SC-05-22

5th Meeting of the Southern Indian Ocean Fisheries Agreement (SIOFA) Scientific Committee

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Annual National Report of Japan

Relates to agenda item: 3 Working paper

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 44 years (1977-2019), 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 highlighting in recent 5 years (2015-2019) as requested.

Contents

1. DESCRIPTION OF FISHERIES

In the SIOFA convention area (CA), Japan has been operating two different types of fisheries discontinuously for 43 years (1977-2019) (Fig. 1). i.e., trawl fisheries and bottom longline fisheries. Fig. 1 shows that the number of vessels (trawl and bottom longline fisheries) operated in the SIOFA CA during 1977-2019 (maximum 3 boats). There were no operations for 24 years (1979-2000 and 2003). Table 1 shows that the number of vessels and their total tonnages (trawl and bottom longline fisheries) operated in the SIOFA CA in the recent 5 years (2015-2019). Map 1 shows major fishing grounds of Japanese trawl and bottom longline fisheries.

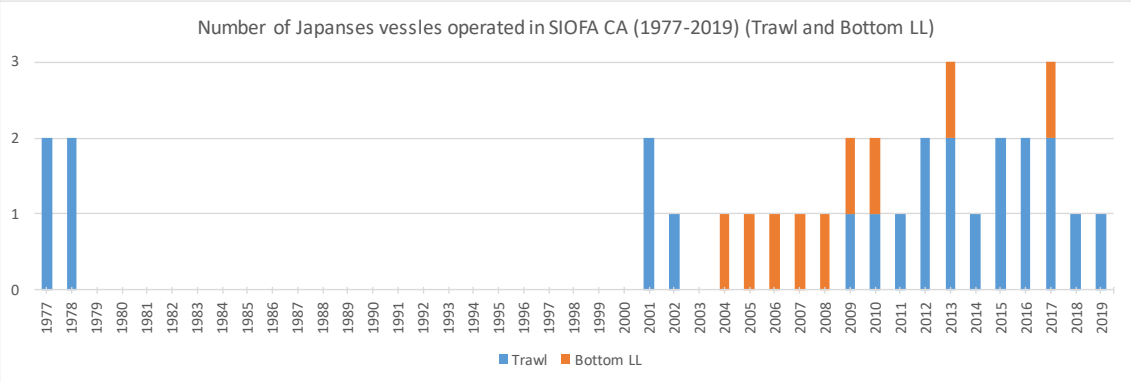
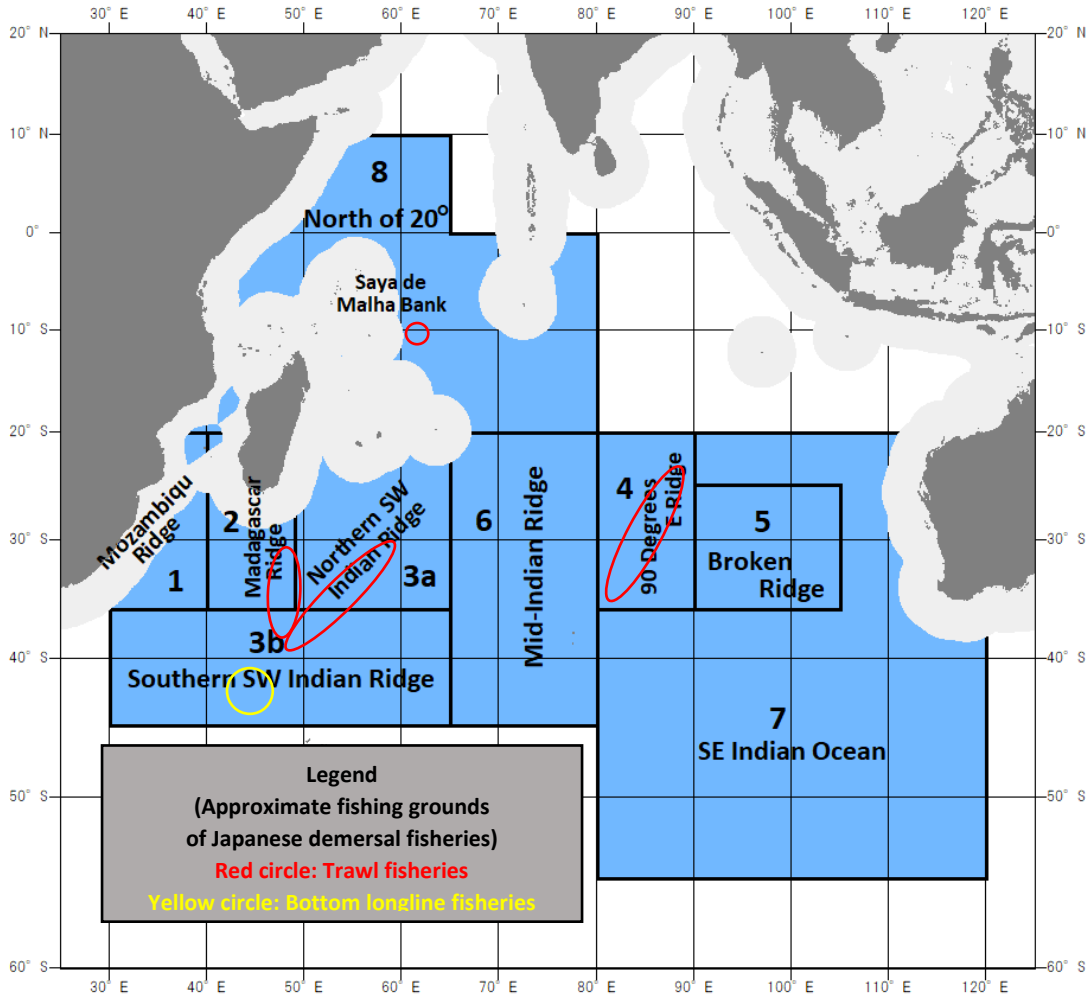


Fig. 1. Number of Japanese vessels (trawl and bottom longline fisheries) operated in the SIOFA convention area (1977-2019).

Table 1 Number of active vessels and their capacities (tonnages) by gear type (2015-2019)

Year	Trawl (total tonnage)	Bottom longline (total tonnage)
2015	2 (2,802)	0
2016	2 (2,802)	0
2017	2 (2,802)	1 (735)
2018	1 (1,598)	0
2019	1 (1,598)	0



Map 1 SIOFA Statistical areas defined in the National Report Guideline (SIOFA, 2019) and approximate locations of Japanese trawl and bottom longline fisheries.

(1) Trawl fisheries

There were 15 years of trawl fisheries operations (including exploratory fishings) in three separate periods, i.e. 1977-1978, 2001-2002 and 2009-2019. The total catch of trawl fisheries ranges 352-2,902 tons (1,605 tons in average) by 1-2 vessels. 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 ranges 5-87 tons (26 tons in average). 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).

2. CATCH, EFFORT AND CPUE SUMMARIES (2015-2019)

(1) Fishing efforts

Table 2a and 2b show annual fishing efforts by sub-area for trawl and bottom longline fisheries respectively.

Table 2a Annual fishing efforts by sub-area (trawl minutes) (2015-2019)

Year	Sub-areas								
	1	2	3.a	3.b	4	5	6	7	8
2015		39,770	19,030	67,740	9,080				
2016		48,200	41,270	61,650					
2017		49,740	38,090	99,770	5,860				
2018		420	15,010	33,960	16,100				
2019		330	14,955	66,170	9,270				

(note 1) blanks: no operations

(note 2) data source: logbook (2015-2018) and observer program (2019)

Table 2b Annual fishing efforts (bottom longline fisheries) by sub-area (number of hooks) (2015-2019)

Year	Sub-areas for reporting catch and effort data								
	1	2	3.a	3.b	4	5	6	7	8
2015									
2016									
2017				64,320					
2018									
2019									

(note 1) blanks: no operations
(note 2) data source: logbook (2017)

(2) Catch

Table 3a and 3b shows annual catch by-sub-area for trawl and bottom longline fisheries respectively. Table 4a and 4b shows catch (Retain and Discards) of main target and bycatch species for trawl and bottom longline fisheries respectively.

Table 3a Annual catch (ton) (trawl fisheries) by-sub-area (2015-2019)

Year	Sub-area								
	1	2	3.a	3.b	4	5	6	7	8
2015		733	422	1,501	292				
2016		754	896	1,252					
2017		505	447	1,592	81				
2018		0.6	349	1,080	329				
2019		8.9	275	1,592	179				

(note 1) data sources: logbook (2015-2018) and observer program (2019)
(note 2) blanks: no operations

Table 3b Annual catch (ton) (bottom longline) by-sub-area(2015-2019)

Year	Sub-area								
	1	2	3.a	3.b	4	5	6	7	8
2015									
2016									
2017				13					
2018									
2019									

(note 1) data source: logbook (2017)
(note2) blanks: no operations

Table 4a Catch (Retain and Discards) (tons) of main target and bycatch species (2015-2019) (trawl fisheries)

FAO-ASFIS(*) code	BYS		EDR		PRP		SEY		BWA		その他		合計	
Japanese	キンメダイ		ミナミクサカリツボダイ		クロシビカマス		ミナミクロメダイ		ナンキョクメダイ（ミナミメダイ）		その他		合計	
English	Splendid alfonsino		Pelagic armorhead		Roudi escolar		Violet warehou		Bluenose warehou		Others		Total	
Scientific	*Beryx splendens*		*Pentaceros richardsoni*		*Promethichthys prometheus*		*Schedophilus velaini*		*Hypeloglyphe antarctica*					
Retain/Discrad	R	D	R	D	R	D	R	D	R	D	R	D	R	D
2015	2,396		33		0		401		220				2,947	
2016	1,977		48		0		560		215				2,902	
2017	2,052		79		130		299		589				2,624	
2018	1,366		0		31		330		133				1,758	
2019	1,653	0	0	0	135	0	240	0	20	0	8	4	2,056	4

(note 1) data source: logbook (2015-2018) and observer program (2019)

(note 2) (*) ASFIS: Aquatic Sciences and Fisheries Information System

Table 4b Catch (Retain and Discards) (tons) of main target and bycatch species (bottom longline fisheries)

FAO-ASFIS(*) code	TOP		GRV		ANT		その他		合計	
Japanese	マジェランアイナメ		ラットテール		チゴダラ (トガリカナダダラ)		その他		合計	
English	Splendid alfonsino		Pelagic armorhead		Roudi escolar		Others		Total	
Scientific	*Dissostichus eleginoides*		*Macrourus spp.*		*Antimora rostrata*					
Retain/Discrad	R	D	R	D	R	D	R	D	R	D
2015										
2016										
2017	11.1	0.4	0	1.5	0	0.2	0	0.2	11.1	2.3
2018										
2019										

(note 1) data source: Observer program (2017)

(note 2) (*) ASFIS: Aquatic Sciences and Fisheries Information System

3. FISHERIES DATA COLLECTION AND RESEARCH ACTIVITIES

(1) Commercial fisheries data collection

Commercial fishing vessels of 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.

(2) Research activities

Trawl fisheries

There were exploratory fishings for 4 years in the past (1997-1978, 2009 and 2012) in the SIOFA CA collecting both fisheries and scientific data such as fishing effort, catch/bycatch species and biological information (size and other data). The observer program started in January 2017 and currently collect scientific information stipulated in Annex B, CM2019/02.

Bottom longline fisheries

One bottom longline fishing vessel has been operating for 9 years (2004-2010,2013 and 2017) targeting Patagonian toothfish. The observers on board used the CCAMLR observer forms and collect scientific information stipulated in Annex B, CM2019/02.

(3) Resolutions of the data

Table 5 shows the tempo and spatial resolutions of the data for trawl and bottom longline fisheries respectively.

Table 5a Tempo-spatial resolutions of the trawl fisheries data (2015-2019)
(commercial fisheries and observer program)

Year	tow / set		time scale		spatial scale		species details	
	(*individual or some aggregation*)		(*set-tow hauling time, daily, etc.*)		(*tow/set exact position or grid, please provide grid resolution*)		(*any aggregation or species grouping*)	
	Commercial	Observer	Commercial	Observer	Commercial	Observer	Commercial	Observer
2015	Aggregated		Daily		30'x30'		(*)	
2016	Aggregated		Daily		30'x30'		(*)	
2017	Aggregated	Set by set	Daily	Set-tow hauling time	30'x30'	tow/set exact position	(*)	(*)
2018	Aggregated	Set by set	Daily	Set-tow hauling time	30'x30'	tow/set exact position	(*)	(*)
2019	Aggregated	Set by set	Daily	Set-tow hauling time	30'x30'	tow/set exact position		

(Note 1) 2015-2016: no observer programs
(Note 2) (*) In this National Report, species in others (Table 4a) are aggregated.
In the submitted data to the Secretariat, species in others are also aggregated.
(Note 3) Both logbook and observer data (2019) will be submitted by May 31, 2020 (CMM2019/02)

Table 5b tempo-spatial resolutions of the bottom longline fisheries data (2015-2019)
(commercial fisheries and observer program)

Year	tow / set		time scale		spatial scale		species details	
	(*individual or some aggregation*)		(*set-tow hauling time, daily, etc.*)		(*tow/set exact position or grid, please provide grid resolution*)		(*any aggregation or species grouping*)	
	Commercial	Observer	Commercial	Observer	Commercial	Observer	Commercial	Observer
2015								
2016								
2017	Aggregated	Set by set	Daily	Set-tow hauling time	1'x1'	tow/set exact position	(*)	(*)
2018								
2019								

(Note 1) Blanks: no operations
(Note 2) 2015-2016: no observer programs
(Note 3) (*) In this National Report, species in others (Table 4b) are aggregated.
In the submitted data to the Secretariat, species in others are also aggregated.

4. VME THRESHOLDS (FOR BOTTOM FISHING ACTIVITY ONLY)

(1) 2017 or before

Japanese trawl fisheries operated in the mid-water, hence no threshold levels nor the move-on-rule had been established.

(2) 2018

Japanese trawlers had operated under voluntary measures which temporarily establish VME encounter threshold (50kg for corals) and the move-on rule (1 miles) following Article 11, CMM 2018/01 when the observer recognizes that the trawl operations touch the seafloor and there are VME species bycatches. As for the bottom longline fisheries, Japan temporarily applies those used in CCAMLR.

(3) 2019

From the middle of the 2019 fishing season, Japanese fishing vessel have applied Article 12, CMM 2019/01, which establish VME thresholds and the move-on-rule in the encounter protocol, i.e., for trawl fisheries, it is 60 kg of live corals and/or 300 kg of sponges and for the bottom longline fisheries, it is 10 or more VME-indicator units. If by-catch amount of VME indicators reached the threshold values, Japanese fishing vessels will follow the protocols stipulated in Article 12 to 19, CMM 2019/01, i.e., fishing vessels will move away 2 and 1 nm for trawl and longline fisheries respectively then report to the Secretariat.

(4) Summary

Table 6 shows the summary of VME species encounter threshold values and the move-on-rules applied in Japan.

(5) VME species bycatch

Table 7a and 7b shows the summary VME Taxa (wet) weight (kg), operations exceeding thresholds and effort in trawl and bottom longline fisheries respectively.

Table 8a and 8b shows VME bycatch amounts in the bottom longline fisheries in 2017 (no operations in other years during 2015-2019). There were no VME species bycatch in trawl fisheries (2015-2019).

Table 6 Summary of VME species encounter threshold values and the move-on rule

year	Rules	Trawl fisheries	Bottom longline fisheries Longline (Trotline type)
2015	threshold	None	None
	move-away distance		
2016	threshold	None	None
	move-away distance		
2017	threshold	None	None
	move-away distance		
2018	Article 11, CMM 2018/01 (voluntary base)		
	threshold	60 kg of live corals None for sponges	10 or more VME-indicator units
	move-away distance	2 mile	1 mile
2019	Article 12 to 19, CMM 2019/01		
	threshold	60 kg of live corals and/or 300 kg of sponges	10 or more VME-indicator units
	move-away distance	2 miles	1 mile

Table 7a VME Taxa (wet) weight (kg) exceeding thresholds (trawl fisheries)

Year	Sub-areas for reporting catch and effort data								
	1	2	3.a	3.b	4	5	6	7	8
2015		(n/a)							
2016		(n/a)							
2017		(none)							
2018		(none)							
2019		(none)							

(note 1) yellow markers: areas operated

(note 2) 2015-2016: (n/a) not applicable due to no formal VME species bycatch threshold values.

Table 7b VME Taxa (wet) weight (kg) exceeding thresholds (bottom longline fisheries)

Year	Sub-areas for reporting catch and effort data								
	1	2	3.a	3.b	4	5	6	7	8
2015	(n/a)								
2016	(n/a)								
2017				(none)					
2018									
2019									

(note 1) yellow markers: areas operated

(note 2) 2015-2016: (n/a) not applicable due to no formal VME species bycatch threshold values.

(note 3) 2015-2016 and 2018-2019: no operations

Table 8a VME taxa bycatch quantities (trawl fisheries) (2017)

	FAO AFSA code	Scientific name	English name	Bycatch weight (kg)	total weight (Kg)
2015	**(n/a)**				
2016	**(n/a)**				
2017	**(none)**				
2018	**(none)**				
2019	**(none)**				

(note 1) 2015-2016: (n/a) not applicable because no formal VME species bycatch threshold values.
(note 2) data source: observer program (2017-2019)
(note 3) ASFIS: Aquatic Sciences and Fisheries Information System

Table 8b VME taxa bycatch quantities (bottom longline fisheries)

	FAO AFSA code	Scientific name	English name	Bycatch weight (kg)	total weight (Kg)
2015	**(n/a)**				
2016	**(n/a)**				
2017	**OEQ**	***Euryalida***	**Basket stars**	**0.04**	**0.31**
	GGW	***Gorgoniidae***	**Gorgonians**	**0.06**	
	CSS	***Scleractinia***	**Hard corals**	**0.21**	
2018					
2019					

(note 1) 2015-2016: (n/a) not applicable as no formal VME species bycatch thresholds.
(note 2) 2015-2016 and 2018-2019: no operations
(note 3) data source: observer program (2017)
(note 4) ASFIS: Aquatic Sciences and Fisheries Information System

5. BIOLOGICAL SAMPLING AND LENGTH/AGE COMPOSITION OF CATCHES

(1) Trawl fisheries

Biological samples and length/age composition of catches were 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). Fig. 2 shows the length frequency distribution of splendid alfonsino (*Beryx splendens*) collected during 2016-2019.

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

In addition, liver, gonad, otolith, scale, muscle tissue and stomach contents for both species are collected for 30 individuals per month and species at onshore laboratories. Aging of alfonsino and armorhead otolith is underway at onshore laboratories. The results of otolith aging have been presented in the past 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) using 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 the species level where possible, including those lost at the surface.

For all individuals of Patagonian toothfish caught, species and sex are identified and body length (mm) and weight (kg) are 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 and hooking conditions of fish are checked. Toothfish otolith is sampled up to 30 fish for each haul.

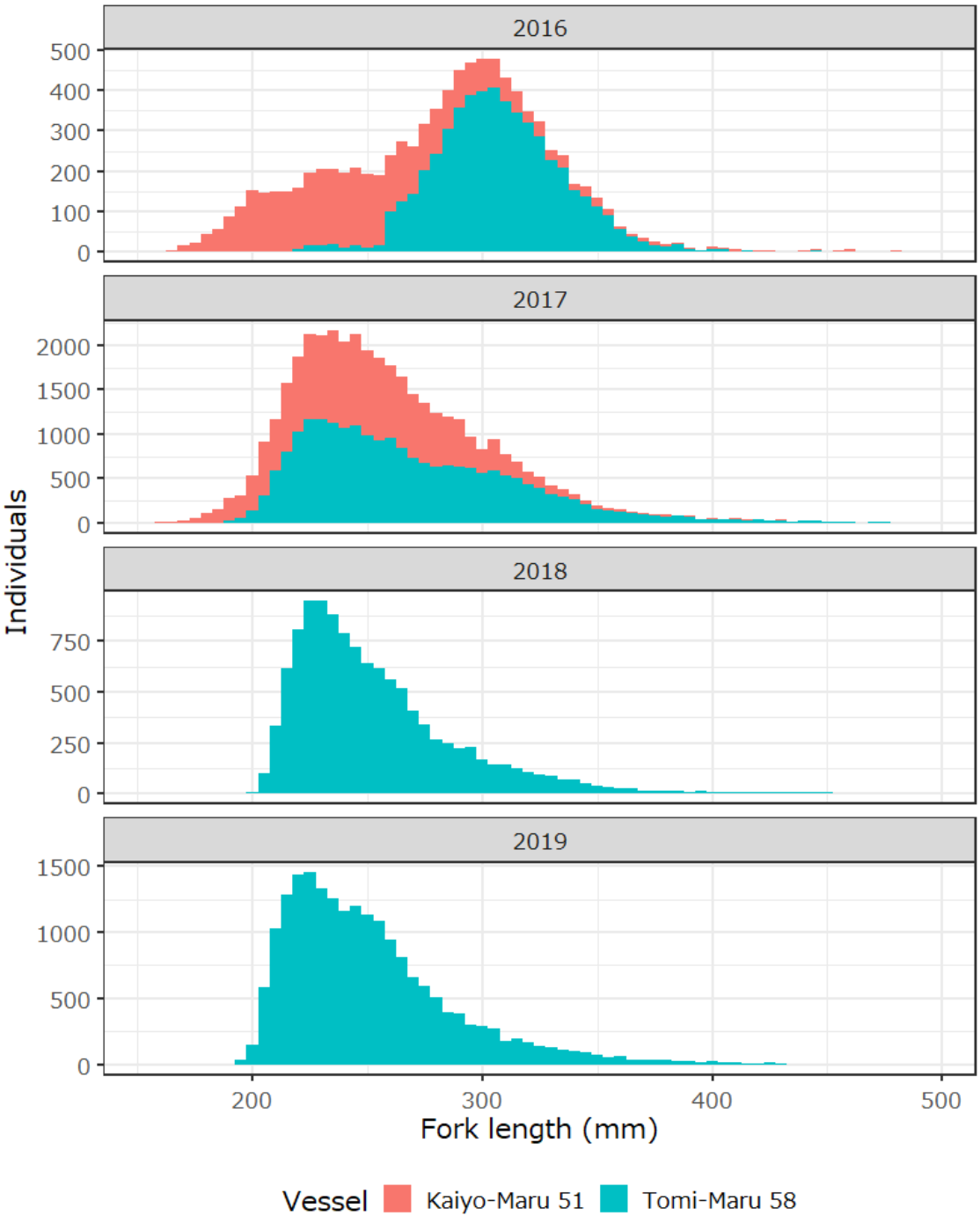


Fig. 2 Length frequency distribution of splendid alfonsino (*Beryx splendens*) during 2016-2019. In 2016, the length of alfonsino was recorded during October to December.

Fig. 3 shows the length frequency distribution of Patagonian toothfish (*Dissostichus eleginoides*) in 2013 and 2017. Total length was recorded according to the CCAMLR scientific observer scheme since 2013 in Japanese bottom longline fishery.

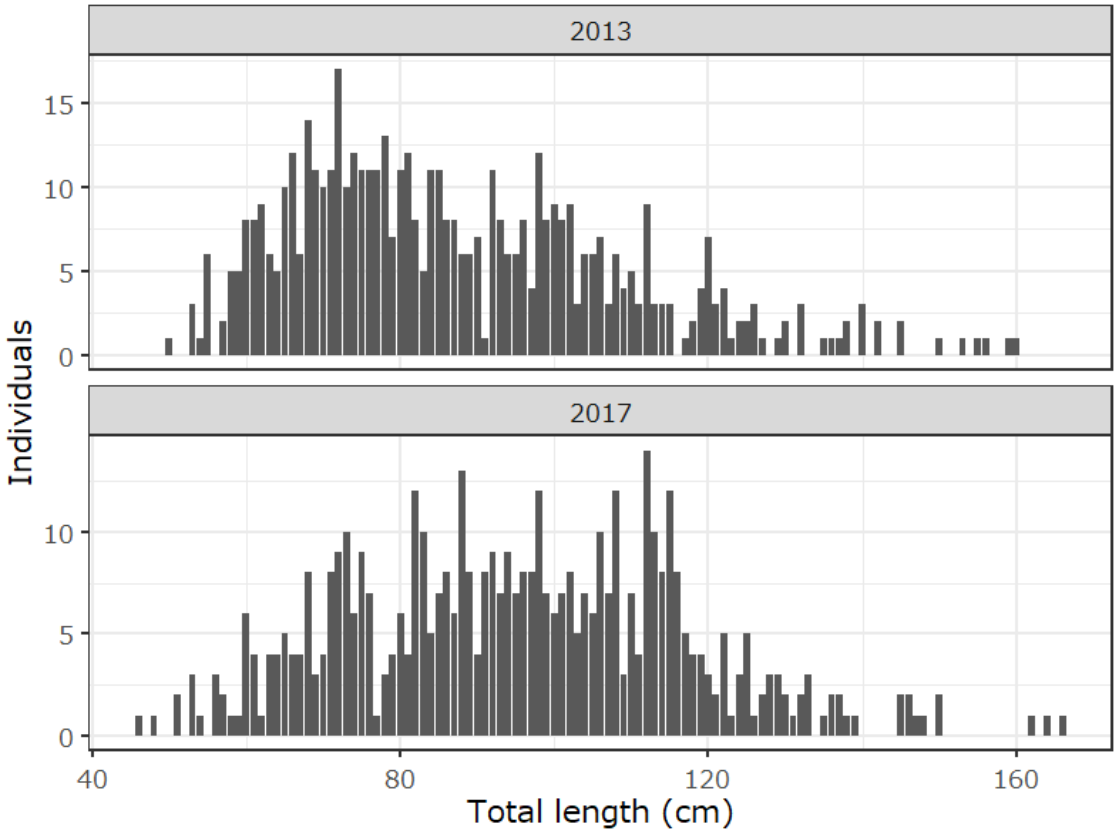


Fig. 3 Length frequency distribution of Patagonian toothfish (*Dissostichus eleginoides*) in 2013 and 2017

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 has also verified locations of vessels through the Vessel Monitoring System (VMS). The scientific observer data starting in 2017 has been 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 data

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

7. SUMMARY OF OBSERVER AND PORT SAMPLING PROGRAMS

(1) Trawl fisheries

Following Article 30, CMM 2016/01 (SIOFA interim observer program), Japan started the observer program from January 2017 (for details see National Report of Japan in 2017, SIOFA-2017-SC02-04 (05)). This program is based on the Japanese scientific observer program for bottom trawl fisheries in North Pacific Fisheries Commission (NPFC) CA. Currently the scientific observers collect items listed in Annex B, CMM 2019/02, i.e., catch, effort, biological data, bycatch information including VME indicators, non-target species (sea-bird, marine mammals, reptiles and other species of concern). The observers are deployed to all operating vessels and cover all activities in fishing operations (100% coverage) since 2017 when the SIOFA interim observer program has started.

The observer trainings have been held annually since 2016. The scientific observer scheme and manuals have been improved based on information and feedback from the scientific observers through the debriefing held during the scientific observer trainings. From 2017, there is no major improvement for Japanese scientific observer scheme for trawl fisheries. There are no port sampling programs.

(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. This is because 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). There are no port sampling programs.

Currently the scientific observers collect items stipulated in Annex B, CMM 2019/02, i.e., catch, effort, biological data, bycatch information including VME indicator species, non-target species (sea birds, marine mammals, reptiles and other species of concern). The scientific observer covers all activities of fishing operations (100% haul coverage rate) since 2017 when the SIOFA interim observer program has started.

(3) Summary

Table 9a and 9b is the summary of observer program coverages in trawl and bottom longline fisheries respectively. Table 10a and 10b is the summary of bycatch in trawl and bottom longline fisheries respectively.

8. RELEVANT SOCIAL AND ECONOMIC INFORMATION (OPTIONAL)

There is no relevant information.

Table 9a Observer coverages (trawl fisheries)

(2015-2019)

	trips coverage (%)	total no of sets/hauls	no of sets/hauls covered	within set/haul coverage (%)	incidental bycatch (bird, mammal) observation coverage (% set/haul)
2015	(n/a)				
2016	(n/a)				
2017	100	735	735	100	100
2018	100	211	211	100	100
2019	100	374	374	100	100

(note 1) 2015-2016: (n/a) not applicable as no observer programs

Table 9b Observer coverage (bottom longline fisheries)

(2015-2019)

	trips coverage (%)	total no of sets/hauls	no of sets/haulscovered	within set/haul coverage (%)	incidental bycatch (bird, mammal) observation coverage (% set/haul)
2015					
2016					
2017	100	17	17	100	100
2018					
2019					

(note 1) blank: no operations

Table 10a Summary of bycatch (trawl fisheries) (2015-2019)
(number of individuals)

names (code)	Sharks									seabird	mammal	VME taxon	Other species of concern
FAO-ASFIS(*) code	SCK	TCF	CYW	CHZ	DNA	HXT	GUQ	SOR	Unknow shark spp.				
Japanses	ヨロイザメ	ヤマノカミ	マルバラユメザメ		ヘラツノザメ	エドアブラザメ		カエルザメ					
English	Kitefin shark	Roughskin sculpin	Roughskin dogfish	Roughskin spurdog	Deania dogfishes	Sharpnose sevengill shark	Leafscale gulper shark	Little sleeper shark					
Scientific	*Dalatias licha*	*Trachidermus fasciatus*	*Centroscymnus coelopepis*	*Cirrhigaleus asper*	*Deania profundorum*	*Heptranchias perlo*	*Centrophorus squamosus*	*Somniosus rostratus*					
2015	(n/a)												
2016	(n/a)												
2017	3	1			2	0	0	0	0	0	0	0	0
2018	3	0			0	1	0	0	1	0	0	0	0
2019	6	0			0	0	1	1	0	0	0	0	0

(note 1) 2015-2016: (n/a) not applicable as no observer programs
(note 2) (*) ASFIS: Aquatic Sciences and Fisheries Information System

Table 10b Summary of bycatch (bottom longline fisheries) (2015-2019)
(number of individuals)

code or rnames	sharks (not retained)		seabird	mammal	VME taxon	Other species of concern
FAO-ASFIS(*) code	GSK	ETF				
Japanses	ニシオンデンザメ	フジクジラ				
English	Greenland shark (**)	Blackbelly lanternshark				
Scientific	Somniosus microcephalus	Etmopterus lucifer				
2015						
2016						
2017	2	6	0	0	see Table 8b	0
2018						
2019						

(note 1) blank: no operations
(note 2) (*) ASFIS: Aquatic Sciences and Fisheries Information System
(note 3) (**) Under investigation because Greenland shark does not inhabit in the southern hemisphere hence these species may be mis-identified.