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3rd Meeting of the Southern Indian Ocean Fisheries Agreement (SIOFA) Scientific
Committee
20-24 March 2017, Saint Denis, La Reunion

Annual National Report of Japan

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Delegation of Japan

Abstract

This document describes following seven items requested by the National Report Template, i.e., "1. Fisheries", "2. Catch, effort and CPUE", "3. Fisheries data collection and research activities", "4. VME Thresholds", "5. Biological sampling and length/age composition of catches", "6. Data verification mechanisms" and "7. Observer program". In the SIOFA convention area (CA), Japan has been operating two different types of fisheries discontinuously for 41 years (1977-2017), i.e., trawl fisheries targeting splendid alfonsino and bottom longline fisheries targeting Patagonian toothfish. Based on accumulated information, the seven items are described each for trawl and bottom longline fisheries.

Recommendations

The meeting is invited to consider the Cook Islands Annual National Report

NATIONAL REPORT: JAPAN

AGENDA ITEM: 3 (WORKING PAPER)

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ABSTRACT

This document describes following seven items requested by the National Report Template, i.e., “1. Fisheries”, “2. Catch, effort and CPUE”, “3. Fisheries data collection and research activities”, “4. VME Thresholds”, “5. Biological sampling and length/age composition of catches”, “6. Data verification mechanisms” and “7. Observer program”. In the SIOFA convention area (CA), Japan has been operating two different types of fisheries discontinuously for 41 years (1977-2017), i.e., trawl fisheries targeting splendid alfonsino and bottom longline fisheries targeting Patagonian toothfish. Based on accumulated information, the seven items are described each for trawl and bottom longline fisheries.

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Submitted to the 3rd Meeting of the SIOFA Scientific Committee (20-24 March 2018, Saint Denis, La Reunion)

1. DESCRIPTION OF FISHERIES

In the SIOFA convention area (CA), Japan has been operating two different types of fisheries discontinuously for 41 years (1977-2017) (Figure 1). i.e., trawl fisheries and bottom longline fisheries. Figure 1 shows that the number of vessels (trawl and bottom longline fisheries) operated in the SIOFA CA during 1997-2017 ranging 0 to 3 boats. Table 1 shows the summary of the annual catch for trawl and bottom longline fisheries.

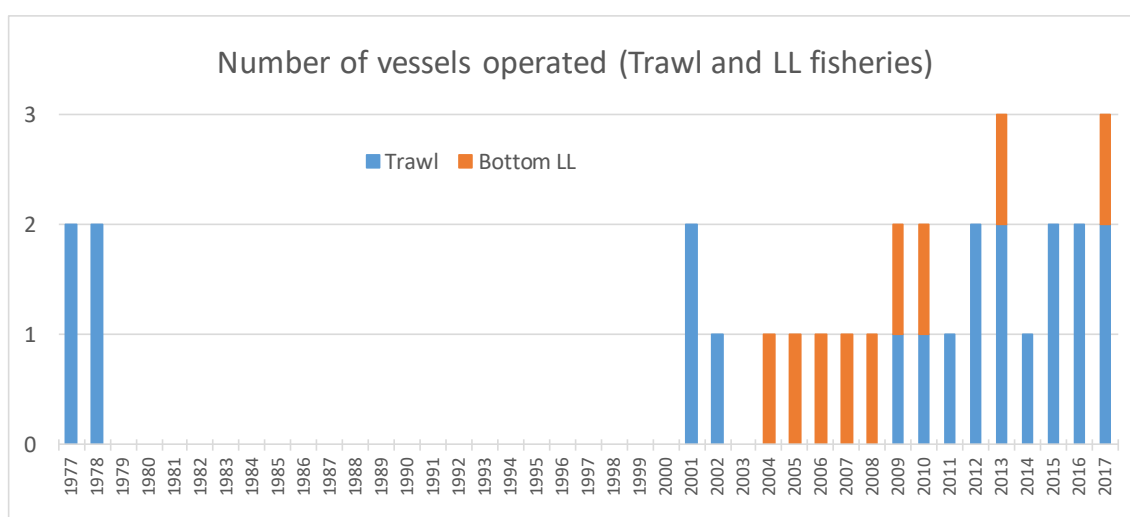


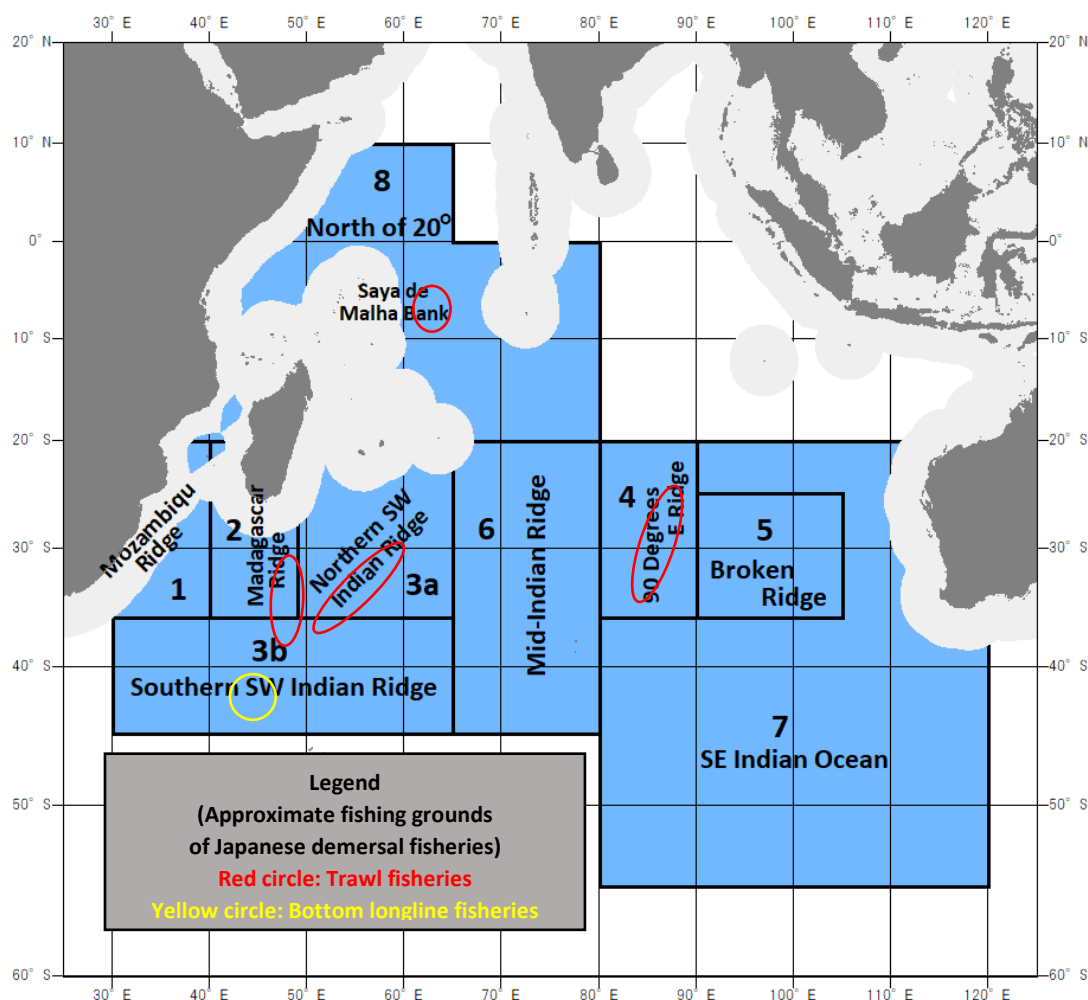
Figure 1. Number of Japanese vessels (trawl and bottom longline fisheries) operated in the SIOFA area (1977-2017).

(1) Trawl fisheries

There are 12 years of trawl fisheries operations in three separate periods, i.e. 1977-1978, 2001-2002 and 2009-2017. The total catch (without 2017) of trawl fisheries ranges 352-4,416 tons (1,340 tons in average) with 1-2 vessels (Table 1). There are 4 major Japanese trawl fishing grounds in the SIOFA area, i.e., Area 2 (Madagascar Ridge), Area 3 (Southwestern Indian Ridge), Area 4(90° E Ridge) and Saya de Malha Bank in Area 8 (North of 20°) (red circle areas in Map 1).

(2) Bottom longline fisheries

As for bottom longline fisheries, there were 9 years of operations in 2004-2010, 2013 and 2017 by the same boat. The total catch (without 2017) ranges 5-87 tons (28 tons in average) (Table 1). This boat mainly operates in the CCAMLR CA and opportunistically operates in the SIOFA Area 3 (Southwestern Indian Ridge) adjacent to the northern part of the CCAMLR area (yellow circle area in Map 1).



Map 1 SIOFA Statistical areas defined in the National Report Guideline (SIOFA, 2018) and approximate locations of Japanese trawl and bottom longline fisheries (1977-2017)

Table 1 Summary of annual total catch of Japanese demersal fisheries (Trawl and Bottom longline) in the SIOFA CA (1977-2016) (- no operation) (As of February, 2018)							
Year	Japanese year		Trawl fisheries		Bottom longline fisheries		
			No. of vessels operated	Total catch (tons)	No. of vessels operated	Total catch (tons)	
1977	Showa	52	2	721	-	-	
1978		53	2	352	-	-	
1979		54	-	-	-	-	
1980		55	-	-	-	-	
1981		56	-	-	-	-	
1982		57	-	-	-	-	
1983		58	-	-	-	-	
1984		59	-	-	-	-	
1985		60	-	-	-	-	
1986		61	-	-	-	-	
1987		62	-	-	-	-	
1988		63	-	-	-	-	
1989		Heisei	1	-	-	-	-
1990			2	-	-	-	-
1991	3		-	-	-	-	
1992	4		-	-	-	-	
1993	5		-	-	-	-	
1994	6		-	-	-	-	
1995	7		-	-	-	-	
1996	8		-	-	-	-	
1997	9		-	-	-	-	
1998	10		-	-	-	-	
1999	11		-	-	-	-	
2000	12		-	-	-	-	
2001	13		2	4,416	-	-	
2002	14		1	412	-	-	
2003	15		-	-	-	-	
2004	16		-	-	1	87	
2005	17		-	-	1	39	
2006	18		-	-	1	5	
2007	19		-	-	1	5	
2008	20		-	-	1	46	
2009	21		1	1,409	1	9	
2010	22		1	1,233	1	23	
2011	23		1	717	-	-	
2012	24		2	360	-	-	
2013	25		2	1,667	1	6	
2014	26		1	508	-	-	
2015	27		2	2,947	-	-	
2016	28		2	2,902	-	-	
2017	29		2	(in process)	1	(in process)	

2. CATCH, EFFORT AND CPUE SUMMARIES

(1) Trawl fisheries

Table 2 shows annual catch (tons) by species (1977-2016). Target species during 2001-2016 is splendid alfonsino (286-2,987 tons and 1,245 tons in average) operated in Area 2 (Madagascar Ridge), Area 3 (Southwestern Indian Ridge) or Area 4(90° E Ridge) (Map 1). However, target species during 1977 and 1978 are horse mackerels and lizardfish (snakefish), where fishing operations were conducted in the shallower waters (depth less than 200m) in Saya de Malha Bank (Area 8, Map 1) or Madagascar Bank (Area 2). Other catches are mainly composed of other demersal species and other snappers.

In 2001, 600 tons of orange roughy catch was exploited in a single year, while nil catch in other years. Reasons of this background are as follow: In 2001, 2 trawl vessels started operating in the virgin fishing ground hence they could exploit 600 tons suddenly. But later they did not intend catch orange roughy due to no commercial interest under Japanese hygienic regulations not to allow for human consumption because of its unsafe chemical composition (high content of unsaponifiable fats).

Small amount of pelagic armorhead has been exploited in 2001-2016 (0-69 tons and 25 tons in average). There were sudden high violet warehou catch (401 and 510 tons) in 2015 and 2016 respectively. Figure 2 shows historical trends of fishing efforts (1977-2016) (hours trawled). In 2015-2016, the fishing efforts remarkably increased.

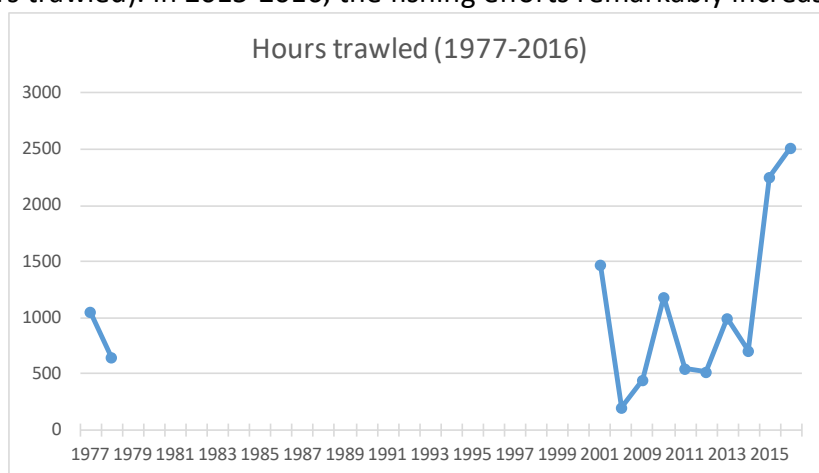


Figure 2 Trends of fishing efforts (hours trawled) of the Japanese trawl fisheries (1977-2016)
 (Note): Fishing operations in 1977-1978 were conducted in the shallower waters (depth less than 200m) in Saya de Malha Bank or Madagascar Bank.

Table 2 Annual catch of Japanese trawl fisheries by species in the SIOFA CA (1977-1978, 2001-2002 and 2009-2016) (ton) (6 major species)											
Year	Japanese year	Number of vessels operated	Japanese name	オレンジラフィー	キンメダイ	ミナミクサカリツボダイ	ミナミクロメダイ	ナンキョクメダイ	ヤセムツ類	その他	Total
			English name	Orange roughy	Splendid alfonso	Pelagic armorhead	Violet warehou	Bluenose warehou	Cardinal fish	Others (**) (***)	
			Scientific name	<i>Hoplostethus atlanticus</i>	<i>Beryx splendens</i>	<i>Pentaceros richardsoni</i>	<i>Schedophilus velaini</i>	<i>Hypelogyphes antarctica</i>	<i>Epigonidae</i>		
			FAO-ASFIS(*) Code	ORY	BYS	EDR	SEY	BWA	EPI		
1977	Showa	52	2	0	0	0	0	0	0	721	721
1978		53	2	0	0	0	0	0	0	352	352
No operations for 24 years (1979-2000)											
2001	Heisei	13	2	600	2,987	17	0	0	0	813	4,416
2002		14	1	1	286	6	0	0	0	119	412
No operations for 8 years (2003-2008)											
2009	Heisei	21	1	0	1,204	69	40	21	36	39	1,409
2010		22	1	0	977	32	27	7	3	187	1,233
2011		23	1	0	612	0	0	0	0	104	717
2012		24	2	0	296	24	2	0	3	36	360
2013		25	2	0	1,265	14	0	1	0	387	1,667
2014		26	1	0	452	9	16	21	4	5	508
2015		27	2	1	2,396	33	401	22	35	61	2,948
2016		28	2	0	1,977	48	560	22	41	255	2,902
2017		29	2	(in process)							
(*) ASFIS: Aquatic Sciences and Fisheries Information System											
(**) including other demersal fish (wreck fish, spiky orero, red bait, alfonso and john dory), meso pelagic fish (horse mackerel and lizardfish in 1977-78) and other species with negligible amount of catch.											
(***) Fishing grounds in 1977-78 are Saya de Malha Bank (shallower waters in north) and more than 80% catch are meso pelagic fish (horse backread lizard fish), while for all other years, fishing grounds are deeper waters in south and majority of catch are demersal fish.											

Figures 3-4 show historical trends of nominal catch for splendid alfonsino and pelagic armorhead respectively. The average catch of splendid alfonsino ranges 286-2,987 tons (average 1,245 tons). There were high splendid alfonsino catches in 2001 (2,987 tons) (2.4 times higher than the average) due to the virgin fishing grounds as explained above and 2015 (2,396 tons) (1.9 times higher) due to high fishing efforts (Figure 2). The average catch of pelagic armorhead ranges 0-69 tons (average 25 tons). There was a high pelagic armorhead catch in 2009 (69 tons).

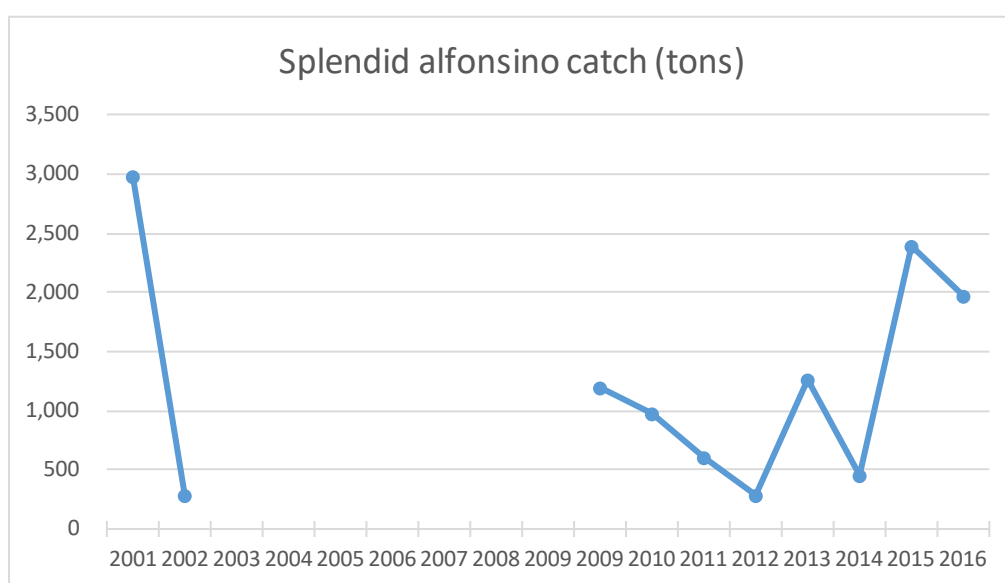


Figure 3 Annual trends of splendid Alfonsino catch (tons) by Japanese trawl fisheries

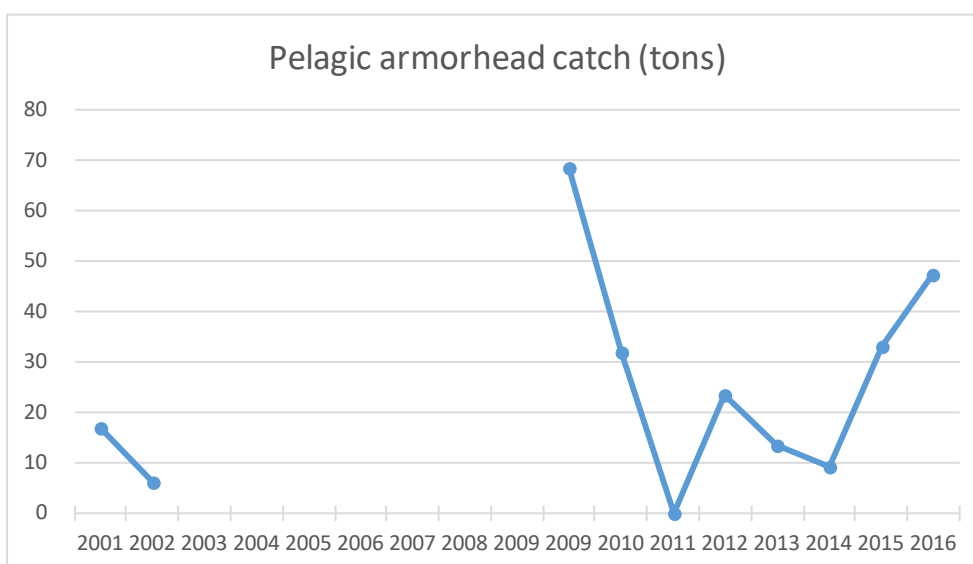


Figure 4 Annual trends of pelagic armorhead catch (tons) by Japanese trawl fisheries

(2) Bottom longline fisheries

Table 3 shows annual catch by species exploited by Japanese bottom longline fisheries in the SIOFA CA (2004-2016).

Figure 5 shows annual catch of Patagonian toothfish. Average nominal annual catch is 23 tons and catch in 2004 was quite high (72 tons) due to the intensive trial operations in the virgin fishing ground. There are bycatches including rattail (0-15 tons) and blue antimora (deep sea cod) (0-2 tons).

Table 3 Annual catch of Japanese bottom longline fisheries by species in the SIOFA area (2004-2010 and 2013) (tons) (- no operations) (as of February, 2018)								
Year	Japanese year (Heisei)	Number of vessel operated	Japanese name	メロ(マジエラ ンアイナメ)	ラットテール	チゴダラ(トガ リカナダダラ)	その他	Total
			English name	Patagonian toothfish	Rattails (Grenadiers)	Blue antimora (deep sea cod)	Others	
			Scientific name	<i>Dissostichus eleginoides</i>	<i>Macrourus spp.</i>	<i>Antimora rostrata</i>		
			FAO-ASFIS* Code	TOP	GRV	ANT		
2004	16	1		72	15	0	0	87
2005	17	1		33	6	0	0	39
2006	18	1		4	1	0	0	5
2007	19	1		4	0	0	0	5
2008	20	1		40	3	2	0	46
2009	21	1		7	1	1	0	9
2010	22	1		19	4	1	0	23
2011	23	-		-	-	-	-	-
2012	24	-		-	-	-	-	-
2013	25	1		5	1	0	0	6
2014	26	-		-	-	-	-	-
2015	27	-		-	-	-	-	-
2016	28	-		-	-	-	-	-
2017	29	1		(in process)				

(*) ASFIS: Aquatic Sciences and Fisheries Information System

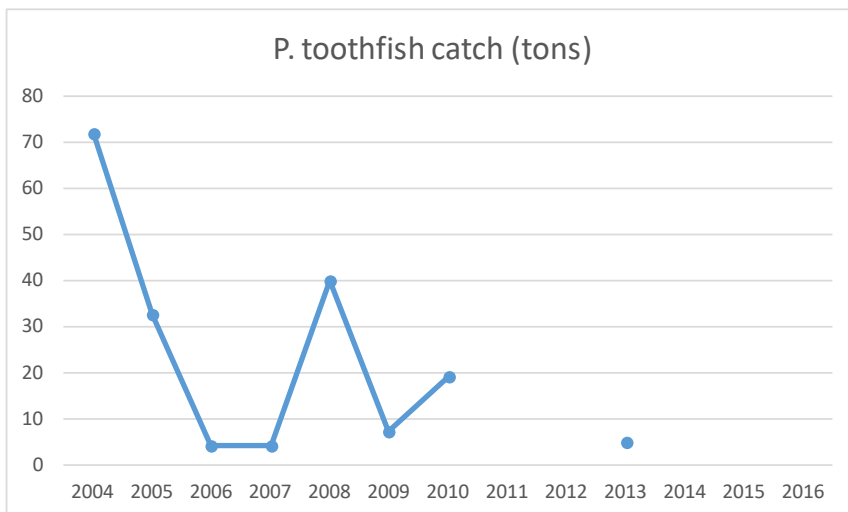


Figure 5 Annual trends of Patagonian toothfish catch (2004-2013)

Figure 6 shows annual trends of fishing effort. The annual average fishing effort is 0.26 million hooks and the number in 2004 was quite high (1.05 million hooks) due to the intensive trial operations in the virgin fishing ground.

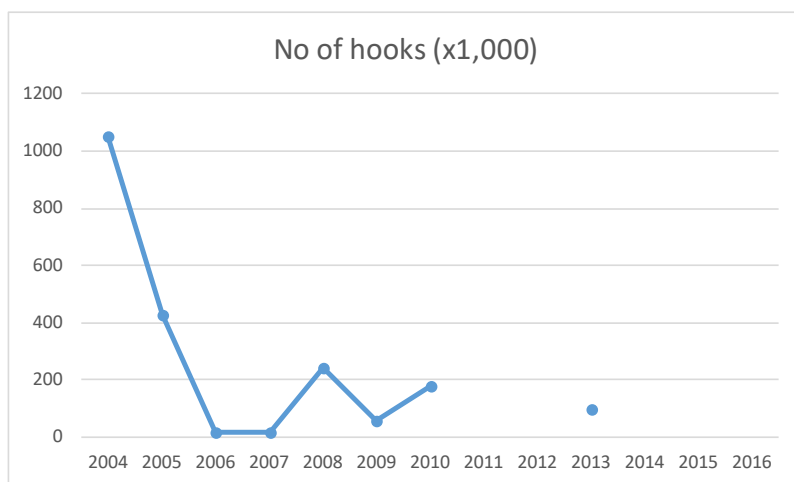


Figure 6 Annual trends of Japanese bottom longline fisheries (2004-2013)
(1,000 hooks)

3. FISHERIES DATA COLLECTION AND RESEARCH ACTIVITIES

Fishing vessels for both trawl and bottom longline fisheries have been collecting information in each operation, i.e., dates, locations, depth, catch/effort data and other relevant data. This information is recorded in logbooks and submitted to Fisheries Agency of Japan. Followings are research activities in trawl and bottom longline fisheries.

(1) Trawl fisheries

In the past, there are several exploratory fishing cruises in the SIOFA CA collecting both fisheries and scientific data such as fishing effort, catch/bycatch by species and biological information (size and other data). The observer program started in January 2017 to collect scientific information listed in Annex B, CMM 2016/02. Stock assessment of splendid alfonsino, main target species in Japanese trawl fisheries, is planned to be conducted in SAWG02 (2019).

(2) Bottom longline fisheries

One bottom longline fishing vessel has been operating since 2004 (Figure 1 and Table 1). The observer on board has used the CCAMLR observer forms and has been collecting various scientific information of Patagonian toothfish such as size, weight, otolith, sex, gonads condition/weight, tagging and other relevant information.

4. VME THRESHOLDS

Following Article 11 CMM 2016/01, Japan temporarily establishes threshold levels for encounters with VMEs and move-on protocols. For trawl fisheries, as they operate in the mid-water, no threshold levels have been established. The threshold levels will be

established when the observer recognizes that the operations touch the seafloor and bycatch benthic organisms. As for the bottom longline fisheries, Japan applies those used in CCAMLR.

5. BIOLOGICAL SAMPLING AND LENGTH/AGE COMPOSITION OF CATCHES

5.1 Overview summary of the coverage of biological and size-frequency sampling conducted.

(1) Trawl fisheries

Biological sampling and length/age composition of catches are collected by exploratory fishing operations in the past. In addition, from January 2017, the newly launched observe program started collecting biological and size data of main target species (i.e., splendid alfonsino and pelagic armorhead).

In current scientific observer program, 100 splendid alfonsino individuals are recorded the fork length (FL) on board. For armorhead, 30 individuals are measured FL and body height on board. These body size measurements are conducted for one haul a day. Splendid alfonsino and pelagic armorhead are randomly sampled from one haul.

For both species, 30 individuals per month are measured body, liver, stomach, and gonad, and then collected otolith, scale, muscle tissue, liver, gonad, and stomach contents at an onshore laboratory. Aging of alfonsino and armorhead otolith is underway at an onshore laboratory. The results of otolith aging will be presented in the future SIOFA meetings after a certain progress has been obtained.

(2) Bottom longline fisheries

One bottom longline fishing vessel has been operating since 2004. The observer on board has been collecting various biological information (size and other data) through the CCAMLR observer data forms since 2013.

For every longline operation, catch and effort data are recorded and reported by following CCAMLR Conservation Measures. All fish are identified to species where possible, including those lost at the surface.

For all individuals of Patagonian toothfish caught, species and sex are identified and body length (m) and weight (kg) is measured and recorded. Gonad stage is determined by visual inspection on board. If feasible, all retained toothfish up to 40 per haul are sampled to measure gonad weights. The physical condition of hauled fish body and hooking conditions are checked for each fish caught. Toothfish otolith is sampled up to 30 fish for each haul.

5.2 Simple summary table or figure showing length and/or age-frequency distribution of the target species by gear, and how this has changed over the past five years.

Length frequency distributions of alfonsino caught by midwater trawl fishing are presented in Figure 7. Although there is no description in the measurement method before 2015, it is presumed that the fork length was likely measured for 50 individuals per day. From October 2016, fork length composition of 100 individuals per day was recorded according to the protocol of the SIOFA scientific observer program.

There are difficulties to interpret changes of size composition across years in Figure 8, because trawl operations differ by fishing vessel, fishing location and season. To discuss spatio-temporal changes of size composition of splendid alfonsino, further analyses need to be conducted in the future.

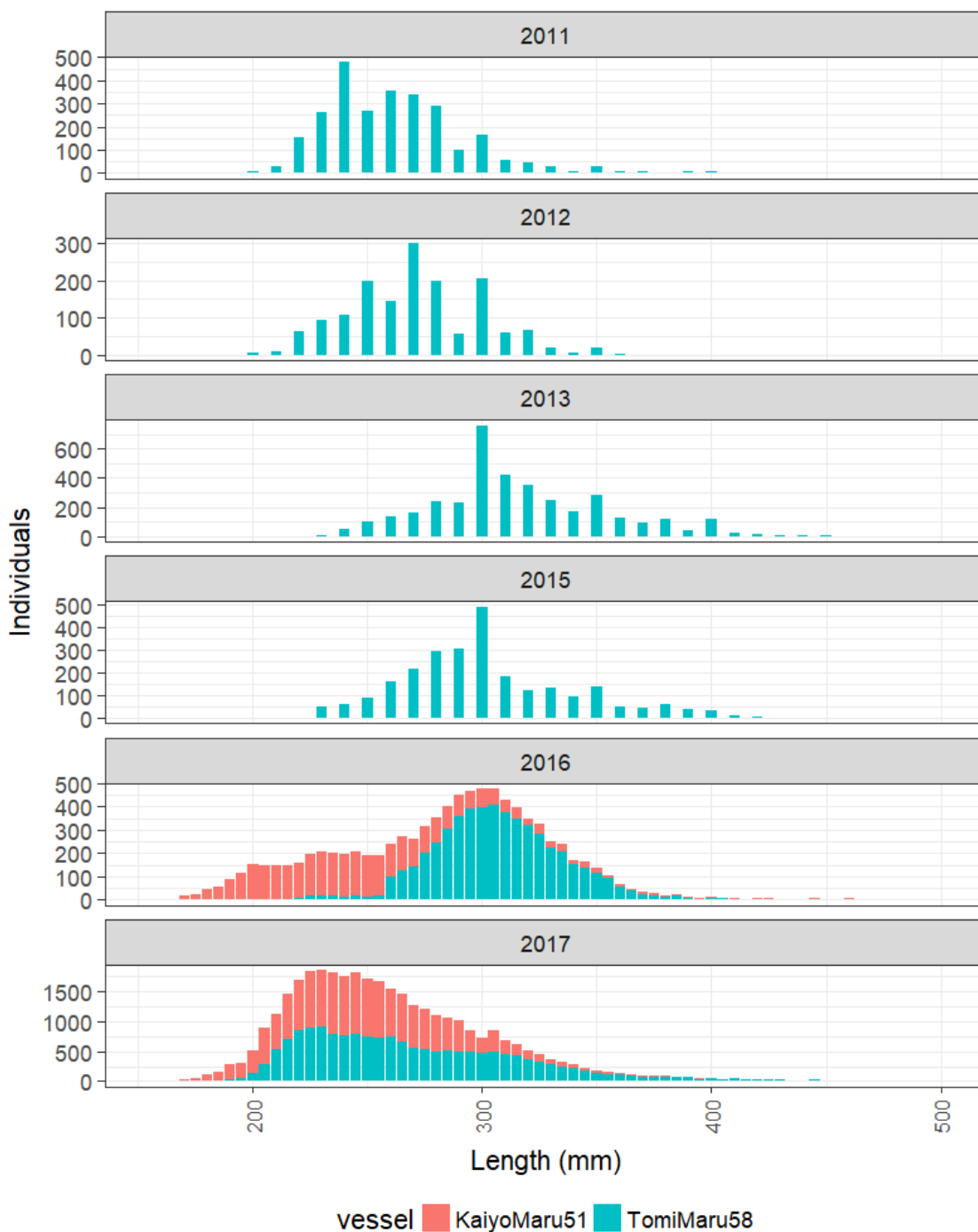


Figure 7 Length frequency distribution of splendid alfonsino (*Beryx splendens*). From 2011 to 2015, length data (fork length?) was collected as a part of SIODFA voluntary scientific observation. From October 2016, fork length was recorded according to the protocol of the SIOFA scientific observer program.

Age-frequency distribution splendid alfonsino and armorhead cannot be presented here because otolith of both species is still under processing.

Figure 8 shows length frequency distributions of Patagonian toothfish caught by bottom longline fishing. Total length of all catch was recorded according to the CCAMLR scientific observer scheme.

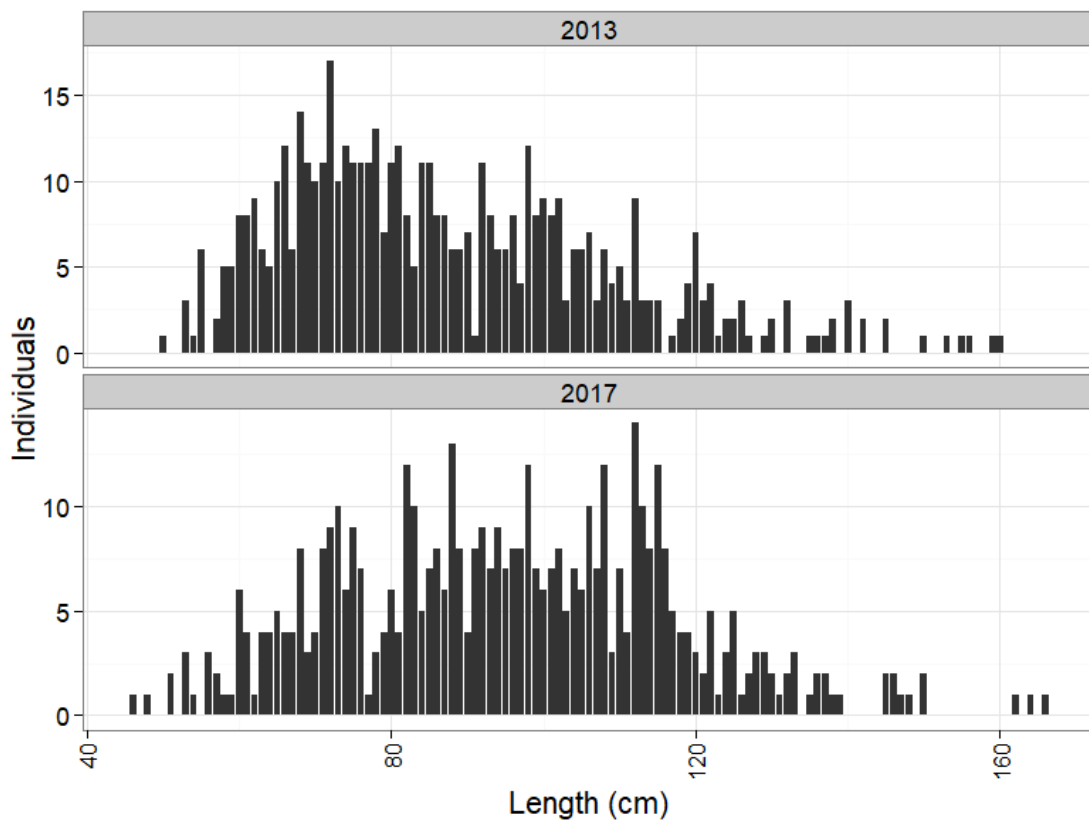


Figure 8. Length frequency distribution of Patagonian toothfish (*Dissostichus eleginoides*). Total length was recorded according to the CCAMLR scientific observer scheme.

6. DESCRIPTION OF DATA VERIFICATION MECHANISMS

(1) Trawl fisheries data

Commercial fisheries data (logbook) have been verified by Japan Overseas Fishing Association (JOFA) and Fishery Agency of Japan. Fisheries Agency of Japan also verifies locations of vessels through the Vessel Monitoring System (VMS). The observer data starting this year will be verified by Fisheries Agency of Japan and National Research Institute of Far Seas Fisheries (NRIFSF). The exploratory fishing data has been verified by Japan Marine Fishery Resources Research Centre (JAMARC) (current name is Marine Fisheries Research and Development Centre with the same abbreviation).

(2) Bottom longline fisheries

Both fisheries logbook and observer data have been verified by Fishery Agency of Japan. Fisheries Agency of Japan also verifies locations of vessels through VMS.

7. SUMMARY OF OBSERVER AND PORT SAMPLING PROGRAMS

7.1 Brief description of observer and port sampling programs conducted, and how these have changed or been improved over the past year.

(1) Trawl fisheries

Following Article 30, CMM 2016/01, Japan started the observer program from January 2017. Observers collect items listed in Annex B, CMM 2016/02. The observer trainings have been held annually since 2016. Details of the Japanese observer program were reported in SC2 (2017) (SIOFA-2017-SC02-04 (05)).

(2) Bottom longline fisheries

One vessel operating primarily in the CCAMLR area, occasionally moves up to the SIOFA CA. Hence, the same observer collects scientific data in both CCAMLR and SIOFA Cas. Under such situation, it is not efficient to use different observer data collection forms in these two areas. Thus, the observer in SIOFA uses the CCAMLR data collection forms (in excel).

7.2 Information on coverage rates achieved by observer programs, or sampling coverage achieved by port sampling programs, over the past year.

7.3 Information on the level of observer coverage focused on recording bycatch of seabirds, marine mammals, reptiles and other species of concern.

7.4 Reporting of observed bycatch by species and fishery for all seabirds, marine mammals, reptiles and other species of concern.

Japan deploys observers to all fishing vessels (100% of the coverage rates), i.e., 2 observers for 2 trawl fishing vessels and 1 observer for 1 bottom longline vessel. Observers collect and report information on bycatch of seabirds, marine mammals, reptiles and other species of concern.

8. RELEVANT SOCIAL AND ECONOMIC INFORMATION (OPTIONAL)

There is no information for this time.