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UPDATE (2020) PRELIMINARY ASSESSMENT OF BOTTOM FISHING IMPACT FOR THE EU FISHERIES IN THE SIOFA CA EU-Spain

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

Relates to agenda item: 6.5 Working paper ☒ Info paper ☐

Delegation of European Union

Abstract

Recommendations ***(working papers only)***

UPDATE (2020)

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

EU-Spain

Introduction

Following the adoption of UNGA Resolution 61/105 in 20061, 64/72 in 20092 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.

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 to 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 authorizes or is seeking to authorize 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 2019, 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

From 2017, two EU-Spain fishing vessels have had activities within the convention area of SIOFA, each of them with a different gear configuration namely Spanish line and Autoline. Spanish bottom longline system has a secondary floating line while the Mustad-autoline system has a single line with integrated weights.

Bottom Longline - Spanish System

This gear is used by the EU-Spanish F/V TRONIO.

The double system (Spanish LL) (Fig. 1a,b,c) consists of an upper line (secondary line) and a mean line from which the hooks are attached by a branch line. The diameter of the upper line is 16 mm. Mean line materials are made of nylon (4 mm of ∅) in the first and last sections of the gear while most of the gear is monofilament rope (5 mm of ∅).

Hooks are Mustad/Stell and attached to the mean line with a nylon branch line of 3mm ⍰ and 60-70 cm length. The gear consists on 40-200 magazines (≈15,000 m long). Every magazine has 63 hooks distributed in three sections of a length of 40 m and 23 hooks. The mean distance between hooks is 160 cm. There are two types of weights, 5 k made of iron (the most common) and 8.5-10k granite / cement block, both attached by a 8 mm ∅ polypropylene line of 25 m length. Every 23 hooks a weight is inserted.

Anchors of ≈ 80k are used at the beginning and the end of the gear to fasten the mean line to the sea floor, with 9 iron chains (30 k each). Attached with a buoy line to every anchor it is placed a radio buoy and up to 30 yellow floats. The length of the buoy line depends on the bottom depth. Both, Secondary line and mean line have a positive buoyancy. Below is a diagram of the gear used and the fixing system of the first section of the gear.

The main considerations before line setting are the bottom depth, wind and tidal movement as well as local seabird activity. The vessel deploys the buoys at the desired location sailing at a speed of 7-8.5 knots. (Buoys are clearly marked for identification of the vessel such as the name of the vessel and radio call sign). The mean setting time is about 1.3 hours and the hauling time 7 hours. In the water there are usually between 3 and 4 gears simultaneously, but it depends on the sea conditions. The minimum soak time is about 12 h.

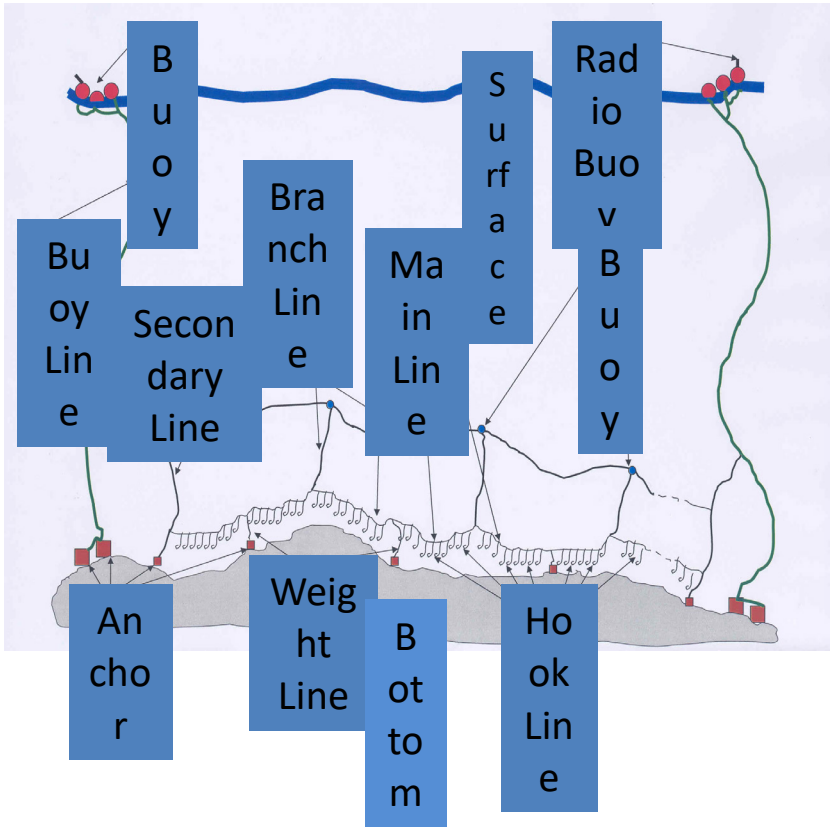


Figure 1a. The Spanish Bottom Longline system deployed on Spanish vessels.

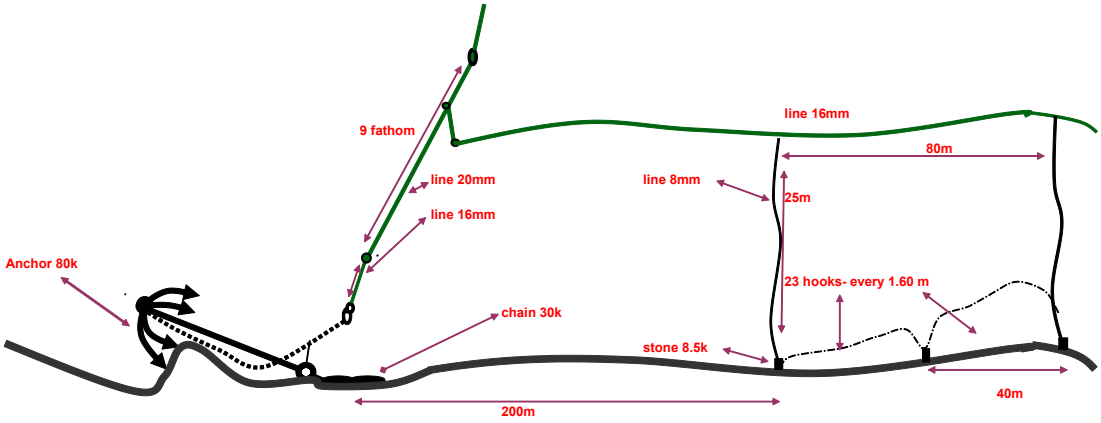


Figure 1b. Fixing system of the Spanish BLL and first section of the rig.

Hook line, nylon 3mm ⌀.

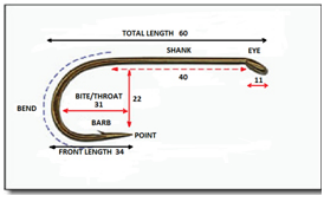


Diagram of the hook,
circular J/J/ (Mustad/Stell)

Granite / cement block in the polypropylene line,
8 mm ⌀, y 25 m length

Standard iron weight in the polypropylene line,8 mm ⌀,
y 25 m length

Radio-buoy (BB-60)

Radio-buoy and floats attached to the anchor

Figure 1c. Other gear devices in the BLL Spanish system.

Bottom Longline – Mustad-autoline System

This gear is used by the EU-Spanish F/V IBSA QUINTO.

The Integrated Weighted Line (IWL) (Fig. 2a,b) 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.

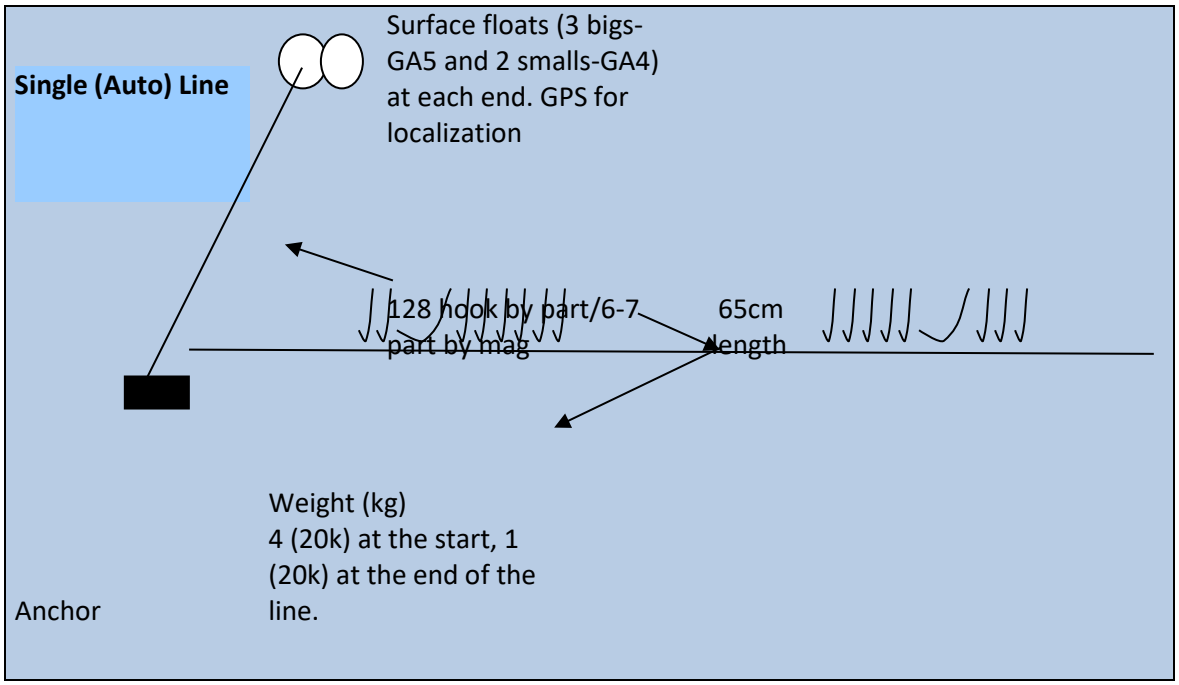
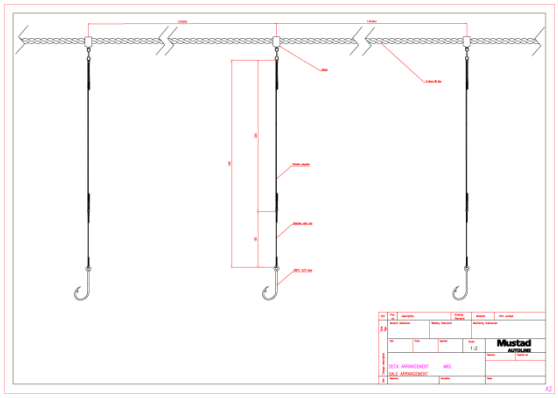
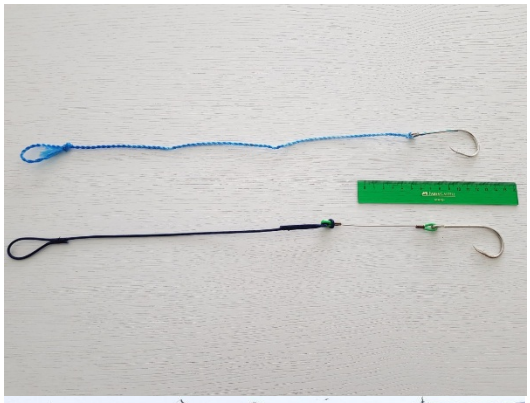


Figure 2a. Single bottom auto longline diagram.





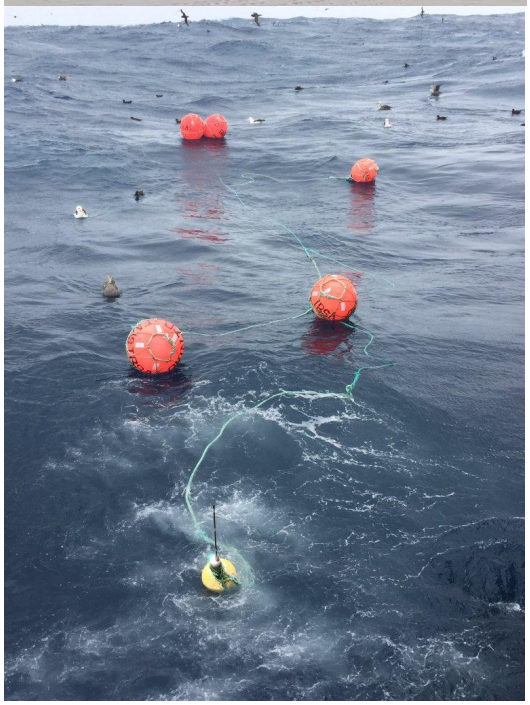


Figure 2b. Diagram and photographs of the hook line and the header of the gear.

Fishing footprint

The bottom Spanish fisheries within the SIOFA-CA historically are made by one or two fishing vessels per year. From April 2015 to the present only bottom longlines are used as well as between 2003 and 2009. From 2013 to March 2015 they have also been used gillnets while in 2000 and 2001 some bottom trawl and traps have been operating in the area.

Data from April 2015 to the end of 2019 have been used in the assessment, period where only bottom longline have been operating, taking into account that this is the only gear that it is expected to be operating within the SIOFA CA in the future. Table 1 shows the number of vessels and the total effort (in km of length) of the longlines by year and SIOFA area, from 2015 to 2019. The length has been calculated with ArcMap as the length of the drawn line from the start to the end of the setting.

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

Area	2		3b		7	
Fishing season	Nº Vessels	LLS (km)	Nº Vessels	LLS (km)	Nº Vessels	LLS (km)
2015	1	3861.4				
2016	1	5530.5				
2017	1	2575	1	2012.7		
2018	1	1652.3	2	3257.1	1	2185.2
2019	1	2634	1	697	1	1530

In 2019, 4862km of bottom longlines were deployed by the EU-Spain fleet in areas 2, 3b and 7, a decrease to 68% of the effort released the previous year in 2018.

Set deployments distribution by depht strata (end position of the longline), for the last five years (2015-2019) using the six meaningful bathomes (*sensu* Last et al., 2010), is showed in Table 2 (n=1715)

Table 2. Set deployment distribution by depht strata.

Depth strata	**Name**	**Number of sets**	**Percentage**
0-200 m	Continental shelf	0	0
201-700 m	Shallow upper continental slope	12	0.7
701-1000 m	Deep upper continental slope	231	13.5
1001-1500 m	Shallow mid-continental slope	1259	73.4
1501-2000 m	Deep mid-continental slope	209	12.2
>2000m	Deep	4	0.23

Fishing grounds for this fleet are mainly located between 1000 and 1500 meters depth (73% of the total sets).

Estimation of footprint index and impact

The EU-Spain historical footprint from 2003 to 2017 has been defined by an area where the bottom longline are distributed in 10' square grids, considering the total length of fishing sets to define grid intersections (Fig. 3). 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 (1-25 sets per grid).

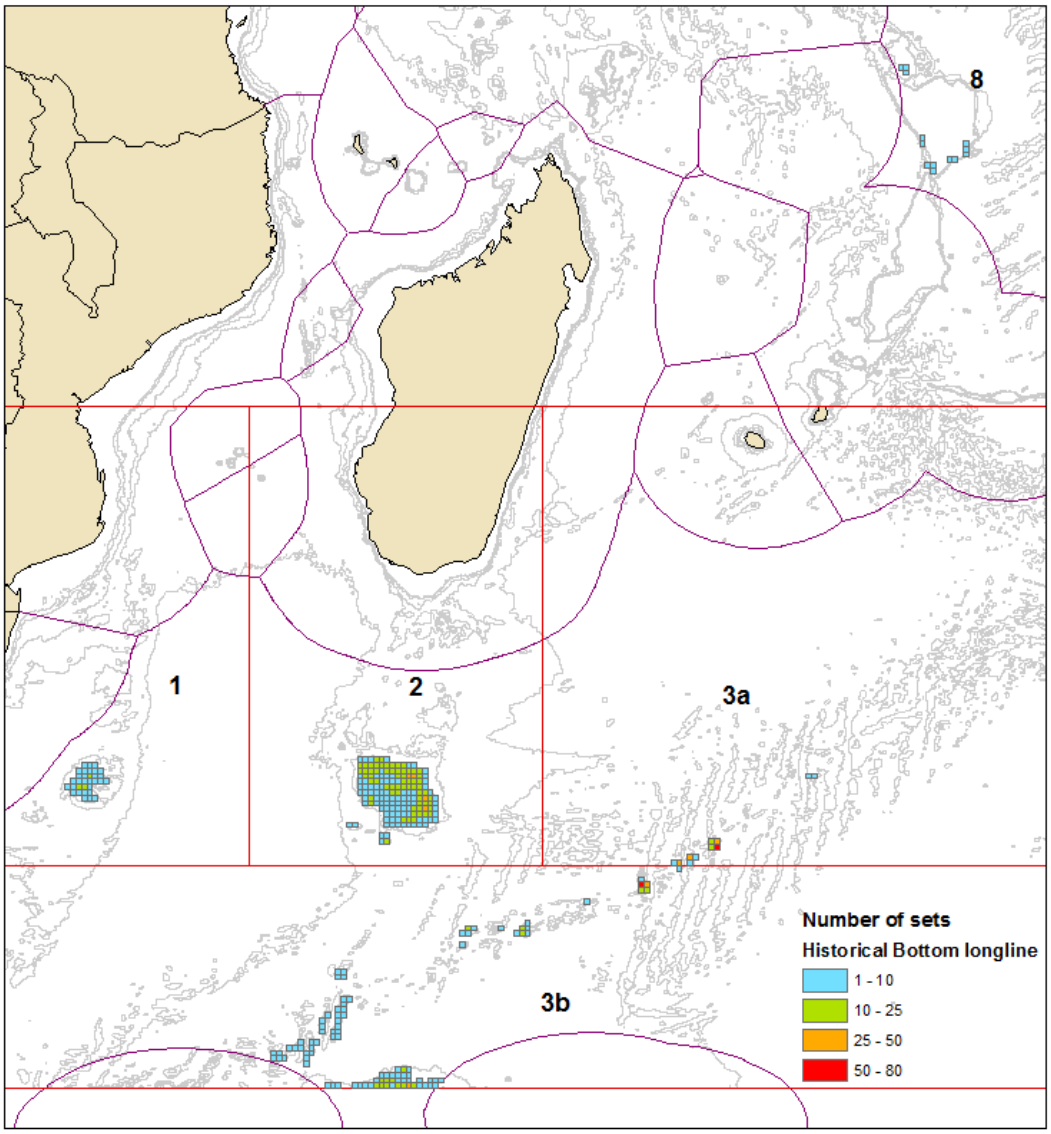


Figure 3. EU-Spain historical footprint up to 2017

In 2018 and 2019 the footprint has changed when comparing with previous years (Figure 4). A new fishing has started in the Willians ridge located in area 7 (Figure 4b).

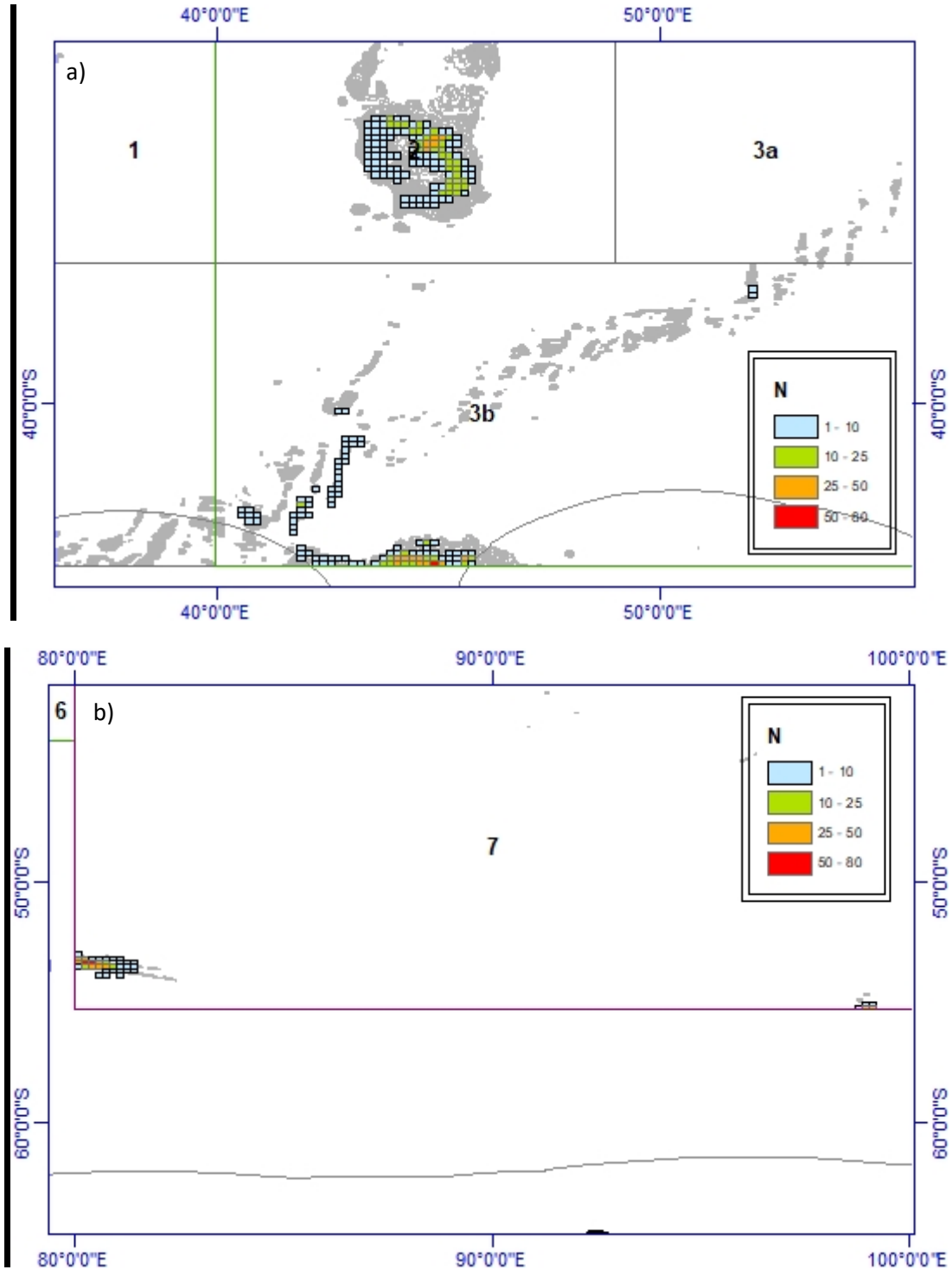


Figure 4. EU-Spain 2017-2019 footprint. SIOFA areas 2 and 3b in the Figure 4a and area 7 in Figure 4b

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 (2019). The historical footprint overlap covers 0.43% of the total SIOFA area, being the footprint of the last year 0.12%. When comparing the same data using the SIOFA area up to 2000m (Fishing area), the overlap results are 24.9% for the historical data and 6.9% for the year 2019 (Table 3). 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).

Table 3. 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] (%)
2003-2018	115 934	26 880 647	0.43	466 050	24.9
2019	32 052	26 880 647	0.12	466 050	6.9

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

However, this approach overestimates the impacted bottom surface because in our estimation we have considered the whole grid (10*10) as an impacted area even when a single portion of a line is crossing a grid.

Effort density estimations (longline km/km^2 of fishable area) reach values of 0.0102, 0.0102, 0.0096, 0.0193 and 0.0104 for the five years respectively. These estimations consider the effort impact as lineal, without taking 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 Autoline systems in CCAMLR (SC-CAMLR XXX, Annex 7, Appendix D) and for the Spanish Longline by the Spanish CCAMLR delegation (SC-CAMLR-XXXV/BG/05)

Footprint index: mean = 4.3×10^{-3}(km^2 of seabed area per km of longline deployed)

Impact index: mean = 3.3×10^{-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 Order Gorgonacea (family Isidiidae and others-GGW), Cnidarians from the order Actiniaria (ATX) or Echinodermata from the Euryalidae family (OEQ) among others. Data on VME by-catch taxa and its quantification have improved the last years with the implementation of the scientific observation on board.

The Spanish fleet in the SIOFA area is following the same protocol for encounters with VMEs taxa than CCAMLR and similar catch thresholds. Vessels are marking their fishing lines into line segments and collecting segment-specific data on the number of VME indicator units. It is required that if 10 or more VME indicator units are recovered in one line segment, to complete hauling any lines intersecting with the Risk Area without delay and not to set any further lines intersecting with the Risk Area. The vessel shall immediately communicate to the Spanish

directorate the location of the midpoint of the line segment from which those VME indicator units were recovered along with the number of VME indicator units recovered.

Four fishing surveys with scientific observers onboard have been monitored from 23/09/2017 to 29/09/2019 following the CCAMLR encounters with VMEs protocol. The maximum catch

The maximum encounters (in kg) by taxa* in a line segment randomly selected for sampling following the CCAMLR protocol, from the last Spanish surveys (from 2017 to 2019) by SIOFA convention area is shown in Table 4. It has never been reached the threshold of 10 or more VME indicator units by segment (the maximum has been 6 units of Euryalida in the 3b area).

Tabla 4. Maximum VME weight (kg) encountered by taxa in a segment and area from 2017 to 2019.

	Area		
	2	3b	7
AQZ		0.2	0.26
ATX	0.4	0.38	0.67
BZN		0.2	
CSS		0.65	0.84
CWD		0.04	0.13
DMO		0.51	0.30
GGW	1.34	2.37	3.50
HXY		0.03	
NTW		0.06	
OEQ		5.5	0.38
OOY		0.38	
PFR		0.2	0.33
QGX			0.43

*AQZ:Antipatharia; ATX:Actiniaria; BZN:Briozoan; CSS:Scleractinia; CWD:Stalked crinoids; DMO: Demospongiae; GGW: Gorgonacea; HXY: Hexactinellida; NTW: Pennatulacea; OEQ: Euryalida; OOY Ophiurida; PFR: Porifera; QGX: Spongia spp;

From the 677 lines set during 4 surveys, a total of 125 VME encounters have been quantified from 70 sets (Figure 5).

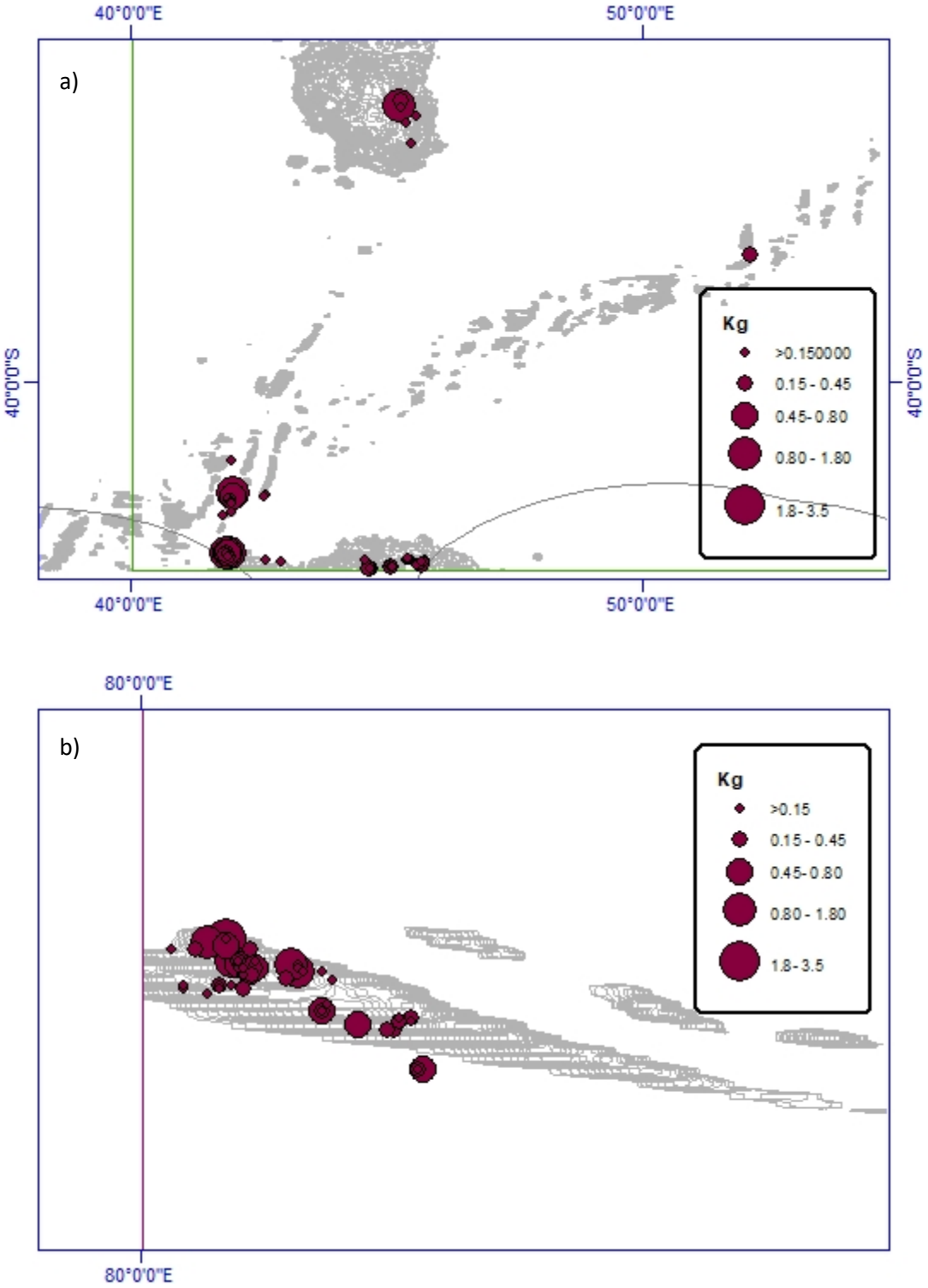


Figure 5. EU-Spain 2017-2019 VME encounters (kg) by random segment sampled. SIOFA areas 2 and 3b in the Figure 5a and area 7 in Figure 5b

The VME impact in neighboring areas is considered to be similar to the described above taking into account that the fishing depth is similar and the gear and vessels are the same.

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

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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.