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Australia's National Report on fishing activities to the Southern Indian Ocean Fisheries Agreement's Scientific Committee

Relates to agenda item: 4 Working paper ☒ info paper ☐

Delegation of Australia

Abstract

This paper updates the SIOFA Scientific Committee on Australia's fishing activities in the SIOFA Area for at least the past five years, in accordance with the requirements of CMM 2016/02.

Australian operators in the SIOFA Area are currently authorised by the Australian Government to target various species with mid-water and demersal trawl, dropline, minor line, automatic longline and demersal longline. In 2015 one Australian multipurpose trawler-longliner conducted a single trip. Australian fishing activities were restricted to Australia's demersal fishing footprint. Catch and effort data for 2016 are not yet available but will be provided to the Secretariat in accordance with CMM 2016/02. No interactions with vulnerable marine ecosystems or bycatch species were reported.

Recommendation

That the Scientific Committee:

- Consider the national report provided by Australia
- Notes that Australia has complied with the reporting requirements of the SIOFA Scientific Committee.

Australian Government
Department of Agriculture and Water Resources
ABARES

Australia's national report on fishing activities to the Southern Indian Ocean Fisheries Agreement's Scientific Committee

S Nicol, L Georgeson and P Hobsbawn

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

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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

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Contents

1 Introduction

This report summarises fishing activity by Australian-flagged vessels in the Southern Indian Ocean Fisheries Agreement (SIOFA) Area for at least the past five years[1]. Australian operators in the SIOFA Area are authorised by the Australian Government to target various species with midwater and demersal trawl, dropline, minor line, automatic longline and demersal longline. Tuna and tuna-like fisheries, over which the Indian Ocean Tuna Commission has competence, are not reported here. In accordance with CMM 2016/02 (Conservation and Management Measure for the Collection, Reporting, Verification and Exchange of Data related to fishing activities in the Agreement Area), Australia's historical fishing data were provided to the SIOFA Secretariat.

Australian-flagged vessels undertaking high seas fishing in the SIOFA Area do so under High Seas Permits issued by the Australian Fisheries Management Authority (AFMA). The permits are granted for a period of up to 12 months. Consistent with SIOFA CMM 2016/02, Australian high-seas fisheries permits require the implementation of vessel monitoring systems, mandatory observer coverage on all trawl vessels and a target of 20 per cent observer coverage on all non-trawl vessels.

Australian policy associated with the dissemination of fisheries catch and effort data administered by the Australian Government allows for the public disclosure of:

a) Total fishing season catch and effort statistics for each species 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

c) Any other catch and effort information, including spatial information, where the information represents data from five or more vessels.

Australian data that do not meet these criteria are not included in this report. However, these data will be prepared for submission to the SIOFA Secretariat in accordance with SIOFA CMM 2016/02. 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.

This report excludes data from within Australia's Exclusive Economic Zone (EEZ). Scientific and common names for species referred to in this report are provided in Appendix A.

[1] This is Australia's first national report submitted since CMM 2016/02 came into force. As per CMM 2016/02, the first national report shall include details of activities of the previous five calendar years.

2 Description of fisheries

A small number of Australian fishing vessels target demersal fish species in association with seamounts, ridges and other features in the southern Indian Ocean. Deep-sea trawlers from Australia were reportedly fishing in the SIOFA Area before 1999. In 1999, there was a substantial increase in deep-sea trawling in the area after orange roughy stocks were discovered (Japp & James 2005). Australian vessels have reported catch from within the SIOFA Area since 1999.

Fishing methods have been specified by AFMA since 2008. Gillnetting was permitted up to 2008, but there are no records of gillnetting in the area after 1999 (Williams et al. 2011), and AFMA has since prohibited the use of deepwater gillnets by Australian-flagged vessels.

Most fishing by Australian vessels in the SIOFA Area is undertaken with midwater and demersal trawl gears. Midwater trawl gears usually have a sacrificial footrope in case the net touches the sea floor, suggesting that midwater trawl gears can touch down occasionally (Williams et al. 2011). Line fishing has historically been a minor component but has increased in recent years. Detailed descriptions of gears used can be found in Williams et al. (2011).

Fleet composition

Five Australian-flagged vessels hold permits to fish in the SIOFA Area.

Table 1 The number of Australian vessels that actively fished in the SIOFA Area, 2011–2016

Year	Vessels that actively fished	
	Non-trawl	Trawl (including mid-water and demersal)
2011	0	1
2012	0	1
2013	0	1
2014	0	1
2015	1	1
2016	1	1

Note: Some vessels may be multipurpose (trawl and non-trawl)

In accordance with CMM 2016/02, Australia's historical data on vessels fishing in the SIOFA Area has been submitted to the SIOFA Secretariat.

3 Catch, fishing effort, CPUE and ecological impacts

Fishing effort

Since 2012, Australian vessels in the SIOFA Area have been restricted to fishing within the 1999–2009 Australian fishing footprint (Figure 1). Australian fishing activities during the last five years were restricted to Australia's demersal fishing footprint and did not exceed historical levels of effort.

Effort in recent years has been low. One Australian flagged vessel actively fished in the SIOFA Area in 2015 and 2016 (Table 1). Catch and effort data for 2016 are not yet available.

During 2015, a single trip was reported for mid-water and demersal trawl. A total of 14 trawl hours were reported, a reduction from 106 hours reported in 2014.

There was no non-trawl effort by Australian-flagged vessels in the SIOFA Area between 2009 and 2014. Non-trawl effort in 2015 was negligible, with only two shots (1800 hooks) reported from a single trip.

Trawl and non-trawl vessel numbers have declined since 2005, while trawl effort has been sporadic but has declined overall. The trend in trawl effort and the number of active vessels between 2005–2015 is presented in Figure 2.

Figure 1 Australia's fishing footprint defined by the period 1999–2009 in the SIOFA Area

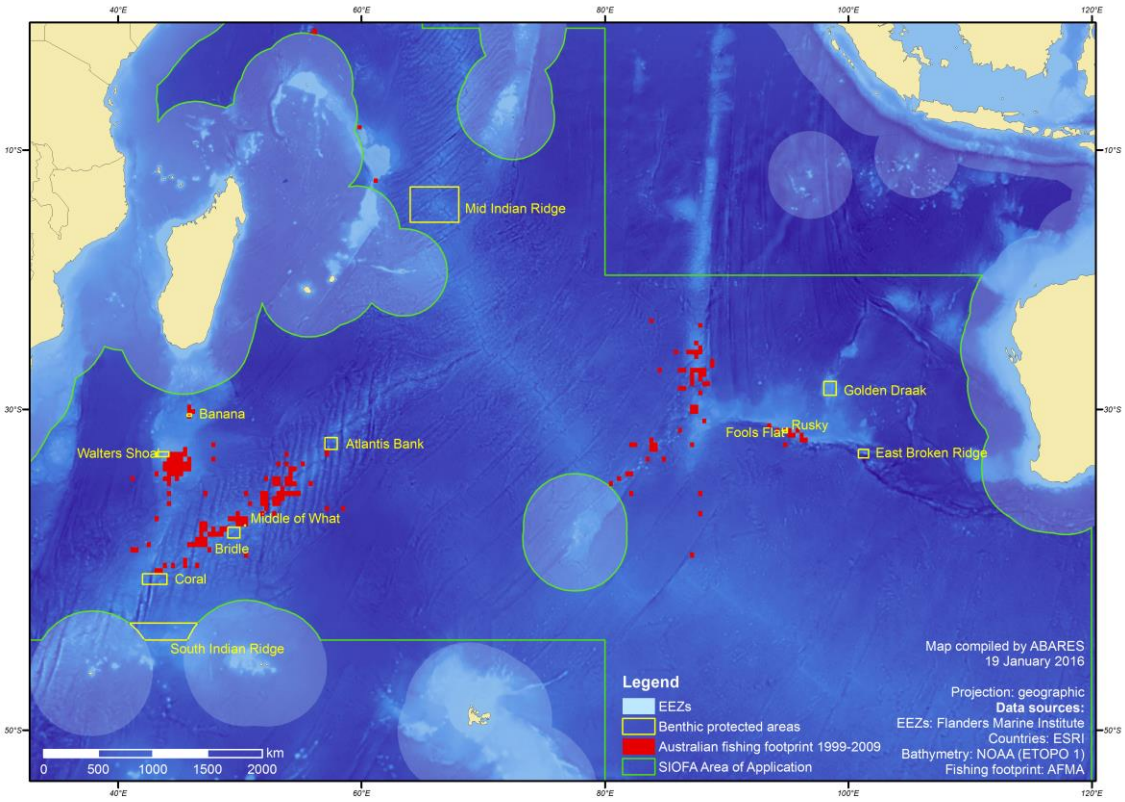
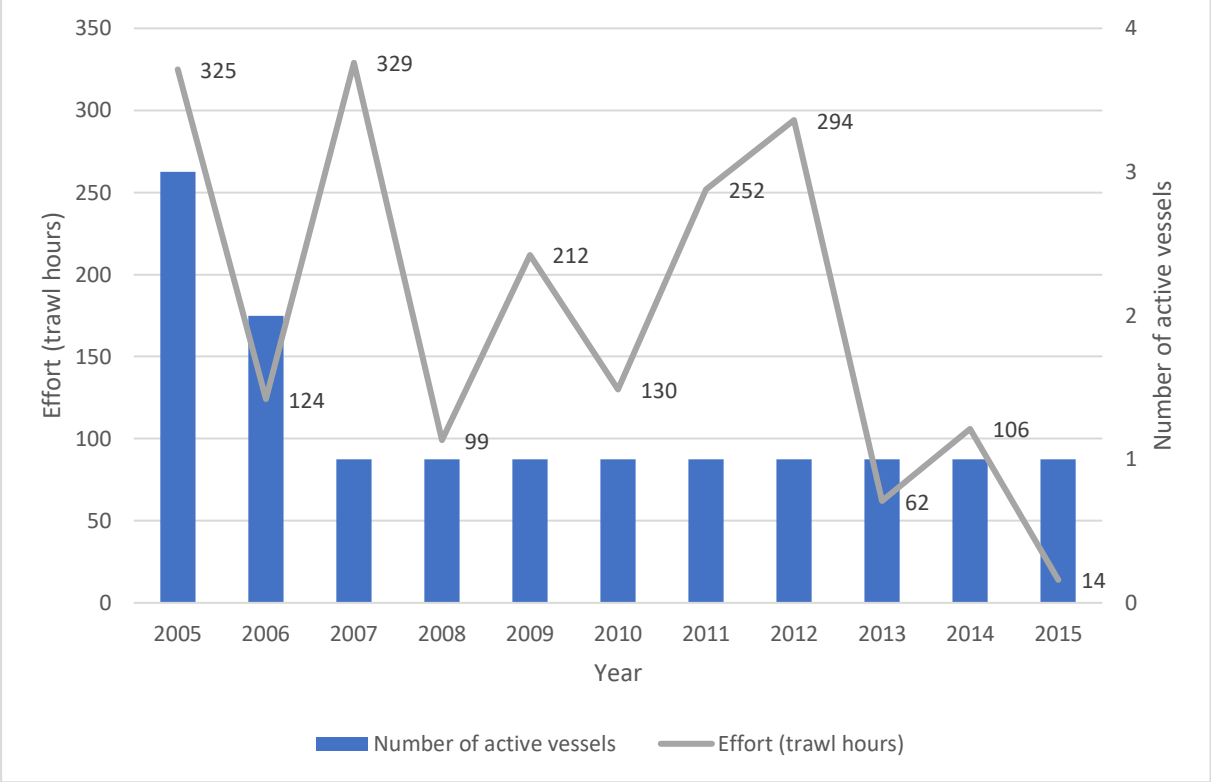


Figure 2 Effort (trawl hours) and number of active vessels in the SIOFA Area, 2005 to 2015



Catch

In line with confidentiality restrictions that prevent the disclosure of fishing activity by fewer than five vessels, annual catch volume data cannot be presented for Australian operations in the SIOFA Area. Data on catch composition is provided, where available.

Australian catch in recent years has been landed in in Port Louis, Mauritius. The top species caught by weight in 2015 were *Beryx splendens* (alfonsino) and blue-eye trevalla (*Hyperoglyphe antartctica*). These two species comprised 96 per cent of the total catch reported in logbooks in 2015. Summary data for catch composition and effort for trawl fishing methods are shown in Table 2. Catch composition for trawl fishing methods is presented in Figure 3.

Summary data for catch composition and effort for non-trawl fishing methods are shown in Table 3.

Table 1 Number of active vessels, fishing effort (hours) and catch composition of major species reported in logbooks by Australian trawlers in the SIOFA Area, 2005–2016

Year	No. of vessels	Effort (hours)	Catch of major species (proportion of total catch)						Total catch a
			Alfonsino	Blue-eye trevalla	Ocean blue-eye trevalla	Orange roughy	Rubyfish (mixed)	Other species	
2005	3	325	0.25	0.01	0.35	0.11	0.03	0.25	Confidential
2006	2	124	0.67	0.06	0.00	0.09	0.01	0.17	Confidential
2007	1	329	0.37	0.08	0.39	0.00	0.06	0.11	Confidential
2008	1	99	0.79	0.00	0.20	0.00	0.00	0.01	Confidential
2009	1	212	0.07	0.03	0.07	0.71	0.00	0.13	Confidential
2010	1	130	0.04	0.00	0.05	0.67	0.01	0.24	Confidential
2011	1	294	0.55	0.05	0.03	0.29	0.00	0.07	Confidential
2012	1	252	0.58	0.00	0.23	0.06	0.06	0.06	Confidential
2013	1	62	0.54	0.00	0.40	0.00	0.00	0.06	Confidential
2014	1	106	0.16	0.00	0.28	0.08	0.36	0.12	Confidential
2015	1	14	0.81	0.15	0.00	0.00	0.00	0.04	Confidential
2016 **b**	1	NA	NA	NA	NA	NA	NA	NA	NA

a In line with confidentiality restrictions that prevent the disclosure of fishing activity by fewer than five vessels, catch data cannot be presented for Australian operations in the SIOFA Area.

b Catch composition and effort data are not yet available.

Notes: Catch composition is estimated using logbook weights, which are based on visual estimates by skippers of retained and discarded catch weights. They do not always exactly match subsequent landings. **NA** Not available.

Figure 3 Catch composition by species (percentage of total catch) for trawl gears in the SIOFA Area, 2005–2015

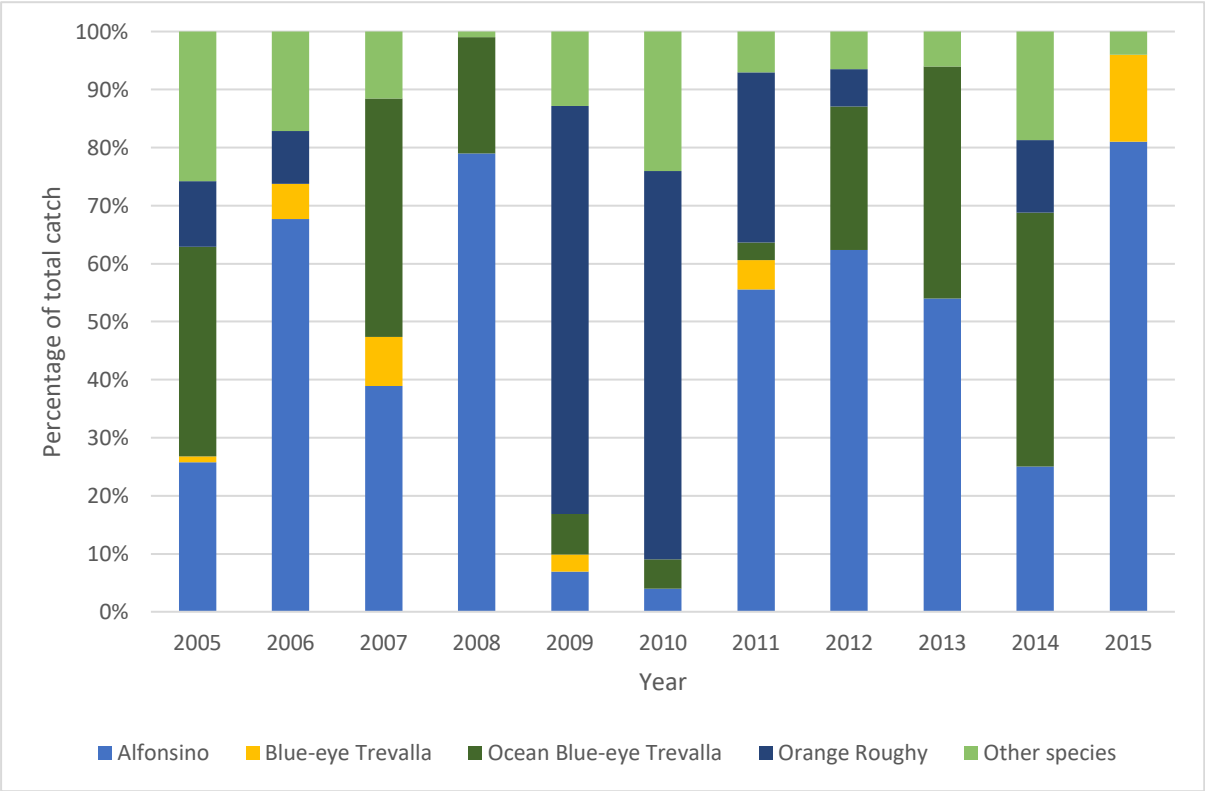


Table 2 Number of active vessels, fishing effort ('000 hooks) and catch composition of major species reported in logbooks by Australian vessels using non-trawl (hook) gears in the SIOFA Area, 2005–2016

Year	No. of vessels	Effort ('000 hooks)	Catch of major species (proportion of total catch)			Total catch **a**
			Hapuku	Reef ocean perch	Other species	
2005	0	0	-	-	-	0
2006	0	0	-	-	-	0
2007	0	0	-	-	-	0
2008	1	22	0.43	0.29	0.29	Confidential
2009	0	0	-	-	-	0
2010	0	0	-	-	-	0
2011	0	0	-	-	-	0
2012	0	0	-	-	-	0
2013	0	0	-	-	-	0
2014	0	0	-	-	-	0
2015	1	2	0	0.02	0.98 **c**	Confidential
2016 **b**	1	NA	NA	NA	NA	NA

a In line with confidentiality restrictions that prevent the disclosure of fishing activity by fewer than five vessels, catch data cannot be presented for Australian operations in the SIOFA Area.

b Catch and effort data are not yet available.

c In 2015, over 99 per cent of the 'other species' were reported to be *Squalus megalops*. The remainder were reported to be Pentacerotidae. All 'other species' in 2015 were reported to have been discarded.

Note: Catch composition is estimated using logbook weights, which are based on visual estimates by skippers of retained and discarded catch weights. They do not always exactly match subsequent landings. **NA** Not available. **–** Not applicable.

CPUE

Catch rate data are not presented because of low and spatio-temporally variable effort in the fishery meaning that CPUE indices are unlikely to be representative of abundance.

VME thresholds and ecological impacts

Any evidence of a VME such as coral or sponges in a fishing shot must be recorded in logbooks. Any Australian-flagged vessels fishing in the SIOFA Area must cease fishing:

a) within an area two nautical miles either side of the trawl track extended by two nautical miles at each end of the trawl track if the combined catch of coral or sponge in any one trawl shot exceeds 50kgs; or

b) within a radius of one nautical mile from the midpoint of the line segment if the combined catch of coral or sponge in any one shot for line method exceeds 10kgs for any 1 000 hook section of line or a 1 200 metre section of line, whichever is the shorter.

The vessel must not fish in that area using the same method as used for that shot that triggered the limit until AFMA notifies otherwise. The encounter must be reported to AFMA within 24 hours of the shot. The notification must include details of the shot including the location, as outlined in Annex 1 of the SIOFA CMM 2016/01 (Conservation and Management Measure for the Interim Management of Bottom Fishing in the SIOFA Agreement Area).

These thresholds were not triggered by any Australian-flagged vessels in 2015 or 2016.

No interactions with threatened, endangered and protected species were reported in 2015 or 2016.

Seabird interactions and mitigation measures

Australian longline vessels operating in high seas areas, including the SIOFA Area, are required to deploy tori (streamer) lines to deter seabirds. Requirements include that the tori line:

- must be a minimum of 150 metres in length;
- must be deployed from a position on board the boat and utilise a drogue so that it remains above the water surface for a minimum of 100 metres from the stern of the boat;
- must have streamers attached to it with a maximum interval between the streamers of 3.5 metres; and
- in addition to part i. above, all streamers must be maintained to ensure their lengths are as close to the water surface as possible.

Source: High Seas Management Arrangements Booklet 2017, AFMA.

The discharge of offal from longline fishing vessels is regulated by Division 3 of the *Fisheries Management Regulations 1992*, prohibiting the discharge of offal in setting and hauling of pelagic and demersal longlines.

4 Fisheries data collection, data verification and research activities

AFMA collects detailed information on fishing trips in accordance with CMM 2016/02.

Some Australian fishing vessels employ electronic monitoring (e-monitoring) systems. One vessel that holds a permit to fish in the SIOFA Area has such a system installed (although this vessel was not active in the SIOFA Area in 2015 or 2016). These e-monitoring systems have been installed to monitor fishing activity and support verification of logbook reports and include multiple cameras and sensors (GPS, hydraulic and drum rotation sensors) that are set up to record all catches and fishing activities. A random sample of video data is analysed when the boat returns to port and is used to verify logbook catch reports, including discards and protected species interactions. Using e-monitoring, fishing activity can be independently monitored and ensures that AFMA has an accurate and reliable record of all catch, discards and interactions with protected species. E-monitoring can include trips where observers were also present on the vessel.

Logbooks and landings

Since 2002, permit conditions have included the requirement 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. The logbooks have been revised on several occasions. The current longline logbook (LN01A—Line Fishing Daily Fishing Log) and trawl logbooks (EFT01B—Eastern Finfish Trawl Daily Fishing Log; SWT01A—Southern and Western Finfish Trawl Daily Fishing Log) were introduced in 2007. Fishers are also required to record bycatch and discards in the logbooks.

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 verified weight by species. Skippers tend to under-estimate the weights reported in logbooks for most species, so the catch disposal record data have been reported in domestic official statistics since 2007. Compliance checks are conducted on landings as part of a risk-based compliance program. Weight estimates are also derived from the size-monitoring program, and are likely to be more accurate than logbook data for that part of the time series.

Logbook and catch disposal record data will be provided in accordance with SIOFA CMM 2016/02.

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. 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 closed areas.

Research

AFMA commissioned a bottom fishing impact assessment of Australian fishing activity in the SIOFA Area, which was published in 2011 (Williams et al. 2011). This report is available at

www.afma.gov.au/fisheries/high-seas-permits/ and has been submitted to the SIOFA Secretariat to also be made publicly available through the SIOFA website.

In 2011, AFMA commissioned ABARES to assess the sustainability of the harvest of key commercial species in the SIOFA Area by Australian vessels (Woodhams et al. 2012). There was limited stock assessment information for the species targeted within the SIOFA Area. A weight of evidence process was used to determine status of stocks by considering the spatial and temporal extent of Australian fishing activity in the context of potential habitat area and what is known about similar fisheries for the same, or similar, species in other oceans. The study assessed alfonsino, blue-eye trevalla, ocean blue-eye, orange roughy, smooth oreodory and spikey oreodory. The results indicated that:

1) Most species or stocks accessed by Australian operations are only accessed in a small proportion of the total assumed available habitat area. No species in the Australian fishery were assessed as subject to overfishing. The determination for alfonsino and orange roughy were uncertain. The determination for all species for the whole SIOFA Area was uncertain. On the assumption that deepwater stocks in the whole SIOFA Area are not overfished or experiencing overfishing, the catches by the Australian fleet are likely to be sustainable when compared with the sustainable catches of similar demersal species in other oceans.

2) Determination of fishing mortality attributable to the Australian fleet for stocks of deepwater species shared between Australia and other fishing nations requires the catch and effort data of all participants fishing these stocks. For assessment of stocks only fished by the Australian fleet, Australian-only catch and effort data could be used. In both cases the maximum spatial aggregation of the catch and effort data is 0.1 degree square for the assessment(s) to be feasible. It would be preferable to use operational (i.e. shot-by-shot) data.

3) 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.

4) Alternative assessment approaches will therefore need to be considered for these deepwater fisheries. Options include:

    - Application of meta-analysis or similar approaches such as those identified by Clark et al. (2010), to estimate carrying capacity for seabed features or fishing areas. These could be used to provide estimates of sustainable yields by feature or fishing area.

    - The development of spatial habitat prediction models for demersal fish species, analogous to the global habitat prediction models developed by Davies & Guinotte (2011) for coldwater corals. These could be used to develop spatial protection approaches for proportions of fish species populations, using suitable habitat as a proxy for biomass.

5 Biological sampling and length/age composition of catches

Length–frequency data are collected by Australian observers in the SIOFA Area. Length frequencies of alfonsino caught by trawl are presented in Figure 4, and length frequencies of orange roughy caught by trawl are presented in Figure 5. Alfonsino length is presented as length to caudal fork (LCF), whereas orange roughy length is presented as standard length.

Figure 4 Length frequency of alfonsino measured by observers on Australian trawl vessels in the SIOFA Area

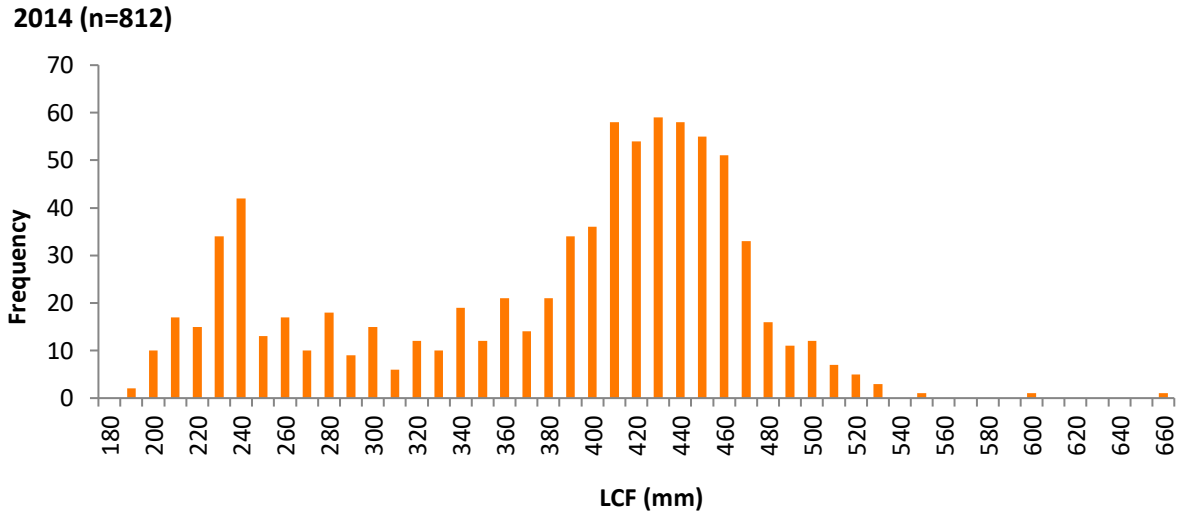
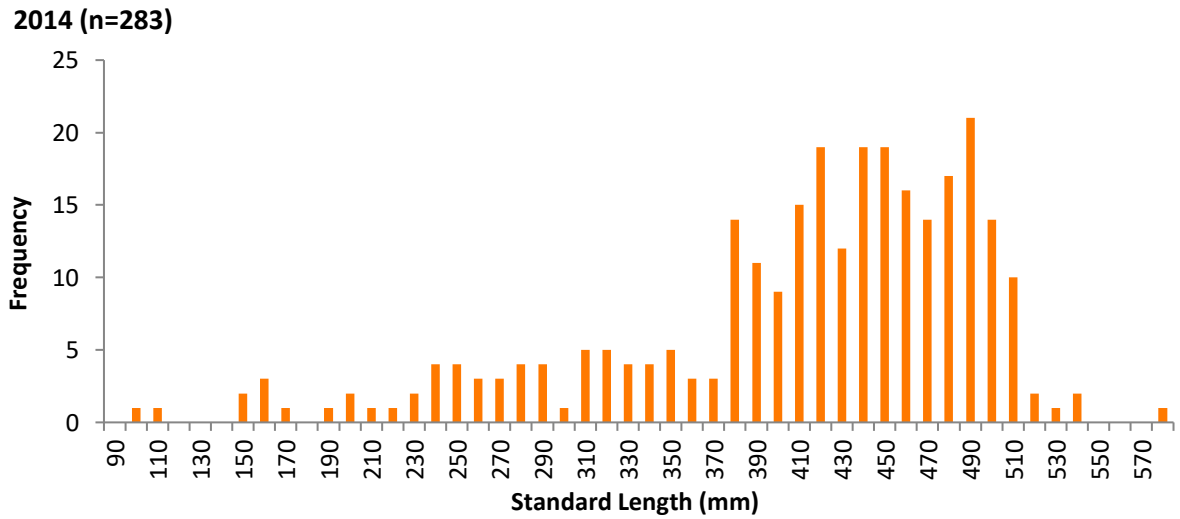


Figure 5 Length frequency of orange roughy measured by observers on Australian trawl vessels in the SIOFA Area



6 Summary of observer and port sampling programs

Observer program

Since 2010, Australian permit conditions for bottom fishing in the SIOFA Area have required 100 per cent observer coverage on all vessels permitted to use trawl gear. This was achieved for 2015 and 2016.

Twenty per cent observer coverage is required for vessels using non-trawl fishing methods. Observer data for 2015 and 2016 is not yet available.

AFMA recruits and trains the observers. About sixteen observers are currently employed in the AFMA observer 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 sea safety certificate and medical certificate, and have completed an AFMA observer training course. Some observers hold a marine radio operators certificate of proficiency (or similar qualifications).

Observers collect a range of data on vessel characteristics, fishing activity, catch composition, discarding and bycatch.

Observers did not record any bycatch of marine mammals, seabirds or marine reptiles in trawl or non-trawl operations in the SIOFA Area in 2015 and 2016.

Port sampling program

Australia does not have a port sampling program for vessels that fish in the SIOFA Area. The landings are monitored through catch disposal records where the catch is verified by an AFMA-approved fish receiver. These data will be submitted in accordance with CMM 2016/02.

Appendix A Common and scientific names

Common Name	**Scientific Name**
Alfonsino	*Beryx splendens*
Blue-eye trevalla	*Hyperoglyphe antarctica*
Cardinal fish	Family Apogonidae
Hapuku	*Polyprion oxygeneios*
Orange roughy	*Hoplostethus atlanticus*
Ocean blue-eye trevalla	*Schedophilus labyrinthicus*
Reef ocean perch	*Helicolenus percoides*
Rubyfish	*Plagiogeneion* spp.
Smooth oreodory	*Pseudocyttus maculatus*
Spikey oreodory	*Neocyttus rhomboidalis*

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