	1,263
		Line	Eastern Indian Ocean	20	0	20
		Other	Eastern Indian Ocean	1,008	0	1,008
		Purse seine	Eastern Indian Ocean	17	0	17
	SAU	Gillnet	Western Indian Ocean	994	0	994
		Line	Western Indian Ocean	15	0	15
Other		Western Indian Ocean	253	0	253	
THA	Purse seine	Eastern Indian Ocean	217	0	217	
YEM	Gillnet	Western Indian Ocean	46	0	46	
2020	IRN	Gillnet	Western Indian Ocean	10,237	10,445	-208
		Line	Western Indian Ocean	419	211	208

Year	Fleet	Fishery group	Area	Current (t)	Previous (t)	Difference (t)
	MMR	Gillnet	Eastern Indian Ocean	1,044	971	73
		Line	Eastern Indian Ocean	222	206	16
		Other	Eastern Indian Ocean	1,871	1,740	131
	SAU	Gillnet	Western Indian Ocean	828	718	110
		Other	Western Indian Ocean	203	218	-16
	THA	Purse seine	Eastern Indian Ocean	238	0	238
2019	IRN	Gillnet	Western Indian Ocean	10,035	10,113	-78
		Line	Western Indian Ocean	312	226	85
	SAU	Gillnet	Western Indian Ocean	1,013	805	208
		Other	Western Indian Ocean	292	245	47
	2018		Gillnet	Western Indian Ocean	837	820
Other			Western Indian Ocean	223	250	-27
2017	IDN	Gillnet	Eastern Indian Ocean	10,861	8,701	2,161
		Line	Eastern Indian Ocean	2,273	1,821	452
		Other	Eastern Indian Ocean	2,755	2,207	548
		Purse seine	Eastern Indian Ocean	426	341	85
	SAU	Other	Western Indian Ocean	185	219	-34
2016		Gillnet	Western Indian Ocean	798	720	77
		Other	Western Indian Ocean	199	219	-20
2014	IDN	Gillnet	Eastern Indian Ocean	9,325	9,341	-16
		Other	Eastern Indian Ocean	1,925	1,906	19
	MMR	Gillnet	Eastern Indian Ocean	1,074	1,064	11
2013	IDN	Gillnet	Eastern Indian Ocean	10,586	10,256	330
		Line	Eastern Indian Ocean	2,215	2,146	69
		Other	Eastern Indian Ocean	2,685	2,602	84
		Purse seine	Eastern Indian Ocean	415	402	13
	MMR	Gillnet	Eastern Indian Ocean	1,039	1,061	-23
		Other	Eastern Indian Ocean	1,861	1,902	-41
2012	IDN	Gillnet	Eastern Indian Ocean	9,061	8,986	75
		Line	Eastern Indian Ocean	1,896	1,880	16

Year	Fleet	Fishery group	Area	Current (t)	Previous (t)	Difference (t)
		Other	Eastern Indian Ocean	2,298	2,279	19
	MMR	Gillnet	Eastern Indian Ocean	1,087	1,102	-14
		Other	Eastern Indian Ocean	1,948	1,974	-26
2011	AUS	Purse seine	Eastern Indian Ocean	151	177	-26
2010		Purse seine	Eastern Indian Ocean	366	430	-64
	IDN	Gillnet	Eastern Indian Ocean	8,826	8,771	55
		Line	Eastern Indian Ocean	1,847	1,835	12
		Other	Eastern Indian Ocean	2,239	2,225	14
2006	AUS	Purse seine	Eastern Indian Ocean	714	840	-126
2005		Purse seine	Eastern Indian Ocean	191	225	-34