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3rd Meeting of the Southern Indian Ocean Fisheries Agreement (SIOFA) Scientific Committee

20-24 March 2017, Saint Denis, La Reunion

Preliminary assessment of bottom fishing impact for the EU fisheries in the SIOFA CA

Relates to agenda item: 6.2 Working paper ☒ Info paper ☐

Delegation of the European Union

Abstract

A preliminary assessment of BFIA is presented in the document, cumulated fishing footprint and surface areas impacted and the intended fishing activity.

Recommendations *(working papers only)*

1. That the Scientific Committee considers the BFIA provided by the European Union.

PRELIMINARY ASSESSMENT OF BOTTOM FISHING IMPACT FOR THE EU FISHERIES IN THE SIOFA CA

Submitted to SIOFA SC annual meeting (Saint-Dennis, La Réunion, 20-24 March 2018)

EU Delegation

Introduction

Following the adoption of UNGA Resolution 61/105 in 2006[1], 64/72 in 2009[2] and 66/68 in 2013[3] 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.

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 BFIAs shall be prepared, to the extent possible, in accordance with the FAO Guidelines and meet the standards of the SIOFA BFIAS. The BFIAS, therefore, seeks to be consistent with the FAO Guidelines.

Participants are required to prepare bottom fishery impact assessments for all proposed bottom fishing activities in the SIOFA Area, irrespective of the proposed scale, area or previous history of such fishing activities.

Paragraph 14 (CMM 2017/01)

(a) Any Contracting Party, CNCP or PFE that authorises or is seeking to authorise any vessel flying its flag to bottom fish in the Agreement Area shall, at least 30 days prior to the commencement of the ordinary meeting of the Scientific Committee in 2018, submit to the Secretariat a Bottom Fishing Impact Assessment for its individual bottom fishing activities in the Agreement Area that, to the extent possible, accords with paragraph 18 (BFIA). Any Contracting Party, CNCP and PFE that has prepared, or prepares, a BFIA prior

to this CMM entering into force is encouraged to submit this BFIA to the Scientific Committee as soon as possible.

(b) Any Contracting Party, CNCP or PFE that has not submitted a BFIA pursuant to subparagraph (a) may, at least 30 days prior to the commencement of any subsequent ordinary meeting of the Scientific Committee and before the Meeting of the Parties has authorised the SIOFA bottom fishing footprint and the SIOFA BFIA developed by the Scientific Committee in accordance with paragraph 7, submit to the Secretariat a BFIA.

SPAIN (EU) LONGLINE FLEET BFIA

Fishing gear description

EU-Spain fishing boats used in the past the Spanish bottom longline system but the autoline system (Fig. 1a,b), with integrated weight lines, is currently used by the only vessel fishing in the SIOFA CA.

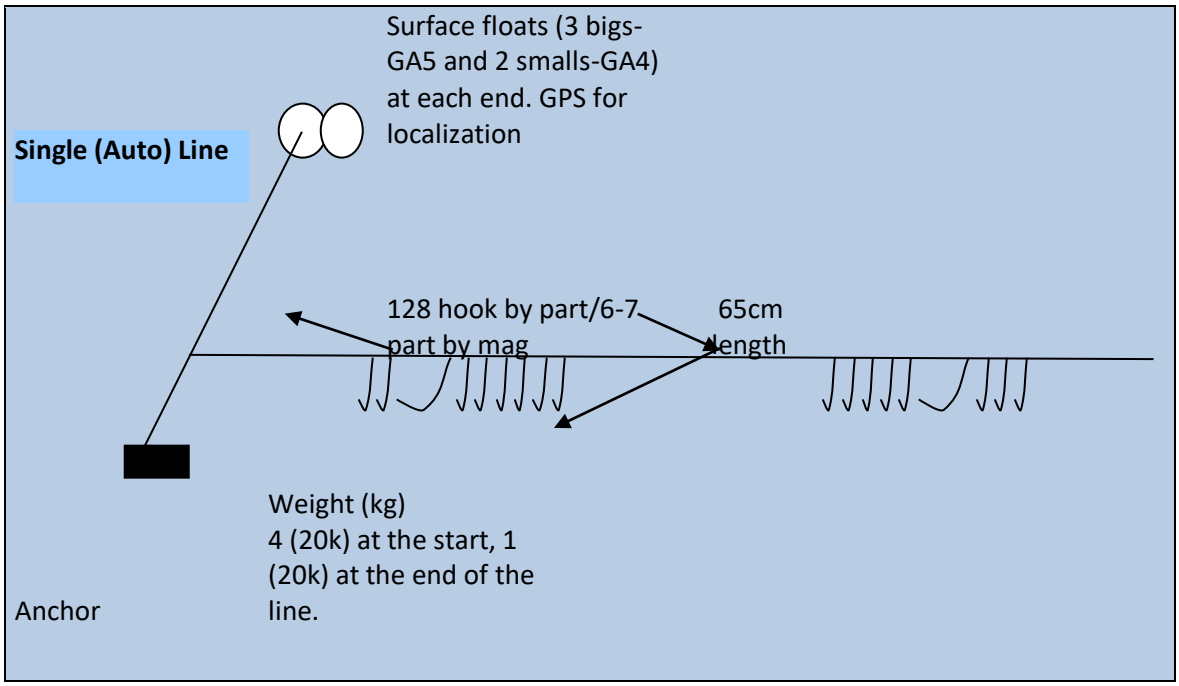


Figure 1a.- Single bottom auto longline diagram.

This following assessment relates to proposed fishing activities to be undertaken by the EU-Spanish F/V IBSA QUINTO.

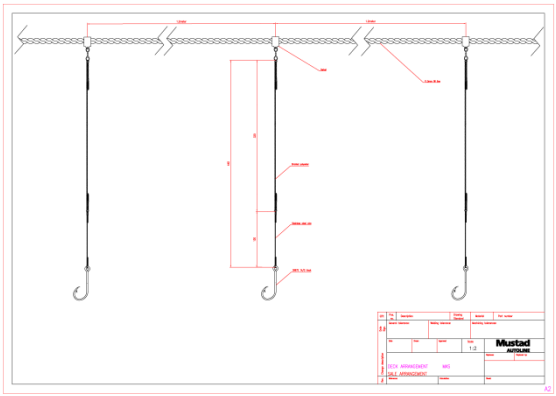
The Integrated Weighted Line (IWL) is used as a backbone, which has lead embedded in the core to assist sinking as a seabird mortality mitigation measure, with sink rate of 0.4-0.59 m/s. The line, with a diameter of 11.5 mm, is made of polyester-polysteel mix, and its weighting is about 155 g per meter of backbone. The length ranged between 7560 and 18900 m.

The number of hooks (EZ 14/0 - Steel) per line ranged between 6272 and 13440 units. The hooks and snoods are normally spaced at 1.4 m intervals and connected to rotors and swivels

that are permanently attached to the backbone. Line range between 7 and 15 magazines in length (each magazine holds about 896 hooks). Several consecutive setting lines up to 69715 hooks can be deployed.The average length of backbone on each magazine is between 1.08 (6 parts) to 1.26 km (7 parts) in length.

When the downline is fully deployed a length of chain (80 kg) is thrown over followed by a grapnel or anchor. Four concrete weights of about 20 kg each (separated 200 meters between them) is attached at the start of the line at a distance of 200 m to the anchor, and one concrete weight at the end of the line.

Floats usually consist of 5 windy buoys with a GPS, or radio beacon. A streamer line is deployed during longline setting and hauling to deter birds from approaching the hookline.



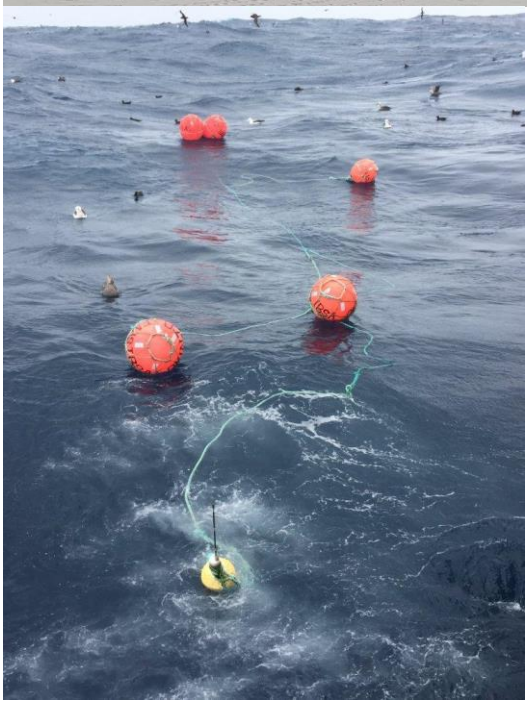


Figure 1b.- Other bottom longline settings.

Fishing footprint

Table 1 shows the number of vessels and the total length (km) of fishing gear by year and SIOFA area, for the historical Spanish bottom longline fishery.

Table 1. Number of EU-Spain vessels and total length of fishing gears (km) by fishing season and area.

Area	**1**		**2**		**3a**		**3b**		**8**	
Fishing season	n vessels	LLS (km)	n vessels	LLS (km)	n vessels	LLS (km)	n vessels	LLS (km)	n vessels	LLS (km)
2003							1	NA		
2004	1	866.7	2	1186.8	1	368.6	2	480.8	1	99.6
2005					1	376.2	1	209.9		
2006	1	NA	1	NA						
2007	2		1	8.4	1	41.28	1	174.7		
2015	1		1	3861.4						
2016	1		1	5530.5						
2017	1		1	2575.0			1	2012.7		

NA: Not available

In 2017, 4587.7 km of bottom longlines were deployed by the Eu-Spain fishing vessel in areas 2 and 3b, almost 950 km less than in 2016.

Set deployments distribution by depht strata (end position of the longline), for the last three years (2015-2017) using the six meaningful bathomes (*sensu* Last et al., 2010), is showed below (n=755):

Depth strata	**Name**	**Percentage**
0-200 m	Continental shelf	0.1
201-700 m	Shallow upper continental slope	0.3
701-1000 m	Deep upper continental slope	18.4
1001-1500 m	Shallow mid-continental slope	72.5
1501-2000 m	Deep mid-continental slope	8.5
>2000m	Deep	0.3

Fishing grounds for this fleet are mainly located between 700 and 2000 meters depth and 72.5% of sets occurred between 1000 and 1500 meters.

Estimation of footprint index and impact

The assessment uses data from 2003-2017 (Table 1), the period for which bottom longline data were available.

The footprint defines an area determined by the bottom longline distribution of the historical fishing activity in 10’ square grids, considering the total length of fishing sets to define grid intersections (Fig. 2). As shown in figure 2, most of the fishing activity took place in the areas 2 and 3b of SIOFA CA, and most of the grids has been moderately fished (3-50 sets).

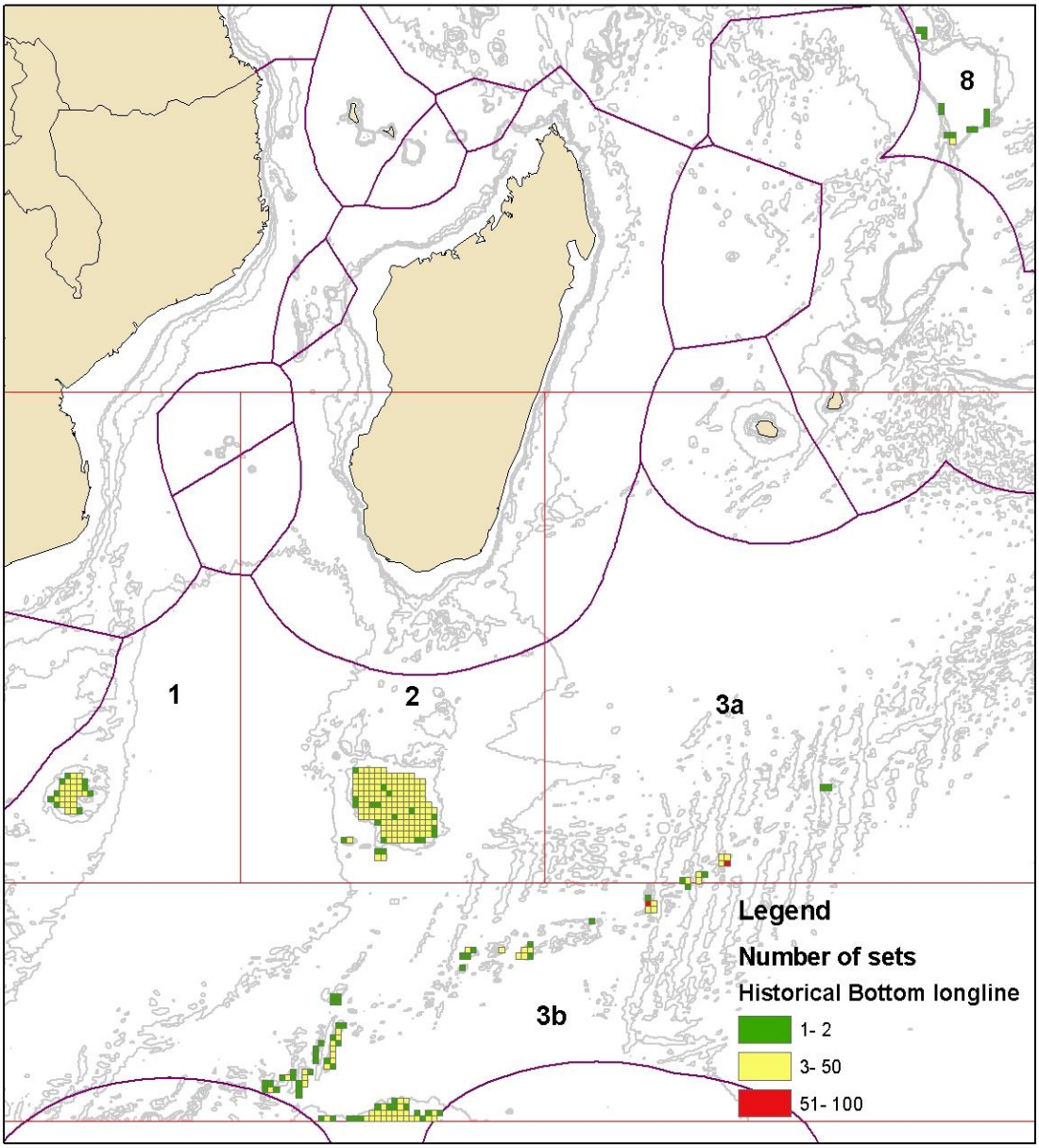


Figure 2.- Historical EU-Spain bottom longline footprint.

Figure 3 shows the EU-Spanish 2017 footprint, which would be the expected area to be fished in the next seasons, mainly focused in areas 2 and 3b.

The overlap of the EU-Spanish footprint (10'x10' grid) in the SIOFA Area has been calculated for the historical data as well as for the last fishing year (2017). The historical footprint overlap covers 0.39% of the total SIOFA area, being the footprint of the last year only the 0.16%. When comparing the same data using the SIOFA area up to 2000m, the overlap results are 22.59% for the historical data and 9.42% for the 2017 data (Table 2). As there are not SIOFA official surface areas available, it has been used the estimations provided by Australia in the 2011 report for SIOFA (CSIRO, 2011).

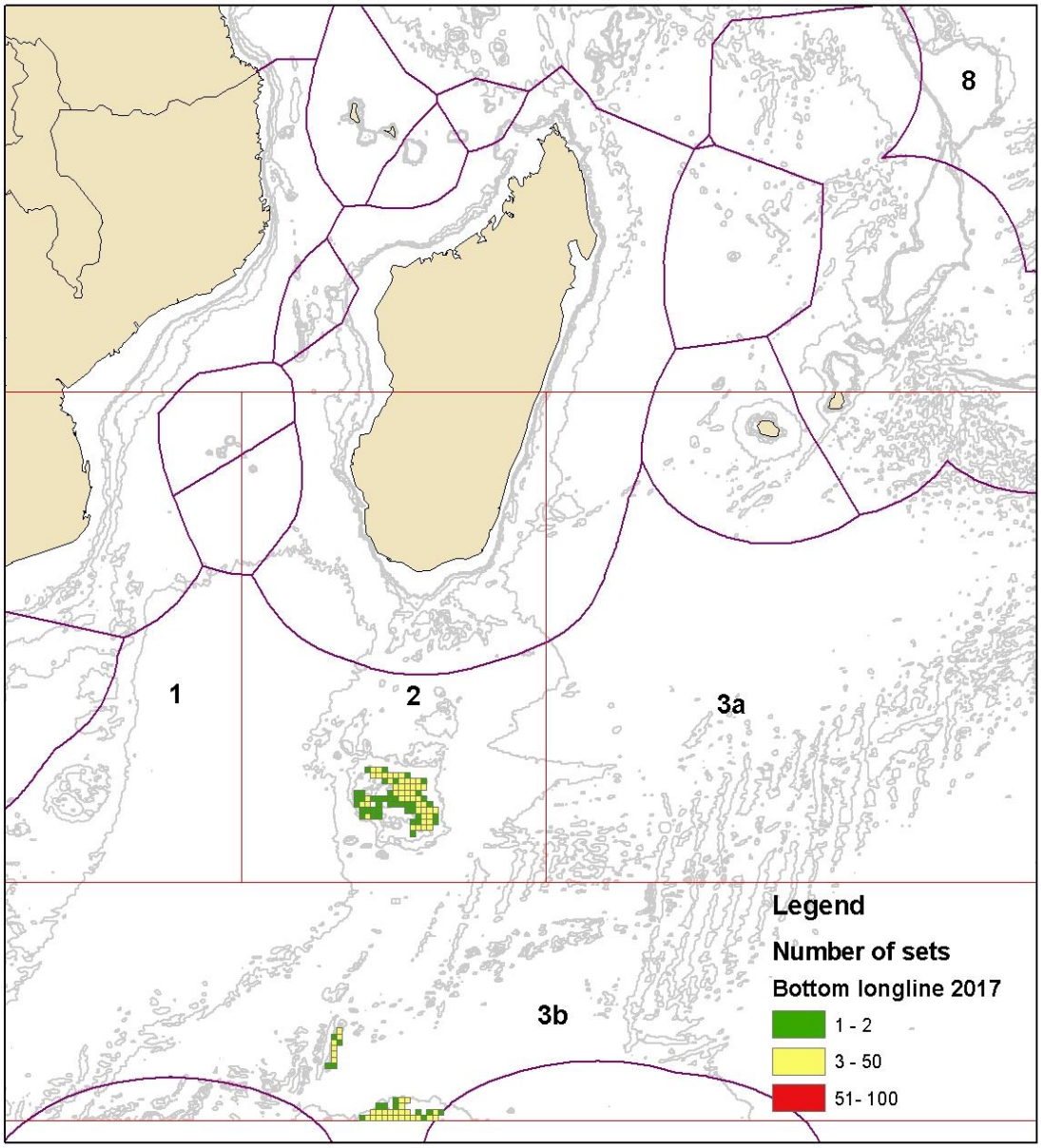


Figure 3.- EU-Spain 2017 bottom longline footprint.

Table 2. Overlap of EU-Spain fishing footprint with fishable seabed.

Years	Footprint area (km^2)	Total SIOFA area[1] (km^2)	Overlap [1] (%)	SIOFA area [2] <2000m (km^2)	Overlap [2] (%)
2003-2017	105,301	26,880,647	0.39	466,050	22.59
2017	43,904	26,880,647	0.16	466,050	9.42

(1) Total SIOFA seabed
(2) SIOFA seabed <2000 m

However, this approach overestimates the impacted surface, because a simple portion of line crossing a grid activates the entire grid as impacted area.

Effort density estimations (longline km/km^2 of fishable area) reach values of 0.0083, 0.0119 and 0.0098 in the last three years. These estimations consider the effort impact as lineal, without take into account the seabed cumulated impact.

Estimates of fishing "footprint index" (km^2 per unit of fishing effort) and "impact index" have been developed for the autoline longline system in CCAMLR (SC-CAMLR XXX, Annex 7, Appendix D) waters:

Footprint index: mean = 6.67 x 10^{-3}; median = 5.26 x 10^{-3}; 95% quantile = 12.1 x 10^{-3} (km^2 of seabed area per km of longline deployed)

Impact index: mean = 5.07 x 10^{-3}; median = 4.70 x 10^{-3}; 95% quantile = 9.04 x 10^{-3}

VME taxa incidental catches

Although the impact on VME taxa is considered to be low, the preliminary data on taxa potentially impacted are Sponges (Demospongia (DMO) and Hexactinellida(HXY)), Cnidarians from the Stylasteridae family (AXT), Cnidarians from the Order Gorgonacea (family Isidiidae and others-GGW), Cnidarians from the order Actiniaria (ATX) and Echinodermata from the Euryalidae family (OEQ). Data on VME taxa by-catch are improving its quality once scientific observation on board is in place, apart from the application of protocols to fulfil the incidental by-catch VME thresholds.

Impacts on potential vulnerable marine ecosystems (VMEs) in the fisheries have been reduced through decisions of using the longline method instead of bottom trawling and to move away from clip on weights in favor of integrated weighted longlines.

EU countries will ensure that any vessels flying its flag comply with any Conservation Measures adopted at SIOFA for the purpose of preventing significant adverse impacts on VMEs.

References

CSIRO, 2011. Bottom Fishery Impact Assessment, Southern Indian Ocean Fisheries Agreement. October 2011.

Last P.R., Lyne V.D., Willians A., davies C.R., Butler A.J., Yearsley G.K. (2010). A hierarchical framework for classifying seabed biodiversity with application to planning and managing Australia's marine biological resources. Biological Conservation 143:1675-1686.

SC-CAMLR. 2011. Report of the Working Group on Fish Stock Assessment, In: Report of the Thirtieth Meeting of the Scientific Committee (SC-CAMLR-XXX), Annex 7, Appendix D. CCAMLR, Hobart, Australia.

FRANCE (EU) BFIA

Detailed description of fishing methods

Description of the fishery

Two EU-France vessels are fishing demersal species in the SIOFA Area, in the Saya de Malha Bank and south-east of La Réunion. They are longliners, less than 25m. There has been a directed fishery for demersal species since 2009. Whereas the longliners's main activity is the tuna fishery, they regularly finish their fishing trip, notably on the Saya de Malha Bank to catch demersal fishes they will send on the fresh market of La Réunion.

From 2009 to 2017 2 vessels have conducted fishing activities using longline or handline (Table 1: EU-France fleet activity in the SIOFA Area from 2009 to 2017

Year	Number of vessels	**Fishing effort (days)**
2009	2	93
2010	2	78
2011	2	136
2012	2	118
2013	2	233
2014	1	22
2015	1	5
2016	1	NA
2017	1	NA

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TABLE 1: EU-FRANCE FLEET ACTIVITY IN THE SIOFA AREA FROM 2009 TO 2017

Year	Number of vessels	**Fishing effort (days)**
2009	2	93
2010	2	78
2011	2	136
2012	2	118
2013	2	233
2014	1	22
2015	1	5
2016	1	NA
2017	1	NA

Longline gears

The longliners use automatic longline MUSTAD (12mm IWL) (**Error! Reference source not found.**). The hooks are MUSTAD circle HOOK and setting capacity is up to 1500 hooks.

In the SIOFA area, since 2015 one longline length is of 6 nautical miles, with an average of 800 hooks per line.

Also handlines can be deployed on vessels.

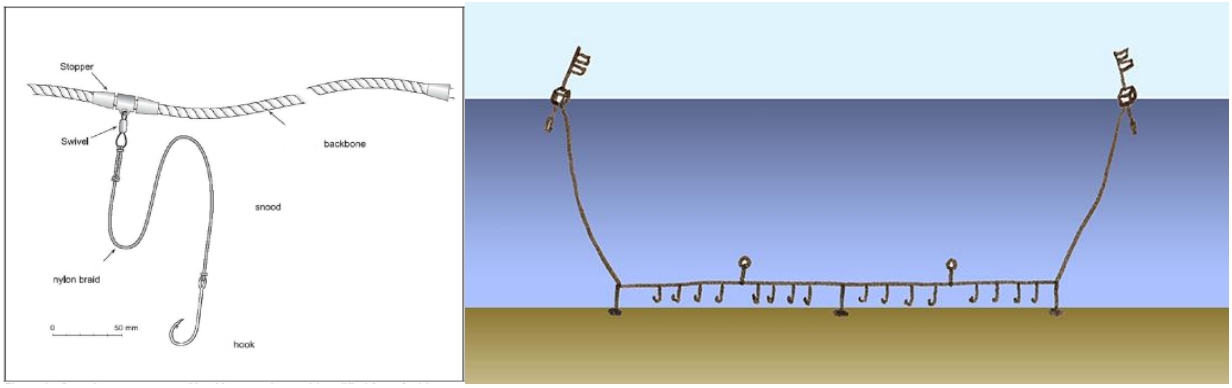

FIGURE 1: LONGLINE SCHEME

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Target species

The main target species (in French) of EU-France fleet operating in the SIOFA area are:

- Colas fil (PFM)
- Vivaneaux (SNA, AVR, ETC, ETA)
- Dentés (SBX)
- Mérous (GPX, EEP, EWU, EEA, EML)
- Empereurs (EMP, LTQ)

Estimates of potential impact for used fishing gears

The ratings of benthic habitat and by-catch impacts for each gear class are:

Longline-demersal:	Physical 2	Biological 2
Hook and line (dropline):	Physical 1	Biological 1

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.

Intended period and duration of fishing

Activity can occur from the 1st of January to the 31st of August of the following year in the SIOFA area. Fishing activity cannot exceed 233 days for all vessel in the whole area, which corresponds to the effort in 2013, that has been frozen accordingly to the SIOFA resolution 2017/01.

Two vessels are expected to be involved in SIOFA fisheries. Vessels are not allowed to transfer unused days of fishing to the following year.

Mapping of the Fishing Area

Figure 2 shows the EU-France footprint, which would be the expected area to be fished in the next seasons. The footprint is concentrated on the Saya de Malha Bank, north east of La Réunion (SIOFA area 8).

The overlap of the EU-France footprint (IOTC grids) in the SIOFA Area has been calculated for the historical data transmitted to the Secretariat on January 2017 and corrected in January2018. The historical footprint (172867 km^2, grids surface) overlap covers 0.64**%** of the total SIOFA area. Although this footprint surface overestimates the impacted surface when using 1ºx1º, which are not fully impacted by the longlines.

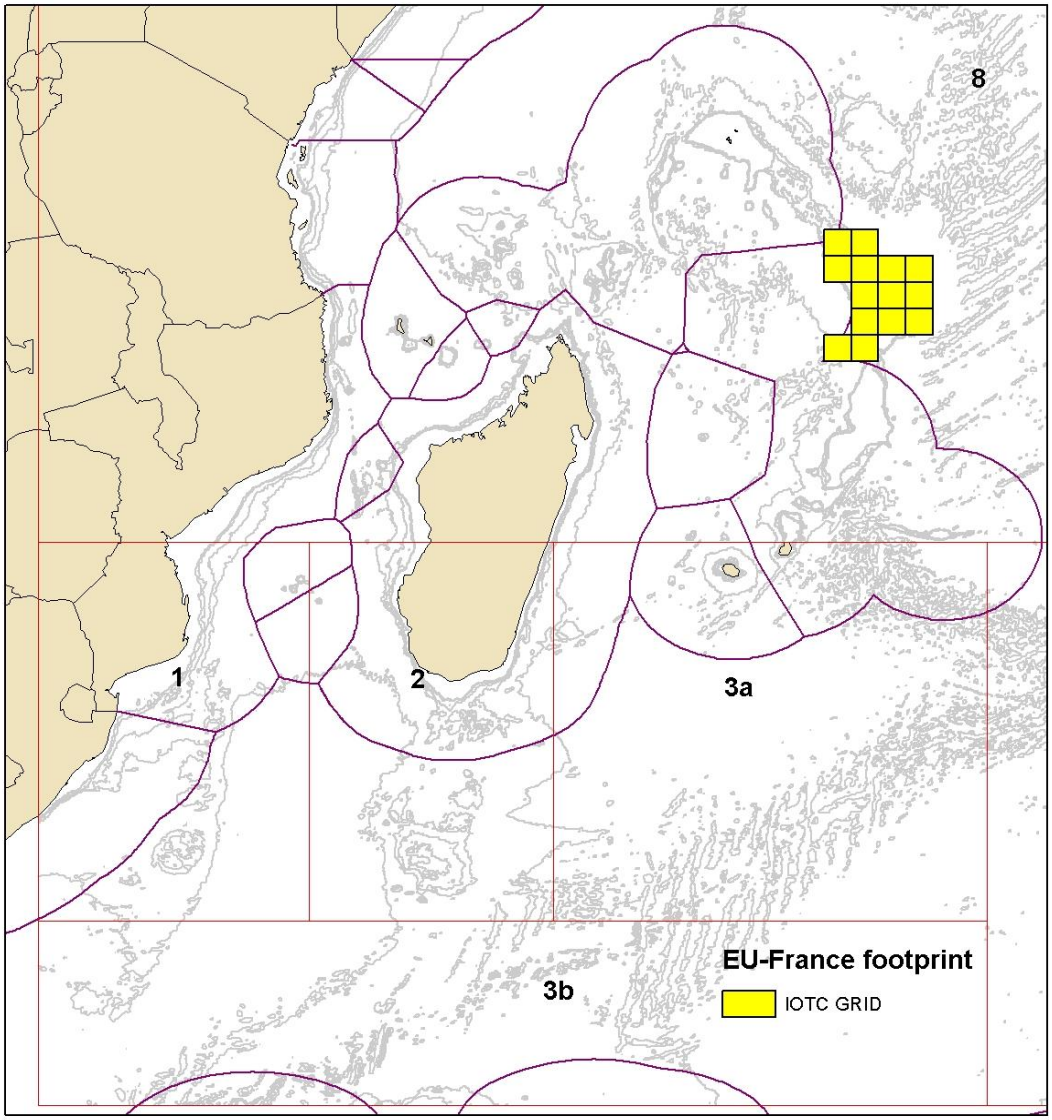

Figure 2: EU-France fishing footprint from IOTC gridding (1ºx1º)

EMV Monitoring, Management and Mitigation Measures

VMS positional information

All the EU-France authorised 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

EU-France data come from the capture declaration system. They use electronic logbooks.

EU-France vessels are under the scientific observation system of the IOTC. In order to mobilize observers on the SIOFA licensed longliners, two observers trained in 2018 by the MNN (same program than for the EU French Territories vessels), and each year from then, domiciled in Reunion Island, will be ready to embark on a 20-day cruise (duration of the trip) in international

waters. The coverage of 20% of the two Reunion longliners fishing in international waters for SIOFA species will thus be ensured.