Western and Central Pacific Fisheries Commission

SCIENTIFIC COMMITTEE
TWENTIETH REGULAR SESSION

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ANNUAL REPORT TO THE COMMISSION
PART 1: INFORMATION ON FISHERIES, RESEARCH AND STATISTICS

WCPFC-SC20-AR/CCM-16

NEW ZEALAND

Ministry for Primary Industries
Manatū Ahu Matua

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NEW ZEALAND

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Annual report

Part 1

Information on fisheries research and statistics

Ministry for Primary Industries

Po Box 2526, Wellington, New Zealand 6140

Scientific data was provided to the Commission in accordance with the decision relating to the provision of scientific data to the Commission by 30 April 2024	**YES**
If no, please indicate the reason(s) and intended actions:	

Abstract

In 2019-2023, skipjack, which is nearly all taken by purse seine, comprised the greatest part of the New Zealand vessels' catch of all tuna species with an average of 4,898 t caught annually, both within and beyond New Zealand fisheries waters. In 2023 only 84 t of skipjack were caught, all by a domestic purse-seine fishery targeting free swimming (unassociated) schools. The second most important component of New Zealand's domestic tuna fisheries by volume in 2019-2023 was albacore, with an average of 2,535 t caught (933 t in 2023). Albacore are taken mostly by troll gear but are also landed as target and bycatch in the longline fishery. Although surface longlining in 2023 mostly targeted and caught southern bluefin tuna, swordfish made up 15% of catches. In addition, smaller amounts of bigeye tuna (9% of catch), Pacific bluefin (6%), albacore (4%) and yellowfin (2%) tunas were also caught, as well as striped marlin (1%). Most highly migratory species caught commercially in New Zealand waters are exported; the destination of exports varies depending on the species. In 2023, 112 t of striped marlin were caught by recreational fishers, with 77% of these tagged and released.

New Zealand had one Class-5 purse seiner fishing offshore in the high seas areas of the equatorial western and central Pacific Ocean (WCPO) until 2021; since 2022 three purse seiners targeting skipjack have been operating in New Zealand fisheries waters only. Before 2016 a limited number of foreign owned longline vessels operated under charter in the NZ EEZ. Since 2016 the New Zealand longline tuna fleet has consisted only of domestically owned and operated vessels (mostly between 15 and 25 m in length). The total number of longline vessels operating in New Zealand declined from 151 vessels in 2002 to 37 in 2014 and 20 in 2023.

In 2023 blue shark was the most common non-tuna fish bycatch species observed caught in the longline fishery followed by butterfly tuna and porbeagle shark.

Longline vessels fishing for tuna or swordfish in New Zealand fishery waters are required to use tori lines and may only set their lines at night unless using approved line weighting to mitigate seabird bycatch. Alternatively hook-shielding devices can be used in place of tori lines and night setting/line weighting. New Zealand longline vessels fishing on the high seas south of 30° S must use two mitigation measures as specified in WCPFC CMM2018-03. New Zealand longline vessels have been provided with turtle de-hooking equipment and information on best practice handling and release guides for turtles. In August 2023 New Zealand made it mandatory for commercial fishers who are surface longlining in New Zealand waters to use circle hooks (a practice which was already widespread previously). The purse seine fishery in New Zealand fishery waters is based on free schools of skipjack, and bycatch is minimal (about 1% by mass). Several non-fish bycatch interactions were observed in the purse seine fishery in 2023, including elasmobranchs and seabirds, but no interactions with marine mammals or turtles were reported. However, no non-fish species or protected fish species interactions were recorded for purse seine sets that were targeting skipjack in 2023 (observed interactions were for sets targeting other species such as blue mackerel, jack mackerel and kahawai).

New Zealand has an Observer Programme and two active domestic port sampling programmes for highly migratory species. During 2023, New Zealand fishing vessels operated exclusively in New Zealand waters, aside from some activities by vessels trolling in the adjacent high seas. This is not within the scope of the Regional Observer Programme (paragraph 5) under CMM 2018-05. In 2023, 3.2% of the longline effort (hooks), and 36% of purse seine sets targeting skipjack in New Zealand waters were observed.

A considerable amount of research is directed at tunas, tuna-like and bycatch species in New Zealand. Fishers and fish receivers are required to furnish returns (monthly reports) to the Ministry for Primary Industries. New Zealand has data collection systems in place to collect catch and effort data as well as a system for collecting information on non-fish bycatch from fishers.

1.1 Annual Fisheries Information

1.1.1 Annual catch by species and gear in the WCPFC Convention Area

For 2023, the catch of the main Highly Migratory Species taken within and beyond New Zealand fisheries waters is summarised in Table 1 and catch by gear type is provided in Table 2. Historical catch for the main gear and species is shown in Figure 1 and historical number of vessels in Figure 2 (2001-2023). In 2002-2021, skipjack catches taken by purse seine comprised the greatest part of the catch by New Zealand vessels of all tuna species, both inside and outside New Zealand fisheries waters. Outside New Zealand fisheries waters, yellowfin makes up most of the balance, but are rarely part of the purse seine catch inside New Zealand fisheries waters. The purse-seine fishery inside New Zealand fisheries waters exclusively targets free schools of skipjack.

Albacore were the second largest component of the tuna catch until 2021, and the most important in 2022 and 2023, despite a decline in albacore catches in 2023. Albacore are taken mostly by troll gear, but also by longline. Although economically important to longline fishers in New Zealand, in 2022 and 2023 an average of 95% of longline caught albacore was bycatch. In contrast, effectively all (more than 99.99% annually) of troll caught albacore is targeted.

A total of 83 vessels 'actively fished' (as defined by WCPFC20) for albacore south of 20 degrees South in 2023, compared to an average of 134 vessels in 2020-2022. In previous years small amounts of swordfish were taken as well as occasional catches of other tuna species by vessels actively fishing for albacore using surface longline gear. In 2023 troll vessels actively fishing for albacore did not deploy any longlines, so there was no bycatch of bigeye tuna, yellowfin tuna, swordfish, other billfish, or sharks (Table 3).

Overall commercial landings of surface longline caught species have declined since 2002, consistent with the decline in the number of vessels operating in this fishery. Although surface longlining in 2023 mostly targeted southern bluefin tuna, swordfish made up 15% of catches. In addition, bigeye tuna, Pacific bluefin and albacore tuna were also caught, with yellowfin tuna and striped marlin only caught in small numbers. In order to protect New Zealand's sport fishery, since 1987 marlins may not be retained by commercial fishers when taken within New Zealand fisheries waters or on the high seas.

The striped marlin catch by recreational fishers in 2023 was estimated to be 112 t, with 77% of the fish tagged and released. Most International Game Fish Association world records for striped marlin are for fish caught in New Zealand.

A National Panel Survey of recreational fishers was conducted for the first time in the 2011–12 fishing year. The recreational sector was estimated to have landed 21,375 (CV 0.22) albacore in that year. Based on a mean weight of 4.2 kg this catch was estimated to be 90 t. The survey was repeated in the 2017–18 fishing year and recreational fishers were estimated to have caught 12,463 albacore with a mean weight of 4.55 kg for a catch of 57 t (CV 0.22). The most recent survey was conducted for the 2022-23 fishing year. It was estimated that 4,745 albacore were caught recreationally, with a mean weight of 7.3 kg resulting in an estimated catch of 35 t (CV 0.30).

The National Panel Survey for the 2011–12 fishing year estimated 76 t of skipjack tuna was landed based on an estimated 33,907 (CV 0.21) fish with a mean weight of 2.24 kg. In the 2017–18 fishing year, an estimated 52 t of skipjack tuna was landed (CV 0.18) based on an estimated 29,070 fish with a mean weight of 1.8 kg. The most recent survey was conducted for the 2022-23 fishing year. It was estimated that 20,928 skipjack were caught recreationally, with a mean weight of 2.08 kg resulting in an estimated catch of 44 t (CV 0.41).

Other pelagic species were not caught in sufficient quantities to be recorded in the survey, which is repeated every 5 years.

New Zealand is on the margins of yellowfin and skipjack tuna distribution and therefore will be impacted by any range contraction associated with stock decline or changed environmental conditions. Yellowfin tuna catches in New Zealand have declined significantly since the late 1990s in both commercial and recreational fisheries. Total skipjack tuna catches have also declined significantly since 2015. These trends are of concern to New Zealand participants in these fisheries.

Table 1: Estimated whole weight (t) of tuna and swordfish landed by New Zealand flagged vessels active in the WCPFC Convention Area, for years 2017 to 2023 (0 refers to catches < 500 kg). NZFW refers to catches within New Zealand fishery waters (up to 200nm off the coastline), and Extra Territorial (ET) refers to catches outside this area. Note: the estimates presented in this Table may differ from those estimated by the SPC due to differences in the estimation procedures.

		2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Albacore	NZFW	2141	2493	2752	3043	3485	2460	933
Thunnus alalunga	ET	0	3	0	0	0	0	0
	Total	2142	2496	2752	3043	3485	2460	933
Bigeye	NZFW	97	136	50	67	86	51	153
Thunnus obesus	ET*	60	17	100	101	0	0	0
	Total	157	153	150	169	86	51	153
Pacific bluefin	NZFW	14	20	23	46	42	34	105
Thunnus orientalis	ET	0	0	0	0	0	0	0
	Total	14	20	23	46	42	34	105
Skipjack	NZFW	5120	3817	5519	5392	4914	931	84
Katsuwonus pelamis	ET	3673	2050	3792	3859	0	0	0
	Total	8793	5868	9311	9251	4914	931	84
Swordfish	NZFW	507	469	264	219	302	149	250
Xiphias gladius	ET	0	0	0	0	0	0	0
	Total	507	469	264	219	302	149	250
Yellowfin	NZFW	10	20	5	11	22	8	36
Thunnus albacares	ET*	369	964	167	171	41	0	0
	Total	379	984	172	182	63	8	36

* The ET estimates for yellowfin tuna may also include some bigeye tuna as these are not always separated on purse seine logbooks completed by fishers

Table 2: Percentage catch by gear type for 2023 for major species taken in New Zealand fishery waters in the Western and Central Pacific Fisheries Commission convention area. Note: due to rounding some of these figures may not add up to 100% exactly.

2023	**Longline**	**Troll**	**Handline**	**Pole & Line**	**Purse seine**
Albacore	7	93	0	0	<1
Bigeye tuna	100	<1	0	0	0
Skipjack tuna	<1	11	0	0	88
Swordfish	100	0	0	0	0
Yellowfin tuna	98	2	0	0	<1

Table 3: Number of vessels and catch details for vessels actively fishing for albacore south of 20° S in New Zealand waters, in t (scaled) using surface longline, troll and purse seine. Actively fishing for albacore is defined as vessel with an annual catch of albacore in that area with South Pacific albacore greater than 50% of the catch of potential target tuna (albacore, yellowfin and bigeye, southern bluefin, skipjack) and swordfish.'

	Vessels	Albacore	Bigeye	Yellowfin	Skipjack	Swordfish	Other billfish	Sharks
2020	135	2,811	2	1	5	46	0	5
2021	143	3,141	4	1	2	48	0	7
2022	123	2,233	0	0	2	6	0	3
2023	83	816	0	0	9	0	0	0

1.1.2 Number of vessels by gear type, size

Approximately 114 domestically owned and operated vessels (mostly 15 to 25 m) made up the main part of the domestic commercial New Zealand tuna fishing fleet in 2023. These vessels use troll or longline gear, with some vessels using both gear types at different times of the year. Some of these vessels do a limited amount of pole and line and handline fishing, but there is no dedicated pole and line or handline fishery in New Zealand. All surface longline vessels reported in Table 4 targeted a species complex including tuna and swordfish.

A small fleet of foreign owned longline vessels on charter to New Zealand fishing companies operated in New Zealand fisheries waters from the late 1980s through 2015. These longliners primarily targeted southern bluefin tuna, although other tunas and swordfish were also caught. No chartered longliners have fished in New Zealand fisheries waters since 2016.

Four New Zealand flagged Class-5 and Class-6 purse seiners fished in the EEZs of Pacific Island States and on the high seas of the equatorial western and central Pacific Ocean (WCPO) through 2015, declining to two in 2016 and 2017, and to one in 2018 (Table 4). The latter Class-5 purse seiner did not fish in the high seas in 2022 or 2023 and is no longer part of the New Zealand fleet. In 2020 and 2021 four purse seiners targeting skipjack operated in New Zealand fisheries waters, targeting free swimming (unassociated) schools of skipjack and blue mackerel. In 2022 and 2023 the number of vessels declined to three.

Table 4: Number of New Zealand-registered vessels fishing for tuna in the WCPFC Convention Area by vessel size class (GRT) and gear type active in the WCPFC Convention Area, for years 2017 to 2023. Fishing methods surface longline, purse seining, pole & line, and troll are presented by calendar year; troll season refers to July-June.

	Calendar	**Total no.**	**Vessels size range (GRT)**		
Fishing Method	**Year**	**vessels**	**0 – 50**	**51 - 200**	
Surface Longline	2017	32	18	14	
	2018	34	17	17	
	2019	28	14	14	
	2020	28	13	15	
	2021	29	13	16	
	2022	22	11	11	
	2023	20	11	9	
Purse Seining			**0 – 500**	**501-1000**	**1001 - 1500**
	2017	6	4	0	2
	2018	5	4	0	1
	2019	5	4	0	1
	2020	4	3	0	1
	2021	4	3	0	1
	2022	3	2	0	1
	2023	3	3	0	0

Pole & Line			**0-50**	**51-150**
	2017	0	0	0
	2018	0	0	0
	2019	0	0	0
	2020	1	0	1
	2021	1	0	1
	2022	1	1	0
	2023	0	0	0
Troll			**0 – 50**	**51 – 200**
	2017	111	88	23
	2018	143	110	33
	2019	143	110	33
	2020	145	111	34
	2021	159	121	38
	2022	134	105	29
	2023	94	79	15
Troll season			**0 – 50**	**51 - 200**
	2016-17	98	82	16
	2017-18	133	104	29
	2018-19	134	106	28
	2019-20	137	104	33
	2020-21	151	114	37
	2021-22	131	105	26
	2022-23	97	81	16

1.1.3 Fishing patterns

Geographical distribution of longline effort (sets) for the domestic fleet by quarter is presented in Figure 3. Total effort (hooks set) for each target species is provided in Table 5. The catch of albacore and the number of vessels involved in the troll and longline fisheries are given for each fleet in Table 6. The catch of swordfish (taken entirely by surface longline) and the number of vessels involved in that fishery are given in Table 7.

The key target species in the longline fishery are southern bluefin, bigeye tuna, and swordfish. The southern bluefin tuna fishery generally occurs during the second and third quarters of the year and mostly off the east coast of the North Island and the west coast of the South Island. However, catch/effort have increased in the first quarter of the year and off the east coast of the South Island in recent years. For the remainder of the year the fishery targets bigeye tuna (and occasionally other species such as bluenose and other tuna species) and occurs off the east coast and northeast of the North Island. As a result of a change in management from a competitive to an individually allocated regime for southern bluefin tuna, fishers are able to delay catching their quota until later in the season when prices are better. This led to some changes in the seasonal distribution of the fishery. Annual effort distributions for the longline fisheries are provided in Figure 3 and catch distributions by species for longline fisheries in Figure 4.

The albacore troll fishery is based mainly on the west coast of the North and South Islands and operates mainly between December and May each year. There is considerable variation from year to year in the availability of these fish in New Zealand waters, with poorer years associated with El Nino events. Longline fishing effort also varies considerably: 21,000 hooks were reported primarily targeting

albacore in 2016, an average of just 4,400 hooks in 2017-21, before increasing to 48,000 hooks in 2022 (Table 5). In 2023 no longline fishing effort targeting albacore was reported. Within a season, however, catch rates experienced across the fleet show little variation and the distribution of catch is consistent with that of effort between years (Figure 5).

The purse seine fishery within New Zealand fisheries waters in 2019 to 2022 occurred on both the east and west coasts of the North Island between January and May, as well as the north west coast of the South Island. In 2023 purse seine fishing effort and skipjack catches came primarily from the east coast of the North Island (Figure 6).

Table 5: **Annual longline effort (000s of hooks) by target species for years 2017 to 2023. The category 'other' includes Pacific bluefin, yellowfin tuna, and swordfish. It should be noted that fishers record only one target species on their logsheets but are often targeting multiple species simultaneously**.

Year	Southern Bluefin	Bigeye	Albacore	Other	Total
2017	1227	512	4	362	2105
2018	1256	577	1	418	2252
2019	1448	325	3	202	1977
2020	1318	428	8	188	1942
2021	964	306	6	281	1557
2022	884	217	48	122	1271
2023	990	399	0	199	1591

Table 6: The total number of domestic vessels that fished for albacore (troll and surface longline), and the total catch of albacore for the domestic troll and surface longline fleets in New Zealand EEZ by calendar year from 2017 to 2023. Small amounts (less than 4 t annually) were taken by other methods including pole and line, handline, and purse seine.

	NZ troll vessels		New Zealand surface longline vessels	
Year	Catch (tonnes)	Vessel numbers	Catch (tonnes)	Vessel numbers
2017	1952.7	111	188.2	32
2018	2255.1	143	237.7	34
2019	2634.7	140	116.5	28
2020	2825.2	145	202.0	28
2021	3382.5	159	102.2	28
2022	2377.1	133	83.3	22
2023	863.6	94	69.6	20

Table 7: The number of domestic vessels that fished for swordfish (all surface longline vessels), and the catch of swordfish for the domestic longline fleet in New Zealand EEZ south of 20ºS by calendar year from 2017-2023.

	Catch (tonnes)	Vessel numbers
2017	504.2	32
2018	468.8	34
2019	263.6	28
2020	219.1	28
2021	301.8	27
2022	149.2	23
2023	249.7	20

1.1.4 Estimated total catches of non-target, associated and dependent species

1.1.4.1 Longline fisheries

For bycatch species of commercial interest, estimates of landings are obtained from fisher records, while for less valuable species, observer data provides the best source of information. In future an additional data source will be fisher reported data verified by onboard cameras. This includes data on major bycatch species including "key shark species" from CMM2022-04 and species of special interest for the longline and purse seine fisheries within, and adjacent to, New Zealand fisheries waters.

The major bycatch species in the longline fishery have been brought into the New Zealand Quota Management System (QMS). The overall levels of landed bycatch have remained similar during the period 2017-2023, with only moonfish landings showing a slight decline (Table 8). Blue shark landings had decreased consistently from 2017 to 2022 but increased back to levels last seen in 2017 and 2018 in 2023.

Table 8: Estimated landed catch (t) of non-target species currently managed within the QMS that are taken in tuna fisheries within New Zealand fisheries waters. Data are provided by calendar year for 2017 – 2023.

Species	Scientific name	2017	2018	2019	2020	2021	2022	2023
Blue shark	*Prionace glauca*	119	117	103	104	93	56	114
Mako shark	*Isurus oxyrinchus*	39	35	25	27	28	15	35
Moonfish	*Lampris guttatus*	51	67	41	52	31	14	27
Porbeagle shark	*Lamna nasus*	26	56	38	23	33	27	51
Ray's bream	*Brama brama*	6	2	2	1	1	3	1

It is also possible to estimate bycatch from the longline fishery using observer records. While this is important for estimating catches of the species that are less likely to be retained or recorded, it is difficult to obtain reliable estimates of species rarely caught in longline fisheries. Observed longline trips are stratified by year, fleet, region and target species, and a CPUE (ratio of means) for each species is established from numbers of fish and numbers of hooks observed. Observer coverage of fishing activities in New Zealand waters averaged 12% of hooks observed in 2017-2021 but declined to 5.4% in 2022 and 3.2% in 2023 due to health and safety concerns from watchkeeping practices on fishing vessels. Estimates of catches (in numbers of fish) are obtained by scaling CPUE to total hooks set by the commercial fishery per stratum and summing across strata. Those estimates of catch, the percentage of those catches retained, and an indication of the life status of discarded fish are provided in Table 9a. Insufficient data was collected to raise observed bycatch (provided in Table 9b) to the total fleet in 2023.

Table 9a: Total estimated catch (numbers of individuals) of common bycatch species in the New Zealand longline fishery as estimated from observer data from 2017 to 2022. Observer data was too limited to raise observed numbers to the fleet total for 2023.

Species	2017	2018	2019	2020	2021	2022
Blue shark	49 924	63 618	89 377	37 093	39 524	65 277
Porbeagle shark	3 101	2 594	2 883	1 320	2 248	2 810
Lancetfish	13 274	13 163	18 747	11 457	4 211	2 212
Butterfly tuna	406	419	348	120	388	663
Moonfish	2 022	2 698	1 975	1 834	1 033	526
Oilfish	227	602	417	1 149	504	510
Pelagic stingray	1 798	2 949	526	1721	3 182	508
Rays bream	2 421	1 579	1 949	3 211	2 514	494

Mako shark	1 391	2 721	1 138	859	933	310
Striped marlin	290	247	157	279	426	175
Escolar	300	594	488	808	388	146
Skipjack tuna	57	184	8	134	110	117
Rudderfish	680	253	186	164	221	80
Dealfish	72	25	23	69	18	80
Sunfish	1 648	3 648	1 982	1 618	1 537	56
Big scale pomfret	17	34	0	52	17	53
School shark	59	187	116	29	64	27
Deepwater dogfish	32	6	90	29	42	27
Thresher shark	260	253	193	269	161	15

Table 9b: Observed catch (numbers of individuals) of common bycatch species in the New Zealand longline fishery from 2020 to 2023. Also provided is the percentage of these species retained and the percentage of fish that were alive when discarded from observer data (2023 data only).

Species	2020	2021	2022	2023	% retained (2023)	discards % alive (2023)
Blue shark	3671	4136	2505	2331	0	80.6
Butterfly tuna	12	39	25	47	93.6	0
Porbeagle shark	131	295	106	39	0	65.9
Rays bream	317	356	20	23	69.6	0
Lancetfish	1026	460	146	16	0	0
Mako shark	85	99	18	4	0	80.0
Moonfish	182	92	23	4	100	0
Escolar	74	46	10	3	100	0
School shark	3	5	1	3	100	0
Pelagic stingray	175	398	33	2	0	100
Slender tuna	0	16	18	2		
Big scale pomfret	5	1	2	1	100	0
Dealfish	7	3	3	1	0	100
Oilfish	111	48	35	1	100	0
Thresher shark	24	16	1	1	0	0
Striped marlin	27	58	12	0	0	0
Skipjack tuna	13	12	8	0	0	0
Bronze whaler shark	7	13	4	0	0	0
Cubehead	0	1	4	0	0	0
Dolphinfish	31	15	4	0	0	0
Rudderfish	16	18	3	0	0	0
Sunfish	159	173	3	0	0	0
Deepwater dogfish	1	5	2	0	0	0

For species listed in the QMS (e.g. blue shark, mako shark and porbeagle shark), dead releases count against a fisher's Annual Catch Entitlement (ACE), while live-releases are not required to be balanced with ACE. Since finning was banned in New Zealand in 2014, the majority of commercially caught blue, mako, and porbeagle sharks have been discarded. Returns of blue shark are more commonly

reported as live returns, while reported returns of mako and porbeagle shark are more evenly split between live and dead/near-dead returns.

In 2022, changes were made to the 1996 New Zealand Fisheries Act to support the rollout of on-board cameras and tighten the rules around what and when QMS species can or must be returned to the sea (i.e., landing and discard rules). These changes were designed to encourage commercial fishers to use more selective fishing techniques and make greater use of the fish they catch. Since the changes were introduced, two new commercial landing exceptions have been introduced:

- Permitted return (when caught by surface longline and troll) of live Pacific bluefin tuna (from 1 March 2024).
- Permitted return of predated fish caught by surface longline (unavoidably damaged fish): Pacific bluefin tuna, southern bluefin tuna, yellowfin tuna, bigeye tuna, and swordfish, moonfish and ray's bream (from 1 June 2024).

In 2023 the following observations were made on shark, ray and mammal captures in longline fisheries:

- No manta rays were observed caught.
- No silky, oceanic whitetip, great white, or whale sharks were observed caught.
- One orca was observed caught but released alive without injuries.
- Twelve fur seals were observed caught, nine were released alive, but three were dead.

Seabird bycatch

Seabirds are sometimes caught in longline fisheries, during setting and hauling, as well as occasionally on the soak. The observed captures in 2017 - 2023 are given in Table 10. All confirmed fishing activity occurred south of 30° S. Estimates of total captures based on observer coverage are highly uncertain, so the capture rates are shown. Observed seabird captures by species for 2023 are shown in Table 11.

Longline vessels fishing for tuna or swordfish in New Zealand fishery waters are required to use tori lines and may only set their lines at night unless using approved line weighting; hook-shielding devices can also be used as a standalone measure. New Zealand longline vessels fishing on the high seas south of 30° S must use any two of the three mitigation measures (tori lines, weighted branch lines, or night setting) or approved hook shielding devices as a stand-alone measure, as specified in CMM2018-03. Observed mitigation measures used by the fleet in 2023 are shown in Table 12.

New Zealand developed and adopted its first National Plan of Action for Seabird (NPOA Seabirds) in 2004. The current iteration, adopted in 2020, sets out a vision that New Zealanders work towards zero fishing-related seabird mortalities. New Zealand also facilitates biannual meetings of the Seabird Advisory Group (SAG), a multiagency, multi-stakeholder group established to monitor progress against the National Plan of Action for Seabirds 2020.

In 2023 New Zealand undertook a review of domestic seabird mitigation requirements. In June 2024 the decision was announced to strengthen some requirements for seabird mitigation, including mandating use of either hook-shielding devices, or simultaneous use of tori lines, line weighting, and night setting. The new regulations come into effect on 1 October 2024 and align with current ACAP best practice guidelines.

Table 10: Fishing effort, number of observed hooks, and estimated seabird capture rates by year south of 30°S. For each year from 2017 - 2023, the table gives the total number of hooks; the number of observed hooks; observer coverage (the percentage of hooks that were observed); the number of observed captures (both dead and alive); and the capture rate (captures per thousand hooks).

			Fishing effort		Observer reported		Fisher reported	
Year	Number of vessels	Number of hooks	Observed hooks	% hooks observed	Number of birds	Capture Rate	Number of birds	Capture Rate
2017	32	2 104 324	330 235	15.7	57	0.173	80	0.038
2018	33	2 233 199	291 638	13.1	98	0.336	154	0.067
2019	28	1 977 487	165 149	8.4	56	0.339	141	0.068
2020	28	1 949 002	193 551	9.9	24	0.124	103	0.053
2021	28	1 535 392	179 169	11.7	53	0.296	179	0.117
2022	22	1 270 685	68 870	5.4	60	0.871	220	0.173
2023	20	1 590 598	50 833	3.2	19	0.374	279	0.175

The number and rate of observed seabirds captures in the surface longline fishery increased substantially in 2018 compared with 2017. The increase in 2018 was primarily driven by high mortality incidents on three observed trips. In 2019 the observed capture numbers decreased to 2017 levels but the capture rate remained similar to 2018 levels. In 2020 there were fewer observed captures and a lower capture rate than seen in the previous four years. Capture numbers and rates increased again in 2021 and 2022 due to high mortality incidents on a few observed trips. However, in 2022 the number of hooks observed was less than half that observed in 2021.

As previously mentioned, New Zealand's surface longline effort catch/effort has increased in the first quarter of the year and off the east coast of the South Island in recent years. This area has more overlap with albatross species which has potentially driven the increase in both observed and commercially reported captures. Low overall observer coverage and prioritising seabird capture reporting has resulted in large fluctuations in observed catch rate, which may not be representative of the fleet.

In 2023 the number of observed seabird captures declined but capture rates remained relatively high despite the fact that vessels were compliant with WCPFC requirements (Table 12). Noting that the number of hooks observed declined to just 3.2% in 2023. The majority of the birds caught were by vessels not using line weighting as one of their two required mitigation types, which was a key driver for strengthened domestic regulations announced in June 2024.

Table 11: Observed seabird captures in surface longline fisheries in 2023. All confirmed fishing activity and observed captures occurred south of 30° S.

Common name	Scientific name	Number observed
White-capped albatross	*Thalassarche steadi*	9
Buller's albatross and Pacific albatross	*Thalassarche bulleri*	2
Westland petrel	*Procellaria westlandica*	2
White-chinned petrel	*Pocellaria aequinoctialis*	2
Northern royal albatross	*Diomedea sanfordi*	1
Black-browed albatross	*Thalassarche impavida* or *T. melanophris*	1
Storm Petrel	Hydrobatidae (Family)	1
Royal albatrosses	*Diomedea sanfordi* or *D. epomophora*	1

Table 12: Proportion of observed mitigation types used by the fleet in 2023; all observed effort was south of 30° S. TL = tori line, NS = night setting, WB = weighted branch lines, SS = side setting, BC = bird curtain, BDB = blue dyed bait, DSLS = deep setting line shooter, MOD = management of offal discharge.

Combination of Mitigation Measures	Proportion of observed effort using mitigation type South of 30° S
No mitigation measures	0%
TL + NS	27%
TL + WB[1]	2%
NS + WB	0%
TL + WB + NS	71%
SS/BC/WB/DSLS	0%
SS/BC/WB/(MOD or BDB)	0%
TL	0%
NS	0%
Totals (must equal 100%)	100%

[1] Fishing events during one observed fishing trips were determined to occur before nautical dusk based on the recorded date, time and position associated with the start of the fishing event.

Sea turtle bycatch

Since 2001, 57 sea turtle interactions have been reported by observers within New Zealand fisheries waters. Of these, 43 were leatherback turtles, three were loggerhead turtles, five were green turtles, one was an olive ridley turtle, and five were unidentified. During the period 2018 to 2023 a total of 34 sea turtles have been observed to be captured in New Zealand fishery waters (Table 13a); all were released alive except for one green turtle in 2020, and two leatherback turtles in 2021, which were landed dead (based on photographs taken by observers). These three sea turtle mortalities in 2020 and 2021 were the first observed since 2001, when one green turtle mortality was observed. No sea turtle mortalities were reported by observers in 2023.

Sea turtle interactions may occur throughout the year with a slight increase observed during the austral summer (November to March). Data from observer reports in 2021 indicates an increase in sea turtle interactions with surface longline vessels, and this trend was also reflected in reporting from commercial fishers in 2021 (Table 13b). Observed sea turtle bycatch as well as fisher reported sea turtle bycatch decreased in 2022 and 2023, however observer coverage in 2022 and 2023 was lower than in previous years. Following the marked increase in reported interactions in 2021 New Zealand informed the WCPFC Secretariat that it has taken action to implement paragraph 7 (a) (i) of the sea turtles measure (CMM2018-04), i.e. making it mandatory for commercial fishers surface longlining in New Zealand waters to use circle hooks from 3 August 2023. In addition, a cross-agency sea turtle bycatch working group has been established to proactively review and address sea turtle bycatch in New Zealand's surface longline fishery. The working group is currently exploring initiatives, and several government funded turtle research projects are underway and expected to be completed mid-2024.

No turtles have been observed or reported from the purse seine or troll fisheries that operate within New Zealand fisheries waters.

Table 13a: **Observed sea turtle interactions for surface longline vessels based on observer records each year from 2018 to 2023. All turtles were alive on capture and released except for one green turtle landed dead in 2020 and two leatherback turtles in 2021.**

Common name	Scientific name	2018	2019	2020	2021	2022	2023
Green turtle	*Chelonia mydas*	1	0	1	1	0	0
Leatherback turtle	*Dermochelys coriacea*	2	0	2	20	5	0
Loggerhead turtle	*Caretta caretta*	1	0	1	0	0	0
Olive ridley turtle	*Lepidochelys olivacea*	0	0	0	0	0	0
Hawksbill turtle	*Eretmochelys imbricata*	0	0	0	0	0	0
Unidentified		0	0	0	0	0	0
Total		4	0	4	21	5	0

Table 13b: **Fisher reported sea turtle interactions for surface longline vessels each year from 2018 to 2023. All turtles were alive on capture and released except for two green turtles (one in 2020 and one in 2021) and seven leatherback turtles (one in 2018, three in 2019, one in 2020 and two in 2021) landed dead. All the observed turtle captures were also reported and are contained in this data.**

Common name	Scientific name	2018	2019	2020	2021	2022	2023
Green turtle	*Chelonia mydas*	3	0	3	5	5	5
Leatherback turtle	*Dermochelys coriacea*	26	14	14	49	13	11
Loggerhead turtle	*Caretta caretta*	3	0	1	0	0	0
Olive ridley turtle	*Lepidochelys olivacea*	0	0	0	0	0	0
Hawksbill turtle	*Eretmochelys imbricata*	0	0	0	1	0	0
Unidentified		0	0	1	2	3	2
Total		32	14	19	57	21	19

1.1.4.2 Purse seine fisheries

Observers have been deployed on purse seine vessels since 2005 to determine levels of bycatch in the fishery that operates within New Zealand fishery waters. The catch composition for the one trip (four sets) that targeted skipjack covered in 2023 is provided in Table 14 and levels of coverage are provided in Table 15.

Observed purse seine trips covered in 2023 targeted blue mackerel, jack mackerel, kahawai, and skipjack in New Zealand waters. The following interactions were reported by purse seine fishery observers (for all sets, irrespective of target species) in 2023:

- Four spine-tailed devil rays were captured and two were released alive, the rest were dead.
- 8 seabirds were reported caught (all common diving petrels) and two were released alive, the rest were dead.
- No dolphins were reported caught.
- No turtles were reported caught.
- No oceanic whitetip sharks, silky sharks, whale sharks or great white sharks were reported caught.

Table 14: Catch composition from the one observed purse seine trip targeting skipjack and operating within New Zealand fisheries waters in 2023. Note that only 4 out of 57 sets were targeting skipjack, the others targeted blue mackerel and kahawai.

Common name	Scientific name	Observed catch weight (kg)	% of catch
Blue mackerel	*Scomber australasicus*	643,015	57.1
Kahawai	*Arripis trutta, A. xylabion*	403,340	35.8
Jack mackerel	*Trachurus declivis, T. murphyi, T. novaezelandiae*	45,950	4.1
Skipjack tuna	*Katsuwonus pelamis*	31,225	2.8
Trevally	*Pseudocaranx georgianus*	2,011	0.2
Kingfish	*Seriola lalandi*	424	<0.1
Rocks stones	*Geological specimens*	250	<0.1
Bronze whaler shark	*Carcharhinus brachyurus*	220	<0.1
Mako shark	*Isurus oxyrinchus*	220	<0.1
Wood	*Wood*	150	<0.1
Sunfish	*Mola mola*	100	<0.1
Flying fish	*Exocoetidae*	34	<0.1
Albacore tuna	*Thunnus alalunga*	25	<0.1
Porcupine fish	*Allomycterus jaculiferus*	8	<0.1
Snapper	*Pagrus auratus*	6	<0.1
Sowfish	*Paristiopterus labiosus*	4	<0.1
John dory	*Zeus faber*	4	<0.1
Frostfish	*Lepidopus caudatus*	3	<0.1
Barracouta	*Thyrsites atun*	3	<0.1
Sponges	*Porifera*	3	<0.1
Southern bastard cod	*Pseudophycis barbata*	1	<0.1
Tarakihi	*Nemadactylus macropterus & N. rex*	1	<0.1

Table 15: Domestic purse seine sets targeting skipjack tuna observed as a percentage of sets made for 2017 to 2023.

Calendar year	No. trips observed	No. sets observed	% sets observed	% SKJ catch
2017	3	69	23.7	21.2
2018	3	67	36.2	44.1
2019	2	36	13.7	10.4
2020	0	0	0	0
2021	2	70	40.5	38.9
2022	0	0	0	0
2023	1	4	36.4	45

Records from observers from the Regional Observer Programme aboard the New Zealand purse seine vessels operating in the tropical Pacific are held by SPC and are available to the Commission. New

Zealand purse seine vessels operating outside the New Zealand EEZ have had 100% observer coverage in the past; there were no such vessels in 2022 or 2023.

1.1.5 Other information

Following the development of domestic longlining in the early 1990s, the number of vessels in the domestic tuna fleet operating in New Zealand fisheries waters peaked in 2001 and has subsequently declined. The potential for claiming an allowance of quota on the basis of fishing history when tuna species entered the Quota Management System (QMS) is likely to have attracted participants to the fishery. As expected, the number of longline vessels targeting tuna declined once the years to be used for determining catch history were known, reducing any incentive to fish to establish catch history.

On 1 October 2004, bigeye, yellowfin and Pacific bluefin tuna were introduced to the QMS system with catch limits set within New Zealand fisheries waters. Several key bycatch species, namely mako, blue, shark porbeagle shark, moonfish, Ray's bream and swordfish were also introduced to the QMS at this time and a Total Allowable Catch (TAC) was set for each species. Southern bluefin tuna was also brought into the QMS in 2004, with a catch limit that applies to catch by New Zealand flagged vessels regardless of where they fish. In 2012 New Zealand reduced the TAC for porbeagle and mako sharks.

The allocation of southern bluefin tuna quota was a further driver for rationalisation in the tuna longline fleet. A national allocation applies to New Zealand southern bluefin tuna catch and, as a result of allocation of individual shares in this fishery, many fishers received small quota allocations that rendered their operations economically unviable. Some responded to this shortfall by purchasing further quota, but many chose to exit the fishery.

Recent economic conditions have also resulted in further decreases in participation in domestic longlining and trolling. These conditions include a variable New Zealand dollar and a static market value for fish product. Some companies have sought to enhance the value of their fishery through applying for MSC (Marine Stewardship Council) certification. The MSC certified on the 16th of May 2011 that the New Zealand troll fishery for albacore conforms to the requirements of the MSC Principles and Criteria for Sustainable Fishing. In 2017 and 2022 the New Zealand albacore troll fishery was successfully re-certified. The domestic skipjack fishery was also successful in attaining MSC certification in 2017, but the fishery self-suspended from MSC certification in 2022. New Zealand continues to advocate for and support work towards developing harvest strategies for the four main tuna species at WCPFC.

New Zealand fisheries are at the limits of the range of many highly migratory species. Catches vary from year to year depending on seasonal variations in highly migratory species (HMS) migrations. The availability of juvenile albacore to the troll fishery in New Zealand waters varies from year to year with larger scale climatic events indicated by the El Niño Southern Oscillation (ENSO) index. The future prospects for New Zealand are strongly dependent on good management of tuna resources by the WCPFC, in particular on biomass of key stocks remaining at a sufficiently high level that no major changes in distribution occur.

Most tuna caught in New Zealand waters are exported and the destination of exports varies depending on the species. Large tunas caught by longline are mostly exported "chilled" to Japan and the United States, with smaller proportions exported to Australia. Troll caught albacore are sent to a variety of markets and in 2023 most was exported frozen whole to Thailand and Vietnam, Europe, and Costa Rica. In 2023, skipjack tuna caught by NZ vessels was largely exported frozen whole to the Philippines and Thailand.

1.2 Research and Statistics

1.2.1 Summary of observer and port sampling programmes

New Zealand has an observer programme, two active port sampling programmes, and on-board cameras have been installed on vessels using a variety of fishing gears including surface longlines. Cameras are due to be installed on purse seine vessels in 2025. Information on the New Zealand observer programme was provided to the Commission in June 2009, as part of the accreditation process for the Regional Observer Programme. The New Zealand observer programme was audited by the WCPFC in early 2012.

With respect to HMS fisheries, most observer effort is currently directed at the longline and purse seine fisheries. In the past, observer effort was also directed at the albacore troll fishery. The main aim of the latter coverage was to better understand the fishing process, and to collect catch, effort and biological samples from albacore. In future observer data will be complemented or replaced by camera verified fisher reported information.

On longline vessels the observers collect detailed data on all fish and non-fish catch. Length or weight is collected for all specimens with additional data also collected, e.g. sex, maturity stage and stomach contents. Physical specimens are also often collected, e.g. hard parts for ageing. Observers make detailed records of the fishery operation, e.g. hooks per basket, use of floats, light-sticks, hook types, bait types, and snood setup. Observers also record information on the behaviour of seabirds and other non-fish species in relation to the fishing operation, e.g. whether seabirds were present during setting or hauling.

On purse seine vessels it is not possible to sample the entire catch, so the observers focus on detailed sampling of the bycatch species and sub-sampling of the target species. To this end New Zealand has worked with SPC in the past to conduct trials using observers where different sampling strategies are utilised to assess the effects of sampling bias on species and length composition of the catch.

The albacore port sampling programme was established during the 1996-97 albacore fishing season. The first two years of sampling were funded through SPC, but the programme has been funded by the Ministry for Primary Industries (costs recovered from industry) since 1998-99. Sampling typically occurs at ports on the west coast of New Zealand during the austral summer. During the duration of the programme over 123,200 albacore have been sampled for length and 12.4% of these were also sampled for weight. The length frequency data are provided to the Commission annually. Due to its importance, New Zealand troll fishery monitoring data is included in the 2023-2026 WCPFC "Tuna Assessment Research Plan (TARP) for key tuna species assessments".

In 2005, the Ministry for Primary Industries funded the development of a sampling programme for swordfish. This programme was subsequently extended to include large tunas (bigeye, yellowfin, and Pacific bluefin) for which fish processors often collect individual processed weight data as part of their operations. It has been possible to collect individual weights for over 80% of the catch of some species.

1.2.2 Research activities

Considerable research effort has been directed at highly migratory species in New Zealand. The Ministry for Primary Industries runs a research planning process each year which involves the updating of the Medium Term Research Plan (MTRP) for groups of species. The Ministry for Primary Industries has, in consultation with stakeholders, developed a MTRP for tunas, billfish, pelagic sharks, other fish species taken in tuna fisheries, including a gamefish tagging programme. The research plan describes the current knowledge about the species and sets out a five-year plan for research activities. Summaries of research were initially provided to WCPFC-SC1 (as paper GN IP-2) and have been routinely reported since then in the Annual New Zealand Country Report.

Current New Zealand research on tuna and tuna-related species include:

All Highly Migratory Species

- Commercial catch sampling programme for highly migratory species
- Gamefish tag recapture programme

Albacore

- Stock monitoring of albacore
- Fishery characterisation, length-composition and CPUE analyses of the New Zealand albacore troll fishery

Ecosystem and Bycatch Mitigation

- Characterisation of bycatch in pelagic fisheries
- Productivity of non-target species
- Longline seabird mitigation – hook shielding devices, hauling mitigation devices, underwater bait setter; enabling uptake of best practice seabird bycatch mitigation in the surface longline fishery including passive electronic monitoring of mitigation usage
- Estimation of release mortality for pelagic sharks and fish
- Understanding and mitigating seabird and turtle bycatch during the longline soak period
- Investigating the relationship between fishhook size and bait type with seabird and turtle captures to decisions on circle hooks as a tool for preventing bycatch
- Data collection of demographic and distributional information for selected seabirds species to allow estimation of effects of fishing on population viability
- Tracking and spatial modelling of seabirds that breed in New Zealand
- Overlap analyses between fisheries and seabird tracking data
- Spatially Explicit Fisheries Risk Assessment for New Zealand seabirds and Collaborative Southern Hemisphere Risk Assessment for CCSBT surface longline fisheries interactions with seabirds
- Spatially Explicit Fisheries Risk Assessment for New Zealand interactions with Marine Mammals
- Multi-threat Risk Assessment for Antipodean albatross to evaluate fisheries impacts in context with other Southern Hemisphere non-fisheries threats
- Estimation of captures in longline fisheries for seabirds, marine mammals and turtles
- Fisheries risk assessment for selected shark species in New Zealand
- Mapping and identification of habitats of significance for sharks in New Zealand
- Post release survivability study for leatherback turtles caught in New Zealand surface longline fisheries
- Aerial survey of turtle hotspot to identify if high catch rates are due to turtle aggregations
- Characterising surface longline fishing fleet behaviour for sea turtle bycatch

Swordfish

- Fishery characterisation and CPUE analysis for swordfish from the New Zealand longline fishery

Striped marlin

- Stock monitoring of striped marlin

If you would like further details regarding any of these studies, please contact Leyla Knittweis (Leyla.Knittweis@mpi.govt.nz).

1.2.3 Statistical data collection systems in use

In order to fish commercially in New Zealand, an individual or entity is required to hold a fishing permit. Fishing permit holders may only sell their catch to licensed receivers of fish (wharf sales of 10kg or less are permitted but must be documented). Both fishing permit holders (fishers) and fish receivers are required to provide returns to the Ministry for Primary Industries. New Zealand has four data collection systems in place to collect catch and effort data:

- the catch and effort system for all domestic and most high seas fishing (including non-fish bycatch data); in 2017-2019 this system was incrementally replaced by Electronic Reporting (ER) of effort, catch and positions by fishers across all fleets.
- monthly harvest returns from fishers
- licensed fish receiver returns for fish processors, and
- a system to collect data from purse seine vessels that are using FFA/SPC logsheets for fishing on the high seas and within the zones of other countries.

Except for the catch and effort system these four data collection systems have not changed substantially in recent years. The catch and effort system was replaced with Electronic Reporting in 2017-2019. The ER system serves the same purpose as the previous paper-based system, but with improvements to the amount of data collected and the timeliness of data collection (see Appendix 1 for a more detailed description).

1.2.4 Data coverage of catch, effort and size data for all species

All fishers are required to fill in logsheets, providing 100% coverage of catch and effort. In addition, for fishing within New Zealand fisheries waters two independent records of total catches exist, the monthly reporting by fishers (MHRs) and licensed fish receivers (LFRRs).

Shore-based catch monitoring of the albacore troll fishery sampled landings that represented 10.1% of the catch by weight during the 2022-23 fishing season. Given the small number of cohorts taken in this fishery, this level of sampling provides good precision on the catch-at-length estimates (e.g. mean weighted coefficient of variation of <0.20 for catch-at-length).

Currently much of the size data from longline, purse seine, and troll fisheries for other HMS comes through the observer and port sampling programmes.

WCPFC CMM 2018-05 sets out that the required observer coverage rate for longline fishery vessels fishing on the high seas is 5% of effort, which should reflect approximately 5% of the HMS catch. When Japanese charter vessels ceased operating in New Zealand waters after 2015, observer coverage of the domestic fleet decreased to about 15% of the reported effort for three years, declining to less than the 10% target value in 2019 and 2020. In 2021 observer coverage increased to 10.7% of days observed (Table 16), before dropping to 5.1% in 2022. During 2023, New Zealand fishing vessels operated exclusively in New Zealand waters, aside from some activities by vessels trolling in the adjacent high seas. This is not within the scope of the ROP under CMM 2018-05. Observer coverage for surface longlines operating in New Zealand waters was 3.2% of hooks and 2.9% of days observed in 2023.

Table 16: Fishing effort observed in the New Zealand domestic longline fishery as a percentage of hooks set and days observed for 2017 to 2023.

Calendar year	% hooks observed	% days observed
2017	15.7	14.5
2018	13.1	12.4
2019	8.4	8.5
2020	9.9	9.5
2021	11.7	10.7
2022	5.4	5.1
2023	3.2	2.9

The shore-based port sampling programme includes the primary species taken in longline fisheries (e.g. bigeye, yellowfin and Pacific bluefin tunas). The sampling programme obtained individual processed weights for 77% of swordfish caught in 2023, 78% of the catch of bigeye tuna, and 89% of yellowfin tuna (Table 17).

The number of striped marlin caught by the New Zealand fishing fleet are presented in Table 18. In New Zealand, retention of striped marlin catches on commercial vessels has been prohibited since the introduction of a Billfish Moratorium in 1987. Any bycaught individuals must be released; based on information available from observer records as well as tag and release rates on sport fishing vessels over half of the released individuals are alive.

Table 17: Number and percent of swordfish and large tunas sampled for individual processed weights for calendar years 2017 to 2023.

Calendar	Numbers of fish sampled			Percentage of catch		
Year	Swordfish	Bigeye tuna	Yellowfin tuna	Swordfish	Bigeye tuna	Yellowfin tuna
2017	4243	1552	201	76.3	84.4	76.7
2018	4278	1994	389	68.5	90.4	82.6
2019	2213	669	93	74.8	90.7	83.0
2020	1771	887	305	54.9	80.9	85.6
2021	3102	1221	446	67.0	78.3	80.1
2022	1599	878	168	45.7	83.2	79.4
2023	2791	1924	700	76.7	78.2	89.2

Table 18: Commercial discards (numbers of fish) of striped marlin in the New Zealand EEZ reported by the NZ commercial fleet and number of fish landed and tagged by the recreational fleet, for fishing years 2015-16 to 2022-23.

Fishing	Commercial	NZ Recreational		
Year	Discarded	Landed	Tagged	Total
2015-16	550	900	1658	3108
2016-17	261	516	528	1305
2017-18	168	618	686	1472
2018-19	74	507	739	1320
2019-20	129	333	437	899
2020-21	195	627	1049	1871
2021-22	82	377	891	1350
2022-23	267	277	974	1518

New Zealand vessels mostly offload their catch of tunas in port; there were no recorded offloads or transhipments by New Zealand vessels in 2023 (Table 19).

Table 19: Transhipment Information for New Zealand vessels for 2023.

Species	Offloaded - Total Quantity (metric tonnes)	Transhipped In Port, national Jurisdiction, etc	Transhipped Inside / Outside Convention area	Product form	Fishing gear
Skipjack tuna (SKJ)	-	n/a	n/a	n/a	n/a
Yellowfin tuna (YFN)	-	n/a	n/a	n/a	n/a
Bigeye tuna (BET)	-	n/a	n/a	n/a	n/a

Species	Offloaded - Number of Transhipments	Transhipped In Port, national Jurisdiction, etc	Transhipped Inside/Outside Convention area	Fishing gear
Skipjack tuna (SKJ)	-	n/a	n/a	n/a
Yellowfin tuna (YFN)	-	n/a	n/a	n/a
Bigeye tuna (BET)	-	n/a	n/a	n/a

1.3 Figures

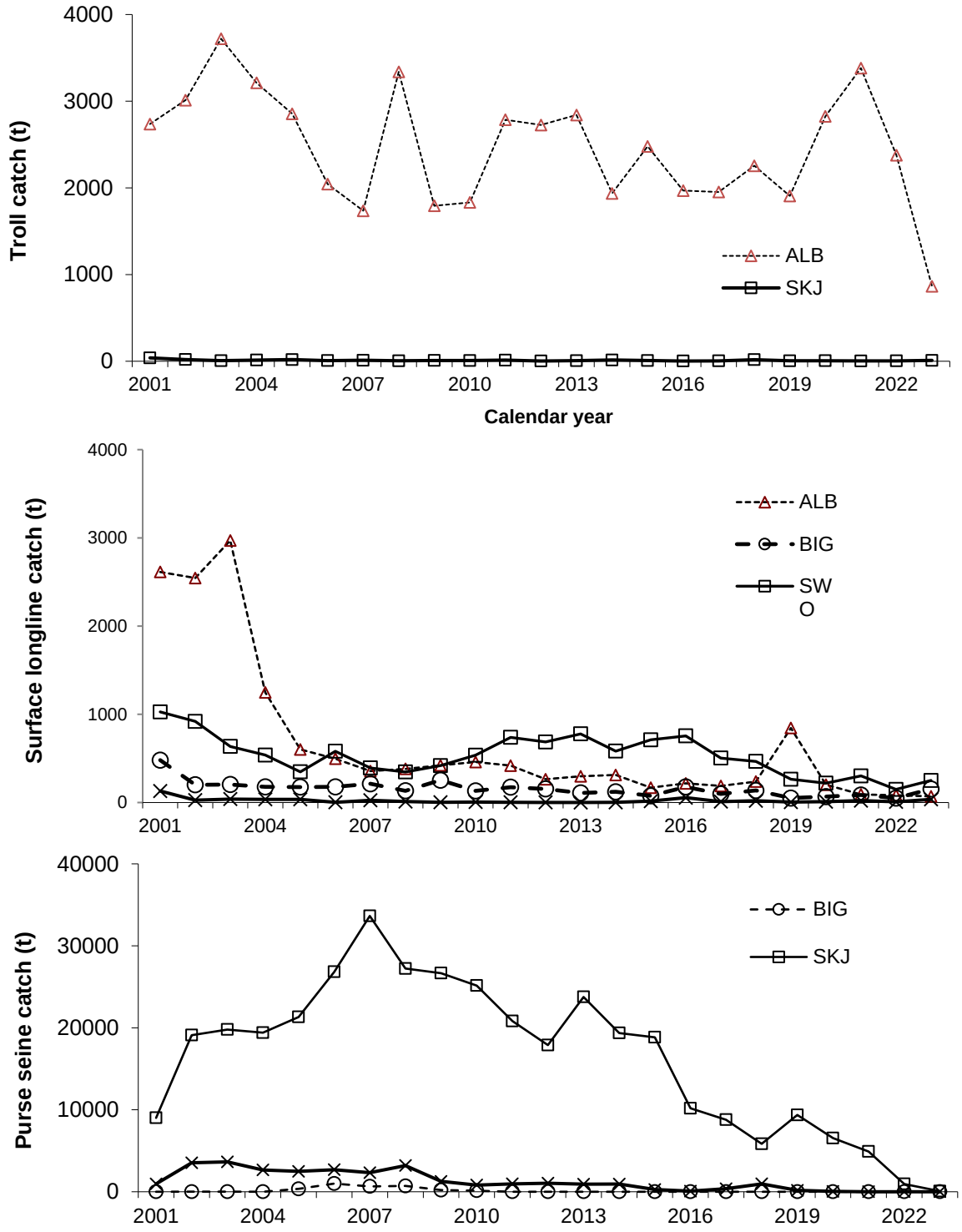

Figure 1: Historical catch (t) by gear and main species for the New Zealand longline, purse-seine and troll fleets operating in the WCPFC Convention area from 2001 to 2023.

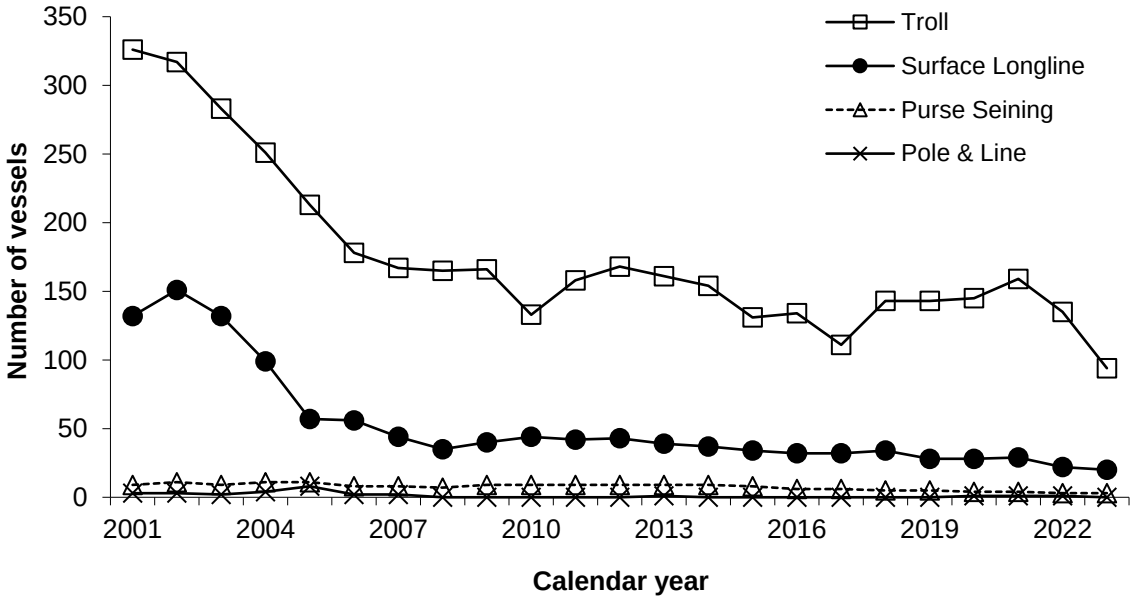

Figure 2: Historical annual vessel numbers for the New Zealand longline, purse seine, troll and pole and line fleets by gear fishing in the WCPFC Convention area from 2001 to 2023. Vessels switch gear seasonally and may be included in more than one category.

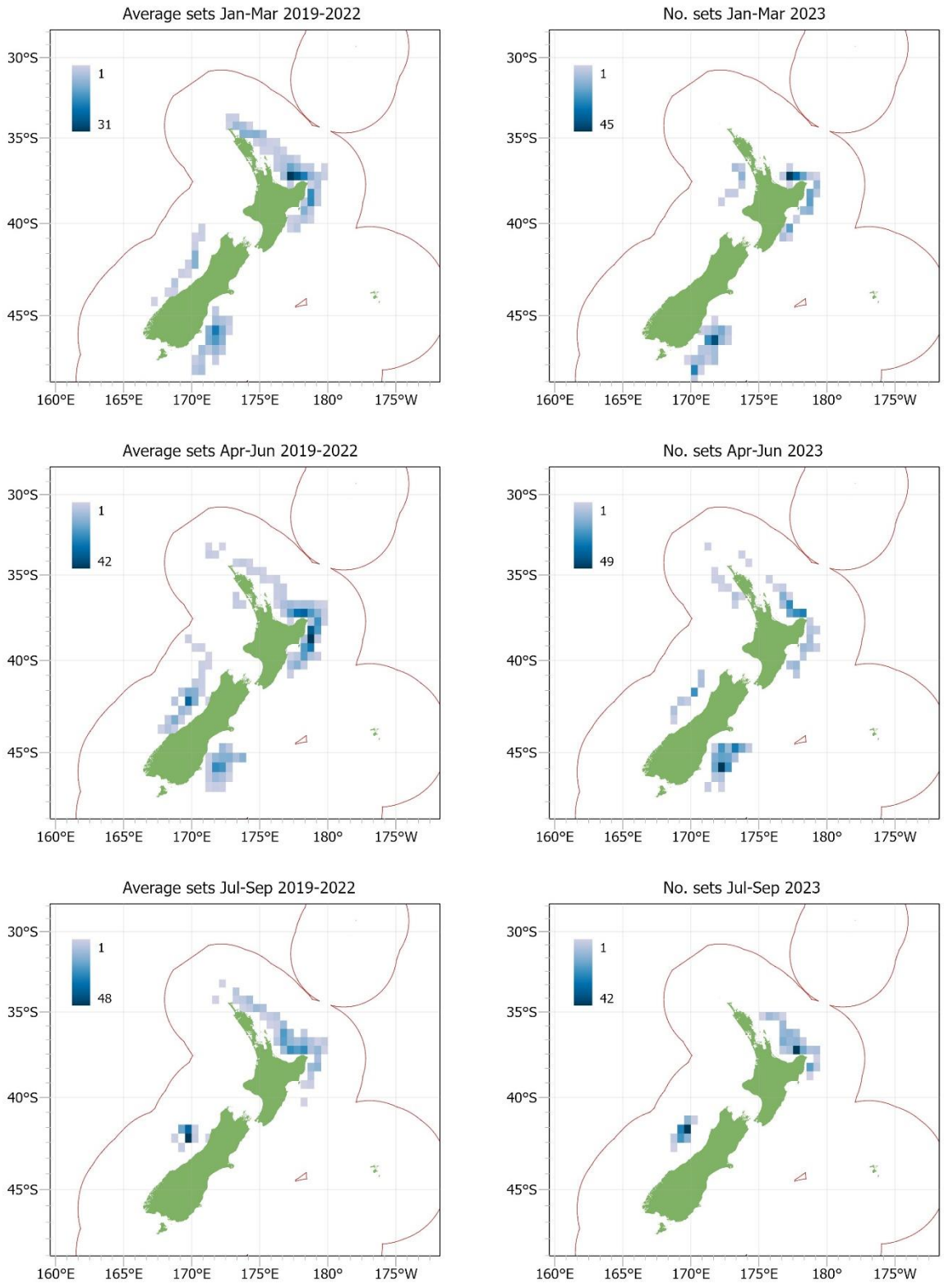

Figure 3: Distribution of effort (number of sets per 1/5 degree square) for the domestic longline fleet by quarter-year for 2019-2022 (average) and 2023 (actual).

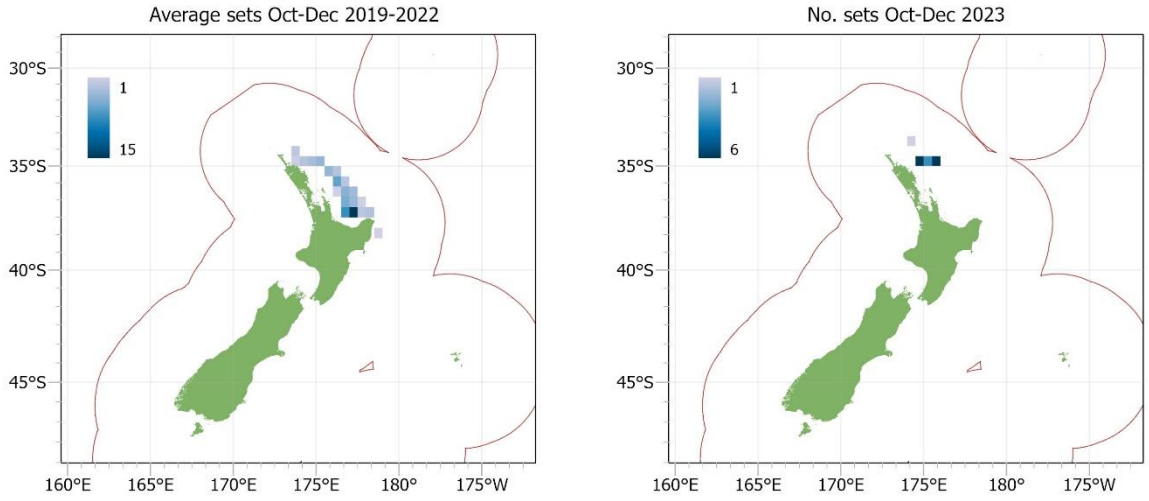

Figure 3 (continued): Distribution of effort (number of sets per 1/5 degree square) for the domestic longline fleet by quarter-year for 2019-2022 (average) and 2023 (actual).

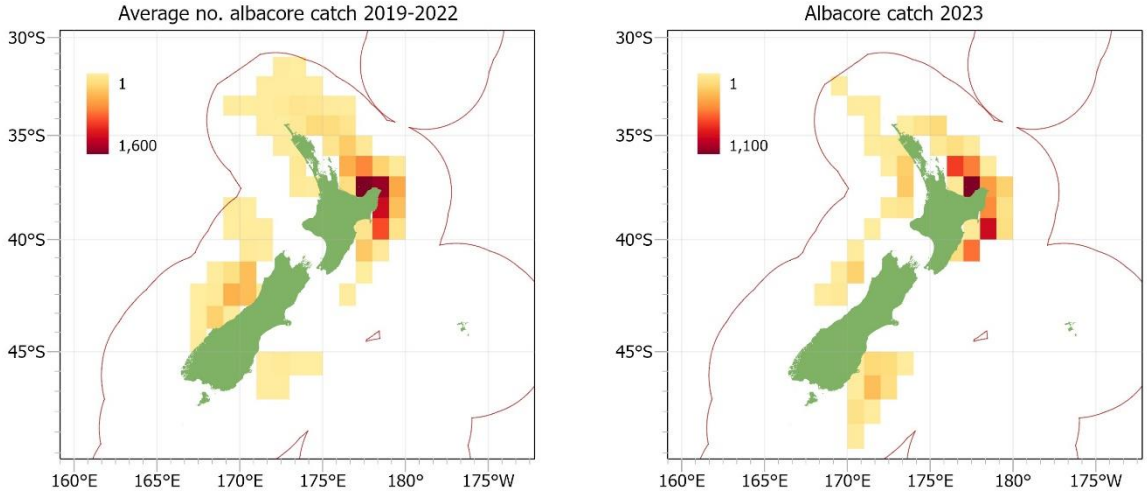

Figure 4: Distribution of longline catch (number of fish in 1-degree squares) for albacore, bigeye, and yellowfin tunas, and swordfish for 2019 to 2022 (average), and for 2023 (actual). All months and all vessels combined.

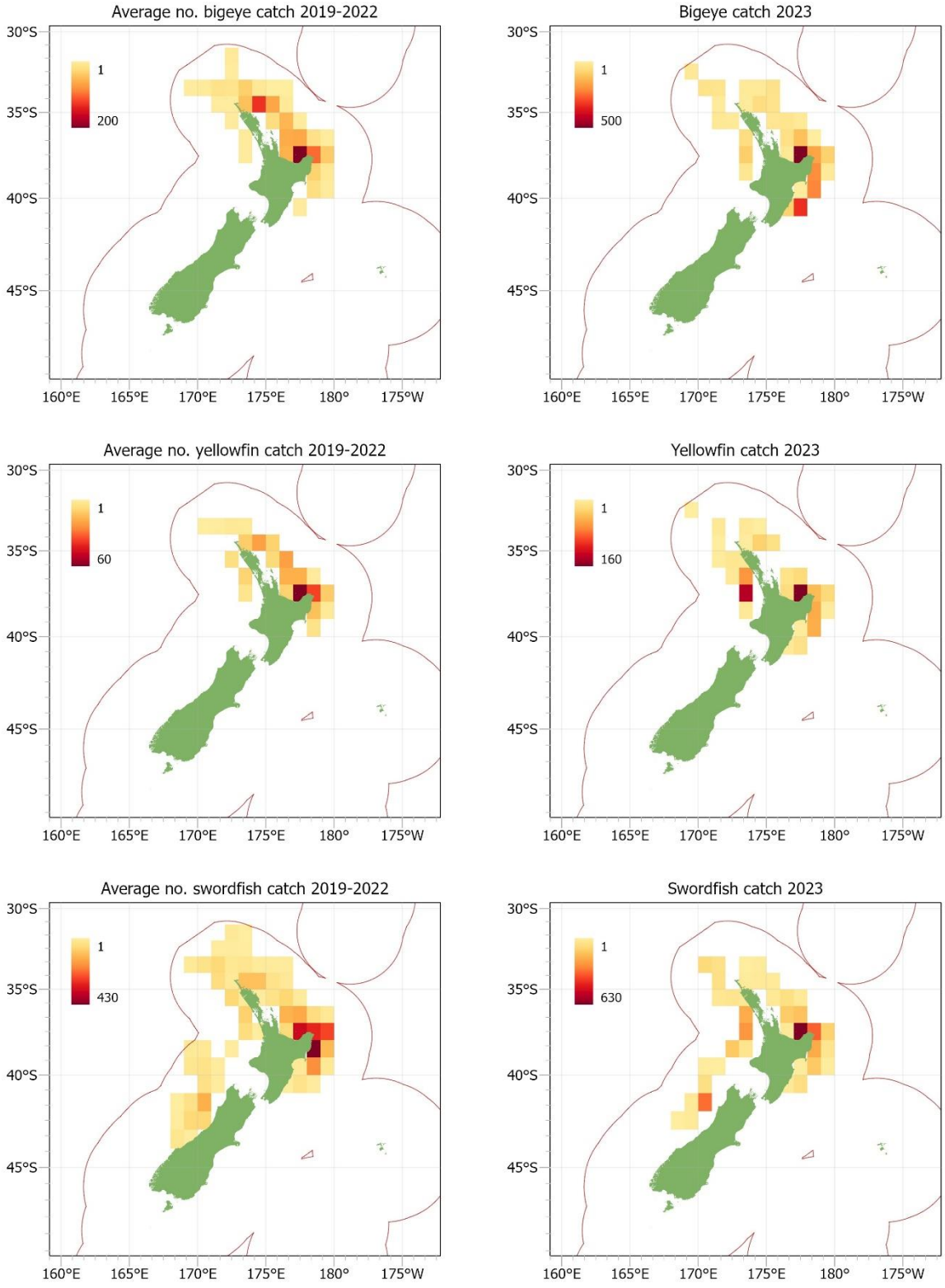

Figure 4 (continued): Distribution of longline catch (number of fish in 1-degree squares) for albacore, bigeye, and yellowfin tunas, and swordfish for 2019 to 2022 (average), and for 2023 (actual). All months and all vessels combined.

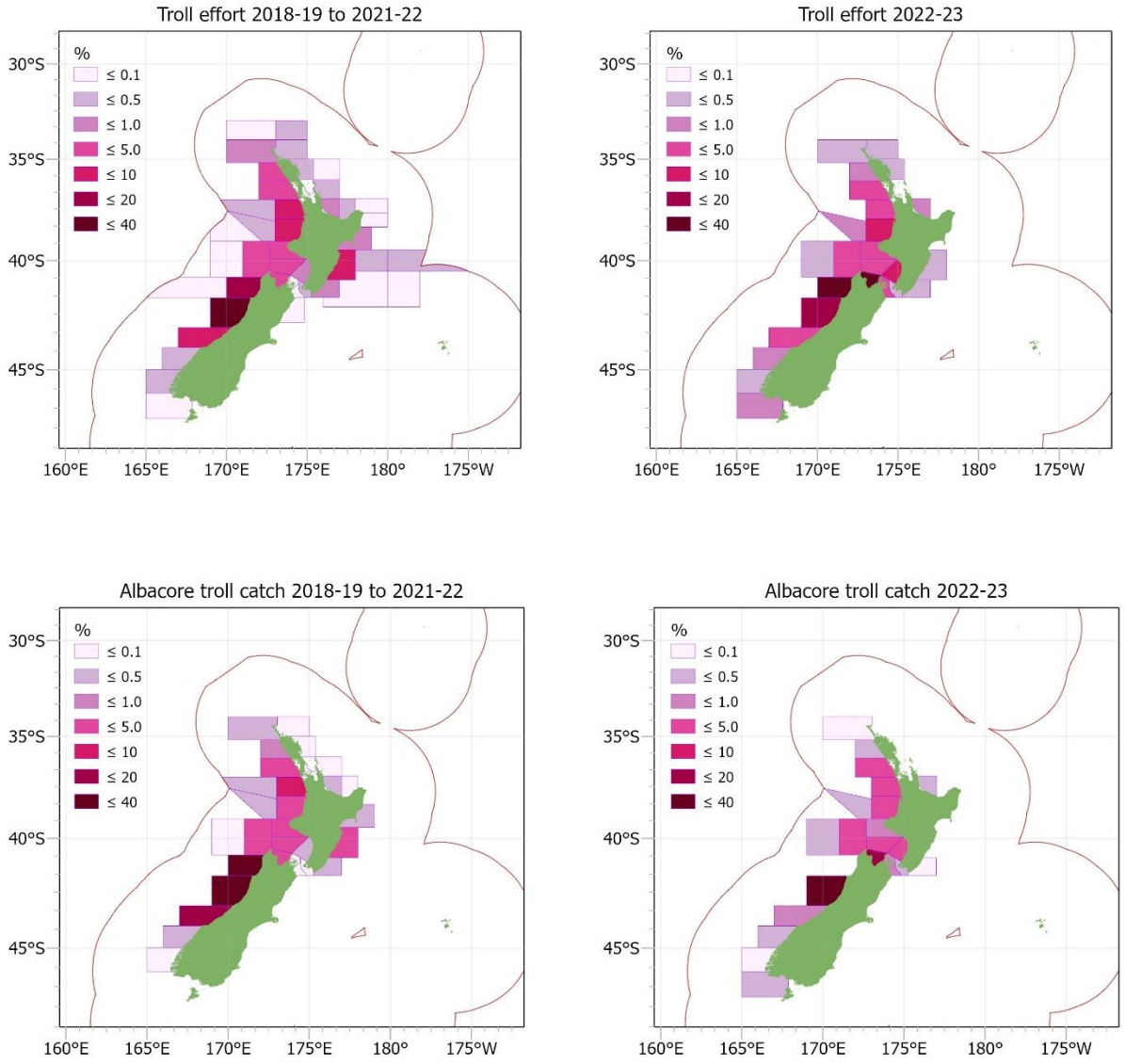

Figure 5: Distribution of troll effort (percent of vessel-days) and troll catch of albacore (percent of total catch) for 2017-18 to 2020-21 troll seasons (left) and for 2021-22 season (right); Note: Positional data for troll are reported at a NZ statistical area resolution.

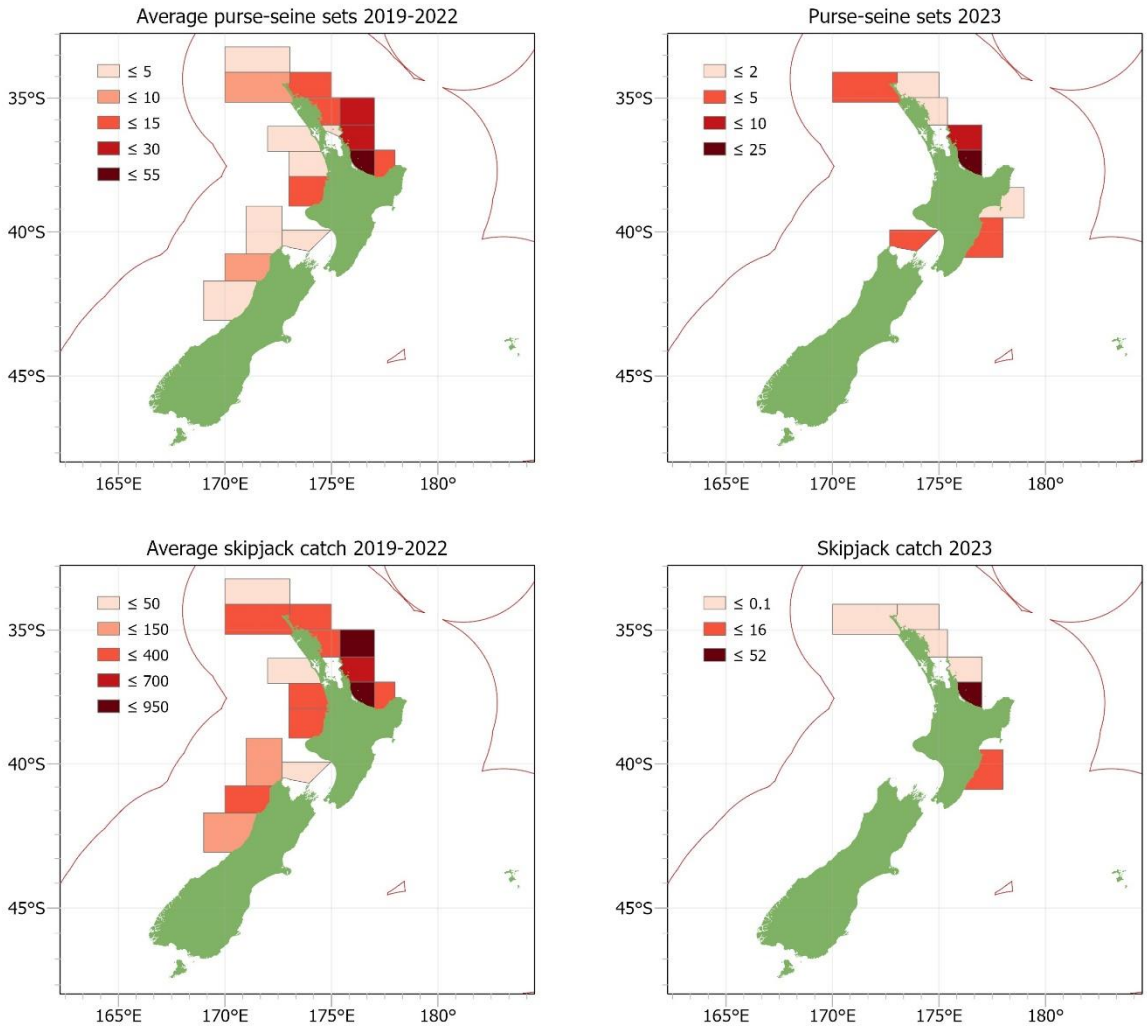

Figure 6: Distribution of purse-seine effort (number of sets) and purse-seine catch of skipjack (tonnes), average for 2018-21 calendar years per 1/5 degree square (left) and actual for 2023 per statistical area (right).

Appendix 1: Description of the types of catch, effort, and size data that are available for HMS species

Data type	Description	Years available	Comments
CELR (Catch Effort Landing Return)	The CELR is a general-purpose form used for recording the taking of fish by any of a variety of methods where there is no more specific form type available. The top part of the form contains details of the fishing activity. A number of method-specific "templates" are used with the CELR form. The templates are overlaid on the standard CELR form and give instructions on filling in the form specific to particular types of method. the fishing details sections of the forms are mainly provided for the purposes of: • stock assessment- to provide a measure of catch per unit effort • policy evaluation –to determine the location and method of fishing • enforcement –to monitor activities of fishers • monitoring environmental performance –to monitor effort The catch effort returns relate details about the fishing activity (including the location of fishing) directly to an estimate of the amount of fish caught. The bottom part of the form contains landing information and records the catch that is landed, lost, discarded at sea, or retained on board after a landing. Landing information is required from all commercial fishing for all species, and hence, this is theoretically the most comprehensive source of information for commercial harvest levels in New Zealand.	January 1988 onwards. Incrementally phased out during the period 2017 to the end of 2019 and replaced by Electronic Reporting (ER).	In addition to this form there is a version specifically for reporting fishing by New Zealand vessels on the high seas known as the HS-CELR (High Seas CELR). The HS-CELR is nearly identical to the standard version of the form and was introduced 1 March 2001. There are a number of limitations and problems in this data set that need to be considered: • Because there is only space on the form for the catches of five species per unit of effort, species caught in small quantities may not be reported. • The catches reported are only estimates and are not weighed. Tuna catches are reported in numbers rather than weight. Fish reported in the landing section of a CELR form usually cannot be related to any specific fishing event during a trip. If the vessel fished in several statistical areas within one trip then it is usually not possible to deduce how much of the landed catch was taken in each statistical area
CLR (Catch Landing Return)	Catch Landing Returns are completed by vessels that use a form other than a CELR to report their fishing effort. They record the catch that is landed, lost, discarded at sea, or retained on board after a landing. Landing information is required from all commercial fishing for all species, and hence, this is theoretically the most comprehensive source of information for commercial harvest levels in New Zealand.	January 1991 onwards (TLCER forms). Incrementally phased out during the period 2017 to the end of 2019 and replaced by Electronic Reporting (ER).	Fish reported in the landings form usually cannot be related to any specific fishing event during a trip . If the vessel fished in several statistical areas within one trip then it is usually not possible to deduce how much of the landed catch was taken in each statistical area. The whole weights reported in the landings are calculated from the processed catch weights multiplied by a conversion factor. The calculated whole weights are therefore only as accurate as the conversion. The whole weights of fish that are not landed to a Licensed Fish Receiver (e.g. fish discarded or

			trans-shipped) have historically not been fully recorded.
TLCER (Tuna Longline Catch Effort Return)	The TLCER is required for all fishing that targets tunas using surface longlining. Data reported on the TLCER is for one set and has the date at start of set and end of haul and the time at start and end of setting and hauling. Locations (of start and end of setting) are reported in latitude and longitude. Catches of all species are recorded in number and in total processed weight.	January 1980 to June 1995 (foreign licensed vessels) March 1989 onwards (charter vessels) March 1991 onwards (domestic vessels). Incrementally phased out during the period 2017 to the end of 2019 and replaced by Electronic Reporting (ER).	In addition to this form there is a version specifically for reporting fishing by New Zealand vessels on the high seas known as the HS-TLCER (High Seas TLCER). The HS-TLCER is nearly identical to the standard version of the form and was introduced 1 March 2001. The TLCER form was redesigned to include additional information on the position and timing of setting and hauling as well as disposition of catches from April 2003.
ER Landing reports	Landing reports record the catch that is landed, transhipped or retained on board after a landing. Landing information is required from all commercial fishing for all species and hence, combined with Disposal reports from the same trip are theoretically the most comprehensive source of information for commercial harvest levels in New Zealand.	Incrementally introduced during the period 2017 to the end of 2019.	The whole weights reported in the Landing report are calculated from the processed catch weights multiplied by a conversion factor. The calculated whole weights are therefore only as accurate as the conversion.
ER Disposal reports	Disposal reports record the catch that is lost, discarded at sea or otherwise not reported on a Landing report. Disposal information is required from all commercial fishing for all species and hence, combined with Landing reports from the same trip are theoretically the most comprehensive source of information for commercial harvest levels in New Zealand. These reports record the weight and, when the catch was taken by surface longlining, the number of fish discarded. Disposal reports are usually linked to a specific fishing event.	Incrementally introduced during the period 2017 to the end of 2019.	The whole weights reported in the Disposal report are the estimate of the weight using the most practicable method available
ER Tuna-Lining reports	The Tuna-Lining report is required for all fishing using surface longlining. Data reported on the Tuna-Lining report is for one set and has the date, time and position at the start and end of setting and at the start and end of hauling. Locations are reported in latitude and longitude. Catches of all species retained are recorded in number and in total processed weight. Catch that is discarded is recorded on a separate Disposal report for the fishing event.	Incrementally introduced during the period 2017 to the end of 2019.	This report also records bycatch mitigation measures used the fishing event.

ER Seining reports	The Seining report is required for all fishing using seining methods. Data reported on the Seining report is for each set and includes the date, time and position of the start and end of the fishing event. These reports record the weight of catch taken during the event	Incrementally introduced during the period 2017 to the end of 2019.	This report also records bycatch mitigation measures used the fishing event.
ER Other Lining reports	The Other Lining report is required for all fishing using handlining, pole and line, and trolling fishing methods. Data reported on the Other Lining report includes the date, time and position of the start and end of the fishing event. When trolling if all lines are removed from the water before being deployed later in the day this will be treated as separate events These reports record the weight of catch, and for trolling the number of fish, taken during the event.	Incrementally introduced during the period 2017 to the end of 2019.	
MHR (Monthly Harvest Return)	The main purpose of the MHR is for fisheries administration. A secondary purpose is to provide an information source concerning total harvest levels of quota and non-quota species for fisheries assessment.	October 2001 onwards	MHR reports are recorded by permit holder, fishstock and month. Fine scale information such as vessel (unless the permit holder used only one vessel), statistical area or the date of fishing are not available in this dataset. The catch within and beyond the EEZ is reported. Prior to October 2001, equivalent information was collected for species subject to New Zealand's Quota Monitoring System on Quota Monitoring Returns (QMRs). This information was collected from December 1986 onwards until the QMR was replaced by the MHR in October 2001.
LFRR (Licensed Fish Receiver Returns)	The primary purpose of LFRR is for administration of the quota management system. LFRR data provides complete coverage of all species processed by licensed fish receivers. Fish not landed to a Licensed Fish Receiver (e.g. fish that are discarded) are not reported through this system.	January 1986 onwards	This dataset does not contain information about the origin of the fish apart from the quota holder. If a permit holder fishes in more than one fishstock in a month or uses more than one vessel, it may not be possible to relate the LFRR data to the landing records. This dataset is therefore useful mainly to estimate total catches for a species in a year. This dataset does not contain information about fish that was not landed to a Licensed Fish Receiver, such as fish that was discarded, eaten, sold at wharf etc.
Observer Data (from longline, purse seine, and trolling vessels)	To monitor the activities of fishing vessels operating in the New Zealand EEZ and to obtain reliable, accurate and independent catch, effort and biological information.	June 1988 onwards for longline, January 2006 onwards for Purse Seine, January 2007 for trolling vessels	This system does not cover all commercial catch. It covers a sample of tuna fishing, but for the trips that are covered, more detailed information is available than from the commercial catch forms completed by fishers.