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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 45 years (1977-2020), 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 6 years (2015-2020) as requested.

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1. DESCRIPTION OF FISHERIES

In the SIOFA convention area (CA), Japan has been operating two different types of fisheries discontinuously for 44 years (1977-2020) (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 1977-2020 (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 6 years (2016-2020). 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 (1977-2020) including exploratory fishing.

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
2020	1 (1,598)	0

Table 1 Number of active vessels and their capacities (tonnages) by gear type (2016-2020)



Map 1 SIOFA Statistical areas defined in the National Report Guideline (SIOFA, 2021) 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 2009-2020. The total catch of trawl fisheries ranges 352-2,902 tons (1,590 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 circled areas in Map 1). Since the logbook data (2020) has not been processed fully, the scientific observer data (2020) are replaced for the relevant Tables in this report except Table 4a.

(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 circled area in Map 1).

2. CATCH, EFFORT AND CPUE SUMMARIES (2016-2020)

(1) Fishing efforts

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

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		500	18,212	80,815	13,220					
2020			12,090	29,245						

Table 2a Annual fishing efforts by sub-area (trawl minutes) (2015-2020)

(note 1) blanks: no operations

(note 2) data sources: logbook (2015-2019) and observer data (2020)

()										
Year		Sub-areas for reporting catch and effort data								
	1	1 2 3.a 3.b 4 5 6 7 8								
2015										
2016										
2017				64,320						
2018										
2019										
2020										

Table 2b Annual fishing efforts (bottom longline fisheries) by sub-area (number of hooks) (2015 - 2020)

(note 1) blanks: no operations (note 2) data sources: 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.

	i able 3a Annual catch (ton) (trawi fisherles) by-sub-area (2015-2020)										
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		9	300	1,571	193						
2020			498	846							

Table 2a Annual estab (tan) (travil fisherica) by sub a (2015 2020)

(note 1) data sources: logbook (2015-2019) and observer data (2020) (note 2) blanks: no operations

Table 3b Annual catch (ton) (bottom longline) by-sub-area (2015-2020)

Year		Sub-area								
	1	2	3.a	3.b	4	5	6	7	8	
2015										
2016										
2017				13						
2018										
2019										
2020										

(note 1) data source: logbook (2017)

(note2) blanks: no operations

FAO-ASFIS(*) code	В	YS	EI	DR	P	RP	s	EY	В	WA															
Japanese	キンス	メダイ	ミュ クサカリ	ナミ ツボダイ	クロシ	ビカマス	ミ クロ	ナミ メダイ	ナンキ ₌ (ミナミ	ョクメダイ 、メダイ)	その他		その他		その他		その他		その他		その他		₽	計	総計
English	Sple alfor	ndid 1sino	Pelagic a	rmorhead	Roud	i escolar	Violet	warehou	Bluenos	e warehou	Others		Othors		Others		Others		т	ntal					
Scientific	Bei splen	ryx Idens	Penta richai	iceros rdsoni	Promet prom	thichthys etheus	Sched vei	ophilus aini	Hypel anta	oglyphe Irctica	U.				Grand total										
Retain/Discrad	R	D	R	D	R	D	R	D	R	D	R	D	R	D											
2015		2,396		33		0		401		22		95		2,947	2,947										
2016		1,977		48		0		560		22		295		2,902	2,902										
2017		2,052		79		130		299		59		5		2,624	2,624										
2018		1,366		0		31		330		13		18		1,758	1,758										
2019	1,667	0	0	0	135	0	240	0	20	0	0.03	3.7	2,070	3.7	2,073										
2020	1,056	1.7	0	0	14	0	261	0	12	0	3.9	1.0	1,344	5.6	1,350										

Table 4a Catch (Retain and Discards) (tons) of main target and bycatch species (2015-2020) (trawl fisheries)

(Note 1) Data sources: logbook

(Note 2) Discards data before Oct. 2016 are not available.

(Note 3) Discards data (Nov. 2016-2018) are available, but they are not yet processed.

(Note 4) (*) 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	т	OP	G	RV	A	NT	その他			
Japanese	マジェラ	ンアイナメ	ラット	・テール	チゴダラ(ダタ	トガリカナ (ラ)			台計	
English	Splendid	alfonsino	Pelagic a	armorhead	Roudi	escolar			-	
Scientific	Dissos elegir	stichus noides	Macrou	urus spp.	Antimore	a rostrata	Ot	ners	Total	
Retain/Discrad	R	D	R	D	R	D	R	R D		D
2015										
2016										
2017	11.1	0.4	0	1.5	0	0.2	0	0.2	11.1	2.3
2018										
2019										
2020										

(Note 1) Data sources: Observer data (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 amount by 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, SIOFA 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.

Voor	tow / set		time scale		spati	al scale	species details		
rear	(individual or some aggregation)		(set-tow hauling time, daily, etc.)		(tow/set exact pos provide gri	sition or grid, please d 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	set by set Set by se		Set-tow hauling time	Set-tow hauling time	tow/set exact position	tow/set exact position	(*)	(*)	
2020	set by set	Set by set	Set-tow hauling time	Set-tow hauling time	tow/set exact position	tow/set exact position	(*)	(*)	

Table 5a Tempo-spatial resolutions of the trawl fisheries data (2015-2020) (commercial fisheries and observer programs)

(Note 1) Set by set logbook data are available from Nov 2016, but data to 2018 have not been processed. (Note 2) No SIOFA observer programs in place before 2016.

(Note 3) (*)Non-reported species in the logbook and the observe data are aggregated as others.

Table 5b Tempo-spatial resolutions of the bottom longline fisheries data (2	2015-2020)
(commercial fisheries and observer program)	

Neen	tow / set		time scale		spati	al scale	species details		
rear	(individual or some aggregation)		(set-tow hauling time, daily, etc.)		(tow/set exact pos provide gri	sition or grid, please d 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									
2020									

(Note 1) Blanks: no operations

(Note 2) No SIOFA observer programs in place before 2016.

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 nautical 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, 60 kg of live corals and 300 kg of sponges and for the bottom longline fisheries, 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 moveon-rules applied in Japan.

Table 6 Summary of VME species encounter threshold values and the move-on rule applied to the Japanese fishing vessels (2015-2020)

year	Rules	Trawl fisheries	Bottom longline fisheries Longline (Trotline type)						
2015	threshold	None	Neno						
2015	move-away distance	None	None						
2010	threshold	Nene	None						
2016	move-away distance	Norie	None						
2017	threshold	None	Neno						
2017	move-away distance	Norie	None						
	Article 11, CMM 2018/01 (voluntary base)								
2018	threshold	60 kg of live corals None for sponges	10 or more VME-indicator units						
	move-away distance	2 mile	1 mile						
		Article 12 to 19, CMM 2019/01							
2019	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						
		Article 12 to 19, CMM 2019/01							
2020	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						

(5) VME species bycatch

Table 7a and 7b shows the summary VME Taxa (wet) weight (kg), exceeding thresholds in trawl and bottom longline fisheries (2015-2020) respectively.

Table 8a and 8b shows VME bycatch amounts in the trawl and bottom longline fisheries (2015-2020) respectively.

Year		Sub-areas for reporting catch and effort data								
	1	2	3.a	6	7	8				
2015			(n/a)							
2016		(n/a)								
2017		(n/a)								
2018		(none)								
2019		(none)								
2020		(none)								

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

(Note 1) Data sources: Observer data (2017-2020)

(Note 2) Yellow markers: SIOFA sub-areas operated.

(Note 3) 2015-2017: (n/a) not applicable because of no formal VME species bycatch threshold values.

Гable 7b VME Taxa (wet) w	eight (kg) exceeding the	resholds (bottom lo	ongline fisheries)
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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											
2020											

(Note 1) Yellow markers: SIOAF sub-areas operated.

(Note 2) 2015-2016: (n/a) not applicable because of no formal VME species bycatch threshold values. (Note 3) 2015-2016 and 2018-2020: no operations

	FAO ASFIS code	Scientific name	English name	Bycatch weight (kg)	total weight (Kg)					
2015			(n/a)							
2016		(n/a)								
2017		(none)								
2018		(none)								
2019	(none)									
2020	(none)									

Table 8a VME taxa bycatch quantities (trawl fisheries) (2015-2020)

(Note 1) Data sources: Observer data (2017-2020).

(Note 2) No SIOFA observer programs in place before 2016.

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

	FAO ASFIS code	Scientific name	English name	Bycatch weight (kg)	total weight (Kg)
2015					
2016					
	OEQ	Euryalida	Basket stars	0.04	
2017	GGW	Gorgoniidae	Gorgonians	0.06	0.31
	CSS	Scleractinia	Hard corals	0.21	
2018					
2019					
2020					

(Note 1) No SIOFA observer program in place before 2016.

(Note 2) No operations in 2018-2020.

(Note 3) Data sources: Observer data (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 2016-2020.

In the current scientific observer program, the fork length (FL) of 100 alfonsino individuals is recorded on board. For pelagic 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 pelagic armorhead otolith has been conducted at the onshore laboratory. The preliminary results of otolith aging was presented in the SIOFA SERA-WG2 (2020) after a certain progress has been accomplished.

(2) Bottom longline fisheries

One bottom longline fishing vessel has been operating since 2004. The scientific 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 then body length (mm) and weight (kg) are measured and recorded. In addition, the gonad stage is determined by visual inspection on board. If possible, 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*) based on the size data collected by the scientific observer during 2016-2020 trawl fishery. In 2016, the length of alfonsino was collected 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 Fisheries Resources Institute (FRI) (re-named from National Research Institute of Far Seas Fisheries in 2020), a part of Japan Fisheries Research and Education Agency (FRA). The exploratory fishing data has been verified by Japan Marine Fishery Resources Research Centre (JAMARC), which is currently Marine Fisheries Research and Development Centre (also JAMARC) under FRA.

(2) Bottom longline fisheries data

Both fisheries logbook and observer data have been verified by Fishery Agency of Japan and FRI. 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 by species, effort, biological data, bycatch information by species including VME indicators and 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 taking place during the scientific observer trainings. 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 by species, effort, biological data, bycatch information by species including VME indicator species and 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 information 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) (2015-2020)

	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					
2016					
2017	100	735	735	100	100
2018	100	211	211	100	100
2019	100	374	374	100	100
2020	100	199	199	100	100

(Note 1) 2015-2016: not applicable because of no SIOFA observer programs in place.

Table 9b Observer coverage (bottom longline fisheries) (2015-2020)

	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					
2020					

(Note 1) blank: no operations

(Note 2) 2015-2016: not applicable because of no SIOFA observer programs in place.

Table 10a Summary of bycatch (trawl fisheries) (2015-2020) (number of individuals)

names (code)					Sharks								
FAO- ASFIS(*) code	SCK	TCF	CYW	СНΖ	DNA	НХТ	GUQ	SOR					Other
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	Unknow shark spp.	seabird	mammal	VME taxon	species of concern
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													
2016													
2017	3	1	0	0	2	0	0	0	0	0	0	0	0
2018	3	0	0	0	0	1	0	0	1	0	0	0	0
2019	6	0	0	0	0	0	1	1	0	0	0	0	0
2020	1	0	0	0	0	0	0	0	0	0	0	0	0

(Note 1) Data sources: Observer data (2017-2020).

(Note 2) No SIOFA observer program in place before 2016

(Note 3) (*) ASFIS: Aquatic Sciences and Fisheries Information System

Table 10b Summary of bycatch (bottom longline fisheries) (2015-2020) (number of individuals)

code or names	sharks (no	t retained)				
FAO-ASFIS(*) code	GSK	ETF				
Japanses	ニシオンデン ザメ	フジクジラ	seabird	mammal	VME taxon	Other species of concern
English	Greenland shark (**)	Blackbelly lanternshark				
Scientific	Somniosus microcephalus	Etmopterus lucifer				
2015						
2016						
2017	2	6	0	0	see Table 8b	0
2018						
2019						
2020						

(Note 1) Data sources: Observer data (2017-2020).

(Note 2) No SIOFA observer program in place before 2016.

(Note 3) blank: no operations

(Note 4) (*) ASFIS: Aquatic Sciences and Fisheries Information System

(Note 5) (**) Under investigation because Greenland shark does not inhabit in the southern hemisphere hence these species may be mis-identified.