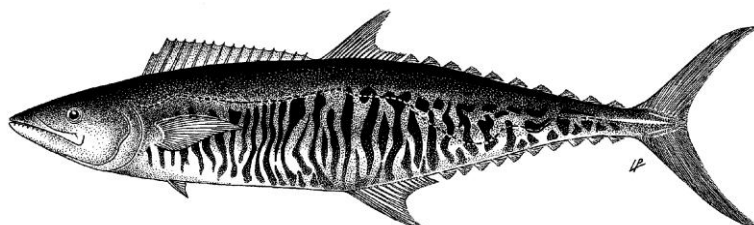


REVIEW OF FISHERIES STATISTICAL DATA AVAILABLE FOR INDIAN OCEAN NARROW-BARRED SPANISH MACKEREL

Author: [IOTC Secretariat](#)



Introduction

Global catches of narrow-barred Spanish mackerel mirroring the increased catches in the Indian Ocean, and offsetting declines elsewhere. The Indian Ocean catch peaked at 157 thousand tonnes in 2024, with gillnet fisheries dominate, while line fisheries are growing. However spatial catch and size data remain limited due to constraints in small-scale fisheries.

The overarching objective of the paper is to provide participants at the 16th Session of the IOTC Working Party on Neritic Tunas ([WPNT16](#)) with a review of the status of fisheries information available on narrow-barred Spanish mackerel (*Scomberomorus commerson*) ([Lacepède 1800](#)) 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 narrow-barred Spanish mackerel in the Indian Ocean, as well as providing an assessment of the reporting quality of the data sets available at the IOTC Secretariat.

Global catches

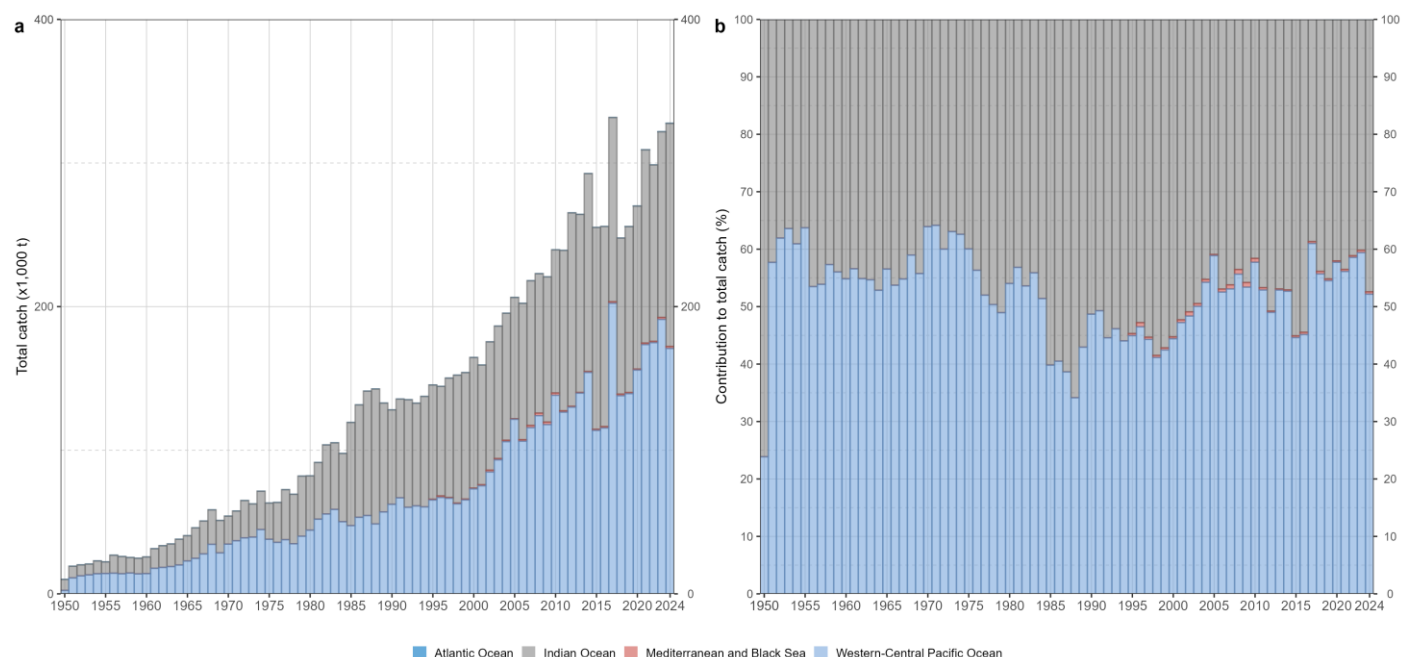


Figure 1: Annual time series of (a) cumulative retained catches (metric tonnes; t) and (b) contribution to the total retained catches (percentage; %) of narrow-barred Spanish mackerel by ocean basin for the period 1950-2024. Source: [FAO global capture production database](#)

Indian Ocean retained catches

Historical trends (1950-2024)

Table 1: Mean annual retained catches (metric tonnes; t) of narrow-barred Spanish mackerel by decade and fishery for the period 1950-2019. The background intensity colour of each cell is directly proportional to the catch level.

Fishery	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Purse seine Other	6	12	266	1,650	2,731	2,583	3,629
Longline Other	0	0	0	0	0	0	0
Longline Fresh	0	0	0	0	0	0	95
Longline Deep-freezing	0	0	0	11	7	3	102
Line Coastal longline	291	428	793	1,456	2,066	2,926	3,963
Line Trolling	990	1,549	1,902	4,355	5,178	7,288	9,808
Line Handline	447	465	1,876	4,893	3,186	3,032	6,883
Baitboat	11	19	286	114	268	418	837
Gillnet	9,261	17,271	31,363	54,542	63,617	65,933	88,188
Other	88	154	337	5,416	9,037	18,766	22,059
Total	11,094	19,897	36,824	72,437	86,090	100,948	135,564

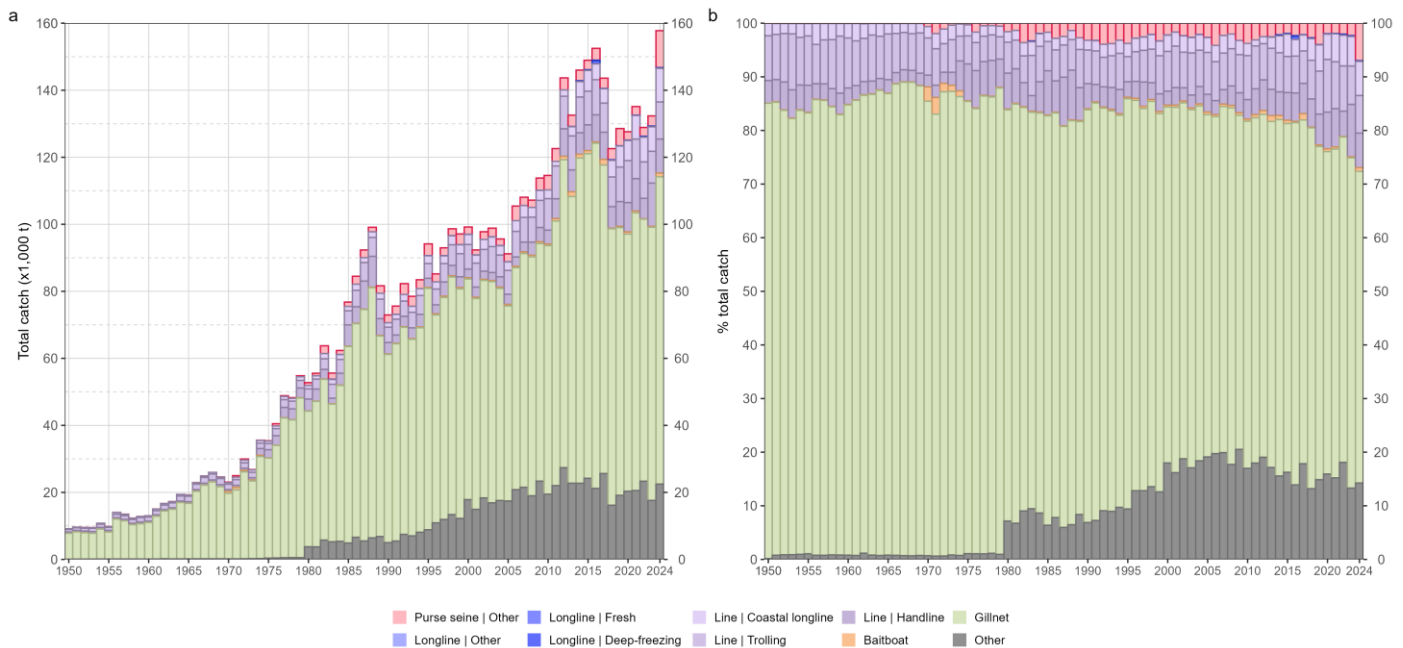


Figure 2: Annual time series of (a) cumulative retained catches (metric tonnes; t) and (b) cumulative contribution to the total retained catches (percentage; %) of narrow-barred Spanish mackerel by fishery for the period 1950-2024. Data source: [best scientific estimates of retained catches](#)

Table 2: Annual retained catches (metric tonnes; t) of narrow-barred Spanish mackerel by fishery for the period 2015-2024. The background intensity colour of each cell is directly proportional to the catch level.

Fishery	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Purse seine Other	2,866	3,542	3,073	3,343	5,139	2,518	2,578	2,647	3,070	11,036
Longline Other	0	0	0	0	0	0	0	0	1	0
Longline Fresh	170	115	88	177	56	87	83	246	178	153
Longline Deep-freezing	12	985	8	4	12	19	8	17	29	48
Line Coastal longline	6,196	4,713	4,275	4,947	6,289	6,003	7,063	7,371	7,289	10,048
Line Trolling	10,032	10,500	8,687	8,849	10,310	12,531	11,800	10,865	9,482	11,061
Line Handline	7,670	8,079	8,105	6,426	7,372	8,725	9,665	6,071	12,919	10,142
Baitboat	934	383	1,690	183	384	674	533	133	275	1,118
Gillnet	96,866	102,995	92,058	82,492	79,892	76,734	82,859	78,216	81,508	91,697
Other	24,201	21,190	25,620	16,160	19,114	20,325	20,550	23,324	17,596	22,472
Total	148,948	152,502	143,603	122,581	128,569	127,616	135,140	128,889	132,347	157,775

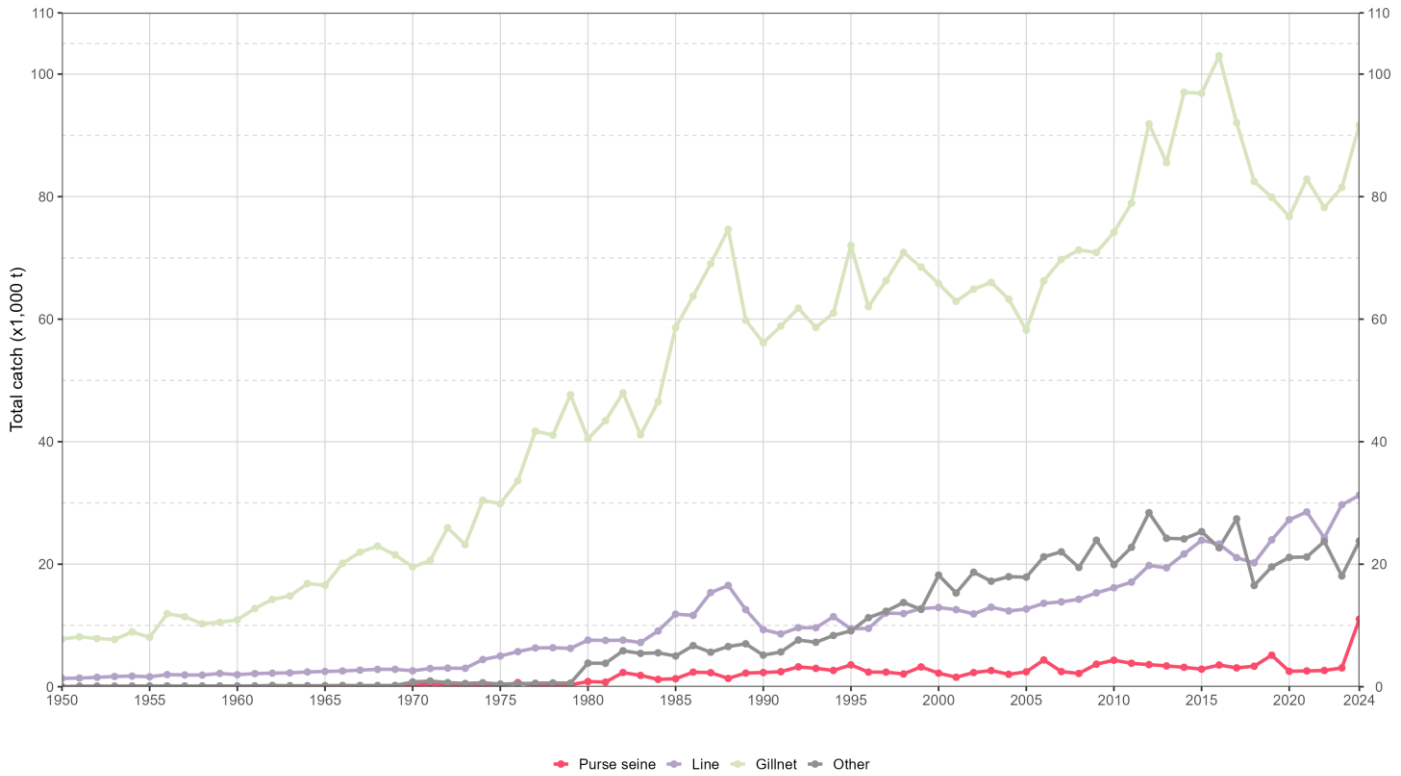


Figure 3: Annual time series of retained catches (metric tonnes; t) of narrow-barred Spanish mackerel by fishery group for the period 1950-2024. Data source: [best scientific estimates of retained catches](#)

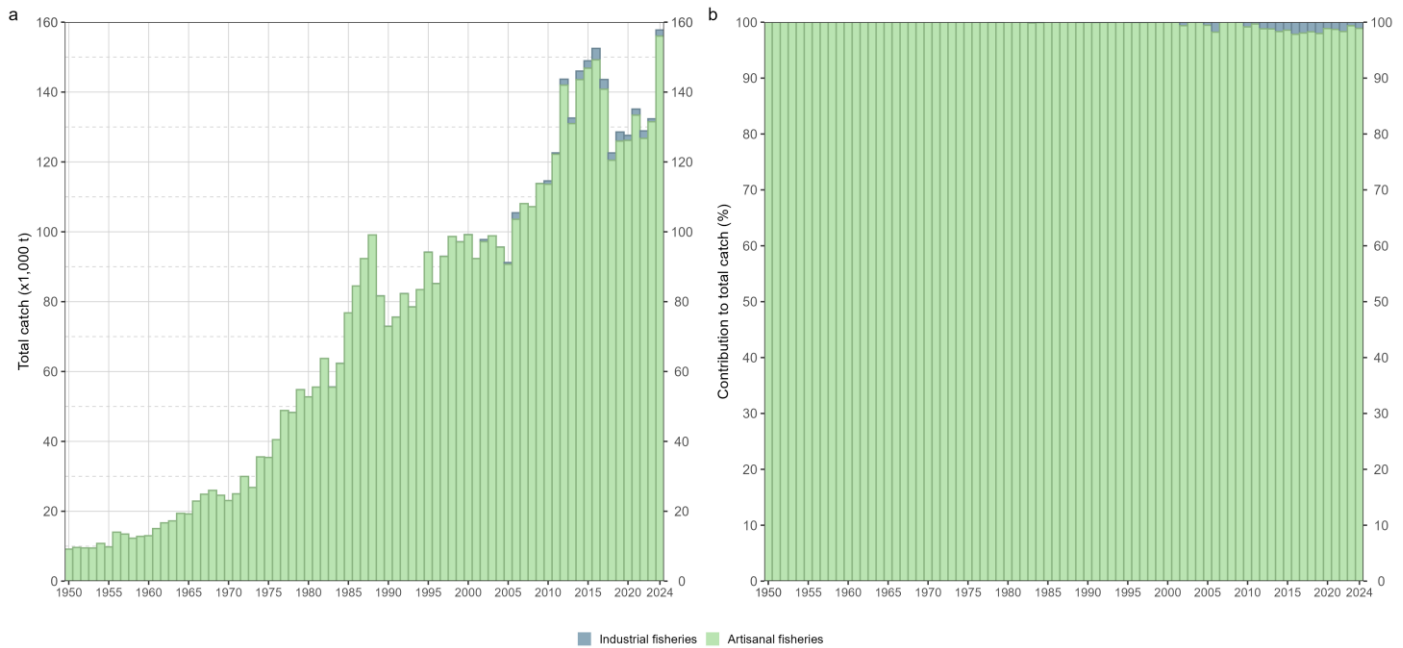


Figure 4: Annual time series of (a) cumulative retained catches (metric tonnes; t) and (b) cumulative contribution to the total retained catches (percentage; %) of narrow-barred Spanish mackerel by type of fishery for the period 1950-2024. Data source: [best scientific estimates of retained catches](#)

Recent fishery features (2020-2024)

Table 3: Mean annual retained catches (metric tonnes; t) of narrow-barred Spanish mackerel by fishery between 2020 and 2024.

Fishery	Fishery code	Catch	Percentage
Gillnet	GN	82,203	60.3
Other	OT	20,853	15.3
Line Trolling	LIT	11,148	8.2
Line Handline	LIH	9,504	7.0
Line Coastal longline	LIC	7,555	5.5
Purse seine Other	PSOT	4,370	3.2
Baitboat	BB	547	0.4
Longline Fresh	LLF	149	0.1
Longline Deep-freezing	LLD	24	0.0
Longline Other	LLO	0	0.0

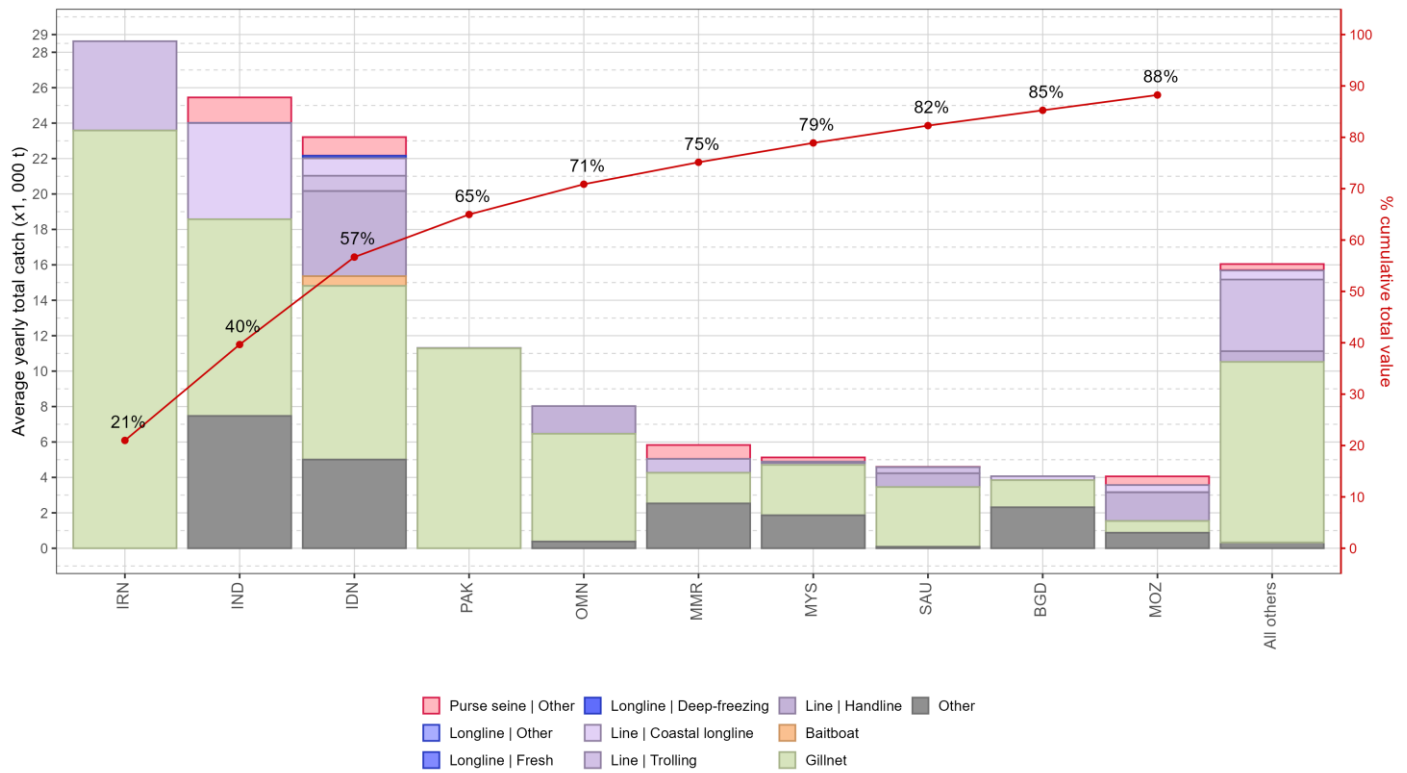


Figure 5: Mean annual retained catches (metric tonnes; t) of narrow-barred Spanish mackerel by fleet and fishery between 2020 and 2024, with indication of cumulative contribution (percentage; %) of catches by fleet. Data source: [best scientific estimates of retained catches](#)

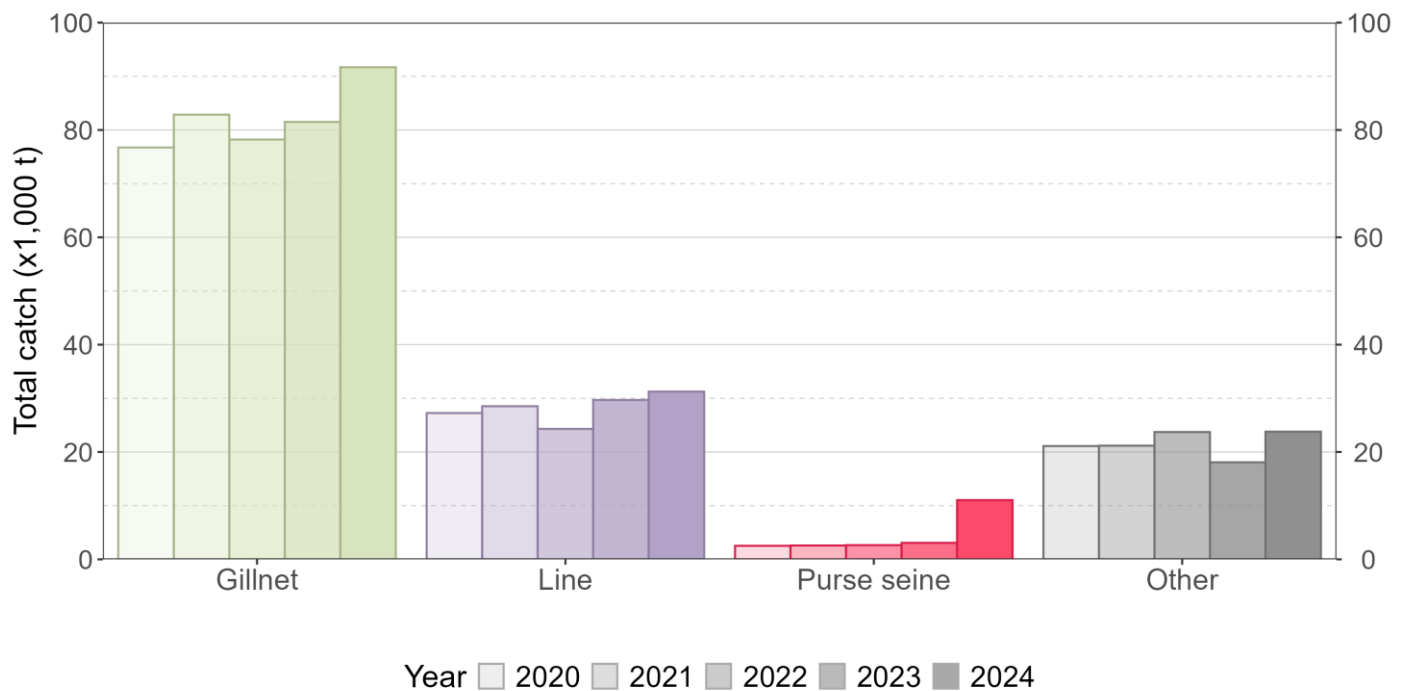


Figure 6: Annual trends in retained catch (metric tonnes; t) of narrow-barred Spanish mackerel by fishery group between 2020 and 2024. Data source: [best scientific estimates of retained catches](#)

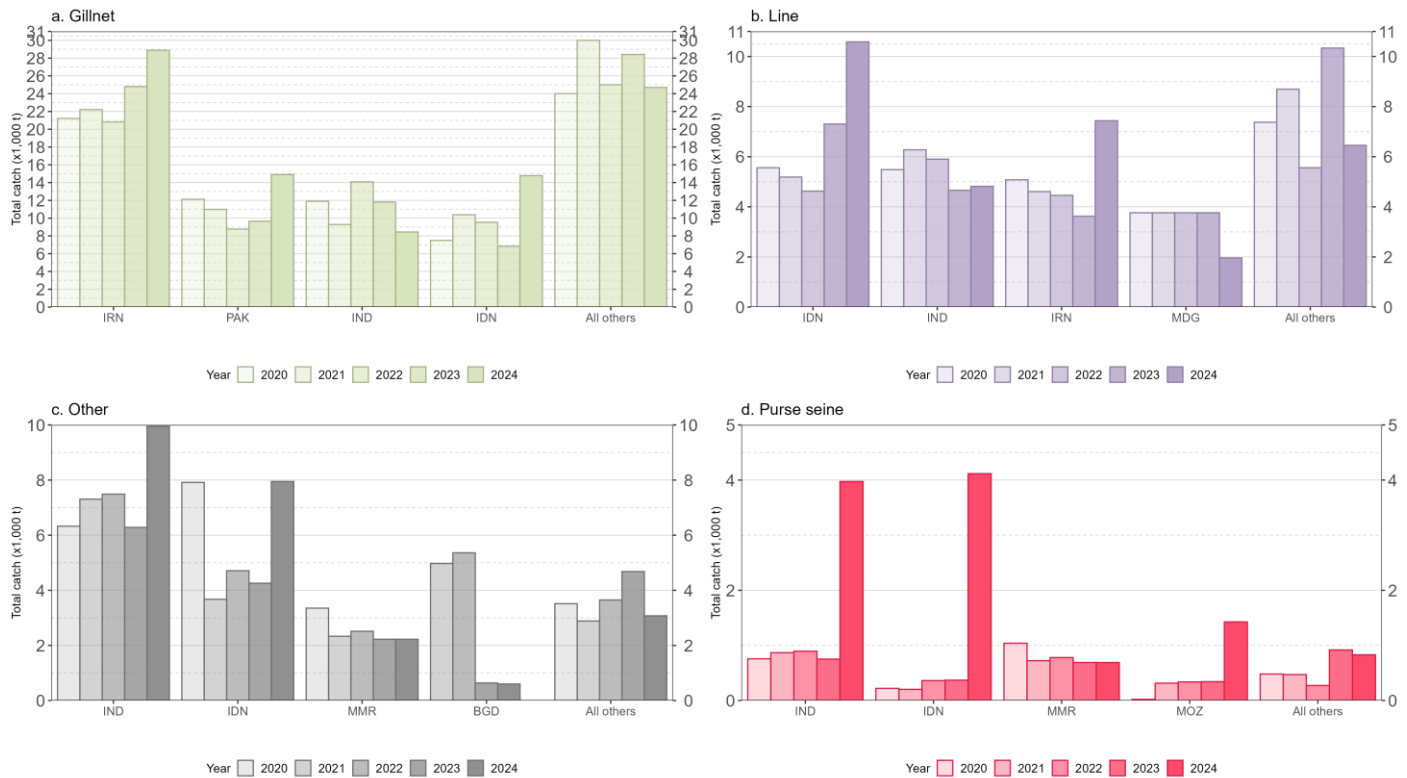


Figure 7: Annual trends in retained catch (metric tonnes; t) of narrow-barred Spanish mackerel by fishery group and fleet between 2020 and 2024. Data source: [best scientific estimates of retained catches](#)

Changes from [WPNT13](#)

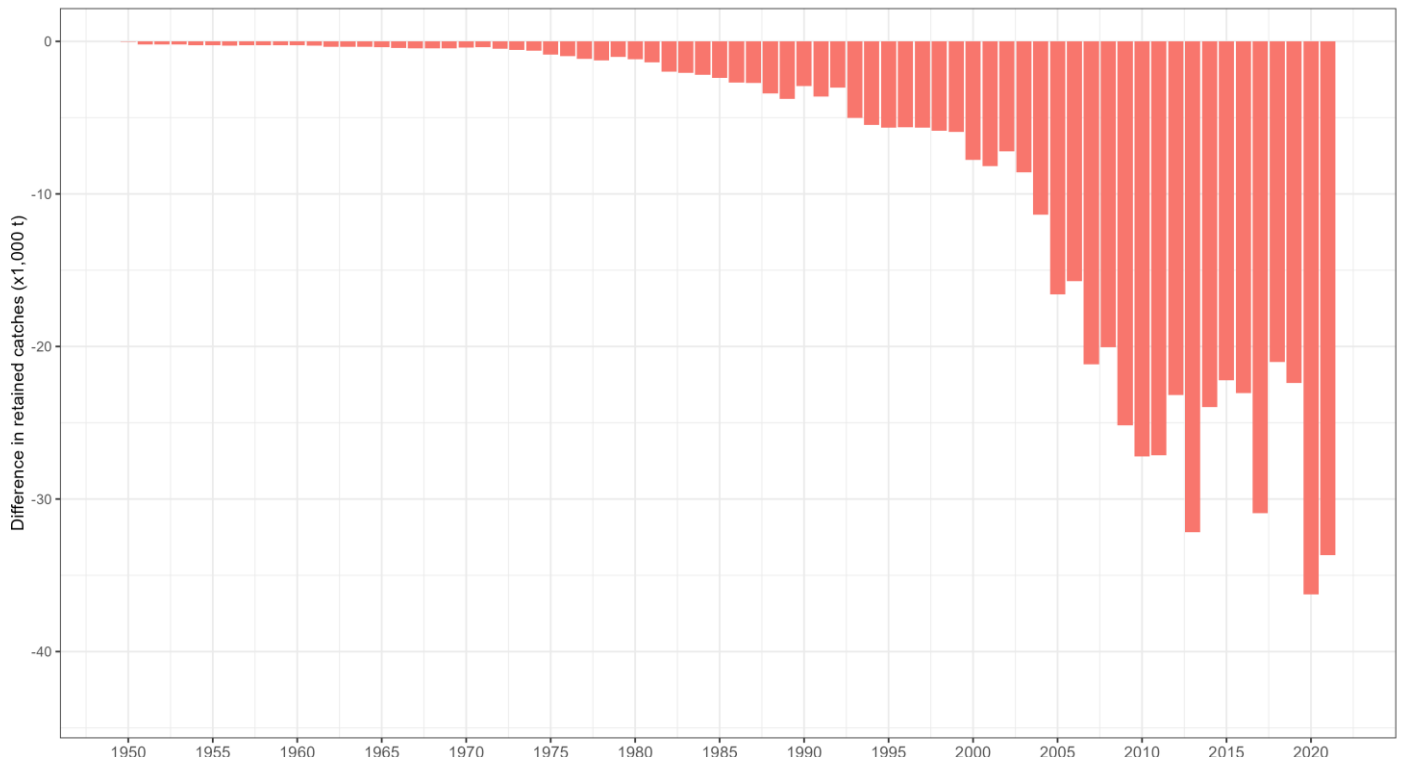


Figure 8: Differences in the annual retained catches (metric tonnes; t) between the current assessment meeting and last assessment meeting of narrow-barred Spanish mackerel (WPNT13 meeting held in July 2023). Details by year, fleet, fishery group, and Indian Ocean major area given in [Appendix II](#)

Uncertainties in retained catch data

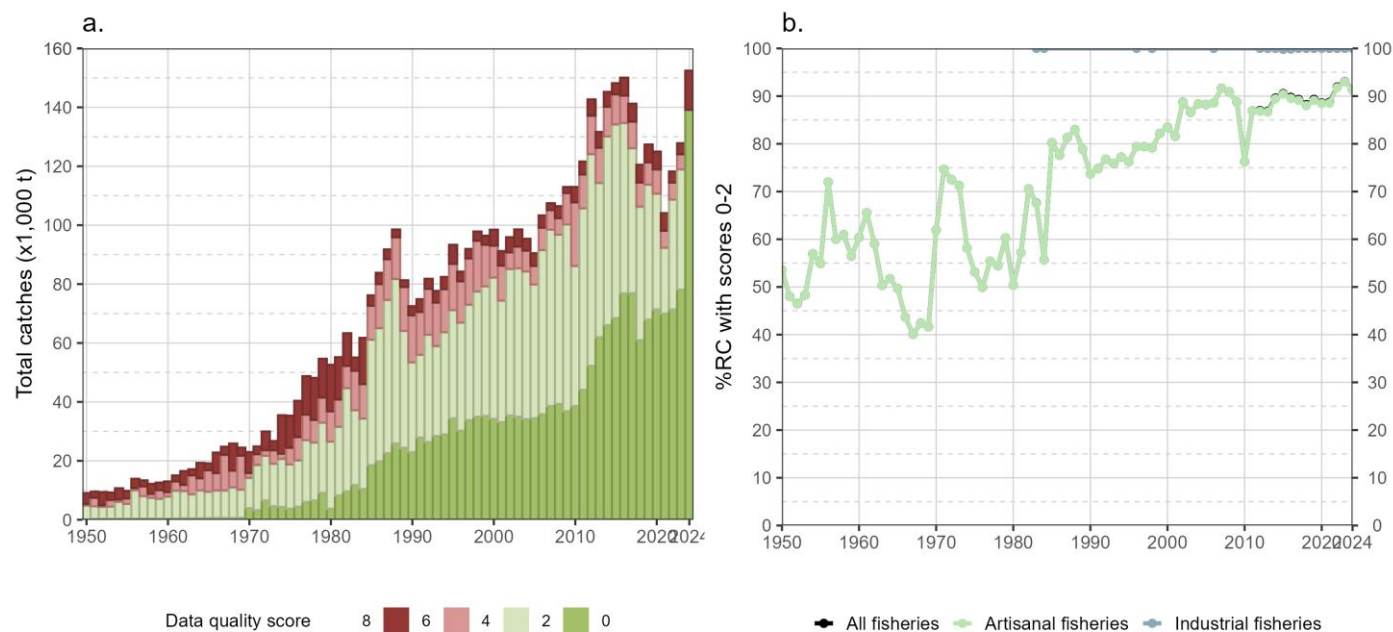


Figure 9: Annual time series of (a) cumulative retained catches (metric tonnes; t) estimated by quality score and (b) contribution of retained catches fully or partially reported to the IOTC Secretariat to all retained catches (percentage; %) of narrow-barred Spanish mackerel for all fisheries and by type of fishery, for the period 1950-2024

Spatial distribution of catch

Geo-references catches

Geo-referenced catches by fishery, last years (2020-2024) and decade (2010-2019)

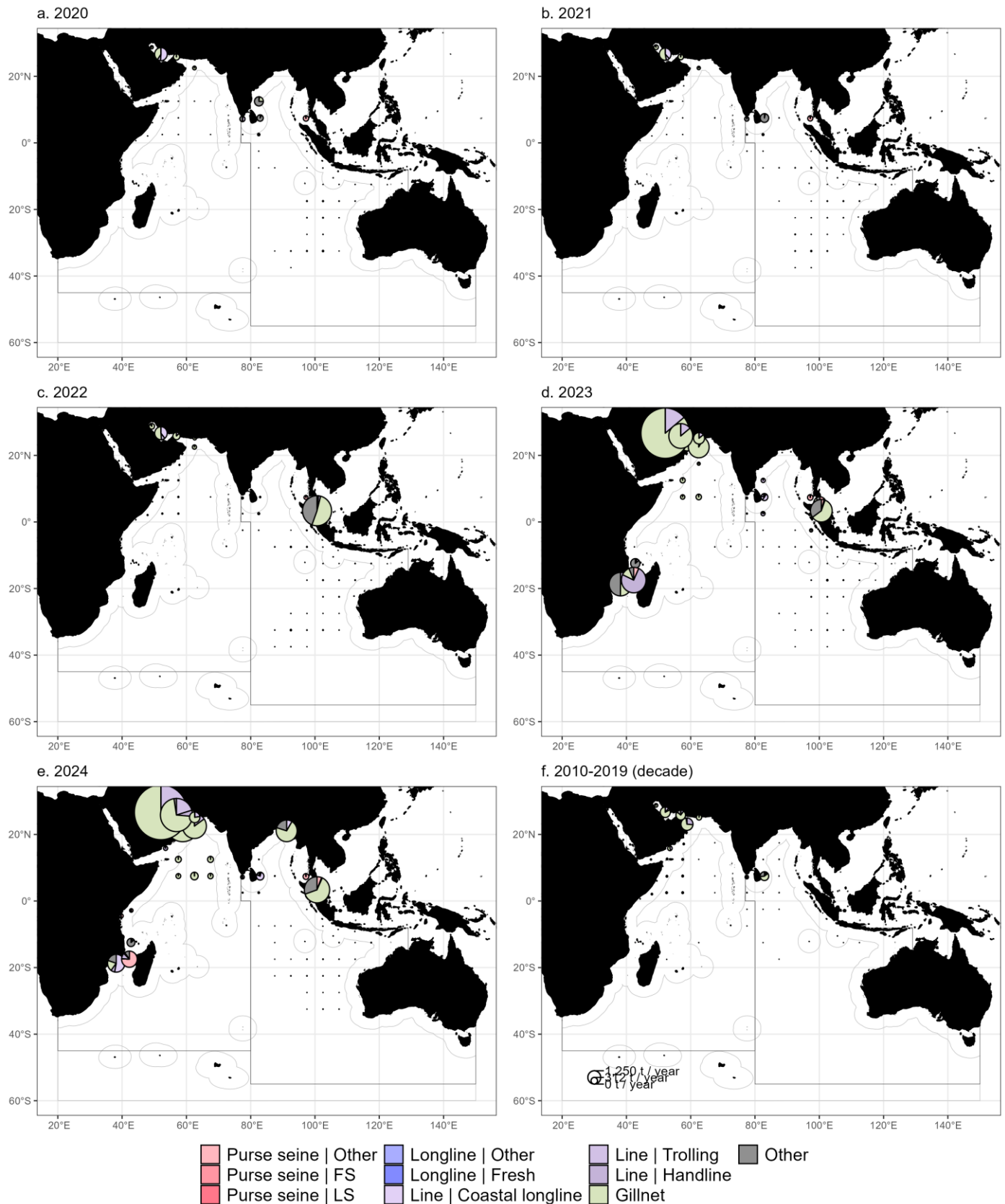


Figure 10: Mean annual time-area catches (metric tonnes; t) of narrow-barred Spanish mackerel, by year and decade, 5-degree grid area, and fishery. Light grey solid lines delineate areas beyond national jurisdiction. Data source: [time-area catches](#)

Domestic catches within areas under national jurisdiction (2020-2024)

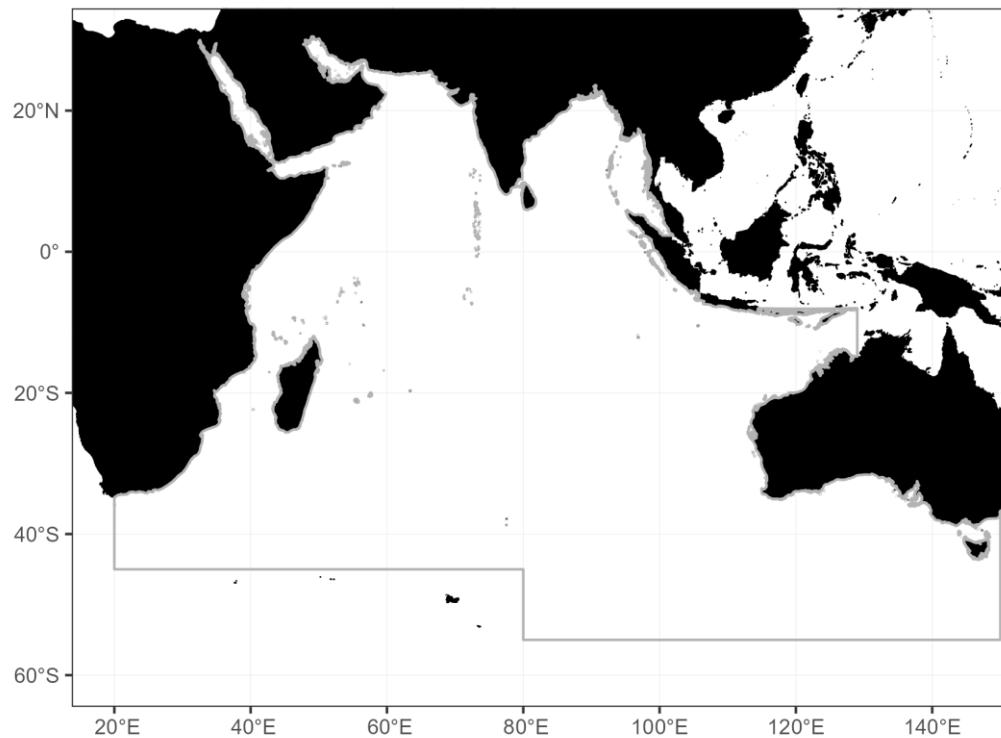


Figure 11: Mean annual density of catch (t km^{-2}) of narrow-barred Spanish mackerel reported for domestic fisheries operating in areas under national jurisdiction of IOTC coastal states between 2020 and 2024. Data source: [best scientific estimates of retained catches](#)

Uncertainties in geo-referenced catch and effort data

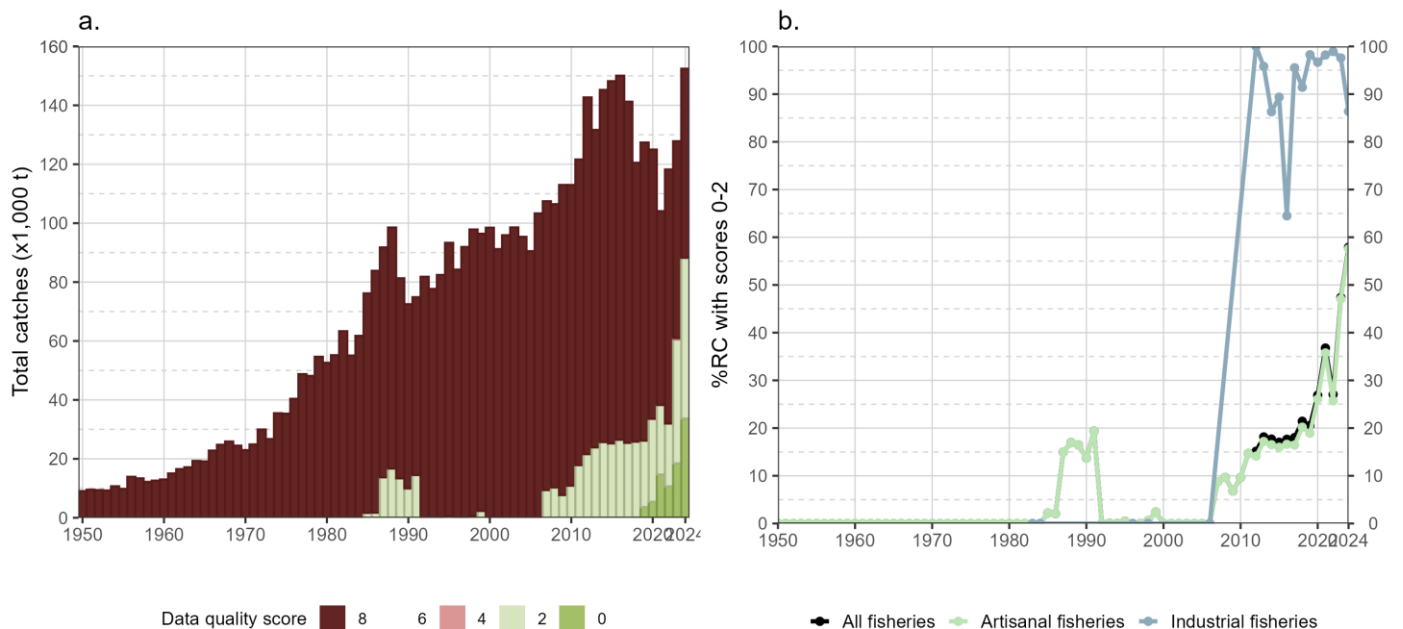


Figure 12: Annual time series of (a) cumulative retained catches (metric tonnes; t) estimated by quality score and (b) contribution of retained catches (percentage; %) with corresponding geo-referenced catch and effort data reported to the IOTC Secretariat in agreement with the requirements of Res. 15/02) to all retained catches of narrow-barred Spanish mackerel for all fisheries and by type of fishery, for the period 1950-2024

Size composition of the catch

Samples availability

By fishery group

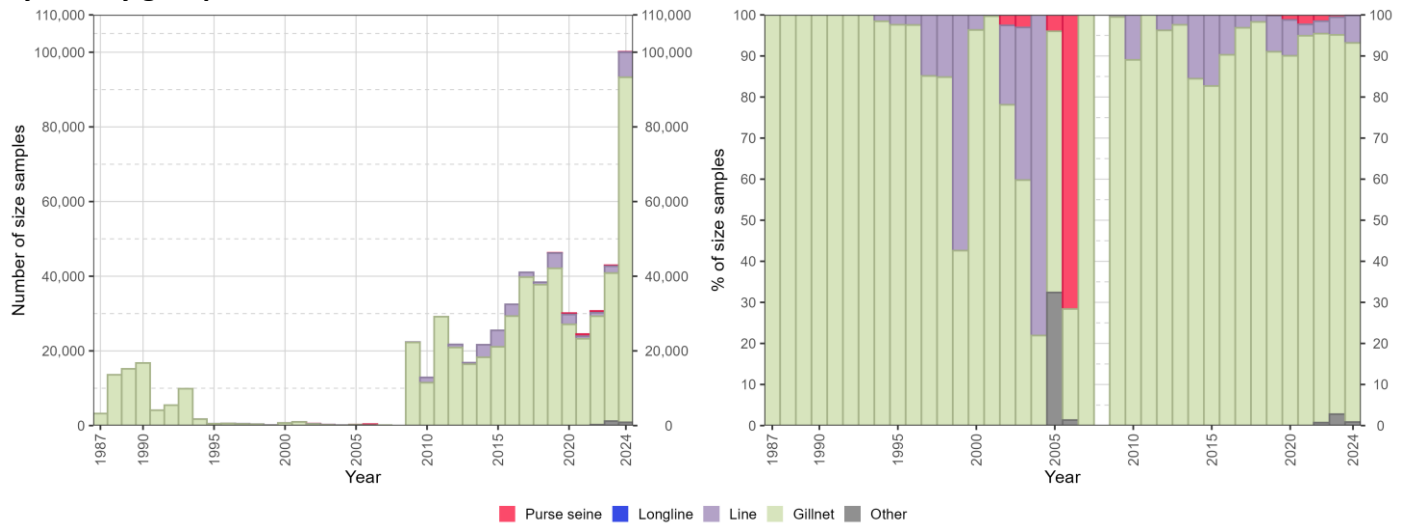


Figure 13: Availability of size-frequency data for narrow-barred Spanish mackerel as (left) absolute and (right) relative number of samples per year and fishery group. Data source: [standardized size-frequency dataset](#)

Purse seine fisheries

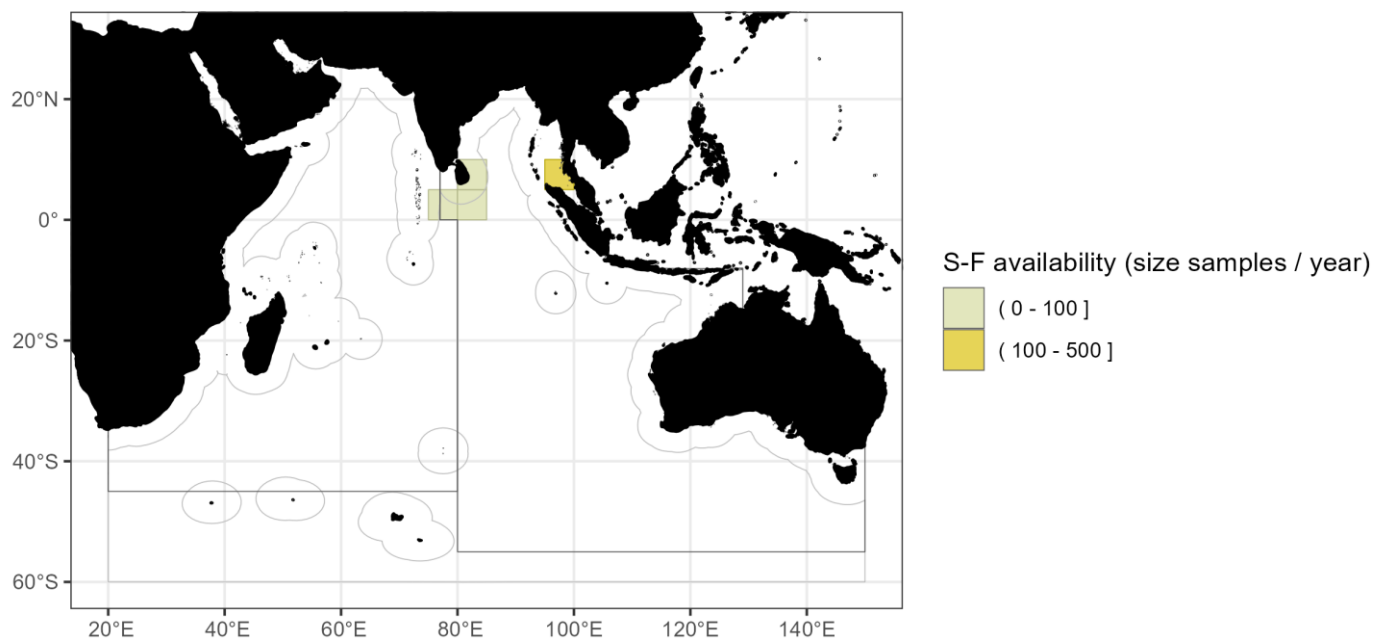


Figure 14: Spatial distribution (mean annual number of samples per 5-degree grid area) of available size-frequency data for narrow-barred Spanish mackerel caught in purse seine fisheries during 2020-2024. Light grey solid lines delineate areas beyond national jurisdiction. Data source: [standardized size-frequency dataset](#)

Gillnet fisheries

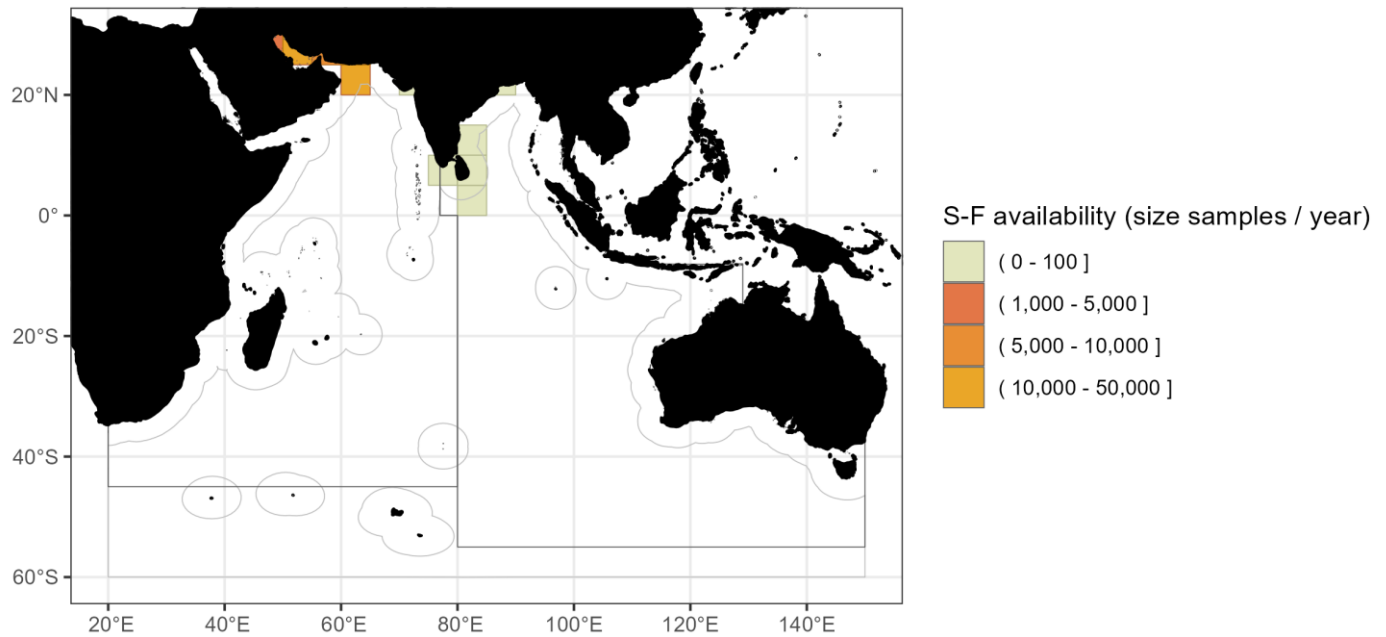


Figure 15: Spatial distribution (mean annual number of samples per 5-degree grid area) of available size-frequency data for narrow-barred Spanish mackerel caught in gillnet fisheries during 2020-2024. Light grey solid lines delineate areas beyond national jurisdiction. Data source: [standardized size-frequency dataset](#)

Line fisheries

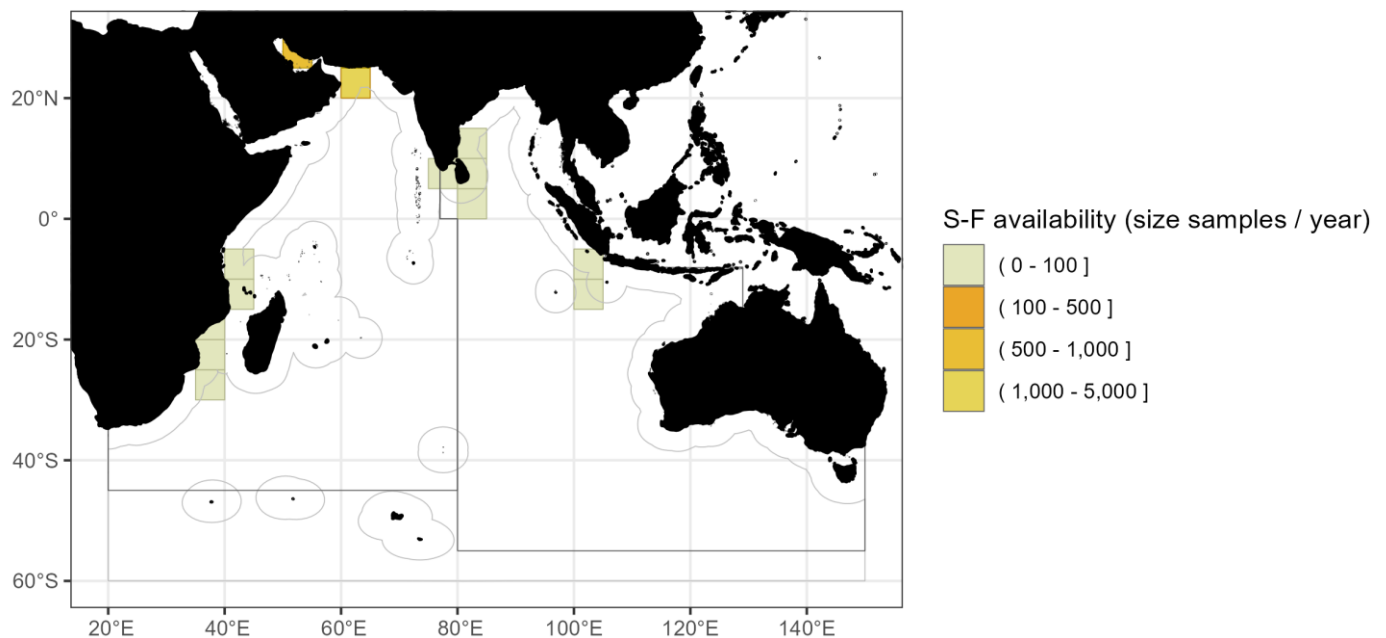


Figure 16: Spatial distribution (mean annual number of samples per 5-degree grid area) of available size-frequency data for narrow-barred Spanish mackerel caught in line fisheries during 2020-2024. Light grey solid lines delineate areas beyond national jurisdiction. Data source: [standardized size-frequency dataset](#)

By fishery

Purse seine fisheries

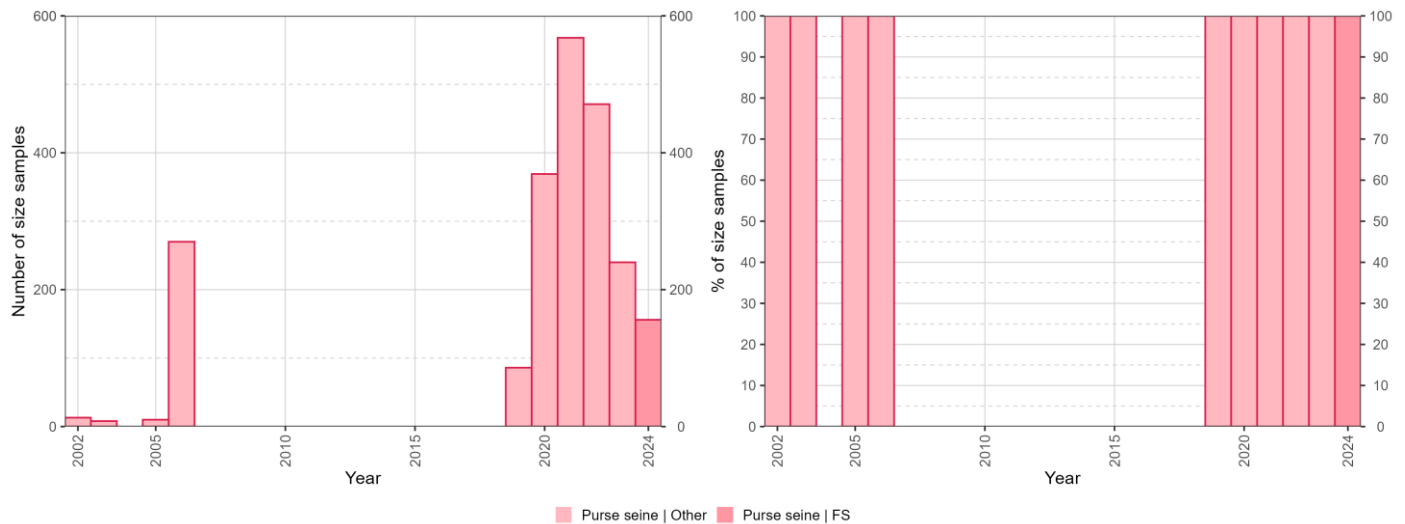


Figure 17: Availability of size-frequency data for narrow-barred Spanish mackerel as (left) absolute and (b) relative number of samples per year and type of purse seine fishery. Data source: [standardized size-frequency dataset](#)

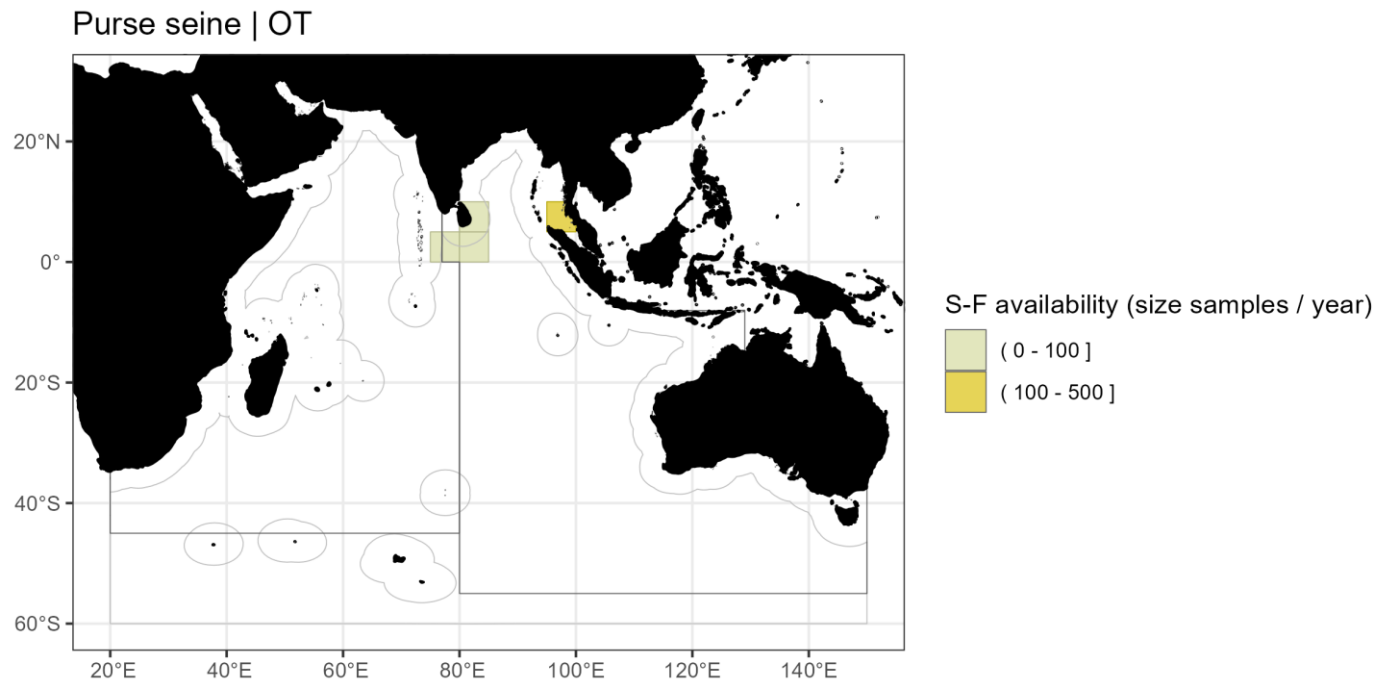


Figure 18: Spatial distribution (mean annual number of samples per 5-degree grid area) of available size-frequency data for narrow-barred Spanish mackerel caught in coastal and ringnet purse seine fisheries (Purse seine|Other) during 2020-2024. Data source: [standardized size-frequency dataset](#)

Gillnet fisheries

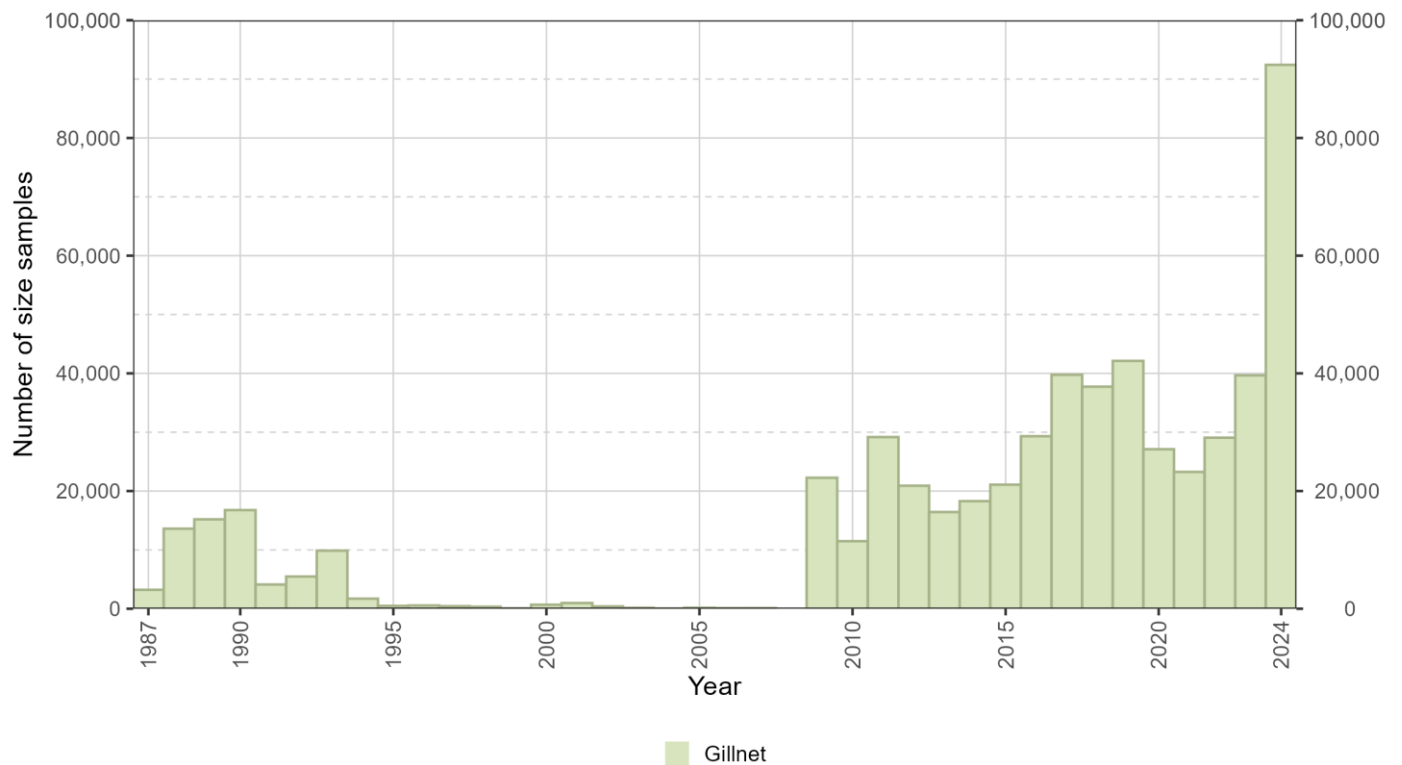


Figure 19: Availability of size-frequency data for narrow-barred Spanish mackerel as absolute number of samples per year in gillnet fisheries. Data source: [standardized size-frequency dataset](#)

Line fisheries

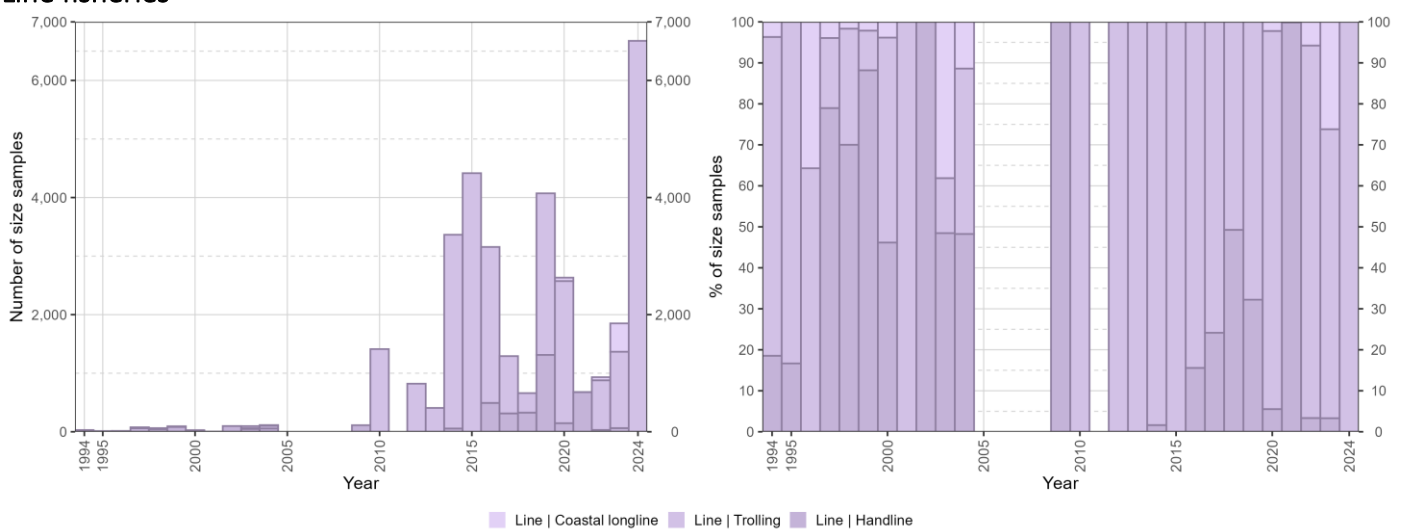


Figure 20: Availability of size-frequency data for narrow-barred Spanish mackerel as (left) absolute and (right) relative number of samples per year and line fishery type. Data source: [standardized size-frequency dataset](#)

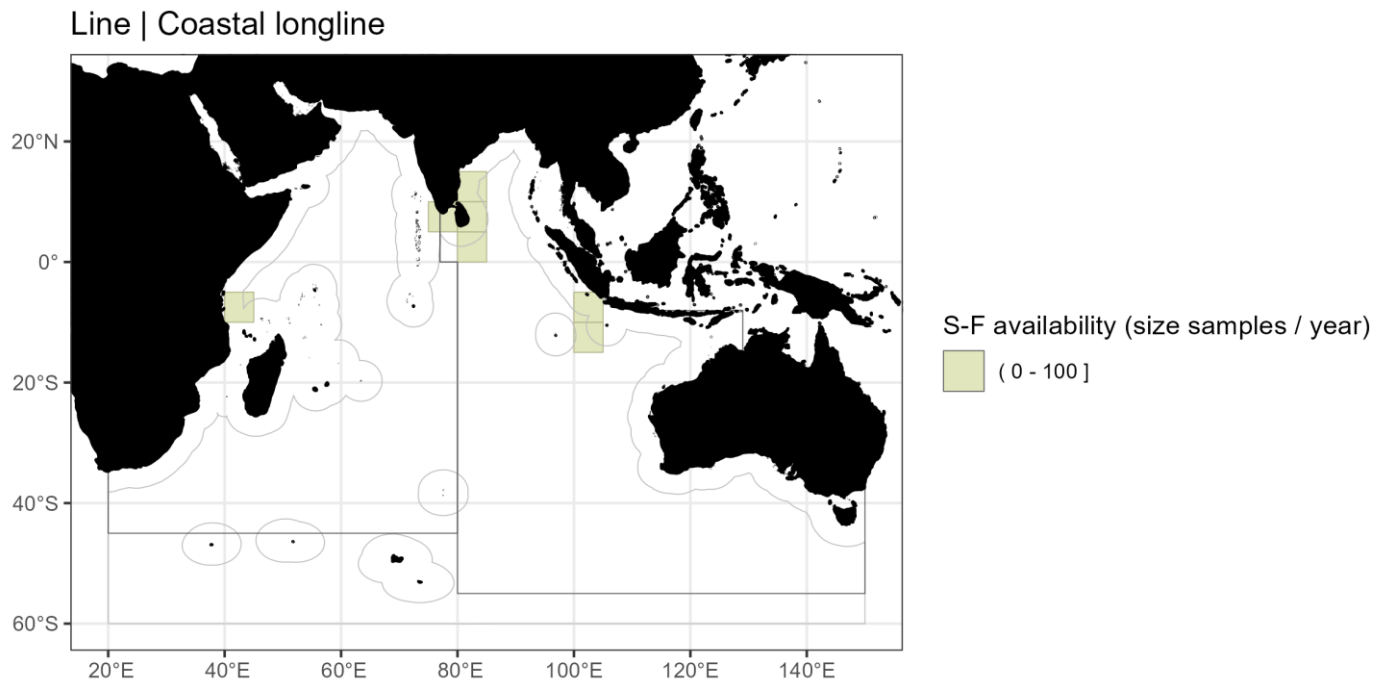


Figure 21: Spatial distribution (mean annual number of samples per 5-degree grid area) of available size-frequency data for narrow-barred Spanish mackerel caught in coastal longline fisheries during 2020-2024. Light grey solid lines delineate areas beyond national jurisdiction. Data source: [standardized size-frequency dataset](#)

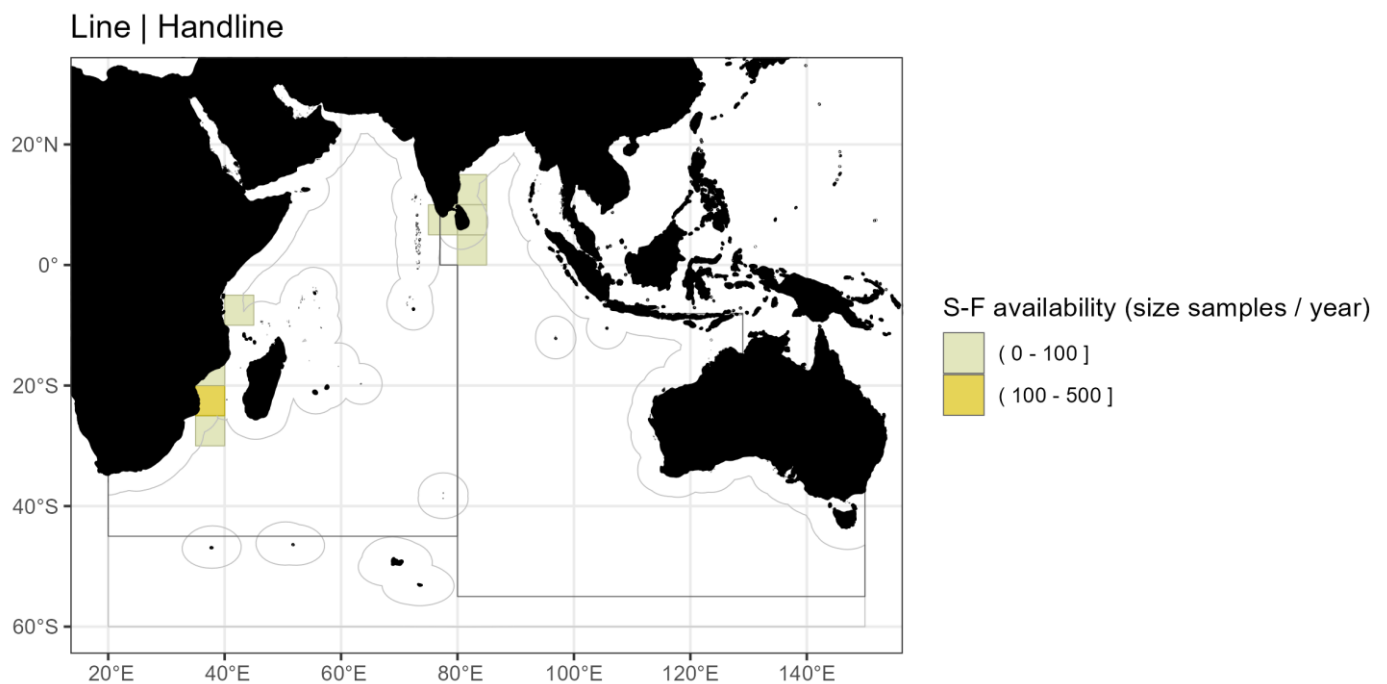


Figure 22: Spatial distribution (mean annual number of samples per 5-degree grid area) of available size-frequency data for narrow-barred Spanish mackerel caught in handline fisheries during 2020-2024. Light grey solid lines delineate areas beyond national jurisdiction. Data source: [standardized size-frequency dataset](#)

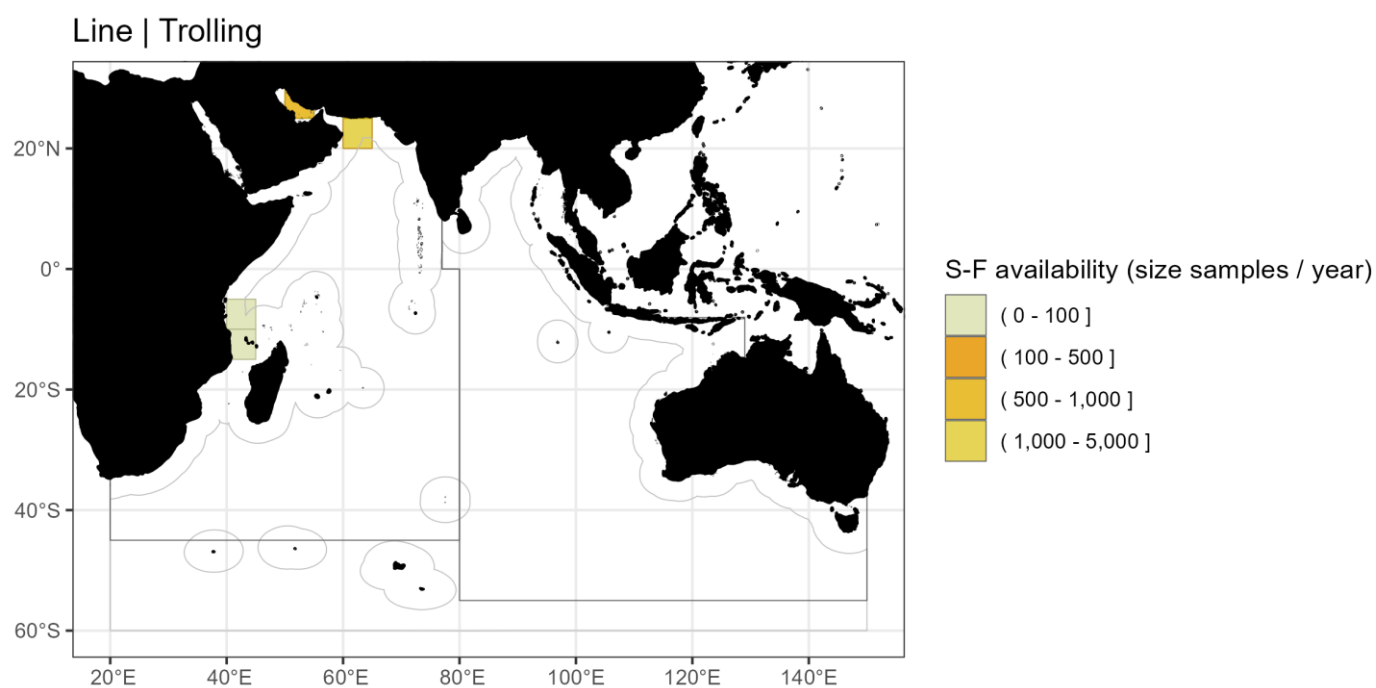


Figure 23: Spatial distribution (mean annual number of samples per 5-degree grid area) of available size-frequency data for narrow-barred Spanish mackerel caught in trolling fisheries during 2020-2024. Light grey solid lines delineate areas beyond national jurisdiction. Data source: [standardized size-frequency dataset](#)

Temporal patterns and trends in size distributions

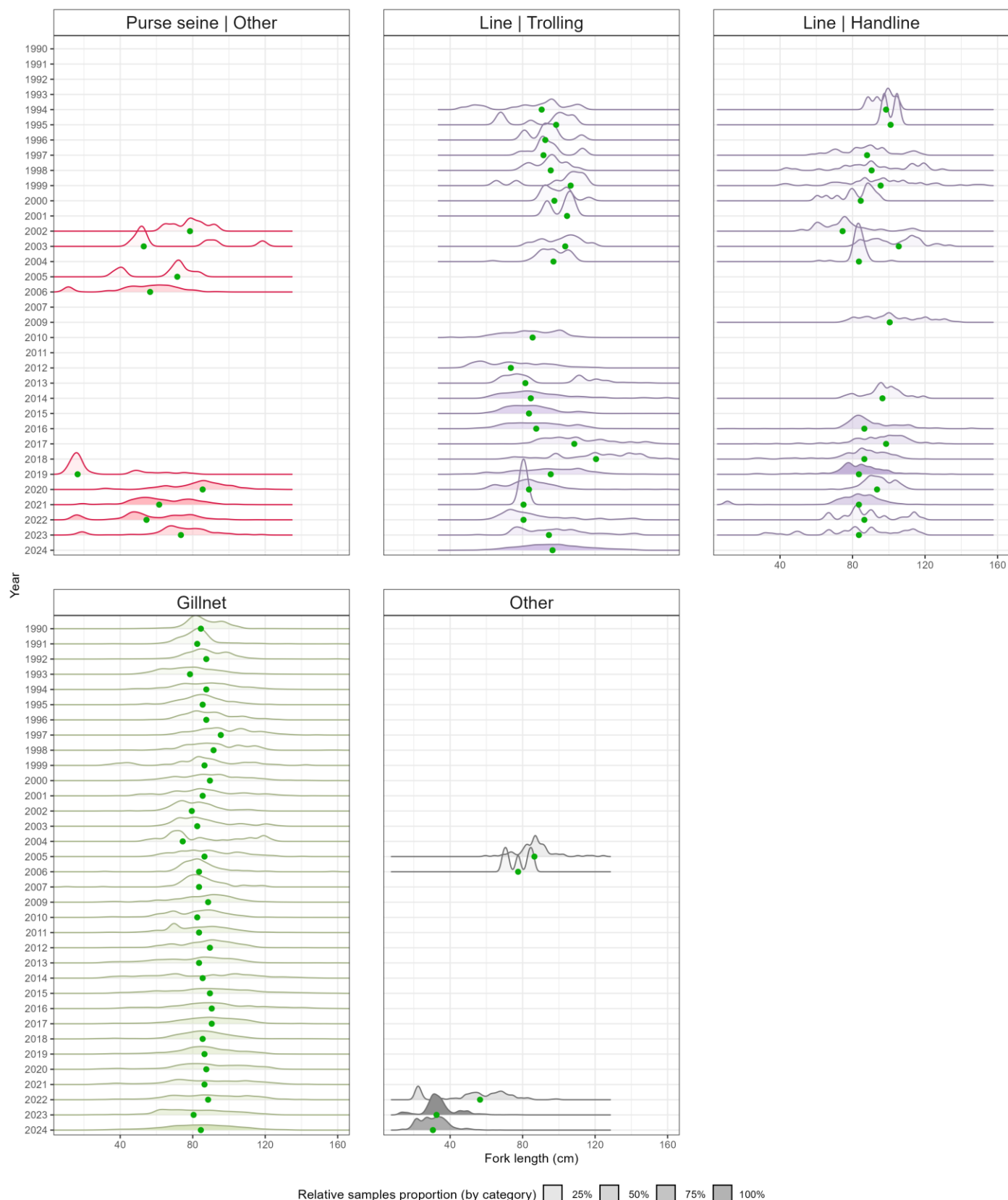


Figure 24: Relative size distribution (fork length; cm) of narrow-barred Spanish mackerel caught in coastal and ringnet purse seine fisheries (Purse seine|Other), gillnet fisheries, and other fisheries (trawl, unclassified). Fill intensity is proportional to the number of samples recorded for the year, while the green dot corresponds to the median value. Data source: [standardized size-frequency dataset](#)

Size distribution by fishery and fleet

Purse seine fisheries (other)

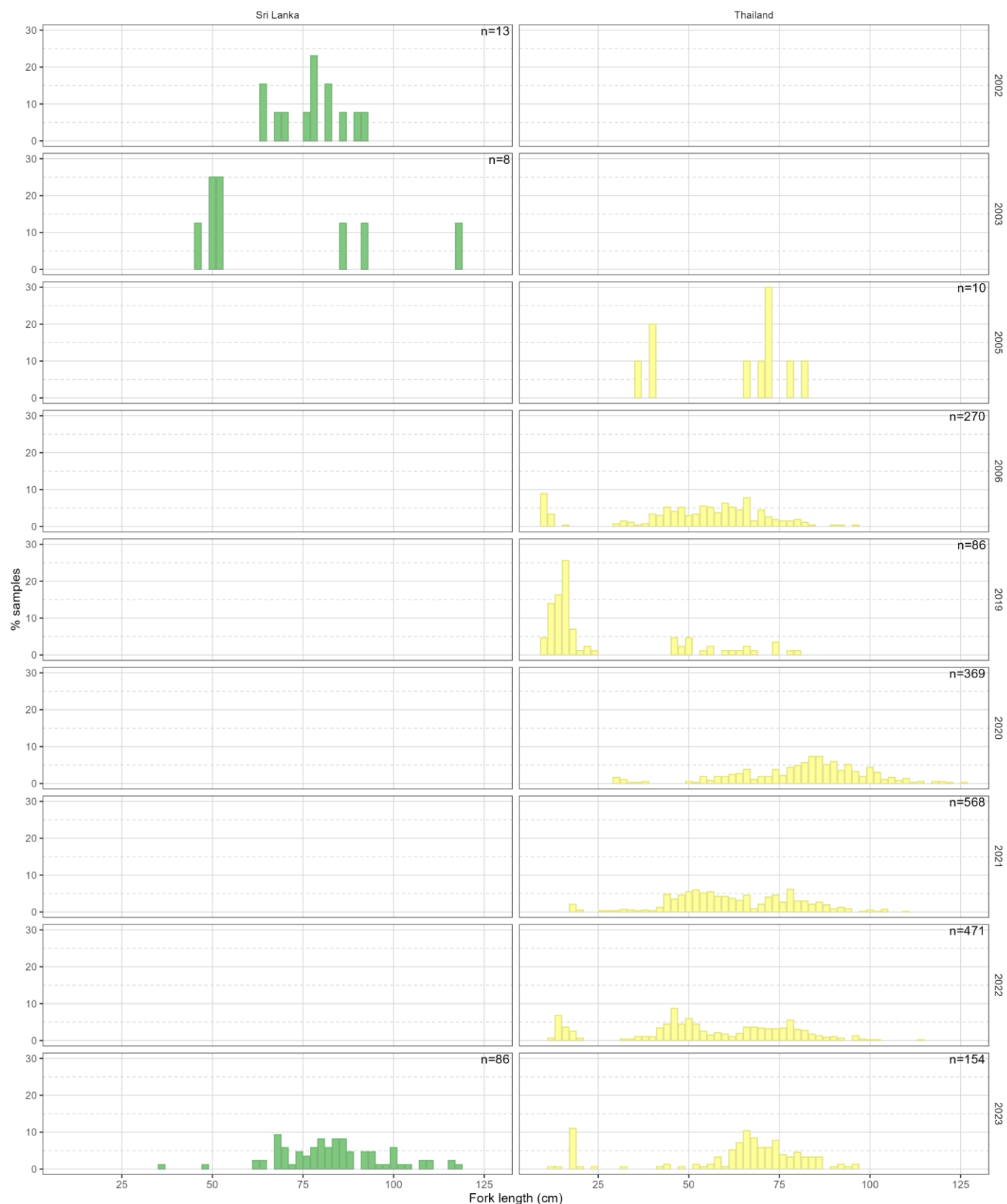


Figure 25: Relative size distribution of narrow-barred Spanish mackerel (fork length; cm) caught in coastal purse seine and ringnet fisheries (Purse seine|Other) by year and main fleet. Data source: [standardized size-frequency dataset](#)

Gillnet fisheries

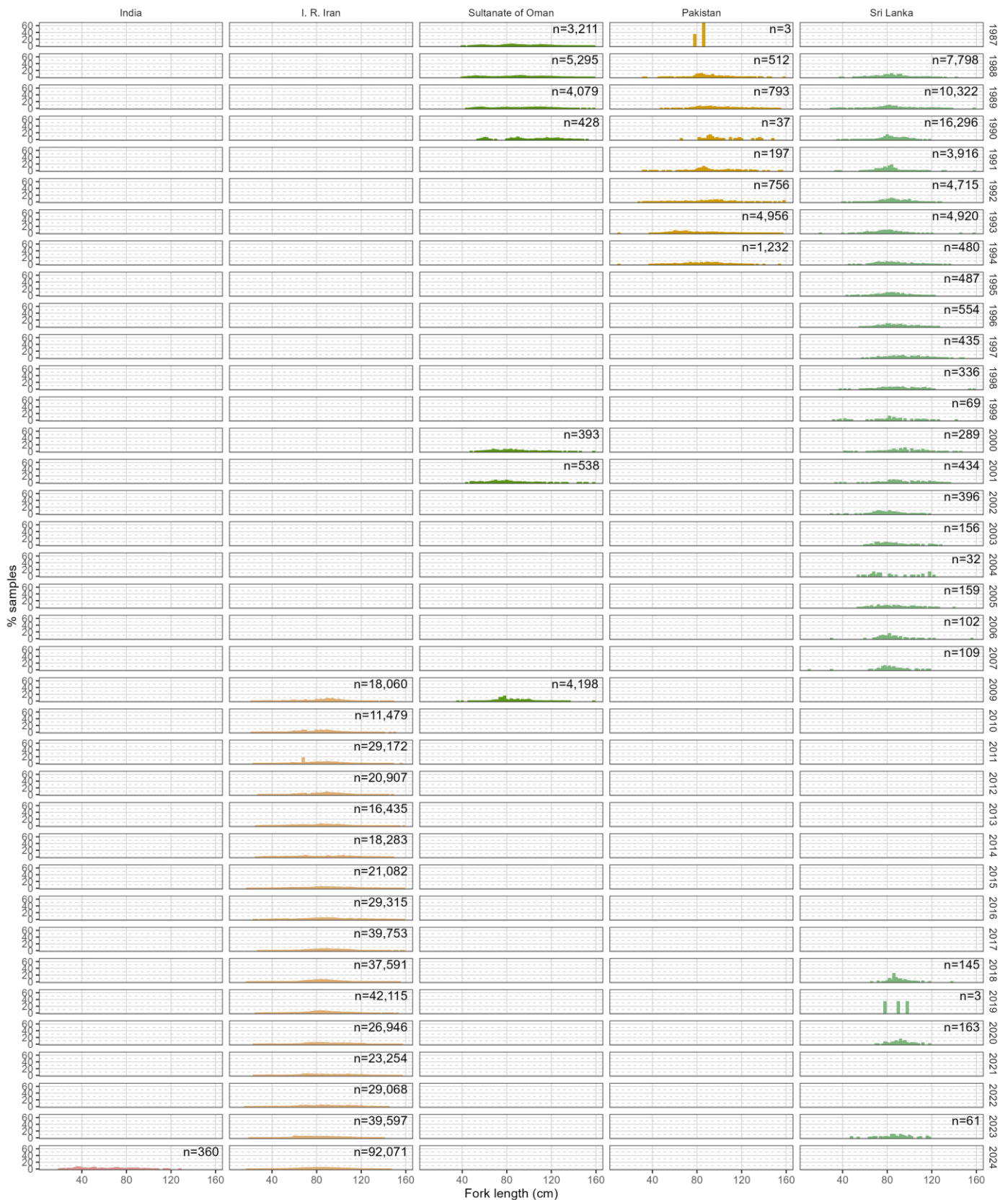


Figure 26: Relative size distribution of narrow-barred Spanish mackerel (fork length; cm) caught in gillnet fisheries by year and main fleet. Data source: [standardized size-frequency dataset](#)

Iranian fisheries

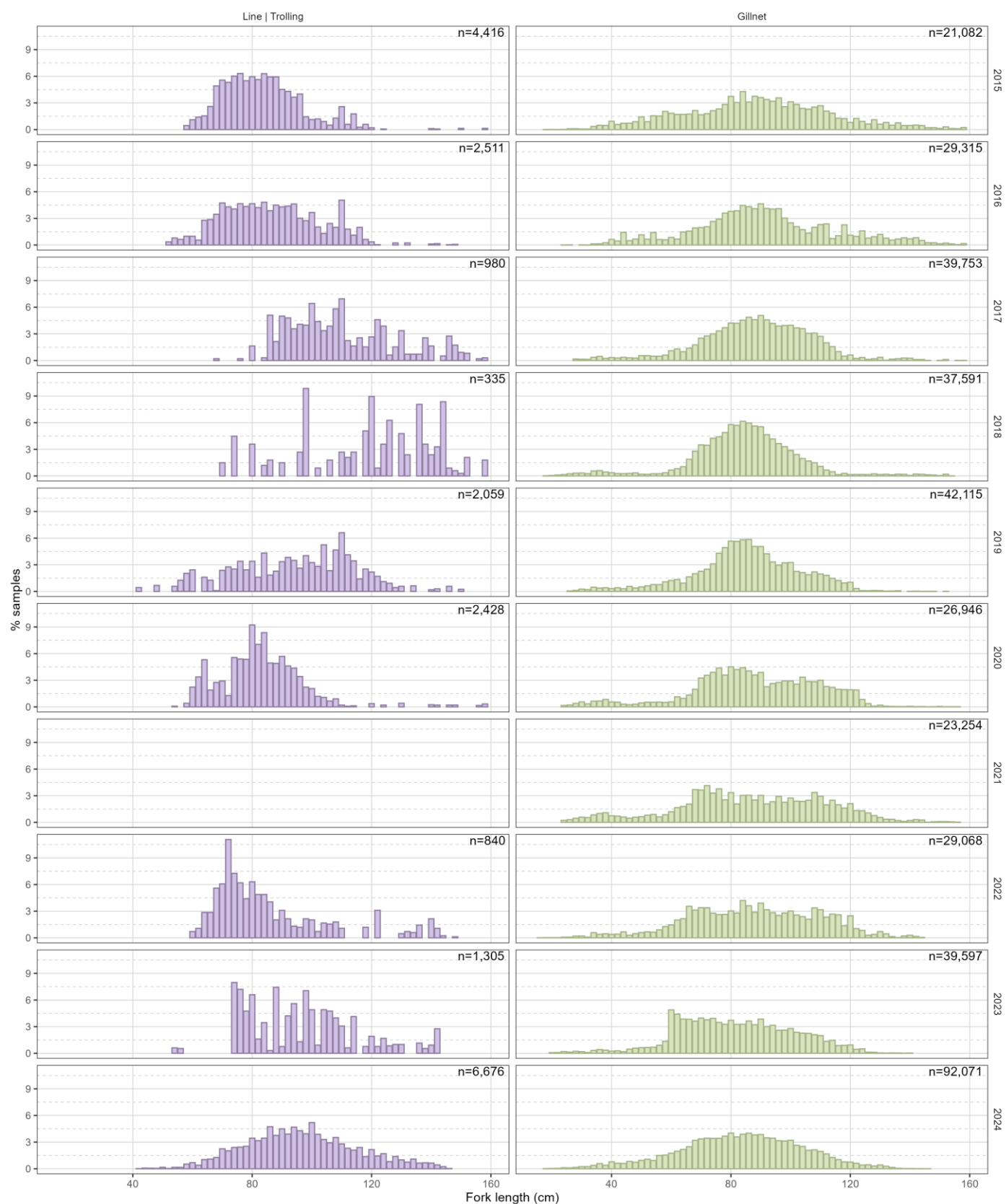


Figure 27: Relative size distribution of narrow-barred Spanish mackerel (fork length; cm) caught in Iranian fisheries by year and fishery. Data source: [standardized size-frequency dataset](#)

Uncertainties in geo-referenced size-frequency data

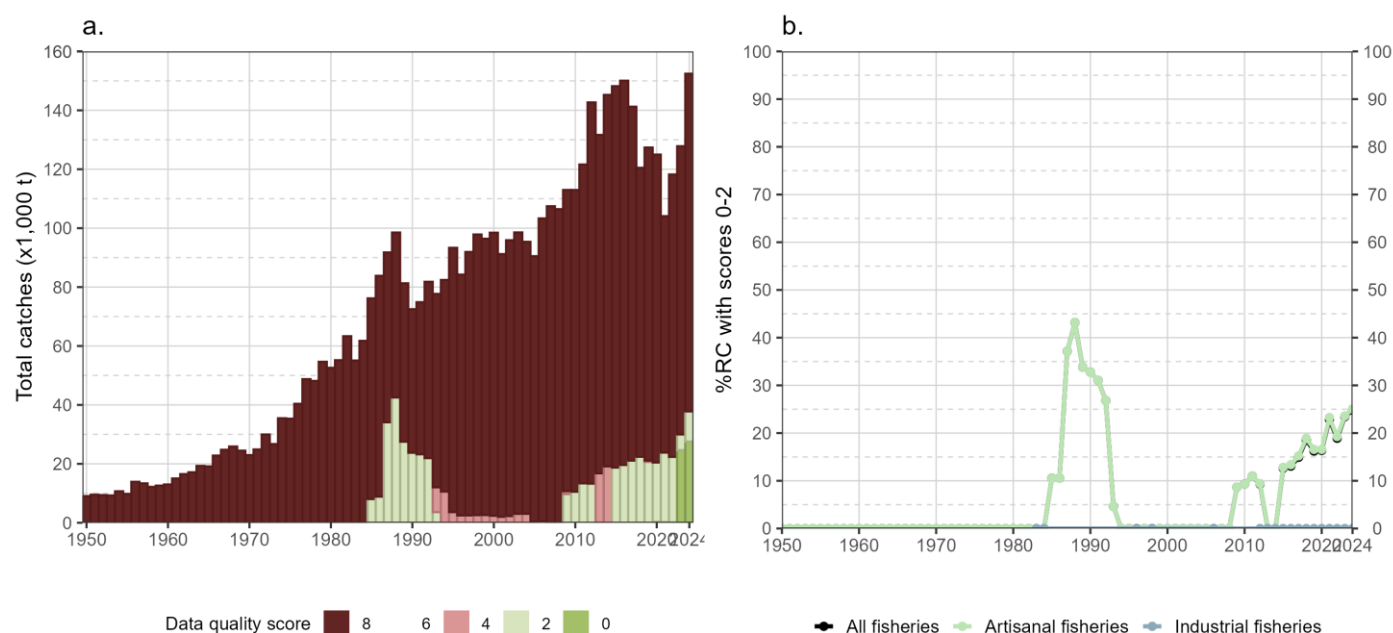


Figure 28: Annual time series of (a) cumulative retained catches (metric tonnes; t) estimated by quality score and (b) contribution of retained catches with corresponding geo-referenced size-frequency data reported to the IOTC Secretariat in agreement with the requirements of Res. 15/02 to all retained catches (percentage; %) of narrow-barred Spanish mackerel for all fisheries and by type of fishery, for the period 1950-2024

References

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Appendix II: Changes in best scientific estimates of retained catches from [WPNT13](#)

Table 4: Changes in best scientific estimates of annual retained catches (metric tonnes; t) between the current assessment meeting and last assessment meeting (WPNT13 held in July 2023) of narrow-barred Spanish 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	Gillnet	Eastern Indian Ocean	1,382	1	1,382
		Line	Eastern Indian Ocean	308	0	308
		Other	Eastern Indian Ocean	4,974	1,839	3,135
	IDN	Baitboat	Eastern Indian Ocean	533	0	533
		Gillnet	Eastern Indian Ocean	10,380	19,123	-8,743
		Line	Eastern Indian Ocean	5,188	10,608	-5,420
		Other	Eastern Indian Ocean	3,075	10,160	-7,085
		Purse seine	Eastern Indian Ocean	203	5,640	-5,437
	IND	Gillnet	Eastern Indian Ocean	5,418	9,426	-4,008
		Gillnet	Western Indian Ocean	3,868	10,176	-6,308
		Line	Eastern Indian Ocean	3,567	3,671	-104
		Line	Western Indian Ocean	2,708	2,550	159
		Other	Eastern Indian Ocean	3,274	4,041	-767
		Other	Western Indian Ocean	4,034	4,363	-329
		Purse seine	Eastern Indian Ocean	236	599	-363
	MMR	Gillnet	Eastern Indian Ocean	1,597	1,858	-261
		Line	Eastern Indian Ocean	725	843	-118
		Other	Eastern Indian Ocean	2,332	2,713	-381
		Purse seine	Eastern Indian Ocean	723	841	-118
	THA	Purse seine	Eastern Indian Ocean	194	411	-217
	YEM	Gillnet	Western Indian Ocean	3,393	2,876	516
2020	IDN	Baitboat	Eastern Indian Ocean	674	0	674
		Gillnet	Eastern Indian Ocean	7,500	23,964	-16,464
		Line	Eastern Indian Ocean	5,560	13,293	-7,734
		Longline	Eastern Indian Ocean	73	296	-223
		Other	Eastern Indian Ocean	7,167	12,732	-5,565
		Purse seine	Eastern Indian Ocean	221	7,097	-6,876
	THA	Purse seine	Eastern Indian Ocean	213	451	-238

Year	Fleet	Fishery group	Area	Current (t)	Previous (t)	Difference (t)
	TMP	Gillnet	Eastern Indian Ocean	171	0	171
2019	IDN	Baitboat	Eastern Indian Ocean	384	0	384
		Gillnet	Eastern Indian Ocean	9,174	16,387	-7,214
		Line	Eastern Indian Ocean	4,415	9,090	-4,676
		Longline	Eastern Indian Ocean	24	219	-196
		Other	Eastern Indian Ocean	3,648	8,707	-5,058
		Purse seine	Eastern Indian Ocean	206	5,919	-5,713
2018		Baitboat	Eastern Indian Ocean	183	0	183
		Gillnet	Eastern Indian Ocean	7,078	14,057	-6,979
		Line	Eastern Indian Ocean	3,272	7,798	-4,526
		Longline	Eastern Indian Ocean	133	12	121
		Other	Eastern Indian Ocean	1,839	7,469	-5,630
		Purse seine	Eastern Indian Ocean	114	4,328	-4,215
2017		Baitboat	Eastern Indian Ocean	1,690	0	1,690
		Gillnet	Eastern Indian Ocean	8,104	22,133	-14,029
		Line	Eastern Indian Ocean	3,829	12,278	-8,449
		Other	Eastern Indian Ocean	7,966	11,759	-3,794
		Purse seine	Eastern Indian Ocean	147	6,479	-6,332
		2016	Baitboat	Eastern Indian Ocean	383	0
Gillnet			Eastern Indian Ocean	10,825	17,747	-6,922
Line			Eastern Indian Ocean	3,952	9,844	-5,893
Other			Eastern Indian Ocean	3,831	9,429	-5,598
Purse seine			Eastern Indian Ocean	204	5,195	-4,991
2015			Baitboat	Eastern Indian Ocean	934	0
		Gillnet	Eastern Indian Ocean	9,315	18,675	-9,361
		Line	Eastern Indian Ocean	3,481	10,360	-6,879
		Other	Eastern Indian Ocean	8,375	9,922	-1,548
		Purse seine	Eastern Indian Ocean	165	5,466	-5,301
		2014	Baitboat	Eastern Indian Ocean	1,129	0
Gillnet			Eastern Indian Ocean	7,929	19,002	-11,072

Year	Fleet	Fishery group	Area	Current (t)	Previous (t)	Difference (t)
2013		Line	Eastern Indian Ocean	3,947	10,541	-6,594
		Longline	Eastern Indian Ocean	280	0	280
		Other	Eastern Indian Ocean	7,736	10,096	-2,360
		Purse seine	Eastern Indian Ocean	194	5,562	-5,368
		Baitboat	Eastern Indian Ocean	1,431	0	1,431
		Gillnet	Eastern Indian Ocean	6,547	21,571	-15,024
		Line	Eastern Indian Ocean	3,905	11,966	-8,061
		Other	Eastern Indian Ocean	7,127	11,461	-4,334
		Purse seine	Eastern Indian Ocean	127	6,314	-6,187
		Baitboat	Eastern Indian Ocean	1,040	0	1,040
		Gillnet	Eastern Indian Ocean	8,442	18,464	-10,022
		Line	Eastern Indian Ocean	3,396	10,242	-6,846
		Other	Eastern Indian Ocean	7,784	9,810	-2,026
		Purse seine	Eastern Indian Ocean	83	5,405	-5,321
2011	AUS	Purse seine	Eastern Indian Ocean	396	226	170
	IDN	Baitboat	Eastern Indian Ocean	734	0	734
		Gillnet	Eastern Indian Ocean	7,507	18,538	-11,031
		Line	Eastern Indian Ocean	2,350	10,284	-7,934
		Other	Eastern Indian Ocean	6,071	9,849	-3,778
		Purse seine	Eastern Indian Ocean	144	5,426	-5,282
2010	AUS	Purse seine	Eastern Indian Ocean	962	549	414
	IDN	Baitboat	Eastern Indian Ocean	468	0	468
		Gillnet	Eastern Indian Ocean	6,572	17,986	-11,414
		Line	Eastern Indian Ocean	2,949	9,977	-7,028
		Other	Eastern Indian Ocean	4,405	9,556	-5,151
		Purse seine	Eastern Indian Ocean	777	5,265	-4,488
	2009	Baitboat	Eastern Indian Ocean	557	0	557
		Gillnet	Eastern Indian Ocean	8,145	17,423	-9,277
		Line	Eastern Indian Ocean	2,818	9,665	-6,846
		Other	Eastern Indian Ocean	4,443	9,257	-4,813

Year	Fleet	Fishery group	Area	Current (t)	Previous (t)	Difference (t)
2008		Purse seine	Eastern Indian Ocean	312	5,100	-4,787
		Baitboat	Eastern Indian Ocean	494	0	494
		Gillnet	Eastern Indian Ocean	7,221	14,498	-7,277
		Line	Eastern Indian Ocean	2,499	8,042	-5,544
		Other	Eastern Indian Ocean	3,939	7,703	-3,764
		Purse seine	Eastern Indian Ocean	277	4,244	-3,967
2007		Baitboat	Eastern Indian Ocean	498	0	498
		Gillnet	Eastern Indian Ocean	7,288	15,025	-7,736
		Line	Eastern Indian Ocean	2,522	8,334	-5,813
		Other	Eastern Indian Ocean	3,976	7,983	-4,007
		Purse seine	Eastern Indian Ocean	279	4,398	-4,118
		2006	AUS	Purse seine	Eastern Indian Ocean	1,878
IDN	Baitboat		Eastern Indian Ocean	399	0	399
	Gillnet		Eastern Indian Ocean	5,837	11,851	-6,014
	Line		Eastern Indian Ocean	2,020	6,574	-4,555
	Other		Eastern Indian Ocean	3,184	6,297	-3,113
	Purse seine		Eastern Indian Ocean	224	3,469	-3,245
2005	AUS	Purse seine	Eastern Indian Ocean	503	287	216
	IDN	Baitboat	Eastern Indian Ocean	452	0	452
		Gillnet	Eastern Indian Ocean	6,607	12,616	-6,010
		Line	Eastern Indian Ocean	2,286	6,998	-4,712
		Other	Eastern Indian Ocean	3,604	6,703	-3,099
		Purse seine	Eastern Indian Ocean	253	3,693	-3,440
2004		Baitboat	Eastern Indian Ocean	377	0	377
		Gillnet	Eastern Indian Ocean	5,509	9,403	-3,894
		Line	Eastern Indian Ocean	1,906	5,216	-3,310
		Other	Eastern Indian Ocean	3,005	4,996	-1,991
		Purse seine	Eastern Indian Ocean	211	2,752	-2,541
		2003	Baitboat	Eastern Indian Ocean	331	0
Gillnet			Eastern Indian Ocean	4,836	7,668	-2,832

Year	Fleet	Fishery group	Area	Current (t)	Previous (t)	Difference (t)
2002		Line	Eastern Indian Ocean	1,673	4,254	-2,580
		Other	Eastern Indian Ocean	2,638	4,074	-1,436
		Purse seine	Eastern Indian Ocean	185	2,244	-2,059
		Baitboat	Eastern Indian Ocean	337	0	337
		Gillnet	Eastern Indian Ocean	4,926	7,171	-2,244
		Line	Eastern Indian Ocean	1,705	3,978	-2,273
		Other	Eastern Indian Ocean	2,687	3,810	-1,122
		Purse seine	Eastern Indian Ocean	189	2,099	-1,910
		2001	Baitboat	Eastern Indian Ocean	364	0
Gillnet		Eastern Indian Ocean	5,331	7,915	-2,583	
Line		Eastern Indian Ocean	1,845	4,390	-2,546	
Other		Eastern Indian Ocean	2,908	4,205	-1,297	
Purse seine		Eastern Indian Ocean	204	2,317	-2,112	
2000		Baitboat	Eastern Indian Ocean	368	0	368
Gillnet		Eastern Indian Ocean	5,377	7,787	-2,409	
Line		Eastern Indian Ocean	1,861	4,319	-2,459	
Other		Eastern Indian Ocean	2,933	4,137	-1,204	
Purse seine		Eastern Indian Ocean	206	2,279	-2,073	