SPRFMO

5th Meeting of the Scientific Committee

Shanghai, China, 23 - 28 September 2017

SC5-Doc24_rev2

The Australian Annual Report

L. Georgeson, S. Nicol and P. Hobsbawn

Australian Government
Department of Agriculture and Water Resources
ABARES

Australia's national report on 2016 fishing activities to the South Pacific Regional Fisheries Management Organisation's Scientific Committee – rev2

L Georgeson, S Nicol and P Hobsbawn

Research by the Australian Bureau of Agricultural and Resource Economics and Sciences

SPRFMO document number: SC-05-Doc24-rev2
September 2017

Cataloguing data

This publication (and any material sourced from it) should be attributed as: Georgeson, L, Nicol, S & Hobsbawn, P 2017, Australia's National Report on 2016 fishing activities to the South Pacific Regional Fisheries Management Organisation's Scientific Committee, Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES), Canberra, August 2017.

Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES)

Postal address GPO Box 858 Canberra ACT 2601
Switchboard +61 2 6272 2010
Facsimile +61 2 6272 2001
Email info.abares@agriculture.gov.au
Web agriculture.gov.au/abares

Acknowledgements

This work is supported by the Fisheries Resources Research Fund and ABARES. The authors thank George Day, Brodie Macdonald and Ryan Keightley (Australian Fisheries Management Authority) and Kerrie Robertson (Department of Agriculture and Water Resources) for their comments on the report.

Contents

1 Introduction

Rev1 contained updated observer data for 2016, including observer coverage levels and orange roughy length-frequency data for trawl methods. It also amends an error in the previous version regarding the composition of non-trawl catches in 2016. This version (rev2) amends an error found in the

---

This report provides an update on fishing activity by Australian-flagged vessels in the South Pacific Regional Fisheries Organisation (SPRFMO) Convention Area. Australian operators in the SPRFMO Convention Area are authorised by permits that are issued by the Australian Fisheries Management Authority (AFMA) to target various species with mid-water and demersal trawl, traps, dropline, minor line, automatic longline and demersal longline. 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. Scientific and common names for species mentioned in this report are provided in Appendix A.

Permits to fish in the SPRFMO Convention Area are granted by AFMA for a period of up to 12 months. Australian high-seas fisheries permits require the implementation of vessel monitoring systems, mandatory observer coverage on all trawl vessels and a target of 10 per cent observer coverage on all non-trawl vessels. In accordance with the requirements of Conservation and Management Measure (CMM) 03-2017, AFMA's high seas permit conditions restrict vessels to fishing within the 2002–06 Australian fishing footprint (Map 1). All fishing operations in 2016 were within this footprint. In 2016 AFMA introduced changes to its high seas permits to require trawl vessels to deploy bird bafflers at all times when fishing gear is in the water.

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

a) total fishing season catch and effort statistics for each species[1] 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

---

[1] Includes: target, byproduct, bycatch and threatened, endangered or protected species

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, these data are submitted to the SPRFMO Secretariat in accordance with CMM 02-2017. 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.

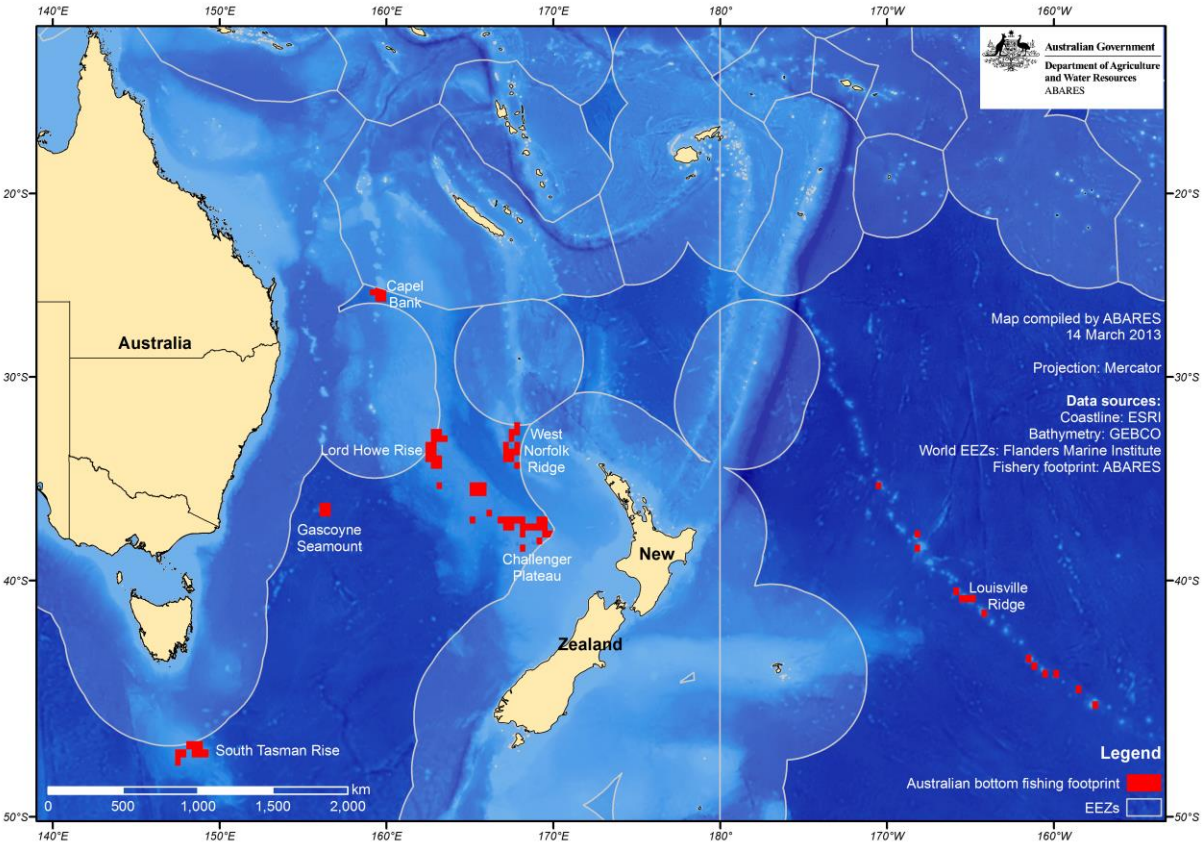
The threshold limits for vulnerable marine ecosystems (VME) indicators, which trigger Australia's move-on protocols, are 50 kg of corals and sponges in a shot for trawlers and 10 kg of corals and sponges for any 1000 hook section (or 1200 metre section of line) for all line methods. These thresholds were not triggered in 2016.

2 Description of fisheries

A small number of Australian fishing vessels target demersal fish species in association with seamounts, ridges and other features within Australia's historical (2002–06) fishing footprint in the South Pacific Ocean (Map 1). Historically, trawling targeted at orange roughy on the South Tasman Rise comprised the major component of Australia's fishing effort in the SPRFMO area. Australian catch of orange roughy peaked at 3098 t in 1998. In the latter years of the South Tasman Rise trawl fishery, very little orange roughy was caught; the catch was mostly smooth oreodory and spikey oreodory. The South Tasman Rise trawl fishery has been closed to Australian fishing—both within and outside Australia's EEZ—since 2007. From the mid-2000s onwards, catch of alfonsino in the SPRFMO area increased to comprise a significant proportion of the trawl catch in some years. There was no trawl effort from 2008 to 2010.

Non-trawl effort has historically been low and variable, targeting morwong species, blue-eye trevalla, ocean blue-eye and yellowtail kingfish. In 2016, catch of redthroat emperor increased markedly, with this being the most caught species by volume in the non-trawl component of the fishery. In recent years, all of the non-trawl component has been taken by bottom longline gears.

Map 1 Australia's fishing footprint (based on historical bottom fishing effort in the 2002–2006 reference period) and identified fishing grounds in the SPRFMO Area



Fleet composition

Three Australian-flagged vessels fished in the SPRFMO Convention Area in 2016; one trawl vessel and two non-trawl vessels (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, 2013–2016

	Vessels that actively bottom fished							
	Non-trawl				Trawl			
Year	2013	2014	2015	2016	2013	2014	2015	2016
Vessels	2	2	2	2	1	2	1	1
Retained catch (t)	133	99	177	156	138	104	25	84
Effort	594	379	745	710	101	52	16	12

Note: Fishing effort is presented in hours for trawl and as thousands of hooks for non-trawl. Catch data are based on logbook estimates.

3 Catch, fishing effort and CPUE

The total catch reported in logbooks by Australian vessels in the SPRFMO Convention area was 271 t in 2013, 203 t in 2014, 202 t in 2015 and 240 t in 2016 (Table 1).

After a peak of 4,143 t in 1998, annual catches by Australian trawl vessels in the SPRFMO Convention area have been less than 500 t for the past 10 years. Trawl catch increased from 25 t in 2015 to 84 t in 2016. Orange roughy comprised 99 per cent of the 2016 trawl catch (>83 t). Very small quantities of other fish were landed, including alfonsino, ribaldo, morwong and oreodories.

Total effort for the trawl fishery was 12 trawl hours in 2016, a decrease from 16 hours in 2015.[2] The nominal catch per unit effort (CPUE) for orange roughy and other species landed in the trawl fishery shows variation over time, with no clear trend. As catch and effort are low and spatio-temporally variable, nominal CPUE indices for trawl gears are not presented graphically herein as they are not thought to be representative of changes in stock biomass.

Total non-trawl catch reported in logbooks by Australian vessels in the SPRFMO area was 156 t in 2016, a decrease from 177 t reported in 2015. Bottom longline was the only non-trawl method used in 2015 and 2016. Morwong species constituted the single largest component of the total Australian non-trawl catch in the SPRFMO Convention area between 2008 and 2015; however, in 2016, redthroat emperor comprised the largest landed volume, accounting for 28 per cent of the catch (44 t). The remainder comprised yellowtail kingfish (18 per cent; 28 t), Robinson's seabream (16 per cent; 26 t), flame snapper (8 per cent; 13 t), jackass morwong (5 per cent; 8 t) and other species (24 per cent; 37 t). A change in the composition of landed catches towards emperors, sweetlips and deepwater snappers (as well as other more sub-tropical species) reflects a change in the main fishing grounds used by Australian non-trawl vessels in 2016.

Effort in the Australian non-trawl fishery has fluctuated over time. Effort was 710 179 hooks in 2016, representing a slight decrease from 744 900 hooks in 2015 but still above the 555 416 hook five-year average for 2012-2016[3]. The nominal CPUE for redthroat emperor in the non-trawl fishery in 2016 was 0.097 t per 1000 hooks, representing a decrease from 0.16 t per 1000 hooks in 2015. The nominal CPUE for jackass morwong in the non-trawl fishery changed from 0.11 t per 1000 hooks in 2012 to 0.06 t per 1000 hooks in 2015 and less than 0.01 t per 1000 hooks in 2016. If shots in which only morwong were caught are used, the nominal catch rate was around 0.08 t per 1000 hooks in 2016. These rates should be viewed with caution as it is difficult to separate shots that are targeted at these species from shots targeted at other species. Any trends would need further analysis to be of use in any potential index of abundance. Other species caught show similar variations in CPUE.

There was no fishing effort directed at, or catch of, jack mackerel (*Trachurus* spp.) or jumbo flying squid (*Dosidicus gigas*) by Australian vessels operating in the SPRFMO Area in 2016.

Logbook estimates of catch, fishing effort and nominal CPUE are shown for key species in Table 2~~Table 2~~ (trawl) and Table 3~~Table 3~~ (non-trawl).

[3] Effort and catch-per-unit (CPUE) are based on logbook estimates.

Table 2 Number of active vessels, fishing effort (hours), annual catch (t) and nominal CPUE (t/trawling hour, in parentheses) of major species reported in logbooks by Australian trawlers in the SPRFMO Area, 1987–2016

Year	No. of vessels	Effort (hours)	Catch of major species (t) and CPUE					Total catch (t)
			Orange roughy	Smooth oreo	Spiky oreo	Alfonsino	Other species	
1987–1990 a	6	105	9 (0.08)	0 (0.00)	0 (0.00)	0 (0.00)	8	17
1991–1993 a	6	85	367 (4.31)	1 (0.01)	107 (1.26)	0 (0.00)	4	479
1994	7	257	192 (0.74)	0 (0.00)	6 (0.02)	0 (0.00)	5	203
1995–1996 a	6	62	21 (0.34)	12 (0.19)	10 (0.16)	0 (0.00)	54	98
1997	10	396	1 458 (3.68)	505 (1.27)	448 (1.13)	1 (0.00)	56	2 468
1998	12	916	3 098 (3.38)	420 (0.46)	620 (0.68)	1 (0.00)	5	4 143
1999	10	777	2 514 (3.23)	106 (0.14)	89 (0.11)	8 (0.01)	5	2 720
2000	12	752	948 (1.26)	123 (0.16)	86 (0.11)	4 (0.00)	8	1 170
2001	9	307	751(2.45)	13 (0.04)	31 (0.10)	1 (0.00)	3	799
2002	8	196	376 (1.91)	6 (0.03)	67 (0.34)	3 (0.01)	3	453
2003	9	102	166 (1.62)	6 (0.06)	63 (0.61)	2 (0.02)	1	238
2004	5	48	369 (7.72)	22 (0.46)	12 (0.26)	1 (0.02)	1	406
2005	3	29	207 (7.19)	74 (2.58)	1 (0.02)	81 (2.81)	14	377
2006	3	104	166 (1.60)	0 (0.00)	0 (0.00)	209 (2.02)	75	451
2007	2	71	148 (2.09)	0 (0.00)	1 (0.01)	86 (1.21)	18	253
2008	0	–	–	–	–	–	–	–
2009	0	–	–	–	–	–	–	–
2010	0	–	–	–	–	–	–	–
2011	1	72	2 (0.03)	0 (0.00)	0 (0.00)	47 (0.66)	14	63
2012	1	123	56 (0.45)	<1 (<0.01)	<1 (<0.01)	167 (1.35)	119	264
2013	1	101	49 (0.49)	<1 (<0.01)	0 (0.00)	72 (0.72)	17	138
2014	2	52	102 (1.95)	0 (0.00)	<1 (<0.01)	<1 (<0.01)	2	104
2015	1	16	20 (1.24)	0 (0.00)	0 (0.00)	3 (0.19)	1	25
2016	1	12	83 (2.03)	<1 (<0.01)	<1 (<0.01)	<1 (<0.01)	<1	84

a In earlier years, data were combined over several years to comply with a confidentiality policy on not reporting data for fewer than five vessels.

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 vessels, fishing effort ('000s of hooks), annual catch and nominal CPUE (t/1000 hooks, in parentheses) of major species reported in logbooks by Australian vessels using non-trawl gear in the SPRFMO Area, 1997–2016

Year	No. of vessels	Effort ('000 hooks) [a]	Catch of major species (t) and CPUE						Total catch (t)
			Morwong [b]	Blue-eye trevalla	Ocean blue-eye trevalla	Yellowtail kingfish [c]	Redthroat emperor	Other species [c]	
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 (0.03)	3 (<0.01)	0 (0.00)	25 (0.03)	**d**	125	177
2009	3	507	13 (0.03)	4 (<0.01)	0 (0.00)	11 (0.02)	**d**	79	106
2010	3	333	23 (0.07)	6 (0.02)	0 (0.00)	17 (0.05)	**d**	49	95
2011	1	443	45 (0.10)	17 (0.04)	0 (0.00)	24 (0.05)	**d**	5	91
2012	2	349	40 (0.11)	10 (0.03)	0 (0.00)	54 (0.15)	**d**	6	110
2013	2	594	39 (0.07)	37 (0.06)	<1 (<0.01)	23 (0.04)	**d**	33	133
2014	2	379	30 (0.08)	21 (0.06)	0 (0.00)	26 (0.07)	**d**	22	99
2015	2	745	46 (0.06)	16 (0.02)	<1 (<0.01)	33 (0.04)	**d**	81	177
2016	2	710	6 (<0.01)	5 (<0.01)	<1 (<0.01)	28 (0.04)	44 (0.06)	78	156

a Historical effort not reported due to data handling issues and/or confidentially restrictions. **b** Morwong catch from 1997 to 2009 is combined *Nemadactylus macropterus* and *Nemadactylus* spp. Morwong catches in subsequent years were *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 have been included in 'Other species'. Historical catches and nominal catch rates for this species may be included retrospectively in future reports.
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.

4 Fisheries data collection and research activities

Australian vessels require a permit from AFMA to fish in the SPRFMO Convention Area. The permits are issued for a period of up to 12 months. AFMA requires operators to submit detailed logbook records of fishing trips.

During 2016 observer coverage was maintained as required under CMM 03-2017. 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 reviewed, but it could be used in future to supplement human observer coverage if the data needs arises.

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. The current longline logbook is LN01A—Line Fishing Daily Fishing Log and the trawl logbook is EFT01B—Eastern Finfish Trawl Daily Fishing Log.

Landings are monitored by AFMA through formal catch disposal records. Weights in logbooks are estimates only, so the catch disposal record data have been reported in domestic official statistics since 2007. 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 have been submitted to the SPRFMO Secretariat, as required by SPRFMO CMM 02-2017.

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. For 2016, there was a 100 per cent compliance rate with VMS reporting requirements for Australian vessels operating in the SPRFMO area. 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.

Research

Australia submitted a bottom fishing impact assessment of Australian fishing activity in the SPRFMO Area to the SPRFMO Science Working Group in 2011 (CSIRO 2011).

In 2011, AFMA commissioned ABARES to assess the sustainability of the harvest of key commercial species in the SPRFMO Area by Australian vessels (Woodhams et al. 2012). Results indicated that:

1) The main data that could be used for sustainability assessments for deepwater species in the SPRFMO Convention Area are the catch and effort data of fishery participants.

2) Even if data can be obtained from all participants, catch and effort data for deepwater fisheries are typically limited, and may not provide reliable indices of abundance for use in standard stock assessment approaches. Assessments of this nature are likely to remain difficult for any high seas demersal fishery.

3) Alternative assessment approaches will therefore need to be considered for these deepwater fisheries.

In 2013, Australia, in collaboration with New Zealand, undertook research and literature reviews that informed the SPRFMO Scientific Committee discussions on bottom fishing. Specific tasks included:

- Identification of vulnerable benthic taxa in the SPRFMO Area and review of move-on rules for different gear types (Hansen et al. 2013).

- Mapping of bottom fished areas and consideration of fishing reference periods in the SPRFMO area (Penney 2013).

In 2016 the Australian Government funded a project conducted by the South East Trawl Fishing Industry Association to examine ways to further decrease seabird interactions with trawl fishing gear. This project resulted in AFMA approving the deployment of 'bird bafflers' as a seabird mitigation measure. The bird bafflers are designed to prevent seabirds from interacting with the warp wires whilst trawl gear is being towed, and resulted in significantly fewer seabird interactions than alternative seabird mitigation measures.

In 2017 the Australian Government has been working closely with the SPFRMO Deepwater Working Group (DWG) to develop a revised bottom fishing CMM for the SPRFMO area (see relevant SC5 papers). This included Australia hosting a DWG workshop in Hobart, Tasmania, in May 2017, at which progress was made towards an assessment framework for SPRFMO deepwater fisheries (see relevant SC5 papers). Australia has also made progress on an ecological risk assessment for deepwater chondrichthyans that could interact with bottom fishing gears in the SPRFMO area (see relevant SC5 paper) and towards the assessment of orange roughy in the SPRFMO jurisdiction (see relevant SC5 papers).

5 Biological sampling and length/age composition of catches

Length–frequency data are collected by Australian observers in the SPRFMO Area and submitted annually to the SPRFMO Secretariat. Where the number of samples are adequate, length frequencies of orange roughy caught by trawl (Figure 1 (2014) and Figure 2 (2016)), and jackass morwong caught by demersal longline (Figure 3 (2014)) are presented. Orange roughy length is presented as standard length and jackass morwong length is reported as length to caudal fork (LCF).

Figure 1 Length frequency of orange roughy measured by observers on Australian trawl vessels in the SPRFMO Area, 2014

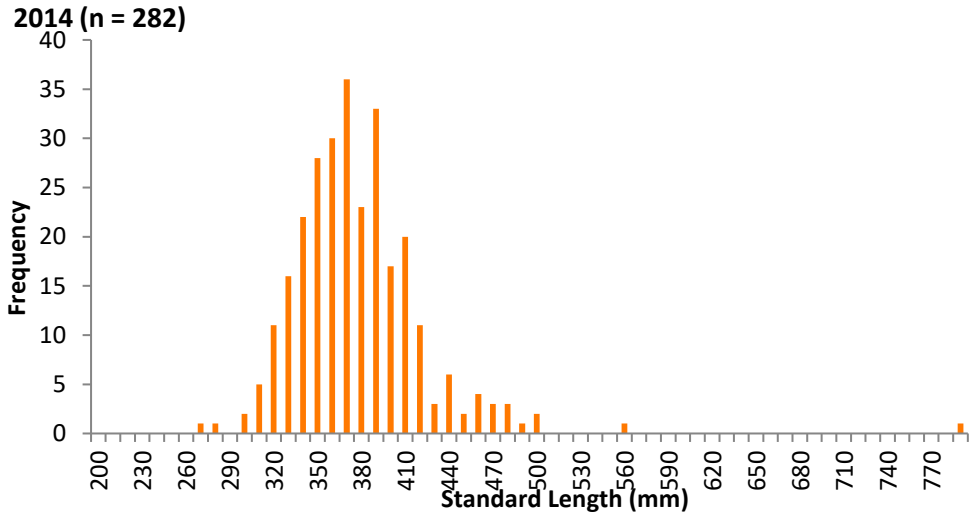


Figure 2 Length frequency of orange roughy measured by observers on Australian trawl vessels in the SPRFMO Area, 2016

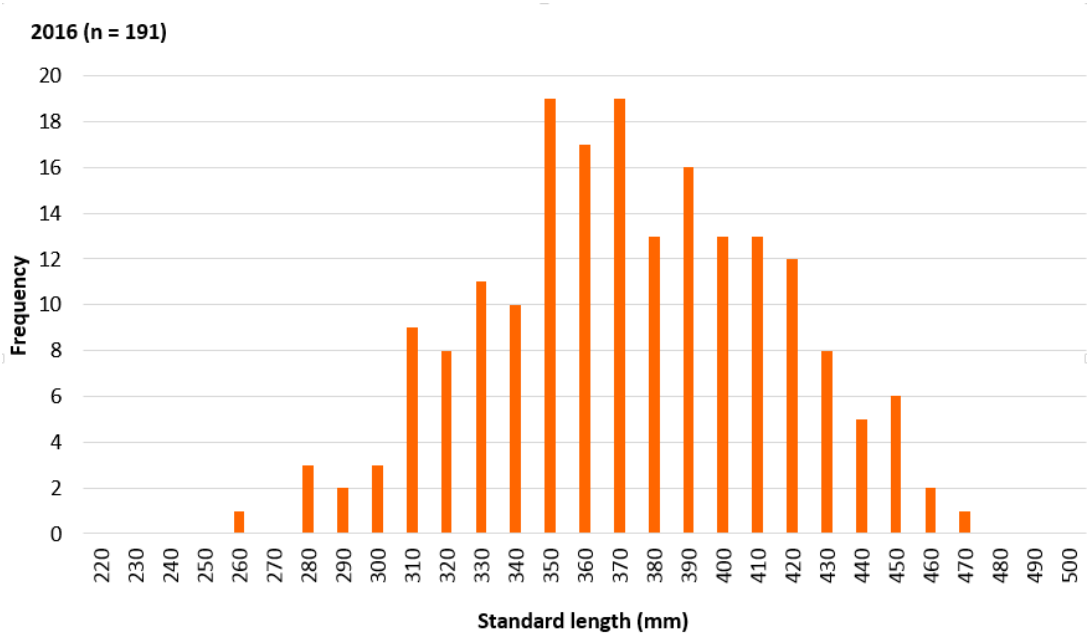
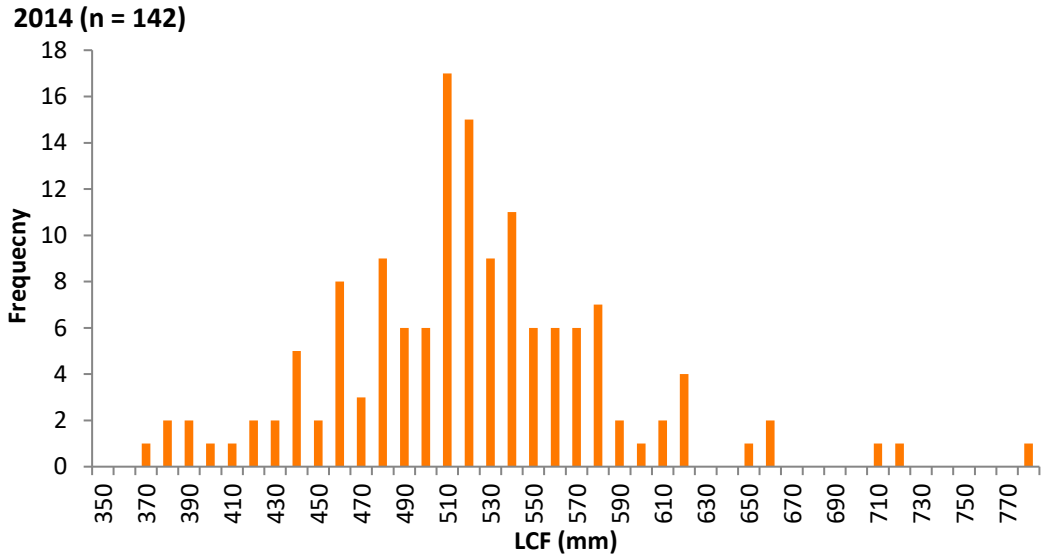


Figure 3 Length frequency of jackass morwong measured by observers on Australian longline vessels in the SPRFMO Area



6 Summary of observer and port sampling programs

Observer program

In 2016, observer coverage levels met or exceeded the minimum requirement (10 per cent coverage for non-trawl, and 100 per cent coverage for trawl trips). Observers did not record any bycatch of marine mammals, seabirds or marine reptiles in trawl or non-trawl operations in the SPRFMO Area[4].

AFMA recruits and trains the observers. 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 2016.

~~Observers did not record any bycatch of marine mammals, seabirds or marine reptiles in trawl or non-trawl operations in the SPRFMO Area in 2016.~~

Table 4 Summary of demersal fishing effort, observer coverage and sampling in the SPRFMO Area in 2016

Gear	Logbook		Observer	
	Tow hrs/ No. of hooks	Reported catch (t)	Tow hrs/ No. of hooks	No. of fish measured
Trawl	12	84	12	191
Non-trawl	710,197	156	610,383	51

Seabird interactions and mitigation measures

Australian longline vessels operating in high seas areas, including the SPRFMO area, are required to deploy tori (streamer) lines to deter seabirds. All trawl vessels must deploy bird bafflers on both warps while fishing gear is in the water.

Longline vessels must not discharge any biological material during shooting and hauling, where possible, 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 2016, Australia was compliant with CMM 09-2017 regarding the minimisation of seabird interactions. Australian vessels have recorded low seabird interaction and mortality rates in the SPRFMO area and observer coverage levels met or exceeded the minimum requirements.

[4] In 2016, a number of interactions with protected bycatch species, including sharks, seabirds and one marine reptile, were reported in logbooks in Australia's non-trawl fishery. Records of these interactions have been provided to the Secretariat and are included in paper SC5-Doc31.

Port sampling program

Australia does not have a port sampling program for vessels that fish in the SPRFMO Convention 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.

Appendix A Common and scientific names

Common Name	**Scientific Name**
Alfonsino	*Beryx splendens*
Blue-eye trevalla	*Hyperoglyphe antarctica*
Cardinal fish	Family Apogonidae
Flame snapper	*Etelis coruscans*
Jackass morwong	*Nemadactylus macropterus*
Jack mackerel	*Trachurus* spp.
Jumbo flying squid	*Dosidicus gigas*
Ocean blue-eye trevalla	*Schedophilus labyrinthicus*
Orange roughy	*Hoplostethus atlanticus*
Redthroat emperor	*Lethrinus miniatus*
Robinson's seabream	*Gymnocranius grandoculis*
Smooth oreodory	*Pseudocyttus maculatus*
Spiky oreodory	*Neocyttus rhomboidalis*
Yellowtail kingfish	*Seriola lalandi*

References

AFMA (Australian Fisheries Management Authority) 2011, 'High seas: conservation and management measures to prevent significant adverse impacts on vulnerable marine ecosystems', SPRFMO document SWG-10-DW-01b, Tenth Scientific Working Group, Port Vila, 19–23 September 2011.

— —2015, 'Australia's electronic monitoring program'. SPRFMO Paper SC-03-30, Third Meeting of the Scientific Committee, Port Vila, Vanuatu, 28 September – 3 October 2015.

Clark, MR, Dunn, MR & Anderson, OF 2010, 'Development of estimates of biomass and sustainable catches for orange roughy fisheries in the New Zealand region outside the EEZ: CPUE analyses, and application of the "seamount meta-analysis" approach', *New Zealand Fisheries Assessment Report 2010/19*.

CSIRO Marine and Atmospheric Research 2011, 'Bottom Fishery Impact Assessment', SPRFMO Paper SWG-10-DW-01a, Tenth Scientific Working Group, Port Vila, 19–23 September 2011.

Davies, AJ & Guinotte, JM 2011, 'Global Habitat Suitability for Framework-Forming Cold-Water Corals', PLoS ONE 6(4): e18483. doi:10.1371/journal.pone.0018483.

Hansen, S, Ward, P & Penney, A 2013, 'Identification of vulnerable benthic taxa in the western SPRFMO Convention Area and review of move-on rules for different gear types', SPRFMO Document SC-01-09, First Meeting of the Scientific Committee, La Jolla, 21–27 October 2013.

Penney, A 2013, 'Spatial analysis of Australian and New Zealand historical bottom trawl fishing effort in the Convention Area of the SPRFMO', SPRFMO Document SC-01-20, First Meeting of the Scientific Committee, La Jolla, 21–27 October 2013.

Woodhams, J, Stobutzki, I, Noriega, R & Roach, J 2012, 'Sustainability of harvest levels by Australian flagged vessels in the high seas areas of the South Pacific Ocean and South Indian Ocean', ABARES report to client prepared for the Australian Fisheries Management Authority, Canberra, November 2012.