

SC-05-20

5<sup>th</sup> Meeting of the Southern Indian Ocean Fisheries Agreement (SIOFA) Scientific  
Committee

30 March – 03 April 2020, Saint Gilles, Réunion

# Annual National Reports 2020

## French territory

*Please note that National Reports and SC Working Group reports shall be classified as working papers*

*Relates to agenda item: 03*

Working paper ☒ Info paper ☐

### Delegation of French territory

---

#### Abstract

*This report summarizes and updates fishing activity by France for French Territories-flagged vessels in the Southern Indian Ocean Fisheries Agreement (SIOFA) Area for 2019. The fishing activity has been very low in 2019, only one longliner vessel operated in the area during two cruises for a total of 11 days. It conducted a total of 40 fishing operations with 200 000 hooks set.*

*No VME indicator thresholds were triggered during 2019.*

*This document provides also an overview of the French observer program implemented on bottom longline fishery. The observer coverage is 100%, meaning that they are on board vessels for every fishing event. Data (including both from observer and skipper) are entered daily in an electronic logbook and their consistency is checked on a daily basis by observers at sea and on a weekly basis by the Muséum National d'Histoire Naturelle (MNHN).*

---

---

## Recommendations *(working papers only)*

**1. That the Scientific Committee considers the National Report provided by French Territory.**

---

## French territory Annual National Reports 2020, SIOFA 5th Scientific Committee 2020

Chazeau C.<sup>1</sup>, Pruvost P.<sup>1</sup>

<sup>1</sup> Laboratoire de Biologie des Organismes et des Ecosystèmes Aquatiques (BOREA) – Muséum national d'Histoire naturelle, 43 rue Cuvier 75005 Paris, France.

### French territory National Report 2020

This report summarizes fishing activity by France for French Territories-flagged vessels in the Southern Indian Ocean Fisheries Agreement (SIOFA) Area for 2019. This report include the French territory's BFIA document submitted in 2018 (SC-03-06.2(10) BFIA - French Territory). It should be noted that there has been no significant change in the fishery since that time. The data are transmitted via the national report and are therefore not updated of the BFIA in this report (Annex 3).

The French Administration gave license to 5 longliners and one trawler/potter vessel to target various species with pots, dropline, vertical longlines, automatic longlines and demersal longlines.

This scientific report described the French licensed fishery in the SIOFA area from 2014 to 2019.

In 2019 the French Territories fishing activities in the SIOFA AREA was very low.

### Description of fisheries

In 2019, 6 vessels from the Southern French Territories request a license to the French authorities for the SIOFA's area fishing activity. The fleet includes:

- 5 longliner vessels
- 1 trawler/potter vessel.

The size of vessels is from 55 to 65 meters. The port of registry is "Port-aux-Français", Kerguelen Islands, (Terres Australes et Antarctiques Françaises, TAAF). Only one vessel operated in the area for the year 2019 during two cruises (Table 1).

**TABLE 1: FLEET COMPOSITION (NUMBER OF VESSELS BY GEAR TYPE AND SIZE AND HOW THIS HAS CHANGED BY YEAR) OVER THE PREVIOUS FIVE YEARS**

Year	Vessels that actively fished	
	Longliner	Potter
2015	2	0
2016	0	1
2017	2	0

2018	0	1
2019	1	0

## Catch, effort and CPUE summaries

### *Fishing effort*

In 2019, there were 40 fishing operations over 11 days, all in Zone 3b (Table 2), including:

- 27 longlines of 5000 hooks (i.e. a total of 135000 hooks) between 1112 and 1381 meters in 7 days during the first cruise.

- 13 longlines of 5000 hooks (i.e. a total of 65000 hooks) between 1354 and 1694 meters in 4 days during the second cruise.

**TABLE 2.1: SUMMARY TABLE OF LONGLINE EFFORT BY SET (NUMBER OF LINE).**

Year	Sub-areas for reporting effort data								
	1	2	3.a	3.b	4	5	6	7	8
2019				40	0	0			
2018				0	30*	0			
2017				26	4	3			
2016				0	12*	0			
2015				66	0	0			
2014				103	0	0			
2013				126	0	0			
2012				88	0	0			
2011				80	0	0			

Note: \* vertical longline

**TABLE 2.2: SUMMARY TABLE OF TRAP EFFORT BY SET (NUMBER OF TRAP).**

Year	Sub-areas for reporting effort data								
	1	2	3.a	3.b	4	5	6	7	8
2019					0				
2018					50				
2017					0				



2016					97,9				
2015				2,6					
2014									
2013									
2012									
2011									

**TABLE 4: LONGLINE CATCH (KG) BY SPECIES FOR MAIN TARGET, BYCATCH, ASSOCIATED AND DEPENDENT SPECIES (R-RETAINED AND D-DISCARDED)**

Year	<i>Dissostichus eleginoides</i>		<i>Macrourus sp</i>		<i>Antimora rostrata</i>		<i>Amblyraja taaf</i>		<i>Etmopterus sp</i>	
	R	D	R	D	R	D	R	D	R	D
2019	9618	20	5103	3607	21	10192	19	502	0	2
2018	0		0	0	0	0	0	0		0
2017	7610		5020	2656	0	9500	0	361		469
2016	0		0	0	0	0	0	0		0
2015	17200	60	12300	6700	0	33800	0	400		1
2014	13500		7700	3800	0	37600	0	3900		561
2013	16000		13000	5600	0	44200				582
2012	17700		3900	2600	1	10900				0
2011	22100		8800	3500	0	28000				167

## CPUE

## Fishery data collection and research activities

All the licensed French Territories vessels have on-board a fishing observer to cover 100% of the fishing activities (Annex II). The data collection occurs at two different levels:

- Skipper level: have to collect all detailed information on fishing events and catches.
- Observer level: independently, fishery observer (covering 100% of gear deployment) collect data on a fourth of the set to monitor catches (retained and discarded).

All data are registered in a digital logbook and transferred to the MNHN fishing database "PECHEKER".

**TABLE 5: DETAILS ON THE SCALES AND RESOLUTIONS OF THE FISHERY DATA COLLECTION**

	longliner data collection items			
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)

2011-2019	Individual (set by set)	set hauling time	set exact position	species level
-----------	-------------------------	------------------	--------------------	---------------

## VME Thresholds

Crew must collect and retain all benthic organisms for each segments in numbered buckets, those buckets will be made available for observers. The observers record benthic organisms composition and abundance for each set. This information are also recorded in a digital logbook and transferred to the MNHN fishing database “PECHEKER”.

No VME indicator thresholds were triggered for the period 2011-2019. The move-on protocol didn’t need to be applied.

No interactions with threatened, endangered and protected species were reported in 2019.

**TABLE 6: THRESHOLD LEVELS FOR ENCOUNTERS WITH VMEs AND MOVE-ON PROTOCOLS FOR THE PERIOD 2011-2019**

Gear/fishery	Threshold (kgs)	Move-on protocols
Long line	<b>0</b>	<b>None apply</b>

**TABLE 7: SUMMARY VME TAXA (WET) WEIGHT (KG), OPERATIONS EXCEEDING THRESHOLDS AND EFFORT: GEAR TYPE IDENTIFIED, 1 TABLE PER GEAR**

Year	Unit	Sub-areas for reporting catch and effort data								
		1	2	3.a	3.b	4	5	6	7	8
Year 2011-2019	Weight (kg)				<b>0</b>	<b>0</b>	<b>0</b>			
	N° Operations				<b>0</b>	<b>0</b>	<b>0</b>			
	Effort (Tables 2.1..)				<b>0</b>	<b>0</b>	<b>0</b>			

## Summary of observer and port sampling programs

In order to keep track of the catch: species and area where the fish were caught are reported on every single box containing the fish to be landed for commercial purpose. An independent company of expert based in La Réunion island is tasked to weight a second time (first time being on the factory of the ship at sea) all the fish boxes and report exact weight for each combination of area, species and product. Those data are then used to correct the weights collected at sea. For Patagonian toothfish an official DCD (Dissostichus Catch Document) from CCAMLR is produced at the scale of each trip and contains all needed information on species, products and areas including SIOFA.

**TABLE 9: OBSERVER PROGRAM DESIGN AND COVERAGE SUMMARY TABLE FOR PERIOD 2011-2019**

	trips	total no of	no of	within set/haul	incidental bycatch (bird, mammal) observation coverage (% set/haul)
	coverage (%)	sets/hauls	sets/hauls covered	coverage (%)	
longliner	100			100	25 % for bird 100 % for mammal

**TABLE 10: REPORTING OF OBSERVED BYCATCH NUMBER**

bycatch	Longline 2019	Longline 2018	Longline 2017	Longline 2016	Longline 2015	Longline 2014	Longline 2013	Longline 2012	Longline 2011
seabird	0	0	0	0	0	0	0	0	0
mammal	0	0	0	0	0	0	0	0	0
sharks (not retained)	4	0	462	0	2	853	372	0	314
VME taxon 1 (unit)									
VME taxon 2 (unit)									
other									

## Description of data verification mechanisms

All the data verification mechanisms are conducted according to the SIOFA CMM and described in the French BFIA 2018.

The captain and the fishing observer computerize all the data in a digital logbook.

The fishing observer sends weekly the dataset for verification to the MNHN team.

The landing and transshipment report is sent to MNHN from the port sampling at the end of the cruise.



## Annex I: Sub-areas for reporting catch and effort data.

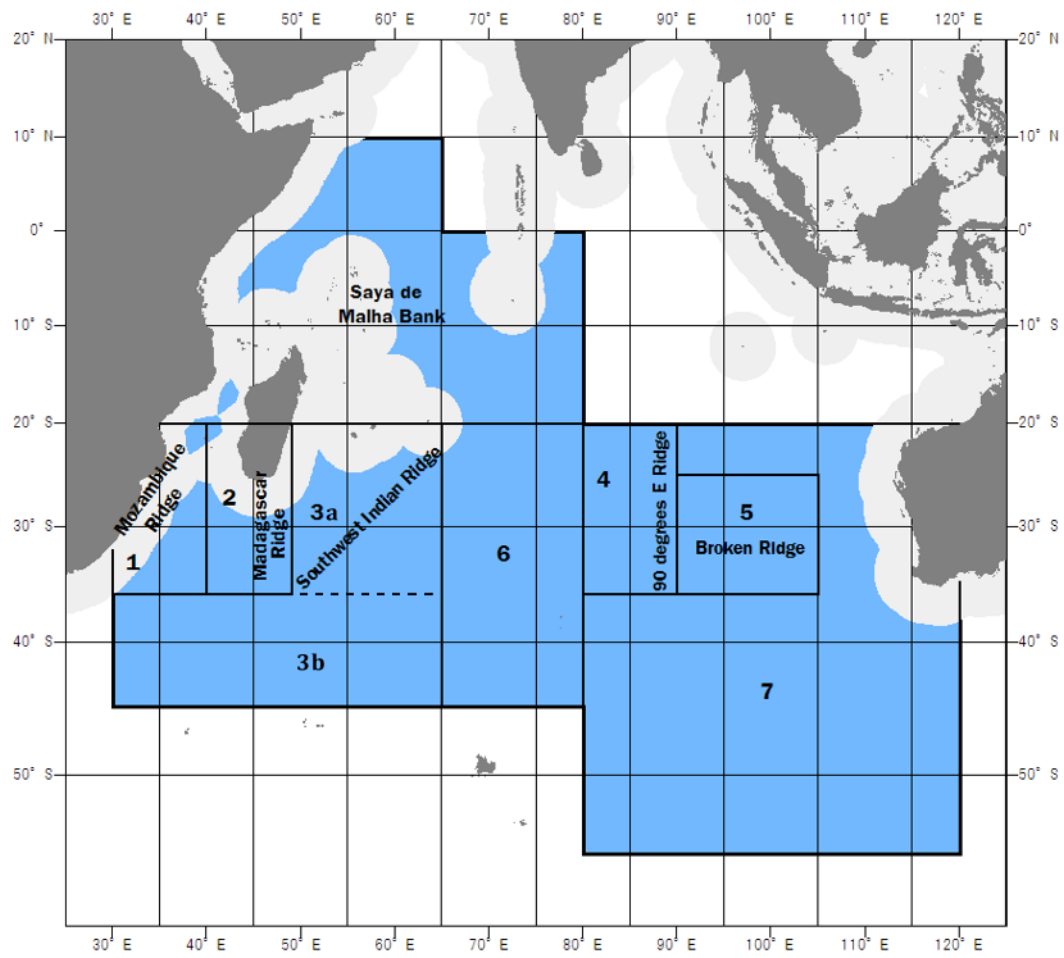
**Table 1**

	Area	Lats		Longs	
		NS		E	
1	Mozambique Ridge	S 20°	S 36°	-	40°
2	Madagascar Ridge	S 20°	S 36°	40°	49°
3a	Northern SW Indian Ridge	S 20°	S 36°	49°	65°
3b	Southern SW Indian Ridge	S 36°	S 45°	30°	65°
6	Mid-Indian Ridge	S 20°	S 45°	65°	80°
4	Ninety Degree East Ridge	S 20°	S 36°	80°	90°
5	Broken Ridge	S 25°	S 36°	90°	105°
7	SE Indian Ocean	S 20°	S 55°	80°	120°
8	North of 20°	N 10°	S 20°	-	80°

---

<sup>2</sup> Source for Table 1 and Figure 1: Guidelines for submission of annual national reports Rev3.docx

**Figure 1**



## **Annex II: French observer program**

The observers are trained in the MNHN and in the TAAF administration according to the rules of the French Administration and the CCAMLR.

They cover 100 % of the fishing operation.

### **1- Data collected by the skipper**

At the scale of every single fishing event, the skipper reports the following data:

#### On fishing event:

- Latitude, longitude and depth of start and end of setting and hauling
- Environmental conditions (weather, wind, swell)
- Number of hooks or pots
- Bait species

#### On catch:

For each haul and each species:

- Number of individuals
- Product weight
- Type of product (filet, HGT, collars....)
- Green weight calculated through product weight X conversion factor
- Fate (kept on board, discarded....)

### **2- Data collected by scientific observer:**

#### Hauling observations

For each line hauled , a fourth of the hooks hauled are observed in order to count bird incidental bycatches (caught either during setting and hauling) and fish catches by species and if they are brought on board or lost at the surface.

#### Setting observation

The baiting rate is assessed three times per trip.

#### Number of hooks

The number of hooks declared per line is verified at least 5 times per trip.

#### Bird abundance

If visibility allows it, observers are asked to assess bird abundance around the boat daily for each species.

#### Bird tag

Bird bands and localization systems such as Argos or GLS are reported.

#### Marine mammals abundance

For each line hauled, the presence and absence (and if possible the number of individuals) of marine mammals is reported for each species, observers also report interactions with fishing activities, the time between the first hook hauled and the time mammals arrive.

#### Catch measurement for the target species (toothfish)

Observers measure Total Length on at least 100 fish per day (up to 200) or 10% of the number of individuals caught (in case of low capture rates). It also includes sexing, gonad maturity stages and stomach contents when time allows.

#### Catch measurement for all species

Observers measure as many fish as time allows (the threshold being 3 hours 30 minutes per day maximum at the factory for biologicals measurements), covering all species. Individual weights are also collected to the extent possible.

#### Tagging recapture

This applies mainly for toothfish, observers are asked to collect Total Length, Standard Length, sex, gonad stage, weight, they are also asked to seek for pit tag (or any probe) and they sample otoliths and take pictures of tagging site and tag. Healing is assessed according to a scale established with CCAMLR technical coordinators. If tagged is likely to have steamed for a long distance a sample of tissue is sampled in alcohol for genetic analyses. Samples are returned and archived at the MNHN.

#### Benthic organisms

All benthic organisms brought on board during the observed fourth of the line are weighted and photographed. All benthic organisms caught on the line are sampled and returned to the MNHN.

#### Sample: uncommon species

Observers are asked to take pictures of uncommon species, measure and weight them. Based on pictures received by email the decision to keep them partly or entirely is provided to observers by the MNHN.

#### Sample: bait

Tissue samples (and otolith when possible) of baits used during each trip are archived as references.

#### Sample: otoliths

A minimum of 5 fish per species are sampled for otoliths along with total length, weight, sex and gonad stage.

#### Sample: Fossils

Fossils (benthic organisms, whales...) are all kept by observers and returned to the MNHN to be identified and studied.

#### Sample: Hooks

Every type of hook used during each trip is archived along with all size information and the maker's label.

#### Marine mammals photo-identification

Observers are asked to follow two protocols. The first one is to take as many pictures as possible of killer whales around the boat for each haul in order to identify pods involved in the interactions. The second one is (when time and weather conditions allow it) to take as many pictures as possible of every individuals of killer whales and sperm whales to follow the evolution of markings and update the photo-identification catalogues. Other species are photographed opportunistically.

#### Photo of gear

Observers are asked to take pictures of every element of gear used on board including all mitigation in place.

#### Identification quality

For their first trip at sea in an area, observers are asked to take pictures of all fish and bird species and sort them into folders named with the species name. This allows to assess their identifications skills, the data quality, and thus improve training and identification guides.

#### Data entering and checking

All data are archived on hardcopies and entered daily in an electronic logbook, observers also check data's consistency daily through the tools they are provided with.

### **3 - Mitigation measures:**

All mitigation measures (to avoid bird incidental bycatches) in place are verified by the scientific observer on board and data are collected on:

- Brickle curtain
- Streamer lines used during setting
- Implementation of nautical twilight time for setting

## **Annex II: French territory BFIA (SC-03-06.2(10) BFIA - French Territory)**

### **Update of the French territory Bottom Fishing Impact Assessment for the French territory in the SIOFA area**

Pruvost P.<sup>1</sup>, Chazeau C.<sup>1</sup>, Martin A.<sup>1</sup>

<sup>1</sup> Laboratoire de Biologie des Organismes et des Ecosystèmes Aquatiques (BOREA) – Muséum national d'Histoire naturelle, 43 rue Cuvier 75005 Paris, France.

## **Introduction**

This report is an update of the working document (SC-03-06.2(10) BFIA - French Territory). It should be noted that there has been no significant change in the fishery since that time. The data are transmitted via the national report and are therefore not updated in this report. There are therefore no significant changes in this document.

Following the adoption of UNGA Resolution 61/105 in 2006, 64/72 in 2009 and 66/68 in 2013 on deep-sea fisheries, the management of bottom fisheries and protection of deep-sea ecosystems on the high seas has been a priority for the international community.

Measures to implement these UNGA Resolutions have been put in place by a number of States and through RFMOs, including those active in high seas bottom fisheries in the Southern Ocean, North East Atlantic, North West Atlantic and South East Atlantic Oceans.

UNGA Resolution 61/105 calls on high seas fishing nations and RFMOs to take urgent action to protect vulnerable marine ecosystems (VMEs) from destructive fishing practices. In particular, Resolution 61/105 calls on States to:

- Conduct impact assessments to determine whether bottom fishing activities would have significant adverse impacts on VMEs, and ensure effective management to prevent such impacts, or else prohibit the activity;
- Close areas of the high seas to bottom fishing where VMEs are known or likely to occur unless fishing in these areas can be managed to prevent significant adverse impacts to such ecosystems; and
- Establish and implement protocols requiring vessels to cease fishing in areas where an encounter with VMEs occurs and to report the encounter so that appropriate measures can be adopted in respect of the site.

The CMM 2017/01 identifies that BFIA shall be prepared, to the extent possible, in accordance with the FAO Guidelines and meets the standards of the SIOFA BFIA. The BFIA, therefore, seeks to be consistent with the FAO Guidelines.

This BFIA is the result of the data analyses provided by the French Observers program from 2013 to 2017 after that the Southern Indian Ocean Fisheries Agreement (SIOFA) applied to June 2012

## Area of Application

### Description of the Proposed Fishing Activities

#### Details of the vessels to be used, providing all vessel data required in terms of the SIOFA

The Southern French Territory fishing fleet is composed with seven to eight longliners and one trawler/potter. The size of longliner boats is from 55 to 60 meters and trawler/potter vessel is 80 m long. The gross tonnage is from 1300 to 2100 UMS for the longliners and 2300 UMS for the trawler/potter vessel (Annex I).

The port of registration is Port-aux-Français (Kerguelen Islands, French Austral and Antarctic Territory).

### Data Standards for vessel data

Fishing activities are subject to a fishing authorization delivered by the French administration (*Arrêté transposant les recommandations de l'Accord relatif aux pêches dans le Sud de l'océan Indien adoptées en 2019 et abrogeant l'arrêté du 6 février 2017 transposant la recommandation CMM 2016/01 de l'Accord relatif aux pêches dans le Sud de l'océan Indien*)).

The administration established 7 areas based on the footprint of the French fleet. In the 7 established fishing zones, the fishing industry shall submit a request specifying, in accordance with the administration regulation Annex II, the fishing zone, the fishing period, the species or species targeted as well as relevant information on the environment protection procedure. Applications for fishing activities must be submitted to the French administration, Direction des Pêches Maritimes et de l'Aquaculture (DPMA, Ministère de l'Agriculture et de l'Alimentation) no later than five days before the deadline set by the SIOFA Secretariat. The Director of Maritime Fisheries and Aquaculture submits these applications, if they comply with the rules set by SIOFA, to the SIOFA Secretariat.

No more than 9 authorizations are delivered per year. Only bottom longline and pot fishing techniques are allowed. Any other gear or fishing technique is submitted for advice to the Museum national d'Histoire naturelle (MNHN), which assesses the risks with regard to the protection of the environment and the SIOFA rules.

The data standards for vessel data are provided within the annex II of this document. The French national legal framework includes a series of requirements about the data to be collected on board, regarding the quality and the types of collected information. Electronic logbooks are used by on board by scientific observers.

## Detailed description of fishing methods

From 2013 to 2017 6 vessels obtain authorization for their fishing activities using longline or pot gear (Table 1). The ratings of benthic habitat and by-catch impacts for each gear class are :

Longline-demersal :      Physical 2                      Biological 2

Pots and traps :          Physical 3                      Biological 2

Considering that the ratings scale is from 1 (very low) to 5 (very high) (Sources: impact ratings were by Chuenpagdee et al. (2003) with rating considerations proposed by (Williams et al. 2011b), who only assessed and proposed considerations for gear types used by the Australian fishing fleet in the SPRFMO area).

**TABLE 2: FRENCH TERRITORY AUTHORIZED VESSEL FROM 2015 TO 2019**

Gear type	Characteristic	No. authorized vessel	Active vessel				
			2015	2016	2017	2018	2019
Longliner	55 to 65 (thousand hooks/line)	7	2	0	2	5	5
Potter	X pots / line	1	0	1	0	1	1

### *Longline gear*

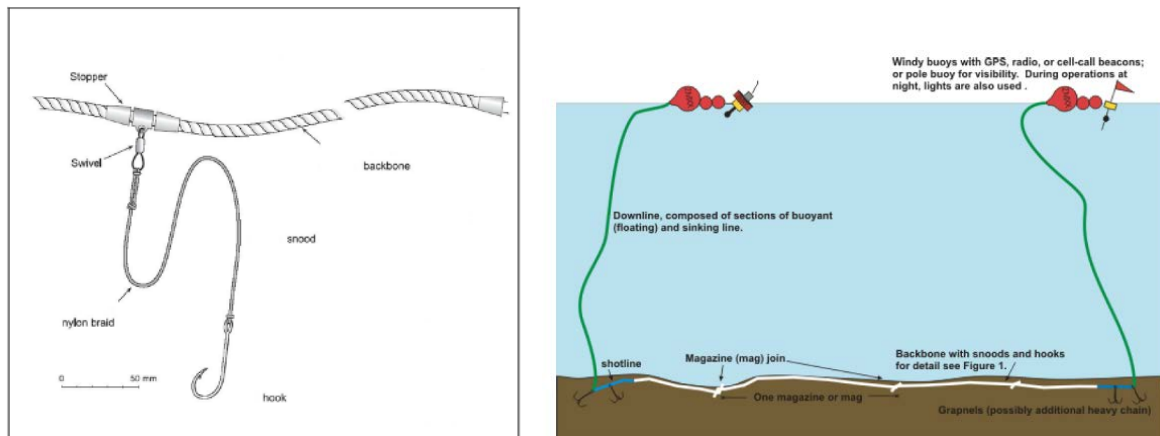
The longliners use automatic longline MUSTAD (12mm IWL) (Figure 1: Automatic longline). The hooks are MUSTAD or FISKEVEGN n°14/ 0 and setting capacity is 55 000 to 65 000.

In the SIOFA area the longline length is an average of 6112 hooks per line (from 1904 to 10 500 hooks) (Figure 2).



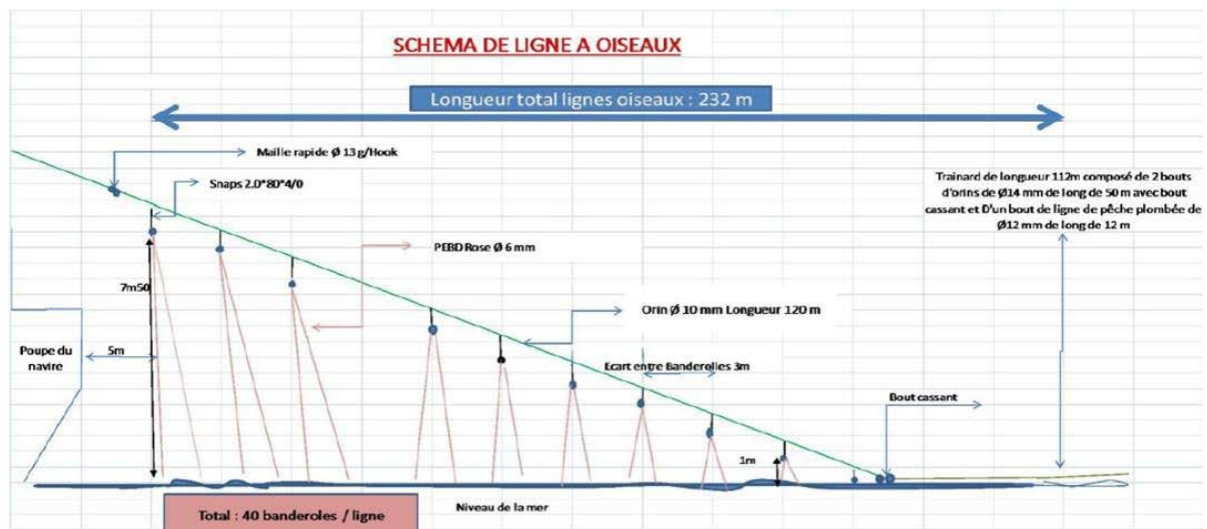
**FIGURE 1: AUTOMATIC LONGLINE**





**FIGURE 2: LONGLINE SCHEME (FROM WG-FSA-08/60)**

A birds scaring system (streamer lines) is used during all the setting fishing activities (Figure 3: birds scaring system). The system follows the specifications required by CCAMLR. Streamers touch the surface of the water in the absence of wind and swell. During the fishing operation, everything is done to limit the light emitted by the ship with curtains in the bridge, a curtain at the level of the stroller, a reduced lighting at the level of the stroller, the portholes are closed, and the rear deck light is off.



### FIGURE 3: BIRDS SCARING SYSTEM

Additionally, another scaring system (the Brickle curtain) is set up at the line place (Figure 4) when hauling.

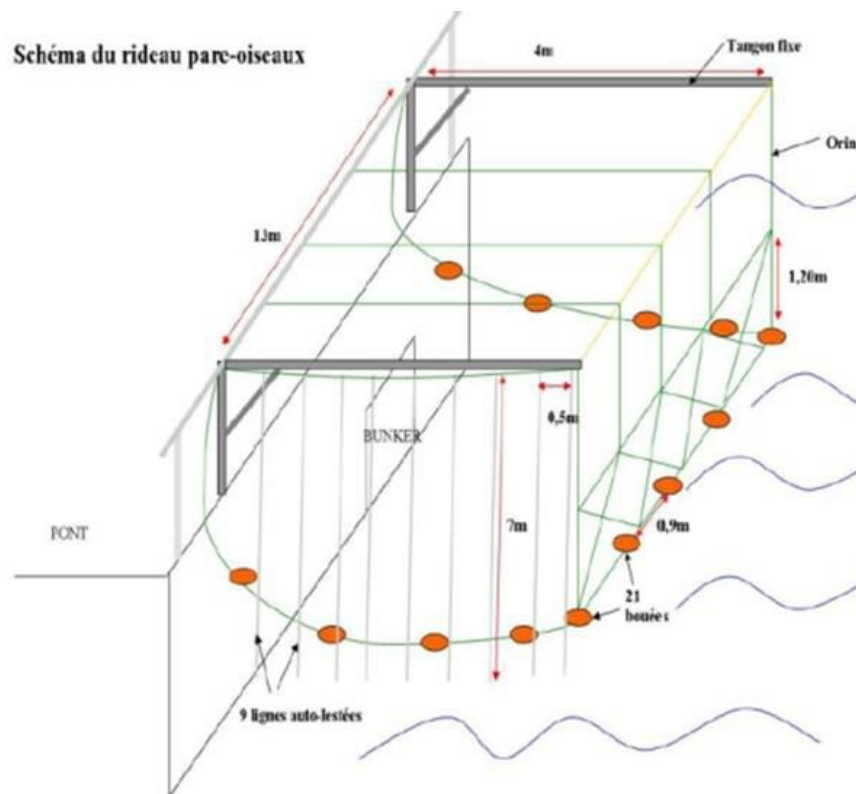


FIGURE 4: BRICKLE CURTAIN DEVICE

### Pot gear

The pot fishing activities are conducted from the mother ship (trawler/potter) or usingher 2 small boats of 8,20m of length, pulling 1,30m (Figure 5: pot gear).



FIGURE 5: POT GEAR

### Other gear

Vertical longline can be deployed from the trawler/potter or longline vessels .

## Seabed depth range to be fished.

According to the 2017 French fishing activity and considering rounded values, depth range should be from -1160 meters to -1590 meters depth in sub-Antarctic areas (zone 1a and zone 1b), and from -580 meters to -1300 meters in subtropical and tropical areas (Tab. 2)

**TABLE 3: SEABED DEPTH RANGE TO BE FISHED BY FRENCH SUB-AREA**

French sub-area	Depth range	
	min	Max
Zone 1a – 1b	1160	1590
Zone 2-3-4-5-6	580	1300

## Target species, and likely or potential by-catch species

### Target species

The main target species (Table 3) for the southern area is the Patagonian Toothfish (TOP). TOP and Macrourids. In the northern part, the target species are *Jasus paulensis* and fishes (*Polyprion oxygeneios*, *Hyperoglyphe antarctica*, *Latris lineata* ....).

**TABLE 4: TARGET SPECIES LIST**

Species	FAO code	Longline	Pot	Others
<i>Dissostichus eleginoides</i>	TOP	X		
<i>Macrourus carinatus</i>	MCC	X		
<i>Polyprion oxygeneios</i>	WHA	X		X
<i>Hyperoglyphe antarctica</i>	BWA	X		X
<i>Latris lineata</i>	LRL	X		X
<i>Nemadactylus monodactylus</i>	TDL			X
<i>Seriola lalandi</i>	YTC			X
<i>Jasus paulensis</i>	JSP		X	

### Potential by-catch species

The potential by catch are listed in Table 4.

TABLE 5 : BY-CATCH SPECIES LIST

Species	FAO code	Longline	Pot	Others
<i>Antimora rostrata</i>	ANT	X		
<i>Amblyraja taaf</i>	RFA	X		
<i>Etmopterus sp.</i>	ETF	X		
<i>Centroscymnus sp.</i>		X		
<i>Bassanago sp.</i>				X
<i>Diastobranthus capensis</i>	SDC	X		
<i>Hydrolagus sp.</i>		X		
<i>Lepidion schmidtii</i>		X		
<i>Pseudotriakis microdon</i>	PTM	X		
<i>Squalus sp.</i>		X		
<i>Mora moro</i>	RIB	X		
<i>Zameus squamulosus</i>		X		
<i>Helicolenus sp.</i>				X

### Intended period and duration of fishing

Activity can occur from the 1st of September to the 31st of August of the following year in the authorized established fishing areas. Fishing activity cannot exceed 15 days for each vessel in the whole area, and 8 days in the subantarctic fishing areas 1a and 1b as defined in “Arrêté du 6 février 2017 transposant la recommandation CMM 2016-01 de l'Accord relatif aux pêches dans le sud de l'océan Indien”.

Vessels may exchange or transfer unused days of fishing by informing the regional operational center Reunion Island and the Directorate of Maritime Fisheries and Aquaculture (DPMA) in advance. A vessel may not trade or transmit more than the maximum effort she possesses, ie 15 days for all fishing areas and 8 days for zones 1a and 1b. In the event that authorizations have not been granted on 30 April of the current year, the corresponding days of effort shall be shared equitably amongst the licensed vessels, which may use them or transmit them to the end of the campaign.

### Effort indices

7 vessels are expected, 9 maximum

**TABLE 6: FRENCH 2013-2017 FISHING ACTIVITY IN SUBANTARCTIC AREAS (ZONE 1A AND ZONE 1B), INCLUDING NUMBER OF VESSELS, NUMBER OF OPERATIONS, NUMBER OF HOOKS AND LENGTH OF LONGLINES**

ASD_CODE	Year	Vessels Number	Fishing operations	mean Hook size	hook min per operation	hook max per operation	total hooks used	Line length min per operation	Line length max per operation	Total Line length
517	2013	2	126	75	3000	8308	731883	3600	9969	878230
517	2014	2	103	76	2011	8208	634682	2413	9849	761501
517	2015	2	66	74	3000	8405	443492	4320	10800	551447
517	2017	2	26	75	5000	6000	135000	6000	7200	162000

**TABLE 7: FRENCH 2013-2017 FISHING ACTIVITY IN SUBTROPICAL AND TROPICAL AREAS (ZONE 2 TO 6), INCLUDING NUMBER OF VESSELS, NUMBER OF OPERATIONS, NUMBER OF HOOKS AND LENGTH OF LONGLINES**

ASD_CODE	Year	Vessels Number	Fishing operations	mean Hook size	hook min per operation	hook max per operation	total hooks used	Line length min per operation	Line length max per operation	Total Line length
573	2013	2	0	0	0	0	0	0	0	0
573	2014	2	0	0	0	0	0	0	0	0
573	2015	2	0	0	0	0	0	0	0	0
573	2017	2	7	76	2250	2250	15750	2700	2700	18900

### Estimated total catch and discard quantities by target and bycatch species

The main targeted catch in the south of the SIOFA area by the French longliners is the Patagonian toothfish, *Dissostichus eleginoides* (TOP). Primary by-catch species from the longline fishery are the macrourid *Macrourus spp.* (GRV), rajid skates (*Bathyraja spp.*) (BHY) and blue antimora (*Antimora rostrata*) (ANT). The latter species is fully discarded, while the others are partly or totally retained. *The TOP's annual catches vary between 11 and 22 tonnes.*

### Mapping and Description of Proposed Fishing Areas

*Maps of the proposed fishing areas in relation to available information on VMEs and seabed bathymetry should be presented including:*

The Austral French Territory fleet is used to occur in several areas. The French Fishery Administration decided to consider the historical footprint to propose 7 Fishing Area where fishermen had already prospected during the past (Figure 6). Fishing authorizations are restricted to these areas.

Two areas (1a and 1b) in the southern part are regularly exploited. The other areas (2 to 6) are occasionally fished.

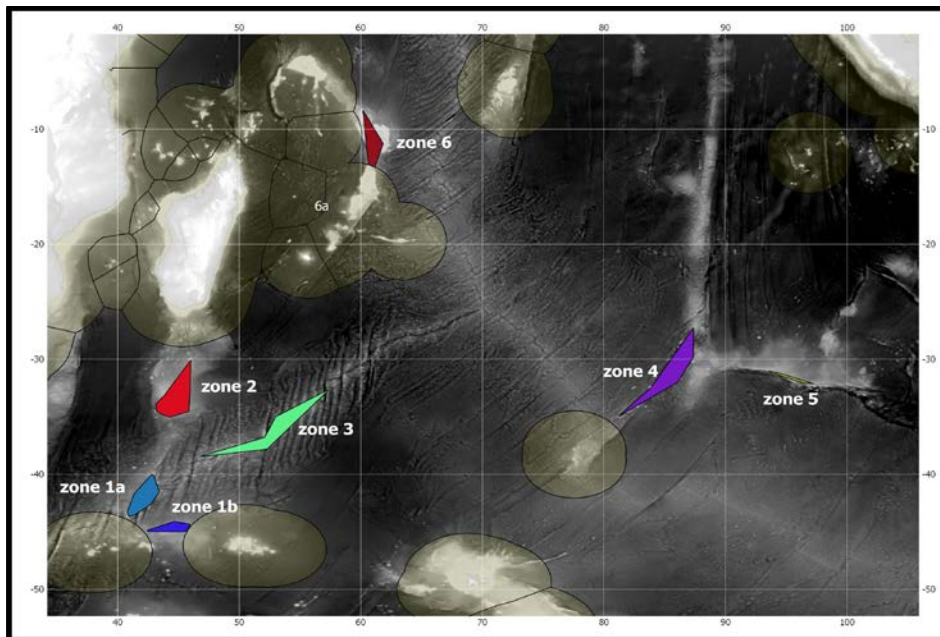


FIGURE 6: MAP OF THE PROPOSED FISHING AREA

## Impact Assessment

The BFIA is evaluated using both a spatial analysis approach and the fishing effort data available for French fleet within the period 2013-2017.

### *Spatial analysis*

Firstly, the surface of the different bathomes in the whole SIOFA area is considered (Table 5). Secondary, the area of each bathome within each French fishing zone (Table 6) and the area of the fishable bathomes in the whole French fishing zones (Table 7) are calculated. We have considered the limit of 500 meters, upper depth where longline fishing is not allowed. Finally, **a French theoretical fishing footprint is obtained (Table 8) which corresponds to the maximum area potentially impacted**. Furthermore, the percentage of each bathome of French fishing zones in the SIOFA area is provided.

The French theoretical fishing footprint comparing to the whole SIOFA area is 0.22% (Table 8). However, the French theoretical fishing footprint can reach up to 56% when considering the bathomes separately (for example the bathome 701-1000 m, **Table 8**).

### *Real footprint in the 2013-2017 period*

The real footprint of the French fleet is calculated for the 2013-2017 period. The data available for the bottom longline operations is used. All the operations are plotted using a GIS software. The

whole area covered by the longlines represents a surface of **2679 km<sup>2</sup>** and **0.0099 % of the SIOFA area**, which corresponds to the French cumulative impact in recent years (Table 8).



**TABLE 8: SURFACE OF THE DIFFERENT BATHOMES IN THE WHOLE SIOFA AREA**  
**SOURCE MODIFIED FROM LAST ET AL., 2010 CITED BY WILLIAM ET AL., 2011**

	Bathome (m)	Name	Area (km <sup>2</sup> )
Fishable area	0-200	Continental shelf	37402
	201-700	Shallow upper Continental slope	32101
	701-1000	Deeper upper Continental slope	25133
	1001-1500	Shallow mid Continental slope	110781
	1501-2000	Deep mid Continental slope	260633
		<b>Subtotal of fishable area (A)</b>	<b>466050</b>
<b>Unfishable area (B) &gt;2000 m</b>			<b>26414597</b>
<b>Total SIOFA area (A + B)</b>			<b>26880647</b>

**TABLE 9: AREAS (KM<sup>2</sup>) OF FISHING ZONES CALCULATED PER BATHOME (M)**

		Area (km <sup>2</sup> ) per bathome (m) per zone						Total area (km <sup>2</sup> ) per zone
	Zones	0-200	201-700	701-1000	1001-1500	1501-2000	>2000	
subantarctic	1a	53	399	532	2379	6673	33111	43151
	1b	0	0	115	4114	9460	4312	18003
subtropical and tropical	2	164	1149	10407	22380	26475	17396	77973
	3	22	267	273	2212	11954	74737	89467
	4	0	127	464	1235	1907	87428	91163
	5	0	17	855	3920	976	635	6405
	6	20136	14162	1455	3858	4643	3600	47856

**TABLE 10: AREAS (KM<sup>2</sup>) OF FISHING ZONES CALCULATED FOR FISHABLE BATHOMES (-500 TO -2000 M) AND NON-FISHABLE BATHOMES**

	Zones	Area (km <sup>2</sup> ) in fishable bathomes (501-2000 m)	Area (km <sup>2</sup> ) in non fishable bathomes
subantarctic	1a	4898	38253
	1b	6845	11158
subtropical and tropical	2	30090	47881
	3	7286	82179
	4	1845	89318



	5	2885	3520
	6	5456	42333

**TABLE 11: FRENCH THEORETICAL MAXIMUM FISHING FOOTPRINT AND REAL FOOTPRINT IN THE 2013-2017 PERIOD IN SIOFA AREA**

Bathomes (m)	0-200	201-700	701-1000	1001-1500	1501-2000	>2000	Total
Area (km <sup>2</sup> ) per bathome of zones	20376	16124	14103	40102	62091	221221	374020
Percentage per bathome of zones in SIOFA	54,47 %	50,23 %	56,12 %	36,20 %	23,82 %	0,82 %	1,39 %
French fishable areas (500-2000 m): <b>59305 km<sup>2</sup></b>							
French theoretical fishing footprint comparing to SIOFA area: <b>0,22 %</b>							
French fished area in the 2013-2017 period: <b>2679 km<sup>2</sup></b>							
French real footprint in the 2013-2017 period: <b>0.0099 %</b>							

## Risk Assessment

No specific Evaluation Risk Assessment (ERA) has been conducted for this fishery due to data gaps and the low fishing effort. All the historical data have been provided to the WG ERA conducted by the Australian delegation.

## Interactions with VME

No Vulnerable Marine Ecosystem (VME) has been detected during the French fishing operations. A single specimen belonging to a VME bioindicator taxa (*Demospongiae*, *Porifera*) has been caught in 2017 on a longline.

## Information on Status of the Deep-sea Stocks to be Fished

For Patagonian toothfish, French bottom longline fishing operations are monitored, catches and fishing effort are recorded. This information could be useful in the case of a "CPUE by seabed area" analysis, that stock assessment methodology is used to define catch limits in CCAMLR data-poor areas. Nevertheless, no tagging-recapture program that would allow for a more reliable estimate of the stock is in force at this time. However, collected biological data may be used in the future for stock assessments. Some recaptured fishes from CCAMLR fisheries can be used to provide information of

Toothfish stocks structures. As agreed by the SIOFA, stock assessments for Patagonian toothfish will be referred to those conducted in CCAMLR, collection of the fishing data from French fishing boats in this area is similar to that undertaken in the French fisheries in the CCAMLR area, where stock status are evaluated by integrated stock assessments.

## List of the intended target and likely by-catch species

The main target species in the south of the SIOFA area by the French longliners is the Patagonian toothfish, *Dissostichus eleginoides* (TOP). Reported catches are presented in Table 11, catches for the period 2000 to 2009 were not recorded. Main by-catch species from the longline fishery are the macrourid *Macrourus sp.* (GRV), rajid skates *Amblyraja taaf* (RFA) and blue antimora *Antimora rostrata* (ANT). The latter species is fully discarded, while the others are partly or totally retained. The TOP's annual catches vary between 13 and 17 tonnes.

**TABLE 12 : CATCH REPORT (IN TONNES) IN THE SIOFA AREA FROM 2013 TO 2017 BY LONGLINERS.**

Year	TOP retained	TOP discarded	GRV retained	GRV discarded	RFA retained	RFA discarded	ANT retained	ANT discarded
2013	16	0	13	6	0	5	0	44
2014	14	0	8	4	0	4	0	38
2015	17	0	12	7	0	0,4	0	34
2017	8	0	5	3	0	0,4	0	10

## Historic catches

The Southern French Territories fleet is mainly composed with seven to eight longliners and one trawler. From 2000 to 2009 three longliners from the French territory worked in the SIOFA Area. One trawler occurred in the area during this period in 2002 (Table 12).

**Since no more bottom trawling activities** from the Southern French Territories fleet occurs in the SIOFA area.

**TABLE 13: LONGLINERS AND TRAWLERS EFFORTS IN THE SIOFA AREA FROM 2000 TO 2010**

	2002	2006	2007	2008	2009

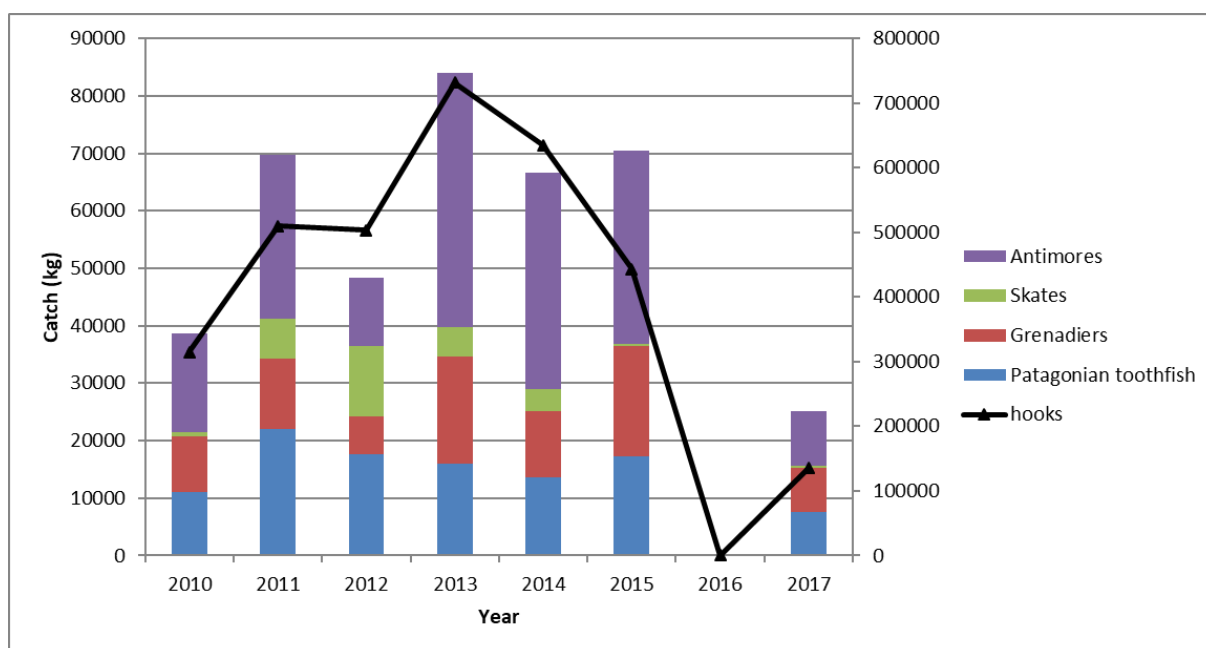
<b>Longliners</b>		1	1	2	3
<b>Trawler</b>	1				

### Catch, effort and CPUE summaries

From 2013 to 2017, six longliners from the French territory worked in the SIOFA Area, in the Northern SW Indian Ridge sub-area 3. They stay from 13 to 40 days per year and have done 41 to more than one hundred stations (Table 13).

**TABLE 14: LONGLINERS EFFORTS IN THE SIOFA AREA FROM 2010 TO 2017 DAYS, HAULS AND HOOKS NUMBER PER YEAR AND AREA.**

ASD_CODE	Year	Sets	hooks
517	2010	41	314886
517	2011	80	509414
517	2012	89	503478
517	2013	126	731883
517	2014	103	634682
517	2015	66	443492
517	2017	26	135000
573	2017	7	15750



**FIGURE 7 : HISTORICAL EFFORT AND CATCHES OF TARGET (PATAGONIAN TOOTHFISH) AND BY-CATCH SPECIES OF FRENCH LONGLINERS FROM 2010 TO 2017 IN THE SUBANTARCTIC SIOFA AREA**

## EMV Monitoring, Management and Mitigation Measures

### VMS positional information

All the French Territories licensed fishing vessels use a VMS data system. VMS positional information should be collected in accordance with the SIOFA Data Standards.

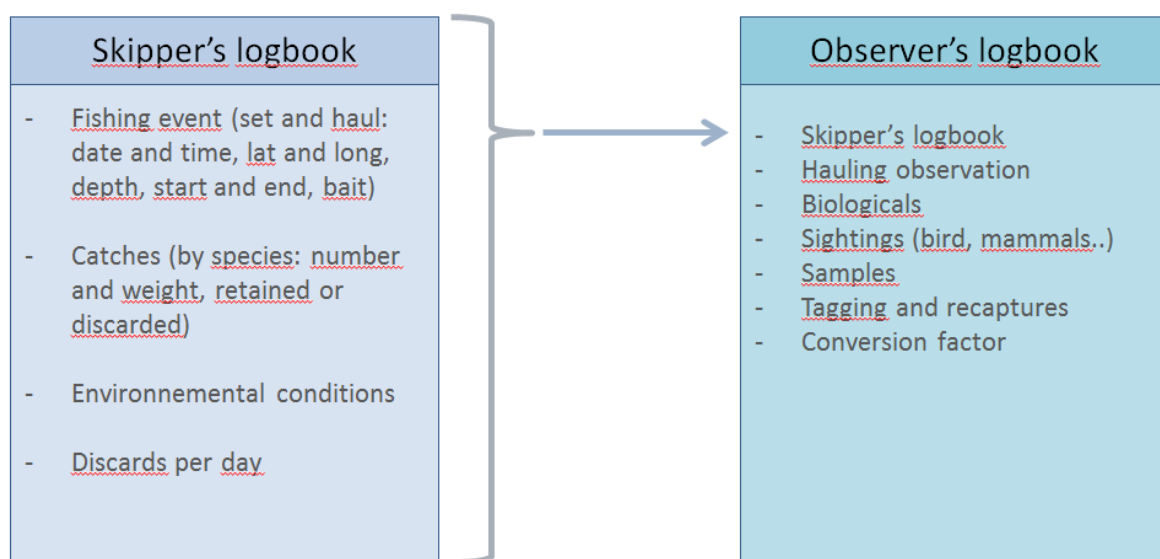
### Details of catch and effort data collection systems

All the licensed French Territories boats are obliged to embark a fishing observer to cover 100% of the fishing activities. The data collection occurs at two different levels (Figure 8):

- skipper level: they are asked to collect all detailed information on fishing events and catches
- Observer level: Independently, fishery observer (covering 100% of vessel deployment) collect data on a fourth of the hauling to monitor catches (retained and discarded).

The skipper is in charge to collected and computerize the following information:

- Start and end of setting gear with latitude and longitude, depth, date and time, hooks set, bait ...
- Start and end of hauling with latitude and longitude, depth, date and time, hooks hauled
- Environmental conditions during hauling
- Details by set and by species of catches, including: number, weight (unless cut off), fate (processed, discarded etc...)



**FIGURE 8: DATA ENTRY VERSUS SKIPPER'S AND OBSERVERS LOGBOOK**

Skipper's data are entered in an electronic logbook which is then provided to the observer on a daily basis for the observer to synchronise with it's observer's logbook and thus to compare and crosscheck data that were collected (see figure below). This observer's logbook is described in details in annex (please see page Annex 123 to page Annex 256, noting that this document describes the entire logbook used on french vessels while only the bottom longline / fish trap technique will be used in SIOFA) along with references lists used. Those data are sent every Monday to the MNHN for checking, monitoring and to create back-ups.

Observer's are provided with a comprehensive tool box in order to check the entire data set's consistency on a daily basis allowing them to correct errors in real times at sea rather than after vessel's return which is far more difficult. On top of this, a checking routine is run by the MNHN on the entire data set received on a weekly basis.

Observer's logbook (electronic version as well as hard copies) are returned to the MNHN for perennial storage. Hard copies are referenced and stored in the MNHN's official archives and electronic versions are validated and then uploaded into a secured server linked to several external synchronised copies. Data security is thus met and data can be queried.

## Reporting systems to record VME

In 2015, the MNHN has started to develop a new data acquisition protocol for benthos bycatch in the French fisheries of the Southern Ocean (statistical areas 58.5.1, 58.6, 58.4.3a, 58.4.4b, 58.4.2). This protocol aims at producing presence and abundance data of the benthic macro-invertebrates collected by the fishing gears. The main objective is to increase knowledge on the benthic ecosystems impacted by the French fishing activities, in a context marked by the CCAMLR conservation measures for Vulnerable Marine Ecosystems (VME) protection and the Marine Protected Areas (MPA) development and in the short term to decrease this impact. The protocol, now applied also for French fishing zones in the SIOFA, area is based on collecting, weighing and photographic sampling of the benthic macro-invertebrate specimens. Furthermore, the VME conservation rules from the CCAMLR are applied in the French fishing zones of the SIOFA through the French national legal framework.

### *Conservation rules:*

For the French fleet operating in the SIOFA area, the CCAMLR rules about VME data recording and VME protection are applied. The contents of the CCAMLR Conservation Measure 22-06 and the CCAMLR Conservation Measure 22-07 about VME are thus implemented in the French national legal framework for SIOFA area.

As defined by the CCAMLR in the Conservation Measures, the catching of VME units forces the vessel:

- to record and report the impact when 5 caught units of VME are detected in one of the randomly monitored segments of the longline, each of them corresponding to 1000 hooks,
- **to stop fishing in a circle of 1 nautical mile area around the mid-point of the segment when 10 caught units of VME are detected.**

Furthermore, **to protect the benthic habitats, fishing is forbidden in from 0 to -500 meters depth**, according to the French national legal framework for SIOFA area.

### *VME data collection framework:*

Specimen sampling is based on an effort towards conservation of the benthic invertebrates collected by the fishing gears. It aims at producing qualitative data about the presence of the taxa within the different fishery areas, in accordance with the goal of contributing to their inventory.

In the SIOFA areas, all the specimens caught on the longlines are collected. In these poorly known areas, any benthic invertebrates presence data needs to be produced. Thus, exhaustive sampling is a unique opportunity to realize an inventory, which is the first condition to build the knowledge background needed for upcoming assessment approaches.

The collected specimens are conserved in alcohol during the cruise with proper packaging and labelling, including date, position and identification of the gear.

At the end of the cruise, the specimens are sent to the MNHN (Paris, France) to be studied and integrated in the national natural history collections. After this process, they are submitted first to

taxonomists to be precisely identified, using both molecular and anatomical approaches. The MNHN's taxonomists and experts from the international community are mobilized through different networks.

The scientific observers can also record a photographic sampling during the hauling observation, according to the time available. For photographic sampling of benthos, all the invertebrates caught on the longline during the hauling observation are collected. If the scientific observer is not positioned in the factory of the vessel during the hauling observation, crew collaboration is needed to collect the organisms.

At the end of the hauling, all the collected organisms are:

- weighted together (Figure 9),
- spread out and photographed together with a scale,

Depending of the observers or the scientist availability:

- the organisms can be sorted and weighted by phyla,
- the organisms can be spread out and photographed separately, by colony or by individual, with a scale.

Photographed organisms are discarded. The weights are recorded in the electronic fishing log. The pictures are stored and identified with file naming rules allowing matching them with the data of the fishing process: date, geographical position, type of gear, part and/or length of the observed line.

At the end of the cruise, the data and the pictures are sent to MNHN to be treated and analysed. To treat the pictures a complete specific pipeline of data treatment (Figure 10), with semi-automated process including different components based on various software, has been developed.

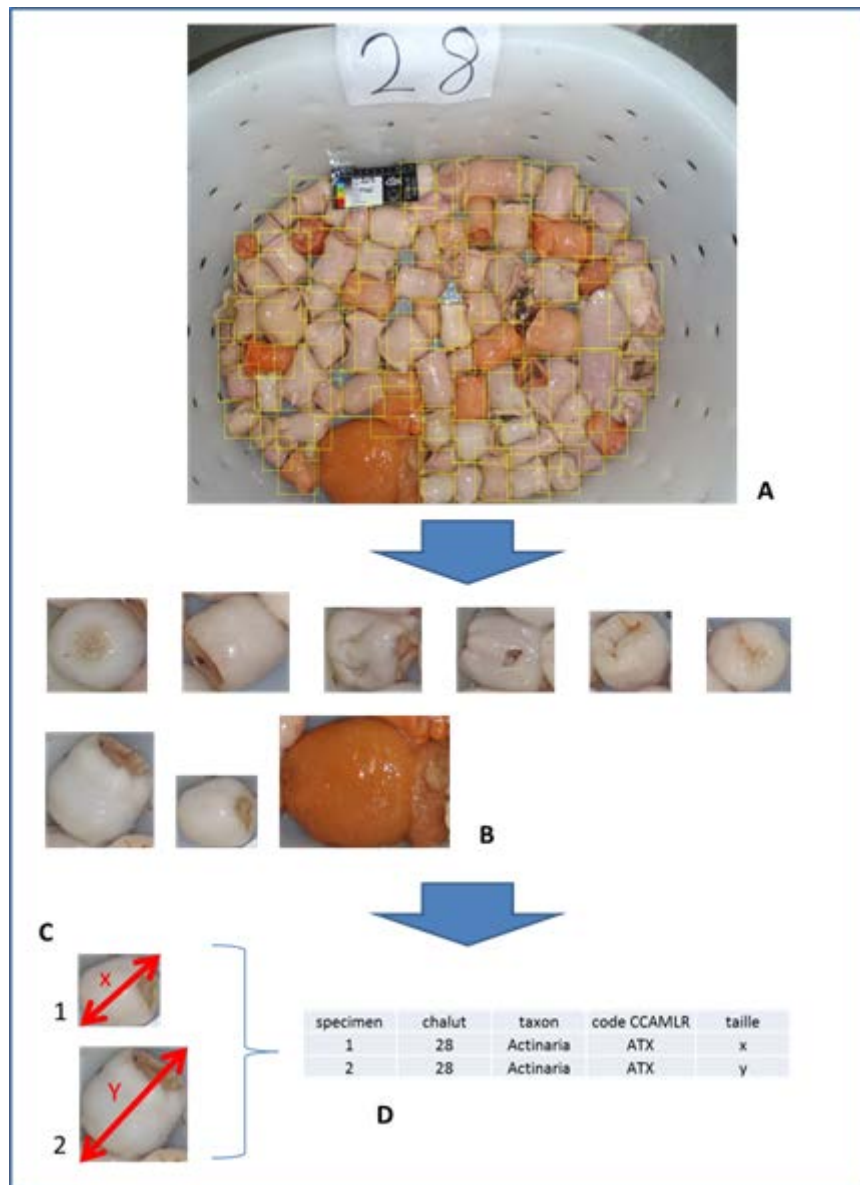
Associated to the taxonomic identification of the photographed organisms, the pipeline allows us to extract information about:

- size of the organisms,
- quantity of organisms per taxonomic group.



**FIGURE 9: WEIGHING OF A SET OF BENTHOS BYCATCH SPECIMENS COLLECTED DURING THE HAULING OBSERVATION OF A LONGLINE IN KERGUELEN; PICTURE BY FISHERY OBSERVER HUGUES VERMANDE (2015)**





**FIGURE 10: PICTURE ANALYSES PROTOCOL DESCRIPTION OF THE PICTURES TREATMENT PIPELINE: COUNT AND IDENTIFICATION OF THE ORGANISMS (A), EXTRACTION OF THE CROPPED PICTURES OF EACH ORGANISM (B), MEASUREMENT (C), STORAGE INTO A DATABASE (D) READY TO BE EXTRACTED FOR ANALYSIS AND STATISTICS; RAW PICTURE BY SCIENTIFIC TEAM PARTICIPANT MÉLYNE HAUTECOEUR (PIGE 2015)**

The new data acquisition protocol for benthos bycatch in Southern Ocean French fisheries provided significant results in CCAMLR areas, regarding to the amount and the quality of the data produced. The preliminary results show that benthos bycatch survey and VME conservation issues may be taken into account in a near future in the French fisheries management.

The present protocol will improve with the constitution of a reference collection of well identified organisms and a better correlation between these specimens and the photographed ones. A dedicated

international collaborative network and development of automated identification tools are obvious avenues that need to be explored.

The main objective of this new protocol is to contribute to the knowledge of marine habitat used by fisheries and to detect any Vulnerable Marine Ecosystems that need to be protected in the future. It also helps policy makers to design marine protected areas. In SIOFA areas, this new data collection framework will allow:

- habitat modelling and mapping of benthic ecosystems,
- VME mapping,
- taxa distribution and niche modelling.