Northwest Atlantic Fisheries Organization

Serial No. N7059 **NAFO SCR Doc. 20/014**

SCIENTIFIC COUNCIL MEETING – JUNE 2020

Results for the Atlantic cod, roughhead grenadier, redfish, thorny skate and black dogfish of the Spanish Survey in the NAFO Div. 3L for the period 2003-2019

by

Esther Román-Marcote, Diana González-Troncoso and Marisol Alvarez

Instituto Español de Oceanografía
P.O. Box 1552. Vigo, Spain
e-mail: esther.roman@ieo.es

Abstract

Since 2003, a stratified random spring bottom trawl survey was conducted by Spain in Division 3L of NAFO Regulatory Area (Flemish Pass). The surveys were carried out by the R/V *"Vizconde de Eza"* using bottom trawl net type *Campelen*. Entire series of mean catches, biomass and length distribution for Atlantic cod, roughhead grenadier, redfish, thorny skate and black dogfish are presented for the period 2003-2019.

KEYWORDS: Survey, Flemish Pass, Atlantic Cod, Roughhead grenadier, Redfish, Thorny skate, Black dogfish.

Material and Methods

The Spanish surveys in Div. 3L of NAFO Regulatory Area (Flemish Pass) were initiated by Spain in 2003. The Research vessel *"Vizconde de Eza"* has carried out the entire surveys series following the same procedures and using the same bottom trawl gear *Campelen 1800*. In 2003 and 2004, the survey did not cover all strata adequately. In 2005, it was not possible to perform the survey due to problems with the winch of the ship; and in 2006, for the first time, an adequate prospecting survey was conducted in Division 3L with over 100 valid hauls. Table 1 shows the number of valid tows, the depth and number of covered strata and the dates of the survey series. To know more details about the technical specifications of the surveys, see Román *et al*., 2020.

The catch from each haul was sorted out and weighted by species and a randomly selected sample of each species was taken in order to measure it and obtain the length distribution. In 2003 and 2004 the Atlantic cod samples were not sorted out by sex. There are two species of redfish in Division 3L (*Sebastes mentella* and *S. fasciatus*); the external characteristics of both species are very similar, which makes it difficult to distinguish between them and, as a result, they are treated together.

For Atlantic cod, redfish, thorny skate and black dogfish each individual of the sample was measured to the total length to the nearest lower cm and data are given in 2 cm intervals. However, roughhead grenadier individuals were measured from tip of snout to base of first anal-fin ray to the lower ½ cm., in 0.5 cm intervals, as adopted by NAFO in June 1980 (Atkinson, 1991) as a standard measurement for roundnose and roughhead grenadiers; length is presented as pre-anal-fin length (AFL) and data are given in 1 cm intervals.

It is presented the mean catch per haul, the stratified mean catch per haul and the biomass with their variance per year in the period 2003-2019. Length distribution in number per haul stratified mean catches per length, sex and year for these species are presented too. The following formula was used to obtain the biomass from length distribution: Weight=a(Length+0.5)^b / Weight=a(Length+0.25)^b. To calculate the parameters for the indeterminate individuals, we used the total data (males+females+indeterminate individuals).

Results

Atlantic Cod (*Gadus morhua* Linnaeus, 1758)

Atlantic cod are distributed within Divisions 3LMNO and managed as three separate stocks: Div. 3L, 3M (Flemish Cap) and 3NO (southern Gran Bank). As bycatch, it is primarily caught in the redfish, yellowtail flounder and skates fisheries. After a dramatic decline of cod during the eighties and nineties, fishing bans were imposed in the 1990s. In recent assessment all stocks remain at a very low level although spawning biomass has increased in recent years. In 2010, after a decade long moratorium, a cod fishery on the Flemish Cap (Div. 3M) was re-opened but the moratoria (no directed fishery) continues for Div. 3NO and Div. 3L since 1994 (NAFO, 2019).

Mean catches and biomass

Table 2 shows the swept area, the tow number, the mean catches and their variance per haul by stratum for Atlantic cod. Table 3 and Figure 1 present the stratified mean catches by stratum and year with their total variance. The entire time series (2003-2019) of biomass and their total variance for Atlantic cod are presented in Table 4 and Figure 2. Estimated parameters values of length-weight relationship are presented in Table 5 (2006-2019).

Figure 3 shows a map with the distribution of Atlantic cod catches per haul in 2019 Spanish 3L survey. Atlantic cod indices show a great variation, due to a few hauls in which the presence of cod was very high, however there is no clear trend along the whole period (2003-2019). Stratified mean catch and biomass decreased from 2003 to 2004; then, the values of these indices increased in 2006 and declined briefly again in 2007. A great increase is shown in 2008 but this was due to a single haul in which the presence of cod was very high (1298.5 kg). The great value of the variance in some years is produced by the tows with a large catch. In 2009 declined again and since then an increasing trend in the biomass can be seen. In 2011 the biomass reaches the highest value in the time series and it decreases at the same level than in 2008 in 2012. In 2013, the index increased briefly but then continually decreased to a very low levels.

The highest values in the estimated biomass have been observed in the shallow strata, in a range of depth from 93 to 274 meters

Length distribution

Table 6 presents the length distribution of stratified mean catches per haul for this species, by sex and year (2006-2019), with the number of samples in which there were length measurements, the sampled catch, the total number of individuals measured in each sample and the range of lengths achieved, as well as the total catch of this species and the total hauls made in the survey. In Figures 4 and 5 the evolution throughout the period can be followed.

In this period, individuals between 12 and 25 cm can be seen although in 2004 there was no presence of individuals below 24 cm. In general all lengths presence is very low, even it is very difficult to follow the modal values. In 2008 we have a good presence of individuals between 26 and 33 cm, probably due to the haul with great catch of that year, 29 cm is the mode in the length distribution. In 2010 the mode was 44 cm with the dominant length between 40 and 47 cm. In 2013 we have the best presence of individuals between 12 - 25 cm. and there were two modes, one in 28 cm and another in 47cm with the dominant length between 23-31 and 41-58 cm. In 2019, the dominant lengths were between 22 and 42 cm and the mode = 27 cm. No large recruitments have been observed since 2008.

Roughhead grenadier (*Macrourus berglax* Lacépède, 1802)

The stock structure of this species in the North Atlantic remains unclear because there is little information on the number of different populations that may exist and their relationship. Roughhead grenadier is distributed throughout NAFO Subareas 0 to 3 in depths between 300 and 2 000 m.. There is no directed fishery for this species and most catches are taken as by-catch in Greenland halibut fishery in Subareas 2 and 3. Most of the catches were taken in Divs. 3LMN by Spain, Portugal and Russia fleets.

NAFO considers the population of Subareas 2 and 3 as a single stock for assessment purposes; however, Roughhead grenadier is taken mainly in Div. 3LMN of NAFO Regulatory Area. The highest level of observed catches was reached in 1998. Survey indices indicate a stable or declining stock in recent years. Fishing mortality indices have remained at low levels since 2005. Roughhead grenadier is not a regulated species (NAFO, 2019).

Mean catches and biomass

Roughhead grenadier haul mean catches by stratum are presented in Table 7; swept area, number of hauls and SD are also shown in this table. Stratified mean catches per tow by stratum and year and their variance are presented in Table 8. The entire time series (2003-2019) of biomass and their SD estimates of this species are shown in Table 9 and length-weight relationships are shown in Table 5 (2006-2019).

The Roughhead grenadier biomass index from 2006 to 2008 was stable and since then presents a clear decreasing trend, reaching the time series minimum in 2012. In the period 2012-2015 the index has increased to levels similar to its maximum (2008). In 2015 the biomass increased, reaching the second highest value of the series and the values of these indices declined again in 2016-2019 (Fig. 6 and 7). Figure 3 shows a map with the distribution of roughhead grenadier catches per haul in 2019 Spanish 3L survey.

Length distribution

Table 10 shows the stratified mean catches per haul length distribution, for roughhead grenadier, by sex and year (2006-2019), with the number of samples in which there was length measurements, the sampled catch, the total number of individuals measured in these samples and the range of lengths found. The total catch of this species and the total hauls made in the survey are shown too. In Figures 5 and 8 the evolution along the years can be followed. A slight recruitment can be seen in all period but it was quite good in 2013-2015-2016 (mode =16, 18 and 6.5 respectevely). In 2019, the mode observed was 15 and the dominant lengths were between 9 and 17.5 cm.

Females attain larger lengths than males in all years.

Redfish (*Sebastes spp*. Cuvier, 1829)

There are two species of redfish that have been commercially fished in Div. 3LN, *Sebastes fasciatus* (Acadian redfish) and *S. mentella* (deepwater redfish). The external characteristics are very similar, making them difficult to distinguish, and as a consequence they are reported collectively as "redfish" in the commercial fishery. The redfish stocks in 3LN, 3M, 3O, as well as those in Subarea 2 and Div. 1F+3K are managed by NAFO. From 1998-2010 a moratorium was on 3LN stocks (no directed fishery). With the reopening of the fishery in 2010 catches increased steadily and TAC has gradually increased to 18 100 tonnes in 2019. Catches from EU-Portugal, Russian and Canadian fleets justified most of the increase on the redfish catch observed on Divisions 3L (NAFO, 2019).

Mean catches and biomass

Table 11 shows the swept area, the tow number, the mean catches per haul and year (2006-2019) and their variance for redfish. Table 12 and Figure 9 present the stratified mean catches per stratum with the total variance per year. Figure 3 shows a map with the distribution of redfish catches per haul in 2019 Spanish 3L survey.

Table 13 and Figure 10 show the biomass estimate per swept area per stratum and their total variance by year and also the estimated abundance. Redfish shows a great annual variability probably due to its pelagic habitat. Redfish biomass indices decreased in 2004, 2007 and 2011 with a great decrease in 2013. In 2014 the biomass remains at the same value as the last year but then continually decreased to a very low levels. In 2012, the redfish indices show the greater increasing reaching the highest value of the series (this was due to some hauls in which the presence of redfish was very high).
The length-weight relationships are presented in Table 5 (2006-2019).

Length distribution

Table 14 presents the length distribution of the stratified mean catches per haul for redfish, by sex and year (2006-2019), with the number of samples in which there was length measurements, the sampled catch, the total number of individuals measured in these samples and the range of lengths found. The total catch of this species and the total hauls made in the survey are also shown. In Figures 5 and 11 the evolution along the years can be followed. The highest proportions of small individuals in the catches (smaller than 20 cm) were found in the period 2018-2019

(51.06%, highest value of the series). In 2019, the mode observed was 12 and 18 cm and the dominant lengths were between 11-32 cm.

Thorny skate (*Amblyraja radiata* Donovan, 1808)

Commercial catches of skates comprise a mix of skate species. However, thorny skate dominates, comprising about 95% of the skate species taken in the Canadian and EU-Spain catches. Thus, the skate fishery on the Grand Banks can be considered a fishery for thorny skate. In 2005, NAFO Fisheries Commission established a TAC of 13 500 t for thorny skate in the NRA of Divs. 3LNO. In 2010 and 2011, the TAC for was reduced to 12 000 t. The TAC was further reduced to 8 500 t for 2012, and to 7 000 t for 2013-2019. Thorny skate in Div. 3LNOPs is considered to constitute a single stock (NAFO, 2019).

Mean catches and biomass

Table 15 shows the swept area, the tow number, the mean catches per haul and year (2006-2019) and their variance for thorny skate. Table 16 presents the length-weight relationships (2006-2019). Table 17 and Figure 12 present the stratified mean catches per stratum with the total variance per year. Table 18 and Figure 13 present the biomass per swept area by stratum and year, their total variance per year and the abundance index. The indices of the thorny skate decreased from 2003 to 2004, increased in 2006-2007 and decreased again in the period 2008-2011. In 2012 the indices of the thorny skate increased and they slight decreased again in the 2013. The thorny skate indices increased slightly in the period 2014-2015 and decreased again since 2016. Since 2017, the biomass index has been relatively stable at very low levels

Figure 3 shows a map with the distribution of thorny skate catches per haul in 2019 Spanish 3L survey.

Length distribution

Table 19 presents the stratified mean catches per haul length distribution for this species, by sex and year (2006-2019), with the number of samples in which there was length measurements, the sampled catch, the total number of individuals measured in these samples and the range of lengths achieved, as well as the total catch of this species and the total hauls made in the survey. In Figures 14 and 15, the evolution along the years can be followed. The highest proportion of small (smaller than 30 cm) thorny skate in the catches was in 2007 and 2015. In this survey recorded 14-84 cm thorny skates (mode: 67 cm.).

Black dogfish (*Centroscyllium fabricii* Reinhardt, 1825)

Black dogfish is present in all Divisions, but is more abundant in Div. 3NO and in depths greater than 900 m. Black dogfish is not a regulated species and commercial catches of this species are mainly a by-catch of the Greenland halibut fishery in Div. 3LMNO (González-Costas *et al*., 2006).

Mean catches and biomass

Black dogfish haul mean catches by stratum are presented in Table 20, including swept area, number of hauls and SD. Stratified mean catches per tow by stratum and year and their variance are presented in Table 21. The entire time series (2003-2019) of biomass and their SD estimates of black dogfish are shown in Table 22. Length-weight relationships are presented in Table 16 (2006-2019).

The abundance and biomass present the same trend as mean catches. Biomass estimated from the 3L survey displays an increasing trend since 2004 until 2007 and decreased in 2008, 2009 and 2012. In 2003, the catches occurred only in two strata (747 and 749), in which the catches were much different, what explain why the variance in that year is so large. In 2015 the biomass increased, reaching the highest value of the series. Since 2016 the indices decreased and they have been relatively stable at very low levels (Fig. 16 and 17). Figure 3 shows a map with the distribution of black dogfish catches per haul in 2019 Spanish 3L survey.

Length distribution

Table 23 presents the length distribution of the stratified mean catches per haul for black dogfish, by sex and year (2006-2019), with the number of samples in which there was length measurements, the sampled catch, the total number of individuals measured in these samples and the range of lengths met. The total catch of this species and the total hauls made in the survey are shown too. In Figures 15 and 18 the evolution throughout the years can be followed.

In the 2019, the length range caught in the survey was 43-78 cm black dogfish (mode: 63 cm.). There is no presence of small individual (smaller 37 cm) in time serie.

Acknowledge

The data used in this paper have been funded by the EU through the European Maritime and Fisheries Fund (EMFF) within the National Program of collection, management and use of data in the fisheries sector and support for scientific advice regarding the Common Fisheries Policy.

References

ATKINSON, D. B. 1991. Relationships Between Pre-anal Fin Length and Total Length of Roughhead Grenadier (*Macrourus berglax* Lacépède) in the Northwest Atlantic. J. Northw. Atlan. Fish. Sci., **11**: 7-9

GONZÁLEZ-COSTAS, F., D. GONZÁLEZ-TRONCOSO, M. CASAS, and G. RAMILO. 2006. Spiny Dogfish (*Squalus acanthias*) and Black Dogfish (*Centroscyllium fabricii*) Spanish Data (Surveys and Fishery) in NAFO Divisions 3LMNO. *NAFO SCR Doc*., No. 30, Serial No. N5250, 10 p.

NAFO, 2019. Report of the Scientific Council Meeting, 31 May - 15 June 2019 (Halifax - Nova Scotia).

ROMÁN, E., C. GONZÁLEZ-IGLESIAS and D. GONZÁLEZ-TRONCOSO. 2020. Results for the Spanish Survey in the NAFO Regulatory Area of Division 3L for the period 2003-2019. *NAFO SCR Doc*., No. XX, Serial No NXXXX.

Table 1. Spanish bottom trawl surveys in NAFO Division 3L for the period 2003-2019.

Year	Vessel	Valid tows	Depth strata covered (m)	Surveyed strata (no.)	Dates
2003	R/V *"Vizconde de Eza"*	39	118-1100	17	June 2 - June 6, June 29
2004	R/V *"Vizconde de Eza"*	50	141-1452	23	August 7 - August 15
2005	-	-	-	-	-
2006	R/V *"Vizconde de Eza"*	100	116-1449	24	July 31 - August 18
2007	R/V *"Vizconde de Eza"*	94	119-1449	24	July 23 - August 11
2008	R/V *"Vizconde de Eza"*	100	105-1455	24	July 24 - August 11
2009	R/V "*Vizconde de Eza"*	98	111-1458	24	July 25 - August 12
2010	R/V "*Vizconde de Eza*"	97	119-1462	24	July 25 - August 14
2011	R/V "*Vizconde de Eza"*	89	115-1419	24	August 10 - August 24
2012	R/V "*Vizconde de Eza"*	98	112-1478	24	July 30 - August 18
2013	R/V "*Vizconde de Eza"*	100	117-1420	24	July 30 - August 19
2014	R/V "*Vizconde de Eza"*	102	104-1411	24	July 30 - August 19
2015	R/V "*Vizconde de Eza"*	97	112-1458	24	July 28 - August 17
2016	R/V "*Vizconde de Eza"*	98	126-1447	24	July 28 - August 17
2017	R/V *"Vizconde de Eza"*	99	106-1433	24	July 21 - August 8
2018	R/V "Vizconde de Eza"	100	116-1442	24	July 31 - August 19
2019	R/V "Vizconde de Eza"	96	120-1359	24	August 3 - August 23

Table 2. Swept area, number of hauls and **Atlantic cod** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2006				2007				2008				2009				2010			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	1.783	2.521	0.0225	2	0.835	1.181	0.0229	2	6.051	6.537	0.0225	2	5.285	3.514	0.0225	2	0.775	1.096
387	0.0225	2	0.395	0.559	0.0225	2	1.992	1.105	0.0435	4	5.386	5.633	0.0439	4	23.204	40.440	0.0458	4	3.433	2.594
388	0.0566	5	7.028	5.142	0.0563	5	7.434	7.400	0.0559	5	18.665	19.454	0.0555	5	7.413	3.853	0.0570	5	61.988	121.458
389	0.0795	7	10.582	14.986	0.0900	8	4.162	4.621	0.0780	7	30.523	18.566	0.0803	7	40.874	54.955	0.0795	7	150.908	266.990
390	0.1249	11	0.081	0.249	0.1350	12	1.369	1.251	0.1395	12	8.682	15.848	0.1373	12	22.441	43.094	0.1249	11	37.143	51.671
391	0.0450	4	14.338	13.278	0.0450	4	11.183	15.378	0.0454	4	342.268	637.574	0.0458	4	65.264	62.051	0.0454	4	144.075	119.143
392	0.0229	2	2.045	1.506	0.0225	2	13.985	7.779	0.0221	2	0.000	0.000	0.0229	2	0.063	0.089	0.0225	2	70.680	89.265
729	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0341	3	0.000	0.000	0.0338	3	0.000	0.000
730	0.0326	3	0.000	0.000	0.0225	2	0.000	0.000	0.0323	3	0.000	0.000	0.0338	3	0.000	0.000	0.0334	3	0.000	0.000
731	0.0341	3	0.000	0.000	0.0338	3	0.510	0.883	0.0330	3	0.130	0.225	0.0341	3	0.000	0.000	0.0338	3	0.247	0.225
732	0.0334	3	0.000	0.000	0.0338	3	0.000	0.000	0.0446	4	0.000	0.000	0.0450	4	0.000	0.000	0.0450	4	0.000	0.000
733	0.0454	4	0.000	0.000	0.0338	3	0.427	0.739	0.0431	4	0.000	0.000	0.0450	4	0.000	0.000	0.0450	4	0.000	0.000
734	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000
741	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000
742	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000
743	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0203	2	0.000	0.000	0.0203	2	0.000	0.000	0.0225	2	0.000	0.000
744	0.0229	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0210	2	0.000	0.000	0.0229	2	0.000	0.000
745	0.0686	6	0.000	0.000	0.0675	6	0.000	0.000	0.0555	5	0.000	0.000	0.0559	5	0.000	0.000	0.0563	5	0.000	0.000
746	0.0675	6	0.000	0.000	0.0664	6	0.000	0.000	0.0638	6	0.000	0.000	0.0668	6	0.000	0.000	0.0679	6	0.000	0.000
747	0.1230	11	0.000	0.000	0.1238	11	0.000	0.000	0.1069	10	0.000	0.000	0.1118	10	0.000	0.000	0.1125	10	0.000	0.000
748	0.0326	3	0.000	0.000	0.0338	3	0.000	0.000	0.0218	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000
749	0.0229	2	0.000	0.000	0.0113	1	0.000	-	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000
750	0.1005	9	0.000	0.000	0.0679	6	0.000	0.000	0.0844	8	0.000	0.000	0.0791	7	0.000	0.000	0.0900	8	0.000	0.000
751	0.0454	4	0.000	0.000	0.0225	2	0.000	0.000	0.0413	4	0.000	0.000	0.0338	3	0.000	0.000	0.0225	2	0.000	0.000

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 2 (cont.). Swept area, number of hauls and **Atlantic cod** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2011				2012				2013				2014				2015			
	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD
385	0.0229	2	93.750	118.723	0.0225	2	4.820	2.871	0.0229	2	4.556	4.144	0.0225	2	8.360	8.712	0.0236	2	8.271	9.279
387	0.0450	4	36.505	32.228	0.0450	4	6.760	4.899	0.0450	4	92.938	97.705	0.0461	4	39.932	36.630	0.0458	4	17.995	19.617
388	0.0563	5	15.241	14.829	0.0570	5	162.020	264.788	0.0570	5	91.360	68.284	0.0585	5	28.395	23.211	0.0574	5	23.188	18.824
389	0.0675	6	26.796	42.096	0.0799	7	34.169	26.422	0.0791	7	74.413	71.762	0.0814	7	26.084	37.415	0.0814	7	70.861	40.597
390	0.1009	9	217.889	231.959	0.1354	12	43.245	27.872	0.1358	12	42.393	23.638	0.1369	12	20.592	24.738	0.1260	11	10.735	8.941
391	0.0458	4	150.275	91.993	0.0458	4	44.280	47.163	0.0450	4	14.288	19.423	0.0465	4	13.695	17.396	0.0465	4	24.148	22.449
392	0.0229	2	3.268	3.129	0.0225	2	13.470	4.992	0.0225	2	27.297	2.626	0.0225	2	1.485	0.092	0.0229	2	2.669	0.471
729	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0341	3	0.759	1.314	0.0338	3	0.000	0.000	0.0345	3	0.000	0.000
730	0.0334	3	0.000	0.000	0.0338	3	0.000	0.000	0.0334	3	0.000	0.000	0.0345	3	0.000	0.000	0.0345	3	0.000	0.000
731	0.0334	3	0.000	0.000	0.0341	3	0.000	0.000	0.0334	3	0.173	0.300	0.0345	3	0.000	0.000	0.0345	3	1.540	2.667
732	0.0454	4	0.000	0.000	0.0454	4	0.000	0.000	0.0450	4	0.000	0.000	0.0454	4	0.000	0.000	0.0465	4	0.000	0.000
733	0.0454	4	0.545	0.642	0.0454	4	0.000	0.000	0.0450	4	5.008	7.845	0.0458	4	0.107	0.213	0.0454	4	0.349	0.492
734	0.0225	2	0.000	0.000	0.0233	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.085	0.120	0.0225	2	0.000	0.000
741	0.0218	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0236	2	0.000	0.000
742	0.0225	2	0.000	0.000	0.0206	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0233	2	0.000	0.000
743	0.0221	2	0.000	0.000	0.0206	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0233	2	0.000	0.000
744	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
745	0.0446	4	0.000	0.000	0.0570	5	0.000	0.000	0.0559	5	0.000	0.000	0.0578	5	0.000	0.000	0.0578	5	0.000	0.000
746	0.0566	5	0.000	0.000	0.0675	6	0.000	0.000	0.0675	6	0.000	0.000	0.0683	6	0.000	0.000	0.0686	6	0.000	0.000
747	0.0893	8	0.000	0.000	0.1121	10	0.000	0.000	0.1125	10	0.000	0.000	0.1125	10	0.000	0.000	0.1028	9	0.000	0.000
748	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0233	2	0.000	0.000
749	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
750	0.0668	6	0.000	0.000	0.0885	8	0.000	0.000	0.0896	8	0.000	0.000	0.0904	8	0.000	0.000	0.0934	8	0.000	0.000
751	0.0334	3	0.000	0.000	0.0218	2	0.000	0.000	0.0446	4	0.000	0.000	0.0334	3	0.000	0.000	0.0341	3	0.000	0.000

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 2. Swept area, number of hauls and **Atlantic cod** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2016				2017				2018				2019							
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0233	2	2.847	0.222	0.0225	2	1.326	0.011	0.0221	2	1.065	1.506	0.0225	2	1.385	0.219				
387	0.0454		464.128	110.507	0.0446	4	3.608	3.116	0.0465	4	5.029	4.248	0.0450	4	10.398	14.693				
388	0.0570		513.467	11.849	0.0566		514.505	8.081	0.0566	5	7.337	4.492	0.0559	5	19.525	11.007				
389	0.0814		725.386	33.591	0.0799		710.561	10.033	0.0803		716.829	18.110	0.0784		722.887	14.423				
390	0.1391	12	8.767	8.308	0.1369	12	8.625	8.352	0.1358	12	2.723	2.074	0.1125	10	2.965	6.617				
391	0.0469		423.023	14.537	0.0458		427.195	10.815	0.0458		415.435	13.636	0.0450		421.082	15.790				
392	0.0233		223.726	29.803	0.0229	2	6.679	2.147	0.0229	2	0.605	0.856	0.0229	2	6.690	9.461				
729	0.0341	3	0.000	0.000	0.0345	3	0.000	0.000	0.0341	3	0.000	0.000	0.0338	3	0.000	0.000				
730	0.0233	2	0.000	0.000	0.0341	3	0.000	0.000	0.0330	3	0.000	0.000	0.0338	3	0.000	0.000				
731	0.0345	3	5.050	8.106	0.0338	3	0.247	0.428	0.0353	3	0.508	0.598	0.0341	3	1.812	1.649				
732	0.0454	4	0.163	0.325	0.0446	4	0.000	0.000	0.0461	4	0.000	0.000	0.0454	4	0.000	0.000				
733	0.0458	4	1.675	2.521	0.0450	4	0.000	0.000	0.0454	4	0.000	0.000	0.0450	4	0.040	0.080				
734	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000				
741	0.0233	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000				
742	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000				
743	0.0229	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000				
744	0.0229	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000				
745	0.0574	5	0.000	0.000	0.0559	5	0.000	0.000	0.0596	5	0.000	0.000	0.0578	5	0.000	0.000				
746	0.0690	6	0.000	0.000	0.0683	6	0.000	0.000	0.0698	6	0.000	0.000	0.0679	6	0.000	0.000				
747	0.1140	10	0.000	0.000	0.1125	10	0.000	0.000	0.1140	10	0.000	0.000	0.1125	10	0.000	0.000				
748	0.0233	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000				
749	0.0233	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000				
750	0.0930	8	0.000	0.000	0.0934	8	0.000	0.000	0.0904	8	0.000	0.000	0.0788	7	0.000	0.000				
751	0.0345	3	0.000	0.000	0.0349	3	0.000	0.000	0.0454	4	0.000	0.000	0.0338	3	0.000	0.000				

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 3. Stratified mean catches (Kg) of **Atlantic cod** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey													
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	7.26	53.10	210.34	98.53	713.96	623.63	91.45	11062.50	568.76	537.61	986.48	975.98	335.95	156.47
387	1123.84	482.56	101.12	509.82	1378.75	5940.16	878.72	9345.28	1730.43	23792.19	10222.59	4606.72	16416.64	923.58
388	2809.59	468.74	2509.00	2653.87	6663.55	2646.51	22129.72	5441.04	57841.14	32615.52	10136.94	8278.04	4807.65	5178.43
389	429.34	259.59	5386.31	2118.59	15536.35	20804.94	76812.24	13639.08	17391.88	37876.07	13276.54	36068.25	12921.69	5375.40
390	0.00	0.00	65.94	1115.80	7076.10	18289.28	30271.32	177579.44	35245.01	34550.09	16782.48	8749.32	7144.97	7029.71
391	47.00	0.00	4043.18	3153.47	96519.44	18404.45	40629.15	42377.55	12486.96	4029.29	3862.06	6809.67	6492.35	7668.85
392	58.00	1916.68	296.53	2027.75	0.00	9.14	10248.60	473.79	1953.15	3958.07	215.33	387.01	3440.27	968.38
729	234.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	141.11	0.00	0.00	0.00	0.00
730	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
731	4839.48	107.03	0.00	110.16	28.08	0.00	53.28	0.00	0.00	37.44	0.00	332.64	1090.80	53.42
732	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	37.54	0.00
733	n.s	0.00	0.00	99.84	0.00	0.00	0.00	127.59	0.00	1171.76	24.92	81.67	391.95	0.00
734	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.01	0.00	0.00	0.00
741	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
742	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
743	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
744	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
745	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
746	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
747	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
748	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
749	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
751	n.s	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL	9548.87	3287.70	-	12612.40	11887.83	127916.23	66718.10	181114.48	260046.27	127217.33	138709.14	55520.34	53079.8	27354.25
$(\overline{y})$	2.13	0.53	-	1.94	1.83	19.72	10.28	27.92	40.09	19.61	21.38	8.56	8.18	4.22
SD	0.57	0.30	-	0.55	0.42	13.89	2.75	9.17	10.15	6.72	3.47	1.74	2.5	0.53

Table 3 (cont). Stratified mean catches (Kg) of **Atlantic cod** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	125.67	163.43
387	1287.49	2661.82
388	2619.38	6970.50
389	8566.18	11649.41
390	2218.91	2416.23
391	4352.53	5945.05
392	87.73	970.05
729	0.00	0.00
730	0.00	0.00
731	109.73	391.39
732	0.00	0.00
733	0.00	9.36
734	0.00	0.00
741	0.00	0.00
742	0.00	0.00
743	0.00	0.00
744	0.00	0.00
745	0.00	0.00
746	0.00	0.00
747	0.00	0.00
748	0.00	0.00
749	0.00	0.00
750	0.00	0.00
751	0.00	0.00
TOTAL	19367.6	31177.25
$(\bar{y})$	2.99	4.81
SD	0.63	0.74

Table 4. Survey estimates (by the swept area method) of **Atlantic cod** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

					Survey									
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	1	5	18	9	62	55	8	967	51	47	88	83	29	14
387	98	45	9	45	127	542	77	831	154	2115	887	403	1447	83
388	253	45	222	236	596	238	1941	484	5074	2861	866	721	422	457
389	38	23	474	188	1394	1815	6763	1212	1524	3351	1142	3103	1112	471
390	0	0	6	99	609	1599	2667	15844	3124	3054	1471	764	616	616
391	4	0	359	280	8509	1609	3582	3705	1092	358	332	586	554	671
392	5	179	26	180	0	1	911	41	174	352	19	34	296	85
729	22	0	0	0	0	0	0	0	0	12	0	0	0	0
730	0	0	0	0	0	0	0	0	0	0	0	0	0	0
731	423	9	0	10	3	0	5	0	0	3	0	29	95	5
732	0	0	0	0	0	0	0	0	0	0	0	0	3	0
733	n.s	0	0	9	0	0	0	11	0	104	2	7	34	0
734	n.s	0	0	0	0	0	0	0	0	0	1	0	0	0
741	0	0	0	0	0	0	0	0	0	0	0	0	0	0
742	0	0	0	0	0	0	0	0	0	0	0	0	0	0
743	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
744	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
745	0	0	0	0	0	0	0	0	0	0	0	0	0	0
746	0	0	0	0	0	0	0	0	0	0	0	0	0	0
747	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
748	0	0	0	0	0	0	0	0	0	0	0	0	0	0
749	0	0	0	0	0	0	0	0	0	0	0	0	0	0
750	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
751	n.s	n.s	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	844	306	1114	1057	11300	5859	15953	23095	11192	12258	4809	5729	4608	2401
SD	222	180	315	245	7745	1556	5265	5833	3877	1984	1001	829	1397	301

Table 4 (cont). Survey estimates (by the swept area method) of **Atlantic cod** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	11	15
387	111	237
388	231	624
389	747	1040
390	196	215
391	381	528
392	8	85
729	0	0
730	0	0
731	9	34
732	0	0
733	0	1
734	0	0
741	0	0
742	0	0
743	0	0
744	0	0
745	0	0
746	0	0
747	0	0
748	0	0
749	0	0
750	0	0
751	0	0
TOTAL	1694	2779
SD	353	427

Table 5. Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2006-2019 for **Atlantic cod, roughhead grenadier and redfish**.

	Atlantic cod				Roughhead grenadier				Redfish			
Year	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2
2006	All	$W = 0.0057\ L^{3.3142}$	308	0.9854	All	$W = 0.0773\ L^{3.0264}$	1645	0.9817	All	$W = 0.0096\ L^{3.1034}$	920	0.9835
	Males	$W = 0.0043\ L^{3.2188}$	142	0.9808	Males	$W = 0.0664\ L^{3.0810}$	655	0.9748	Males	$W = 0.0100\ L^{3.0871}$	444	0.9843
	Females	$W = 0.0069\ L^{3.0874}$	166	0.9896	Females	$W = 0.0893\ L^{2.9794}$	975	0.986	Females	$W = 0.0091\ L^{3.1221}$	471	0.9811
2007	All	$W = 0.0055\ L^{3.1370}$	225	0.983	All	$W = 0.0885\ L^{2.9691}$	1950	0.9895	All	$W = 0.0080\ L^{3.1588}$	881	0.9842
	Males	$W = 0.0061\ L^{3.1114}$	107	0.991	Males	$W = 0.0946\ L^{2.9435}$	754	0.9859	Males	$W = 0.0140\ L^{2.9836}$	432	0.9858
	Females	$W = 0.0047\ L^{3.1750}$	118	0.9735	Females	$W = 0.0877\ L^{2.9727}$	1165	0.9897	Females	$W = 0.0133\ L^{3.0115}$	392	0.9868
2008	All	$W = 0.0083\ L^{3.0479}$	819	0.9856	All	$W = 0.1237\ L^{2.8681}$	1773	0.9871	All	$W = 0.0142\ L^{2.9849}$	699	0.9701
	Males	$W = 0.0083\ L^{3.0493}$	403	0.9855	Males	$W = 0.1174\ L^{2.8868}$	754	0.9832	Males	$W = 0.0337\ L^{2.7219}$	338	0.9343
	Females	$W = 0.0084\ L^{3.0467}$	416	0.9856	Females	$W = 0.1144\ L^{2.8938}$	1024	0.988	Females	$W = 0.0314\ L^{2.7511}$	340	0.9412
2009	All	$W = 0.0084\ L^{3.0256}$	684	0.9824	All	$W = 0.0903\ L^{2.9583}$	1457	0.9911	All	$W = 0.0083\ L^{3.1392}$	818	0.9854
	Males	$W = 0.0089\ L^{3.0085}$	296	0.9824	Males	$W = 0.0847\ L^{2.9803}$	540	0.9871	Males	$W = 0.0135\ L^{2.9882}$	354	0.9738
	Females	$W = 0.0083\ L^{3.0299}$	388	0.9821	Females	$W = 0.0927\ L^{2.9505}$	899	0.9904	Females	$W = 0.0174\ L^{2.9204}$	389	0.9763
2010	All	$W = 0.0086\ L^{3.0302}$	756	0.980	All	$W = 0.1006\ L^{2.9369}$	1539	0.991	All	$W = 0.0110\ L^{3.0593}$	808	0.9859
	Males	$W = 0.0076\ L^{3.0636}$	364	0.980	Males	$W = 0.0909\ L^{2.9770}$	547	0.984	Males	$W = 0.0153\ L^{2.9565}$	372	0.9754
	Females	$W = 0.0095\ L^{3.0027}$	392	0.979	Females	$W = 0.1071\ L^{2.9152}$	947	0.990	Females	$W = 0.0161\ L^{2.9484}$	397	0.9706
2011	All	$W = 0.0090\ L^{3.0101}$	1421	0.9874	All	$W = 0.0962\ L^{2.9550}$	1545	0.9899	All	$W = 0.0105\ L^{3.0803}$	1218	0.9882
	Males	$W = 0.0102\ L^{2.9790}$	682	0.9852	Males	$W = 0.1018\ L^{2.9403}$	543	0.9796	Males	$W = 0.0129\ L^{3.0158}$	529	0.9836
	Females	$W = 0.0082\ L^{3.0334}$	739	0.9892	Females	$W = 0.1169\ L^{2.8873}$	913	0.9884	Females	$W = 0.0109\ L^{3.0768}$	559	0.9855
2012	All	$W = 0.0106\ L^{2.9627}$	878	0.982	All	$W = 0.1070\ L^{2.9148}$	1607	0.988	All	$W = 0.0126\ L^{3.0228}$	978	0.9847
	Males	$W = 0.0109\ L^{2.9573}$	403	0.982	Males	$W = 0.1008\ L^{2.9374}$	609	0.980	Males	$W = 0.0135\ L^{2.9979}$	476	0.9856
	Females	$W = 0.0123\ L^{2.9243}$	474	0.980	Females	$W = 0.1081\ L^{2.9117}$	934	0.988	Females	$W = 0.0157\ L^{2.9616}$	491	0.9806

Table 5 (cont.). Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2006-2019 for **Atlantic cod, roughhead grenadier and redfish**.

	Atlantic cod				Roughhead grenadier				Redfish			
Year	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2
2013	All	$W = 0.0072\ L^{3.0592}$	1717	0.992	All	$W = 0.0979\ L^{2.9309}$	1784	0.991	All	$W = 0.0080\ L^{3.1741}$	1130	0.99
	Males	$W = 0.0071\ L^{3.0636}$	785	0.992	Males	$W = 0.0919\ L^{2.9562}$	643	0.985	Males	$W = 0.0130\ L3^{.0249}$	497	0.9803
	Females	$W = 0.0073\ L^{3.0554}$	932	0.993	Females	$W = 0.0995\ L^{2.9248}$	1036	0.991	Females	$W = 0.0132\ L3^{.0237}$	522	0.9822
2014	All	$W = 0.0071\ L^{3.0532}$	685	0.990	All	$W = 0.1003\ L^{2.9350}$	1604	0.992	All	$W = 0.0094\ L^{3.1208}$	925	0.9840
	Males	$W = 0.0067\ L^{3.0666}$	317	0.987	Males	$W = 0.0958\ L^{2.9529}$	582	0.987	Males	$W = 0.0161\ L^{2.9557}$	424	0.981
	Females	$W = 0.0076\ L^{3.0345}$	365	0.991	Females	$W = 0.1091\ L^{2.9071}$	940	0.992	Females	$W = 0.0121\ L3^{.0495}$	457	0.9624
2015	All	$W = 0.0079\ L^{3.0271}$	867	0.989	All	$W = 0.1107\ L^{2.9089}$	1832	0.993	All	$W = 0.0088\ L^{3.1436}$	1088	0.9909
	Males	$W = 0.0080\ L^{3.0280}$	393	0.989	Males	$W = 0.1127\ L^{2.9084}$	662	0.987	Males	$W = 0.0148\ L^{2.9886}$	500	0.9893
	Females	$W = 0.0080\ L^{3.0264}$	473	0.989	Females	$W = 0.1197\ L^{2.8800}$	1097	0.992	Females	$W = 0.0104\ L^{3.0946}$	554	0.9898
2016	All	$W = 0.0078\ L^{3.0345}$	590	0.986	All	$W = 0.0972\ L^{2.9511}$	1525	0.989	All	$W = 0.0088\ L^{3.1297}$	908	0.9925
	Males	$W = 0.0074\ L^{3.0493}$	289	0.984	Males	$W = 0.0926\ L^{2.9755}$	603	0.985	Males	$W = 0.0179\ L^{2.9154}$	377	0.9771
	Females	$W = 0.0081\ L^{3.0222}$	301	0.988	Females	$W = 0.1024\ L^{2.9304}$	885	0.989	Females	$W = 0.0136\ L3^{.0075}$	409	0.9808
2017	All	$W = 0.0066\ L^{3.0630}$	834	0.985	All	$W = 0.0898\ L^{2.9684}$	1733	0.992	All	$W = 0.0084\ L^{3.1317}$	1021	0.992
	Males	$W = 0.0070\ L^{3.0478}$	397	0.988	Males	$W = 0.0856\ L^{2.9910}$	669	0.990	Males	$W = 0.0109\ L^{3.0552}$	441	0.986
	Females	$W = 0.0063\ L^{3.0787}$	437	0.983	Females	$W = 0.0990\ L^{2.9328}$	996	0.993	Females	$W = 0.0094\ L^{3.0946}$	380	0.986
2018	All	$W = 0.0066\ L^{3.0798}$	323	0.990	All	$W = 0.0864\ L^{2.9869}$	1458	0.990	All	$W = 0.0094\ L^{3.1089}$	836	0.991
	Males	$W = 0.0065\ L^{3.0865}$	177	0.989	Males	$W = 0.0778\ L^{3.0328}$	570	0.985	Males	$W = 0.0127\ L^{3.0136}$	369	0.989
	Females	$W = 0.0068\ L^{3.0716}$	146	0.990	Females	$W = 0.0879\ L^{2.9776}$	874	0.990	Females	$W = 0.0122\ L^{3.0349}$	388	0.990
2019	All	$W = 0.0063\ L^{3.1064}$	794	0.983	All	$W = 0.0834\ L3^{.0104}$	1315	0.987	All	$W = 0.0097\ L^{3.1463}$	800	0.992
	Males	$W = 0.0056\ L^{3.1366}$	380	0.978	Males	$W = 0.0872\ L2^{.9918}$	532	0.980	Males	$W = 0.0112\ L^{3.0574}$	326	0.985
	Females	$W = 0.0068\ L^{3.0812}$	414	0.987	Females	$W = 0.0868\ L^{2.9978}$	757	0.997	Females	$W = 0.0106\ L^{3.0851}$	354	0.985

Table 6. **Atlantic cod** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2006				2007				2008				2009			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
<12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.00	0.04	0.00	0.01	0.00	0.01
14	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
16	0.00	0.01	0.00	0.01	0.02	0.00	0.00	0.02	0.08	0.03	0.00	0.11	0.01	0.00	0.00	0.01
18	0.00	0.03	0.00	0.03	0.04	0.03	0.00	0.07	0.19	0.15	0.00	0.34	0.00	0.00	0.00	0.00
20	0.03	0.00	0.00	0.03	0.04	0.00	0.00	0.04	0.14	0.13	0.00	0.27	0.02	0.01	0.00	0.03
22	0.05	0.02	0.00	0.08	0.02	0.01	0.00	0.03	0.12	0.19	0.00	0.31	0.06	0.06	0.00	0.12
24	0.08	0.10	0.00	0.18	0.01	0.01	0.00	0.02	1.21	1.36	0.00	2.56	0.08	0.05	0.00	0.13
26	0.09	0.16	0.00	0.25	0.01	0.00	0.00	0.01	5.14	6.23	0.00	11.37	0.12	0.12	0.00	0.24
28	0.09	0.19	0.00	0.27	0.02	0.04	0.00	0.06	8.51	10.05	0.00	18.56	0.14	0.18	0.00	0.32
30	0.13	0.19	0.00	0.32	0.05	0.02	0.00	0.07	6.60	7.42	0.00	14.02	0.20	0.15	0.00	0.36
32	0.20	0.11	0.00	0.30	0.05	0.06	0.00	0.12	2.99	3.61	0.00	6.60	0.39	0.37	0.00	0.77
34	0.15	0.10	0.00	0.25	0.07	0.06	0.00	0.14	1.94	0.81	0.00	2.74	0.66	1.04	0.00	1.70
36	0.12	0.11	0.00	0.23	0.07	0.13	0.00	0.21	0.83	0.78	0.00	1.61	1.11	1.16	0.00	2.26
38	0.11	0.12	0.00	0.23	0.14	0.17	0.00	0.31	0.32	0.35	0.00	0.67	1.09	1.42	0.00	2.51
40	0.05	0.12	0.00	0.17	0.11	0.14	0.00	0.25	0.14	0.29	0.00	0.43	0.92	1.07	0.00	1.99
42	0.12	0.07	0.00	0.18	0.10	0.14	0.00	0.24	0.06	0.37	0.00	0.43	0.49	0.76	0.00	1.25
44	0.13	0.10	0.00	0.23	0.11	0.07	0.00	0.18	0.13	0.05	0.00	0.19	0.28	0.47	0.00	0.75
46	0.11	0.13	0.00	0.24	0.02	0.13	0.00	0.15	0.09	0.29	0.00	0.37	0.15	0.37	0.00	0.52
48	0.03	0.09	0.00	0.12	0.07	0.04	0.00	0.12	0.07	0.24	0.00	0.31	0.04	0.15	0.00	0.18
50	0.03	0.05	0.00	0.08	0.02	0.03	0.00	0.05	0.06	0.09	0.00	0.16	0.08	0.14	0.00	0.22
52	0.02	0.05	0.00	0.08	0.02	0.05	0.00	0.07	0.22	0.07	0.00	0.29	0.07	0.13	0.00	0.20
54	0.00	0.04	0.00	0.04	0.05	0.02	0.00	0.07	0.04	0.06	0.00	0.10	0.07	0.08	0.00	0.15
56	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.06	0.04	0.02	0.00	0.06	0.09	0.11	0.00	0.20
58	0.01	0.00	0.00	0.01	0.03	0.03	0.00	0.06	0.19	0.03	0.00	0.22	0.01	0.13	0.00	0.14
60	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.02	0.02	0.00	0.04	0.02	0.07	0.00	0.09
62	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.05	0.03	0.00	0.09	0.03	0.04	0.00	0.07
64	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.06	0.01	0.06	0.00	0.07
66	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.04	0.01	0.03	0.00	0.04
68	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.01	0.02	0.00	0.03
70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.03	0.00	0.04
72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01
76	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
78	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.57	1.82	0.00	3.38	1.13	1.30	0.00	2.43	29.27	32.78	0.00	62.05	6.18	8.25	0.00	14.44
Nº samples:				22				32				34				32
Nº Ind.:	143	167	0	310	107	119	0	226	739	827	0	1566	580	781	0	1361
Sampled catch:				176				168				1814				957
Range:				13-79				12-76				12-74				13-77
Total catch:				176				168				1814				957
Total valid hauls:				100				94				100				98

Table 6 (cont.). **Atlantic cod** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2010				2011				2012				2013			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
<12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.00	0.02
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	0.06	0.00	0.18
14	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.28	0.41	0.00	0.68
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.04	0.54	0.41	0.00	0.95
18	0.03	0.00	0.00	0.03	0.00	0.01	0.00	0.01	0.07	0.04	0.00	0.11	0.19	0.22	0.00	0.41
20	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.03	0.01	0.00	0.00	0.01	0.22	0.29	0.00	0.51
22	0.01	0.00	0.00	0.01	0.04	0.05	0.00	0.08	0.02	0.01	0.00	0.03	0.33	0.45	0.00	0.78
24	0.07	0.07	0.00	0.13	0.07	0.16	0.00	0.23	0.05	0.03	0.00	0.08	0.66	0.63	0.00	1.30
26	0.21	0.24	0.00	0.45	0.37	0.31	0.00	0.68	0.06	0.04	0.00	0.10	0.67	0.60	0.00	1.27
28	0.49	0.88	0.00	1.37	0.46	0.66	0.00	1.12	0.15	0.03	0.00	0.18	0.71	0.65	0.00	1.36
30	0.99	1.06	0.00	2.05	0.58	0.71	0.00	1.29	0.14	0.06	0.00	0.20	0.60	0.60	0.00	1.21
32	1.34	1.23	0.00	2.57	0.67	0.78	0.00	1.45	0.15	0.07	0.00	0.22	0.33	0.43	0.00	0.76
34	0.87	1.07	0.00	1.95	0.81	0.72	0.00	1.53	0.39	0.33	0.00	0.72	0.28	0.29	0.00	0.58
36	1.27	1.35	0.00	2.62	0.68	0.75	0.00	1.43	0.44	0.58	0.00	1.03	0.41	0.36	0.00	0.78
38	1.31	1.44	0.00	2.75	0.71	0.75	0.00	1.46	0.68	0.98	0.00	1.66	0.58	0.46	0.00	1.05
40	1.65	2.08	0.00	3.72	0.76	1.09	0.00	1.85	0.73	0.82	0.00	1.55	0.50	0.35	0.00	0.86
42	1.91	2.12	0.00	4.02	0.95	0.86	0.00	1.82	0.71	1.08	0.00	1.79	0.54	0.67	0.00	1.21
44	1.79	2.52	0.00	4.31	0.99	1.29	0.00	2.28	0.75	0.85	0.00	1.60	0.73	0.98	0.00	1.71
46	1.60	2.24	0.00	3.85	1.18	1.61	0.00	2.79	0.91	0.97	0.00	1.88	0.86	0.76	0.00	1.62
48	1.17	1.48	0.00	2.65	1.41	2.14	0.00	3.55	0.64	0.97	0.00	1.61	0.75	0.80	0.00	1.54
50	0.51	0.95	0.00	1.46	2.26	2.42	0.00	4.68	0.63	0.79	0.00	1.42	0.52	0.75	0.00	1.27
52	0.28	0.43	0.00	0.71	1.86	2.21	0.00	4.07	0.48	0.62	0.00	1.10	0.50	0.62	0.00	1.11
54	0.18	0.31	0.00	0.49	1.34	2.00	0.00	3.34	0.45	0.54	0.00	0.99	0.36	0.72	0.00	1.09
56	0.05	0.21	0.00	0.25	0.71	1.05	0.00	1.75	0.55	0.48	0.00	1.03	0.42	0.44	0.00	0.86
58	0.12	0.13	0.00	0.26	0.49	0.62	0.00	1.11	0.22	0.22	0.00	0.45	0.29	0.47	0.00	0.76
60	0.16	0.06	0.00	0.22	0.36	0.32	0.00	0.68	0.16	0.33	0.00	0.48	0.17	0.31	0.00	0.49
62	0.05	0.07	0.00	0.12	0.08	0.22	0.00	0.30	0.10	0.19	0.00	0.29	0.19	0.33	0.00	0.52
64	0.05	0.01	0.00	0.06	0.09	0.06	0.00	0.15	0.05	0.17	0.00	0.22	0.12	0.17	0.00	0.28
66	0.02	0.05	0.00	0.07	0.07	0.05	0.00	0.12	0.02	0.12	0.00	0.14	0.10	0.12	0.00	0.21
68	0.04	0.01	0.00	0.05	0.02	0.09	0.00	0.11	0.04	0.04	0.00	0.08	0.10	0.09	0.00	0.19
70	0.01	0.00	0.00	0.01	0.00	0.05	0.00	0.05	0.01	0.06	0.00	0.07	0.02	0.04	0.00	0.06
72	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.09	0.00	0.13
74	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.09
76	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01
80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00
84	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	16.19	20.07	0.00	36.25	17.01	21.02	0.00	38.03	8.65	10.47	0.01	19.14	12.24	13.65	0.00	25.89
Nº samples:				36				34				35				41
Nº Ind.:	1014	1265	0	2279	1147	1440	0	2587	603	693	1	1297	1085	1200	0	2285
Sampled catch:				2509				3141				1809				2002
Range:				12-93				19-85				5-82				11-87
Total catch:				2509				3141				1809				2002
Total valid hauls:				97				89				98				100

Table 6 (cont.). Atlantic cod length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2014				2015				2016				2017			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
<12	0.01	0.01	0.02	0.04	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.01	0.00	0.00	0.01
12	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
14	0.01	0.04	0.00	0.05	0.00	0.00	0.00	0.00	0.02	0.04	0.00	0.06	0.03	0.03	0.00	0.07
16	0.02	0.01	0.00	0.03	0.01	0.00	0.00	0.01	0.06	0.02	0.00	0.08	0.07	0.01	0.00	0.08
18	0.01	0.03	0.00	0.04	0.11	0.07	0.00	0.18	0.01	0.03	0.00	0.04	0.02	0.01	0.00	0.03
20	0.02	0.07	0.00	0.08	0.25	0.12	0.00	0.37	0.10	0.09	0.00	0.19	0.09	0.07	0.00	0.15
22	0.09	0.14	0.00	0.23	0.51	0.47	0.00	0.98	0.16	0.09	0.00	0.25	0.28	0.27	0.00	0.54
24	0.12	0.11	0.00	0.23	0.60	0.69	0.00	1.28	0.17	0.25	0.00	0.43	0.44	0.66	0.00	1.10
26	0.16	0.28	0.00	0.44	0.85	0.91	0.00	1.75	0.40	0.36	0.00	0.75	0.40	0.61	0.00	1.00
28	0.19	0.17	0.00	0.36	0.79	0.86	0.00	1.65	0.51	0.54	0.00	1.06	0.47	0.56	0.00	1.04
30	0.24	0.23	0.00	0.47	0.90	0.90	0.00	1.80	0.42	0.63	0.00	1.05	0.42	0.35	0.00	0.77
32	0.28	0.23	0.00	0.52	1.08	0.72	0.00	1.80	0.80	0.61	0.00	1.42	0.35	0.29	0.00	0.64
34	0.38	0.38	0.00	0.76	0.68	0.68	0.00	1.36	1.05	0.80	0.00	1.85	0.21	0.32	0.00	0.53
36	0.63	0.39	0.00	1.02	0.66	0.62	0.00	1.28	0.90	0.83	0.00	1.74	0.29	0.32	0.00	0.62
38	0.55	0.62	0.00	1.17	0.68	0.63	0.00	1.31	0.68	0.57	0.00	1.25	0.24	0.33	0.00	0.57
40	0.43	0.41	0.00	0.84	0.49	0.42	0.00	0.90	0.46	0.56	0.00	1.02	0.35	0.30	0.00	0.65
42	0.36	0.45	0.00	0.81	0.28	0.44	0.00	0.72	0.42	0.33	0.00	0.76	0.19	0.23	0.00	0.43
44	0.18	0.34	0.00	0.52	0.37	0.50	0.00	0.88	0.37	0.28	0.00	0.65	0.13	0.17	0.00	0.31
46	0.23	0.23	0.00	0.47	0.28	0.28	0.00	0.56	0.28	0.32	0.00	0.60	0.02	0.15	0.00	0.17
48	0.24	0.27	0.00	0.51	0.24	0.34	0.00	0.58	0.19	0.23	0.00	0.43	0.08	0.10	0.00	0.18
50	0.24	0.26	0.00	0.50	0.26	0.22	0.00	0.48	0.17	0.17	0.00	0.34	0.04	0.09	0.00	0.13
52	0.15	0.27	0.00	0.42	0.10	0.11	0.00	0.22	0.09	0.10	0.00	0.18	0.03	0.03	0.00	0.07
54	0.16	0.19	0.00	0.35	0.21	0.13	0.00	0.33	0.14	0.11	0.00	0.25	0.03	0.08	0.00	0.11
56	0.09	0.18	0.00	0.27	0.13	0.18	0.00	0.31	0.03	0.05	0.00	0.08	0.03	0.08	0.00	0.11
58	0.12	0.18	0.00	0.30	0.07	0.14	0.00	0.21	0.04	0.02	0.00	0.06	0.06	0.03	0.01	0.11
60	0.06	0.09	0.00	0.15	0.04	0.10	0.00	0.13	0.07	0.03	0.00	0.10	0.05	0.00	0.00	0.05
62	0.05	0.10	0.00	0.15	0.11	0.06	0.00	0.16	0.04	0.08	0.00	0.11	0.01	0.02	0.00	0.03
64	0.02	0.10	0.00	0.12	0.05	0.02	0.00	0.07	0.03	0.04	0.00	0.07	0.03	0.01	0.00	0.04
66	0.02	0.05	0.00	0.08	0.03	0.02	0.00	0.06	0.01	0.00	0.00	0.01	0.01	0.02	0.00	0.03
68	0.02	0.02	0.00	0.04	0.00	0.01	0.00	0.01	0.03	0.01	0.00	0.04	0.02	0.01	0.00	0.03
70	0.01	0.04	0.00	0.05	0.02	0.01	0.00	0.03	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01
72	0.00	0.04	0.00	0.04	0.01	0.02	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.02
76	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
78	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
84	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	5.12	5.97	0.03	11.12	9.83	9.68	0.00	19.51	7.68	7.24	0.00	14.93				
Nº samples:				38				39				39				37
Nº Ind.:	463	546	3	1012	848	840	0	1688	618	589	0	1207	407	471	1	879
Sampled catch:				806				927				774				390
Range:				9-84				17-79				9-83				11-75
Total catch:				806				927				774				390
Total valid hauls:				99				97				98				99

Table 6 (cont.). Atlantic cod length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2018				2019											
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
<12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
12	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01								
14	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.04								
16	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.09								
18	0.01	0.00	0.00	0.01	0.05	0.01	0.00	0.06								
20	0.03	0.03	0.00	0.07	0.35	0.21	0.00	0.56								
22	0.04	0.20	0.00	0.25	0.51	0.56	0.00	1.07								
24	0.19	0.10	0.00	0.29	0.76	0.88	0.00	1.64								
26	0.21	0.28	0.00	0.49	0.87	0.92	0.00	1.78								
28	0.27	0.21	0.00	0.48	0.71	0.86	0.00	1.56								
30	0.36	0.27	0.00	0.62	0.53	0.55	0.00	1.08								
32	0.23	0.18	0.00	0.41	0.34	0.37	0.00	0.71								
34	0.20	0.16	0.00	0.36	0.30	0.38	0.00	0.68								
36	0.19	0.20	0.00	0.39	0.31	0.33	0.00	0.65								
38	0.25	0.15	0.00	0.41	0.32	0.30	0.00	0.61								
40	0.10	0.10	0.00	0.20	0.15	0.31	0.00	0.46								
42	0.09	0.05	0.00	0.14	0.18	0.22	0.00	0.40								
44	0.15	0.13	0.00	0.28	0.18	0.11	0.00	0.29								
46	0.14	0.08	0.00	0.22	0.07	0.12	0.00	0.19								
48	0.10	0.08	0.00	0.18	0.05	0.15	0.00	0.21								
50	0.10	0.11	0.00	0.21	0.07	0.14	0.00	0.21								
52	0.11	0.04	0.00	0.16	0.05	0.09	0.00	0.14								
54	0.02	0.03	0.00	0.05	0.05	0.06	0.00	0.12								
56	0.00	0.01	0.00	0.01	0.03	0.05	0.00	0.09								
58	0.01	0.00	0.00	0.01	0.02	0.02	0.00	0.04								
60	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.05								
62	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00								
64	0.03	0.01	0.00	0.04	0.00	0.01	0.00	0.01								
66	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00								
68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
70	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00								
72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
74	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00								
76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
78	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00								
80	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01								
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
92	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00								
Total	2.92	2.48	0.00	5.40	5.99	6.78	0.00	12.77								
Nº samples:				33				32								
Nº Ind.:	263	224	0	487	548	622	0	1170								
Sampled catch:				274				435								
Range:				15-93				13-80								
Total catch:				274				435								
Total valid hauls:				100				96								

Table 7. Swept area, number of hauls and **roughhead grenadier** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the p l 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2006				2007				2008				2009				2010			
	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD
385	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
387	0.0225	2	34.790	20.520	0.0225	2	45.990	51.746	0.0435	4	20.320	11.817	0.0439	4	30.045	16.013	0.0458	4	14.399	12.704
388	0.0566	5	26.406	7.803	0.0563	5	37.663	22.136	0.0559	5	15.056	11.298	0.0555	5	27.627	27.428	0.0570	5	17.174	8.563
389	0.0795	7	1.426	2.642	0.0900	8	3.075	8.697	0.0780	7	19.007	23.458	0.0803	7	31.105	63.627	0.0795	7	8.231	10.443
390	0.1249	11	0.000	0.000	0.1350	12	0.000	0.000	0.1395	12	0.580	1.338	0.1373	12	4.648	14.283	0.1249	11	1.071	3.295
391	0.0450	4	178.123	304.579	0.0450	4	86.525	171.255	0.0454	4	248.947	142.328	0.0458	4	72.878	56.298	0.0454	4	169.525	25.560
392	0.0229	2	118.025	159.347	0.0225	2	129.950	138.805	0.0221	2	58.175	54.836	0.0229	2	60.934	78.701	0.0225	2	35.050	15.203
729	0.0338	3	25.164	23.944	0.0338	3	26.490	13.222	0.0338	3	19.943	6.923	0.0341	3	9.991	5.382	0.0338	3	10.817	4.348
730	0.0326	3	53.270	7.021	0.0225	2	81.378	33.061	0.0323	3	35.119	29.483	0.0338	3	75.453	99.963	0.0334	3	26.400	4.084
731	0.0341	3	10.512	3.252	0.0338	3	14.333	7.365	0.0330	3	14.333	10.000	0.0341	3	4.980	1.654	0.0338	3	10.508	7.656
732	0.0334	3	22.164	9.200	0.0338	3	11.151	3.253	0.0446	4	21.545	3.045	0.0450	4	8.289	3.314	0.0450	4	16.060	6.489
733	0.0454	4	23.450	16.806	0.0338	3	19.104	14.162	0.0431	4	23.939	36.979	0.0450	4	19.108	13.978	0.0450	4	8.785	9.702
734	0.0225	2	39.315	9.638	0.0225	2	23.400	8.202	0.0221	2	30.580	20.182	0.0218	2	28.777	12.760	0.0225	2	65.625	48.826
741	0.0218	2	17.557	23.112	0.0225	2	4.650	6.166	0.0210	2	10.359	10.390	0.0221	2	11.334	6.316	0.0225	2	14.350	3.606
742	0.0229	2	20.933	7.015	0.0225	2	14.493	2.011	0.0210	2	16.861	11.943	0.0214	2	3.425	1.803	0.0225	2	3.870	1.987
743	0.0225	2	10.574	6.353	0.0225	2	29.666	25.928	0.0203	2	25.509	13.847	0.0203	2	13.278	13.438	0.0225	2	30.937	37.283
744	0.0229	2	15.365	15.111	0.0218	2	33.965	0.375	0.0221	2	58.670	15.570	0.0210	2	8.208	6.495	0.0229	2	13.319	1.031
745	0.0686	6	8.238	5.438	0.0675	6	3.624	1.509	0.0555	5	14.284	7.402	0.0559	5	3.787	2.256	0.0563	5	7.959	3.864
746	0.0675	6	41.767	29.972	0.0664	6	34.607	22.333	0.0638	6	30.720	16.486	0.0668	6	23.474	20.537	0.0679	6	13.030	7.624
747	0.1230	11	42.307	40.112	0.1238	11	62.510	26.732	0.1069	10	28.717	25.198	0.1118	10	33.180	25.868	0.1125	10	36.785	18.008
748	0.0326	3	67.920	73.796	0.0338	3	33.533	16.455	0.0218	2	217.340	286.322	0.0229	2	92.330	127.477	0.0225	2	50.350	51.548
749	0.0229	2	25.930	31.919	0.0113	1	28.700	-0.021	4	2	47.452	11.670	0.0225	2	13.700	9.334	0.0229	2	20.482	26.189
750	0.1005	9	16.866	18.117	0.0679	6	19.516	24.114	0.0844	8	11.937	6.673	0.0791	7	16.895	14.145	0.0900	8	12.763	11.150
751	0.0454	4	4.253	3.543	0.0225	2	24.445	7.983	0.0413	4	9.038	8.141	0.0338	3	88.193	144.495	0.0225	2	22.150	8.980

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 7 (cont.). Swept area, number of hauls and **roughhead grenadier** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza"*.

	2011				2012				2013				2014				2015			
Stratum	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD	SweptTow area	No.	Mean catch	SD
385	0.0229	2	1.010	1.428	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.02362		0.000	0.000
387	0.0450	4	11.304	9.250	0.0450	4	16.012	11.119	0.0450	4	48.039	29.999	0.0461	4	34.291	36.472	0.04584		56.143	42.743
388	0.0563	5	5.022	4.969	0.0570	5	14.019	22.081	0.0570	5	11.737	9.670	0.0585	5	19.183	19.378	0.05745		35.214	22.023
389	0.0675	6	4.711	3.126	0.0799	7	11.893	9.022	0.0791	7	7.694	11.153	0.0814	7	4.613	7.433	0.08147		14.689	18.122
390	0.1009	9	2.856	7.168	0.1354	12	0.000	0.000	0.1358	12	0.418	0.995	0.1369	12	0.203	0.530	0.126011		0.173	0.573
391	0.0458	4	153.179	92.811	0.0458	4	21.670	8.743	0.0450	4	6.940	6.438	0.0465	4	18.675	19.226	0.04654		118.535	108.870
392	0.0229	2	83.417	29.674	0.0225	2	73.339	76.293	0.0225	2	462.715	55.388	0.0225	2	165.300	98.005	0.02292		92.963	28.656
729	0.0338	3	3.398	2.102	0.0338	3	23.722	12.954	0.0341	3	13.044	2.954	0.0338	3	20.597	10.873	0.03453		21.267	8.882
730	0.0334	3	66.456	55.464	0.0338	3	27.264	5.665	0.0334	3	16.433	3.745	0.0345	3	24.237	12.193	0.03453		43.188	29.351
731	0.0334	3	2.002	1.506	0.0341	3	5.244	2.400	0.0334	3	5.861	7.211	0.0345	3	11.131	11.131	0.03453		12.921	8.486
732	0.0454	4	2.393	2.786	0.0454	4	3.022	2.324	0.0450	4	9.399	5.783	0.0454	4	20.145	14.299	0.04654		18.716	4.826
733	0.0454	4	6.622	8.721	0.0454	4	9.322	10.885	0.0450	4	25.366	26.819	0.0458	4	48.449	47.653	0.04544		22.976	35.302
734	0.0225	2	8.413	1.874	0.0233	2	20.968	0.803	0.0221	2	51.715	2.849	0.0225	2	52.870	32.286	0.02252		57.250	48.154
741	0.0218	2	7.707	9.880	0.0218	2	5.764	2.452	0.0221	2	26.100	18.526	0.0225	2	9.559	5.316	0.02362		26.240	14.199
742	0.0225	2	14.545	14.221	0.0206	2	6.851	3.796	0.0218	2	4.829	4.554	0.0221	2	39.490	39.330	0.02332		8.550	3.323
743	0.0221	2	18.488	1.660	0.0206	2	5.421	7.609	0.0218	2	23.750	18.314	0.0221	2	14.015	16.567	0.02332		12.869	6.178
744	0.0221	2	6.254	3.743	0.0221	2	8.725	9.086	0.0221	2	27.217	13.266	0.0225	2	9.081	3.064	0.02252		3.869	1.951
745	0.0446	4	2.802	4.240	0.0570	5	1.932	1.671	0.0559	5	7.092	4.649	0.0578	5	14.445	16.588	0.05785		14.563	7.820
746	0.0566	5	8.981	7.193	0.0675	6	14.447	14.048	0.0675	6	19.411	13.114	0.0683	6	18.434	11.243	0.06866		16.779	6.548
747	0.0893	8	22.273	17.958	0.1121	10	19.457	7.563	0.1125	10	22.433	9.574	0.1125	10	20.426	14.337	0.10289		35.466	21.325
748	0.0221	2	25.955	33.074	0.0225	2	106.350	134.562	0.0225	2	50.520	62.607	0.0229	2	72.050	46.457	0.02332		105.925	34.189
749	0.0221	2	27.713	30.670	0.0221	2	9.800	8.061	0.0225	2	16.950	0.495	0.0225	2	15.900	4.384	0.02252		56.302	40.590
750	0.0668	6	9.292	4.047	0.0885	8	18.823	14.451	0.0896	8	6.988	4.947	0.0904	8	10.760	11.655	0.09348		23.339	13.464
751	0.0334	3	14.880	6.137	0.0218	2	34.850	33.022	0.0446	4	9.238	3.941	0.0334	3	9.612	6.745	0.03413		56.233	55.211

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 7 (cont.). Swept area, number of hauls and **roughhead grenadier** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza"*.

Stratum	2016				2017				2018				2019							
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0233	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.02212		0.000	0.000				
387	0.0454		486.830	82.494	0.0446		453.387	40.728	0.0465		419.704	8.192	0.04654		24.088	12.740				
388	0.0570		535.766	30.573	0.0566		526.894	27.237	0.0566		521.716	20.521	0.05665		15.736	5.413				
389	0.0814	7	6.013	9.722	0.0799	7	1.402	1.889	0.0803	7	4.866	5.069	0.08037		6.217	5.173				
390	0.1391	12	0.000	0.000	0.1369	12	0.033	0.113	0.1358	12	0.000	0.000	0.135810		0.359	1.135				
391	0.0469		411.432	21.534	0.0458		418.830	35.182	0.0458		426.172	18.273	0.04584		23.775	31.414				
392	0.0233		275.048	61.875	0.0229		269.358	21.698	0.0229		216.375	3.076	0.02292		28.400	24.890				
729	0.0341		314.300	8.602	0.0345		329.106	16.933	0.0341		315.778	6.335	0.03413		10.511	3.245				
730	0.0233		261.225	59.857	0.0341		339.938	14.378	0.0330		366.719	70.948	0.03303		12.202	4.251				
731	0.0345		327.651	19.134	0.0338		313.683	8.312	0.0353		317.212	4.727	0.03533		11.883	5.643				
732	0.0454		420.278	13.418	0.0446		410.040	6.175	0.0461	4	7.020	2.783	0.04614		12.042	9.860				
733	0.0458		430.175	28.753	0.0450		426.280	19.843	0.0454		412.040	6.061	0.04544		11.486	7.625				
734	0.0229		241.999	12.746	0.0225		219.190	1.994	0.0225	2	6.545	0.537	0.02252		15.461	12.188				
741	0.0233	2	9.085	1.908	0.0225		220.238	14.867	0.0229	2	4.940	2.319	0.02292		1.464	0.600				
742	0.0229		211.617	4.275	0.0225		215.564	5.793	0.0221	2	9.074	3.173	0.02212		6.604	0.492				
743	0.0229		223.727	27.257	0.0229		224.673	3.386	0.0225	2	5.864	4.167	0.02252		11.168	5.312				
744	0.0229		224.545	7.149	0.0221	2	6.461	1.278	0.0229	2	4.529	6.299	0.02292		3.008	3.949				
745	0.0574		514.965	10.561	0.0559		514.752	13.785	0.0596	5	9.617	7.015	0.05965		9.537	6.107				
746	0.0690		614.967	13.081	0.0683		613.424	9.070	0.0698		613.844	10.458	0.06986		16.959	7.407				
747	0.1140		1015.779	8.000	0.1125		1023.644	16.516	0.1140		1015.856	8.129	0.114010		18.263	8.231				
748	0.0233		226.050	23.688	0.0225		282.186	100.955	0.0225		280.502	7.851	0.02252		13.960	12.714				
749	0.0233		228.400	22.627	0.0229		219.075	6.824	0.0225		224.125	9.228	0.02252		24.231	10.580				
750	0.0930	8	8.830	4.778	0.0934		817.880	19.526	0.0904		811.148	5.852	0.09047		11.982	7.043				
751	0.0345		310.460	9.545	0.0349	3	5.000	4.070	0.0454		418.893	6.623	0.04543		13.150	7.002				

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 8. Stratified mean catches (Kg) of **roughhead grenadier** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey													
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	119.18	0.00	0.00	0.00	0.00	0.00	0.00
387	0.00	15356.54	8906.24	11773.44	5201.92	7691.52	3686.21	2893.70	4099.14	12297.98	8778.56	14372.48	22228.42	13667.14
388	0.00	15458.10	9426.94	13445.76	5374.85	9862.70	6131.05	1792.71	5004.78	4190.04	6848.33	12571.40	12768.46	9601.16
389	0.00	954.38	725.69	1565.18	9674.64	15832.37	4189.80	2397.73	6053.54	3916.39	2347.80	7476.48	3060.40	713.40
390	456.40	5.43	0.00	0.00	472.70	3787.71	872.79	2327.28	0.00	340.94	165.72	140.77	0.00	26.49
391	4.70	4.94	50230.55	24400.05	70203.05	20551.46	47806.05	43196.41	6110.94	1957.08	5266.35	33426.87	3223.68	5310.06
392	565.50	29094.25	17113.63	18842.75	8435.38	8835.43	5082.25	12095.47	10634.08	67093.68	23968.50	13479.56	10881.89	10056.84
729	7021.50	5482.35	4680.44	4927.20	3709.46	1858.39	2011.90	632.09	4412.23	2426.25	3830.98	3955.60	2659.80	5413.78
730	17178.50	5731.55	9055.90	13834.26	5970.29	12827.07	4488.00	11297.58	4634.82	2793.67	4120.23	7341.96	10408.25	6789.52
731	758.16	2257.20	2270.52	3095.93	3095.93	1075.61	2269.73	432.36	1132.78	1266.05	2404.37	2791.01	5972.54	2955.60
732	7946.40	9122.19	5119.88	2575.96	4976.90	1914.82	3709.74	552.67	698.08	2171.17	4653.55	4323.40	4684.10	2319.12
733	n.s	3639.48	5487.30	4470.26	5601.67	4471.16	2055.69	1549.49	2181.41	5935.70	11337.07	5376.33	7060.95	6149.58
734	n.s	10075.05	6015.20	3580.20	4678.66	4402.88	10040.63	1287.19	3208.03	7912.32	8089.11	8759.25	6425.85	2936.07
741	870.00	105.53	1755.70	465.00	1035.90	1133.40	1435.00	770.65	576.35	2610.00	955.90	2624.00	908.50	2023.75
742	1561.60	300.80	1339.68	927.55	1079.10	219.20	247.68	930.85	438.46	309.02	2527.33	547.20	743.49	996.10
743	n.s	1338.50	539.27	1512.97	1300.93	677.18	1577.79	942.89	276.45	1211.25	714.74	656.29	1210.05	1258.32
744	n.s	168.30	1014.09	2241.69	3872.22	541.70	879.05	412.73	575.85	1796.29	599.31	255.32	1619.97	426.39
745	6106.24	2018.40	2866.88	1261.09	4970.83	1317.95	2769.59	975.10	672.20	2468.16	5026.86	5068.06	5207.82	5133.84
746	25009.60	10272.36	16372.53	13565.94	12042.24	9201.61	5107.56	3520.47	5663.35	7609.05	7226.19	6577.37	5867.00	5262.21
747	n.s	31585.71	30630.47	45257.17	20791.04	24022.61	26632.56	16125.29	14086.51	16241.27	14788.28	25677.71	11423.78	17118.11
748	8900.82	3579.89	10799.28	5331.80	34557.06	14680.47	8005.65	4126.85	16909.65	8032.68	11455.95	16842.08	4141.95	13067.57
749	18295.20	5783.40	3267.18	3616.20	5978.95	1726.20	2580.67	3491.84	1234.80	2135.70	2003.40	7093.99	3578.40	2403.45
750	n.s	31553.00	9377.25	10850.99	6636.90	9393.86	7096.23	5166.44	10465.52	3885.26	5982.56	12976.62	4909.48	9941.49
751	n.s	n.s	973.82	5597.91	2069.59	20196.12	5072.35	3407.52	7980.65	2115.39	2201.22	12877.43	2395.34	1145.00
TOTAL	94674.62	183887.34	197968.44	193139.30	221730.20	176221.39	153747.96	120444.46	107049.61	160715.33	135292.31	205211.18	131380.12	124714.98
$(\bar{y})$	21.16	29.38	30.52	29.77	34.18	27.17	23.70	18.57	16.50	24.77	20.86	31.63	20.25	19.23
SD	3.38	5.27	7.41	4.86	6.12	4.97	1.71	2.51	2.92	1.75	2.44	3.31	2.61	2.46

Table 8 (cont). Stratified mean catches (Kg) of **roughhead grenadier** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	0.00	0.00
387	5044.29	6166.53
388	7752.54	5617.75
389	2476.87	3164.53
390	0.00	292.59
391	7380.50	6704.55
392	2374.38	4118.00
729	2934.71	1954.98
730	11342.23	2074.28
731	3717.72	2566.66
732	1621.62	2781.70
733	2817.24	2687.67
734	1001.39	2365.46
741	493.95	146.40
742	580.70	422.66
743	299.04	569.54
744	298.91	198.50
745	3346.58	3318.81
746	5426.85	6647.73
747	11479.38	13222.48
748	12799.74	2219.64
749	3039.75	3053.11
750	6198.50	6661.83
751	4326.38	3011.35
TOTAL	96753.2	79966.73
$(\bar{y})$	14.91	12.33
SD	1.38	1.06

Table 9. Survey estimates (by the swept area method) of **roughhead grenadier** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

	Survey													
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0	0	0	0	0	0	0	10	0	0	0	0	0	0
387	0	1437	792	1047	478	701	322	257	364	1093	761	1257	1960	1225
388	0	1472	832	1195	481	889	538	159	439	368	585	1096	1120	848
389	0	85	64	139	868	1381	369	213	531	346	202	643	263	63
390	41	0	0	0	41	331	77	208	0	30	15	12	0	2
391	0	0	4465	2169	6189	1797	4214	3777	534	174	453	2875	275	464
392	49	2722	1496	1675	763	772	452	1058	945	5964	2131	1179	936	879
729	669	496	416	438	330	163	179	56	392	213	341	344	234	471
730	1553	518	833	1230	555	1140	403	1016	412	251	358	638	895	597
731	66	194	200	275	281	95	202	39	100	114	209	243	519	263
732	706	869	460	229	446	170	330	49	62	193	410	372	413	208
733	n.s	331	484	397	520	397	183	137	192	528	991	474	617	547
734	n.s	995	535	318	423	405	893	114	276	715	719	779	562	261
741	77	10	161	41	99	102	128	71	53	236	85	222	78	180
742	134	25	117	82	103	21	22	83	43	28	228	47	65	89
743	n.s	143	48	134	128	67	140	85	27	111	65	56	106	110
744	n.s	17	89	206	350	52	77	37	52	162	53	23	142	39
745	537	190	251	112	448	118	246	87	59	221	435	439	454	459
746	2242	913	1455	1226	1133	827	451	311	503	676	635	575	510	463
747	n.s	3082	2739	4023	1945	2150	2367	1445	1256	1444	1315	2249	1002	1522
748	818	360	993	474	3178	1284	712	373	1503	714	1002	1449	356	1162
749	1654	523	286	321	559	153	226	316	112	190	178	631	308	210
750	n.s	3506	840	959	629	831	631	464	946	347	530	1112	422	852
751	n.s	n.s	86	498	201	1795	451	306	734	190	198	1132	208	98
TOTAL	8546	17887	17641	17190	20148	15641	13612	10672	9535	14308	11898	17846	11446	11010
SD	1340	3240	4271	2799	3534	2844	972	1466	1676	1010	1393	1864	1495	1411

Table 9. Survey estimates (by the swept area method) of **roughhead grenadier** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	0	0
387	434	548
388	685	503
389	216	283
390	0	26
391	645	596
392	208	360
729	258	174
730	1031	184
731	316	226
732	141	245
733	248	239
734	89	207
741	43	13
742	52	38
743	27	51
744	26	18
745	281	287
746	467	588
747	1007	1175
748	1138	197
749	270	276
750	549	592
751	381	268
TOTAL	8512	7093
SD	787	607

Table 10. Roughhead grenadier length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2006				2007				2008				2009			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
1.5	0.00	0.00	0.04	0.04	0.00	0.02	0.01	0.03	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.01
2.5	0.07	0.04	0.02	0.13	0.00	0.04	0.15	0.19	0.00	0.03	0.09	0.13	0.01	0.00	0.13	0.15
3.5	0.61	0.16	0.14	0.91	0.40	0.17	0.70	1.26	0.28	0.08	1.42	1.78	0.27	0.16	1.01	1.44
4.5	0.14	0.00	0.00	0.14	0.08	0.06	0.02	0.16	0.11	0.01	0.03	0.15	0.07	0.00	0.05	0.12
5.5	0.12	0.15	0.00	0.27	0.34	0.21	0.02	0.57	0.10	0.13	0.01	0.24	0.12	0.13	0.00	0.25
6.5	0.91	0.71	0.00	1.63	0.94	0.75	0.00	1.69	0.69	0.64	0.03	1.36	0.38	0.45	0.00	0.83
7.5	0.62	0.48	0.00	1.10	0.28	0.33	0.00	0.61	0.24	0.38	0.00	0.62	0.11	0.23	0.00	0.35
8.5	0.46	0.50	0.00	0.97	0.54	0.68	0.01	1.23	0.39	0.46	0.00	0.85	0.25	0.30	0.00	0.54
9.5	0.95	0.87	0.00	1.82	0.60	0.81	0.00	1.42	0.74	0.58	0.00	1.31	0.38	0.51	0.00	0.89
10.5	0.87	0.98	0.00	1.84	0.84	0.55	0.00	1.39	0.87	0.77	0.00	1.63	0.56	0.52	0.00	1.08
11.5	1.36	1.26	0.00	2.62	1.21	1.12	0.00	2.32	1.19	1.32	0.00	2.51	0.56	0.99	0.00	1.55
12.5	1.83	1.78	0.01	3.61	1.13	1.22	0.00	2.35	1.07	1.20	0.00	2.26	1.24	0.91	0.00	2.15
13.5	1.66	1.75	0.01	3.41	1.46	1.45	0.00	2.91	1.58	1.36	0.00	2.93	1.33	1.44	0.00	2.77
14.5	1.91	1.77	0.00	3.67	1.89	1.71	0.00	3.60	2.16	1.77	0.00	3.94	1.58	1.53	0.00	3.11
15.5	2.21	1.64	0.00	3.85	1.54	1.47	0.00	3.01	2.61	2.21	0.00	4.82	1.92	1.90	0.00	3.81
16.5	2.19	1.86	0.00	4.04	1.74	1.56	0.00	3.29	2.60	2.67	0.00	5.26	1.96	1.80	0.00	3.76
17.5	3.45	1.88	0.01	5.34	1.97	1.45	0.00	3.41	1.92	1.97	0.00	3.89	1.71	1.96	0.00	3.67
18.5	2.99	2.03	0.00	5.02	1.85	1.38	0.00	3.23	1.60	1.74	0.00	3.34	1.31	1.52	0.00	2.83
19.5	1.73	2.94	0.00	4.66	1.57	1.57	0.00	3.14	1.36	1.77	0.00	3.13	0.97	1.24	0.00	2.22
20.5	0.91	2.50	0.00	3.41	0.98	1.70	0.00	2.67	0.82	1.89	0.00	2.71	0.59	1.22	0.00	1.81
21.5	0.51	2.60	0.00	3.11	0.40	2.38	0.00	2.78	0.37	1.71	0.00	2.09	0.30	1.23	0.00	1.53
22.5	0.10	1.73	0.00	1.83	0.15	2.18	0.00	2.32	0.10	1.82	0.00	1.91	0.15	1.21	0.00	1.37
23.5	0.03	1.44	0.00	1.47	0.05	1.90	0.00	1.95	0.03	1.83	0.00	1.86	0.01	1.33	0.00	1.35
24.5	0.01	0.94	0.00	0.95	0.00	1.49	0.00	1.49	0.00	2.28	0.00	2.29	0.00	1.25	0.00	1.25
25.5	0.00	0.84	0.00	0.84	0.01	1.18	0.00	1.20	0.00	1.87	0.00	1.87	0.01	1.18	0.00	1.19
26.5	0.00	0.63	0.00	0.63	0.00	1.05	0.00	1.05	0.00	1.53	0.00	1.53	0.00	1.19	0.00	1.19
27.5	0.00	0.25	0.00	0.25	0.00	0.69	0.00	0.69	0.00	0.88	0.00	0.88	0.00	0.82	0.00	0.82
28.5	0.00	0.31	0.00	0.31	0.01	0.37	0.00	0.38	0.00	0.62	0.00	0.62	0.00	0.52	0.00	0.52
29.5	0.00	0.20	0.00	0.20	0.01	0.35	0.00	0.37	0.00	0.58	0.00	0.58	0.00	0.46	0.00	0.46
30.5	0.00	0.10	0.00	0.10	0.00	0.28	0.00	0.28	0.00	0.15	0.00	0.15	0.00	0.27	0.00	0.27
31.5	0.00	0.13	0.00	0.13	0.00	0.21	0.00	0.21	0.00	0.11	0.00	0.11	0.00	0.23	0.00	0.23
32.5	0.00	0.09	0.00	0.09	0.00	0.07	0.00	0.07	0.00	0.07	0.00	0.07	0.00	0.14	0.00	0.14
33.5	0.00	0.04	0.00	0.04	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.09	0.00	0.09
34.5	0.00	0.03	0.00	0.03	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08
35.5	0.00	0.01	0.00	0.01	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03
36.5	0.00	0.05	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03
37.5	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
38.5	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
39.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.5	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41.5	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
42.5	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
Total	25.64	32.68	0.23	58.54	19.99	30.69	0.90	51.59	20.84	34.48	1.59	56.91	15.78	26.93	1.21	43.93
Nº samples:				83				71				87				81
Nº Ind.:	2107	2423	25	4555	1589	2246	69	3904	2022	3019	176	5217	1409	2319	105	3833
Sampled catch:				2985				2712				3287				2541
Range:				1.5-39				2-41				1.5-42.5				2.0-41.5
Total catch:				2985				2712				3287				2543
Total valid hauls:				100				94				100				98

Table 10 (cont). **Roughhead grenadier** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2010				2011				2012				2013			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.5	0.03	0.00	0.26	0.29	0.02	0.00	0.17	0.19	0.00	0.00	0.24	0.24	0.01	0.03	1.12	1.15
3.5	0.07	0.05	0.33	0.46	0.00	0.01	1.41	1.42	0.00	0.02	1.01	1.04	0.24	0.09	4.47	4.80
4.5	0.04	0.09	0.01	0.15	0.03	0.03	0.07	0.14	0.10	0.03	0.03	0.16	0.17	0.20	0.24	0.60
5.5	0.29	0.20	0.00	0.48	0.06	0.16	0.01	0.24	0.22	0.23	0.00	0.44	1.23	1.16	0.00	2.38
6.5	0.58	0.59	0.00	1.17	0.24	0.30	0.02	0.56	0.92	0.88	0.00	1.80	1.66	2.08	0.00	3.74
7.5	0.26	0.22	0.00	0.47	0.22	0.18	0.00	0.40	0.38	0.35	0.00	0.74	0.39	0.45	0.00	0.84
8.5	0.28	0.36	0.00	0.64	0.44	0.34	0.00	0.78	0.38	0.28	0.00	0.66	1.13	1.52	0.00	2.65
9.5	0.54	0.43	0.00	0.97	0.29	0.46	0.00	0.75	0.44	0.53	0.00	0.98	1.23	3.14	0.00	4.37
10.5	0.76	0.66	0.00	1.42	0.31	0.42	0.00	0.72	0.57	0.42	0.00	0.99	0.63	1.16	0.00	1.78
11.5	0.95	0.89	0.00	1.83	0.50	0.29	0.00	0.79	0.68	0.60	0.00	1.28	1.10	2.29	0.00	3.39
12.5	1.26	1.10	0.00	2.37	0.62	0.63	0.00	1.25	0.65	0.59	0.00	1.24	1.52	2.64	0.00	4.16
13.5	1.84	1.74	0.00	3.59	0.81	0.79	0.00	1.61	0.79	0.74	0.00	1.53	2.42	3.03	0.00	5.46
14.5	2.46	2.38	0.00	4.85	1.48	1.13	0.00	2.61	1.26	0.91	0.00	2.17	1.77	2.40	0.00	4.17
15.5	2.29	2.10	0.00	4.40	2.22	1.37	0.00	3.59	1.52	1.13	0.00	2.65	2.04	2.84	0.00	4.88
16.5	2.32	2.49	0.00	4.80	2.24	1.41	0.00	3.65	1.63	1.02	0.00	2.65	2.18	2.17	0.00	4.35
17.5	1.89	2.35	0.00	4.24	1.35	1.79	0.00	3.14	1.54	1.46	0.00	2.99	1.98	2.97	0.00	4.95
18.5	1.35	2.30	0.00	3.65	1.31	1.99	0.00	3.30	1.06	1.38	0.00	2.45	1.51	2.30	0.00	3.81
19.5	0.75	1.78	0.00	2.52	0.58	1.78	0.00	2.36	0.64	1.19	0.00	1.83	0.65	2.34	0.00	2.99
20.5	0.36	1.26	0.00	1.62	0.16	1.26	0.00	1.42	0.29	1.25	0.00	1.55	0.33	1.70	0.00	2.03
21.5	0.16	1.20	0.00	1.36	0.06	0.85	0.00	0.91	0.09	0.96	0.00	1.05	0.16	1.40	0.01	1.57
22.5	0.04	0.85	0.00	0.89	0.06	0.66	0.00	0.72	0.01	0.98	0.00	0.99	0.01	1.44	0.00	1.45
23.5	0.04	0.93	0.00	0.96	0.00	0.58	0.00	0.58	0.01	0.61	0.00	0.63	0.00	1.16	0.00	1.16
24.5	0.00	0.56	0.00	0.56	0.01	0.73	0.00	0.74	0.00	0.70	0.00	0.70	0.00	0.70	0.00	0.70
25.5	0.00	0.80	0.00	0.80	0.00	0.58	0.00	0.58	0.00	0.49	0.00	0.49	0.00	0.63	0.00	0.63
26.5	0.00	0.56	0.00	0.56	0.00	0.63	0.00	0.63	0.00	0.45	0.00	0.45	0.00	0.47	0.00	0.47
27.5	0.00	0.44	0.00	0.44	0.00	0.50	0.00	0.50	0.00	0.44	0.00	0.44	0.01	0.29	0.00	0.30
28.5	0.00	0.38	0.00	0.38	0.00	0.37	0.00	0.37	0.00	0.23	0.00	0.23	0.00	0.36	0.00	0.36
29.5	0.00	0.23	0.00	0.23	0.00	0.17	0.00	0.17	0.00	0.10	0.00	0.10	0.00	0.18	0.00	0.18
30.5	0.00	0.11	0.00	0.11	0.00	0.10	0.00	0.10	0.00	0.08	0.00	0.08	0.00	0.18	0.00	0.18
31.5	0.00	0.09	0.00	0.09	0.00	0.03	0.00	0.03	0.00	0.16	0.00	0.16	0.00	0.08	0.00	0.08
32.5	0.00	0.06	0.00	0.06	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.06	0.00	0.06
33.5	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03
34.5	0.00	0.06	0.00	0.06	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
35.5	0.00	0.02	0.00	0.02	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01
36.5	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
37.5	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
38.5	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01
39.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.5	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41.5	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	18.58	27.44	0.61	46.63	13.01	19.73	1.68	34.43	13.19	18.35	1.29	32.83	22.36	41.53	5.84	69.73
Nº samples:				84				83				82				83
Nº Ind.:	1486	1997	65	3548	1037	1506	140	2683	1077	1413	113	2603	0	1986	427	3731
Sampled catch:				2234				1710				1508				2379
Range:				2.5-42				2.5-39				2.5-38.5				2.5-39
Total catch:				2234				1710				1508				2379
Total valid hauls:				97				89				98				100

Table 10 (cont). **Roughhead grenadier** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2014				2015				2016				2017			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
2.5	0.00	0.05	0.24	0.29	0.00	0.00	1.16	1.16	0.01	0.00	0.50	0.51	0.00	0.00	0.19	0.19
3.5	0.04	0.01	1.38	1.43	0.10	0.00	3.19	3.30	0.04	0.09	1.08	1.20	0.27	0.06	0.76	1.09
4.5	0.09	0.01	0.07	0.17	0.06	0.04	0.04	0.14	0.17	0.26	0.00	0.43	0.04	0.05	0.06	0.15
5.5	0.56	0.51	0.01	1.08	0.67	1.14	0.02	1.83	1.39	1.94	0.00	3.32	0.61	0.62	0.00	1.22
6.5	0.85	1.04	0.00	1.88	2.00	2.51	0.00	4.51	2.40	2.78	0.01	5.19	0.82	0.83	0.00	1.65
7.5	0.17	0.27	0.00	0.43	0.73	0.77	0.00	1.50	0.44	0.56	0.00	0.99	0.41	0.41	0.00	0.82
8.5	0.27	0.38	0.00	0.65	2.08	2.32	0.00	4.39	1.29	1.76	0.00	3.04	1.40	1.27	0.00	2.67
9.5	0.46	0.36	0.00	0.81	1.38	1.64	0.00	3.02	0.96	1.21	0.00	2.17	0.63	1.10	0.00	1.73
10.5	0.61	0.47	0.00	1.08	0.73	0.87	0.00	1.59	1.43	1.15	0.00	2.59	0.93	0.85	0.00	1.78
11.5	0.70	0.62	0.00	1.32	0.94	1.08	0.00	2.01	1.75	2.09	0.00	3.84	1.34	1.14	0.00	2.48
12.5	0.75	0.69	0.00	1.43	1.54	1.23	0.00	2.77	1.15	1.09	0.00	2.24	1.54	1.43	0.00	2.97
13.5	1.33	1.03	0.00	2.36	1.57	1.29	0.00	2.86	1.82	1.65	0.00	3.46	1.59	1.66	0.00	3.25
14.5	1.24	1.14	0.00	2.38	1.94	1.38	0.00	3.31	1.81	1.78	0.00	3.59	1.39	0.98	0.00	2.37
15.5	1.46	1.15	0.00	2.61	2.76	2.02	0.00	4.78	2.21	1.85	0.00	4.06	1.72	1.08	0.00	2.80
16.5	1.84	1.26	0.00	3.10	3.18	1.87	0.00	5.05	1.68	1.42	0.00	3.10	1.49	1.47	0.00	2.96
17.5	1.49	1.74	0.00	3.23	2.76	2.25	0.00	5.01	1.60	1.59	0.00	3.19	1.67	1.32	0.00	2.99
18.5	0.91	1.71	0.00	2.62	2.67	2.08	0.00	4.75	1.02	1.53	0.00	2.55	1.10	1.15	0.00	2.25
19.5	0.51	1.64	0.00	2.15	1.05	2.55	0.00	3.60	0.71	1.13	0.00	1.84	0.73	1.45	0.00	2.17
20.5	0.40	1.84	0.00	2.24	0.47	2.62	0.00	3.09	0.38	1.33	0.00	1.71	0.42	1.20	0.00	1.62
21.5	0.19	1.76	0.00	1.95	0.17	2.34	0.00	2.51	0.19	1.27	0.00	1.46	0.17	1.35	0.00	1.52
22.5	0.04	1.36	0.00	1.40	0.11	1.70	0.00	1.81	0.02	1.09	0.00	1.11	0.02	1.09	0.01	1.13
23.5	0.04	1.22	0.00	1.26	0.02	1.44	0.00	1.47	0.01	0.81	0.00	0.82	0.01	0.88	0.00	0.89
24.5	0.00	1.02	0.00	1.02	0.00	1.26	0.00	1.26	0.00	0.86	0.00	0.86	0.01	0.97	0.00	0.98
25.5	0.00	0.67	0.00	0.67	0.00	0.80	0.00	0.80	0.00	0.66	0.00	0.66	0.00	0.53	0.00	0.53
26.5	0.00	0.51	0.00	0.51	0.01	0.76	0.00	0.77	0.00	0.47	0.00	0.47	0.01	0.60	0.00	0.62
27.5	0.00	0.45	0.00	0.45	0.00	0.45	0.00	0.45	0.00	0.34	0.00	0.34	0.06	0.32	0.00	0.37
28.5	0.00	0.29	0.00	0.29	0.00	0.44	0.00	0.44	0.00	0.19	0.00	0.19	0.00	0.26	0.00	0.26
29.5	0.00	0.21	0.00	0.21	0.00	0.34	0.00	0.34	0.00	0.12	0.00	0.12	0.00	0.17	0.00	0.17
30.5	0.00	0.15	0.00	0.15	0.00	0.17	0.00	0.17	0.00	0.08	0.00	0.08	0.00	0.03	0.00	0.03
31.5	0.00	0.05	0.00	0.05	0.00	0.20	0.00	0.20	0.00	0.06	0.00	0.06	0.00	0.07	0.00	0.07
32.5	0.00	0.04	0.00	0.04	0.00	0.13	0.00	0.13	0.00	0.03	0.00	0.03	0.00	0.07	0.00	0.07
33.5	0.00	0.04	0.00	0.04	0.00	0.09	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
34.5	0.00	0.01	0.00	0.01	0.00	0.08	0.00	0.08	0.00	0.01	0.00	0.01	0.00	0.06	0.00	0.06
35.5	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
36.5	0.00	0.03	0.00	0.03	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02
37.5	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
38.5	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
39.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
Total	13.94	23.75	1.70	39.39	26.93	37.94	4.41	69.28	22.47	31.23	1.60	55.30	18.38	24.54	1.03	43.95
Nº samples:				83				82				79				81
Nº Ind.:	1126	1892	154	3172	2276	3199	444	5919	1691	2220	135	4046	1782	2299	111	4192
Sampled catch:				2043				2954				1969				1889
Range:				2.5-39				2.5-38				2.5-42.5				1.5-37
Total catch:				2043				2954				1969				1889
Total valid hauls:				99				97				98				99

Table 10 (cont). Roughhead grenadier length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2018				2019			
Length (cm.)	M	F	I	T				
1.5	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00
2.5	0.00	0.00	0.21	0.21	0.01	0.00	0.09	0.10
3.5	0.15	0.09	0.43	0.67	0.15	0.03	0.36	0.55
4.5	0.04	0.04	0.02	0.10	0.02	0.02	0.01	0.05
5.5	0.18	0.14	0.00	0.33	0.36	0.30	0.00	0.66
6.5	0.58	0.73	0.00	1.32	0.62	0.77	0.01	1.40
7.5	0.28	0.32	0.00	0.60	0.47	0.27	0.00	0.75
8.5	0.55	0.61	0.00	1.15	1.15	0.93	0.00	2.08
9.5	0.40	0.49	0.00	0.89	0.88	0.95	0.00	1.83
10.5	0.84	0.77	0.00	1.61	0.84	0.89	0.00	1.72
11.5	0.72	0.95	0.00	1.67	1.04	1.14	0.00	2.18
12.5	0.97	0.69	0.00	1.67	1.12	1.22	0.00	2.34
13.5	1.29	0.85	0.00	2.14	1.13	1.19	0.00	2.32
14.5	1.35	1.12	0.00	2.47	1.64	1.29	0.00	2.93
15.5	1.26	1.27	0.00	2.53	1.56	1.31	0.00	2.86
16.5	1.36	0.80	0.00	2.16	1.36	1.14	0.00	2.49
17.5	1.26	0.95	0.00	2.21	1.13	0.90	0.00	2.02
18.5	0.92	1.03	0.00	1.94	0.85	0.79	0.00	1.63
19.5	0.59	0.81	0.00	1.41	0.58	0.69	0.00	1.27
20.5	0.34	0.94	0.00	1.28	0.19	0.53	0.00	0.72
21.5	0.12	0.65	0.00	0.77	0.03	0.61	0.00	0.64
22.5	0.02	0.88	0.00	0.90	0.01	0.51	0.00	0.52
23.5	0.01	0.55	0.00	0.56	0.02	0.32	0.00	0.33
24.5	0.01	0.57	0.00	0.58	0.00	0.25	0.00	0.25
25.5	0.00	0.55	0.00	0.55	0.01	0.25	0.00	0.26
26.5	0.00	0.41	0.00	0.41	0.00	0.18	0.00	0.18
27.5	0.00	0.26	0.00	0.26	0.00	0.16	0.00	0.16
28.5	0.01	0.21	0.00	0.22	0.00	0.09	0.00	0.09
29.5	0.01	0.14	0.00	0.15	0.00	0.08	0.00	0.08
30.5	0.00	0.17	0.00	0.17	0.00	0.09	0.00	0.09
31.5	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03
32.5	0.00	0.01	0.00	0.01	0.00	0.06	0.00	0.06
33.5	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00
34.5	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
35.5	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.05
36.5	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03
37.5	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01
38.5	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
39.5	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
40.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
41.5	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
42.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	13.27	17.22	0.66	31.15	15.16	17.06	0.48	32.70
Nº samples:				85				82
Nº Ind.:	1345	1717	69	3131	1398	1582	50	3030
Sampled catch:				1460				1179
Range:				2.0-41.5				2.5-37.5
Total catch:				1460				1179
Total valid hauls:				100				96

Table 11. Swept area, number of hauls and **redfish** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2006				2007				2008				2009				2010			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	0.000	0.000	0.0225	2	0.041	0.027	0.0229	2	0.495	0.644	0.0225	2	0.275	0.389	0.0225	2	0.000	0.000
387	0.0225	2	113.685	116.171	0.0225	2	80.400	34.083	0.0435	4	185.125	58.384	0.0439	4	568.427	761.003	0.0458	4	278.625	163.544
388	0.0566	5	66.040	32.355	0.0563	5	162.078	100.787	0.0559	5	212.750	142.882	0.0555	5	1686.275	2522.618	0.0570	5	922.261	770.678
389	0.0795	7	46.008	84.876	0.0900	8	10.723	18.542	0.0780	7	385.331	509.833	0.0803	7	321.423	836.313	0.0795	7	3449.476	9037.325
390	0.1249	11	0.188	0.318	0.1350	12	0.173	0.473	0.1395	12	0.922	2.280	0.1373	12	0.086	0.182	0.1249	11	0.005	0.011
391	0.0450	4	7.135	5.793	0.0450	4	6.013	6.351	0.0454	4	1093.130	1444.102	0.0458	4	243.571	371.869	0.0454	4	2337.331	4421.647
392	0.0229	2	4367.190	5741.976	0.0225	2	959.650	350.230	0.0221	2	209.150	15.203	0.0229	2	797.546	42.491	0.0225	2	480.100	211.425
729	0.0338	3	202.167	262.943	0.0338	3	128.889	184.792	0.0338	3	618.467	508.067	0.0341	3	50.830	11.765	0.0338	3	284.767	335.507
730	0.0326	3	145.923	148.390	0.0225	2	367.737	518.964	0.0323	3	29.790	42.861	0.0338	3	167.600	193.999	0.0334	3	147.447	167.733
731	0.0341	3	19.053	7.921	0.0338	3	37.100	28.646	0.0330	3	132.967	154.885	0.0341	3	37.000	30.152	0.0338	3	89.033	43.263
732	0.0334	3	5.638	7.067	0.0338	3	12.115	13.539	0.0446	4	11.975	11.596	0.0450	4	8.311	9.503	0.0450	4	16.665	14.441
733	0.0454	4	72.600	47.167	0.0338	3	115.667	70.383	0.0431	4	132.600	203.165	0.0450	4	59.725	53.776	0.0450	4	174.368	45.484
734	0.0225	2	12.328	3.921	0.0225	2	24.728	28.585	0.0221	2	22.485	27.457	0.0218	2	16.220	17.367	0.0225	2	5.945	3.868
741	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.555	0.049	0.0221	2	0.903	0.012	0.0225	2	0.000	0.000
742	0.0229	2	0.000	0.000	0.0225	2	0.300	0.424	0.0210	2	0.000	0.000	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000
743	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0203	2	0.000	0.000	0.0203	2	5.575	7.884	0.0225	2	0.000	0.000
744	0.0229	2	0.000	0.000	0.0218	2	0.479	0.677	0.0221	2	0.000	0.000	0.0210	2	0.000	0.000	0.0229	2	0.133	0.188
745	0.0686	6	0.119	0.221	0.0675	6	0.380	0.450	0.0555	5	0.364	0.664	0.0559	5	0.000	0.000	0.0563	5	0.436	0.632
746	0.0675	6	0.118	0.185	0.0664	6	0.000	0.000	0.0638	6	0.000	0.000	0.0668	6	0.043	0.106	0.0679	6	0.053	0.131
747	0.1230	11	0.000	0.000	0.1238	11	0.000	0.000	0.1069	10	0.012	0.039	0.1118	10	0.000	0.000	0.1125	10	0.000	0.000
748	0.0326	3	0.130	0.225	0.0338	3	0.830	1.050	0.0218	2	4.290	6.067	0.0229	2	1.576	2.228	0.0225	2	0.000	0.000
749	0.0229	2	0.000	0.000	0.0113	1	0.000	-0.021	4	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000
750	0.1005	9	0.000	0.000	0.0679	6	0.000	0.000	0.0844	8	0.000	0.000	0.0791	7	0.230	0.609	0.0900	8	0.184	0.520
751	0.0454	4	0.000	0.000	0.0225	2	0.000	0.000	0.0413	4	0.000	0.000	0.0338	3	0.000	0.000	0.0225	2	0.000	0.000

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 11 (cont.). Swept area, number of hauls and **redfish** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2011				2012				2013				2014				2015			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	0.205	0.290	0.0225	2	0.000	0.000	0.0229	2	0.114	0.161	0.0225	2	0.000	0.000	0.0236	2	0.363	0.148
387	0.0450	4	471.900	592.192	0.0450	4	456.188	146.956	0.0450	4	903.875	221.080	0.0461	4	692.755	574.493	0.0458	4	734.010	488.907
388	0.0563	5	400.680	561.867	0.0570	5	3649.824	2735.118	0.0570	5	2614.156	2779.770	0.0585	5	2063.600	2163.327	0.0574	5	876.100	163.716
389	0.0675	6	314.072	337.845	0.0799	7	5366.450	13039.715	0.0791	7	1522.331	2830.529	0.0814	7	672.973	1713.444	0.0814	7	695.546	1727.062
390	0.1009	9	0.298	0.893	0.1354	12	0.307	0.723	0.1358	12	0.250	0.567	0.1369	12	0.096	0.316	0.1260	11	0.571	0.983
391	0.0458	4	270.078	524.098	0.0458	4	1317.264	848.814	0.0450	4	9.546	9.721	0.0465	4	39.913	51.137	0.0465	4	300.301	338.624
392	0.0229	2	7489.781	7767.171	0.0225	2	4138.815	2411.128	0.0225	2	1336.512	1473.062	0.0225	2	2692.510	923.665	0.0229	2	1394.767	444.016
729	0.0338	3	1405.563	2154.649	0.0338	3	1491.733	2440.054	0.0341	3	1933.319	1952.744	0.0338	3	1061.297	884.322	0.0345	3	227.700	84.668
730	0.0334	3	98.992	73.752	0.0338	3	214.100	203.592	0.0334	3	143.300	121.829	0.0345	3	92.793	111.735	0.0345	3	240.005	135.477
731	0.0334	3	45.227	32.987	0.0341	3	37.000	4.590	0.0334	3	82.897	60.702	0.0345	3	110.933	80.154	0.0345	3	496.350	769.247
732	0.0454	4	12.480	9.605	0.0454	4	7.236	4.921	0.0450	4	5.558	2.888	0.0454	4	39.853	27.312	0.0465	4	11.650	14.470
733	0.0454	4	255.160	236.623	0.0454	4	129.800	140.677	0.0450	4	418.230	374.577	0.0458	4	2467.588	3626.885	0.0454	4	647.925	622.329
734	0.0225	2	7.888	0.972	0.0233	2	9.015	1.393	0.0221	2	168.600	170.554	0.0225	2	42.250	1.909	0.0225	2	75.550	87.328
741	0.0218	2	0.500	0.707	0.0218	2	0.700	0.990	0.0221	2	2.003	2.833	0.0225	2	0.360	0.509	0.0236	2	1.387	1.962
742	0.0225	2	0.208	0.294	0.0206	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0233	2	0.449	0.635
743	0.0221	2	0.000	0.000	0.0206	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0233	2	0.000	0.000
744	0.0221	2	0.858	1.213	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
745	0.0446	4	0.745	1.007	0.0570	5	0.348	0.506	0.0559	5	0.490	0.565	0.0578	5	1.204	1.597	0.0578	5	0.281	0.628
746	0.0566	5	0.000	0.000	0.0675	6	0.000	0.000	0.0675	6	0.000	0.000	0.0683	6	0.009	0.022	0.0686	6	0.301	0.737
747	0.0893	8	0.379	1.071	0.1121	10	0.000	0.000	0.1125	10	0.000	0.000	0.1125	10	0.000	0.000	0.1028	9	0.022	0.065
748	0.0221	2	0.595	0.134	0.0225	2	0.000	0.000	0.0225	2	7.045	8.846	0.0229	2	0.000	0.000	0.0233	2	3.075	4.349
749	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.192	0.096	0.0225	2	0.000	0.000
750	0.0668	6	0.242	0.592	0.0885	8	0.039	0.110	0.0896	8	0.000	0.000	0.0904	8	0.000	0.000	0.0934	8	0.148	0.340
751	0.0334	3	0.000	0.000	0.0218	2	0.000	0.000	0.0446	4	0.000	0.000	0.0334	3	0.000	0.000	0.0341	3	0.277	0.479

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 11 (cont.). Swept area, number of hauls and **redfish** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2016				2017				2018				2019			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0233	2	0.000	0.000	0.0225	2	1.715	2.425	0.0221	2	0.152	0.215	0.0225	2	0.015	0.018
387	0.0454	4	584.341	493.178	0.0446	4	701.090	731.669	0.0465	4	239.235	229.266	0.0450	4	266.004	127.589
388	0.0570	5	1030.358	1137.237	0.0566	5	295.390	151.518	0.0566	5	235.345	232.170	0.0559	5	424.870	459.902
389	0.0814	7	23.125	22.419	0.0799	7	45.796	48.788	0.0803	7	128.879	199.320	0.0784	7	250.967	495.273
390	0.1391	12	0.010	0.028	0.1369	12	0.000	0.001	0.1358	12	0.080	0.274	0.1125	10	0.039	0.120
391	0.0469	4	100.259	195.736	0.0458	4	23.575	45.651	0.0458	4	294.143	557.156	0.0450	4	10.360	10.352
392	0.0233	2	1030.905	794.922	0.0229	2	1123.789	262.250	0.0229	2	352.825	327.284	0.0229	2	218.475	26.269
729	0.0341	3	275.297	95.563	0.0345	3	214.253	188.870	0.0341	3	38.827	34.558	0.0338	3	662.483	554.297
730	0.0233	2	490.900	198.131	0.0341	3	155.247	212.573	0.0330	3	69.500	62.933	0.0338	3	25.067	13.268
731	0.0345	3	749.513	1224.409	0.0338	3	19.847	9.161	0.0353	3	259.133	396.687	0.0341	3	147.212	207.645
732	0.0454	4	27.555	53.312	0.0446	4	16.556	22.856	0.0461	4	2.715	2.851	0.0454	4	4.034	4.020
733	0.0458	4	470.400	560.171	0.0450	4	337.351	330.001	0.0454	4	172.787	292.419	0.0450	4	268.638	319.639
734	0.0229	2	79.902	100.440	0.0225	2	23.310	5.926	0.0225	2	6.260	8.853	0.0229	2	10.608	6.353
741	0.0233	2	2.225	3.147	0.0225	2	27.070	37.520	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000
742	0.0229	2	0.000	0.000	0.0225	2	1.180	0.339	0.0221	2	1.770	2.503	0.0221	2	0.000	0.000
743	0.0229	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0578	5	0.400	0.894
744	0.0229	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	0.000	0.000	0.0679	6	0.000	0.000
745	0.0574	5	0.405	0.419	0.0559	5	0.242	0.343	0.0596	5	0.126	0.281	0.1125	10	0.000	0.000
746	0.0690	6	0.187	0.311	0.0683	6	0.194	0.344	0.0698	6	0.076	0.186	0.0225	2	0.000	0.000
747	0.1140	10	0.000	0.000	0.1125	10	0.000	0.000	0.1140	10	0.000	0.000	0.0221	2	0.000	0.000
748	0.0233	2	1.125	0.658	0.0225	2	10.610	7.509	0.0225	2	0.545	0.770	0.0788	7	0.000	0.000
749	0.0233	2	0.330	0.467	0.0229	2	0.890	0.170	0.0225	2	0.000	0.000	0.0338	3	0.000	0.000
750	0.0930	8	0.000	0.000	0.0934	8	0.090	0.255	0.0904	8	0.151	0.232	0.0225	2	0.015	0.018
751	0.0345	3	0.000	0.000	0.0349	3	0.000	0.000	0.0454	4	0.000	0.000	0.0450	4	266.004	127.589

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 12. Stratified mean catches (Kg) of **redfish** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey													
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0.12	0.59	0.00	4.84	58.35	32.45	0.00	24.19	0.00	13.45	0.00	42.78	0.0233	202.37
387	439.04	14336.00	29103.36	20582.40	47392.00	145517.18	71328.00	120806.40	116784.00	231392.00	177345.28	187906.56	0.0454	179479.04
388	2303.84	4212.60	23576.28	57861.85	75951.75	602000.18	329247.18	143042.76	1302987.17	933253.69	736705.20	312767.70	0.0570	105454.23
389	407.58	16822.45	23418.22	5458.01	196133.55	163604.53	1755783.21	159862.48	2731523.05	774866.41	342543.18	354032.77	0.0814	23310.24
390	472.70	0.00	153.59	141.00	751.23	70.36	3.93	242.69	250.00	203.95	78.10	465.14	0.1391	0.14
391	24.44	404.67	2012.07	1695.53	308262.66	68687.02	659127.27	76161.86	371468.38	2691.97	11255.33	84684.81	0.0469	6648.08
392	6713.50	177236.40	633242.55	139149.25	30326.75	115644.17	69614.50	1086018.17	600128.18	193794.24	390413.95	202241.22	0.0233	162949.33
729	16516.80	57706.50	37603.00	23973.29	115034.80	9454.32	52966.60	261434.78	277462.40	359597.27	197401.18	42352.20	0.0341	39851.12
730	39283.60	9443.50	24806.97	62515.29	5064.30	28492.00	25065.93	16828.70	36397.00	24361.00	15774.87	40800.85	0.0233	26391.93
731	8502.84	17182.80	4115.52	8013.60	28720.80	7992.00	19231.20	9768.96	7992.00	17905.68	23961.60	107211.60	0.0345	4286.88
732	16678.20	9707.78	1302.46	2798.49	2766.23	1919.90	3849.62	2882.88	1671.40	1283.78	9205.93	2691.15	0.0454	3824.44
733	n.s	26130.00	16988.40	27066.00	31028.40	13975.65	40802.00	59707.44	30373.20	97865.82	577415.48	151614.45	0.0458	78940.08
734	n.s	823.65	1886.11	3783.31	3440.21	2481.66	909.59	1206.79	1379.30	25795.80	6464.25	11559.15	0.0229	3566.35
741	224000.00	25.50	0.00	0.00	55.50	90.25	0.00	50.00	70.00	200.30	36.00	138.70	0.0233	2706.95
742	0.00	21.18	0.00	19.20	0.00	0.00	0.00	13.31	0.00	0.00	0.00	28.74	0.0229	75.52
743	n.s	106.59	0.00	0.00	0.00	284.33	0.00	0.00	0.00	0.00	0.00	0.00	0.0229	0.00
744	n.s	0.00	0.00	31.58	0.00	0.00	8.78	56.63	0.00	0.00	0.00	0.00	0.0229	0.00
745	610078.80	0.00	41.47	132.24	126.74	0.00	151.73	259.26	121.10	170.59	418.92	97.72	0.0574	84.15
746	0.00	0.00	46.39	0.00	0.00	16.99	20.91	0.00	0.00	0.00	3.59	117.99	0.0690	76.05
747	n.s	144.80	0.00	0.00	8.98	0.00	0.00	274.22	0.00	0.00	0.00	15.69	0.1140	0.00
748	429.30	69.96	20.67	131.97	682.11	250.50	0.00	94.61	0.00	1120.16	0.00	488.93	0.0233	1686.99
749	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	24.19	0.00	0.0233	112.14
750	n.s	0.00	0.00	0.00	0.00	127.88	102.17	134.37	21.68	0.00	0.00	82.22	0.0930	50.18
751	n.s	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	63.36	0.0345	0.00
TOTAL	925850.76	334374.97	798317.04	353357.83	845804.35	1160641.36	3028212.59	1938870.48	5478628.86	2664516.12	2489047.05	1499403.71	1132836.20	639696.20
$(\bar{y})$	206.94	53.43	123.06	54.47	130.38	178.92	466.81	298.89	844.56	410.75	383.70	231.14	174.63	98.61
SD	136.03	28.87	90.99	11.94	36.35	69.07	285.47	130.15	396.90	115.72	101.29	56.47	41.60	17.28

Table 12 (cont). Stratified mean catches (Kg) of **redfish** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	17.94	1.77
387	61244.16	68096.96
388	84018.09	151678.59
389	65599.19	127742.42
390	65.34	31.38
391	82948.19	2921.52
392	51159.63	31678.88
729	7221.88	123221.90
730	11815.00	4261.33
731	55972.80	31797.72
732	627.22	931.91
733	40432.04	62861.18
734	957.78	1622.95
741	0.00	0.00
742	113.28	0.00
743	0.00	0.00
744	0.00	0.00
745	43.71	139.20
746	29.73	0.00
747	0.00	0.00
748	86.58	0.00
749	0.00	0.00
750	83.96	0.00
751	0.00	0.00
TOTAL	462436.5	606987.70
$(\bar{y})$	71.29	93.57
SD	18.67	22.00

Table 13. Survey estimates (by the swept area method) of **redfish** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

	Survey													
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0	0	0	0	5	3	0	2	0	1	0	4	0	18
387	38	1341	2587	1830	4358	13267	6236	10738	10381	20568	15380	16429	13187	16088
388	207	401	2082	5143	6797	54234	28881	12715	114297	81864	62966	27256	32266	9312
389	36	1495	2062	485	17602	14271	154597	14210	239382	68551	29466	30454	1013	2043
390	42	0	14	13	65	6	0	22	22	18	7	41	1	0
391	2	37	179	151	27175	6005	58105	6659	32478	239	968	7285	2413	581
392	578	16584	55365	12369	2741	10111	6188	94952	53345	17226	34703	17682	12859	14247
729	1573	5216	3342	2131	10225	831	4708	23239	24663	31613	17547	3683	4502	3465
730	3551	854	2281	5557	471	2533	2253	1513	3235	2190	1372	3548	7179	2320
731	743	1478	362	712	2611	703	1709	878	703	1609	2084	9323	14078	381
732	1483	925	117	249	248	171	342	254	147	114	812	231	561	343
733	n.s	2375	1498	2406	2878	1242	3627	5263	2678	8699	50484	13365	9624	7017
734	n.s	81	168	336	311	228	81	107	119	2332	575	1027	1069	317
741	19911	2	0	0	5	8	0	5	6	18	3	12	19	241
742	0	2	0	2	0	0	0	1	0	0	0	2	0	7
743	n.s	11	0	0	0	28	0	0	0	0	0	0	0	0
744	n.s	0	0	3	0	0	1	5	0	0	0	0	0	0
745	53633	0	4	12	11	0	13	23	11	15	36	8	12	8
746	0	0	4	0	0	2	2	0	0	0	0	10	6	7
747	n.s	14	0	0	1	0	0	25	0	0	0	1	0	0
748	39	7	2	12	63	22	0	9	0	100	0	42	15	150
749	0	0	0	0	0	0	0	0	0	0	2	0	4	10
750	n.s	0	0	0	0	11	9	12	2	0	0	7	0	4
751	n.s	n.s	0	0	0	0	0	0	0	0	0	6	0	0
TOTAL	81837	30825	70066	31410	75567	103675	266754	170632	481469	235158	216405	130418	98807	56557
SD	50717	17163	50718	6885	20435	40871	164597	72507	229026	66637	57523	31673	23025	9850

Table 13 (cont). Survey estimates (by the swept area method) of **redfish** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	2	0
387	5268	6053
388	7419	13573
389	5722	11409
390	6	3
391	7252	260
392	4473	2770
729	635	10953
730	1074	379
731	4764	2795
732	54	82
733	3564	5588
734	85	142
741	0	0
742	10	0
743	0	0
744	0	0
745	4	12
746	3	0
747	0	0
748	8	0
749	0	0
750	7	0
751	0	0
TOTAL	40350	54019
SD	10496	12677

Table 14. **Redfish** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2006				2007				2008				2009			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
4	0.00	0.01	0.00	0.01	0.00	0.00	0.04	0.04	0.00	0.00	0.16	0.16	0.00	0.00	0.01	0.01
6	0.10	0.05	2.83	2.98	0.00	0.00	17.45	17.45	0.00	0.00	8.19	8.19	0.00	0.00	1.44	1.44
8	0.90	1.28	13.68	15.86	0.01	0.19	26.86	27.06	0.00	0.00	17.35	17.35	0.00	0.00	7.73	7.73
10	2.18	1.28	1.82	5.28	1.45	2.17	1.64	5.26	0.81	0.21	57.74	58.76	0.12	0.14	6.53	6.79
12	3.00	3.27	0.12	6.40	4.45	3.71	0.53	8.69	3.70	2.13	17.78	23.62	0.78	0.36	8.74	9.87
14	11.25	8.43	0.00	19.68	3.44	1.80	0.01	5.25	8.31	3.62	0.11	12.04	3.23	2.04	5.53	10.80
16	20.69	19.49	0.00	40.18	5.97	3.81	0.00	9.77	19.39	18.88	0.00	38.27	46.42	22.66	0.79	69.87
18	14.29	13.66	0.00	27.95	11.85	13.08	0.00	24.92	66.37	46.99	0.05	113.41	133.26	137.85	0.00	271.11
20	23.65	11.01	0.00	34.66	25.50	15.85	0.00	41.35	96.85	63.72	0.00	160.57	115.15	92.22	0.08	207.45
22	41.88	31.01	0.00	72.89	36.00	30.40	0.00	66.41	81.51	63.44	0.00	144.94	117.95	120.09	0.00	238.03
24	40.39	44.21	0.00	84.60	19.89	32.60	0.00	52.48	49.16	50.05	0.00	99.21	67.44	106.44	0.00	173.88
26	9.50	58.30	0.00	67.79	7.34	11.29	0.00	18.63	25.59	33.03	0.00	58.62	15.72	82.79	0.00	98.51
28	8.69	64.05	0.00	72.74	4.69	6.69	0.00	11.39	22.11	21.05	0.00	43.16	9.27	17.36	0.00	26.62
30	6.12	47.61	0.00	53.73	4.33	5.57	0.00	9.90	10.25	9.73	0.00	19.99	2.75	10.77	0.00	13.52
32	4.13	23.73	0.00	27.86	5.48	7.42	0.00	12.90	3.50	4.98	0.00	8.48	2.46	4.50	0.00	6.96
34	0.72	3.74	0.00	4.47	2.66	2.82	0.00	5.48	1.11	2.86	0.00	3.96	2.23	2.06	0.00	4.29
36	0.12	2.15	0.00	2.27	0.20	0.96	0.00	1.16	0.49	0.68	0.00	1.18	0.60	1.49	0.00	2.10
38	0.08	1.05	0.00	1.12	0.05	0.13	0.00	0.18	0.06	0.29	0.00	0.35	0.15	0.03	0.00	0.19
40	0.02	0.01	0.00	0.03	0.02	0.03	0.00	0.06	0.01	0.12	0.00	0.13	0.32	0.37	0.00	0.70
42	0.00	0.01	0.00	0.01	0.01	0.03	0.00	0.04	0.01	0.11	0.00	0.12	0.00	0.04	0.00	0.04
44	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.31	0.00	0.31
46	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.13	0.00	0.00	0.00	0.00
48	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.30
50	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
52	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	187.71	334.38	18.45	540.54	133.36	138.57	46.53	318.46	389.23	322.03	101.39	812.65	517.84	601.84	30.85	1150.53
Nº samples:				48				51				52				51
Nº Ind.:	3205	3089	1205	7499	2669	2360	2016	7045	3957	3147	1372	8476	3016	2723	558	6297
Sampled catch:				11080				4675				12283				16615
Range:				5-48				5-53				5-47				5-49
Total catch:				11080				4675				12283				16615
Total valid hauls:				101				99				100				98

Table 14 (cont.). Redfish length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2010				2011				2012				2013			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
4	0.00	0.00	0.05	0.05	0.00	0.00	0.20	0.20	0.00	0.00	0.02	0.02	0.00	0.00	0.09	0.09
6	0.00	0.00	3.06	3.06	0.00	0.00	5.36	5.36	0.00	0.00	11.79	11.79	0.00	0.00	5.15	5.15
8	0.00	0.00	5.23	5.23	0.00	0.00	6.74	6.74	0.06	0.82	16.26	17.13	0.01	0.00	9.49	9.50
10	0.20	0.00	4.23	4.43	0.14	0.08	5.23	5.45	3.18	4.43	12.65	20.26	0.06	0.33	10.90	11.30
12	0.21	0.12	3.91	4.24	1.55	1.30	2.51	5.36	9.66	4.04	4.21	17.91	4.92	2.02	3.30	10.23
14	2.31	8.76	2.81	13.87	2.58	2.02	1.26	5.86	5.06	2.67	0.94	8.68	9.57	4.45	0.04	14.06
16	52.93	20.23	0.33	73.50	13.55	6.58	0.00	20.13	12.20	5.77	0.00	17.97	10.71	8.41	0.00	19.12
18	362.56	228.57	0.00	591.13	54.39	33.52	0.00	87.90	134.16	83.98	0.00	218.14	21.03	10.38	0.00	31.41
20	557.56	698.41	0.00	1255.97	141.06	124.18	0.00	265.25	635.81	404.59	0.00	1040.41	172.77	104.22	0.00	276.99
22	260.01	387.04	0.00	647.05	115.55	123.27	0.00	238.82	783.26	916.84	0.00	1700.11	247.48	310.10	0.00	557.58
24	91.63	122.89	0.00	214.51	165.60	80.38	0.00	245.98	279.36	676.30	0.00	955.66	166.92	323.66	0.00	490.58
26	53.99	95.89	0.00	149.88	110.11	66.27	0.00	176.37	118.77	229.31	0.00	348.08	89.86	137.72	0.00	227.57
28	21.46	66.19	0.00	87.65	33.80	104.64	0.00	138.43	23.11	113.92	0.00	137.02	27.74	80.12	0.00	107.86
30	8.10	14.77	0.00	22.87	5.54	79.03	0.00	84.57	6.96	74.74	0.00	81.70	13.10	58.07	0.00	71.17
32	4.85	10.51	0.00	15.36	2.92	27.91	0.00	30.82	3.54	30.04	0.00	33.58	4.06	22.19	0.00	26.25
34	2.69	4.84	0.00	7.54	1.12	17.35	0.00	18.48	3.37	6.71	0.00	10.08	3.59	10.79	0.00	14.37
36	1.25	2.39	0.00	3.64	1.18	5.13	0.00	6.31	1.21	2.74	0.00	3.96	1.19	4.65	0.00	5.84
38	0.60	1.72	0.00	2.31	0.21	0.67	0.00	0.88	1.21	1.64	0.00	2.85	0.06	2.10	0.00	2.16
40	0.06	0.95	0.00	1.01	0.01	0.05	0.00	0.06	0.06	0.46	0.00	0.53	0.13	0.10	0.00	0.23
42	0.06	1.79	0.00	1.85	0.02	0.00	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.94	0.00	0.94
44	0.00	0.11	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	1.94	0.00	1.94
46	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.05	0.09	0.06	0.00	0.15	0.00	0.00	0.00	0.00
48	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.11	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.03
52	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.04	0.03	0.00	0.00	0.03	0.00	0.02	0.00	0.02
54	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.08	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00
62	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00
Total	1420.47	1665.26	19.63	3105.35	649.33	672.46	21.31	1343.10	2021.20	2559.23	45.88	4626.30	773.21	1082.22	28.97	1884.40
Nº samples:				48				51				49				52
Nº Ind.:	3216	3082	1178	7476	3017	3572	443	7032	3715	3954	502	8171	3635	4233	866	8734
Sampled catch:				42525				27586				76987				38588
Range:				5-55				5-52				5-61				5-53
Total catch:				42526				27586				76988				38588
Total valid hauls:				97				89				98				100

Table 14 (cont). Redfish length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2014				2015				2016				2017			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
4	0.00	0.00	0.38	0.38	0.00	0.00	0.18	0.18	0.00	0.00	0.01	0.01	0.00	0.00	0.18	0.18
6	0.00	0.00	4.76	4.76	0.00	0.00	66.62	66.62	0.00	0.00	3.35	3.35	0.00	0.00	0.83	0.83
8	0.00	0.05	6.74	6.79	0.00	0.00	31.23	31.23	0.00	0.00	72.84	72.84	0.00	0.00	2.79	2.79
10	0.50	0.15	9.67	10.33	0.11	0.53	6.73	7.36	0.02	0.27	40.38	40.68	0.00	0.00	44.95	44.95
12	2.37	2.20	3.86	8.42	3.45	1.38	7.14	11.97	0.36	0.28	3.63	4.27	1.64	0.50	61.60	63.73
14	2.69	2.45	0.57	5.71	7.85	7.33	0.61	15.79	1.29	0.49	0.90	2.68	3.36	1.86	10.78	16.00
16	7.88	4.42	0.00	12.30	5.87	6.21	0.00	12.08	1.90	1.58	0.00	3.48	2.19	1.44	0.00	3.63
18	20.55	13.12	0.00	33.67	9.82	9.49	0.00	19.31	3.41	2.39	0.00	5.80	3.00	1.71	0.00	4.71
20	64.32	49.96	0.00	114.27	44.36	26.09	0.00	70.45	13.32	7.22	0.00	20.54	7.47	3.40	0.00	10.88
22	200.92	140.84	0.00	341.76	130.55	68.48	0.00	199.03	44.67	25.52	0.00	70.19	18.65	6.78	0.00	25.43
24	173.58	217.21	0.00	390.78	116.13	122.70	0.00	238.83	68.77	46.42	0.00	115.19	39.74	14.64	0.00	54.38
26	127.00	173.62	0.00	300.62	64.97	85.12	0.00	150.09	56.76	55.41	0.00	112.16	32.69	36.04	0.00	68.73
28	68.06	94.45	0.00	162.51	35.75	54.34	0.00	90.09	40.07	39.89	0.00	79.96	20.27	26.20	0.00	46.47
30	27.14	57.35	0.00	84.49	10.82	36.53	0.00	47.36	16.14	25.11	0.00	41.25	12.06	18.87	0.00	30.93
32	8.34	32.35	0.00	40.68	6.52	23.12	0.00	29.64	7.06	25.13	0.00	32.19	8.25	17.24	0.00	25.49
34	5.01	12.67	0.00	17.68	3.37	15.38	0.00	18.75	6.14	20.22	0.00	26.36	3.98	13.82	0.00	17.80
36	4.13	4.05	0.00	8.18	1.69	7.33	0.00	9.01	6.97	15.74	0.00	22.72	3.00	8.13	0.00	11.13
38	2.02	1.93	0.00	3.95	0.43	2.55	0.00	2.98	2.08	6.36	0.00	8.44	0.61	3.18	0.00	3.79
40	0.13	0.37	0.00	0.50	0.03	0.09	0.00	0.12	1.18	1.32	0.00	2.50	0.29	0.95	0.00	1.24
42	0.01	0.10	0.00	0.11	0.00	0.01	0.00	0.01	0.09	0.78	0.00	0.87	0.06	0.00	0.00	0.06
44	0.00	0.08	0.00	0.08	0.00	0.05	0.00	0.05	0.00	0.65	0.00	0.65	0.07	0.01	0.00	0.08
46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.35	0.00	0.35	0.00	0.00	0.00	0.00
48	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.37	0.00	0.38	0.00	0.06	0.00	0.06
50	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.00	0.00	0.05
52	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.05	0.01	0.00	0.06
54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.05
56	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.01	0.00	0.06
60	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01
62	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	717.47	810.54	26.08	1554.09	441.75	466.78	112.50	1021.03	270.24	275.49	121.11	666.84	157.49	154.89	121.14	433.52
Nº samples:				50				56				47				56
Nº Ind.:	3205	3251	1162	7618	3604	3365	1350	8319	2748	2623	1117	6488	2539	2097	1136	5772
Sampled catch:				37262				21880				16332				9660
Range:				5-56				5-62				5-49				5-60
Total catch:				37262				21880				16332				9660
Total valid hauls:				99				97				98				99

Table 14 (cont). **Redfish** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2018				2019											
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
4	0.00	0.00	0.15	0.15	0.00	0.00	0.13	0.13								
6	0.00	0.13	8.35	8.48	0.00	0.00	1.63	1.63								
8	0.00	0.00	24.96	24.96	0.00	0.02	12.23	12.25								
10	0.11	0.01	4.13	4.25	0.11	0.00	20.75	20.75								
12	6.55	5.61	7.14	19.30	6.55	0.29	20.07	20.73								
14	29.22	23.32	4.37	56.91	29.22	4.23	7.07	18.71								
16	21.19	17.70	0.25	39.14	21.19	28.66	0.00	80.81								
18	5.66	4.70	0.00	10.35	5.66	28.00	0.00	78.51								
20	6.45	6.36	0.00	12.81	6.45	12.76	0.00	23.81								
22	7.94	5.91	0.00	13.85	7.94	7.49	0.00	19.21								
24	14.42	8.71	0.00	23.13	14.42	10.59	0.00	26.45								
26	27.60	12.26	0.00	39.87	27.60	6.46	0.00	39.06								
28	25.13	14.61	0.00	39.74	25.13	14.71	0.00	39.54								
30	8.22	11.33	0.00	19.55	8.22	18.00	0.00	28.15								
32	3.32	9.31	0.00	12.62	3.32	15.43	0.00	18.41								
34	3.46	11.46	0.00	14.92	3.46	10.03	0.00	12.22								
36	1.60	5.45	0.00	7.05	1.60	6.29	0.00	8.58								
38	0.77	2.32	0.00	3.10	0.77	3.51	0.00	5.13								
40	0.41	0.91	0.00	1.32	0.41	0.73	0.00	0.89								
42	0.13	0.32	0.00	0.46	0.13	0.02	0.00	0.33								
44	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.49								
46	0.00	0.01	0.00	0.01	0.00	0.73	0.00	0.79								
48	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.24								
50	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.49								
52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
54	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00								
56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
58	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
62	0.01	0.01	0.00	0.02	0.01	0.01	0.00	0.01								
Total	162.21	140.45	49.35	352.00	226.27	169.18	61.87	457.31								
Nº samples:				49				46								
Nº Ind.:	2788	2229	1336	6353	2294	2013	1092	5399								
Sampled catch:				6743				9042								
Range:				5-66				5-62								
Total catch:				6743				9042								
Total valid hauls:				100				96								

Table 15. Swept area, number of hauls and **thorny skate** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza"*.

Stratum	2006				2007				2008				2009				2010			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	6.044	4.588	0.0225	2	30.260	11.653	0.0229	2	37.608	26.315	0.0225	2	22.855	12.155	0.0225	2	4.230	5.204
387	0.0225	2	16.438	16.599	0.0225	2	32.485	2.143	0.0435	4	26.276	17.380	0.0439	4	20.590	15.584	0.0458	4	22.350	21.258
388	0.0566	5	44.186	24.414	0.0563	5	31.096	13.246	0.0559	5	37.148	12.932	0.0555	5	33.480	11.888	0.0570	5	34.932	33.326
389	0.0795	7	32.979	14.712	0.0900	8	25.861	11.704	0.0780	7	33.065	8.029	0.0803	7	12.954	7.076	0.0795	7	27.170	24.762
390	0.1249	11	5.529	7.479	0.1350	12	7.366	7.441	0.1395	12	5.044	7.191	0.1373	12	14.043	24.187	0.1249	11	12.900	8.972
391	0.0450	4	151.088	51.460	0.0450	4	100.658	56.818	0.0454	4	190.795	35.749	0.0458	4	31.899	30.002	0.0454	4	24.041	14.994
392	0.0229	2	149.500	165.604	0.0225	2	330.100	170.554	0.0221	2	159.247	95.534	0.0229	2	41.322	31.215	0.0225	2	36.728	7.462
729	0.0338	3	49.261	27.663	0.0338	3	164.760	243.624	0.0338	3	34.265	25.540	0.0341	3	38.090	23.526	0.0338	3	6.453	5.814
730	0.0326	3	4.348	7.532	0.0225	2	0.000	0.000	0.0323	3	0.000	0.000	0.0338	3	0.000	0.000	0.0334	3	0.012	0.021
731	0.0341	3	46.757	62.791	0.0338	3	57.448	64.552	0.0330	3	9.140	13.870	0.0341	3	22.847	22.201	0.0338	3	11.411	11.389
732	0.0334	3	2.015	1.851	0.0338	3	0.000	0.000	0.0446	4	0.727	1.454	0.0450	4	7.100	11.428	0.0450	4	0.000	0.000
733	0.0454	4	14.573	8.911	0.0338	3	6.427	8.497	0.0431	4	14.693	15.502	0.0450	4	4.315	6.530	0.0450	4	5.573	4.374
734	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000
741	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000
742	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0214	2	0.000	0.000	0.0225	2	0.011	0.016
743	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0203	2	0.000	0.000	0.0203	2	1.395	1.973	0.0225	2	0.000	0.000
744	0.0229	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0210	2	0.000	0.000	0.0229	2	0.000	0.000
745	0.0686	6	0.000	0.000	0.0675	6	0.000	0.000	0.0555	5	0.000	0.000	0.0559	5	0.000	0.000	0.0563	5	0.650	1.453
746	0.0675	6	0.000	0.000	0.0664	6	0.000	0.000	0.0638	6	0.000	0.000	0.0668	6	0.000	0.000	0.0679	6	0.000	0.000
747	0.1230	11	0.000	0.000	0.1238	11	0.000	0.000	0.1069	10	0.000	0.000	0.1118	10	0.000	0.000	0.1125	10	0.000	0.000
748	0.0326	3	0.837	1.449	0.0338	3	0.000	0.000	0.0218	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000
749	0.0229	2	0.000	0.000	0.0113	1	0.000	-	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000
750	0.1005	9	0.393	1.180	0.0679	6	0.000	0.000	0.0844	8	0.000	0.000	0.0791	7	0.000	0.000	0.0900	8	0.000	0.000
751	0.0454	4	0.000	0.000	0.0225	2	0.000	0.000	0.0413	4	0.000	0.000	0.0338	3	0.000	0.000	0.0225	2	0.000	0.000

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 15 (cont.). Swept area, number of hauls and **thorny skate** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2011				2012				2013				2014				2015			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	40.870	7.722	0.0225	2	38.670	8.358	0.0229	2	18.500	15.570	0.0225	2	8.912	1.912	0.0236	2	18.864	4.574
387	0.0450	4	5.241	5.174	0.0450	4	7.559	6.290	0.0450	4	23.395	7.473	0.0461	4	62.785	26.835	0.0458	4	64.881	63.854
388	0.0563	5	9.356	7.705	0.0570	5	42.734	32.557	0.0570	5	32.704	9.754	0.0585	5	70.966	52.957	0.0574	5	97.970	58.681
389	0.0675	6	11.893	10.892	0.0799	7	14.376	12.301	0.0791	7	21.343	11.010	0.0814	7	32.745	32.251	0.0814	7	23.159	12.273
390	0.1009	9	20.264	12.350	0.1354	12	18.599	15.739	0.1358	12	14.574	21.619	0.1369	12	15.477	15.734	0.1260	11	7.690	7.359
391	0.0458	4	32.718	28.277	0.0458	4	38.843	29.385	0.0450	4	37.358	37.052	0.0465	4	36.052	35.657	0.0465	4	52.499	19.346
392	0.0229	2	40.537	19.861	0.0225	2	178.990	196.916	0.0225	2	56.130	25.725	0.0225	2	53.836	58.357	0.0229	2	152.976	185.437
729	0.0338	3	4.906	5.481	0.0338	3	35.344	8.527	0.0341	3	28.835	4.548	0.0338	3	42.980	19.122	0.0345	3	22.367	16.344
730	0.0334	3	1.467	2.540	0.0338	3	3.670	6.357	0.0334	3	11.360	7.412	0.0345	3	22.237	11.856	0.0345	3	6.492	6.242
731	0.0334	3	4.470	5.812	0.0341	3	3.263	2.986	0.0334	3	14.460	9.648	0.0345	3	21.310	15.539	0.0345	3	21.632	12.445
732	0.0454	4	0.000	0.000	0.0454	4	0.000	0.000	0.0450	4	0.848	1.695	0.0454	4	1.980	3.960	0.0465	4	3.333	2.617
733	0.0454	4	2.899	3.869	0.0454	4	5.995	4.874	0.0450	4	18.918	20.706	0.0458	4	32.181	22.484	0.0454	4	6.778	7.155
734	0.0225	2	0.000	0.000	0.0233	2	0.010	0.014	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
741	0.0218	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0236	2	0.000	0.000
742	0.0225	2	0.000	0.000	0.0206	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0233	2	0.000	0.000
743	0.0221	2	0.000	0.000	0.0206	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0233	2	0.000	0.000
744	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
745	0.0446	4	0.000	0.000	0.0570	5	0.004	0.008	0.0559	5	0.000	0.000	0.0578	5	0.000	0.000	0.0578	5	0.000	0.000
746	0.0566	5	0.000	0.000	0.0675	6	0.000	0.000	0.0675	6	0.000	0.000	0.0683	6	0.000	0.000	0.0686	6	0.000	0.000
747	0.0893	8	0.424	1.199	0.1121	10	0.000	0.000	0.1125	10	0.000	0.000	0.1125	10	0.559	1.227	0.1028	9	0.698	2.095
748	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	1.530	2.164	0.0233	2	0.000	0.000
749	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
750	0.0668	6	0.000	0.000	0.0885	8	0.000	0.000	0.0896	8	0.493	1.393	0.0904	8	0.000	0.000	0.0934	8	0.000	0.000
751	0.0334	3	0.000	0.000	0.0218	2	0.000	0.000	0.0446	4	0.154	0.308	0.0334	3	0.000	0.000	0.0341	3	0.000	0.000

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 15 (cont). Swept area, number of hauls and **thorny skate** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2016				2017				2018				2019							
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0233	2	7.597	5.256	0.0225	2	3.096	4.378	0.0221	2	4.484	3.438	0.0225	2	22.762	3.473				
387	0.0454	4	31.627	17.162	0.0446	4	19.410	13.560	0.0465	4	11.960	7.847	0.0450	4	15.865	8.511				
388	0.0570	5	79.224	106.746	0.0566	5	48.386	15.529	0.0566	5	20.228	9.523	0.0559	5	18.151	11.620				
389	0.0814	7	25.022	12.652	0.0799	7	14.615	13.113	0.0803	7	10.026	5.995	0.0784	7	19.418	17.571				
390	0.1391	12	14.868	9.489	0.1369	12	15.278	11.324	0.1358	12	9.216	7.914	0.1125	10	11.779	11.699				
391	0.0469	4	31.228	22.199	0.0458	4	19.138	11.483	0.0458	4	28.346	20.875	0.0450	4	25.120	16.236				
392	0.0233	2	105.050	119.713	0.0229	2	48.392	58.371	0.0229	2	90.390	89.859	0.0229	2	59.534	57.695				
729	0.0341	3	47.022	17.543	0.0345	3	15.865	10.485	0.0341	3	16.297	15.712	0.0338	3	10.230	11.457				
730	0.0233	2	11.495	1.195	0.0341	3	0.000	0.000	0.0330	3	1.408	2.439	0.0338	3	0.000	0.000				
731	0.0345	3	20.199	19.892	0.0338	3	5.837	6.771	0.0353	3	0.000	0.000	0.0341	3	0.000	0.000				
732	0.0454	4	8.855	12.448	0.0446	4	0.000	0.000	0.0461	4	0.000	0.000	0.0454	4	0.000	0.000				
733	0.0458	4	20.013	31.029	0.0450	4	4.355	6.853	0.0454	4	2.063	4.125	0.0450	4	1.785	2.499				
734	0.0229	2	2.110	2.984	0.0225	2	1.750	2.475	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000				
741	0.0233	2	0.000	0.000	0.0225	2	1.920	2.715	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000				
742	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000				
743	0.0229	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000				
744	0.0229	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000				
745	0.0574	5	1.514	2.088	0.0559	5	0.000	0.000	0.0596	5	0.680	1.521	0.0578	5	0.000	0.000				
746	0.0690	6	0.000	0.000	0.0683	6	0.000	0.000	0.0698	6	0.000	0.000	0.0679	6	0.000	0.000				
747	0.1140	10	0.000	0.000	0.1125	10	0.000	0.000	0.1140	10	0.000	0.000	0.1125	10	0.000	0.000				
748	0.0233	2	1.730	2.447	0.0225	2	0.935	1.322	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000				
749	0.0233	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000				
750	0.0930	8	0.000	0.000	0.0934	8	0.000	0.000	0.0904	8	0.000	0.000	0.0788	7	0.000	0.000				
751	0.0345	3	0.000	0.000	0.0349	3	0.000	0.000	0.0454	4	0.000	0.000	0.0338	3	0.000	0.000				

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 16. Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2006-2019 for **thorny skate and black dogfish**.

	Thorny skate				Black dogfish			
Year	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2
2006	All	$W = 0.0084\ L^{3.0587}$	491	0.983	All	$W = 0.0011\ L^{3.3758}$	283	0.9216
	Males	$W = 0.0103\ L^{3.0011}$	210	0.9847	Males	$W = 0.0071\ L^{2.9000}$	99	0.9233
	Females	$W = 0.0061\ L^{3.1402}$	281	0.9814	Females	$W = 0.0008\ L^{3.4608}$	184	0.9363
						$W = 0.0011\ L^{3.3758}$	283	0.9216
2007	All	$W = 0.0080\ L^{3.0609}$	539	0.9848	All	$W = 0.0008\ L^{3.4421}$	362	0.9155
	Males	$W = 0.0091\ L^{3.0242}$	255	0.9868	Males	$W = 0.0099\ L^{2.8281}$	147	0.9029
	Females	$W = 0.0072\ L^{3.0929}$	284	0.9839	Females	$W = 0.0006\ L^{3.5445}$	215	0.9373
2008	All	$W = 0.0071\ L^{3.0883}$	598	0.9884	All	$W = 0.0014L^{3.3183}$	279	0.9006
	Males	$W = 0.0077\ L^{3.0618}$	282	0.9903	Males	$W = 0.0087\ L^{2.8575}$	160	0.8956
	Females	$W = 0.0064\ L^{3.1175}$	316	0.9867	Females	$W = 0.0008\ L^{3.4541}$	119	0.9283
2009	All	$W = 0.0072\ L^{3.0862}$	283	0.9864	All	$W = 0.0007\ L^{3.4922}$	236	0.9246
	Males	$W = 0.0093\ L^{3.0231}$	171	0.9848	Males	$W = 0.0132\ L^{2.7605}$	75	0.8865
	Females	$W = 0.0057\ L^{3.1507}$	112	0.9881	Females	$W = 0.0007\ L^{3.5184}$	161	0.9465
2010	All	$W = 0.0060\ L^{3.1361}$	290	0.9906	All	$W = 0.0019\ L^{3.2510}$	299	0.9506
	Males	$W = 0.0060\ L^{3.1285}$	149	0.9892	Males	$W = 0.0137\ L^{2.7559}$	130	0.9408
	Females	$W = 0.0056\ L^{3.1630}$	141	0.9927	Females	$W = 0.0012\ L^{3.3617}$	169	0.9637
2011	All	$W = 0.0031\ L^{3.2899}$	218	0.9937	All	$W = 0.0020\ L^{3.2316}$	455	0.9518
	Males	$W = 0.0036\ L^{3.2468}$	136	0.9941	Males	$W = 0.0059\ L^{2.9580}$	171	0.9493
	Females	$W = 0.0024\ L^{3.3657}$	82	0.9941	Females	$W = 0.0014\ L^{3.3220}$	284	0.9568
2012	All	$W = 0.0065\ L^{3.1140}$	352	0.9918	All	$W = 0.0019\ L^{3.2460}$	242	0.9531
	Males	$W = 0.0085\ L^{3.0429}$	219	0.9925	Males	$W = 0.0107\ L^{2.8100}$	116	0.9571
	Females	$W = 0.0040\ L^{3.2467}$	133	0.9933	Females	$W = 0.0010\ L^{3.4151}$	126	0.9718

Table 16 (cont.). Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2006-2019 for **thorny skate and black dogfish**.

	Thorny skate				Black dogfish			
Year	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2
2013	All	$W = 0.0057\ L^{3.1365}$	336	0.9926	All	$W = 0.0007\ L^{3.4877}$	352	0.9275
	Males	$W = 0.0054\ L^{3.1470}$	218	0.9914	Males	$W = 0.0084\ L^{2.8679}$	81	0.8884
	Females	$W = 0.0054\ L^{3.1631}$	118	0.9955	Females	$W = 0.007\ L^{3.4843}$	271	0.9385
2014	All	$W = 0.0066\ L^{3.1037}$	577	0.9836	All	$W = 0.0010\ L^{3.3969}$	259	0.9283
	Males	$W = 0.0077\ L^{3.0639}$	402	0.9764	Males	$W = 0.0067\ L^{2.9222}$	77	0.9222
	Females	$W = 0.0049\ L^{3.1865}$	175	0.994	Females	$W = 0.009\ L^{3.4286}$	182	0.9338
2015	All	$W = 0.0064\ L^{3.1098}$	532	0.9944	All	$W = 0.0013\ L^{3.3416}$	578	0.9544
	Males	$W = 0.0075\ L^{3.0685}$	337	0.9945	Males	$W = 0.0056\ L^{2.9683}$	178	0.959
	Females	$W = 0.0050\ L^{3.1760}$	195	0.9941	Females	$W = 0.0011\ L^{3.4038}$	400	0.9604
2016	All	$W = 0.0077\ L^{3.0629}$	496	0.9916	All	$W = 0.0015\ L^{3.3055}$	350	0.9465
	Males	$W = 0.0074\ L^{3.0722}$	289	0.9919	Males	$W = 0.0085\ L^{2.8629}$	135	0.9452
	Females	$W = 0.0077\ L^{3.0656}$	207	0.9904	Females	$W = 0.0010\ L^{3.4002}$	215	0.9557
2017	All	$W = 0.0064\ L^{3.1134}$	429	0.9912	All	$W = 0.0009\ L^{3.4335}$	390	0.9554
	Males	$W = 0.0075\ L^{3.0698}$	260	0.9906	Males	$W = 0.0048\ L^{2.9976}$	108	0.9616
	Females	$W = 0.0047\ L^{3.2013}$	168	0.9925	Females	$W = 0.0006\ L^{3.5289}$	282	0.9609
2018	All	$W = 0.0076\ L^{3.0706}$	260	0.9899	All	$W = 0.0011\ L^{3.3773}$	319	0.9636
	Males	$W = 0.0083\ L^{3.0450}$	176	0.9902	Males	$W = 0.0046\ L^{3.0130}$	84	0.973
	Females	$W = 0.0053\ L^{3.1666}$	84	0.9903	Females	$W = 0.0009\ L^{3.4233}$	235	0.9649
2019	All	$W = 0.0057\ L^{3.1376}$	253	0.9933	All	$W = 0.0009\ L^{3.4338}$	240	0.9446
	Males	$W = 0.0060\ L^{3.1239}$	162	0.9922	Males	$W = 0.0055\ L2^{.9712}$	111	0.99196
	Females	$W = 0.0050\ L^{3.1794}$	91	0.9949	Females	$W = 0.0006\ L^{3.5310}$	129	0.9678

Table 17. Stratified mean catches (Kg) of **thorny skate** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey													
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0.00	831.90	713.19	3570.68	4437.69	2696.89	499.14	4822.66	4563.06	2183.00	1051.62	2225.95	896.39	365.27
387	1355.52	2739.20	4208.00	8316.16	6726.59	5271.04	5721.60	1341.76	1935.04	5989.12	16072.83	16609.41	8096.51	4968.96
388	4738.58	5961.90	15774.40	11101.27	13261.69	11952.50	12470.58	3340.16	15256.04	11675.33	25334.72	34975.36	28282.97	17273.80
389	3045.60	5548.10	16786.09	13163.25	16830.16	6593.66	13829.31	6053.28	7317.60	10863.51	16667.21	11788.00	12735.98	7438.96
390	154.85	1627.28	4506.21	6003.36	4110.66	11444.98	10513.50	16515.07	15158.46	11878.15	12613.48	6267.28	12117.49	12451.37
391	485.98	18118.50	42606.68	28385.42	53804.19	8995.45	6779.63	9226.41	10953.66	10534.89	10166.52	14804.72	8806.23	5396.78
392	1457.25	9033.50	21677.50	47864.50	23090.82	5991.69	5325.49	5877.79	25953.48	8138.85	7806.15	22181.52	15232.25	7016.77
729	10221.63	26109.75	9162.48	30645.36	6373.35	7084.74	1200.20	912.52	6573.92	5363.25	7994.28	4160.32	8746.03	2950.89
730	12138.00	0.00	739.22	0.00	0.00	0.00	2.04	249.33	623.90	1931.20	3780.23	1103.58	1954.15	0.00
731	8360.28	3998.16	10099.44	12408.84	1974.24	4934.88	2400.70	965.52	704.74	3123.36	4602.96	4672.51	4362.98	1260.72
732	17602.20	0.00	465.47	0.00	167.94	1640.10	0.00	0.00	0.00	195.77	457.38	769.98	2045.51	0.00
733	n.s	2191.02	3410.14	1503.84	3438.05	1009.71	1304.02	678.31	1402.83	4426.70	7530.41	1585.94	4682.98	1019.07
734	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.53	0.00	0.00	0.00	322.83	267.75
741	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	192.00
742	0.00	0.00	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00
743	n.s	0.00	0.00	0.00	0.00	71.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
744	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
745	7682.68	0.00	0.00	0.00	0.00	0.00	226.20	0.00	1.32	0.00	0.00	0.00	526.87	0.00
746	908.46	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
747	n.s	0.00	0.00	0.00	0.00	0.00	0.00	306.80	0.00	0.00	404.72	505.67	0.00	0.00
748	10369.98	0.00	133.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	243.27	0.00	275.07	148.67
749	1015.56	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
750	n.s	764.50	218.69	0.00	0.00	0.00	0.00	0.00	0.00	273.83	0.00	0.00	0.00	0.00
751	n.s	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	35.21	0.00	0.00	0.00	0.00
TOTAL	79536.57	76923.81	130500.54	162962.67	134215.36	67686.78	60273.11	50289.61	90445.57	76612.16	114725.78	121650.25	109084.23	60751.00
$(\bar{y})$	17.78	12.29	20.12	25.12	20.69	10.43	9.29	7.75	13.94	11.81	17.69	18.75	16.82	9.37
SD	2.41	4.54	3.27	5.19	1.92	1.44	1.30	0.98	3.36	1.36	2.25	3.58	3.42	1.23

Table 17. Stratified mean catches (Kg) of **thorny skate** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	529.11	2685.92
387	3061.76	4061.31
388	7221.40	6479.91
389	5103.16	9883.98
390	7511.11	9599.64
391	7993.50	7083.70
392	13106.55	8632.36
729	3031.18	1902.78
730	239.42	0.00
731	0.00	0.00
732	0.00	0.00
733	482.63	417.63
734	0.00	0.00
741	0.00	0.00
742	0.00	0.00
743	0.00	0.00
744	0.00	0.00
745	236.64	0.00
746	0.00	0.00
747	0.00	0.00
748	0.00	0.00
749	0.00	0.00
750	0.00	0.00
751	0.00	0.00
TOTAL	48516.4	50747.22
$(\overline{y})$	7.48	7.82
SD	1.58	1.26

Table 18. Survey estimates (by the swept area method) of **thorny skate** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

					Survey									
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0	73	62	317	388	240	44	422	406	191	93	188	77	365.27
387	119	256	374	739	619	481	500	119	172	532	1394	1452	714	4968.96
388	426	568	1393	987	1187	1077	1094	297	1338	1024	2165	3048	2481	17273.80
389	268	493	1478	1170	1510	575	1218	538	641	961	1434	1014	1096	7438.96
390	14	142	397	534	354	1001	926	1473	1344	1050	1106	547	1045	12451.37
391	43	1666	3787	2523	4743	786	598	807	958	936	875	1274	751	5396.78
392	125	845	1895	4255	2087	524	473	514	2307	723	694	1939	1310	7016.77
729	973	2360	814	2724	567	623	107	81	584	471	711	362	769	2950.89
730	1097	0	68	0	0	0	0	22	55	174	329	96	168	0.00
731	731	344	888	1103	179	434	213	87	62	281	400	406	379	1260.72
732	1565	0	42	0	15	146	0	0	0	17	40	66	180	0.00
733	n.s	199	301	134	319	90	116	60	124	393	658	140	409	1019.07
734	n.s	0	0	0	0	0	0	0	0	0	0	0	28	267.75
741	0	0	0	0	0	0	0	0	0	0	0	0	0	192.00
742	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
743	n.s	0	0	0	0	7	0	0	0	0	0	0	0	0.00
744	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0.00
745	675	0	0	0	0	0	20	0	0	0	0	0	46	0.00
746	81	0	0	0	0	0	0	0	0	0	0	0	0	0.00
747	n.s	0	0	0	0	0	0	28	0	0	36	44	0	0.00
748	954	0	12	0	0	0	0	0	0	0	21	0	24	148.67
749	92	0	0	0	0	0	0	0	0	0	0	0	0	0.00
750	n.s	85	20	0	0	0	0	0	0	24	0	0	0	0.00
751	n.s	n.s	0	0	0	0	0	0	0	3	0	0	0	0.00
TOTAL	7164	7031	11531	14486	11968	5982	5310	4448	7991	6783	9956	10577	9478	5345
SD	942	2642	1887	2993	1124	808	740	560	2008	779	1263	1981	1927	704

Table 18 (cont). Survey estimates (by the swept area method) of **thorny skate** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	48	239
387	263	361
388	638	580
389	445	883
390	664	853
391	699	630
392	1146	755
729	266	169
730	22	0
731	0	0
732	0	0
733	43	37
734	0	0
741	0	0
742	0	0
743	0	0
744	0	0
745	20	0
746	0	0
747	0	0
748	0	0
749	0	0
750	0	0
751	0	0
TOTAL	4253	4506
SD	877	714

Table 19. **Thorny skate** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2006				2007				2008				2009			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.04	0.01	0.00	0.05	0.16	0.08	0.00	0.24	0.09	0.11	0.00	0.20	0.11	0.05	0.00	0.16
14	0.09	0.00	0.00	0.09	0.08	0.12	0.00	0.21	0.12	0.09	0.00	0.20	0.06	0.07	0.00	0.13
16	0.04	0.03	0.00	0.07	0.05	0.10	0.00	0.15	0.03	0.03	0.00	0.06	0.02	0.02	0.00	0.04
18	0.03	0.02	0.00	0.06	0.13	0.12	0.00	0.25	0.04	0.01	0.00	0.05	0.00	0.05	0.00	0.05
20	0.03	0.03	0.00	0.06	0.18	0.10	0.00	0.28	0.09	0.01	0.00	0.10	0.01	0.03	0.00	0.04
22	0.00	0.03	0.00	0.03	0.15	0.19	0.00	0.34	0.02	0.01	0.00	0.03	0.00	0.00	0.00	0.00
24	0.03	0.01	0.00	0.05	0.13	0.14	0.00	0.27	0.02	0.02	0.00	0.04	0.02	0.02	0.00	0.05
26	0.00	0.01	0.00	0.01	0.13	0.16	0.00	0.30	0.08	0.07	0.00	0.14	0.01	0.00	0.00	0.01
28	0.02	0.01	0.00	0.03	0.10	0.06	0.00	0.16	0.02	0.05	0.00	0.08	0.02	0.01	0.00	0.03
30	0.00	0.03	0.00	0.03	0.08	0.05	0.00	0.12	0.04	0.05	0.00	0.10	0.02	0.03	0.00	0.06
32	0.03	0.01	0.00	0.05	0.08	0.06	0.00	0.13	0.07	0.05	0.00	0.12	0.00	0.01	0.00	0.01
34	0.01	0.03	0.00	0.05	0.09	0.03	0.00	0.12	0.05	0.04	0.00	0.10	0.01	0.01	0.00	0.02
36	0.02	0.01	0.00	0.03	0.06	0.05	0.00	0.11	0.03	0.05	0.00	0.08	0.00	0.00	0.00	0.00
38	0.00	0.04	0.00	0.04	0.05	0.06	0.00	0.11	0.01	0.03	0.00	0.04	0.02	0.01	0.00	0.03
40	0.05	0.03	0.00	0.08	0.02	0.01	0.00	0.03	0.05	0.01	0.00	0.06	0.02	0.00	0.00	0.02
42	0.00	0.03	0.00	0.03	0.03	0.06	0.00	0.09	0.02	0.05	0.00	0.07	0.00	0.01	0.00	0.01
44	0.01	0.03	0.00	0.05	0.04	0.04	0.00	0.08	0.01	0.02	0.00	0.03	0.01	0.04	0.00	0.05
46	0.09	0.08	0.00	0.17	0.05	0.09	0.00	0.14	0.03	0.06	0.00	0.09	0.00	0.01	0.00	0.01
48	0.10	0.08	0.00	0.18	0.05	0.09	0.00	0.14	0.02	0.01	0.00	0.03	0.01	0.02	0.00	0.03
50	0.13	0.17	0.00	0.30	0.12	0.13	0.00	0.25	0.06	0.03	0.00	0.09	0.05	0.01	0.00	0.06
52	0.22	0.13	0.00	0.35	0.09	0.15	0.00	0.24	0.07	0.08	0.00	0.15	0.02	0.02	0.00	0.04
54	0.27	0.37	0.00	0.64	0.21	0.24	0.00	0.44	0.08	0.09	0.00	0.17	0.05	0.05	0.00	0.09
56	0.22	0.24	0.00	0.45	0.19	0.34	0.00	0.53	0.03	0.13	0.00	0.16	0.02	0.15	0.00	0.17
58	0.22	0.46	0.00	0.67	0.30	0.27	0.00	0.57	0.12	0.22	0.00	0.34	0.13	0.09	0.00	0.22
60	0.36	0.39	0.00	0.75	0.27	0.59	0.00	0.86	0.22	0.28	0.00	0.50	0.16	0.08	0.00	0.24
62	0.22	0.53	0.00	0.76	0.46	0.76	0.00	1.22	0.29	0.35	0.00	0.65	0.23	0.24	0.00	0.47
64	0.41	0.54	0.00	0.95	0.42	0.62	0.00	1.04	0.35	0.45	0.00	0.81	0.23	0.14	0.00	0.36
66	0.34	0.39	0.00	0.72	0.34	0.54	0.00	0.88	0.39	0.45	0.00	0.84	0.25	0.18	0.00	0.43
68	0.17	0.41	0.00	0.58	0.37	0.64	0.00	1.02	0.32	0.44	0.00	0.76	0.28	0.18	0.00	0.47
70	0.19	0.22	0.00	0.41	0.25	0.38	0.00	0.62	0.25	0.37	0.00	0.62	0.19	0.07	0.00	0.26
72	0.08	0.13	0.00	0.21	0.18	0.24	0.00	0.43	0.19	0.15	0.00	0.34	0.17	0.09	0.00	0.25
74	0.09	0.07	0.00	0.16	0.12	0.13	0.00	0.25	0.26	0.16	0.00	0.42	0.19	0.01	0.00	0.20
76	0.08	0.05	0.00	0.13	0.04	0.05	0.00	0.10	0.10	0.13	0.00	0.23	0.02	0.03	0.00	0.06
78	0.00	0.01	0.00	0.01	0.03	0.03	0.00	0.06	0.09	0.03	0.00	0.12	0.04	0.03	0.00	0.07
80	0.01	0.01	0.00	0.02	0.01	0.00	0.00	0.01	0.07	0.00	0.00	0.07	0.01	0.00	0.00	0.01
82	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.05	0.02	0.00	0.07	0.01	0.00	0.00	0.01
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	3.61	4.66	0.00	8.27	5.10	6.71	0.00	11.81	5.10	6.71	0.00	11.81	2.41	1.76	0.00	4.17
Nº samples:				42				43				43				44
Nº Ind.:	312	420	0	732	457	621	0	1078	457	621	0	1078	211	156	0	367
Sampled catch:				1832				2325				2325				996.2
Range:				13-81				12-82				12-82				12-82
Total catch:				1832				2325				2325				996.2
Total valid hauls:				101				99				94				98

Table 19 (cont). **Thorny skate** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2010				2011				2012				2013			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
10	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.05	0.05	0.00	0.10	0.09	0.03	0.00	0.11	0.09	0.05	0.00	0.14	0.01	0.06	0.00	0.07
14	0.08	0.07	0.00	0.15	0.06	0.08	0.00	0.14	0.07	0.05	0.00	0.11	0.10	0.03	0.00	0.13
16	0.00	0.03	0.00	0.03	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.03	0.06	0.00	0.10
18	0.01	0.02	0.00	0.03	0.00	0.01	0.00	0.01	0.03	0.00	0.00	0.03	0.02	0.01	0.00	0.03
20	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.04	0.01	0.00	0.05	0.00	0.03	0.00	0.03
22	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.06	0.00	0.00	0.00	0.00
24	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.05	0.06	0.00	0.11	0.00	0.00	0.00	0.00
26	0.01	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.04	0.03	0.00	0.07	0.00	0.01	0.00	0.01
28	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03	0.03	0.11	0.00	0.14	0.02	0.00	0.00	0.02
30	0.04	0.02	0.00	0.07	0.02	0.01	0.00	0.03	0.08	0.01	0.00	0.09	0.00	0.00	0.00	0.00
32	0.00	0.03	0.00	0.03	0.01	0.00	0.00	0.01	0.04	0.04	0.00	0.08	0.00	0.00	0.00	0.00
34	0.01	0.04	0.00	0.05	0.00	0.01	0.00	0.01	0.04	0.04	0.00	0.08	0.01	0.02	0.00	0.03
36	0.04	0.02	0.00	0.07	0.02	0.01	0.00	0.03	0.06	0.06	0.00	0.12	0.00	0.03	0.00	0.03
38	0.02	0.01	0.00	0.03	0.00	0.02	0.00	0.02	0.06	0.04	0.00	0.10	0.00	0.02	0.00	0.02
40	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.03	0.07	0.05	0.00	0.12	0.02	0.04	0.00	0.06
42	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.06	0.01	0.00	0.07	0.02	0.04	0.00	0.06
44	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.02	0.00	0.05	0.06	0.03	0.00	0.10
46	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.03	0.00	0.05	0.06	0.05	0.00	0.11
48	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.05	0.01	0.00	0.06
50	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.02	0.05	0.00	0.07	0.05	0.00	0.00	0.05
52	0.01	0.02	0.00	0.03	0.00	0.00	0.00	0.00	0.05	0.03	0.00	0.08	0.06	0.00	0.00	0.06
54	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.03	0.02	0.03	0.00	0.06
56	0.02	0.04	0.00	0.07	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.02	0.03	0.00	0.05
58	0.08	0.09	0.00	0.17	0.02	0.05	0.00	0.07	0.03	0.04	0.00	0.07	0.04	0.02	0.00	0.06
60	0.03	0.12	0.00	0.16	0.06	0.09	0.00	0.15	0.03	0.05	0.00	0.08	0.04	0.03	0.00	0.07
62	0.08	0.10	0.00	0.18	0.03	0.08	0.00	0.10	0.07	0.10	0.00	0.18	0.10	0.09	0.00	0.18
64	0.12	0.16	0.00	0.28	0.15	0.06	0.00	0.20	0.10	0.11	0.00	0.21	0.07	0.14	0.00	0.21
66	0.21	0.18	0.00	0.38	0.13	0.09	0.00	0.23	0.10	0.14	0.00	0.24	0.11	0.14	0.00	0.25
68	0.19	0.23	0.00	0.42	0.19	0.12	0.00	0.31	0.28	0.22	0.00	0.50	0.25	0.17	0.00	0.42
70	0.21	0.07	0.00	0.28	0.17	0.15	0.00	0.32	0.30	0.09	0.00	0.38	0.23	0.17	0.00	0.39
72	0.13	0.08	0.00	0.21	0.18	0.03	0.00	0.22	0.37	0.12	0.00	0.49	0.23	0.06	0.00	0.30
74	0.11	0.05	0.00	0.16	0.16	0.05	0.00	0.21	0.23	0.03	0.00	0.26	0.24	0.02	0.00	0.26
76	0.09	0.03	0.00	0.12	0.11	0.00	0.00	0.11	0.19	0.07	0.00	0.26	0.24	0.06	0.00	0.30
78	0.09	0.01	0.00	0.10	0.05	0.00	0.00	0.05	0.21	0.03	0.00	0.24	0.17	0.01	0.00	0.18
80	0.03	0.00	0.00	0.03	0.04	0.00	0.00	0.04	0.14	0.01	0.00	0.15	0.14	0.00	0.00	0.14
82	0.02	0.00	0.00	0.02	0.01	0.00	0.00	0.01	0.09	0.01	0.00	0.10	0.07	0.00	0.00	0.07
84	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.07	0.00	0.00	0.07	0.02	0.00	0.00	0.02
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.02	0.01	0.00	0.00	0.01
88	0.01	0.00	0.00	0.01	0.04	0.00	0.00	0.04	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.73	1.62	0.00	3.35	1.59	0.96	0.00	2.55	3.19	1.74	0.00	4.93	2.53	1.44	0.00	3.97
Nº samples:				46				39				44				49
Nº Ind.:	159	145	0	304	136	82	0	218	266	151	0	417	225	117	0	342
Sampled catch:				853				663				1309				1128
Range:				12-88				11-88				12-88				13-86
Total catch:				853				663				1309				1128
Total valid hauls:				97				89				98				100

Table 19 (cont.). Thorny skate length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2014				2015				2016				2017			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.01	0.02	0.00	0.03	0.02	0.04	0.00	0.06	0.06	0.00	0.00	0.06	0.03	0.02	0.00	0.05
14	0.12	0.12	0.00	0.24	0.03	0.11	0.00	0.14	0.08	0.02	0.00	0.10	0.04	0.04	0.00	0.08
16	0.02	0.04	0.00	0.06	0.02	0.03	0.00	0.05	0.04	0.07	0.00	0.12	0.05	0.02	0.00	0.07
18	0.06	0.01	0.00	0.07	0.03	0.11	0.00	0.14	0.08	0.08	0.00	0.16	0.01	0.00	0.00	0.01
20	0.05	0.09	0.00	0.14	0.12	0.09	0.00	0.21	0.08	0.07	0.00	0.14	0.02	0.01	0.00	0.03
22	0.08	0.06	0.00	0.14	0.23	0.08	0.00	0.31	0.01	0.04	0.00	0.05	0.00	0.04	0.00	0.04
24	0.08	0.04	0.00	0.12	0.21	0.15	0.00	0.36	0.06	0.12	0.00	0.18	0.04	0.07	0.00	0.11
26	0.10	0.09	0.00	0.19	0.30	0.28	0.00	0.58	0.15	0.11	0.00	0.25	0.07	0.08	0.00	0.14
28	0.03	0.11	0.00	0.14	0.33	0.27	0.00	0.60	0.17	0.22	0.00	0.38	0.11	0.09	0.00	0.20
30	0.17	0.11	0.00	0.27	0.39	0.40	0.00	0.79	0.31	0.38	0.00	0.68	0.23	0.20	0.00	0.42
32	0.13	0.08	0.00	0.20	0.38	0.27	0.00	0.65	0.29	0.38	0.00	0.68	0.22	0.27	0.00	0.49
34	0.07	0.06	0.00	0.12	0.27	0.24	0.00	0.51	0.34	0.37	0.00	0.71	0.14	0.17	0.00	0.31
36	0.06	0.08	0.00	0.14	0.24	0.19	0.00	0.43	0.30	0.15	0.00	0.45	0.10	0.13	0.00	0.23
38	0.10	0.10	0.00	0.20	0.13	0.10	0.00	0.23	0.13	0.09	0.00	0.21	0.07	0.09	0.00	0.16
40	0.11	0.04	0.00	0.15	0.03	0.08	0.00	0.11	0.13	0.11	0.00	0.24	0.08	0.03	0.00	0.11
42	0.12	0.04	0.00	0.17	0.13	0.10	0.00	0.23	0.10	0.14	0.00	0.25	0.04	0.05	0.00	0.10
44	0.15	0.10	0.00	0.25	0.12	0.10	0.00	0.22	0.09	0.04	0.00	0.13	0.02	0.04	0.00	0.06
46	0.20	0.08	0.00	0.29	0.11	0.10	0.00	0.21	0.08	0.05	0.00	0.14	0.04	0.02	0.00	0.06
48	0.19	0.10	0.00	0.29	0.08	0.10	0.00	0.17	0.09	0.12	0.00	0.21	0.02	0.02	0.00	0.04
50	0.14	0.03	0.00	0.17	0.14	0.21	0.00	0.34	0.15	0.07	0.00	0.23	0.07	0.03	0.00	0.10
52	0.18	0.09	0.00	0.26	0.12	0.09	0.00	0.21	0.17	0.18	0.00	0.35	0.10	0.07	0.00	0.17
54	0.12	0.02	0.00	0.14	0.12	0.09	0.00	0.21	0.09	0.15	0.00	0.23	0.06	0.03	0.00	0.10
56	0.13	0.06	0.00	0.19	0.12	0.04	0.00	0.16	0.10	0.13	0.00	0.23	0.09	0.07	0.00	0.16
58	0.06	0.04	0.00	0.11	0.05	0.10	0.00	0.16	0.05	0.08	0.00	0.13	0.05	0.07	0.00	0.12
60	0.09	0.09	0.00	0.17	0.12	0.09	0.00	0.21	0.13	0.09	0.00	0.22	0.12	0.03	0.00	0.15
62	0.11	0.02	0.00	0.13	0.11	0.12	0.00	0.23	0.09	0.08	0.00	0.17	0.10	0.06	0.00	0.16
64	0.08	0.06	0.00	0.14	0.16	0.07	0.00	0.24	0.11	0.07	0.00	0.18	0.13	0.02	0.00	0.15
66	0.24	0.19	0.00	0.42	0.19	0.18	0.00	0.37	0.16	0.08	0.00	0.24	0.13	0.05	0.00	0.18
68	0.27	0.10	0.00	0.37	0.32	0.09	0.00	0.41	0.19	0.12	0.00	0.30	0.08	0.10	0.00	0.18
70	0.31	0.12	0.00	0.44	0.32	0.10	0.00	0.42	0.34	0.22	0.00	0.56	0.15	0.07	0.00	0.21
72	0.36	0.15	0.00	0.51	0.40	0.08	0.00	0.48	0.27	0.07	0.00	0.34	0.22	0.05	0.00	0.27
74	0.31	0.07	0.00	0.39	0.31	0.04	0.00	0.35	0.14	0.11	0.00	0.25	0.13	0.06	0.00	0.19
76	0.33	0.04	0.00	0.36	0.32	0.03	0.00	0.35	0.34	0.03	0.00	0.37	0.08	0.01	0.00	0.10
78	0.19	0.04	0.00	0.23	0.27	0.02	0.00	0.29	0.22	0.03	0.00	0.25	0.16	0.00	0.00	0.16
80	0.22	0.01	0.00	0.23	0.19	0.04	0.00	0.23	0.19	0.02	0.00	0.21	0.04	0.01	0.00	0.05
82	0.13	0.00	0.00	0.13	0.03	0.00	0.00	0.03	0.07	0.00	0.00	0.07	0.04	0.00	0.00	0.04
84	0.06	0.00	0.00	0.06	0.08	0.00	0.00	0.08	0.06	0.00	0.00	0.06	0.02	0.00	0.00	0.02
86	0.05	0.00	0.00	0.05	0.03	0.00	0.00	0.03	0.02	0.00	0.00	0.02	0.03	0.00	0.00	0.03
88	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Total	5.23	2.51	0.00	7.74	6.59	4.24	0.00	10.83	5.50	4.08	0.00	9.58	3.12	2.13	0.00	5.26
Nº samples:				50				49				54				46
Nº Ind.:	474	217	0	691	607	390	0	997	466	331	0	797	288	199	0	487
Sampled catch:				1695				1748				1582				876
Range:				13-89				12-91				12-94				12-87
Total catch:				1695				1748				1582				876
Total valid hauls:				99				97				98				99

Table 19 (cont.). Thorny skate length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2018				2019											
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
14	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01								
16	0.01	0.00	0.00	0.01	0.01	0.03	0.00	0.05								
18	0.01	0.01	0.00	0.02	0.02	0.03	0.00	0.05								
20	0.01	0.00	0.00	0.01	0.04	0.01	0.00	0.05								
22	0.02	0.01	0.00	0.03	0.00	0.01	0.00	0.01								
24	0.03	0.01	0.00	0.04	0.02	0.04	0.00	0.07								
26	0.02	0.00	0.00	0.02	0.02	0.05	0.00	0.07								
28	0.01	0.02	0.00	0.03	0.02	0.05	0.00	0.07								
30	0.07	0.01	0.00	0.08	0.03	0.00	0.00	0.03								
32	0.06	0.05	0.00	0.12	0.05	0.06	0.00	0.11								
34	0.09	0.03	0.00	0.12	0.08	0.02	0.00	0.10								
36	0.06	0.06	0.00	0.11	0.04	0.05	0.00	0.10								
38	0.03	0.00	0.00	0.03	0.07	0.03	0.00	0.11								
40	0.00	0.03	0.00	0.03	0.05	0.07	0.00	0.13								
42	0.02	0.04	0.00	0.07	0.03	0.05	0.00	0.09								
44	0.02	0.02	0.00	0.04	0.06	0.02	0.00	0.08								
46	0.02	0.05	0.00	0.07	0.02	0.04	0.00	0.06								
48	0.04	0.01	0.00	0.06	0.01	0.02	0.00	0.03								
50	0.06	0.03	0.00	0.09	0.03	0.02	0.00	0.05								
52	0.03	0.05	0.00	0.09	0.04	0.01	0.00	0.05								
54	0.01	0.04	0.00	0.06	0.00	0.01	0.00	0.01								
56	0.01	0.06	0.00	0.08	0.04	0.05	0.00	0.09								
58	0.05	0.06	0.00	0.11	0.08	0.04	0.00	0.12								
60	0.08	0.04	0.00	0.12	0.04	0.04	0.00	0.09								
62	0.15	0.03	0.00	0.18	0.05	0.08	0.00	0.13								
64	0.16	0.05	0.00	0.22	0.08	0.08	0.00	0.16								
66	0.12	0.04	0.00	0.16	0.18	0.14	0.00	0.32								
68	0.14	0.06	0.00	0.20	0.11	0.02	0.00	0.14								
70	0.14	0.04	0.00	0.18	0.21	0.05	0.00	0.26								
72	0.13	0.03	0.00	0.16	0.15	0.04	0.00	0.19								
74	0.10	0.03	0.00	0.13	0.15	0.04	0.00	0.18								
76	0.15	0.00	0.00	0.15	0.12	0.01	0.00	0.13								
78	0.10	0.01	0.00	0.11	0.08	0.01	0.00	0.09								
80	0.05	0.00	0.00	0.05	0.07	0.00	0.00	0.07								
82	0.03	0.00	0.00	0.03	0.03	0.00	0.00	0.03								
84	0.02	0.00	0.00	0.02	0.01	0.00	0.00	0.01								
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
94	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Total	2.08	0.96	0.00	3.04	2.08	1.25	0.00	3.34								
Nº samples:				40				38								
Nº Ind.:	192	90	0	282	193	115	0	308								
Sampled catch:				698				711								
Range:				17-85				14-84								
Total catch:				698				711								
Total valid hauls:				100				96								

Table 20. Swept area, number of hauls and **black dogfish** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2006				2007				2008				2009				2010			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
387	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0435	4	0.000	0.000	0.0439	4	0.000	0.000	0.0458	4	0.000	0.000
388	0.0566	5	0.000	0.000	0.0563	5	0.000	0.000	0.0559	5	0.000	0.000	0.0555	5	0.000	0.000	0.0570	5	0.000	0.000
389	0.0795	7	0.000	0.000	0.0900	8	0.000	0.000	0.0780	7	0.000	0.000	0.0803	7	0.000	0.000	0.0795	7	0.000	0.000
390	0.1249	11	0.000	0.000	0.1350	12	0.000	0.000	0.1395	12	0.000	0.000	0.1373	12	0.000	0.000	0.1249	11	0.000	0.000
391	0.0450	4	0.000	0.000	0.0450	4	0.000	0.000	0.0454	4	0.000	0.000	0.0458	4	0.000	0.000	0.0454	4	0.000	0.000
392	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000
729	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0341	3	0.000	0.000	0.0338	3	0.000	0.000
730	0.0326	3	3.690	6.391	0.0225	2	19.488	26.067	0.0323	3	27.367	47.400	0.0338	3	30.959	51.654	0.0334	3	19.640	25.019
731	0.0341	3	0.000	0.000	0.0338	3	0.000	0.000	0.0330	3	0.000	0.000	0.0341	3	0.000	0.000	0.0338	3	0.000	0.000
732	0.0334	3	0.000	0.000	0.0338	3	0.000	0.000	0.0446	4	0.000	0.000	0.0450	4	0.000	0.000	0.0450	4	0.300	0.600
733	0.0454	4	0.000	0.000	0.0338	3	0.000	0.000	0.0431	4	0.000	0.000	0.0450	4	0.000	0.000	0.0450	4	0.000	0.000
734	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000
741	0.0218	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000
742	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0210	2	0.000	0.000	0.0214	2	0.000	0.000	0.0225	2	0.000	0.000
743	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0203	2	0.000	0.000	0.0203	2	1.835	1.082	0.0225	2	0.000	0.000
744	0.0229	2	0.725	1.025	0.0218	2	1.663	0.541	0.0221	2	0.880	0.198	0.0210	2	0.430	0.608	0.0229	2	0.000	0.000
745	0.0686	6	0.000	0.000	0.0675	6	0.000	0.000	0.0555	5	0.000	0.000	0.0559	5	0.000	0.000	0.0563	5	0.000	0.000
746	0.0675	6	9.033	10.572	0.0664	6	9.171	6.742	0.0638	6	6.142	1.917	0.0668	6	3.939	5.074	0.0679	6	4.817	2.936
747	0.1230	11	3.656	2.707	0.1238	11	6.015	5.815	0.1069	10	5.894	5.184	0.1118	10	6.653	4.933	0.1125	10	5.965	5.925
748	0.0326	3	15.713	18.383	0.0338	3	35.817	40.266	0.0218	2	80.800	114.268	0.0229	2	12.240	17.310	0.0225	2	83.545	40.807
749	0.0229	2	91.125	124.599	0.0113	1	229.700	-	0.0214	2	35.410	19.827	0.0225	2	131.090	156.143	0.0229	2	148.715	196.837
750	0.1005	9	6.213	9.605	0.0679	6	13.979	28.671	0.0844	8	12.366	21.347	0.0791	7	9.146	7.225	0.0900	8	0.848	1.376
751	0.0454	4	1.103	1.497	0.0225	2	4.405	0.191	0.0413	4	3.780	2.765	0.0338	3	5.343	4.636	0.0225	2	1.870	1.414

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 20 (cont.). Swept area, number of hauls and **black dogfish** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2011				2012				2013				2014				2015			
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0236	2	0.000	0.000
387	0.0450	4	0.000	0.000	0.0450	4	0.000	0.000	0.0450	4	0.000	0.000	0.0461	4	0.000	0.000	0.0458	4	0.000	0.000
388	0.0563	5	0.000	0.000	0.0570	5	0.000	0.000	0.0570	5	0.000	0.000	0.0585	5	0.000	0.000	0.0574	5	0.000	0.000
389	0.0675	6	0.000	0.000	0.0799	7	0.000	0.000	0.0791	7	0.000	0.000	0.0814	7	0.000	0.000	0.0814	7	0.000	0.000
390	0.1009	9	0.000	0.000	0.1354	12	0.000	0.000	0.1358	12	0.000	0.000	0.1369	12	0.000	0.000	0.1260	11	0.000	0.000
391	0.0458	4	0.000	0.000	0.0458	4	0.000	0.000	0.0450	4	0.000	0.000	0.0465	4	0.000	0.000	0.0465	4	0.000	0.000
392	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000
729	0.0338	3	0.000	0.000	0.0338	3	0.000	0.000	0.0341	3	0.000	0.000	0.0338	3	0.000	0.000	0.0345	3	0.000	0.000
730	0.0334	3	3.646	6.315	0.0338	3	10.040	17.053	0.0334	3	0.000	0.000	0.0345	3	0.000	0.000	0.0345	3	16.964	28.977
731	0.0334	3	0.000	0.000	0.0341	3	0.000	0.000	0.0334	3	0.000	0.000	0.0345	3	0.000	0.000	0.0345	3	0.000	0.000
732	0.0454	4	0.000	0.000	0.0454	4	0.000	0.000	0.0450	4	0.000	0.000	0.0454	4	0.000	0.000	0.0465	4	0.000	0.000
733	0.0454	4	0.000	0.000	0.0454	4	0.000	0.000	0.0450	4	0.000	0.000	0.0458	4	0.000	0.000	0.0454	4	0.000	0.000
734	0.0225	2	0.000	0.000	0.0233	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000
741	0.0218	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000	0.0236	2	0.000	0.000
742	0.0225	2	0.000	0.000	0.0206	2	0.000	0.000	0.0218	2	0.000	0.000	0.0221	2	0.598	0.845	0.0233	2	0.523	0.740
743	0.0221	2	0.000	0.000	0.0206	2	0.000	0.000	0.0218	2	0.945	1.336	0.0221	2	2.505	3.543	0.0233	2	5.060	2.206
744	0.0221	2	0.612	0.865	0.0221	2	0.000	0.000	0.0221	2	3.550	5.020	0.0225	2	0.000	0.000	0.0225	2	0.506	0.716
745	0.0446	4	0.705	1.410	0.0570	5	0.000	0.000	0.0559	5	0.620	1.386	0.0578	5	0.000	0.000	0.0578	5	51.731	115.643
746	0.0566	5	7.160	9.335	0.0675	6	6.004	4.804	0.0675	6	26.233	40.751	0.0683	6	10.215	14.886	0.0686	6	29.042	14.767
747	0.0893	8	5.204	3.122	0.1121	10	4.889	4.861	0.1125	10	11.874	6.025	0.1125	10	11.466	4.719	0.1028	9	7.979	7.512
748	0.0221	2	135.930	187.058	0.0225	2	25.190	35.624	0.0225	2	25.780	36.458	0.0229	2	63.850	2.758	0.0233	2	100.365	117.401
749	0.0221	2	114.000	69.141	0.0221	2	70.633	84.905	0.0225	2	42.515	34.104	0.0225	2	66.725	41.260	0.0225	2	107.620	22.316
750	0.0668	6	1.711	2.351	0.0885	8	4.283	6.729	0.0896	8	7.622	10.816	0.0904	8	12.006	13.261	0.0934	8	11.718	17.339
751	0.0334	3	3.076	2.976	0.0218	2	9.550	5.388	0.0446	4	7.797	3.881	0.0334	3	3.267	3.348	0.0341	3	15.593	0.655

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 20 (cont.). Swept area, number of hauls and **black dogfish** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2006-2019, on board R/V "*Vizconde de Eza*".

Stratum	2016				2017				2018				2019							
	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD	Swept area	Tow No.	Mean catch	SD
385	0.0233	2	0.000	0.000	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.0225	2	0.000	0.000				
387	0.0454	4	0.000	0.000	0.0446	4	0.000	0.000	0.0465	4	0.000	0.000	0.0450	4	0.000	0.000				
388	0.0570	5	0.000	0.000	0.0566	5	0.000	0.000	0.0566	5	0.000	0.000	0.0559	5	0.000	0.000				
389	0.0814	7	0.000	0.000	0.0799	7	0.000	0.000	0.0803	7	0.000	0.000	0.0784	7	0.000	0.000				
390	0.1391	12	0.000	0.000	0.1369	12	0.000	0.000	0.1358	12	0.000	0.000	0.1125	10	0.000	0.000				
391	0.0469	4	0.000	0.000	0.0458	4	0.000	0.000	0.0458	4	0.000	0.000	0.0450	4	0.000	0.000				
392	0.0233	2	0.000	0.000	0.0229	2	0.000	0.000	0.0229	2	0.000	0.000	0.0229	2	0.000	0.000				
729	0.0341	3	0.000	0.000	0.0345	3	0.000	0.000	0.0341	3	0.000	0.000	0.0338	3	0.000	0.000				
730	0.0233	2	40.845	2.284	0.0341	3	2.570	3.107	0.0330	3	5.321	9.216	0.0338	3	0.470	0.814				
731	0.0345	3	0.000	0.000	0.0338	3	0.000	0.000	0.0353	3	0.000	0.000	0.0341	3	0.000	0.000				
732	0.0454	4	0.000	0.000	0.0446	4	0.000	0.000	0.0461	4	0.000	0.000	0.0454	4	0.000	0.000				
733	0.0458	4	0.000	0.000	0.0450	4	0.000	0.000	0.0454	4	0.000	0.000	0.0450	4	0.000	0.000				
734	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000				
741	0.0233	2	0.465	0.658	0.0225	2	0.000	0.000	0.0229	2	0.000	0.000	0.0225	2	0.000	0.000				
742	0.0229	2	0.745	1.054	0.0225	2	4.175	2.440	0.0221	2	0.000	0.000	0.0221	2	0.000	0.000				
743	0.0229	2	8.170	9.150	0.0229	2	13.020	1.188	0.0225	2	0.000	0.000	0.0225	2	0.535	0.757				
744	0.0229	2	2.175	3.076	0.0221	2	1.769	1.077	0.0229	2	1.331	1.882	0.0225	2	1.145	1.619				
745	0.0574	5	4.588	10.259	0.0559	5	0.000	0.000	0.0596	5	4.255	8.265	0.0578	5	7.160	7.778				
746	0.0690	6	7.011	4.467	0.0683	6	4.919	4.579	0.0698	6	4.951	6.960	0.0679	6	10.740	8.044				
747	0.1140	10	7.782	4.872	0.1125	10	8.070	2.752	0.1140	10	4.684	5.538	0.1125	10	1.257	1.608				
748	0.0233	2	5.220	7.382	0.0225	2	21.914	28.855	0.0225	2	45.050	10.607	0.0225	2	10.790	15.259				
749	0.0233	2	84.700	25.173	0.0229	2	97.454	44.596	0.0225	2	91.051	21.907	0.0221	2	68.570	4.214				
750	0.0930	8	10.915	9.666	0.0934	8	9.595	13.033	0.0904	8	14.194	32.910	0.0788	7	9.729	15.906				
751	0.0345	3	5.014	2.285	0.0349	3	2.419	2.278	0.0454	4	3.087	1.120	0.0338	3	1.937	0.910				

$$(**)\ SD = \frac{\sum (x_i - \bar{x})}{n-1}$$

Table 21. Stratified mean catches (Kg) of **black dogfish** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey													
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
387	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
388	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
389	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
390	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
391	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
392	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
729	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
730	0.00	369.75	627.30	3312.88	4652.33	5262.97	3338.80	619.82	1706.80	0.00	0.00	2883.94	6943.65	436.96
731	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
732	0.00	0.00	0.00	0.00	0.00	0.00	69.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00
733	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
734	n.s	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
741	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	46.50	0.00
742	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	38.24	33.47	47.68	267.20
743	n.s	31.90	0.00	0.00	0.00	93.59	0.00	0.00	0.00	48.20	127.76	258.06	416.67	664.02
744	n.s	0.00	47.85	109.73	58.08	28.38	0.00	40.39	0.00	234.30	0.00	33.40	143.55	116.72
745	2.32	0.00	0.00	0.00	0.00	0.00	0.00	245.34	0.00	215.76	0.00	18002.53	1596.62	0.00
746	0.00	0.00	3541.07	3594.84	2407.60	1544.22	1888.13	2806.72	2353.63	10283.47	4004.35	11384.59	2748.44	1928.12
747	n.s	2944.27	2646.94	4354.53	4267.26	4816.77	4318.66	3767.42	3539.64	8596.56	8301.38	5776.96	5634.17	5842.97
748	0.00	5879.82	2498.42	5694.85	12847.20	1946.16	13283.66	21612.87	4005.21	4099.02	10152.15	15958.04	829.98	3484.25
749	27688.50	2179.80	11481.75	28942.20	4461.66	16517.34	18738.09	14364.00	8899.76	5356.89	8407.35	13560.12	10672.20	12279.20
750	n.s	1556.80	3454.61	7772.42	6875.64	5085.02	471.21	951.50	2381.07	4237.97	6675.48	6514.93	6068.46	5334.54
751	n.s	n.s	252.47	1008.75	865.62	1223.62	428.23	704.48	2186.95	1785.40	748.07	3570.87	1148.21	553.95
TOTAL	27690.82	12962.34	24550.42	54790.18	36435.38	36518.07	42536.08	45112.55	25073.06	34857.56	38454.77	77976.90	36293.13	30907.93
$(\bar{y})$	6.19	2.07	3.78	8.45	5.62	5.63	6.56	6.95	3.87	5.37	5.93	12.02	5.6	4.76
SD	6.19	1.01	1.78	1.28	2.23	2.33	2.83	3.39	1.38	1.34	0.81	3.55	0.58	0.90

Table 21 (cont). Stratified mean catches (Kg) of **black dogfish** by stratum and year (2003-2019) and SD. Research Vessel *Vizconde de Eza*. n.s. means stratum not surveyed. In 2003: the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	0.00	0.00
387	0.00	0.00
388	0.00	0.00
389	0.00	0.00
390	0.00	0.00
391	0.00	0.00
392	0.00	0.00
729	0.00	0.00
730	904.51	79.90
731	0.00	0.00
732	0.00	0.00
733	0.00	0.00
734	0.00	0.00
741	0.00	0.00
742	0.00	0.00
743	0.00	27.29
744	87.81	75.57
745	1480.88	2491.68
746	1940.73	4210.15
747	3391.43	910.21
748	7162.95	1715.61
749	11472.36	8639.82
750	7892.07	5409.09
751	706.81	443.50
TOTAL	35039.56	24002.81
$(\bar{y})$	5.4	3.70
SD	1.12	0.65

Table 22. Survey estimates (by the swept area method) of **black dogfish** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

	Survey													
Stratum	2003	2004	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
385	0	0	0	0	0	0	0	0	0	0	0	0	0	0
387	0	0	0	0	0	0	0	0	0	0	0	0	0	0
388	0	0	0	0	0	0	0	0	0	0	0	0	0	0
389	0	0	0	0	0	0	0	0	0	0	0	0	0	0
390	0	0	0	0	0	0	0	0	0	0	0	0	0	0
391	0	0	0	0	0	0	0	0	0	0	0	0	0	0
392	0	0	0	0	0	0	0	0	0	0	0	0	0	0
729	0	0	0	0	0	0	0	0	0	0	0	0	0	0
730	0	33	58	294	433	468	300	56	152	0	0	251	597	38
731	0	0	0	0	0	0	0	0	0	0	0	0	0	0
732	0	0	0	0	0	0	6	0	0	0	0	0	0	0
733	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
734	n.s	0	0	0	0	0	0	0	0	0	0	0	0	0
741	0	0	0	0	0	0	0	0	0	0	0	0	4	0
742	0	0	0	0	0	0	0	0	0	0	3	3	4	24
743	n.s	3	0	0	0	9	0	0	0	4	12	22	36	58
744	n.s	0	4	10	5	3	0	4	0	21	0	3	13	11
745	0	0	0	0	0	0	0	22	0	19	0	1559	139	0
746	0	0	315	325	227	139	167	248	209	914	352	995	239	170
747	n.s	287	237	387	399	431	384	338	316	764	738	506	494	519
748	0	592	230	506	1181	170	1181	1954	356	364	888	1373	71	310
749	2503	197	1004	2573	417	1468	1638	1298	804	476	747	1205	918	1074
750	n.s	173	309	687	652	450	42	86	215	378	591	558	522	457
751	n.s	n.s	22	90	84	109	38	63	201	160	67	314	100	48
TOTAL	2503	1286	2179	4872	3399	3247	3756	4068	2253	3102	3398	6789	3138	2708
SD	2546	695	994	721	1296	1340	1634	1964	819	773	466	2012	324	499

Table 22 (cont). Survey estimates (by the swept area method) of **black dogfish** biomass (t.) by stratum and year and their SD on NAFO Div. 3L (R/V *Vizconde de Eza*). n.s. means stratum not surveyed. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

	Survey	
Stratum	2018	2019
385	0	0
387	0	0
388	0	0
389	0	0
390	0	0
391	0	0
392	0	0
729	0	0
730	82	7
731	0	0
732	0	0
733	0	0
734	0	0
741	0	0
742	0	0
743	0	2
744	8	7
745	124	216
746	167	372
747	297	81
748	637	152
749	1020	781
750	699	481
751	62	39
TOTAL	3096	2139
SD	661	369

Table 23. Black dogfish length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2006				2008				2008				2009			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
40	0.00	0.01	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01
42	0.01	0.01	0.00	0.02	0.00	0.03	0.00	0.03	0.02	0.00	0.00	0.02	0.01	0.04	0.00	0.05
44	0.02	0.03	0.00	0.05	0.02	0.00	0.00	0.02	0.01	0.04	0.00	0.05	0.04	0.03	0.00	0.07
46	0.02	0.02	0.00	0.04	0.01	0.04	0.00	0.04	0.04	0.06	0.00	0.09	0.01	0.02	0.00	0.03
48	0.05	0.02	0.00	0.06	0.01	0.02	0.00	0.03	0.03	0.01	0.00	0.04	0.04	0.02	0.00	0.06
50	0.00	0.03	0.00	0.03	0.03	0.09	0.00	0.12	0.07	0.03	0.00	0.10	0.03	0.08	0.00	0.11
52	0.03	0.06	0.00	0.10	0.05	0.06	0.00	0.11	0.09	0.08	0.00	0.17	0.11	0.10	0.00	0.21
54	0.04	0.06	0.00	0.09	0.11	0.18	0.00	0.28	0.18	0.10	0.00	0.28	0.13	0.10	0.00	0.23
56	0.04	0.06	0.00	0.11	0.11	0.14	0.00	0.25	0.19	0.12	0.00	0.30	0.18	0.15	0.00	0.33
58	0.08	0.12	0.00	0.20	0.28	0.36	0.00	0.64	0.28	0.15	0.00	0.43	0.19	0.17	0.00	0.37
60	0.15	0.15	0.00	0.29	0.45	0.22	0.00	0.68	0.55	0.16	0.00	0.71	0.28	0.20	0.00	0.49
62	0.11	0.23	0.00	0.35	0.65	0.45	0.00	1.10	0.63	0.12	0.00	0.75	0.29	0.19	0.00	0.48
64	0.17	0.19	0.00	0.35	0.38	0.39	0.00	0.77	0.58	0.13	0.00	0.72	0.18	0.20	0.00	0.38
66	0.14	0.18	0.00	0.32	0.23	0.29	0.00	0.51	0.17	0.17	0.00	0.34	0.04	0.31	0.00	0.35
68	0.07	0.14	0.00	0.21	0.13	0.25	0.00	0.38	0.08	0.10	0.00	0.18	0.05	0.19	0.00	0.25
70	0.01	0.15	0.00	0.16	0.05	0.24	0.00	0.29	0.01	0.12	0.00	0.13	0.00	0.22	0.00	0.22
72	0.01	0.15	0.00	0.16	0.00	0.24	0.00	0.24	0.02	0.02	0.00	0.04	0.00	0.17	0.00	0.17
74	0.00	0.11	0.00	0.11	0.00	0.21	0.00	0.21	0.00	0.08	0.00	0.08	0.00	0.14	0.00	0.14
76	0.00	0.03	0.00	0.03	0.00	0.10	0.00	0.10	0.00	0.07	0.00	0.07	0.00	0.08	0.00	0.08
78	0.00	0.02	0.00	0.02	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
80	0.00	0.02	0.00	0.02	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
84	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
Total	0.94	1.77	0.00	2.71	2.51	3.41	0.00	5.92	2.95	1.59	0.00	4.53	1.58	2.46	0.00	4.04
Nº samples:				28				28				30				32
Nº Ind.:	99	184	0	283	179	245	0	424	269	152	0	421	157	234	0	391
Sampled catch:				397				593				526				554
Range:				41-84				41-81				41-85				41-89
Total catch:				397				593				526				554
Total valid hauls:				100				94				100				98

Table 23 (cont). **Black dogfish** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2010				2011				2012				2013			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03	0.01	0.00	0.00	0.01	0.00	0.01	0.00	0.01
40	0.00	0.00	0.00	0.00	0.01	0.05	0.00	0.06	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.01
42	0.06	0.04	0.00	0.09	0.09	0.05	0.00	0.14	0.01	0.07	0.00	0.08	0.00	0.04	0.00	0.04
44	0.05	0.09	0.00	0.13	0.08	0.13	0.00	0.20	0.06	0.07	0.00	0.13	0.00	0.06	0.00	0.06
46	0.08	0.11	0.00	0.19	0.10	0.10	0.00	0.20	0.07	0.06	0.00	0.13	0.04	0.03	0.00	0.07
48	0.05	0.07	0.00	0.12	0.18	0.15	0.00	0.33	0.01	0.03	0.00	0.04	0.01	0.04	0.00	0.05
50	0.06	0.06	0.00	0.12	0.14	0.11	0.00	0.25	0.09	0.04	0.00	0.12	0.02	0.06	0.00	0.08
52	0.12	0.09	0.00	0.21	0.12	0.08	0.00	0.20	0.07	0.08	0.00	0.16	0.01	0.06	0.00	0.07
54	0.09	0.10	0.00	0.19	0.07	0.10	0.00	0.17	0.06	0.04	0.00	0.10	0.05	0.10	0.00	0.15
56	0.13	0.14	0.00	0.27	0.23	0.23	0.00	0.47	0.13	0.08	0.00	0.21	0.04	0.12	0.00	0.16
58	0.24	0.11	0.00	0.36	0.38	0.25	0.00	0.64	0.12	0.10	0.00	0.22	0.12	0.11	0.00	0.22
60	0.29	0.21	0.00	0.51	0.41	0.41	0.00	0.82	0.20	0.14	0.00	0.33	0.26	0.21	0.00	0.47
62	0.30	0.20	0.00	0.50	0.37	0.52	0.00	0.89	0.30	0.18	0.00	0.49	0.13	0.25	0.00	0.38
64	0.17	0.14	0.00	0.31	0.22	0.36	0.00	0.58	0.27	0.07	0.00	0.34	0.15	0.37	0.00	0.52
66	0.12	0.17	0.00	0.30	0.14	0.30	0.00	0.44	0.08	0.18	0.00	0.26	0.08	0.35	0.00	0.42
68	0.03	0.16	0.00	0.19	0.03	0.20	0.00	0.23	0.04	0.12	0.00	0.16	0.00	0.36	0.00	0.36
70	0.03	0.19	0.00	0.22	0.01	0.12	0.00	0.13	0.02	0.09	0.00	0.11	0.00	0.21	0.00	0.21
72	0.00	0.31	0.00	0.31	0.01	0.13	0.00	0.14	0.00	0.12	0.00	0.12	0.00	0.16	0.00	0.16
74	0.00	0.28	0.00	0.28	0.00	0.08	0.00	0.08	0.00	0.04	0.00	0.04	0.00	0.13	0.00	0.13
76	0.00	0.11	0.00	0.11	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.05	0.00	0.05
78	0.00	0.10	0.00	0.10	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03
80	0.00	0.04	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02
82	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.84	2.73	0.00	4.57	2.58	3.47	0.00	6.05	1.55	1.62	0.00	3.16	0.91	2.77	0.00	3.68
Nº samples:				26				22				24				31
Nº Ind.:	172	275	0	447	214	301	0	515	150	137	0	287	85	264	0	349
Sampled catch:				624				612				360				517
Range:				37-87				36-78				39-80				39-81
Total catch:				624				612				360				517
Total valid hauls:				97				89				98				100

Table 23 (cont). Black dogfish length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2014				2015				2016				2017			
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
36	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.02
40	0.00	0.00	0.00	0.00	0.01	0.02	0.00	0.03	0.01	0.01	0.00	0.02	0.01	0.04	0.00	0.06
42	0.03	0.07	0.00	0.10	0.03	0.13	0.00	0.16	0.00	0.01	0.00	0.01	0.02	0.05	0.00	0.07
44	0.04	0.04	0.00	0.07	0.05	0.13	0.00	0.19	0.02	0.03	0.00	0.06	0.03	0.10	0.00	0.13
46	0.04	0.12	0.00	0.15	0.23	0.29	0.00	0.53	0.11	0.12	0.00	0.23	0.12	0.19	0.00	0.31
48	0.05	0.11	0.00	0.17	0.23	0.32	0.00	0.55	0.11	0.17	0.00	0.28	0.08	0.21	0.00	0.29
50	0.03	0.09	0.00	0.12	0.22	0.28	0.00	0.50	0.14	0.11	0.00	0.25	0.09	0.13	0.00	0.22
52	0.15	0.07	0.00	0.22	0.21	0.31	0.00	0.52	0.09	0.12	0.00	0.20	0.07	0.12	0.00	0.19
54	0.09	0.10	0.00	0.19	0.16	0.30	0.00	0.46	0.11	0.16	0.00	0.27	0.03	0.12	0.00	0.15
56	0.08	0.24	0.00	0.32	0.13	0.32	0.00	0.46	0.18	0.13	0.00	0.31	0.08	0.13	0.00	0.21
58	0.13	0.27	0.00	0.40	0.21	0.41	0.00	0.63	0.21	0.18	0.00	0.38	0.06	0.17	0.00	0.23
60	0.21	0.21	0.00	0.43	0.31	0.37	0.00	0.68	0.20	0.22	0.00	0.42	0.12	0.29	0.00	0.42
62	0.28	0.34	0.00	0.62	0.42	0.61	0.00	1.02	0.21	0.21	0.00	0.41	0.07	0.19	0.00	0.26
64	0.16	0.26	0.00	0.42	0.31	0.57	0.00	0.88	0.16	0.25	0.00	0.41	0.12	0.23	0.00	0.34
66	0.06	0.30	0.00	0.36	0.16	0.58	0.00	0.74	0.12	0.24	0.00	0.35	0.11	0.16	0.00	0.27
68	0.05	0.25	0.00	0.29	0.09	0.63	0.00	0.72	0.04	0.30	0.00	0.34	0.03	0.21	0.00	0.24
70	0.01	0.17	0.00	0.18	0.02	0.60	0.00	0.63	0.01	0.24	0.00	0.25	0.03	0.29	0.00	0.31
72	0.00	0.15	0.00	0.15	0.00	0.38	0.00	0.38	0.01	0.15	0.00	0.16	0.00	0.14	0.00	0.14
74	0.00	0.13	0.00	0.13	0.00	0.18	0.00	0.18	0.00	0.08	0.00	0.08	0.00	0.04	0.00	0.04
76	0.00	0.07	0.00	0.07	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.08	0.00	0.08
78	0.00	0.05	0.00	0.05	0.00	0.04	0.00	0.04	0.00	0.02	0.00	0.02	0.00	0.02	0.00	0.02
80	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
82	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.41	3.08	0.00	4.50	2.81	6.56	0.00	9.37	1.73	2.80	0.00	4.53	1.08	2.93	0.00	4.01
Nº samples:				27				35				37				36
Nº Ind.:	125	282	0	407	260	594	0	854	149	267	0	416	106	284	0	390
Sampled catch:				549				1124				530				479
Range:				37-82				22-81				38-79				38-78
Total catch:				549				1124				530				479
Total valid hauls:				99				97				98				99

Table 23 (cont). **Black dogfish** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2006-2019 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2018				2019											
Length (cm.)	M	F	I	T	M	F	I	T	M	F	I	T	M	F	I	T
16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
26	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
28	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
32	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
36	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00								
38	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
40	0.03	0.08	0.00	0.12	0.00	0.00	0.00	0.00								
42	0.04	0.13	0.00	0.17	0.00	0.03	0.00	0.03								
44	0.16	0.25	0.00	0.41	0.06	0.05	0.00	0.11								
46	0.17	0.33	0.00	0.50	0.02	0.10	0.00	0.13								
48	0.07	0.23	0.00	0.30	0.01	0.04	0.00	0.05								
50	0.14	0.22	0.00	0.35	0.07	0.06	0.00	0.14								
52	0.07	0.21	0.00	0.28	0.03	0.01	0.00	0.04								
54	0.03	0.18	0.00	0.21	0.10	0.01	0.00	0.11								
56	0.11	0.16	0.00	0.27	0.07	0.09	0.00	0.16								
58	0.09	0.27	0.00	0.36	0.15	0.05	0.00	0.20								
60	0.14	0.14	0.00	0.28	0.14	0.08	0.00	0.22								
62	0.12	0.18	0.00	0.29	0.32	0.09	0.00	0.42								
64	0.16	0.21	0.00	0.38	0.17	0.12	0.00	0.29								
66	0.04	0.23	0.00	0.27	0.17	0.11	0.00	0.27								
68	0.02	0.20	0.00	0.22	0.06	0.16	0.00	0.22								
70	0.00	0.24	0.00	0.24	0.01	0.15	0.00	0.16								
72	0.00	0.18	0.00	0.18	0.00	0.15	0.00	0.15								
74	0.00	0.14	0.00	0.14	0.00	0.06	0.00	0.06								
76	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.05								
78	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01								
80	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00								
82	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00								
Total	1.41	3.62	0.00	5.03	1.38	1.43	0.00	2.80								
Nº samples:				29				27								
Nº Ind.:	129	341	0	470	131	135	0	266								
Sampled catch:				515				350								
Range:				37-80				43-78								
Total catch:				515				350								
Total valid hauls:				100				96								

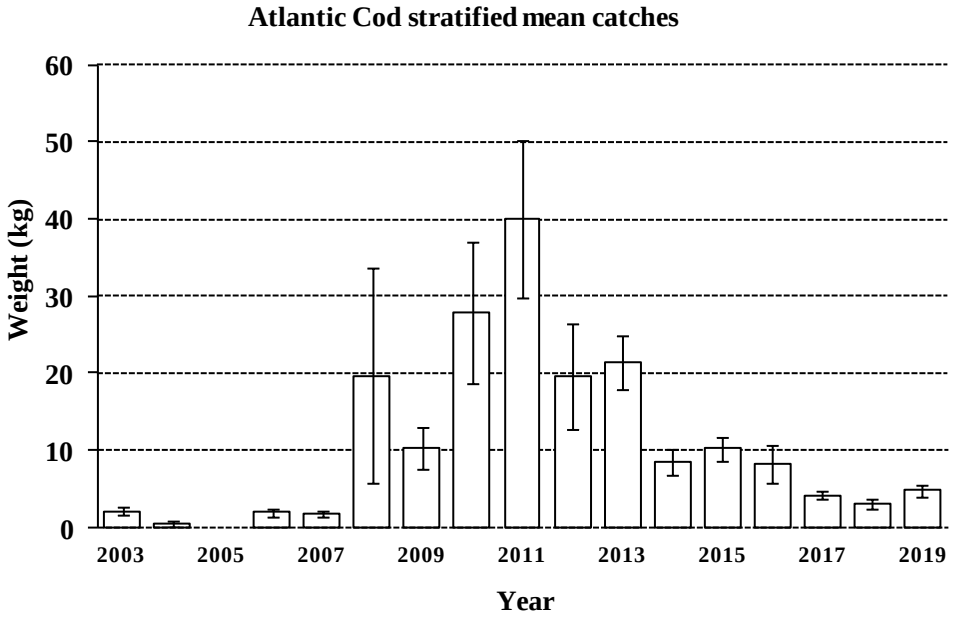


Figure 1 **Atlantic cod** stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

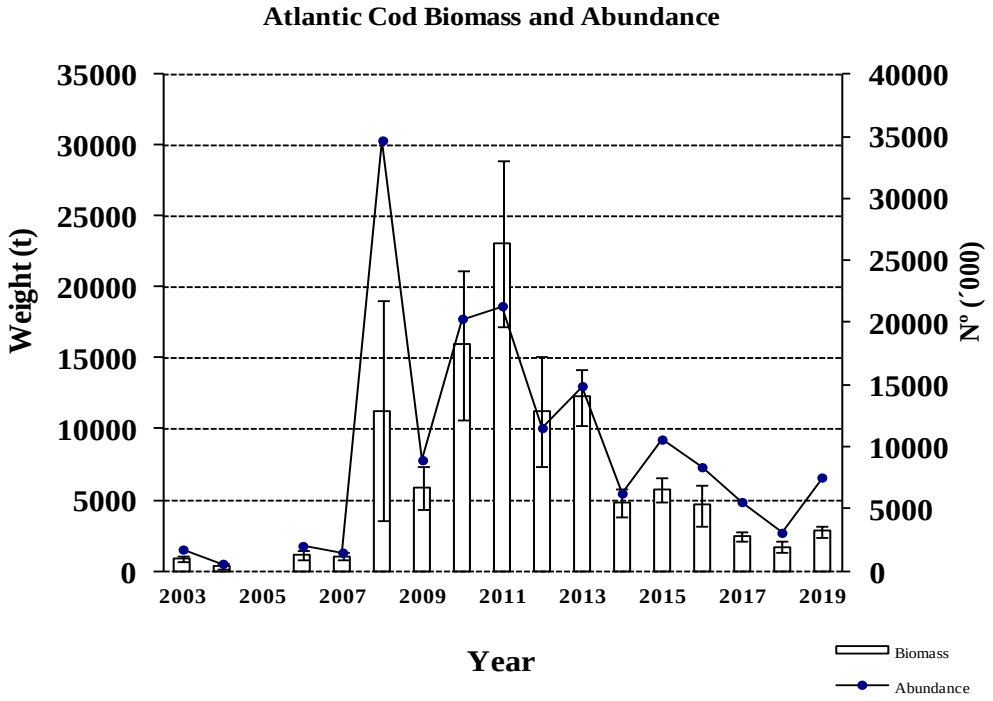


Figure 2. **Atlantic cod** abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

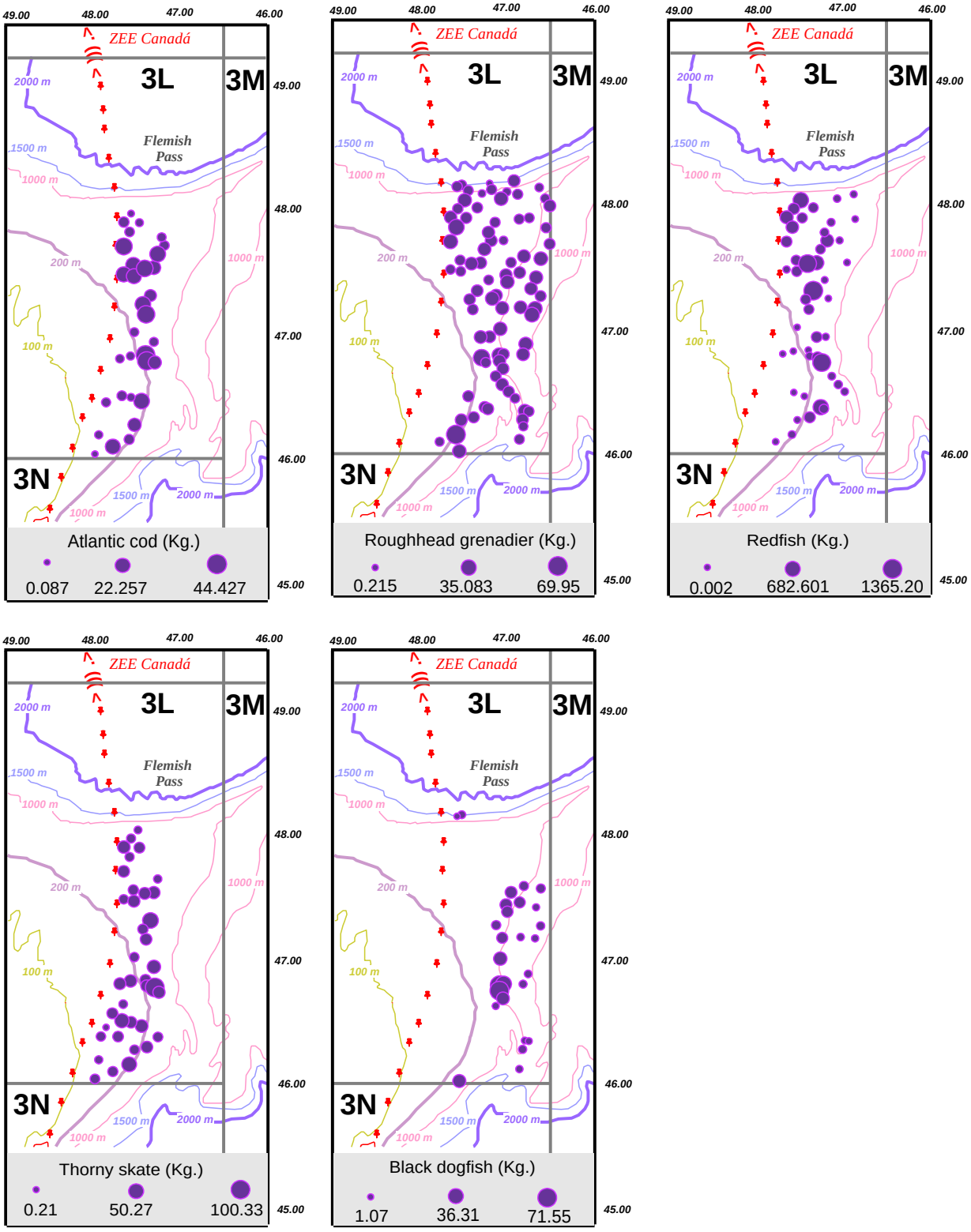


Figure 3. Distribution of the catches per haul for **Atlantic cod, Roughhead grenadier, redfish, thorny skate and black dogfish** in 2019 Spanish 3L survey..

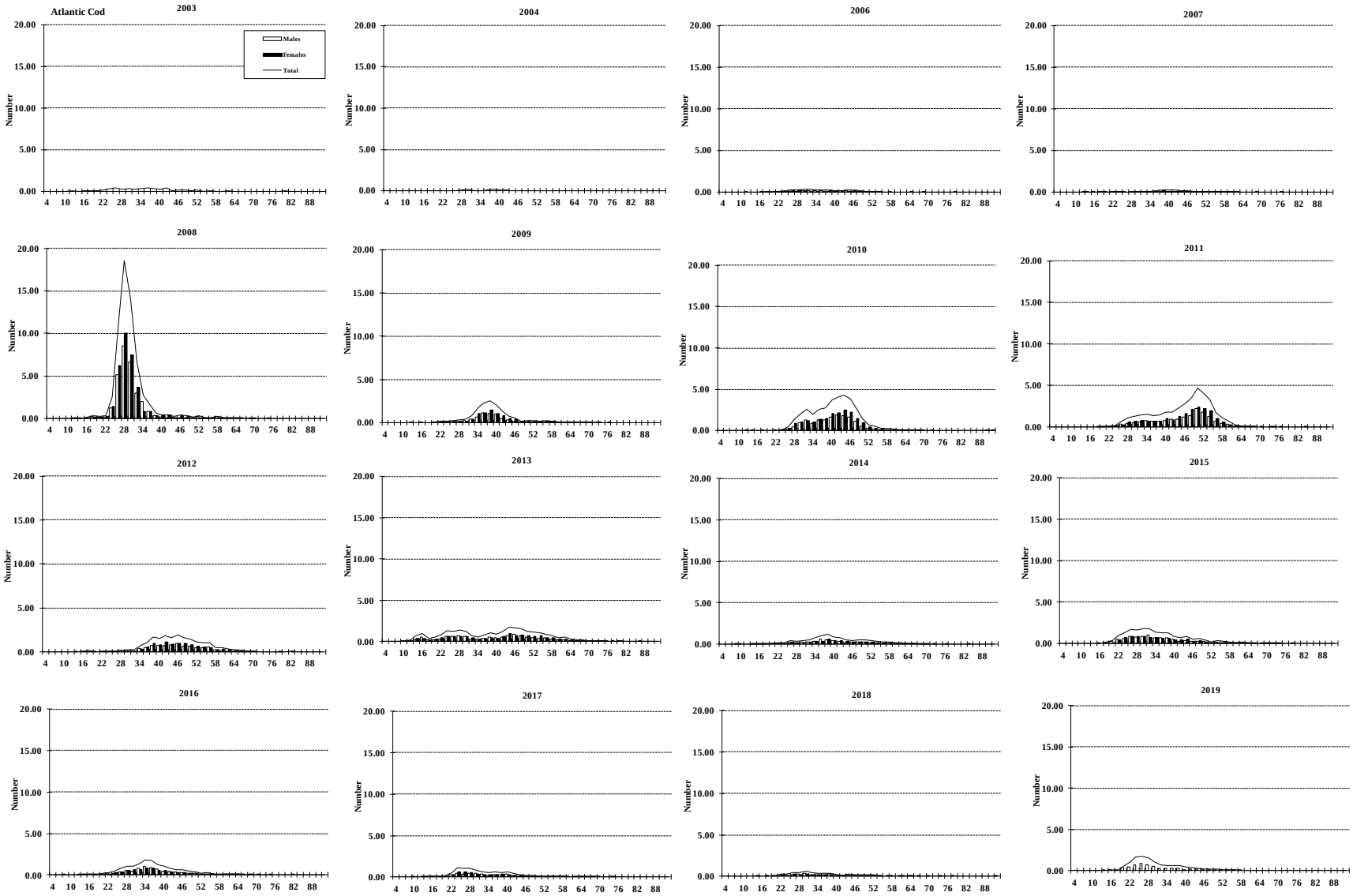
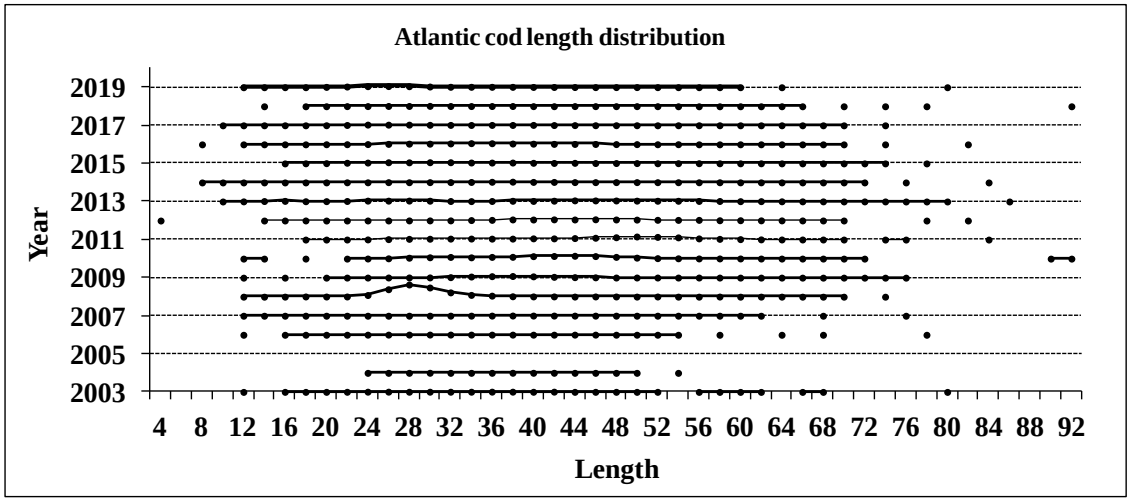
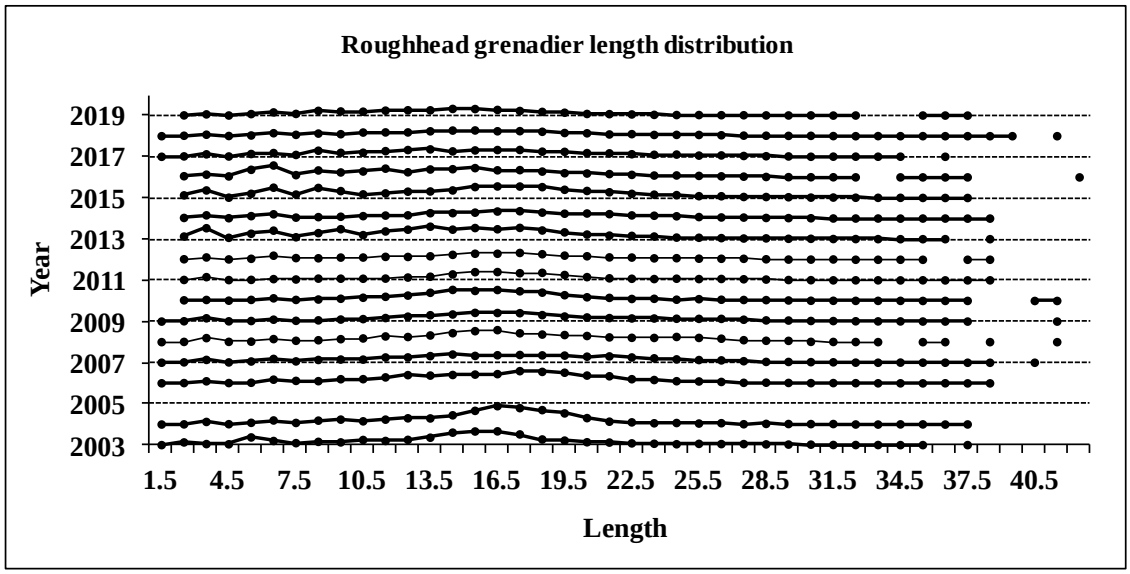


Figure 4. **Atlantic cod** length distribution (cm) in NAFO 3L: 2003-2019. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.





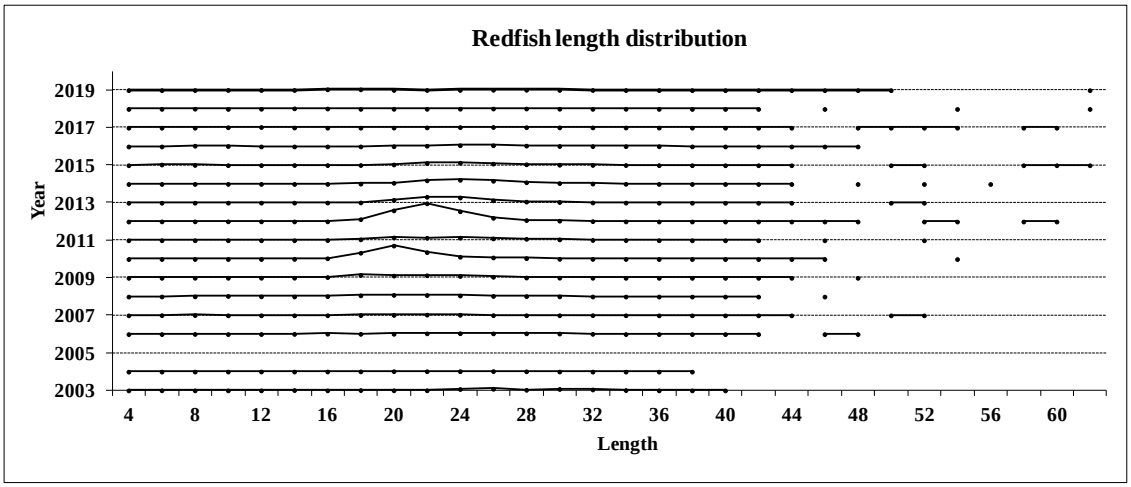


Figure 5. Atlantic cod, roughhead grenadier and redfish length distribution (cm) in NAFO 3L: 2003-2019.

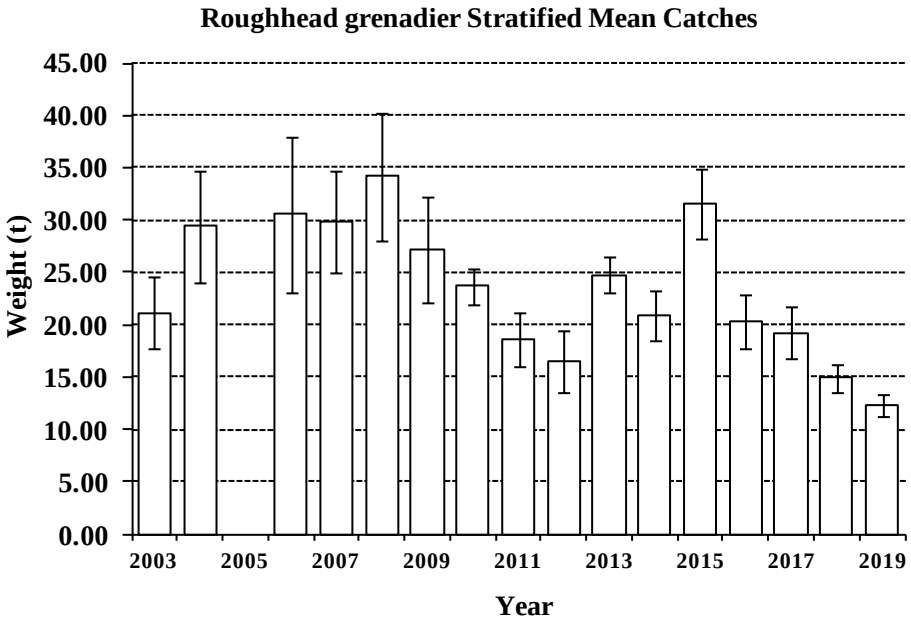


Figure 6. **Roughhead grenadier** stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

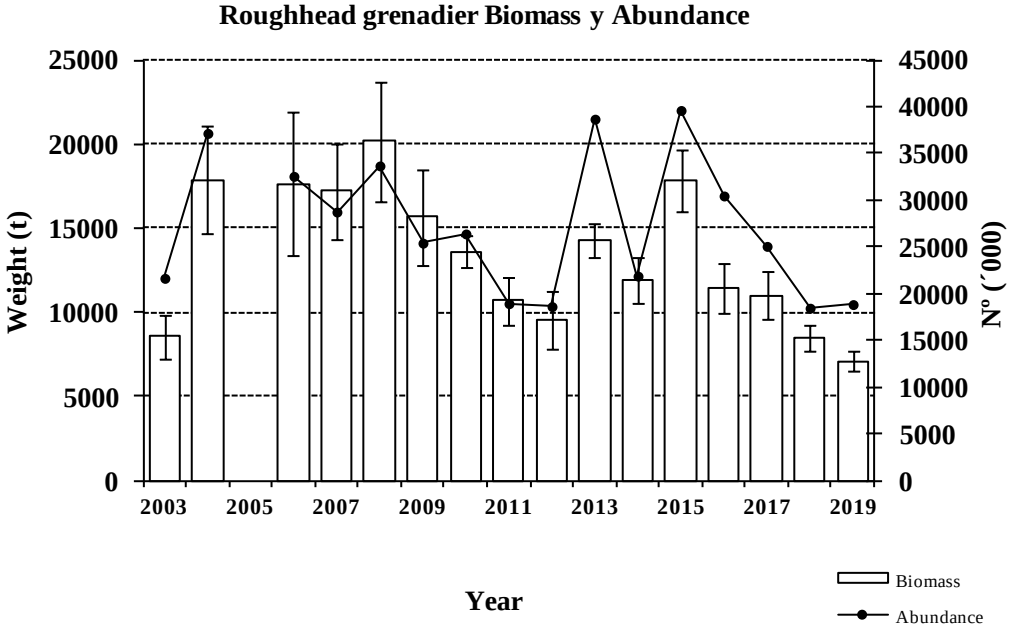


Figure 7. **Roughhead grenadier** abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

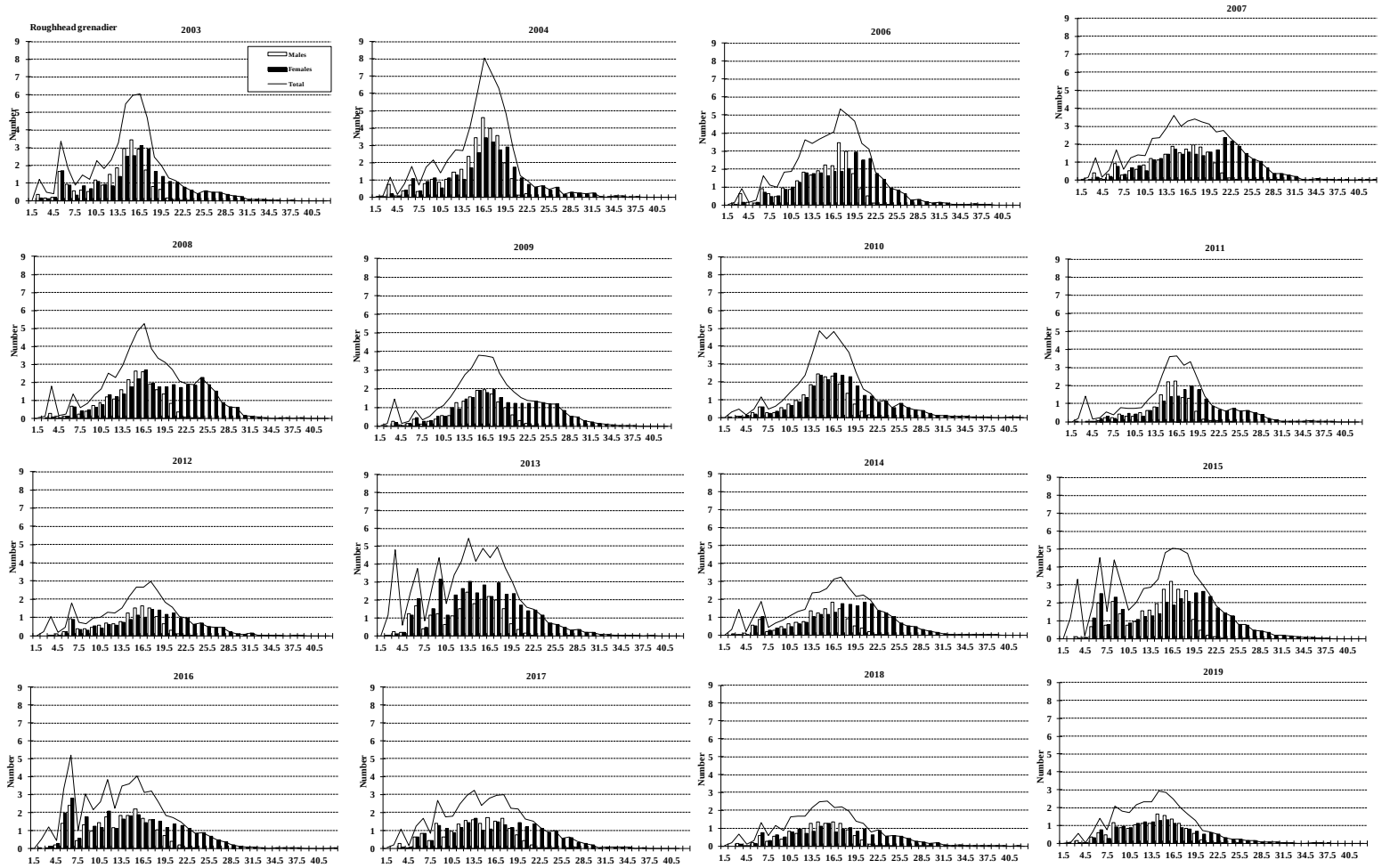


Figure 8. **Roughhead grenadier** length distribution (cm) in NAFO 3L: 2003-2019. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

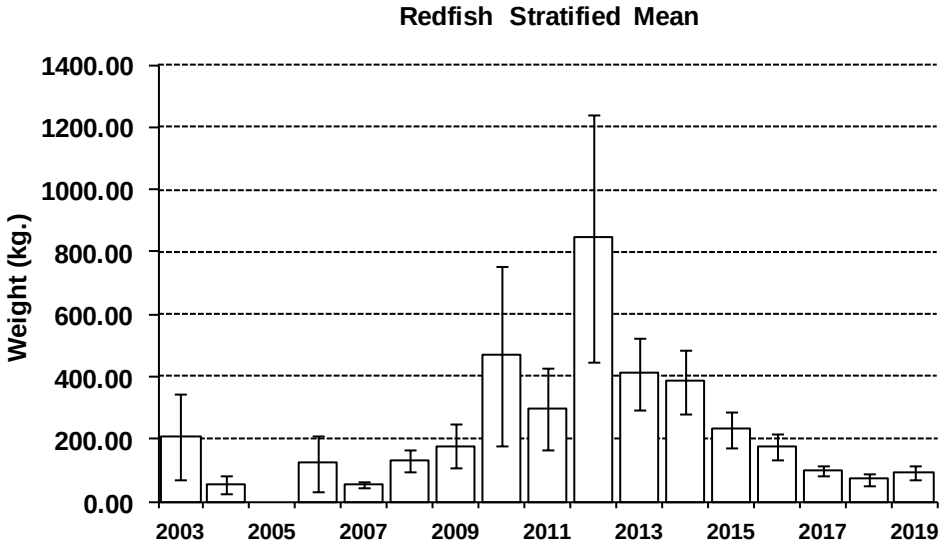


Figure 9. **Redfish** stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

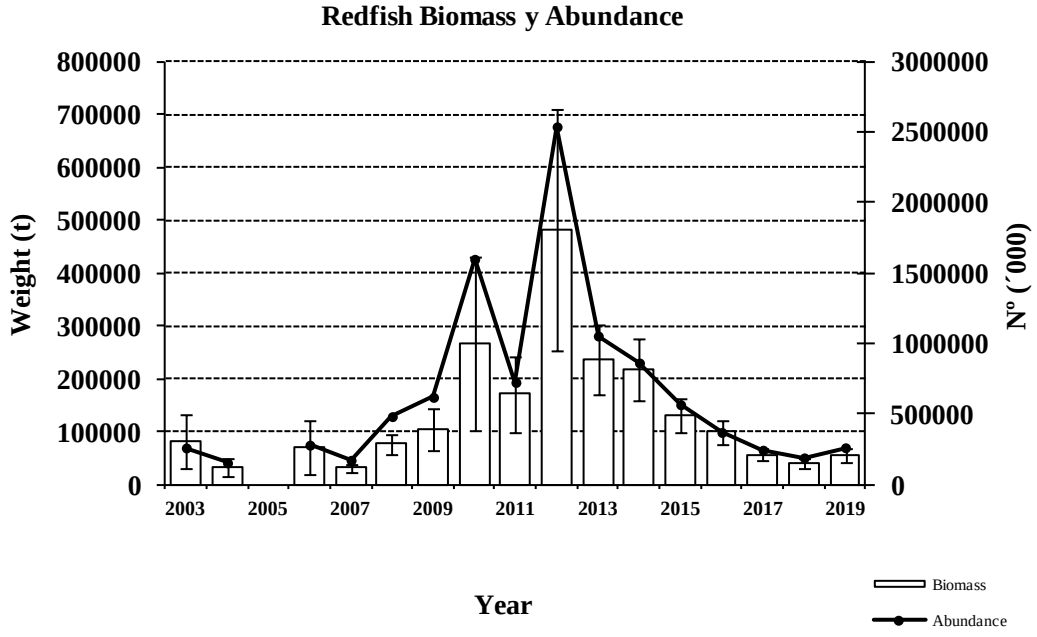


Figure 10. **Redfish** abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area rospected in 2006-2019.

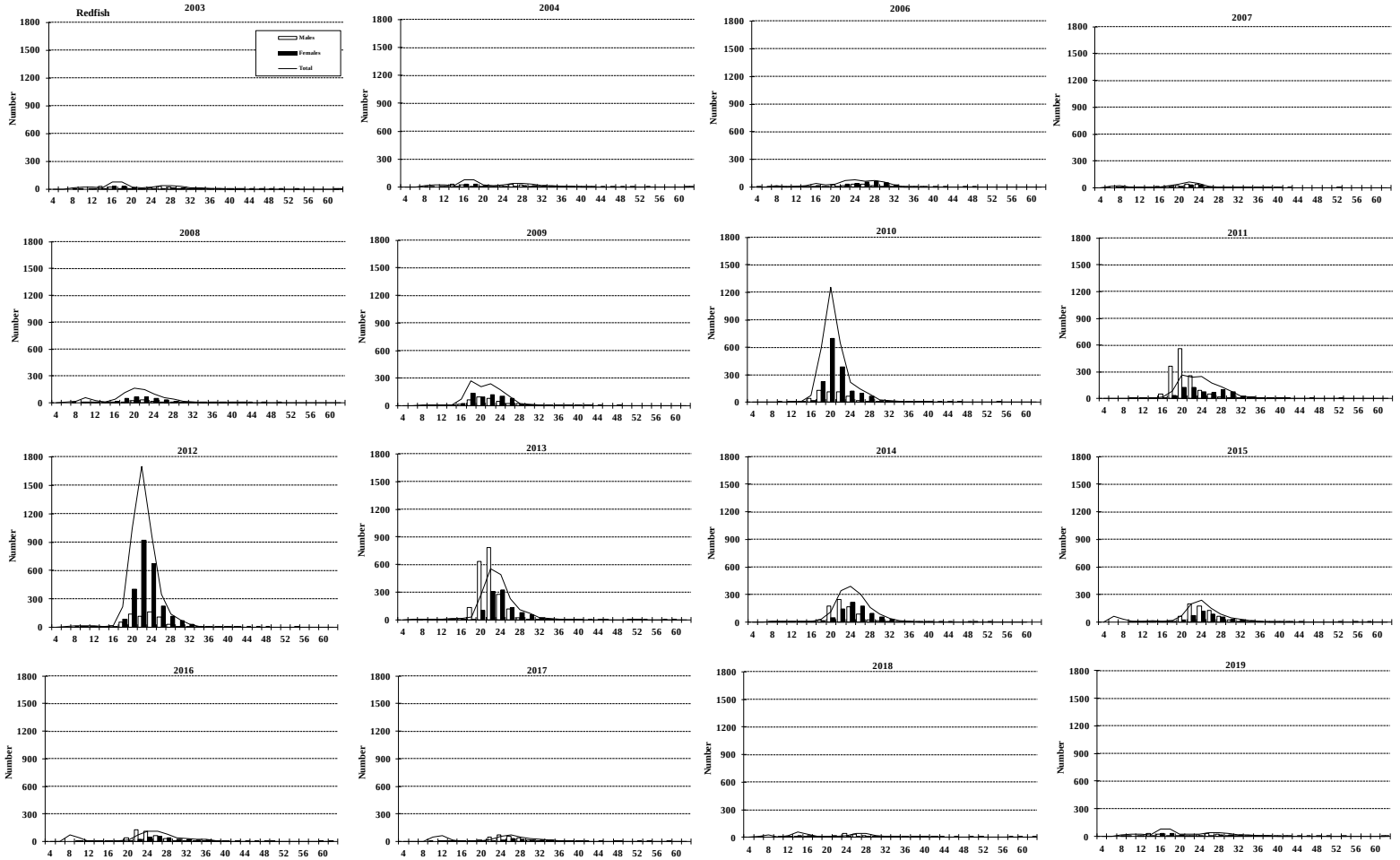


Figure 11. **Redfish** length distribution (cm) in NAFO 3L: 2003-2019. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

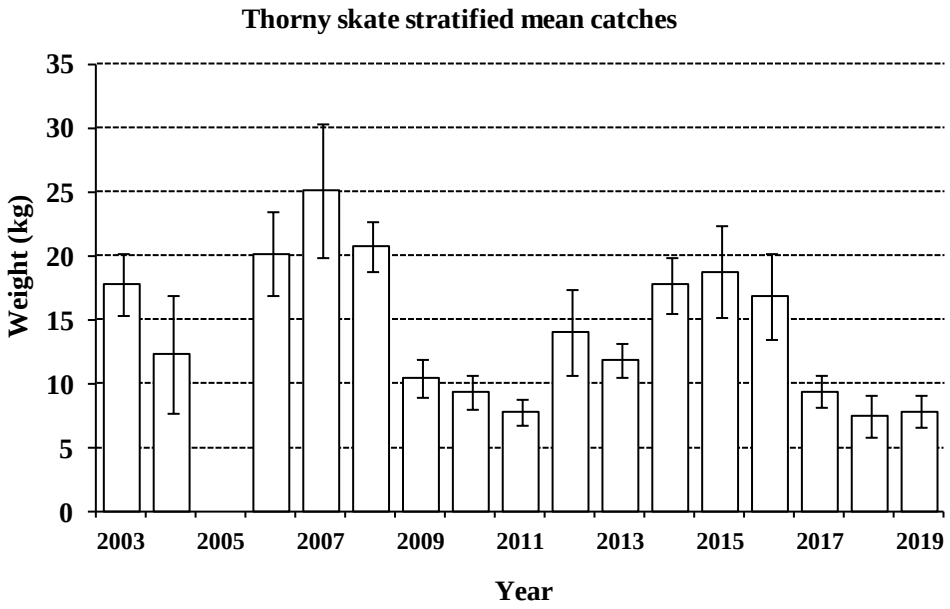


Figure 12. **Thorny skate** stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

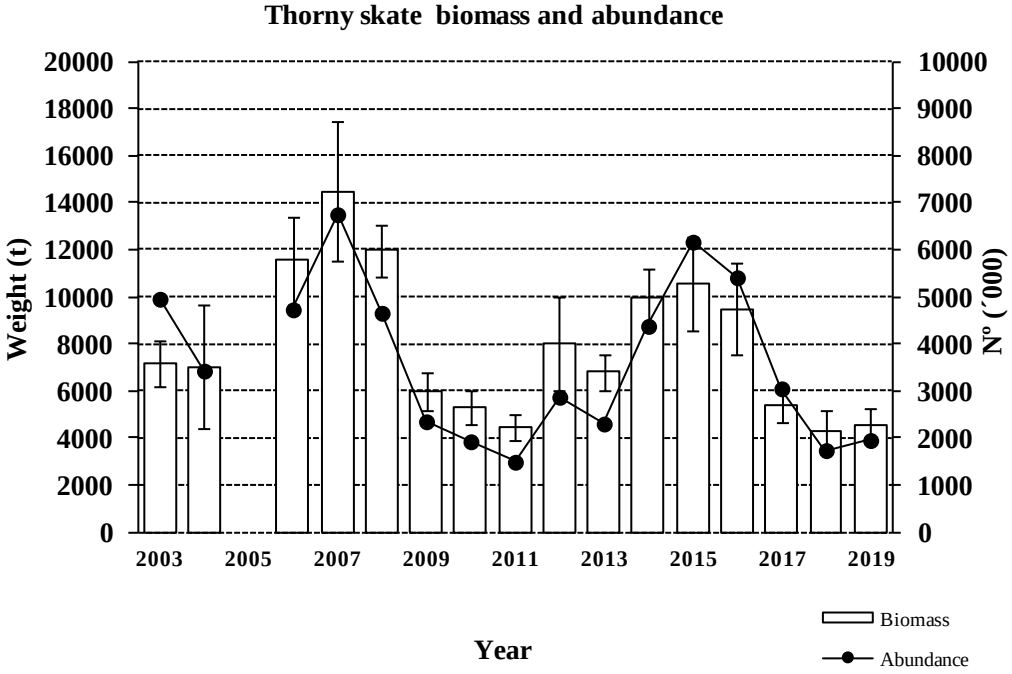


Figure 13. **Thorny skate** abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

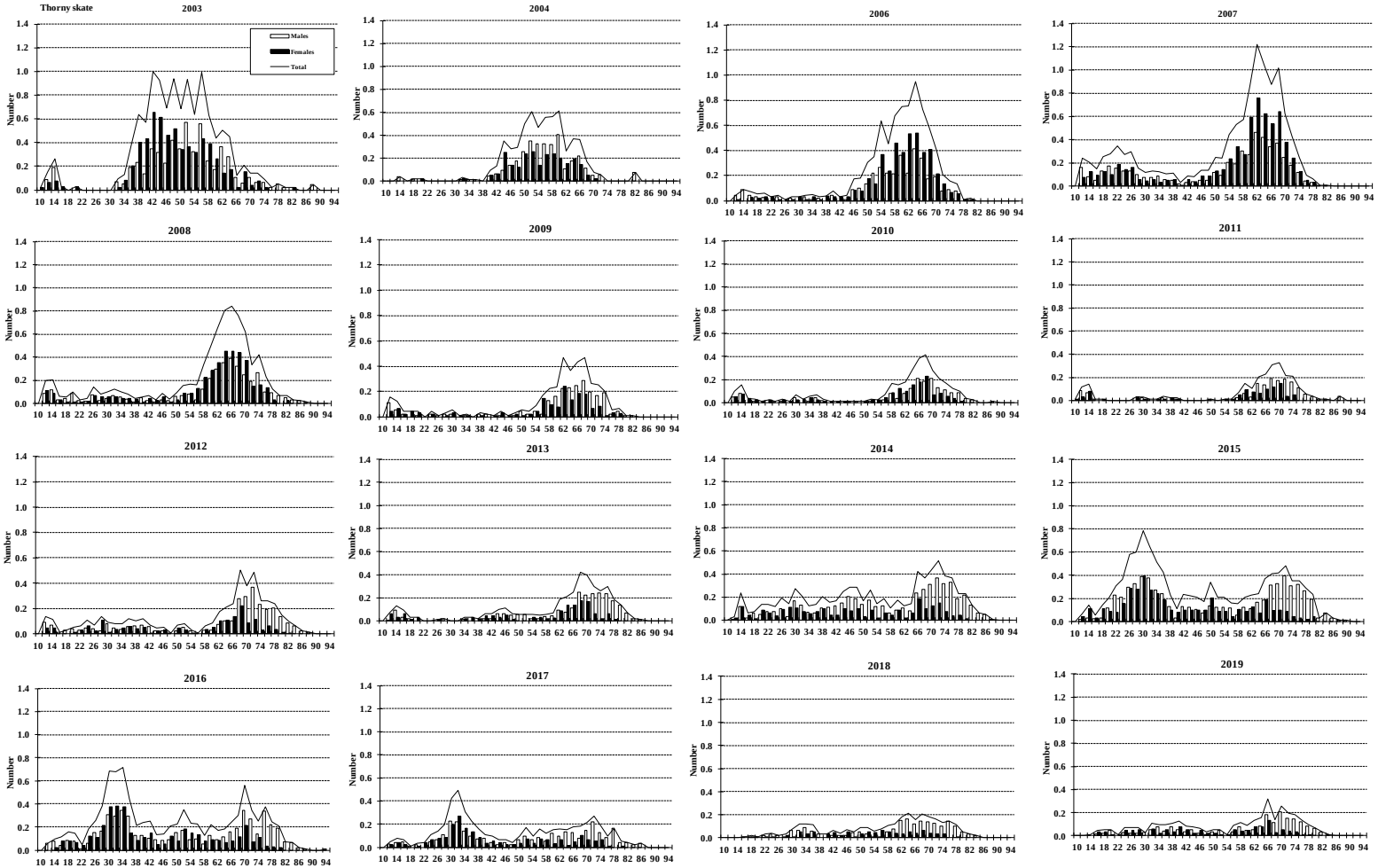
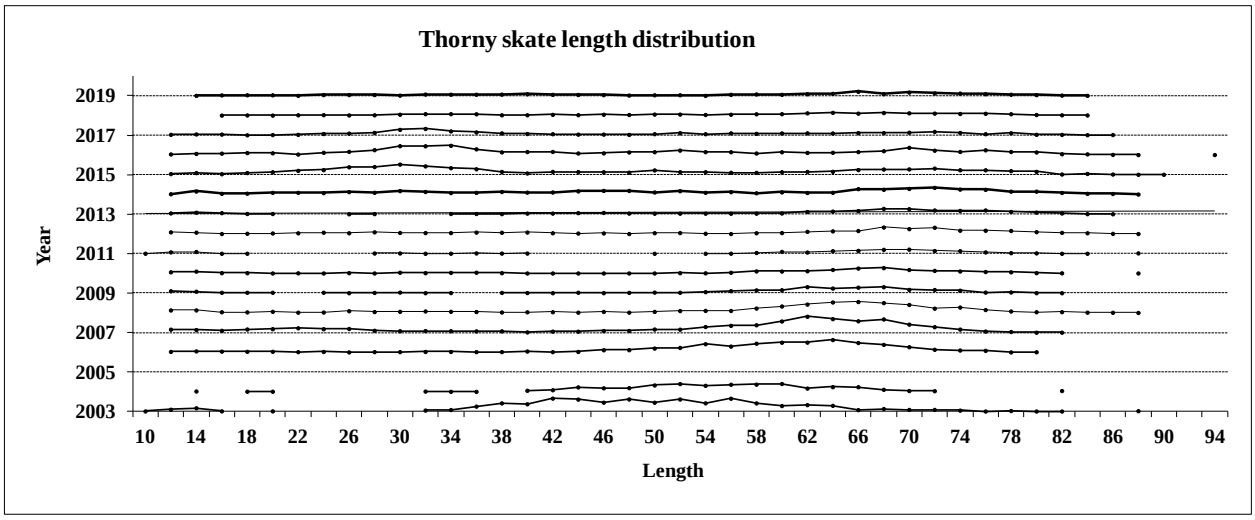


Figure 14. Thorny skate length distribution (cm) in NAFO 3L: 2003-2019. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.



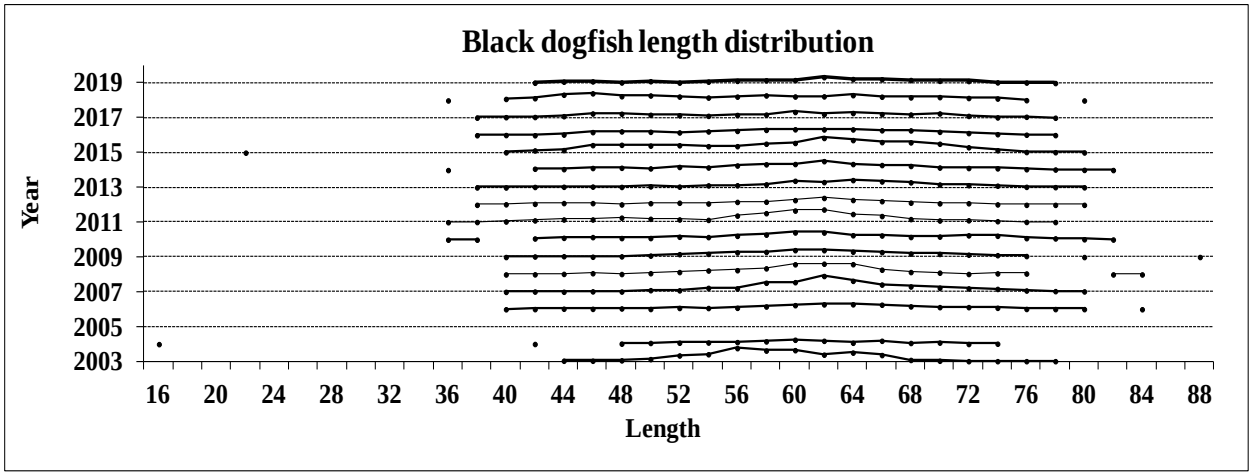


Figure 15. **Thorny skate** and **black length** distribution (cm) in NAFO 3L: 2003-2019.

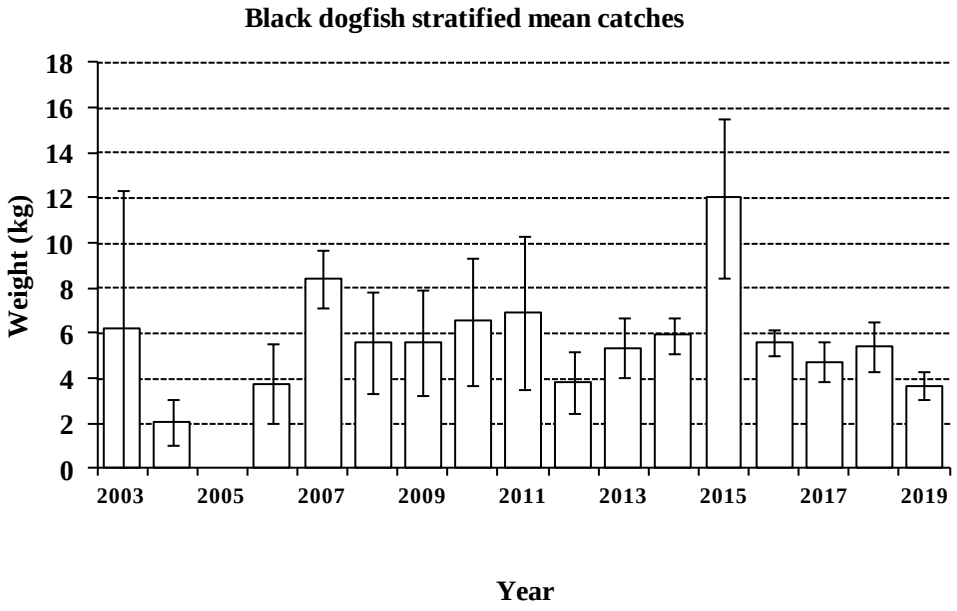


Figure 16. **Black dogfish** stratified mean catches in Kg and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

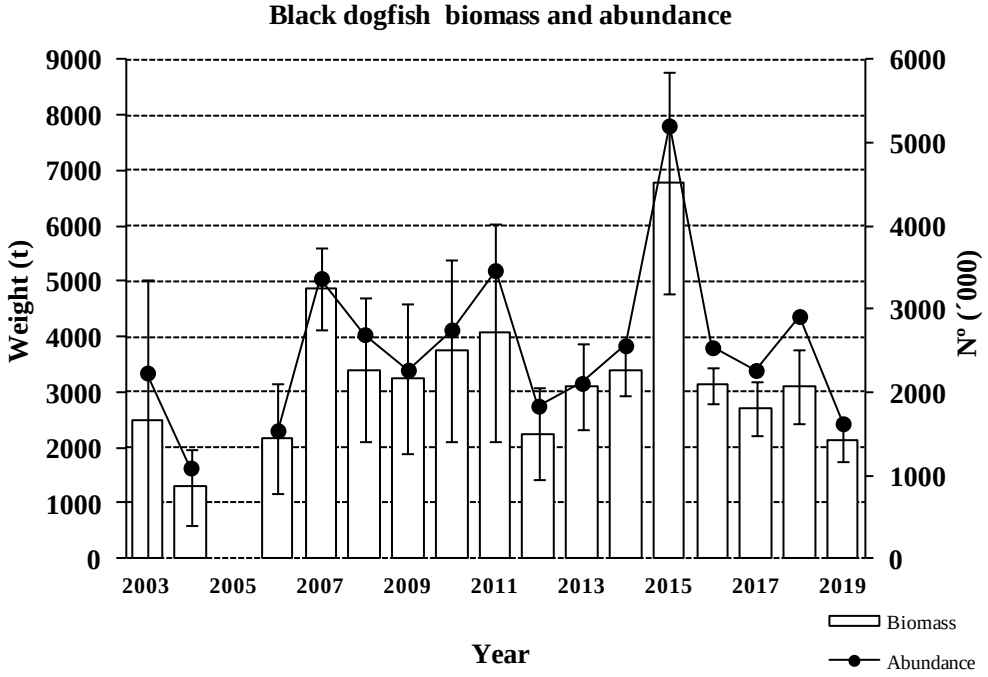


Figure 17. **Black dogfish** abundance (´000), biomass in tonnes and ±SD by year. Spanish surveys in NAFO Division 3L: 2003 - 2019 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2019.

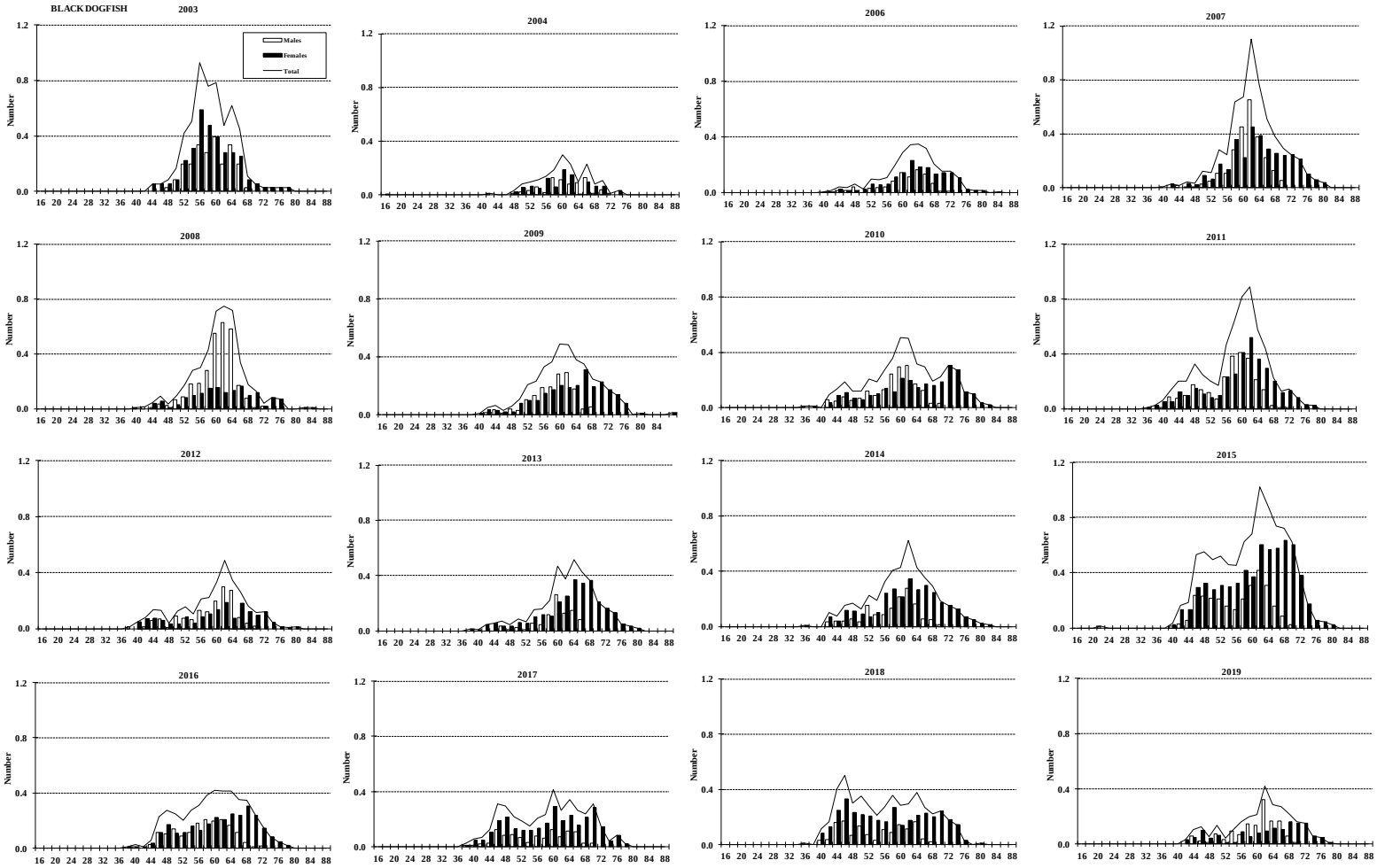


Figure 18. **Black dogfish** length distribution (cm) in NAFO 3L: 2003-2019. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2019.