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Australia's national report on 2020 fishing activities to the South Pacific Regional Fisheries Management Organisation's Scientific Committee

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Australian Bureau of Agricultural and Resource Economics and Sciences

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Introduction

This report provides an update on fishing activity by Australian-flagged vessels in the South Pacific Regional Fisheries Management Organisation (SPRFMO) Convention Area. This report excludes data from within the Exclusive Economic Zone (EEZ) of Australia and its external territories (e.g. Norfolk Island). Tuna and billfish fisheries, over which the Western and Central Pacific Fisheries Commission has competence, are not reported here. Common and scientific names for species mentioned are provided in Appendix A.

Australian operators in the SPRFMO Convention Area are authorised under permits granted by the Australian Fisheries Management Authority (AFMA) to target various species with midwater and demersal trawl, dropline, minor line, automatic longline and demersal longline gears. Permits to fish in the SPRFMO Convention Area are granted for a period of up to five years. Australian high-seas fisheries permits require the implementation of vessel monitoring systems, 100% observer coverage¹ on all trawl vessels and for the first trip of the season (for all methods) and a minimum of 10% observer coverage² annually on all non-trawl vessels.

AFMA's high seas permit conditions restrict vessels to fishing within the areas specified in SPRFMO Conservation and Management Measure (CMM) for the Management of Bottom Fishing in the SPRFMO Convention Area (CMM 03-2020) (Map 1). In accordance with CMM for Deepwater Species in the SPRFMO Convention Area (CMM 03a-2020), catches for all species other than *Hoplostethus atlanticus* (orange roughy) are limited to the average annual level between 2002–06. All fishing operations and catches in 2020 were within the management areas specified in CMM03-2020 (now superseded by CMM03-2021) and within the catch limits specified in CMM 03a-2020 (superseded by CMM03a-2021).

AFMA's permit conditions require stringent seabird mitigation measures and reporting of interactions with all species protected under the *Environment Protection and Biodiversity Conservation Act 1999*. The vulnerable marine ecosystems (VME) indicator taxa list and associated thresholds that trigger the move-on protocols observed by Australian vessels fishing in 2020 are specified in annexes 5, 6A and 6B of CMM 03-2020 (noting that these thresholds were amended in CMM03-2021). The thresholds specified in CMM 03-2020 were not triggered by any Australian-flagged vessels in 2020.

To provide accountability to the fishing industry and Australian community in AFMA's management of fisheries resources, AFMA may publicly disclose the following information for all fisheries, so far as it is consistent with Australia's obligations under international law:

¹ Observer coverage for trawl gears is expressed as the percentage of the total number of hauls observed

² Observer coverage for non-trawl (line) gears is expressed as the percentage of the total number of hooks

- a) total fishing season catch and effort statistics for each species³ aggregated by fishing method, sector and/or fishery;
- b) the total area of waters fished within a season by fishery, sector and/or method, reported at a minimum spatial resolution of one degree square. This does not include catch or effort information where the data represents less than five vessels; or
- c) any other catch and effort information, including spatial information, where the information represents data from five or more vessels.

AFMA may publicly disclose more detailed fishing information than that outlined above where:

- a) the information has or will be used to guide fishery management decisions (for example; research or information supporting the implementation of harvest strategies, Stock Recovery Plans, stock-based management measures); or
- b) it is used to ensure that Australia meets its obligations under international law (for example, disclosure to Regional Fishery Management Organisations).

Australian data that do not meet these criteria are not included in this report. However, required data are submitted to the SPRFMO Secretariat in accordance with the CMM on Standards for the Collection, Reporting, Verification and Exchange of Data (CMM 02-2020). The same data confidentiality applies to the Secretariat's use and handling of the data unless the disclosure and use of data is authorised by Australia.

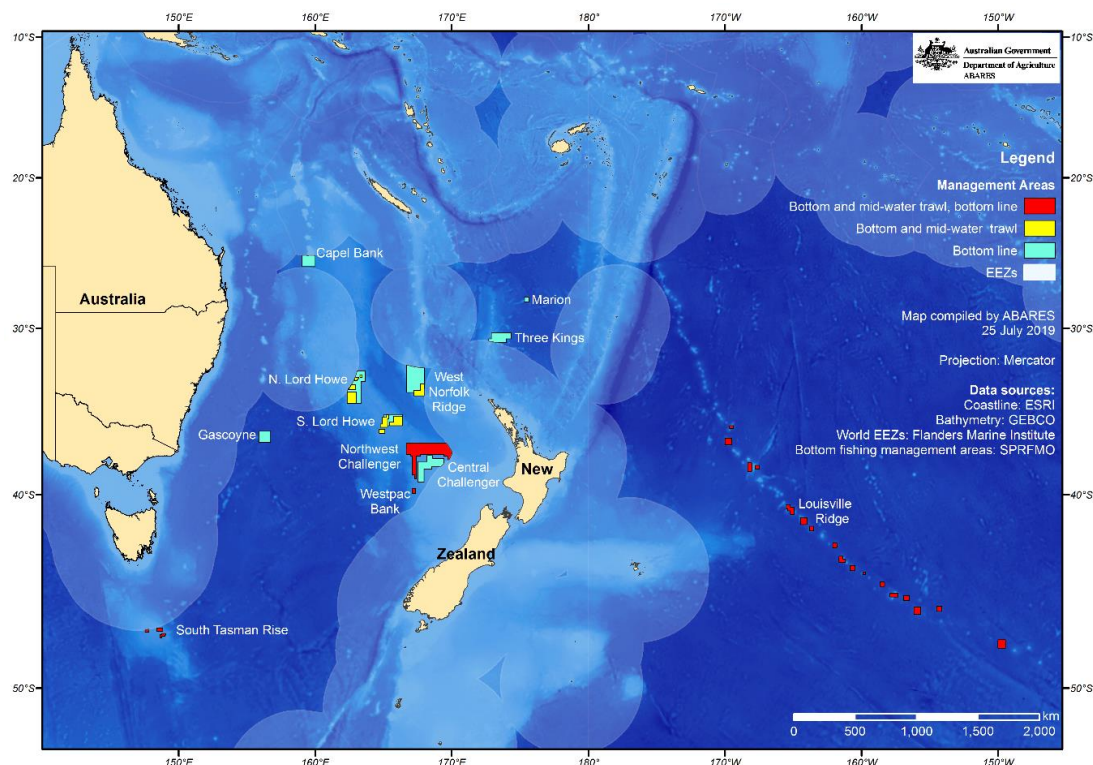
³ Includes: target, byproduct, bycatch and threatened, endangered or protected species

1 Description of fisheries

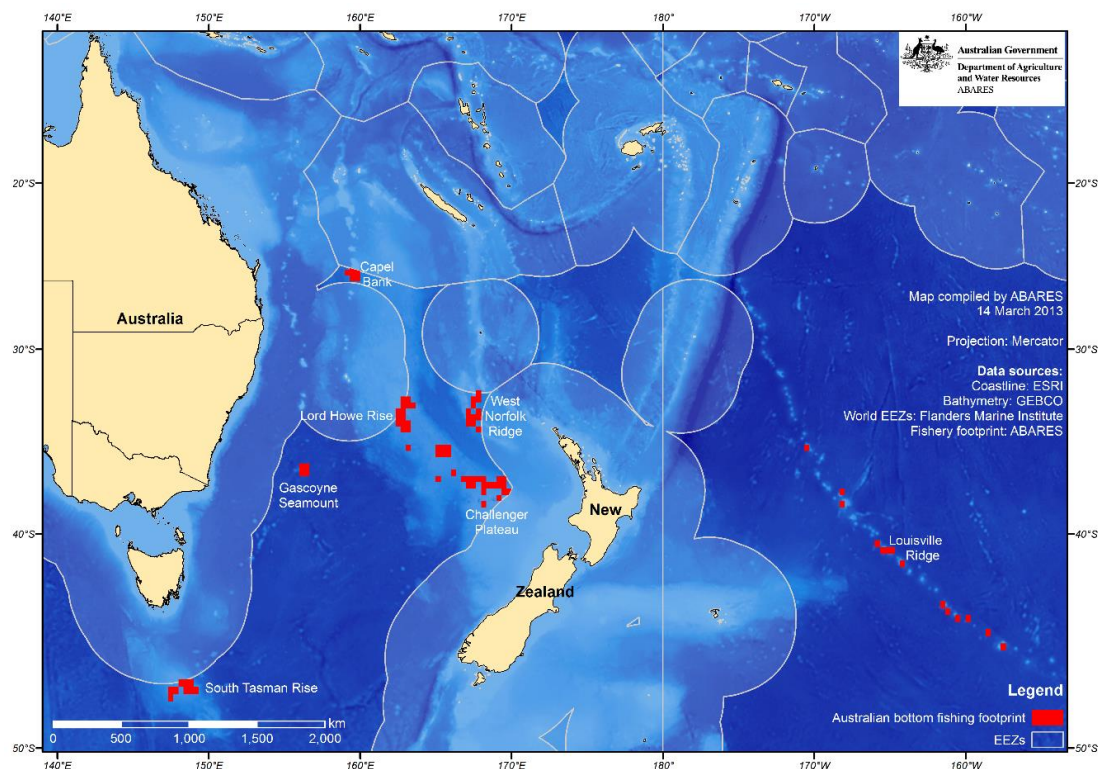
A small number of Australian fishing vessels target demersal fish species in association with seamounts, ridges and other features in the South Pacific Ocean. Trawling targeted at *Hoplostethus atlanticus* has comprised the majority of Australian catches in the SPRFMO area, although from the mid-2000s until 2013, catch of *Beryx splendens* (splendid alfonsino) increased to comprise a significant proportion of the trawl catch in some years. Much of the historical catch of *H. atlanticus* was taken on the South Tasman Rise, with *Pseudocyttus maculatus* (smooth oreodory) and *Neocyttus rhomboidalis* (spiky oreodory) also being caught in relatively large volumes in association with the main target species. The South Tasman Rise trawl fishery has been closed to Australian fishing—both within and outside Australia's EEZ—since 2007. There was no trawl effort in the SPRFMO Convention Area in 2008, 2009, 2010 and 2018. From 2011 to 2017 and in 2019, trawl catch was relatively low and sporadic, with the catch mostly comprised of *H. atlanticus* and *B. splendens*. In 2020 there was no trawl effort in the SPRFMO Convention Area.

Non-trawl effort has historically been low and variable, targeting *Nemadactylus* spp. (morwong species, predominantly jackass morwong), *Hyperoglyphe antarctica* (blue-eye trevalla), *Seriola lalandi* (yellowtail kingfish) and *Schedophilus velaini* (ocean blue-eye trevalla; formerly *Schedophilus labrynthicus*). Since around 2016, a change in the composition of landed catches towards Lethrinidae and Etelinae species (as well as other sub-tropical species) reflects a change in the main fishing grounds used by Australian non-trawl vessels. The non-trawl catch has exceeded the trawl catch since 2016. In recent years, all of the non-trawl component has been taken by bottom longline gears.

Map 1 Bottom trawl, midwater trawl and bottom line Management Areas specified in CMM 03-2020 in the SPRFMO area



Map 2 Australia's fishing footprint (based on historical bottom fishing effort in the 2002–2006 reference period) and identified fishing grounds in the SPRFMO area



Note: This historical footprint was used to determine Australian fishing grounds until April 2019 but has since been superseded by the areas outlined in CMM 03-2020 (see Map 1). EEZ boundaries were correct as at the time of map production.

1.1 Fleet composition

One Australian-flagged vessels fished in the SPRFMO area in 2020 using demersal longline gears and no Australian-flagged vessel fished using trawl gears (Table 1).

Table 1 Fishing effort, retained catches and the number of Australian vessels that actively bottom fished in the SPRFMO area under relevant high-seas permits, 2013–2019

Year	Non-trawl							Trawl						
	2014	2015	2016	2017	2018	2019	2020	2014	2015	2016	2017	2018	2019	2020
Vessels	2	2	2	2	2	2	1	2	1	1	1	0	1	0
Retained catch (t)	99	177	156	145	116	123	12	104	25	84	98	0	62	0
Effort	379	745	710	841	753	658	52	52	16	12	52	0	16	0

Note: Fishing effort is presented as thousands of hooks for non-trawl and hours for trawl. Retained catch volumes are based on logbook estimates.

2 Catch and effort

The total retained catch reported in logbooks by Australian vessels in the SPRFMO area was 12 t in 2020 (Table 1). Logbook estimates of catch and fishing effort for key species are shown in

Table 2 (trawl) and Table 3 (non-trawl).

Trawl catches by Australian vessels in SPRFMO peaked at 4,143 t in 1998 (Table 2). Trawl catches over the last decade have been relatively low, averaging 83 t per annum. There was no trawl catch in 2020.

The nominal catch per unit effort (CPUE) for *H. atlanticus* and other species caught in the trawl fishery varies over time, with no clear trend. As catch and effort are low and vary over space and time, nominal CPUE indices for trawl gears are not presented here as they are uninformative.

Non-trawl catches by Australian vessels in SPRFMO peaked at 244 t in 2002 (Table 3). Non-trawl catches over the last decade have averaged 123 t per annum. Total non-trawl catch retained by Australian vessels in the SPRFMO Convention area was 12 t in 2020. Bottom longline was the only non-trawl method used in 2020. *Nemadactylis* spp. (morwongs) accounted for 30% (3.7 t) of the 2020 longline catch; the remainder comprised *Hyperoglyphe antarctica* (blue-eye trevalla; 22%; 2.7 t), *Seriola lalandi* (yellowtail kingfish; 18%; 2.2 t), *Helicolenus percoides* (reef ocean perch; 15%; 1.8 t), and other species (15%; 1.8 t). Logbook-reported discards in the longline fishery were 0.9 t, comprised mostly of *Helicolenus barathri* (bigeye ocean perch).

Effort in the Australian non-trawl fishery has fluctuated over time. Effort was 52,000 hooks in 2020. Nominal CPUE indices for species caught in the non-trawl fishery are not presented here as it is difficult to determine target species. Catch and effort are also low and spatio-temporally variable. Nominal CPUE data would need to be standardised before use as a potential index of abundance.

There was no fishing effort directed at, or catch of, *Trachurus* spp. (jack mackerel) or *Dosidicus gigas* (jumbo flying squid) by Australian vessels operating in the SPRFMO area in 2020.

Table 2 Number of trawl active vessels, fishing effort (hours) and annual catch (t) of major species reported in logbooks by Australian trawlers in the SPRFMO area, 1987–2020

Year	No. of vessels	Effort (hours)	Catch of major species (t)					Total catch (t)
			Orange roughy	Smooth oreo	Spiky oreo	Alfonsino	Other species	
1987–1990 ^a	6	105	9	0	0	0	8	17
1991–1993 ^a	6	85	367	1	107	0	4	479
1994	7	257	192	0	6	0	5	203
1995–1996 ^a	6	62	21	12	10	0	54	98
1997	10	396	1 458	505	448	1	56	2 468
1998	12	916	3 098	420	620	1	5	4 143
1999	10	777	2 514	106	89	8	5	2 720
2000	12	752	948	123	86	4	8	1 170
2001	9	307	751	13	31	1	3	799
2002	8	196	376	6	67	3	3	453
2003	9	102	166	6	63	2	1	238
2004	5	48	369	22	12	1	1	406
2005	3	29	207	74	1	81	14	377
2006	3	104	166	0	0	209	75	451
2007	2	71	148	0	1	86	18	253
2008	0	–	–	–	–	–	–	–
2009	0	–	–	–	–	–	–	–
2010	0	–	–	–	–	–	–	–
2011	1	72	2	0	0	47	14	63
2012	1	123	56	<1	<1	167	119	264
2013	1	101	49	<1	0	72	17	138
2014	2	52	102	0	<1	<1	2	104
2015	1	16	20	0	0	3	1	25
2016	1	12	83	<1	<1	<1	<1	84
2017	1	52	93	b	b	0	<1	98
2018	0	–	–	–	–	–	–	–
2019	1	16	44	0	<1	13	5	62
2020	0	–	–	–	–	–	–	–

^a In earlier years, data were combined over several years to comply with domestic data confidentiality policy. ^b Catch volumes for individual species are not available due to aggregation of reported catch of oreodories in 2017 (5 t).

Note: Logbook weights are based on visual estimates by skippers of retained catch weights. They do not always exactly match subsequent landings. Effort data from 2011 to 2014 was revised in 2016. Data rounding may mean that totals do not match exactly with summed tonnages of individual species.

Table 3 Number of active non-trawl vessels, fishing effort ('000s of hooks) and annual catch of major species reported in logbooks by Australian vessels using non-trawl gear in the SPRFMO area, 1997–2019

Year	No. of vessels	Effort ('000 hooks) a	Catch of major species (t)						Total catch (t)
			Morwong b	Blue-eye trevalla	Ocean blue-eye trevalla	Yellowtail kingfish c	Redthroat emperor	Other species d	
1997	1	-	1	6	0	0	d	3	9
1998	3	-	31	26	0	15	d	34	106
1999	4	-	29	22	0	13	d	26	90
2000	1	-	79	6	0	14	d	19	117
2001	3	-	43	21	35	5	d	53	157
2002	3	-	81	27	66	32	d	38	244
2003	3	-	16	30	13	1	d	24	84
2004	3	-	0	2	7	0	d	8	18
2005	2	-	1	4	0	0	d	4	9
2006	5	-	10	8	0	22	d	20	59
2007	2	-	7	16	0	1	d	24	48
2008	3	751	24	3	0	25	d	125	177
2009	3	507	13	4	0	11	d	79	106
2010	3	333	23	6	0	17	d	49	95
2011	1	443	45	17	0	24	d	5	91
2012	2	349	40	10	0	54	d	6	110
2013	2	594	39	37	<1	23	d	33	133
2014	2	379	30	21	0	26	d	22	99
2015	2	745	46	16	<1	33	d	81	177
2016	2	710	6	5	<1	28	44	78	156
2017	2	841	23	2	<1	35	22	62	145
2018	2	753	18	2	<1	24	5	66	116
2019	2	658	9	3	<1	4	10	102 e	123
2020	1	52	4	3	0	2	0	3	12

a Historical effort not reported due to data handling issues and/or confidentiality restrictions. **b** Morwong catch from 1997 to 2009 is combined *Nemadactylus macropterus* and *Nemadactylus* spp. Morwong catches in subsequent years are predominantly *Nemadactylus macropterus*. **c** Some of the yellowtail kingfish and 'other species' catches presented in previous reports for 2010 were found to have occurred outside the SPRFMO area. Those catches have been removed and reported catches now match the data submission for 2010. **d** Prior to 2016, any catches of redthroat emperor (*Lethrinus miniatus*) are included in 'Other species'. **e** Most of the 'other species' are comprised of Lethrinidae and Etelinae spp., which reflects a change in the main fishing grounds used by Australian longline fishing vessels since around 2016. This table may be updated in future versions of this report to include a revised mix of species.

Note: The logbook weights are based on visual estimates by skippers of retained and discarded catch weights. They do not always exactly match subsequent landings. Data rounding may mean that totals do not match exactly with summed weight of individual species

3 Fisheries data collection and research activities

3.1 Logbooks and landings

High seas permit conditions require operators to record daily catch and fishing effort data in logbooks on a set-by-set or tow-by-tow basis, including the location of fishing operations, and any bycatch and discards. Landings are monitored by AFMA through formal catch disposal records. Catch disposal records are completed by both the fisher and licensed fish receiver at the point of unloading to obtain accurate data on fish numbers and verified weight by species. Compliance checks are conducted on landings as part of a risk-based compliance program.

The logbook and catch disposal record data are submitted to the SPRFMO Secretariat in accordance with SPRFMO CMM 02-2020. The data are submitted by the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), which maintains rigorous data quality assurance processes.

3.2 Vessel Monitoring System

AFMA introduced a compulsory requirement for all Commonwealth-endorsed fishing vessels to be fitted with Integrated Computer Vessel Monitoring Systems (ICVMS) in 2007. All VMS data for Australian vessels operating in the SPRFMO area in 2019 and 2020 has been provided to the Secretariat in accordance with CMM 06-2020. AFMA uses the ICVMS to assist in planning inspections and operations, to assist the observer program in deploying scientific observers and to actively monitor compliance with area restrictions.

3.3 Research

Australia hosted a deepwater working group workshop in Hobart, Tasmania in May 2017, at which progress was made towards *H. atlanticus* assessment, assessing the impacts of fishing on VMEs and an assessment framework for SPRFMO deepwater fisheries (subsequently adopted during SC5). In accordance with the assessment framework, Australia has collaborated with other members and the SPRFMO Secretariat to develop a SPRFMO demersal fisheries species list and undertaken preliminary data characterisation to inform potential assessment options. Australia has also led ecological risk assessments for deepwater chondrichthyans ([SC7-DW10-rev1](#), since published as Georgeson et al. 2020) and demersal teleosts (see, e.g. [SC7-DW11](#)), the latter of which has informed categorisation of SPRFMO demersal species into appropriate tiers within the SPRFMO assessment framework. Australia has also led development of a list of potential candidate species for stock structure delineation studies ([SC7-DW09](#)), with priority species identified by SC7.

From 2018–2020, Australia commissioned CSIRO to review the VME habitat models developed by New Zealand's National Institute of Water and Atmospheric Research (NIWA) that underpin the spatial management approach adopted in CMM 03-2020, as well as to provide advice on the appropriateness of the VME encounter thresholds and the implementation of an appropriate monitoring program that is responsive to potential errors in the modelling approach. Some of this work has been included in the cumulative Bottom Fishing Impact Assessment for Australian

and New Zealand fisheries in the SPRFMO Convention Area, which was submitted to SPRFMO on 4 August 2020. Other work, building on that presented at SC7 in [SC7-DW21-rev1](#), is ongoing.

In 2020-21 Australia has cooperated with New Zealand in the development of spatial management scenarios for bottom trawling in accordance with the request from the ninth meeting of SPRFMO. This work will inform the Commission's determination of the level of protection required to prevent serious and irreversible impacts on VMEs in the SPRFMO Convention Area. It encompasses protection levels of 70%, 80%, 90%, 95% for the modelled VME indicator taxa using temporally static and temporally dynamic assessment methods.

At the ninth meeting of SPRFMO in 2021, Australia committed to undertake a paired trial of electronic and human seabird monitoring observations with a view to demonstrating whether electronic monitoring is as effective as human observers in detecting seabird interactions. This trial essentially comprises a side-by-side comparison of the level of seabird interactions measured by human observers (sampled at 10% of total days) with the level of seabird interactions measured by electronic monitoring. The trial has commenced with the collection of side-by-side data for two fishing trips so far in 2021 and will continue into 2022 with a view to expanding the data set before reporting to SC in 2022.

4 Biological sampling and length composition of catches

Length frequency and other biological data are collected by Australian observers in the SPRFMO area and submitted annually to the SPRFMO Secretariat. A subset of biological and length frequency data collected by observers on Australian trawl and longline vessels during 2018 is provided in Table 4.

Length frequency histograms of *H. atlanticus* caught by trawl (Figure 1), and *N. macropterus* (Figure 2) and *H. antarctica* (Figure 3) caught by demersal longline are presented as a subset of the most recently available (2018) observer data.

Table 4 Subset of biological records collected by observers on Australian trawl and longline vessels in the SPRFMO area, 2018

	Species	Scientific name	No. lengths	No. sexed fish	No. maturity stage	No. otoliths
Non-trawl	BWA	<i>Hyperoglyphe antarctica</i>	172	0	0	0
	HFR	<i>Helicolenus percoides</i>	104	0	0	0
	TAK	<i>Nemadactylus macropterus</i>	504	0	0	0
	YTC	<i>Seriola lalandi</i>	97	0	0	0

Note: Additional data for other species were collected by observers and have been submitted to the SPRFMO Secretariat but are not presented here due to the low number of records. Data in Table 4 may differ from official records.

Figure 1 Length frequency of *H. atlanticus* measured by observers on Australian trawl vessels in the SPRFMO area, 2017

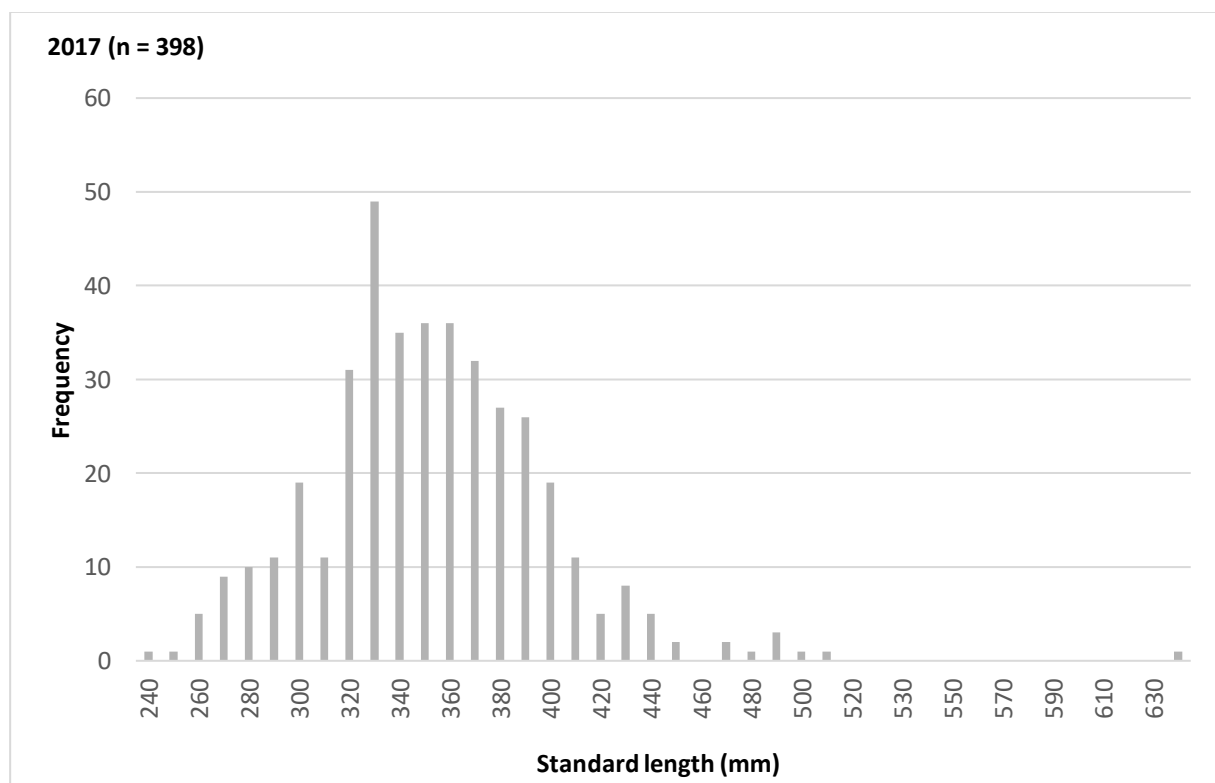


Figure 2 Length frequency of *N. macropterus* measured by observers on Australian longline vessels in the SPRFMO area, 2018

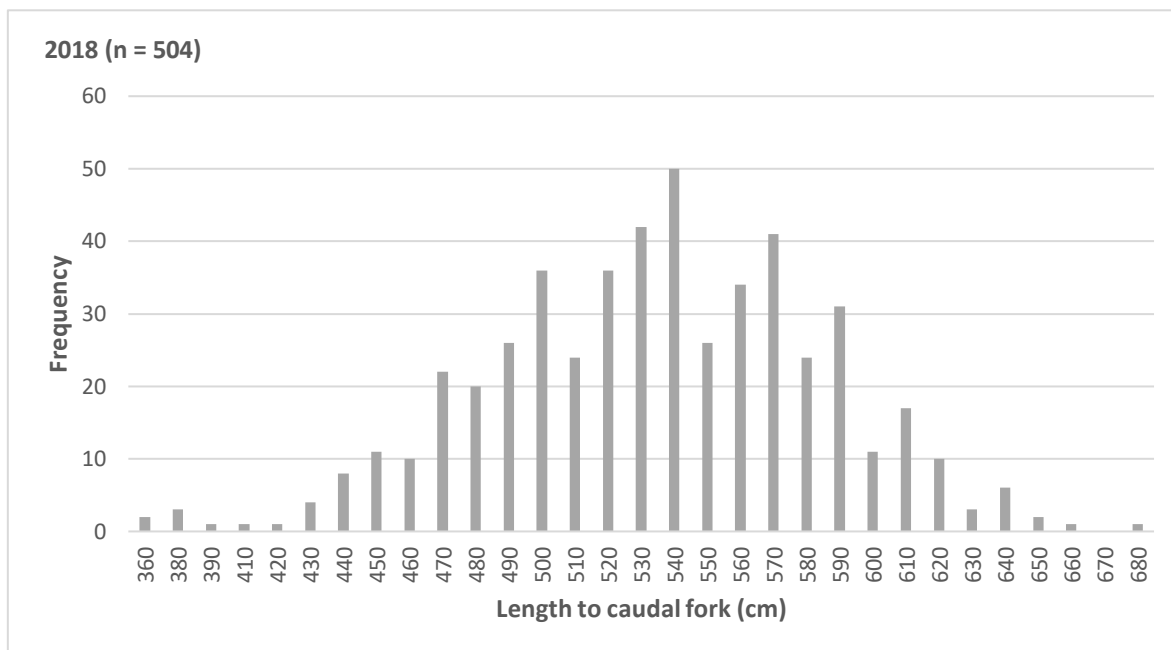
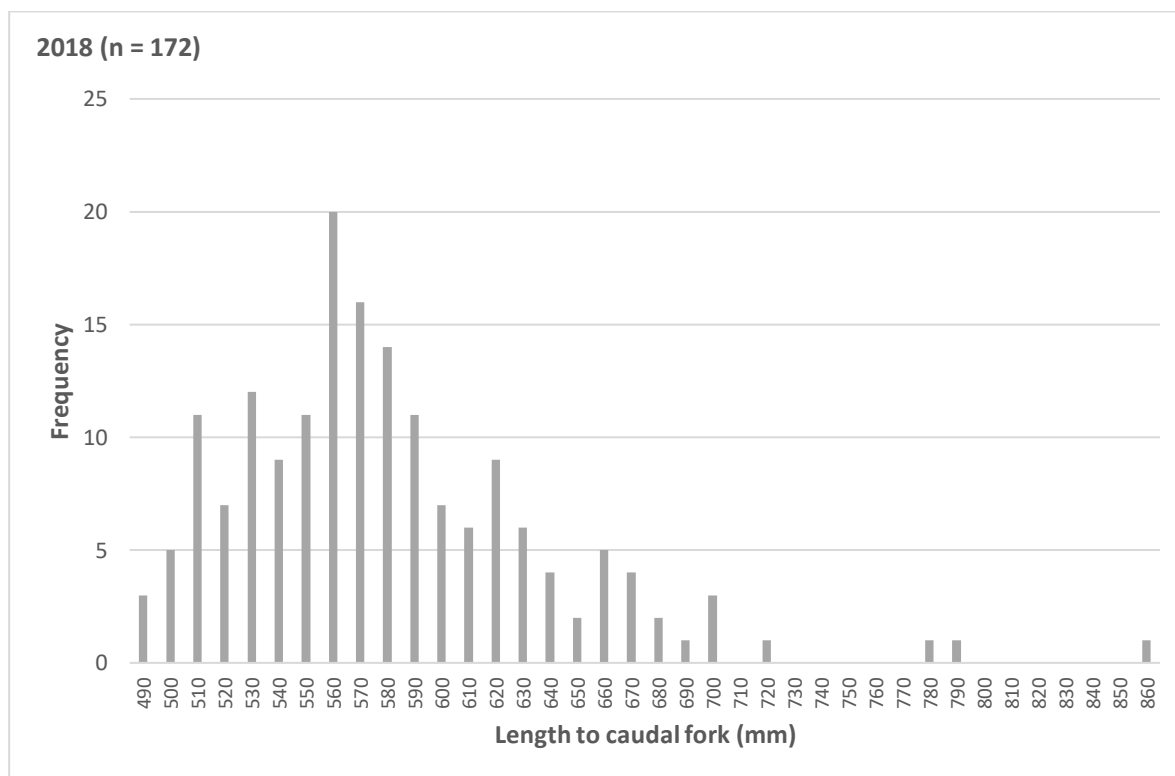


Figure 3 Length frequency of *H. antarctica* measured by observers on Australian longline vessels in the SPRFMO area, 2018



5 Ecosystem approach considerations

5.1 Seabird interactions and mitigation measures

Australian vessels have recorded low seabird interaction and mortality rates in the SPRFMO area. Australian longline vessels operating in high seas areas, including the SPRFMO area, are required to deploy tori (streamer) lines when deploying lines, to deter seabirds. These vessels must also ensure a Bird Excluder Device (BED) designed to discourage birds from accessing baits during hauling of longlines is deployed at all times during line hauling. All trawl vessels must deploy bird bafflers on both warps while fishing gear is in the water.

All vessels must not discharge any biological material while fishing gear is in the water unless an exemption has been provided by AFMA, to avoid attracting seabirds to the vessel. Where it is necessary to discharge biological waste due to operational safety concerns, vessels should batch waste for two hours or longer.

In 2020, Australia was compliant with CMM 09-2017 regarding the minimisation of seabird interactions.

5.2 Bycatch of seabirds, marine mammals, marine reptiles and other species of concern

Observers did not report any bycatch of marine mammals, seabirds or marine reptiles in non-trawl operations in the SPRFMO area in 2020. One interaction with a basking shark (*Cetorhinus maximus*; dead) was reported in the SPRFMO trawl fishery in 2019.

5.3 Benthic bycatch

In the non-trawl fishery in 2020, observers reported 33kg of non-living 'benthos' in 28 separate fishing operations including 29kg of Gorgoniidae, 1.8kg of Antipatharia and 1.5kg of Scleractinia.

5.4 Abandoned, lost, discarded or retrieved fishing gear

No gear was reported lost in logbooks during 2020 (Table 5).

Table 5 Logbook data of abandoned, lost, discarded or retrieved fishing gear from Australian flagged vessels operating within the SPRFMO Convention area

Year	Floats (lost)	Anchor (lost)	Hooks (lost)	Rope (lost)
2018	3	2	980	Y
2019	0	0	2000	Y
2020	0	0	0	N

6 Summary of observer and port sampling programs

6.1 Observer program

During 2020, observer coverage levels met or exceeded the minimum requirement (10% coverage for non-trawl, 100% for trawl) as required under the relevant CMMs. Observer coverage is evaluated as the percentage of the number of hooks or trawls observed. Observers are deployed on an as-needs basis to ensure appropriate coverage. For non-trawl gears, observer coverage will often exceed the minimum observer coverage requirement due to the low number of trips. Additionally, all Australian-flagged auto-longline boats fishing in the SPRFMO area have electronic monitoring (e-monitoring) systems installed to monitor fishing activity and support verification of logbook reports when fishing in the Australian Fishing Zone. Footage collected on the high seas is not currently routinely reviewed (however note the research underway to assess seabird interactions using EM, see Section 3.3), but it could be used in future to supplement human observer coverage if the data need arises.

AFMA recruits and trains observers through its national Independent Scientific Monitoring Program. Observers have a scientific background or experience in the fishing industry or other maritime industries and must demonstrate skills in collecting biological data at sea, fisheries research methodologies and collection of associated scientific data. Observers also hold a marine radio operators certificate of proficiency (or similar qualifications), a sea safety certificate and medical certificate, and have completed an AFMA observer training course.

Observers collect a range of data on vessel characteristics, fishing activity, catch composition, discarding and bycatch. There were no changes to observer requirements in 2020.

6.2 Port sampling program

Australia does not currently have a port sampling program for vessels that fish in the SPRFMO area. The landings are monitored through catch disposal records where the catch is verified by an AFMA-registered fish receiver. These data have been submitted to the SPRFMO Secretariat.

7 Relevant publications

[High Seas Management Arrangements Booklet 2017 \(PDF, 1MB\)](#)

[High Seas Sustainability Assessment Report \(PDF, 4 MB\)](#)

[Bottom Fishery Impacts Assessment – Australian report for the South Pacific Regional Fisheries Management Organisation \(PDF, 4 MB\)](#)

[Ecological risks of demersal fishing on deepwater chondrichthyan populations in the Southern Indian and South Pacific Oceans](#)

Appendix A: Common and scientific names

Common name	Scientific name
Alfonsino	<i>Beryx splendens</i>
Basking shark	<i>Cetorhinus maximus</i>
Blue-eye trevalla	<i>Hyperoglyphe antarctica</i>
Cardinal fish	Family Apogonidae
Flame snapper	<i>Etelis coruscans</i>
Jackass morwong	<i>Nemadactylus macropterus</i>
Jack mackerel	<i>Trachurus</i> spp.
Jumbo flying squid	<i>Dosidicus gigas</i>
Ocean blue-eye trevalla	<i>Schedophilus velaini</i>
Orange roughy	<i>Hoplostethus atlanticus</i>
Redthroat emperor	<i>Lethrinus miniatus</i>
Robinson's seabream	<i>Gymnocranius grandoculis</i>
Smooth oreodory	<i>Pseudocyttus maculatus</i>
Spiky oreodory	<i>Neocyttus rhomboidalis</i>
Spotcheek emperor	<i>Lethrinus rubrioperculatus</i>
Yellowback bream	<i>Dentex spariformis</i>
Yellowtail kingfish	<i>Seriola lalandi</i>