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Results for the Spanish Survey in the NAFO Regulatory Area of Division 3L for the period 2003-2023

by

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Abstract

Since 2003, a stratified random summer bottom trawl survey was conducted by Spain in the NAFO Regulatory Area of Division 3L (Flemish Pass). The surveys were carried out by the R/V "*Vizconde de Eza*" using bottom trawl net type Campelen 1800. Entire series of mean catches, biomass and length distribution for Greenland halibut, American plaice, witch flounder, Atlantic cod, redfish, roughhead grenadier, thorny skate and black dogfish are presented for the period 2003-2023. In 2023, the biomass shows an increase for all these species except for the Greenland halibut.

KEYWORDS: Survey, Flemish Pass, Greenland halibut, American plaice, witch flounder, Atlantic cod, redfish, roughhead grenadier, thorny skate, black dogfish.

Material and Methods

The Spanish surveys in Div. 3L of NAFO Regulatory Area (Flemish Pass) were initiated in 2003. The Research vessel *"Vizconde de Eza"* has carried out these surveys following the same procedures and using the same bottom trawl gear *Campelen 1800*. In 2003, the survey was carried out in spring (June) and it did not cover all strata adequately (17 of the 24 strata). In 2004, the survey was carried out 50 valid hauls in August, for a period of nine days, and not adequately covered all strata. 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. Survey were not carried out in 2022 due technical problems and 2020/2021 due to the exceptional pandemic situation caused by COVID 19. Table 1 presents the number of valid tows, the depth strata covered and the dates of the survey series. Figure 1 shows haul positions of Spanish surveys in NAFO Div. 3L in the period 2003-2023.

The survey area was stratified following the standard stratification schemes (Bishop, 1994). All surveys had a stratified random design following NAFO specifications (Doubleday, 1981). Hauls were allocated to strata proportionally to stratum size, with a minimum of two planned hauls per stratum and the trawl positions were chosen at random. A synoptic sheet of the survey with the vessel and gear characteristics is shown in Table 2. Biomass and abundance indices were calculated by the swept area method (Cochran, 1997), assuming catchability factor of 1.

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 to obtain the length distribution., For Greenland halibut,

American plaice, witch flounder, 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.

We present on a yearly basis: the mean catch per haul, the stratified mean catch per haul, the biomass with its variance per year and the length distribution in number per haul stratified mean catches by length, sex and year for each species in the period 2003-2023.

Biological studies (age, growth, feeding,..), oceanographic data and special studies (occurrence of marine mammals and sea birds) were collected from NAFO Regulatory area Div. 3L during the survey aboard *Vizconde de Eza*. 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).

Stratified mean catches and SD

The mean catch ($\bar{y}_i$) and the variance (Var_i) are calculated by stratum by the following formulas:

$$\bar{y}_i = \sum_{j=1}^{T_i} \frac{y_j}{T_i}, \quad i = 1,\ldots,h$$

$$Var_i = \sum_{j=1}^{T_i} \frac{(y_j - \bar{y}_i)^2}{T_i - 1}, \quad i = 1,\ldots,h$$

where: y_j is the catch in haul j

T_i is the number of hauls in the stratum i

h is the total number of strata

and the stratified mean catch ($\bar{y}_i^{str}$) and the stratified variance (Var_i^{str}) by stratum are obtained as follow:

$$\bar{y}_i^{str} = \bar{y}_i n_i, \quad i = 1,\ldots,h$$

$$Var_i^{str} = Var_i \frac{n_i^2}{T_i}, \quad i = 1,\ldots,h$$

where: n_i is the area of the stratum i , $i = 1,\ldots,h$

Then the total stratified mean catch ($\bar{y}$) and the variance (Var) by year are calculated according to the formulas:

$$\bar{Y} = \sum_{i=1}^{h} \frac{\bar{y}_i^{str}}{N}$$

$$Var = \sum_{i=1}^{h} \frac{Var_i^{str}}{N^2}$$

where: $N = \sum_{i=1}^{h} n_i$ is the total area by year

The stratified standard deviation (SD) by year is calculated as the square root of the stratified variance by year.

Results

In 2023, the bottom trawl survey in Div. 3L (Flemish pass) of NAFO Regulatory Area was carried out on board R/V *Vizconde de Eza* using the usual survey gear (*Campelen 1800*) from August 9st to 27st and following the same procedure as in previous years. A total of 100 hauls (5 of them nulls) were performed in a depth range of 129-1481m. (Table 1).

Biological studies

Biological data (length, sex, sexual maturity, weight and stomach repletion degree) on 9 target species and other 46 species were collected from Div. 3L in 2023 (16800 individuals sampled).

Maturity and fecundity – 193 samples for histological maturity and fecundity of Greenland halibut and roughhead grenadier were taken.

Age and Growth – otoliths (1184 samples) of Greenland halibut, American plaice, roughhead grenadier and cod were collected for growth studies.

Northern shrimp - The detailed results for Northern shrimp, the most abundant species in the catches of all surveys, were presented in Casas *et al*., 2023.

Hydrographic Studies

Temperature and salinity were measured in each haul by means of CTD ((SBE25+ SEALOGGER CTD). Hydrographic profile samplings were performed at 97 fishing stations in a depth range of 93-1463 m. The minimum and maximum observed temperatures were –0.26 and 3.72ºC respectively and the observed salinity range was 33.50 - 34.91 PSU. Results are presented in MEDS (Marine Environmental Data Service of Canada) every year.

Special studies

Benthic invertebrate

The study of benthic invertebrates was performed as a routine work during the survey (catch in weight and number, photographs and collection for study in the laboratory). This study will help us to have more knowledge about these species and their relation to the marine environment in the surveyed area.

Marine mammals and sea birds

Observations and incidental catches of marine mammals occasionally occurred were recorded during fishing time in the surveyed area of Flemish Pass. Occurrence, date, position, number, Tª, fishing time and other data were collected related to marine mammals throughout the survey. In 17 hauls observations of marine mammals species were recorded. *Physeter macrocephalus, Hyperoodon Ampullatus and Globicephala melas* were the most common marine mammals. (Román *et al.,* 2015; Roman-Marcote *et al*. 2020c).

Regarding seabirds, information about species, and incidental catches was also collected in the surveyed area. This will help us get a better understanding of these species, their relation to the marine environment and the interaction of seabirds with fishing. *Fulmarus glacialis, Puffinus gravis, Puffinus grisseus, Morus bassanus and Catharacta skua* were the most common seabird species.

Genetic studies

DNA tissue samples were taken for morphological and molecular identification of the species of the order Rajiformes and Chimaeriformes in the study area.

Results for Greenland halibut, American plaice, witch flounder Atlantic cod, redfish, roughhead grenadier, thorny skate and black dogfish are presented in this report. Most of the tables present the last years of survey, while most of the figures include the whole series of data.

Information from the previous years is available in Roman-Marcote *et al.* (2020a, 2020b).

Greenland halibut (*Reinhardtius hippoglossoides* Walbaum, 1792)

The Greenland halibut stock in Subarea 2 and Div. 3KLMNO is considered to be part of a biological stock complex, which includes Subareas 0 and 1. Fishery status (Div. 3L): TAC for 2023 is 15156 tonnes (NAFO, 2023).

Mean catches and biomass

Table 3 shows the swept area, the tow number, the mean catches and their variance per haul and year (2016-2023) for Greenland halibut. Table 11 and Figure 2 present the stratified mean catches per stratum with the total variance per year. Table 19 and Figure 2 present the abundance, the biomass per swept area per stratum and their total variance per year. Table 27 presents the length-weight relationships (2014-2023).

The biomass of the Greenland halibut has had an increase in the surveyed area along the whole period, reaching the maximum values in the series in 2017 and 2019. The biomass index for the survey increased from 2006 to 2008. After declining to lower levels in 2011 and 2012 it increased to a time series high in 2017 before declining substantially in 2018. In 2019 there was a great increase in the biomass index (second highest value) and 2023 the Greenland halibut biomass decrease again (13487 tons.).

The biomass presents the same trend as mean catches since the year 2004. In 2003, the mean catch does not follow the same pattern; this was probably due to the less area covered in 2003 survey (Figure 2).

The abundance index shows the same trend as biomass since 2003 (Figure 2), in 2016 this index does not follow the same pattern due to the presence of smaller individuals (<15 cm). Figure 5 shows a map with the distribution of Greenland halibut catches per haul in 2023 Spanish 3L survey.

Length distribution

Table 30 presents the stratified mean catches per haul length distribution for the Greenland halibut, by sex and year (2017-2023), with the number of samples in which there were length measures, the total number of individuals measured in these samples, the sampled catch and the range of lengths met, as well as the total catch of this species and the total valid hauls made in the survey. In 2013, 2014, 2017 and 2018 there is a quite good presence of small individuals (<30cm). In 2018 and 2019 we have the best presence of small individuals (11-15cm.).

In the 2023 the mode was 14 and 40 cm and the length range 10-90 cm. Females attain larger lengths than males in all years. In Figures 6 and 14 the evolution along the years can be followed.

American plaice (*Hippoglossoides platesoides* Fabricius, 1780)

American plaice are distributed within Divisions 3LMNO and managed as two separate stocks: 3LNO and 3M. As bycatch, it is primarily caught in the cod and redfish fisheries. Fishery status (Div. 3L): There was no fishing targeting American plaice in 1994 and it has been under moratorium (no directed fishery) since 1995 (NAFO, 2023).

Mean catches and biomass

American plaice haul mean catches by stratum are presented in Table 4, including swept area, number of hauls and SD. Stratified mean catches per tow by stratum and year and their variance are presented in Table 12.

The time series (2016-2023) of biomass and their SD estimates of American plaice are shown in Table 20. Length-weight relationships are presented in Table 27 (2014-2023).

The American plaice indices showed a general increasing trend in the prospected area since 2004 (Figure 2). But in 2010 this increasing trend was broken and the value was below the 2006 value, following by an increase in 2011-2015. The American plaice indices showed a decreasing since 2015 but in 2023 it increased (10439 t.). The highest values in the estimated biomass have been observed in the shallowest strata, in a range of depth from 93 to 274 meters. The abundance index shows the same trend as biomass (Figure 2), in 2023 this index does not follow the same pattern due to the presence of larger individuals.

Figure 5 shows a map with the distribution of American plaice catches per haul in 2023 Spanish 3L survey.

Length distribution

Table 31 presents the stratified mean catches per haul length distribution by sex and year (2017-2023). They present also the number of samples in which length measurements were performed, the total number of individuals measured in these samples, the sampled catch and the range of lengths found. The total catch of this species and the total valid hauls made in the survey are shown too. In Figures 7 and 14 the evolution along the years can be followed. From 2014-2017, it can be seen a great increase of small individuals (individuals <20 cm); in 2023, the mode was 12 and 34 cm and the length range 6-60 cm. There is higher proportion of females (79.1%) than males (19.1%).

Witch flounder (*Glyptocephalus cynoglossus* Linnaeus, 1758)

Witch flounder are distributed within and managed as two separate stocks in Divisions 3NO and 2J3KL, though a TAC is only assigned for 3L. Fishery status (Div. 3L): A moratorium (no directed fishery) has remained in place since it was declared in 2004 and no directed fishing for 2018 to 2019 to allow for stock rebuilding. (NAFO, 2023).

Mean catches and biomass

Table 5 shows the swept area, the tow number, the mean catches and their variance per haul and year (2016-2023) for witch flounder. Table 13 and Figure 2 present the stratified mean catches per stratum with the total variance per year. Table 21 and Figure 2 present the abundance and biomass per swept area per stratum and their total variance per year. Parameters *a* and *b* estimated values of length-weight distribution are presented in Table 27 (2014-2023). Figure 5 shows a map with the distribution of the witch flounder catches per haul in 2023 Spanish 3L survey.

Witch flounder indices show no clear trend throughout the period 2003-2023, the index peaked in 2010 and 2015. Estimated biomass ranged from 691 t in 2010 to 297 t and 298 t in 2003 and 2007 respectively; although most estimate results come from few strata. The witch flounder indices show a decreasing since 2015 although in 2023 they increase (513 t. of biomass). The stratified mean catches per stratum followed similar trends as the biomass and abundance indices (Figure 2).

Length distribution

Table 32 presents the stratified mean catches per haul length distribution for this species, by sex and year (2017-2023), with the number of samples in which there were length measures, the total number of individuals measured in these samples, the sampled catch and the range of lengths met, as well as the total catch of this species and the total valid hauls made in the survey. In Figures 8 and 14 we can follow the evolution along the years.

In the 2023 the mode was 31 cm and the length range 9-58 cm. The highest recruitment was in 2003, but since then the number of younger individuals has declined.

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). Fishery status (Div. 3L): A moratorium (no directed fishery) has remained in place since it was declared in 1994 (NAFO, 2023).

Mean catches and biomass

Table 6 shows the swept area, the tow number, the mean catches and their variance per haul by stratum for Atlantic cod. Table 14 and Figure 3 present the stratified mean catches by stratum and year with their total variance. The time series (2016-2023) of biomass and their total variance for Atlantic cod are presented in Table 22 and Figure 3. Estimated parameters values of length-weight relationship are presented in Table 28 (2014-2023).

Figure 5 shows a map with the distribution of Atlantic cod catches per haul in 2023 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 (2003-2023). 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 level. In 2023 the indices show a slight increase.

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 33 presents the length distribution of stratified mean catches per haul for this species, by sex and year (2006-2023), 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 9 and 15 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 2023, the dominant lengths were between 24 and 42 cm and the mode 24 cm. No large recruitments have been observed since 2008.

Roughhead grenadier (*Macrourus berglax* Lacépède, 1802)

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. Fishery status (Div. 3L): is not a regulated species (NAFO, 2023).

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 15. The time series (2016-2023) of biomass and their SD estimates of this species are shown in Table 23 and length-weight relationships are shown in Table 28 (2014-2023).

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 and increase in 2023 (Figure 3). Figure 5 shows a map with the distribution of roughhead grenadier catches per haul in 2023 Spanish 3L survey.

Length distribution

Table 34 shows the stratified mean catches per haul length distribution, for roughhead grenadier, by sex and year (2017-2023), 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 10 and 15 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 2023, the mode observed was 18 and the dominant lengths were between 15 and 19.5 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. Fishery status (Div. 3L): The moratorium (no directed fishery) was lifted in 2010 and TAC has gradually increased to 18 100 tonnes in 2022 (NAFO, 2023).

Mean catches and biomass

Table 8 shows the swept area, the tow number, the mean catches per haul and year (2016-2023) and their variance for redfish. Table 16 and Figure 3 present the stratified mean catches per stratum with the total variance per year. Figure 5 shows a map with the distribution of redfish catches per haul in 2023 Spanish 3L survey.

Table 24 and Figure 3 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). In 2023, the redfish indices increase slightly.

The length-weight relationships are presented in Table 28 (2014-2023).

Length distribution

Table 35 presents the length distribution of the stratified mean catches per haul for redfish, by sex and year (2017-2023), 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 11 and 15 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 2023, the mode observed was 21 cm and the dominant lengths were between 19-23 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. Fishery status (Div. 3L): The TAC is set at 7 000 tonnes for 2022 (NAFO, 2023).

Mean catches and biomass

Table 9 shows the swept area, the tow number, the mean catches per haul and year (2016-2023) and their variance for thorny skate. Table 29 presents the length-weight relationships (2014-2023). Table 17 and Figure 4 present the stratified mean catches per stratum with the total variance per year. Table 25 and Figure 4 present the biomass per swept area by stratum and year, their total variance per year and the abundance index. Since 2017, the biomass index has been at very low levels. 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. In 2023 the biomass increase sharply again, reaching the fourth highest value of the series (10711 t. of biomass).

Figure 5 shows a map with the distribution of thorny skate catches per haul in 2023 Spanish 3L survey.

Length distribution

Table 36 presents the stratified mean catches per haul length distribution for this species, by sex and year (2017-2023), 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 12 and 16, 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 11-90 cm thorny skates (mode: 71 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 10, including swept area, number of hauls and SD. Stratified mean catches per tow by stratum and year and their variance are presented in Table 18. The time series (2016-2023) of biomass and their SD estimates of black dogfish are shown in Table 26. Length-weight relationships are presented in Table 29 (2014-2023).

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. From 2016 to 2019 the indices decreased and they have been relatively stable at very low levels (Figure 4). In 2023 the indices increased.

Figure 5 shows a map with the distribution of black dogfish catches per haul in 2023 Spanish 3L survey.

Length distribution

Table 37 presents the length distribution of the stratified mean catches per haul for black dogfish, by sex and year (2017-2023), 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 13 and 16 the evolution throughout the years can be followed.

In the 2023, the length range caught in the survey was 43-82 cm black dogfish (mode: 66 cm.). There is no presence of small individual (smaller 37 cm) in time serie.

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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.

BISHOP, C.A. 1994. Revision and additions to stratification schemes used during research vessel surveys in NAFO Subareas 2 and 3. *NAFO SCR Doc*., No 43, Serial No N2413, 23 p.

CASAS, J. M, E. Román, and M. Álvarez. 2023. Northern Shrimp (Pandalus borealis, Krøyer) from Spanish Bottom Trawl Survey 2023 in NAFO Divisions 3LNO. SCIENTIFIC COUNCIL AND STACFIS SHRIMP ASSESSMENT MEETING – SEPTEMBER 2023. NAFO SCR Doc. No.54, Serial Nº N7454, 14 pp.

COCHRAM, W. G. 1997. Sampling techniques. J. Wiley and Sons, N. Y., 23 p.

DOUBLEDAY,W.G. 1981.Manual on groundfish surveys in the Northwest Atlantic. *NAFO Sci.Coun.Studies*, **2**, 55.

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.

ROMAN, E., B. Santos and P. Quelle. 2015. Variación interanual en la presencia de cetáceos en la division 3L del area de regulación de la Northwest Atlantic Fisheries Organization (NAFO, Flemish Pass). Viii Congreso de la Sociedad Española de Cetáceos (2-4 octubre de 2015).

ROMAN-MARCOTE (a), 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. SCIENTIFIC COUNCIL MEETING – JUNE 2020. NAFO SCR Doc. 20/013, Serial No. N7057.

ROMAN-MARCOTE (b), E., D. González-Troncoso and M. Alvarez. 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. SCIENTIFIC COUNCIL MEETING – JUNE 2020. NAFO SCR Doc. 20/014, Serial No. N7059.

ROMAN-MARCOTE (c), E., P. Durán Muñoz and M. Sacau. 2020. Preliminary information from EU-Spain surveys in Div 3L regarding Commission request #18: "Provide information to the Commission at its next annual meeting on sea turtles, seabirds, and marine mammals that are present in NAFO Regulatory Area based on available data". 2020. SCIENTIFIC COUNCIL MEETING – JUNE 2020.NAFO SCR Doc. 20/023REV, Serial No. N7069.

NAFO, 2023. Report of the Scientific Council Meeting, 2-15 May 2023 (Halifax - Nova Scotia - Canada). NAFO SCS Doc. 23/18, Serial No. N7438

Table 1. Spanish bottom trawl surveys in NAFO Division 3L for the period 2003-2023.

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	No survey - Technical problems with the research vessel.				
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
2020	No survey - Exceptional pandemic situation caused by COVID 19				
2021	No survey - Exceptional pandemic situation caused by COVID 19				
2022	No survey - Technical problems with the research vessel.				
2023	R/V "*Vizconde de Eza"*	95	129-1481	24	August 9 - August 27

Table 2. Technical data of the Spanish survey in NAFO Division 3L for the period 2003-2023.

Procedure	**Specification**
Vessel	R/V *"Vizconde de Eza"*
GT	1400 t.
Power	1800 HP
Surveyed area	Div. 3L (depth < 1500 m, outside ZEE Canada)
Mean trawl speed	3 knots
Trawling time	30 minutes effective time
Fishing gear type	*Campelen 1800*
Headline	29.5 m
Groundrope	19.5 m
Type of groundrope	34 rockhopper
Floats	(2 x 39) + 10
Bridle	40 m (20 mm)
Vertical opening	4-5
Horizontal opening	26
Trawl doors	Polyvalent, 1400 Kg
Warp	20 mm
Warp to depth ratio	22.287 * Depth (m)$^{0.6667}$
Mesh size in the cod-end	44 mm
Type of survey:	Stratified random bottom trawl survey
Criterion to change position of a selected tow	Unsuitable bottom for trawling according to commercial fish information or ecosonder register. Information on gear damage from previous surveys.
Criterion to reject data from tow	- Severe tears in the gear - tears in cod-end - Less of 20 minutes tow - Bad behaviour of the gear
Daily period for fishing	6.00 to 22.00 hours
Target species	Greenland halibut, American plaice, Atlantic cod, roughhead grenadier, witch flounder, thorny skate, redfish, black dogfish, northern shrimp.

Table 3. Swept area, number of hauls and **Greenland halibut** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2016-2023, on board R/V "*Vizconde de Eza*".

	2016				2017				2018				2019				2023			
Stratum	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	0.326	0.402	0.0225	2	2.994	3.474	0.0221	2	11.600	4.596	0.0225	2	15.445	3.331	0.0233	2	16.160	12.070
387	0.0454	4	24.744	10.347	0.0446	4	30.778	6.103	0.0465	4	17.894	14.002	0.0450	4	18.363	5.800	0.0450	4	5.145	0.668
388	0.0570	5	20.479	21.629	0.0566	5	24.755	20.232	0.0566	5	16.672	7.357	0.0559	5	29.247	33.782	0.0570	5	3.138	1.372
389	0.0814	7	13.803	5.760	0.0799	7	36.392	17.680	0.0803	7	22.186	5.226	0.0784	7	13.952	7.032	0.0795	7	11.606	4.153
390	0.1391	12	0.647	1.048	0.1369	12	0.430	0.584	0.1358	12	5.758	7.635	0.1125	10	7.417	7.085	0.0926	8	4.564	2.079
391	0.0469	4	9.586	6.731	0.0458	4	12.446	11.267	0.0458	4	29.575	8.078	0.0450	4	25.552	16.731	0.0465	4	19.653	10.905
392	0.0233	2	13.075	4.702	0.0229	2	62.074	52.360	0.0229	2	14.000	5.445	0.0229	2	62.140	40.885	0.0229	2	15.777	8.014
729	0.0341	3	5.133	2.926	0.0345	3	39.678	27.201	0.0341	3	19.350	5.921	0.0338	3	10.667	5.948	0.0345	3	15.938	11.418
730	0.0233	2	17.350	4.738	0.0341	3	29.547	13.488	0.0330	3	33.700	12.988	0.0338	3	58.533	13.455	0.0225	2	52.725	27.655
731	0.0345	3	8.324	3.063	0.0338	3	51.183	15.365	0.0353	3	27.428	9.712	0.0341	3	23.926	15.876	0.0345	3	25.874	17.939
732	0.0454	4	37.100	9.792	0.0446	4	57.010	17.882	0.0461	4	27.092	11.860	0.0454	4	52.478	19.796	0.0458	4	47.255	6.885
733	0.0458	4	11.526	5.815	0.0450	4	26.257	10.222	0.0454	4	30.242	20.540	0.0450	4	22.738	5.931	0.0458	4	7.828	3.049
734	0.0229	2	15.419	11.199	0.0225	2	39.400	7.212	0.0225	2	27.940	4.327	0.0229	2	26.450	1.131	0.0236	2	28.862	5.541
741	0.0233	2	56.250	5.162	0.0225	2	75.867	22.773	0.0229	2	33.410	1.895	0.0225	2	44.485	33.255	0.0233	2	55.135	3.627
742	0.0229	2	38.513	22.609	0.0225	2	46.225	6.399	0.0221	2	36.369	20.491	0.0221	2	39.693	40.528	0.0233	2	37.650	8.881
743	0.0229	2	29.875	34.935	0.0229	2	96.145	32.393	0.0225	2	23.365	2.440	0.0225	2	59.725	20.966	0.0236	2	72.835	13.485
744	0.0229	2	84.505	82.442	0.0221	2	105.601	65.052	0.0229	2	26.188	24.193	0.0225	2	42.385	39.407	0.0233	2	55.987	36.963
745	0.0574	5	31.402	6.866	0.0559	5	43.750	25.418	0.0596	5	21.985	11.365	0.0578	5	45.894	20.251	0.0574	5	34.240	15.783
746	0.0690	6	30.953	18.928	0.0683	6	49.232	11.599	0.0698	6	32.570	13.006	0.0679	6	32.247	22.674	0.0686	6	43.549	22.571
747	0.1140	10	30.581	27.694	0.1125	10	42.505	35.682	0.1140	10	12.780	4.729	0.1125	10	24.155	19.948	0.1133	10	15.362	11.283
748	0.0233	2	35.050	20.435	0.0225	2	70.221	68.307	0.0225	2	20.712	13.277	0.0225	2	76.625	72.231	0.0229	2	102.295	77.280
749	0.0233	2	18.750	12.516	0.0229	2	16.025	7.248	0.0225	2	8.035	5.112	0.0221	2	19.175	1.591	0.0229	2	22.320	10.663
750	0.0930	8	28.781	11.395	0.0934	8	36.150	22.967	0.0904	8	23.887	6.916	0.0788	7	43.061	15.592	0.0904	8	26.341	24.677
751	0.0345	3	36.900	14.535	0.0349	3	33.517	17.830	0.0454	4	61.608	93.564	0.0338	3	44.700	23.718	0.0454	4	38.103	26.082

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

Table 4. Swept area, number of hauls and **American plaice** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2016-2023, on board R/V "*Vizconde de Eza*".

	2016				2017				2018				2019				2023			
Stratum	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	311.53	38.28	0.0225	2	2142.92	0.02	0.0221	2	2148.66	0.02	0.0225	2	1321.38	0.02	0.0233	2	2131.93	0.02
387	0.0454	4	8.06	10.31	0.0446	4	166.91	0.04	0.0465	4	160.00	0.05	0.0450	4	133.00	0.05	0.0450	4	71.38	0.05
388	0.0570	5	6.73	1.57	0.0566	5	494.00	0.06	0.0566	5	291.53	0.06	0.0559	5	425.00	0.06	0.0570	5	33.53	0.06
389	0.0814	7	66.58	53.13	0.0799	7	7509.59	0.08	0.0803	7	2641.51	0.08	0.0784	7	2424.75	0.08	0.0795	7	562.00	0.08
390	0.1391	12	60.65	56.90	0.1369	12	6203.32	0.14	0.1358	12	5074.08	0.14	0.1125	10	3076.25	0.11	0.0926	8	2739.36	0.09
391	0.0469	4	100.31	126.76	0.0458	4	3980.20	0.05	0.0458	4	4340.73	0.05	0.0450	4	1815.33	0.05	0.0465	4	503.00	0.05
392	0.0233	2	1.01	0.00	0.0229	2	51.00	0.02	0.0229	2	10.00	0.02	0.0229	2	158.00	0.02	0.0229	2	0.00	0.02
729	0.0341	3	0.00	0.00	0.0345	3	0.00	0.03	0.0341	3	0.00	0.03	0.0338	3	0.00	0.03	0.0345	3	0.00	0.03
730	0.0233	2	0.00	0.00	0.0341	3	0.00	0.03	0.0330	3	0.00	0.03	0.0338	3	0.00	0.03	0.0225	2	0.00	0.02
731	0.0345	3	3.63	5.49	0.0338	3	5.00	0.03	0.0353	3	3.00	0.04	0.0341	3	17.00	0.03	0.0345	3	0.00	0.03
732	0.0454	4	0.00	0.00	0.0446	4	4.00	0.04	0.0461	4	0.00	0.05	0.0454	4	0.00	0.05	0.0458	4	0.00	0.05
733	0.0458	4	0.00	0.00	0.0450	4	10.00	0.05	0.0454	4	0.00	0.05	0.0450	4	22.00	0.05	0.0458	4	10.00	0.05
734	0.0229	2	0.00	0.00	0.0225	2	0.00	0.02	0.0225	2	0.00	0.02	0.0229	2	0.00	0.02	0.0236	2	0.00	0.02
741	0.0233	2	0.00	0.00	0.0225	2	0.00	0.02	0.0229	2	0.00	0.02	0.0225	2	0.00	0.02	0.0233	2	0.00	0.02
742	0.0229	2	0.00	0.00	0.0225	2	0.00	0.02	0.0221	2	0.00	0.02	0.0221	2	0.00	0.02	0.0233	2	0.00	0.02
743	0.0229	2	0.00	0.00	0.0229	2	0.00	0.02	0.0225	2	0.00	0.02	0.0225	2	0.00	0.02	0.0236	2	0.00	0.02
744	0.0229	2	0.00	0.00	0.0221	2	0.00	0.02	0.0229	2	0.00	0.02	0.0225	2	0.00	0.02	0.0233	2	0.00	0.02
745	0.0574	5	0.00	0.00	0.0559	5	0.00	0.06	0.0596	5	0.00	0.06	0.0578	5	0.00	0.06	0.0574	5	0.00	0.06
746	0.0690	6	0.00	0.00	0.0683	6	0.00	0.07	0.0698	6	0.00	0.07	0.0679	6	0.00	0.07	0.0686	6	0.00	0.07
747	0.1140	10	0.00	0.00	0.1125	10	0.00	0.11	0.1140	10	0.00	0.11	0.1125	10	0.00	0.11	0.1133	10	0.00	0.11
748	0.0233	2	0.00	0.00	0.0225	2	0.00	0.02	0.0225	2	0.00	0.02	0.0225	2	0.00	0.02	0.0229	2	0.00	0.02
749	0.0233	2	0.00	0.00	0.0229	2	0.00	0.02	0.0225	2	0.00	0.02	0.0221	2	0.00	0.02	0.0229	2	0.00	0.02
750	0.0930	8	0.00	0.00	0.0934	8	0.00	0.09	0.0904	8	0.00	0.09	0.0788	7	0.00	0.08	0.0904	8	0.00	0.09
751	0.0345	3	0.00	0.00	0.0349	3	0.00	0.03	0.0454	4	0.00	0.05	0.0338	3	0.00	0.03	0.0454	4	0.00	0.05

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

Table 5. Swept area, number of hauls and **Witch flounder** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2016-2023, on board R/V "*Vizconde de Eza*".

	2016				2017				2018				2019				2023			
Stratum	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	0.50	0.71	0.0225	2	0.00	0.00	0.0221	2	0.48	0.68	0.0225	2	0.00	0.00	0.0233	2	0.56	0.79
387	0.0454	4	2.57	1.14	0.0446	4	1.16	1.38	0.0465	4	3.18	1.67	0.0450	4	1.97	1.90	0.0450	4	2.70	1.13
388	0.0570	5	2.82	3.53	0.0566	5	0.87	0.72	0.0566	5	0.53	0.38	0.0559	5	1.04	0.45	0.0570	5	2.23	1.20
389	0.0814	7	0.08	0.18	0.0799	7	0.00	0.01	0.0803	7	0.16	0.20	0.0784	7	0.60	0.48	0.0795	7	0.44	0.57
390	0.1391	12	0.00	0.00	0.1369	12	0.02	0.08	0.1358	12	0.18	0.63	0.1125	10	0.00	0.00	0.0926	8	0.00	0.00
391	0.0469	4	0.00	0.00	0.0458	4	0.00	0.00	0.0458	4	0.77	0.96	0.0450	4	0.00	0.00	0.0465	4	0.00	0.00
392	0.0233	2	1.56	2.16	0.0229	2	0.33	0.46	0.0229	2	1.93	2.72	0.0229	2	1.04	0.27	0.0229	2	1.65	0.70
729	0.0341	3	9.28	2.97	0.0345	3	2.76	1.00	0.0341	3	5.11	3.12	0.0338	3	2.31	1.43	0.0345	3	1.91	1.00
730	0.0233	2	0.26	0.36	0.0341	3	0.28	0.48	0.0330	3	1.40	1.68	0.0338	3	0.69	1.20	0.0225	2	2.36	3.33
731	0.0345	3	3.98	3.88	0.0338	3	4.62	2.71	0.0353	3	2.36	2.24	0.0341	3	2.96	2.34	0.0345	3	2.58	2.35
732	0.0454	4	5.68	2.50	0.0446	4	4.06	3.35	0.0461	4	1.21	1.35	0.0454	4	0.59	0.69	0.0458	4	6.65	2.44
733	0.0458	4	4.07	2.72	0.0450	4	5.74	6.81	0.0454	4	1.95	2.03	0.0450	4	0.85	0.63	0.0458	4	3.91	4.11
734	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0225	2	0.27	0.37	0.0229	2	0.08	0.11	0.0236	2	0.00	0.00
741	0.0233	2	0.00	0.00	0.0225	2	0.00	0.00	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0233	2	0.24	0.33
742	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0221	2	0.00	0.00	0.0221	2	0.00	0.00	0.0233	2	0.00	0.00
743	0.0229	2	0.00	0.00	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0225	2	0.00	0.00	0.0236	2	0.00	0.00
744	0.0229	2	0.00	0.00	0.0221	2	0.00	0.00	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0233	2	0.00	0.00
745	0.0574	5	0.01	0.01	0.0559	5	0.21	0.46	0.0596	5	0.02	0.04	0.0578	5	0.04	0.08	0.0574	5	0.01	0.03
746	0.0690	6	0.00	0.00	0.0683	6	0.00	0.00	0.0698	6	0.00	0.00	0.0679	6	0.00	0.00	0.0686	6	0.01	0.02
747	0.1140	10	0.00	0.00	0.1125	10	0.00	0.00	0.1140	10	0.00	0.00	0.1125	10	0.00	0.00	0.1133	10	0.00	0.00
748	0.0233	2	0.00	0.00	0.0225	2	0.34	0.48	0.0225	2	0.00	0.00	0.0225	2	0.49	0.69	0.0229	2	0.00	0.00
749	0.0233	2	0.00	0.00	0.0229	2	0.00	0.00	0.0225	2	0.00	0.00	0.0221	2	0.00	0.00	0.0229	2	0.00	0.00
750	0.0930	8	0.00	0.00	0.0934	8	0.00	0.00	0.0904	8	0.00	0.00	0.0788	7	0.00	0.00	0.0904	8	0.08	0.24
751	0.0345	3	0.00	0.00	0.0349	3	0.00	0.00	0.0454	4	0.00	0.00	0.0338	3	0.00	0.00	0.0454	4	0.00	0.00

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

Table 6. Swept area, number of hauls and **Atlantic cod** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2016-2023, on board R/V "*Vizconde de Eza*".

	2016				2017				2018				2019				2023			
Stratum	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	0.0233	2	5.937	2.788
387	0.0454	4	64.128	110.507	0.0446	4	3.608	3.116	0.0465	4	5.029	4.248	0.0450	4	10.398	14.693	0.0450	4	19.117	28.477
388	0.0570	5	13.467	11.849	0.0566	5	14.505	8.081	0.0566	5	7.337	4.492	0.0559	5	19.525	11.007	0.0570	5	14.932	8.632
389	0.0814	7	25.386	33.591	0.0799	7	10.561	10.033	0.0803	7	16.829	18.110	0.0784	7	22.887	14.423	0.0795	7	38.565	25.121
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	0.0926	8	6.453	5.704
391	0.0469	4	23.023	14.537	0.0458	4	27.195	10.815	0.0458	4	15.435	13.636	0.0450	4	21.082	15.790	0.0465	4	30.151	15.208
392	0.0233	2	23.726	29.803	0.0229	2	6.679	2.147	0.0229	2	0.605	0.856	0.0229	2	6.690	9.461	0.0229	2	0.999	0.409
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	0.0345	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	0.0225	2	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	0.0345	3	0.000	0.000
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	0.0458	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	0.0458	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	0.0236	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	0.0233	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	0.0233	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	0.0236	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	0.0233	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	0.0574	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	0.0686	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	0.1133	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	0.0229	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	0.0229	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	0.0904	8	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	0.0454	4	0.000	0.000

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

Table 7. Swept area, number of hauls and **roughead grenadier** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2016-2023, on board R/V "*Vizconde de Eza*".

	2016				2017				2018				2019				2023			
Stratum	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	0.0233	2	0.000	0.000
387	0.0454	4	86.830	82.494	0.0446	4	53.387	40.728	0.0465	4	19.704	8.192	0.0450	4	24.088	12.740	0.0450	4	66.918	31.948
388	0.0570	5	35.766	30.573	0.0566	5	26.894	27.237	0.0566	5	21.716	20.521	0.0559	5	15.736	5.413	0.0570	5	31.090	36.791
389	0.0814	7	6.013	9.722	0.0799	7	1.402	1.889	0.0803	7	4.866	5.069	0.0784	7	6.217	5.173	0.0795	7	4.985	8.201
390	0.1391	12	0.000	0.000	0.1369	12	0.033	0.113	0.1358	12	0.000	0.000	0.1125	10	0.359	1.135	0.0926	8	4.691	11.541
391	0.0469	4	11.432	21.534	0.0458	4	18.830	35.182	0.0458	4	26.172	18.273	0.0450	4	23.775	31.414	0.0465	4	14.142	16.371
392	0.0233	2	75.048	61.875	0.0229	2	69.358	21.698	0.0229	2	16.375	3.076	0.0229	2	28.400	24.890	0.0229	2	69.295	11.066
729	0.0341	3	14.300	8.602	0.0345	3	29.106	16.933	0.0341	3	15.778	6.335	0.0338	3	10.511	3.245	0.0345	3	11.902	9.202
730	0.0233	2	61.225	59.857	0.0341	3	39.938	14.378	0.0330	3	66.719	70.948	0.0338	3	12.202	4.251	0.0225	2	18.500	4.653
731	0.0345	3	27.651	19.134	0.0338	3	13.683	8.312	0.0353	3	17.212	4.727	0.0341	3	11.883	5.643	0.0345	3	14.975	3.033
732	0.0454	4	20.278	13.418	0.0446	4	10.040	6.175	0.0461	4	7.020	2.783	0.0454	4	12.042	9.860	0.0458	4	24.900	11.201
733	0.0458	4	30.175	28.753	0.0450	4	26.280	19.843	0.0454	4	12.040	6.061	0.0450	4	11.486	7.625	0.0458	4	21.218	14.111
734	0.0229	2	41.999	12.746	0.0225	2	19.190	1.994	0.0225	2	6.545	0.537	0.0229	2	15.461	12.188	0.0236	2	70.028	25.065
741	0.0233	2	9.085	1.908	0.0225	2	20.238	14.867	0.0229	2	4.940	2.319	0.0225	2	1.464	0.600	0.0233	2	19.812	7.536
742	0.0229	2	11.617	4.275	0.0225	2	15.564	5.793	0.0221	2	9.074	3.173	0.0221	2	6.604	0.492	0.0233	2	11.082	3.607
743	0.0229	2	23.727	27.257	0.0229	2	24.673	3.386	0.0225	2	5.864	4.167	0.0225	2	11.168	5.312	0.0236	2	23.810	23.095
744	0.0229	2	24.545	7.149	0.0221	2	6.461	1.278	0.0229	2	4.529	6.299	0.0225	2	3.008	3.949	0.0233	2	34.262	15.554
745	0.0574	5	14.965	10.561	0.0559	5	14.752	13.785	0.0596	5	9.617	7.015	0.0578	5	9.537	6.107	0.0574	5	23.987	11.633
746	0.0690	6	14.967	13.081	0.0683	6	13.424	9.070	0.0698	6	13.844	10.458	0.0679	6	16.959	7.407	0.0686	6	28.393	16.524
747	0.1140	10	15.779	8.000	0.1125	10	23.644	16.516	0.1140	10	15.856	8.129	0.1125	10	18.263	8.231	0.1133	10	18.536	8.036
748	0.0233	2	26.050	23.688	0.0225	2	82.186	100.955	0.0225	2	80.502	7.851	0.0225	2	13.960	12.714	0.0229	2	44.945	44.102
749	0.0233	2	28.400	22.627	0.0229	2	19.075	6.824	0.0225	2	24.125	9.228	0.0221	2	24.231	10.580	0.0229	2	42.160	7.353
750	0.0930	8	8.830	4.778	0.0934	8	17.880	19.526	0.0904	8	11.148	5.852	0.0788	7	11.982	7.043	0.0904	8	10.675	4.221
751	0.0345	3	10.460	9.545	0.0349	3	5.000	4.070	0.0454	4	18.893	6.623	0.0338	3	13.150	7.002	0.0454	4	20.008	8.859

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

Table 8. Swept area, number of hauls and **redfish** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2016-2023, on board R/V "*Vizconde de Eza*".

	2016				2017				2018				2019				2023			
Stratum	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	1.715	2.425	0.0221	2	0.152	0.215	0.0225	2	0.015	0.018	0.0233	2	0.119	0.168
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	0.0450	4	1102.138	378.687
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	0.0570	5	1030.016	744.108
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	0.0795	7	69.859	107.498
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	0.0926	8	0.738	1.035
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	0.0465	4	151.935	105.724
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	0.0229	2	1667.520	431.802
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	0.0345	3	190.843	160.145
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	0.0225	2	20.697	3.686
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	0.0345	3	24.843	25.125
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	0.0458	4	1.361	1.450
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	0.0458	4	238.300	175.057
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	0.0236	2	4.635	2.171
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	0.0233	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	0.0233	2	0.710	1.004
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	0.0236	2	0.575	0.813
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	0.0233	2	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	0.0578	5	0.400	0.894	0.0574	5	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	0.0679	6	0.000	0.000	0.0686	6	0.341	0.531
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	0.1133	10	0.159	0.504
748	0.0233	2	1.125	0.658	0.0225	2	10.610	7.509	0.0225	2	0.545	0.770	0.0225	2	0.000	0.000	0.0229	2	1.195	1.690
749	0.0233	2	0.330	0.467	0.0229	2	0.890	0.170	0.0225	2	0.000	0.000	0.0221	2	0.000	0.000	0.0229	2	1.915	2.708
750	0.0930	8	0.000	0.000	0.0934	8	0.090	0.255	0.0904	8	0.151	0.232	0.0788	7	0.000	0.000	0.0904	8	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	0.0454	4	0.000	0.000

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

Table 9. Swept area, number of hauls and **thorny skate** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2016-2023, on board R/V "*Vizconde de Eza*".

	2016				2017				2018				2019				2023			
Stratum	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	0.0233	2	30.113	7.025
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	0.0450	4	18.495	18.344
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	0.0570	5	18.217	12.290
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	0.0795	7	30.226	11.145
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	0.0926	8	28.401	12.443
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	0.0465	4	56.239	35.029
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	0.0229	2	354.700	434.192
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	0.0345	3	2.387	2.067
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	0.0225	2	1.600	2.263
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	0.0345	3	0.005	0.009
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	0.0458	4	0.270	0.540
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	0.0458	4	4.465	5.457
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	0.0236	2	1.298	1.835
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	0.0233	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	0.0233	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	0.0236	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	0.0233	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	0.0574	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	0.0686	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	0.1133	10	0.350	1.107
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	0.0229	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	0.0229	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	0.0904	8	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	0.0454	4	0.000	0.000

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

Table 10. Swept area, number of hauls and **black dogfish** mean catch (Kg) and SD (**) by stratum. Spanish Survey on NAFO Div. 3L in the period 2016-2023, on board R/V "*Vizconde de Eza*".

	2016				2017				2018				2019				2023			
Stratum	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	0.0233	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	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	0.0570	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	0.0795	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	0.0926	8	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	0.0465	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	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	0.0345	3	0.438	0.758
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	0.0225	2	1.915	2.708
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	0.0345	3	1.380	2.390
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	0.0458	4	0.317	0.634
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	0.0458	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	0.0236	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	0.0233	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	0.0233	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	0.0236	2	0.000	0.000
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	0.0233	2	1.650	2.333
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	0.0574	5	21.556	22.586
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	0.0686	6	24.103	30.073
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	0.1133	10	7.899	6.043
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	0.0229	2	32.725	46.280
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	0.0229	2	73.075	52.672
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	0.0904	8	4.998	5.662
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	0.0454	4	1.223	1.212

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

Table 11. Stratified mean catches (Kg) and SD of **Greenland halibut** by stratum and year (2016-2023). Research Vessel *Vizconde de Eza*.

	Survey				
Stratum	2016	2017	2018	2019	2023
385	38.41	353.23	1368.80	1822.45	1906.88
387	6334.40	7879.10	4580.80	4700.80	1317.12
388	7311.00	8837.68	5951.83	10441.25	1120.19
389	7025.65	18523.75	11292.67	7101.79	5907.53
390	527.51	350.65	4692.70	6044.94	3719.76
391	2703.25	3509.63	8340.15	7205.66	5542.01
392	1895.88	9000.73	2030.00	9010.30	2287.67
729	954.80	7380.05	3599.10	1984.00	2964.53
730	2949.50	5022.93	5729.00	9950.67	8963.25
731	1797.98	11055.60	5924.38	5168.02	5588.78
732	8570.10	13169.31	6258.14	12122.36	10915.91
733	2696.97	6144.08	7076.63	5320.58	1831.64
734	2359.11	6028.20	4274.82	4046.85	4415.89
741	5625.00	7586.70	3341.00	4448.50	5513.50
742	2464.83	2958.40	2327.62	2540.32	2409.60
743	1523.60	4903.40	1191.62	3045.98	3714.59
744	5577.33	6969.67	1728.41	2797.41	3695.14
745	10927.83	15225.14	7650.78	15971.11	11915.59
746	12133.45	19298.75	12767.44	12640.69	17071.34
747	22140.64	30773.91	9252.86	17488.22	11122.23
748	5572.95	11165.06	3293.21	12183.38	16264.91
749	2362.50	2019.15	1012.41	2416.05	2812.32
750	16002.38	20099.54	13281.10	23941.76	14645.74
751	8450.10	7675.32	14108.12	10236.30	8725.47
TOTAL	137945.16	225929.97	141073.58	192629.37	154371.56
$(\bar{y})$	21.26	34.83	21.75	29.69	23.80
SD	1.57	2.48	1.90	2.25	1.96

Table 12. Stratified mean catches (Kg) and SD of **American plaice** by stratum and year (2016-2023). Research Vessel *Vizconde de Eza*.

	Survey				
Stratum	2016	2017	2018	2019	2023
385	36760.84	16470.74	18485.29	12065.80	27614.36
387	2064.58	2091.84	1998.34	1706.88	1663.68
388	2402.18	6772.08	4101.07	6628.49	902.57
389	33889.66	45430.50	19259.03	20085.43	10927.94
390	49426.69	34565.51	38088.35	29310.17	75762.40
391	28287.42	21124.27	39751.43	18437.87	3508.50
392	146.67	326.25	64.02	2315.22	0.00
729	0.00	0.00	0.00	0.00	0.00
730	0.00	0.00	0.00	0.00	0.00
731	784.08	111.17	53.28	363.46	0.00
732	0.00	22.29	0.00	0.00	0.00
733	0.00	146.48	0.00	238.39	329.94
734	0.00	0.00	0.00	0.00	0.00
741	0.00	0.00	0.00	0.00	0.00
742	0.00	0.00	0.00	0.00	0.00
743	0.00	0.00	0.00	0.00	0.00
744	0.00	0.00	0.00	0.00	0.00
745	0.00	0.00	0.00	0.00	0.00
746	0.00	0.00	0.00	0.00	0.00
747	0.00	0.00	0.00	0.00	0.00
748	0.00	0.00	0.00	0.00	0.00
749	0.00	0.00	0.00	0.00	0.00
750	0.00	0.00	0.00	0.00	0.00
751	0.00	0.00	0.00	0.00	0.00
TOTAL	153762.11	127061.12	121800.80	91151.69	120709.39
$(\bar{y})$	23.70	19.59	18.78	14.05	18.61
SD	3.82	3.06	3.35	2.28	4.01

Table 13. Stratified mean catches (Kg) and SD of **witch flounder** by stratum and year (2016-2023). Research Vessel *Vizconde de Eza*.

	Survey				
Stratum	2016	2017	2018	2019	2023
385	59.00	0.00	56.64	0.00	65.61
387	657.86	297.22	813.44	504.51	691.52
388	1005.74	311.16	188.00	369.50	794.90
389	39.41	1.96	82.39	306.64	224.18
390	0.75	19.15	148.13	0.00	0.00
391	0.00	0.00	216.22	0.00	0.00
392	226.42	47.56	279.13	150.51	239.47
729	1725.40	512.80	950.40	429.97	355.07
730	43.35	47.03	237.43	117.87	400.52
731	859.97	998.42	509.11	639.86	556.56
732	1311.39	938.15	279.91	136.35	1535.05
733	951.39	1344.27	455.66	199.31	915.82
734	0.00	0.00	40.55	12.24	0.00
741	0.00	0.00	0.00	0.00	23.50
742	0.00	0.00	0.00	0.00	0.00
743	0.00	0.00	0.00	0.00	0.00
744	0.00	0.00	0.00	0.00	0.00
745	2.30	72.73	6.68	12.81	4.45
746	0.00	0.00	0.00	0.00	2.74
747	0.00	0.00	0.00	0.00	0.00
748	0.00	53.58	0.00	77.12	0.00
749	0.00	0.00	0.00	0.00	0.00
750	0.00	0.00	0.00	0.00	46.22
751	0.00	0.00	0.00	0.00	0.00
TOTAL	6882.96	4644.05	4263.68	2956.67	5855.61
$(\bar{y})$	1.06	0.72	0.66	0.46	0.90
SD	0.15	0.15	0.11	0.07	0.12

Table 14. Stratified mean catches (Kg) and SD of **Atlantic cod** by stratum and year (2016-2023). Research Vessel *Vizconde de Eza*.

	Survey				
Stratum	2016	2017	2018	2019	2023
385	335.95	156.47	125.67	163.43	700.51
387	16416.64	923.58	1287.49	2661.82	4893.89
388	4807.65	5178.43	2619.38	6970.50	5330.87
389	12921.69	5375.40	8566.18	11649.41	19629.59
390	7144.97	7029.71	2218.91	2416.23	5259.09
391	6492.35	7668.85	4352.53	5945.05	8502.51
392	3440.27	968.38	87.73	970.05	144.78
729	0.00	0.00	0.00	0.00	0.00
730	0.00	0.00	0.00	0.00	0.00
731	1090.80	53.42	109.73	391.39	0.00
732	37.54	0.00	0.00	0.00	0.00
733	391.95	0.00	0.00	9.36	0.00
734	0.00	0.00	0.00	0.00	0.00
741	0.00	0.00	0.00	0.00	0.00
742	0.00	0.00	0.00	0.00	0.00
743	0.00	0.00	0.00	0.00	0.00
744	0.00	0.00	0.00	0.00	0.00
745	0.00	0.00	0.00	0.00	0.00
746	0.00	0.00	0.00	0.00	0.00
747	0.00	0.00	0.00	0.00	0.00
748	0.00	0.00	0.00	0.00	0.00
749	0.00	0.00	0.00	0.00	0.00
750	0.00	0.00	0.00	0.00	0.00
751	0.00	0.00	0.00	0.00	0.00
TOTAL	53079.80	27354.25	19367.60	31177.25	44461.23
$(\bar{y})$	8.18	4.22	2.99	4.81	6.85
SD	2.50	0.53	0.63	0.74	1.04

Table 15. Stratified mean catches (Kg) and SD of **roughhead grenadier** by stratum and year (2016-2023). Research Vessel *Vizconde de Eza*.

Stratum	Survey 2016	2017	2018	2019	2023
385	0.00	0.00	0.00	0.00	0.00
387	22228.42	13667.14	5044.29	6166.53	17130.88
388	12768.46	9601.16	7752.54	5617.75	11099.13
389	3060.40	713.40	2476.87	3164.53	2537.58
390	0.00	26.49	0.00	292.59	3823.37
391	3223.68	5310.06	7380.50	6704.55	3987.97
392	10881.89	10056.84	2374.38	4118.00	10047.78
729	2659.80	5413.78	2934.71	1954.98	2213.83
730	10408.25	6789.52	11342.23	2074.28	3145.00
731	5972.54	2955.60	3717.72	2566.66	3234.53
732	4684.10	2319.12	1621.62	2781.70	5751.90
733	7060.95	6149.58	2817.24	2687.67	4964.90
734	6425.85	2936.07	1001.39	2365.46	10714.21
741	908.50	2023.75	493.95	146.40	1981.15
742	743.49	996.10	580.70	422.66	709.22
743	1210.05	1258.32	299.04	569.54	1214.28
744	1619.97	426.39	298.91	198.50	2261.29
745	5207.82	5133.84	3346.58	3318.81	8347.41
746	5867.00	5262.21	5426.85	6647.73	11129.93
747	11423.78	17118.11	11479.38	13222.48	13419.77
748	4141.95	13067.57	12799.74	2219.64	7146.26
749	3578.40	2403.45	3039.75	3053.11	5312.10
750	4909.48	9941.49	6198.50	6661.83	5935.51
751	2395.34	1145.00	4326.38	3011.35	4581.89
TOTAL	131380.12	124714.98	96753.26	79966.73	140689.87
$(\bar{y})$	20.25	19.23	14.91	12.33	21.69
SD	2.61	2.46	1.38	1.06	1.73

Table 16. Stratified mean catches (Kg) and SD of **redfish** by stratum and year (2016-2023). Research Vessel *Vizconde de Eza*.

Stratum	Survey 2016	2017	2018	2019	2023
385	0.00	202.37	17.94	1.77	14.04
387	149591.30	179479.04	61244.16	68096.96	282147.20
388	367837.81	105454.23	84018.09	151678.59	367715.71
389	11770.70	23310.24	65599.19	127742.42	35558.01
390	8.49	0.14	65.34	31.38	601.67
391	28272.90	6648.08	82948.19	2921.52	42845.74
392	149481.23	162949.33	51159.63	31678.88	241790.40
729	51205.18	39851.12	7221.88	123221.90	35496.86
730	83453.00	26391.93	11815.00	4261.33	3518.41
731	161894.88	4286.88	55972.80	31797.72	5366.16
732	6365.21	3824.44	627.22	931.91	314.45
733	110073.60	78940.08	40432.04	62861.18	55762.20
734	12224.93	3566.35	957.78	1622.95	709.16
741	222.50	2706.95	0.00	0.00	0.00
742	0.00	75.52	113.28	0.00	45.44
743	0.00	0.00	0.00	0.00	29.33
744	0.00	0.00	0.00	0.00	0.00
745	140.87	84.15	43.71	139.20	0.00
746	73.17	76.05	29.73	0.00	133.74
747	0.00	0.00	0.00	0.00	115.33
748	178.88	1686.99	86.58	0.00	190.01
749	41.58	112.14	0.00	0.00	241.29
750	0.00	50.18	83.96	0.00	0.00
751	0.00	0.00	0.00	0.00	0.00
TOTAL	1132836.20	639696.20	462436.50	606987.70	1072595.14
$(\bar{y})$	174.63	98.61	71.29	93.57	165.35
SD	41.60	17.28	18.67	22.00	21.69

Table 17. Stratified mean catches (Kg) and SD of **thorny skate** by stratum and year (2016-2023). Research Vessel *Vizconde de Eza*.

	Survey				
Stratum	2016	2017	2018	2019	2023
385	896.39	365.27	529.11	2685.92	3553.28
387	8096.51	4968.96	3061.76	4061.31	4734.59
388	28282.97	17273.80	7221.40	6479.91	6503.47
389	12735.98	7438.96	5103.16	9883.98	15384.89
390	12117.49	12451.37	7511.11	9599.64	23146.82
391	8806.23	5396.78	7993.50	7083.70	15859.40
392	15232.25	7016.77	13106.55	8632.36	51431.50
729	8746.03	2950.89	3031.18	1902.78	443.92
730	1954.15	0.00	239.42	0.00	272.00
731	4362.98	1260.72	0.00	0.00	1.15
732	2045.51	0.00	0.00	0.00	62.37
733	4682.98	1019.07	482.63	417.63	1044.81
734	322.83	267.75	0.00	0.00	198.52
741	0.00	192.00	0.00	0.00	0.00
742	0.00	0.00	0.00	0.00	0.00
743	0.00	0.00	0.00	0.00	0.00
744	0.00	0.00	0.00	0.00	0.00
745	526.87	0.00	236.64	0.00	0.00
746	0.00	0.00	0.00	0.00	0.00
747	0.00	0.00	0.00	0.00	253.40
748	275.07	148.67	0.00	0.00	0.00
749	0.00	0.00	0.00	0.00	0.00
750	0.00	0.00	0.00	0.00	0.00
751	0.00	0.00	0.00	0.00	0.00
TOTAL	109084.23	60751.00	48516.45	50747.22	122890.11
$(\bar{y})$	16.82	9.37	7.48	7.82	18.94
SD	3.42	1.23	1.58	1.26	6.95

Table 18. Stratified mean catches (Kg) and SD of **black dogfish** by stratum and year (2016-2023). Research Vessel *Vizconde de Eza*.

	Survey				
Stratum	2016	2017	2018	2019	2023
385	0.00	0.00	0.00	0.00	0.00
387	0.00	0.00	0.00	0.00	0.00
388	0.00	0.00	0.00	0.00	0.00
389	0.00	0.00	0.00	0.00	0.00
390	0.00	0.00	0.00	0.00	0.00
391	0.00	0.00	0.00	0.00	0.00
392	0.00	0.00	0.00	0.00	0.00
729	0.00	0.00	0.00	0.00	81.41
730	6943.65	436.96	904.51	79.90	325.55
731	0.00	0.00	0.00	0.00	298.08
732	0.00	0.00	0.00	0.00	73.17
733	0.00	0.00	0.00	0.00	0.00
734	0.00	0.00	0.00	0.00	0.00
741	46.50	0.00	0.00	0.00	0.00
742	47.68	267.20	0.00	0.00	0.00
743	416.67	664.02	0.00	27.29	0.00
744	143.55	116.72	87.81	75.57	108.90
745	1596.62	0.00	1480.88	2491.68	7501.56
746	2748.44	1928.12	1940.73	4210.15	9448.18
747	5634.17	5842.97	3391.43	910.21	5719.09
748	829.98	3484.25	7162.95	1715.61	5203.28
749	10672.20	12279.20	11472.36	8639.82	9207.45
750	6068.46	5334.54	7892.07	5409.09	2778.82
751	1148.21	553.95	706.81	443.50	279.95
TOTAL	36296.13	30907.93	35039.56	24002.81	41025.43
$(\bar{y})$	5.60	4.76	5.40	3.70	6.32
SD	0.58	0.90	1.12	0.65	1.45

Table 19. Survey estimates (by the swept area method) of **Greenland halibut** biomass (t.) and SD by stratum and year (2016-2023) on NAFO Div. 3L (R/V *Vizconde de Eza*).

	Survey				
Stratum	2016	2017	2018	2019	2023
385	3	31	124	162	164
387	558	706	394	418	117
388	641	780	526	934	98
389	604	1623	985	634	520
390	45	31	415	537	321
391	231	307	729	641	477
392	163	787	177	788	200
729	84	642	316	176	258
730	254	442	521	885	797
731	156	983	504	454	486
732	755	1180	543	1069	954
733	236	546	624	473	160
734	206	536	380	354	374
741	484	674	292	395	474
742	216	263	210	230	207
743	133	429	106	271	314
744	488	630	151	249	318
745	952	1362	642	1383	1038
746	1055	1697	1098	1117	1493
747	1942	2735	812	1555	982
748	479	992	293	1083	1422
749	203	177	90	218	246
750	1377	1722	1176	2128	1296
751	735	660	1244	910	769
TOTAL	12002	19936	12351	17063	13487
SD	878	1430	1122	1297	1106

Table 20. Survey estimates (by the swept area method) of **American plaice** biomass (t.) and SD by stratum and year (2016-2023) on NAFO Div. 3L (R/V *Vizconde de Eza*).

	Survey				
Stratum	2016	2017	2018	2019	2023
385	3162	1464	1671	1073	2375
387	182	188	172	152	148
388	211	598	362	593	79
389	2915	3981	1680	1794	962
390	4263	3030	3367	2605	6544
391	2414	1847	3476	1639	302
392	13	29	6	202	0
729	0	0	0	0	0
730	0	0	0	0	0
731	68	10	5	32	0
732	0	2	0	0	0
733	0	13	0	21	29
734	0	0	0	0	0
741	0	0	0	0	0
742	0	0	0	0	0
743	0	0	0	0	0
744	0	0	0	0	0
745	0	0	0	0	0
746	0	0	0	0	0
747	0	0	0	0	0
748	0	0	0	0	0
749	0	0	0	0	0
750	0	0	0	0	0
751	0	0	0	0	0
TOTAL	13228	11162	10738	8111	10439
SD	2100	1744	1890	1314	2203

Table 21. Survey estimates (by the swept area method) of **witch flounder** biomass (t.) and SD by stratum and year (2016-2023) on NAFO Div. 3L (R/V *Vizconde de Eza*).

Stratum	Survey 2016	2017	2018	2019	2023
385	5	0	5	0	6
387	58	27	70	45	61
388	88	27	17	33	70
389	3	0	7	27	20
390	0	2	13	0	0
391	0	0	19	0	0
392	19	4	24	13	21
729	152	45	84	38	31
730	4	4	22	10	36
731	75	89	43	56	48
732	116	84	24	12	134
733	83	119	40	18	80
734	0	0	4	1	0
741	0	0	0	0	2
742	0	0	0	0	0
743	0	0	0	0	0
744	0	0	0	0	0
745	0	7	1	1	0
746	0	0	0	0	0
747	0	0	0	0	0
748	0	5	0	7	0
749	0	0	0	0	0
750	0	0	0	0	4
751	0	0	0	0	0
TOTAL	603	412	372	262	513
SD	83	88	60	40	72

Table 22. Survey estimates (by the swept area method) of **Atlantic cod** biomass (t.) and SD by stratum and year (2016-2023) on NAFO Div. 3L (R/V *Vizconde de Eza*).

Stratum	Survey 2016	2017	2018	2019	2023
385	29	14	11	15	60
387	1447	83	111	237	435
388	422	457	231	624	468
389	1112	471	747	1040	1728
390	616	616	196	215	454
391	554	671	381	528	731
392	296	85	8	85	13
729	0	0	0	0	0
730	0	0	0	0	0
731	95	5	9	34	0
732	3	0	0	0	0
733	34	0	0	1	0
734	0	0	0	0	0
741	0	0	0	0	0
742	0	0	0	0	0
743	0	0	0	0	0
744	0	0	0	0	0
745	0	0	0	0	0
746	0	0	0	0	0
747	0	0	0	0	0
748	0	0	0	0	0
749	0	0	0	0	0
750	0	0	0	0	0
751	0	0	0	0	0
TOTAL	4608	2401	1694	2779	3890
SD	1397	301	353	427	600

Table 23. Survey estimates (by the swept area method) of **roughead grenadier** biomass (t.) and SD by stratum and year (2016-2023) on NAFO Div. 3L (R/V *Vizconde de Eza*).

Stratum	Survey 2016	2017	2018	2019	2023
385	0	0	0	0	0
387	1960	1225	434	548	1523
388	1120	848	685	503	974
389	263	63	216	283	223
390	0	2	0	26	330
391	275	464	645	596	343
392	936	879	208	360	878
729	234	471	258	174	193
730	895	597	1031	184	280
731	519	263	316	226	281
732	413	208	141	245	503
733	617	547	248	239	434
734	562	261	89	207	907
741	78	180	43	13	170
742	65	89	52	38	61
743	106	110	27	51	103
744	142	39	26	18	195
745	454	459	281	287	727
746	510	463	467	588	973
747	1002	1522	1007	1175	1185
748	356	1162	1138	197	625
749	308	210	270	276	464
750	422	852	549	592	525
751	208	98	381	268	404
TOTAL	11446	11010	8512	7093	12302
SD	1495	1411	787	607	983

Table24. Survey estimates (by the swept area method) of r**edfish** biomass (t.) and SD by stratum and year (2016-2023) on NAFO Div.3L (R/V *Vizconde de Eza*).

Stratum	Survey 2016	2017	2018	2019	2023
385	0	18	2	0	1
387	13187	16088	5268	6053	25080
388	32266	9312	7419	13573	32256
389	1013	2043	5722	11409	3131
390	1	0	6	3	52
391	2413	581	7252	260	3686
392	12859	14247	4473	2770	21140
729	4502	3465	635	10953	3087
730	7179	2320	1074	379	313
731	14078	381	4764	2795	467
732	561	343	54	82	27
733	9624	7017	3564	5588	4875
734	1069	317	85	142	60
741	19	241	0	0	0
742	0	7	10	0	4
743	0	0	0	0	2
744	0	0	0	0	0
745	12	8	4	12	0
746	6	7	3	0	12
747	0	0	0	0	10
748	15	150	8	0	17
749	4	10	0	0	21
750	0	4	7	0	0
751	0	0	0	0	0
TOTAL	98807	56557	40350	54019	94240
SD	23025	9850	10496	12677	12472

Table 25. Survey estimates (by the swept area method) of **thorny skate** biomass (t.) and SD by stratum and year (2016-2023) on NAFO Div. 3L (R/V *Vizconde de Eza*).

Stratum	Survey 2016	2017	2018	2019	2023
385	77	32	48	239	306
387	714	445	263	361	421
388	2481	1525	638	580	570
389	1096	652	445	883	1355
390	1045	1092	664	853	1999
391	751	472	699	630	1364
392	1310	613	1146	755	4497
729	769	257	266	169	39
730	168	0	22	0	24
731	379	112	0	0	0
732	180	0	0	0	5
733	409	91	43	37	91
734	28	24	0	0	17
741	0	17	0	0	0
742	0	0	0	0	0
743	0	0	0	0	0
744	0	0	0	0	0
745	46	0	20	0	0
746	0	0	0	0	0
747	0	0	0	0	22
748	24	13	0	0	0
749	0	0	0	0	0
750	0	0	0	0	0
751	0	0	0	0	0
TOTAL	9478	5345	4253	4506	10711
SD	1927	704	877	714	4015

Table 26. Survey estimates (by the swept area method) of **black dogfish** biomass (t.) and SD by stratum and year (2016-2023) on NAFO Div.3L (R/V *Vizconde de Eza*).

Stratum	Survey 2016	2017	2018	2019	2023
385	0	0	0	0	0
387	0	0	0	0	0
388	0	0	0	0	0
389	0	0	0	0	0
390	0	0	0	0	0
391	0	0	0	0	0
392	0	0	0	0	0
729	0	0	0	0	7
730	597	38	82	7	29
731	0	0	0	0	26
732	0	0	0	0	6
733	0	0	0	0	0
734	0	0	0	0	0
741	4	0	0	0	0
742	4	24	0	0	0
743	36	58	0	2	0
744	13	11	8	7	9
745	139	0	124	216	654
746	239	170	167	372	826
747	494	519	297	81	505
748	71	310	637	152	455
749	918	1074	1020	781	805
750	522	457	699	481	246
751	100	48	62	39	25
TOTAL	3138	2708	3096	2139	3593
SD	324	499	661	369	800

Table 27. Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2014-2023 for **Greenland halibut, American plaice** and **witch flounder**.

		Greenland halibut,			**American plaice**				**Witch flounder**			
Year	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2	Sex	L-W Equations	N	r^2
2014	All	$W = 0.0037\ L^{3.2014}$	1668	0.9946	All	$W = 0.0042\ L^{3.1947}$	996	0.9934	All	$W = 0.0016\ L^{3.4054}$	205	0.9853
	Males	$W = 0.0045\ L^{3.1468}$	683	0.9937	Males	$W = 0.0043\ L^{3.1921}$	343	0.9905	Males	$W = 0.0014\ L^{3.4497}$	58	0.9723
	Females	$W = 0.0036\ L^{3.2185}$	977	0.9952	Females	$W = 0.0037\ L^{3.2324}$	631	0.9941	Females	$W = 0.0017\ L^{3.3924}$	144	0.9817
2015	All	$W = 0.0041\ L^{3.1770}$	1670	0.9945	All	$W = 0.0038\ L^{3.2259}$	1218	0.9952	All	$W = 0.0020\ L^{3.3390}$	330	0.9930
	Males	$W = 0.0043\ L^{3.1618}$	668	0.9927	Males	$W = 0.0035\ L^{3.2562}$	431	0.9908	Males	$W = 0.0022\ L^{3.3309}$	110	0.9849
	Females	$W = 0.0042\ L^{3.1756}$	998	0.9953	Females	$W = 0.0039\ L^{3.2169}$	777	0.9958	Females	$W = 0.0020\ L^{3.3459}$	201	0.9900
2016	All	$W = 0.00336\ L^{3.2284}$	1623	0.9949	All	$W = 0.0041\ L^{3.1971}$	1095	0.9921	All	$W = 0.0021\ L^{3.3301}$	277	0.9896
	Males	$W = 0.0034\ L^{3.2181}$	657	0.9937	Males	$W = 0.0050\ L^{3.1256}$	377	0.9791	Males	$W = 0.0018\ L^{3.3695}$	74	0.9884
	Females	$W = 0.0035\ L^{3.2218}$	961	0.9952	Females	$W = 0.0038\ L^{3.2195}$	709	0.9945	Females	$W = 0.0014\ L^{3.4330}$	189	0.9894
2017	All	$W = 0.0032\ L^{3.2341}$	2068	0.9962	All	$W = 0.0034\ L^{3.2548}$	1205	0.9942	All	$W = 0.0019\ L^{3.3572}$	204	0.9946
	Males	$W = 0.0034\ L^{3.2136}$	872	0.9954	Males	$W = 0.0032\ L^{3.2655}$	400	0.9866	Males	$W = 0.0017\ L^{3.3935}$	52	0.9960
	Females	$W = 0.0032\ L^{3.2360}$	1180	0.9966	Females	$W = 0.0032\ L^{3.2704}$	778	0.9950	Females	$W = 0.0020\ L^{3.3437}$	148	0.9941
2018	All	$W = 0.0033\ L^{3.2316}$	1777	0.9959	All	$W = 0.0034\ L^{3.2547}$	806	0.9899	All	$W = 0.0021\ L^{3.3470}$	152	0.9738
	Males	$W = 0.0032\ L^{3.2436}$	724	0.9950	Males	$W = 0.0037\ L^{3.2216}$	284	0.9839	Males	$W = 0.0019\ L^{3.3575}$	41	0.9738
	Females	$W = 0.0035\ L^{3.2205}$	1052	0.9961	Females	$W = 0.0033\ L^{3.2615}$	520	0.9902	Females	$W = 0.0024\ L^{3.3108}$	110	0.9898
2019	All	$W = 0.0034\ L^{3.2235}$	1714	0.9932	All	$W = 0.0034\ L^{3.2627}$	739	0.9895	All	$W = 0.0014\ L^{3.4472}$	191	0.9917
	Males	$W = 0.0032\ L^{3.2370}$	707	0.9905	Males	$W = 0.0046\ L^{3.1537}$	221	0.9770	Males	$W = 0.0018\ L^{3.3733}$	57	0.9653
	Females	$W = 0.0037\ L^{3.2033}$	1004	0.9944	Females	$W = 0.0031\ L^{3.2875}$	517	0.9900	Females	$W = 0.0017\ L^{3.4024}$	105	0.9927
2023	All	$W = 0.0041\ L^{3.1650}$	1821	0.9898	All	$W = 0.0047\ L^{3.1557}$	1081	0.9898	All	$W = 0.0019\ L^{3.3605}$	226	0.9899
	Males	$W = 0.0045\ L^{3.1302}$	762	0.9903	Males	$W = 0.0053\ L^{3.1221}$	301	0.9900	Males	$W = 0.0028\ L^{3.3466}$	53	0.9900
	Females	$W = 0.0043\ L^{3.1588}$	1034	0.9944	Females	$W = 0.0045\ L^{3.1717}$	753	0.9897	Females	$W = 0.0018\ L^{3.3700}$	172	0.9899

Table 28. Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2014-2023 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
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
2023	All	$W = 0.0069\ L^{3.0691}$	1019	0.9900	All	$W = 0.0079\ L^{2.9920}$	1808	0.9899	All	$W = 0.0105\ L^{3.0633}$	1177	0.9898
	Males	$W = 0.0064\ L^{3.0907}$	466	0.9900	Males	$W = 0.0757\ L^{3.0102}$	717	0.9000	Males	$W = 0.0126\ L^{3.0049}$	498	0.9901
	Females	$W = 0.0073\ L^{3.0540}$	553	0.9865	Females	$W = 0.0844\ L^{2.9689}$	1004	0.9900	Females	$W = 0.0106\ L^{3.0663}$	479	0.9896

Table 29. Length-weight relationships in the calculation of biomass, for Division 3L (out ZEE Canada), 2014-2023 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
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
2023	All	$W = 0.0079\ L^{3.0560}$	483	0.9900	All	$W = 0.0010\ L^{3.3830}$	445	0.9899
	Males	$W = 0.0088\ L^{3.0256}$	291	0.9902	Males	$W = 0.0094\ L2^{.8318}$	205	0.9907
	Females	$W = 0.0067\ L^{3.1036}$	192	0.9897	Females	$W = 0.0006\ L^{3.5237}$	240	0.9892

Table 30. Greenland halibut length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L 2017-2023 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2017				2018				2019				2023			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	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	0.00	0.00	0.00
8	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00
10	0.51	0.43	0.19	1.13	3.18	1.53	0.04	4.74	1.43	1.02	0.03	2.48	0.02	0.04	0.02	0.08
12	2.36	2.09	0.28	4.74	13.38	9.67	0.03	23.08	6.01	5.49	0.07	11.57	0.64	0.51	0.19	1.34
14	1.35	1.25	0.03	2.63	6.88	6.42	0.02	13.32	1.72	1.82	0.00	3.54	0.97	1.00	0.35	2.32
16	0.11	0.15	0.00	0.26	0.44	0.56	0.00	1.00	0.12	0.08	0.00	0.21	0.15	0.10	0.00	0.25
18	0.41	0.70	0.00	1.11	0.60	0.91	0.00	1.51	0.62	0.36	0.00	0.98	0.08	0.06	0.00	0.14
20	1.23	1.28	0.00	2.50	1.81	1.73	0.00	3.54	1.75	1.75	0.00	3.50	0.25	0.28	0.00	0.53
22	2.69	2.85	0.00	5.54	2.58	2.56	0.00	5.13	3.73	2.42	0.00	6.16	0.84	0.39	0.00	1.24
24	2.84	2.53	0.00	5.37	2.08	2.17	0.00	4.26	4.24	2.51	0.00	6.76	1.03	0.93	0.00	1.96
26	3.05	2.17	0.00	5.21	1.08	1.11	0.00	2.19	3.12	2.12	0.00	5.24	1.20	0.89	0.00	2.09
28	2.22	1.85	0.00	4.07	1.07	1.20	0.00	2.27	2.93	2.24	0.00	5.17	1.13	0.70	0.00	1.83
30	2.46	2.14	0.00	4.60	1.48	1.52	0.00	3.00	2.27	2.18	0.00	4.45	1.60	0.77	0.00	2.37
32	2.34	2.66	0.00	5.00	1.44	1.41	0.00	2.86	2.11	1.93	0.00	4.04	1.62	0.93	0.00	2.55
34	1.95	2.32	0.00	4.27	1.29	0.87	0.00	2.15	1.85	1.32	0.00	3.17	1.54	1.31	0.00	2.85
36	2.09	2.01	0.00	4.10	0.89	0.93	0.00	1.83	2.07	1.76	0.00	3.83	1.69	1.44	0.00	3.13
38	1.71	2.16	0.00	3.87	0.84	1.08	0.00	1.92	2.03	1.85	0.00	3.88	1.70	1.73	0.00	3.42
40	1.41	1.98	0.00	3.39	0.54	0.80	0.00	1.34	1.85	2.25	0.00	4.10	1.73	1.77	0.00	3.49
42	1.35	2.20	0.00	3.55	0.66	0.61	0.00	1.27	1.33	1.97	0.00	3.30	1.36	1.86	0.00	3.21
44	1.09	1.69	0.00	2.78	0.46	0.69	0.00	1.15	0.89	1.61	0.00	2.50	1.06	1.46	0.00	2.52
46	1.05	1.61	0.00	2.66	0.40	0.72	0.00	1.12	0.55	1.13	0.00	1.68	0.93	1.19	0.00	2.12
48	0.70	1.16	0.00	1.86	0.24	0.72	0.00	0.96	0.35	1.05	0.00	1.40	0.48	1.08	0.00	1.56
50	0.42	1.22	0.00	1.64	0.30	0.63	0.00	0.94	0.22	0.97	0.00	1.19	0.37	0.89	0.00	1.25
52	0.34	1.21	0.00	1.55	0.25	0.69	0.00	0.94	0.24	0.77	0.00	1.01	0.19	0.87	0.00	1.05
54	0.21	1.32	0.00	1.53	0.14	0.80	0.00	0.94	0.09	0.67	0.00	0.76	0.13	0.48	0.00	0.62
56	0.11	1.19	0.00	1.29	0.11	0.84	0.00	0.95	0.06	0.77	0.00	0.83	0.07	0.53	0.00	0.60
58	0.09	1.02	0.00	1.11	0.04	0.79	0.00	0.83	0.02	0.60	0.00	0.62	0.02	0.31	0.00	0.33
60	0.00	0.78	0.00	0.78	0.03	0.76	0.00	0.79	0.04	0.50	0.00	0.54	0.03	0.28	0.00	0.31
62	0.01	0.69	0.00	0.70	0.00	0.41	0.00	0.41	0.01	0.44	0.00	0.46	0.00	0.24	0.00	0.24
64	0.00	0.25	0.00	0.25	0.01	0.33	0.00	0.34	0.00	0.30	0.00	0.30	0.00	0.27	0.00	0.27
66	0.00	0.19	0.00	0.19	0.00	0.20	0.00	0.20	0.01	0.27	0.00	0.27	0.01	0.18	0.00	0.19
68	0.00	0.13	0.00	0.13	0.00	0.10	0.00	0.10	0.00	0.13	0.00	0.13	0.01	0.19	0.00	0.20
70	0.00	0.07	0.00	0.07	0.00	0.05	0.00	0.05	0.00	0.12	0.00	0.12	0.00	0.12	0.00	0.12
72	0.00	0.06	0.00	0.06	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.05
74	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	0.08	0.00	0.08
76	0.00	0.06	0.00	0.06	0.00	0.05	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.04	0.00	0.04
78	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04	0.00	0.05	0.00	0.05
80	0.00	0.05	0.00	0.05	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02
82	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.06
84	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03
86	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.00	0.02
88	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	0.01	0.00	0.01
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	0.01	0.00	0.01
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
104	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	**34.1**	**43.5**	**0.5**	**78.1**	**42.2**	**43.0**	**0.1**	**85.3**	**41.7**	**42.6**	**0.1**	**84.4**	**20.8**	**23.2**	**0.6**	**44.5**
Nº samples:				99				100				96				95
Nº Ind.:	3185	4154	50	7389	3378	3607	12	6464	3378	3607	12	6997	1884	2153	41	4078
Sampled catch:				3609				2242				2946				2447
Range:				9-89				9-89				7-104				10-90
Total catch:				3609				2242				2946				2447
Total valid hauls:				99				100				96				95

Table 31. American plaice length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2017-2023 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2017				2018				2019				2023			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.07	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.03	0.00	0.00	0.25	0.25
8	0.08	0.22	0.32	0.62	0.06	0.00	0.01	0.07	0.03	0.00	0.00	0.03	0.01	0.00	0.33	0.35
10	1.68	1.39	0.26	3.33	0.34	0.66	0.00	1.00	0.28	0.05	0.00	0.33	0.73	1.96	0.06	2.75
12	6.23	8.38	0.00	14.61	1.35	1.35	0.00	2.70	0.89	0.64	0.00	1.53	2.18	5.12	0.01	7.32
14	10.49	15.01	0.00	25.50	3.03	5.14	0.01	8.17	1.59	2.45	0.00	4.04	1.68	2.31	0.05	4.03
16	14.68	25.67	0.00	40.35	4.82	9.78	0.00	14.60	2.80	4.37	0.00	7.18	1.65	2.01	0.00	3.66
18	12.50	26.15	0.00	38.65	5.91	15.12	0.00	21.03	2.76	6.70	0.00	9.46	0.97	2.30	0.00	3.27
20	8.39	23.26	0.00	31.65	5.69	21.06	0.00	26.75	4.03	12.97	0.00	17.00	0.86	2.33	0.00	3.19
22	5.66	15.34	0.00	21.00	4.58	20.22	0.00	24.79	3.85	14.08	0.00	17.93	1.37	2.19	0.00	3.56
24	2.05	10.18	0.00	12.23	3.90	19.41	0.00	23.31	2.75	11.98	0.00	14.73	1.50	2.44	0.00	3.93
26	1.17	5.12	0.00	6.29	1.86	11.59	0.00	13.45	1.06	7.99	0.00	9.04	1.35	2.98	0.00	4.33
28	1.07	2.84	0.00	3.91	0.74	6.65	0.00	7.39	0.81	7.32	0.00	8.13	1.12	4.00	0.00	5.11
30	0.39	2.75	0.00	3.15	0.40	3.35	0.00	3.75	0.23	4.01	0.00	4.25	0.65	4.03	0.00	4.68
32	0.18	2.87	0.00	3.05	0.48	1.90	0.00	2.38	0.11	2.28	0.00	2.39	0.42	5.32	0.00	5.74
34	0.13	2.83	0.00	2.96	0.23	1.95	0.00	2.17	0.06	1.33	0.00	1.38	0.20	5.90	0.00	6.10
36	0.18	2.40	0.00	2.58	0.16	1.60	0.00	1.76	0.09	1.42	0.00	1.52	0.16	5.26	0.00	5.42
38	0.04	1.88	0.00	1.93	0.05	1.33	0.00	1.38	0.00	0.93	0.00	0.93	0.06	4.03	0.00	4.09
40	0.05	1.69	0.00	1.74	0.02	1.11	0.00	1.14	0.03	0.79	0.00	0.82	0.03	2.63	0.00	2.67
42	0.00	0.63	0.00	0.63	0.00	0.52	0.00	0.52	0.00	0.52	0.00	0.52	0.05	1.65	0.00	1.70
44	0.00	0.82	0.00	0.82	0.00	0.50	0.00	0.50	0.00	0.26	0.00	0.26	0.00	1.00	0.00	1.00
46	0.00	0.26	0.00	0.26	0.00	0.15	0.00	0.15	0.00	0.41	0.00	0.41	0.06	0.81	0.00	0.87
48	0.00	0.25	0.00	0.25	0.00	0.32	0.00	0.32	0.00	0.14	0.00	0.14	0.00	0.54	0.00	0.54
50	0.00	0.30	0.00	0.30	0.00	0.18	0.00	0.18	0.00	0.14	0.00	0.14	0.00	0.32	0.00	0.32
52	0.00	0.06	0.00	0.06	0.00	0.21	0.00	0.21	0.00	0.07	0.00	0.07	0.00	0.15	0.00	0.15
54	0.00	0.15	0.00	0.15	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04	0.00	0.16	0.00	0.16
56	0.00	0.10	0.00	0.10	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.13
58	0.00	0.04	0.00	0.04	0.00	0.07	0.00	0.07	0.00	0.04	0.00	0.04	0.00	0.06	0.00	0.06
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	0.05	0.00	0.05
62	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
64	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
Total	**64.97**	**150.63**	**0.65**	**216.25**	**33.615**	**124.261**	**0.022**	**157.898**	**21.37**	**80.99**	**0.03**	**102.40**	**15.04**	**59.67**	**0.70**	**75.42**
Nº samples:				40				37				37				41
Nº Ind.:	2053	4736	27	6816	1324	3141	551	4753	952	3773	1	4726	1033	2843	16	3892
Sampled catch:				1849				1793				1262				2757
Range:				7-58				9-62				7-64				6-59
Total catch:				1849				1793				1262				2757
Total valid hauls:				99				100				96				98

Table 32. Witch flounder length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2017-2023 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2017				2018				2019				2023			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00	0.02	0.02	0.00	0.00	0.00	0.00
8	0.00	0.00	0.02	0.02	0.00	0.00	0.01	0.01	0.00	0.00	0.33	0.33	0.00	0.00	0.01	0.01
10	0.00	0.01	0.00	0.01	0.00	0.00	0.02	0.02	0.00	0.00	0.07	0.07	0.00	0.00	0.00	0.00
12	0.01	0.01	0.00	0.02	0.01	0.00	0.00	0.01	0.00	0.00	0.06	0.06	0.01	0.01	0.00	0.02
14	0.03	0.07	0.00	0.10	0.01	0.03	0.00	0.04	0.01	0.01	0.02	0.04	0.00	0.00	0.00	0.00
16	0.02	0.02	0.00	0.04	0.02	0.02	0.00	0.04	0.03	0.13	0.01	0.18	0.02	0.04	0.00	0.07
18	0.02	0.04	0.00	0.06	0.04	0.01	0.00	0.05	0.02	0.00	0.00	0.02	0.00	0.05	0.00	0.05
20	0.04	0.06	0.00	0.10	0.03	0.06	0.00	0.09	0.02	0.04	0.00	0.06	0.01	0.04	0.00	0.05
22	0.02	0.09	0.00	0.11	0.03	0.07	0.00	0.10	0.09	0.06	0.00	0.15	0.00	0.08	0.00	0.08
24	0.02	0.03	0.00	0.05	0.03	0.00	0.00	0.03	0.08	0.14	0.00	0.21	0.03	0.07	0.00	0.10
26	0.00	0.03	0.00	0.03	0.03	0.03	0.00	0.06	0.09	0.04	0.00	0.13	0.05	0.17	0.00	0.23
28	0.03	0.02	0.00	0.05	0.02	0.06	0.00	0.08	0.07	0.17	0.00	0.23	0.08	0.13	0.00	0.21
30	0.04	0.08	0.00	0.11	0.03	0.06	0.00	0.09	0.12	0.07	0.00	0.19	0.12	0.13	0.00	0.26
32	0.07	0.08	0.00	0.14	0.02	0.02	0.00	0.04	0.06	0.03	0.00	0.09	0.03	0.07	0.00	0.11
34	0.06	0.14	0.00	0.20	0.02	0.07	0.00	0.09	0.02	0.08	0.00	0.10	0.05	0.08	0.00	0.13
36	0.05	0.07	0.00	0.12	0.02	0.07	0.00	0.09	0.02	0.07	0.00	0.09	0.04	0.10	0.00	0.14
38	0.03	0.08	0.00	0.11	0.04	0.09	0.00	0.13	0.01	0.02	0.00	0.03	0.06	0.11	0.00	0.17
40	0.04	0.15	0.00	0.19	0.02	0.10	0.00	0.12	0.02	0.06	0.00	0.08	0.01	0.14	0.00	0.15
42	0.01	0.13	0.00	0.14	0.04	0.11	0.00	0.15	0.00	0.08	0.00	0.08	0.02	0.12	0.00	0.13
44	0.01	0.11	0.00	0.12	0.00	0.09	0.00	0.09	0.00	0.02	0.00	0.02	0.01	0.09	0.00	0.10
46	0.01	0.05	0.00	0.06	0.01	0.07	0.00	0.08	0.00	0.04	0.00	0.04	0.00	0.10	0.00	0.10
48	0.00	0.11	0.00	0.11	0.00	0.08	0.00	0.08	0.00	0.06	0.00	0.06	0.00	0.10	0.00	0.10
50	0.00	0.04	0.00	0.04	0.00	0.07	0.00	0.07	0.00	0.03	0.00	0.03	0.00	0.07	0.00	0.07
52	0.00	0.02	0.00	0.02	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.11	0.00	0.11
54	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
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	0.01	0.00	0.01
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
Total	**0.00**	**0.00**	**0.02**	**0.02**	**0.43**	**1.14**	**0.04**	**1.61**	**0.66**	**1.16**	**0.51**	**2.33**	**0.56**	**1.83**	**0.01**	**2.40**
Nº samples:				29				33				31				33
Nº Ind.:	51	148	4	203	42	113	4	159				218	54	171	1	226
Sampled catch:				74				66				44				91
Range:				7-55				7-54				7-53				9-58
Total catch:				74				66				44				91
Total valid hauls:				99				100				96				95

Table 33. Atlantic cod length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2017-2023 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2017				2018				2019				2023			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
<12	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
12	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	0.01	0.00	0.01
14	0.03	0.03	0.00	0.07	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.04	0.00	0.00	0.00	0.00
16	0.07	0.01	0.00	0.08	0.00	0.00	0.00	0.00	0.04	0.04	0.00	0.09	0.05	0.03	0.00	0.07
18	0.02	0.01	0.00	0.03	0.01	0.00	0.00	0.01	0.05	0.01	0.00	0.06	0.05	0.08	0.00	0.13
20	0.09	0.07	0.00	0.15	0.03	0.03	0.00	0.07	0.35	0.21	0.00	0.56	0.15	0.18	0.00	0.33
22	0.28	0.27	0.00	0.54	0.04	0.20	0.00	0.25	0.51	0.56	0.00	1.07	0.44	0.52	0.00	0.96
24	0.44	0.66	0.00	1.10	0.19	0.10	0.00	0.29	0.76	0.88	0.00	1.64	1.05	0.78	0.00	1.83
26	0.40	0.61	0.00	1.00	0.21	0.28	0.00	0.49	0.87	0.92	0.00	1.78	0.77	0.67	0.00	1.44
28	0.47	0.56	0.00	1.04	0.27	0.21	0.00	0.48	0.71	0.86	0.00	1.56	0.50	0.48	0.00	0.98
30	0.42	0.35	0.00	0.77	0.36	0.27	0.00	0.62	0.53	0.55	0.00	1.08	0.55	0.48	0.00	1.03
32	0.35	0.29	0.00	0.64	0.23	0.18	0.00	0.41	0.34	0.37	0.00	0.71	0.60	0.52	0.00	1.12
34	0.21	0.32	0.00	0.53	0.20	0.16	0.00	0.36	0.30	0.38	0.00	0.68	0.56	0.54	0.00	1.09
36	0.29	0.32	0.00	0.62	0.19	0.20	0.00	0.39	0.31	0.33	0.00	0.65	0.48	0.59	0.00	1.07
38	0.24	0.33	0.00	0.57	0.25	0.15	0.00	0.41	0.32	0.30	0.00	0.61	0.50	0.47	0.00	0.97
40	0.35	0.30	0.00	0.65	0.10	0.10	0.00	0.20	0.15	0.31	0.00	0.46	0.41	0.54	0.00	0.96
42	0.19	0.23	0.00	0.43	0.09	0.05	0.00	0.14	0.18	0.22	0.00	0.40	0.43	0.55	0.00	0.98
44	0.13	0.17	0.00	0.31	0.15	0.13	0.00	0.28	0.18	0.11	0.00	0.29	0.27	0.28	0.00	0.56
46	0.02	0.15	0.00	0.17	0.14	0.08	0.00	0.22	0.07	0.12	0.00	0.19	0.20	0.33	0.00	0.53
48	0.08	0.10	0.00	0.18	0.10	0.08	0.00	0.18	0.05	0.15	0.00	0.21	0.16	0.26	0.00	0.42
50	0.04	0.09	0.00	0.13	0.10	0.11	0.00	0.21	0.07	0.14	0.00	0.21	0.07	0.13	0.00	0.20
52	0.03	0.03	0.00	0.07	0.11	0.04	0.00	0.16	0.05	0.09	0.00	0.14	0.08	0.12	0.00	0.20
54	0.03	0.08	0.00	0.11	0.02	0.03	0.00	0.05	0.05	0.06	0.00	0.12	0.05	0.15	0.00	0.20
56	0.03	0.08	0.00	0.11	0.00	0.01	0.00	0.01	0.03	0.05	0.00	0.09	0.00	0.05	0.00	0.05
58	0.06	0.03	0.01	0.11	0.01	0.00	0.00	0.01	0.02	0.02	0.00	0.04	0.01	0.02	0.00	0.03
60	0.05	0.00	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.05	0.03	0.02	0.00	0.06
62	0.01	0.02	0.00	0.03	0.02	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.04
64	0.03	0.01	0.00	0.04	0.03	0.01	0.00	0.04	0.00	0.01	0.00	0.01	0.01	0.04	0.00	0.05
66	0.01	0.02	0.00	0.03	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
68	0.02	0.01	0.00	0.03	0.00	0.00	0.00	0.00	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	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	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	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
74	0.01	0.01	0.00	0.02	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	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	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	0.01	0.00	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	0.01	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	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	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	**4.45**	**5.18**	**0.01**	**9.64**	**2.92**	**2.48**	**0.00**	**5.40**	**5.99**	**6.78**	**0.00**	**12.77**	**7.43**	**7.90**	**0.00**	**15.33**
Nº samples:				37				33				32				32
Nº Ind.:	407	471	1	879	263	224	0	487	548	622	0	1170	679	727	0	1406
Sampled catch:				390				274				435				607
Range:				11-75				15-93				13-80				12-67
Total catch:				390				274				435				607
Total valid hauls:				99				100				96				95

Table 34. Roughhead grenadier length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2017-2023 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2017				2018				2019				2023			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
1.5	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2.5	0.00	0.00	0.19	0.19	0.00	0.00	0.21	0.21	0.01	0.00	0.09	0.10	0.00	0.00	1.01	1.01
3.5	0.27	0.06	0.76	1.09	0.15	0.09	0.43	0.67	0.15	0.03	0.36	0.55	0.17	0.06	3.39	3.62
4.5	0.04	0.05	0.06	0.15	0.04	0.04	0.02	0.10	0.02	0.02	0.01	0.05	0.12	0.09	0.19	0.41
5.5	0.61	0.62	0.00	1.22	0.18	0.14	0.00	0.33	0.36	0.30	0.00	0.66	0.84	1.33	0.05	2.21
6.5	0.82	0.83	0.00	1.65	0.58	0.73	0.00	1.32	0.62	0.77	0.01	1.40	2.25	2.30	0.00	4.55
7.5	0.41	0.41	0.00	0.82	0.28	0.32	0.00	0.60	0.47	0.27	0.00	0.75	0.93	0.95	0.00	1.88
8.5	1.40	1.27	0.00	2.67	0.55	0.61	0.00	1.15	1.15	0.93	0.00	2.08	0.80	1.25	0.00	2.05
9.5	0.63	1.10	0.00	1.73	0.40	0.49	0.00	0.89	0.88	0.95	0.00	1.83	0.96	1.06	0.00	2.02
10.5	0.93	0.85	0.00	1.78	0.84	0.77	0.00	1.61	0.84	0.89	0.00	1.72	1.08	1.40	0.00	2.47
11.5	1.34	1.14	0.00	2.48	0.72	0.95	0.00	1.67	1.04	1.14	0.00	2.18	1.13	1.35	0.00	2.48
12.5	1.54	1.43	0.00	2.97	0.97	0.69	0.00	1.67	1.12	1.22	0.00	2.34	0.97	1.07	0.00	2.04
13.5	1.59	1.66	0.00	3.25	1.29	0.85	0.00	2.14	1.13	1.19	0.00	2.32	1.21	1.40	0.00	2.61
14.5	1.39	0.98	0.00	2.37	1.35	1.12	0.00	2.47	1.64	1.29	0.00	2.93	1.81	1.61	0.00	3.42
15.5	1.72	1.08	0.00	2.80	1.26	1.27	0.00	2.53	1.56	1.31	0.00	2.86	2.65	2.08	0.00	4.73
16.5	1.49	1.47	0.00	2.96	1.36	0.80	0.00	2.16	1.36	1.14	0.00	2.49	2.82	2.21	0.00	5.03
17.5	1.67	1.32	0.00	2.99	1.26	0.95	0.00	2.21	1.13	0.90	0.00	2.02	3.17	2.37	0.00	5.53
18.5	1.10	1.15	0.00	2.25	0.92	1.03	0.00	1.94	0.85	0.79	0.00	1.63	2.07	2.19	0.00	4.26
19.5	0.73	1.45	0.00	2.17	0.59	0.81	0.00	1.41	0.58	0.69	0.00	1.27	1.31	1.99	0.00	3.30
20.5	0.42	1.20	0.00	1.62	0.34	0.94	0.00	1.28	0.19	0.53	0.00	0.72	0.50	1.47	0.00	1.96
21.5	0.17	1.35	0.00	1.52	0.12	0.65	0.00	0.77	0.03	0.61	0.00	0.64	0.25	1.22	0.00	1.47
22.5	0.02	1.09	0.01	1.13	0.02	0.88	0.00	0.90	0.01	0.51	0.00	0.52	0.08	1.00	0.00	1.08
23.5	0.01	0.88	0.00	0.89	0.01	0.55	0.00	0.56	0.02	0.32	0.00	0.33	0.03	0.84	0.00	0.87
24.5	0.01	0.97	0.00	0.98	0.01	0.57	0.00	0.58	0.00	0.25	0.00	0.25	0.00	0.59	0.00	0.59
25.5	0.00	0.53	0.00	0.53	0.00	0.55	0.00	0.55	0.01	0.25	0.00	0.26	0.00	0.49	0.00	0.49
26.5	0.01	0.60	0.00	0.62	0.00	0.41	0.00	0.41	0.00	0.18	0.00	0.18	0.02	0.29	0.00	0.31
27.5	0.06	0.32	0.00	0.37	0.00	0.26	0.00	0.26	0.00	0.16	0.00	0.16	0.00	0.20	0.00	0.20
28.5	0.00	0.26	0.00	0.26	0.01	0.21	0.00	0.22	0.00	0.09	0.00	0.09	0.03	0.21	0.00	0.23
29.5	0.00	0.17	0.00	0.17	0.01	0.14	0.00	0.15	0.00	0.08	0.00	0.08	0.01	0.15	0.00	0.16
30.5	0.00	0.03	0.00	0.03	0.00	0.17	0.00	0.17	0.00	0.09	0.00	0.09	0.00	0.10	0.00	0.10
31.5	0.00	0.07	0.00	0.07	0.00	0.06	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.06	0.00	0.06
32.5	0.00	0.07	0.00	0.07	0.00	0.01	0.00	0.01	0.00	0.06	0.00	0.06	0.00	0.09	0.00	0.09
33.5	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
34.5	0.00	0.06	0.00	0.06	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03
35.5	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.05	0.00	0.02	0.00	0.02
36.5	0.00	0.02	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.03	0.00	0.03	0.00	0.02	0.00	0.02
37.5	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
38.5	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
39.5	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
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	0.01	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
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	**18.38**	**24.54**	**1.03**	**43.95**	**13.27**	**17.22**	**0.66**	**31.15**	**15.16**	**17.06**	**0.48**	**32.70**	**25.20**	**31.52**	**4.64**	**61.35**
Nº samples:				81				85				82				84
Nº Ind.:	1782	2299	111	4192	1345	1717	69	3131	1398	1582	50	3030	2307	2720	429	5456
Sampled catch:				1889				1460				1179				2126
Range:				1.5-37				2.0-41.5				2.5-37.5				2.5-41.5
Total catch:				1889				1460				1179				2126
Total valid hauls:				99				100				96				95

Table 35. Redfish length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2017-2023 (R/V *Vizconde de Eza*). Indet. means indeterminate.

Length (cm.)	2017				2018				2019				2023			
	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
4	0.00	0.00	0.18	0.18	0.00	0.00	0.15	0.15	0.00	0.00	0.13	0.13	0.00	0.00	0.00	0.00
6	0.00	0.00	0.83	0.83	0.00	0.13	8.35	8.48	0.00	0.00	1.63	1.63	0.00	0.00	2.29	2.29
8	0.00	0.00	2.79	2.79	0.00	0.00	24.96	24.96	0.00	0.02	12.23	12.25	0.00	0.38	5.74	6.51
10	0.00	0.00	44.95	44.95	0.11	0.01	4.13	4.25	0.11	0.00	20.75	20.75	0.00	4.03	19.10	29.09
12	1.64	0.50	61.60	63.73	6.55	5.61	7.14	19.30	6.55	0.29	20.07	20.73	0.37	19.38	31.33	84.89
14	3.36	1.86	10.78	16.00	29.22	23.32	4.37	56.91	29.22	4.23	7.07	18.71	7.41	16.55	21.84	63.39
16	2.19	1.44	0.00	3.63	21.19	17.70	0.25	39.14	21.19	28.66	0.00	80.81	52.15	19.10	1.24	50.17
18	3.00	1.71	0.00	4.71	5.66	4.70	0.00	10.35	5.66	28.00	0.00	78.51	50.50	69.20	0.00	179.24
20	7.47	3.40	0.00	10.88	6.45	6.36	0.00	12.81	6.45	12.76	0.00	23.81	11.05	302.38	0.00	693.97
22	18.65	6.78	0.00	25.43	7.94	5.91	0.00	13.85	7.94	7.49	0.00	19.21	11.72	79.03	0.00	182.34
24	39.74	14.64	0.00	54.38	14.42	8.71	0.00	23.13	14.42	10.59	0.00	26.45	15.87	4.57	0.00	13.49
26	32.69	36.04	0.00	68.73	27.60	12.26	0.00	39.87	27.60	6.46	0.00	39.06	32.59	6.33	0.00	16.10
28	20.27	26.20	0.00	46.47	25.13	14.61	0.00	39.74	25.13	14.71	0.00	39.54	24.83	4.46	0.00	13.76
30	12.06	18.87	0.00	30.93	8.22	11.33	0.00	19.55	8.22	18.00	0.00	28.15	10.15	4.07	0.00	10.17
32	8.25	17.24	0.00	25.49	3.32	9.31	0.00	12.62	3.32	15.43	0.00	18.41	2.98	2.30	0.00	3.82
34	3.98	13.82	0.00	17.80	3.46	11.46	0.00	14.92	3.46	10.03	0.00	12.22	2.19	4.09	0.00	5.74
36	3.00	8.13	0.00	11.13	1.60	5.45	0.00	7.05	1.60	6.29	0.00	8.58	2.30	3.62	0.00	4.92
38	0.61	3.18	0.00	3.79	0.77	2.32	0.00	3.10	0.77	3.51	0.00	5.13	1.62	3.04	0.00	3.55
40	0.29	0.95	0.00	1.24	0.41	0.91	0.00	1.32	0.41	0.73	0.00	0.89	0.16	1.31	0.00	1.58
42	0.06	0.00	0.00	0.06	0.13	0.32	0.00	0.46	0.13	0.02	0.00	0.33	0.30	0.73	0.00	0.81
44	0.07	0.01	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.49	0.00	0.16	0.00	0.22
46	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.73	0.00	0.79	0.06	0.02	0.00	0.02
48	0.00	0.06	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.24	0.00	0.09	0.00	0.12
50	0.05	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.49	0.00	0.49	0.00	0.00	0.00	0.00
52	0.05	0.01	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
54	0.00	0.05	0.00	0.05	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.01
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	0.01	0.00	0.01
58	0.05	0.01	0.00	0.06	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	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01
62	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.01
64	0.00	0.00	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
66	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	0.03	0.00	0.03
68	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Total	**157.49**	**154.89**	**121.14**	**433.52**	**162.21**	**140.45**	**49.35**	**352.00**	**226.27**	**169.18**	**61.87**	**457.31**	**226.27**	**544.93**	**81.54**	**1366.29**
Nº samples:				56				49				46				52
Nº Ind.:	2539	2097	1136	5772	2788	2229	1336	6353	2294	2013	1092	5399	3397	2471	1540	7408
Sampled catch:				9660				6743				9042				15665
Range:				5-60				5-66				5-62				6-70
Total catch:				9660				6743				9042				15665
Total valid hauls:				99				100				96				95

Table 36. **Thorny skate** length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2016-2023 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2017				2018				2019				2023			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
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	0.01	0.00	0.01
12	0.03	0.02	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.00	0.04
14	0.04	0.04	0.00	0.08	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.01	0.04	0.03	0.00	0.07
16	0.05	0.02	0.00	0.07	0.01	0.00	0.00	0.01	0.01	0.03	0.00	0.05	0.08	0.03	0.00	0.11
18	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.02	0.02	0.03	0.00	0.05	0.00	0.07	0.00	0.07
20	0.02	0.01	0.00	0.03	0.01	0.00	0.00	0.01	0.04	0.01	0.00	0.05	0.02	0.02	0.00	0.03
22	0.00	0.04	0.00	0.04	0.02	0.01	0.00	0.03	0.00	0.01	0.00	0.01	0.03	0.05	0.00	0.08
24	0.04	0.07	0.00	0.11	0.03	0.01	0.00	0.04	0.02	0.04	0.00	0.07	0.01	0.03	0.00	0.04
26	0.07	0.08	0.00	0.14	0.02	0.00	0.00	0.02	0.02	0.05	0.00	0.07	0.01	0.03	0.00	0.04
28	0.11	0.09	0.00	0.20	0.01	0.02	0.00	0.03	0.02	0.05	0.00	0.07	0.02	0.03	0.00	0.05
30	0.23	0.20	0.00	0.42	0.07	0.01	0.00	0.08	0.03	0.00	0.00	0.03	0.04	0.06	0.00	0.10
32	0.22	0.27	0.00	0.49	0.06	0.05	0.00	0.12	0.05	0.06	0.00	0.11	0.03	0.02	0.00	0.05
34	0.14	0.17	0.00	0.31	0.09	0.03	0.00	0.12	0.08	0.02	0.00	0.10	0.03	0.01	0.00	0.04
36	0.10	0.13	0.00	0.23	0.06	0.06	0.00	0.11	0.04	0.05	0.00	0.10	0.00	0.03	0.00	0.03
38	0.07	0.09	0.00	0.16	0.03	0.00	0.00	0.03	0.07	0.03	0.00	0.11	0.05	0.05	0.00	0.10
40	0.08	0.03	0.00	0.11	0.00	0.03	0.00	0.03	0.05	0.07	0.00	0.13	0.03	0.03	0.00	0.06
42	0.04	0.05	0.00	0.10	0.02	0.04	0.00	0.07	0.03	0.05	0.00	0.09	0.04	0.04	0.00	0.08
44	0.02	0.04	0.00	0.06	0.02	0.02	0.00	0.04	0.06	0.02	0.00	0.08	0.06	0.08	0.00	0.14
46	0.04	0.02	0.00	0.06	0.02	0.05	0.00	0.07	0.02	0.04	0.00	0.06	0.08	0.02	0.00	0.09
48	0.02	0.02	0.00	0.04	0.04	0.01	0.00	0.06	0.01	0.02	0.00	0.03	0.07	0.07	0.00	0.14
50	0.07	0.03	0.00	0.10	0.06	0.03	0.00	0.09	0.03	0.02	0.00	0.05	0.06	0.09	0.00	0.15
52	0.10	0.07	0.00	0.17	0.03	0.05	0.00	0.09	0.04	0.01	0.00	0.05	0.19	0.05	0.00	0.25
54	0.06	0.03	0.00	0.10	0.01	0.04	0.00	0.06	0.00	0.01	0.00	0.01	0.08	0.14	0.00	0.22
56	0.09	0.07	0.00	0.16	0.01	0.06	0.00	0.08	0.04	0.05	0.00	0.09	0.11	0.06	0.00	0.18
58	0.05	0.07	0.00	0.12	0.05	0.06	0.00	0.11	0.08	0.04	0.00	0.12	0.15	0.08	0.00	0.23
60	0.12	0.03	0.00	0.15	0.08	0.04	0.00	0.12	0.04	0.04	0.00	0.09	0.18	0.07	0.00	0.25
62	0.10	0.06	0.00	0.16	0.15	0.03	0.00	0.18	0.05	0.08	0.00	0.13	0.06	0.11	0.00	0.17
64	0.13	0.02	0.00	0.15	0.16	0.05	0.00	0.22	0.08	0.08	0.00	0.16	0.17	0.11	0.00	0.28
66	0.13	0.05	0.00	0.18	0.12	0.04	0.00	0.16	0.18	0.14	0.00	0.32	0.22	0.31	0.00	0.53
68	0.08	0.10	0.00	0.18	0.14	0.06	0.00	0.20	0.11	0.02	0.00	0.14	0.20	0.25	0.00	0.44
70	0.15	0.07	0.00	0.21	0.14	0.04	0.00	0.18	0.21	0.05	0.00	0.26	0.37	0.23	0.00	0.60
72	0.22	0.05	0.00	0.27	0.13	0.03	0.00	0.16	0.15	0.04	0.00	0.19	0.34	0.14	0.00	0.47
74	0.13	0.06	0.00	0.19	0.10	0.03	0.00	0.13	0.15	0.04	0.00	0.18	0.45	0.12	0.00	0.58
76	0.08	0.01	0.00	0.10	0.15	0.00	0.00	0.15	0.12	0.01	0.00	0.13	0.23	0.03	0.00	0.26
78	0.16	0.00	0.00	0.16	0.10	0.01	0.00	0.11	0.08	0.01	0.00	0.09	0.26	0.01	0.00	0.27
80	0.04	0.01	0.00	0.05	0.05	0.00	0.00	0.05	0.07	0.00	0.00	0.07	0.26	0.00	0.00	0.26
82	0.04	0.00	0.00	0.04	0.03	0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.11	0.00	0.00	0.11
84	0.02	0.00	0.00	0.02	0.02	0.00	0.00	0.02	0.01	0.00	0.00	0.01	0.04	0.00	0.00	0.04
86	0.03	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.03
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	0.01	0.00	0.00	0.01
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	0.02	0.00	0.00	0.02
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	**3.12**	**2.13**	**0.00**	**5.26**	**2.08**	**0.96**	**0.00**	**3.04**	**2.08**	**1.25**	**0.00**	**3.34**	**4.19**	**2.54**	**0.00**	**6.73**
Nº samples:				46				40				38				42
Nº Ind.:	288	199	0	487	192	90	0	282	193	115	0	308	350	206	0	556
Sampled catch:				876				698				711				1634
Range:				12-87				17-85				14-84				11-90
Total catch:				876				698				711				1634
Total valid hauls:				99				100				96				95

Table 37. Black dogfish length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Summer Survey on NAFO 3L: 2016-2023 (R/V *Vizconde de Eza*). Indet. means indeterminate.

	2017				2018				2019				2023			
Length (cm.)	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total	Males	Females	Indet.	Total
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	0.01	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
38	0.01	0.01	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
40	0.01	0.04	0.00	0.06	0.03	0.08	0.00	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
42	0.02	0.05	0.00	0.07	0.04	0.13	0.00	0.17	0.00	0.03	0.00	0.03	0.00	0.01	0.00	0.01
44	0.03	0.10	0.00	0.13	0.16	0.25	0.00	0.41	0.06	0.05	0.00	0.11	0.02	0.05	0.00	0.07
46	0.12	0.19	0.00	0.31	0.17	0.33	0.00	0.50	0.02	0.10	0.00	0.13	0.06	0.09	0.00	0.16
48	0.08	0.21	0.00	0.29	0.07	0.23	0.00	0.30	0.01	0.04	0.00	0.05	0.05	0.05	0.00	0.10
50	0.09	0.13	0.00	0.22	0.14	0.22	0.00	0.35	0.07	0.06	0.00	0.14	0.11	0.12	0.00	0.23
52	0.07	0.12	0.00	0.19	0.07	0.21	0.00	0.28	0.03	0.01	0.00	0.04	0.13	0.12	0.00	0.25
54	0.03	0.12	0.00	0.15	0.03	0.18	0.00	0.21	0.10	0.01	0.00	0.11	0.13	0.20	0.00	0.33
56	0.08	0.13	0.00	0.21	0.11	0.16	0.00	0.27	0.07	0.09	0.00	0.16	0.16	0.14	0.00	0.30
58	0.06	0.17	0.00	0.23	0.09	0.27	0.00	0.36	0.15	0.05	0.00	0.20	0.23	0.14	0.00	0.37
60	0.12	0.29	0.00	0.42	0.14	0.14	0.00	0.28	0.14	0.08	0.00	0.22	0.37	0.17	0.00	0.54
62	0.07	0.19	0.00	0.26	0.12	0.18	0.00	0.29	0.32	0.09	0.00	0.42	0.31	0.20	0.00	0.51
64	0.12	0.23	0.00	0.34	0.16	0.21	0.00	0.38	0.17	0.12	0.00	0.29	0.34	0.24	0.00	0.57
66	0.11	0.16	0.00	0.27	0.04	0.23	0.00	0.27	0.17	0.11	0.00	0.27	0.30	0.24	0.00	0.54
68	0.03	0.21	0.00	0.24	0.02	0.20	0.00	0.22	0.06	0.16	0.00	0.22	0.10	0.24	0.00	0.33
70	0.03	0.29	0.00	0.31	0.00	0.24	0.00	0.24	0.01	0.15	0.00	0.16	0.06	0.19	0.00	0.25
72	0.00	0.14	0.00	0.14	0.00	0.18	0.00	0.18	0.00	0.15	0.00	0.15	0.00	0.12	0.00	0.12
74	0.00	0.04	0.00	0.04	0.00	0.14	0.00	0.14	0.00	0.06	0.00	0.06	0.01	0.15	0.00	0.17
76	0.00	0.08	0.00	0.08	0.00	0.03	0.00	0.03	0.00	0.05	0.00	0.05	0.00	0.06	0.00	0.06
78	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.04	0.00	0.04
80	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
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	0.01	0.00	0.01
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	**1.08**	**2.93**	**0.00**	**4.01**	**1.41**	**3.62**	**0.00**	**5.03**	**1.38**	**1.43**	**0.00**	**2.80**	**2.39**	**2.58**	**0.00**	**4.97**
Nº samples:				36				29				27				36
Nº Ind.:	106	284	0	390	129	341	0	470	131	135	0	266	207	238	0	445
Sampled catch:				479				515				350				602
Range:				38-78				37-80				43-78				43-82
Total catch:				479				515				350				602
Total valid hauls:				99				100				96				95

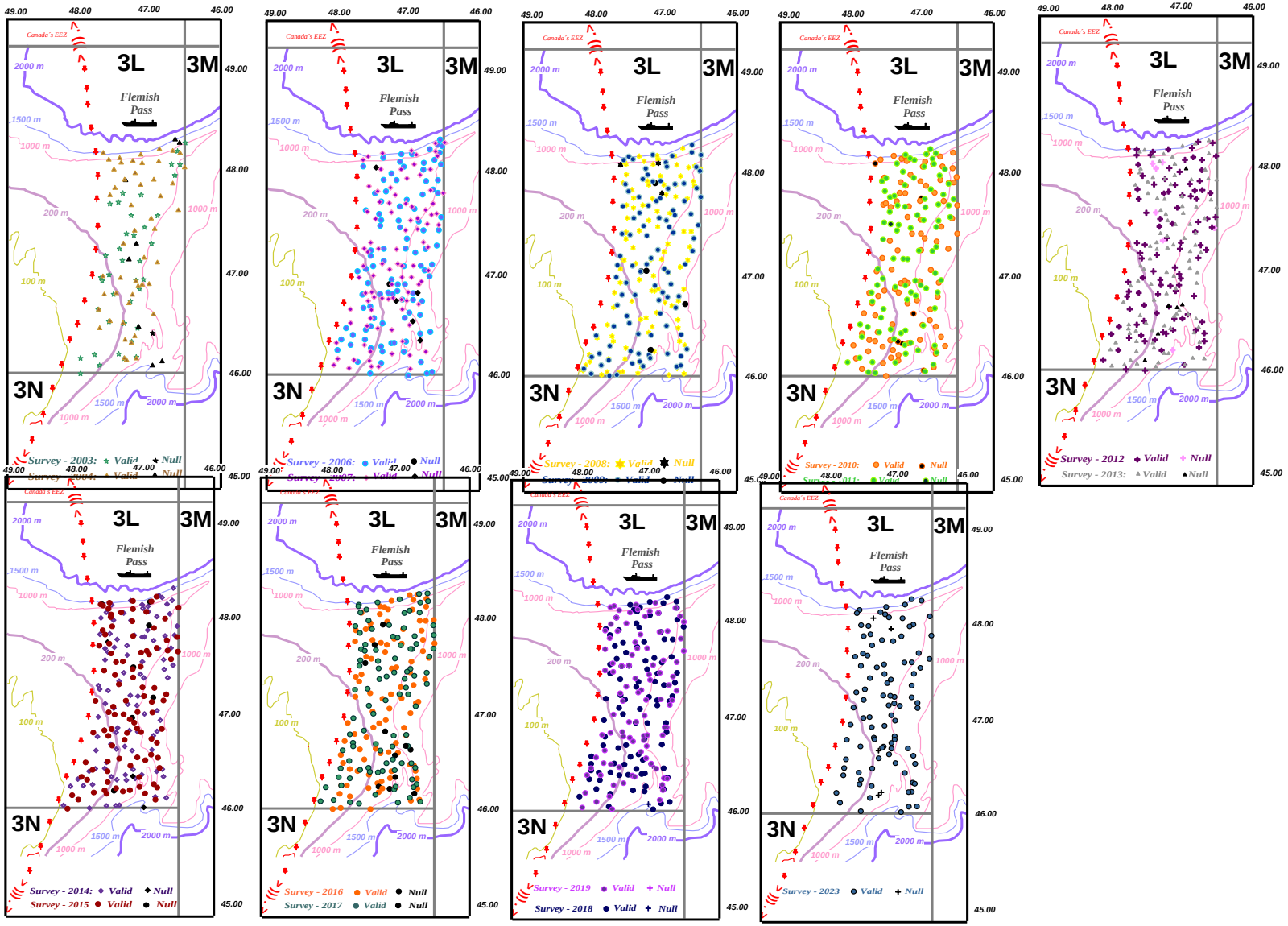
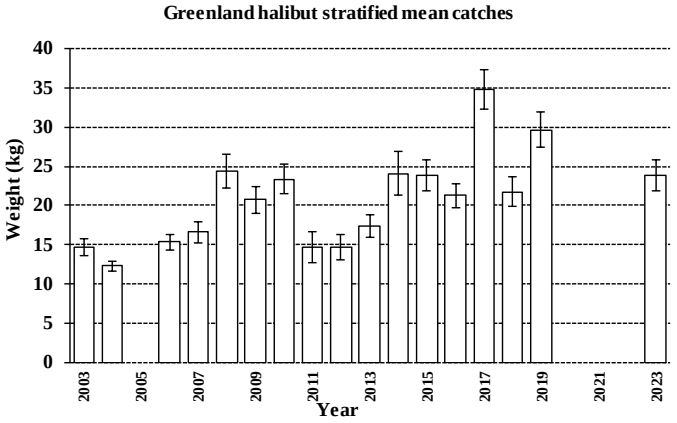
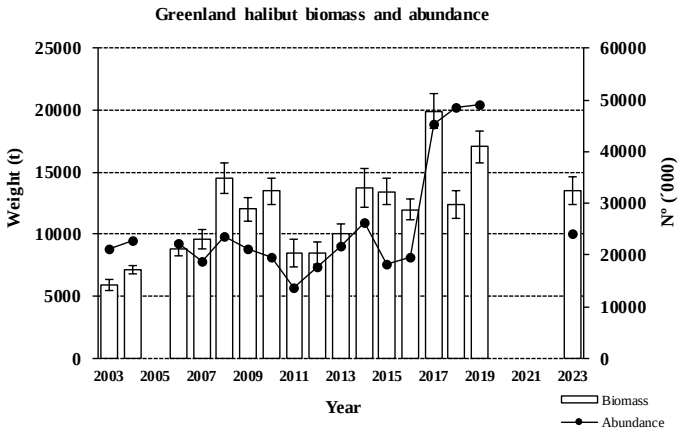
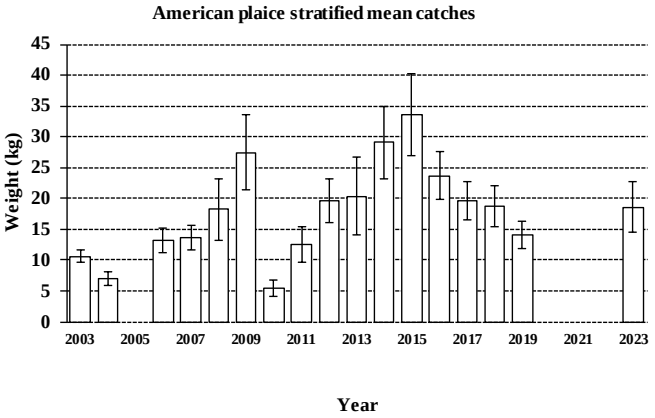
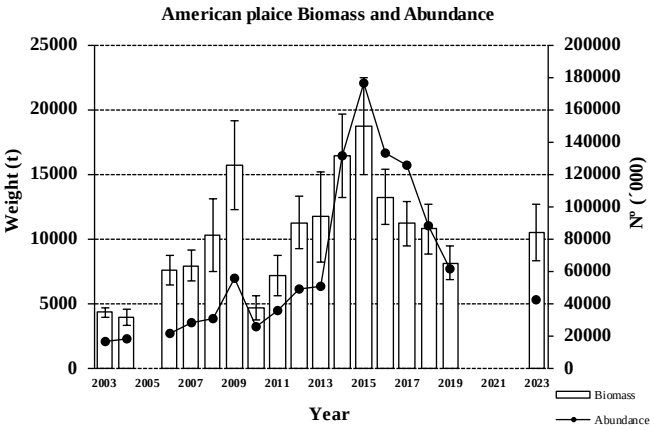


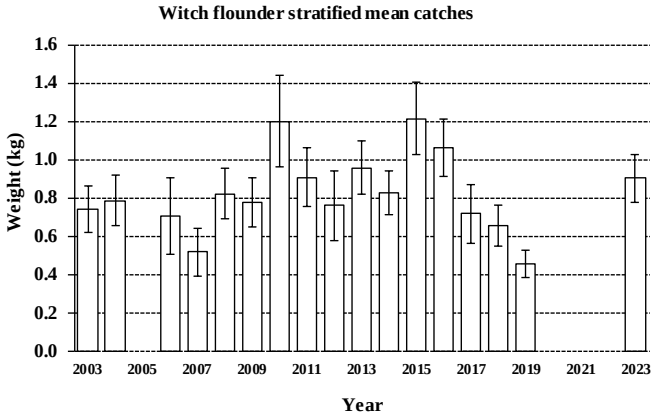
Figure 1. Haul positions of the Spanish surveys in NAFO Division 3L in the period 2003-2023 (R/V *"Vizconde de Eza"*).











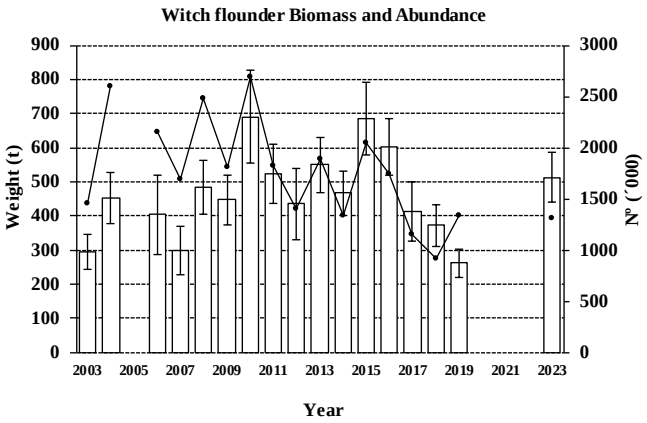


Figure 2. Stratified mean catches in Kg and ±SD by year, abundance (´000) and biomass in tonnes and ±SD by year for **Greenland halibut, American plaice and Witch flounder**. Spanish surveys in NAFO Division 3L: 2003 - 2023 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

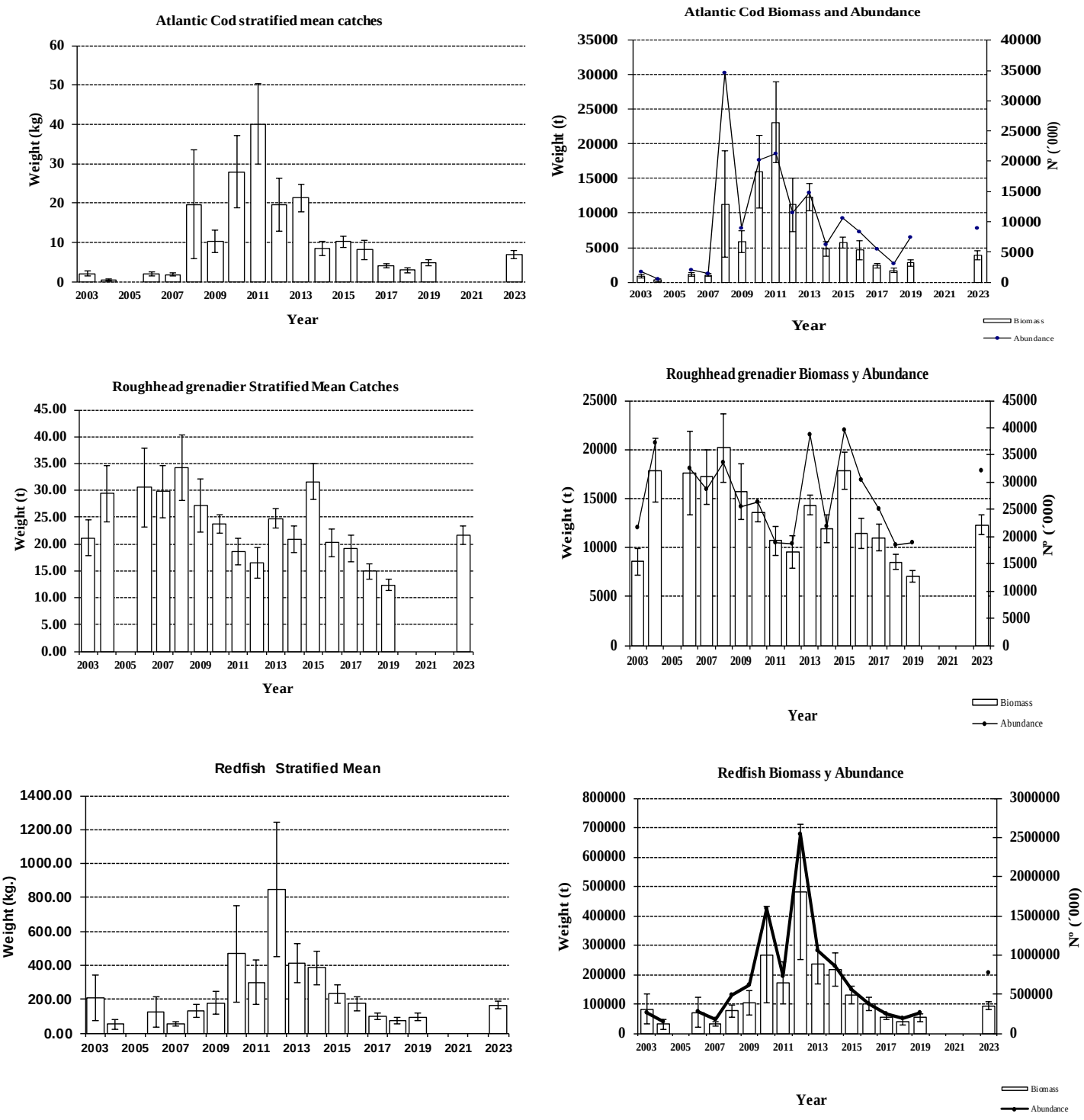


Figure 3. Stratified mean catches in Kg and ±SD by year, abundance (´000) and biomass in tonnes and ±SD by year for **Atlantic cod, roughhead grenadier and redfish**. Spanish surveys in NAFO Division 3L: 2003-2023 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

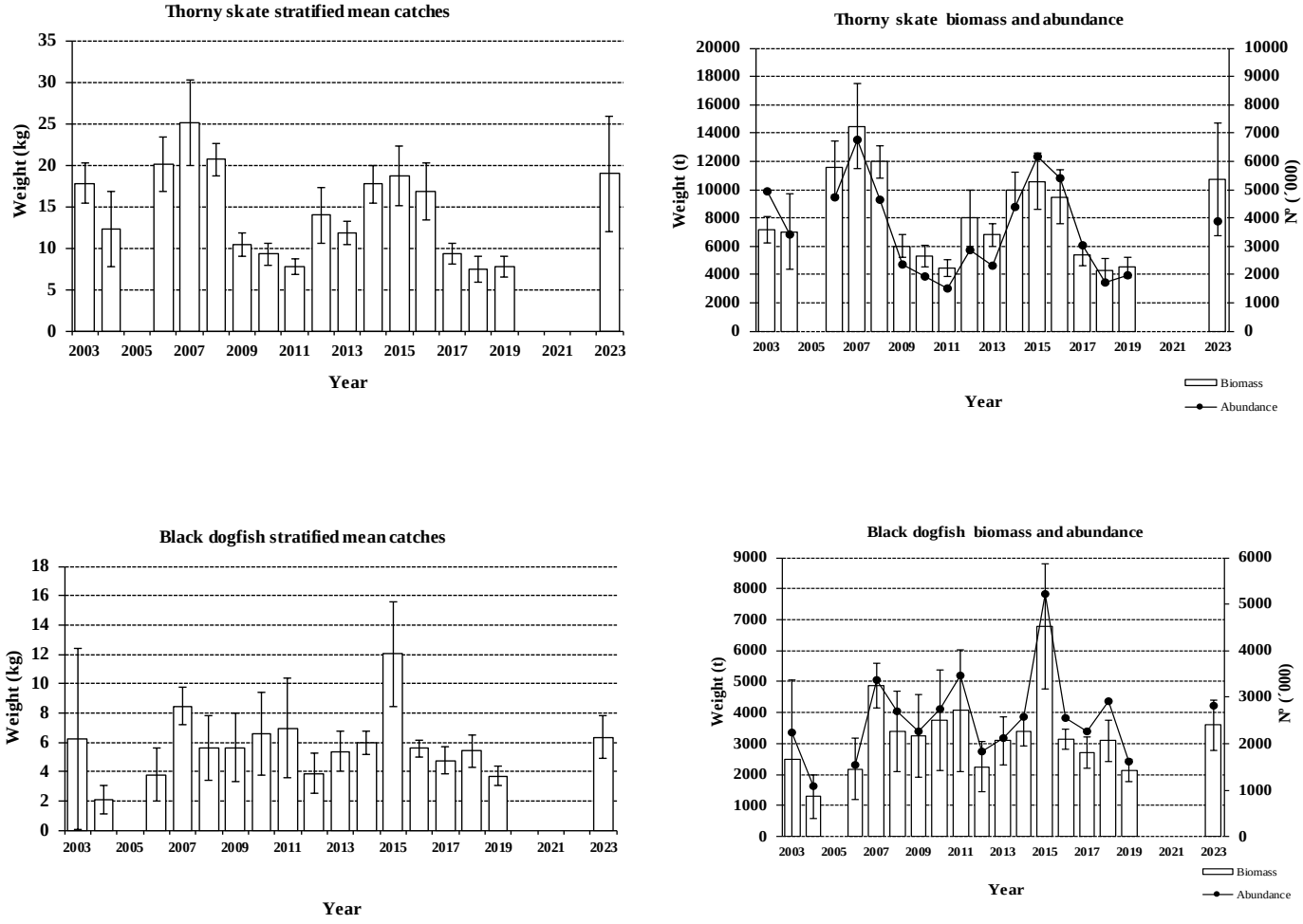


Figure 4. Stratified mean catches in Kg and ±SD by year, abundance (´000) and biomass in tonnes and ±SD by year for **thorny skate and black dogfish**. Spanish surveys in NAFO Division 3L: 2003-2023 (R/V *"Vizconde de Eza"*). In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

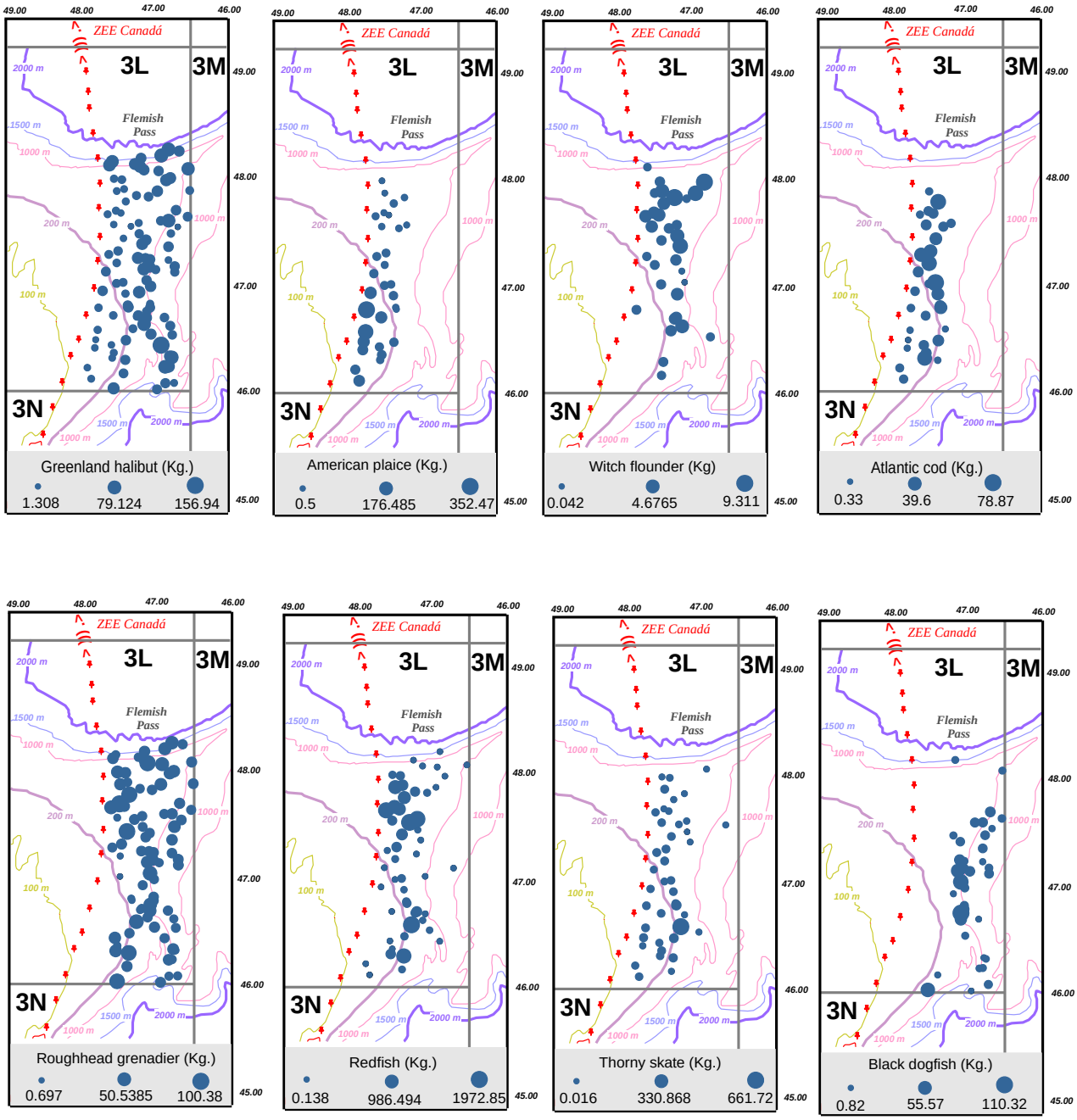


Figure 5. Distribution of the catches per haul for **Greenland halibut, American plaice, witch flounder, Atlantic cod, roughhead grenadier, redfish, thorny skate and black dogfish** in 2023 Spanish 3L survey.

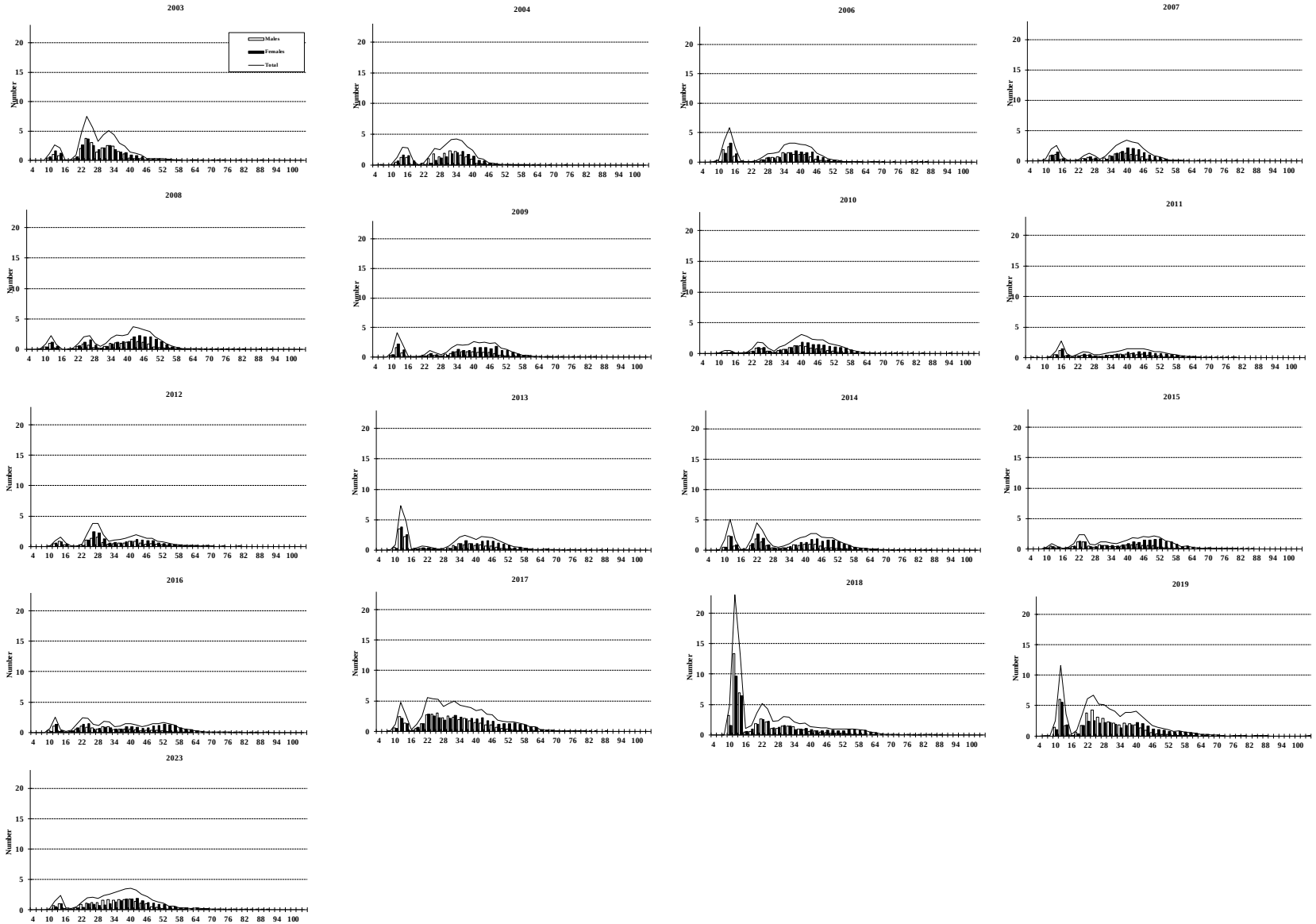


Figure 6. **Greenland halibut** length distribution (cm) in NAFO 3L: 2003-2023. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

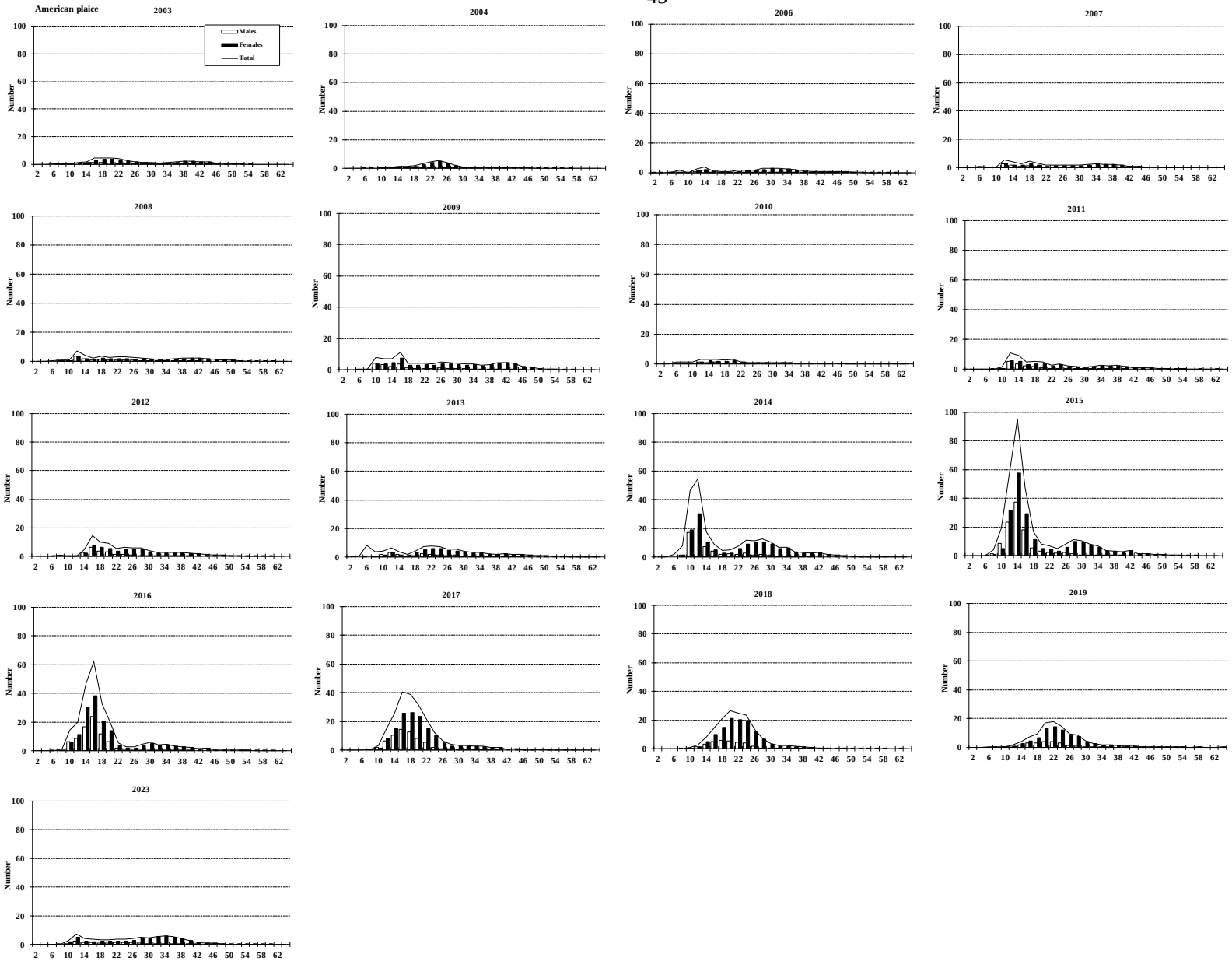


Figure 7. **American plaice** length distribution (cm) in NAFO 3L: 2003-2023. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

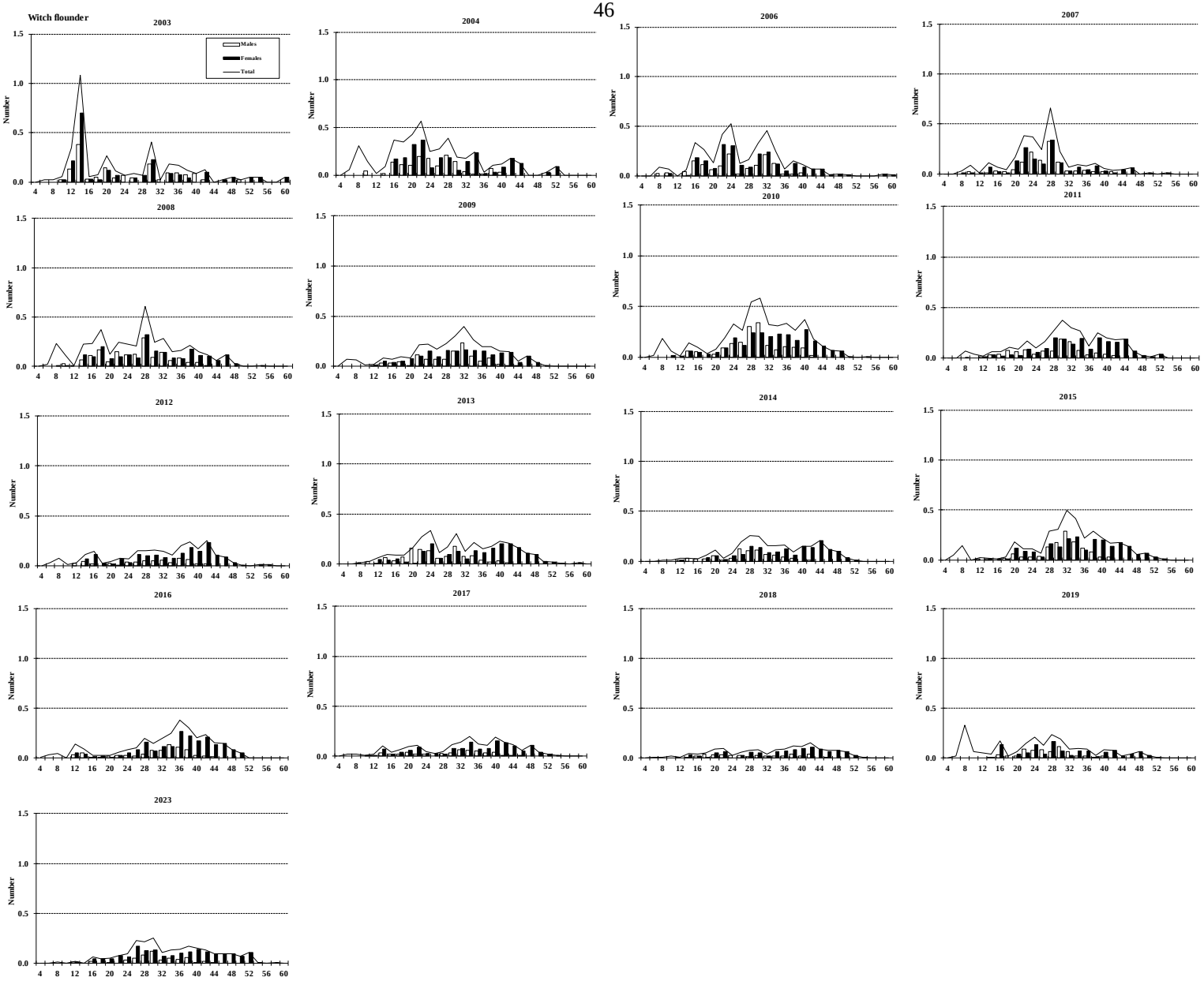


Figure 8. **Witch flounder** length distribution (cm) in NAFO 3L: 2003-2023. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

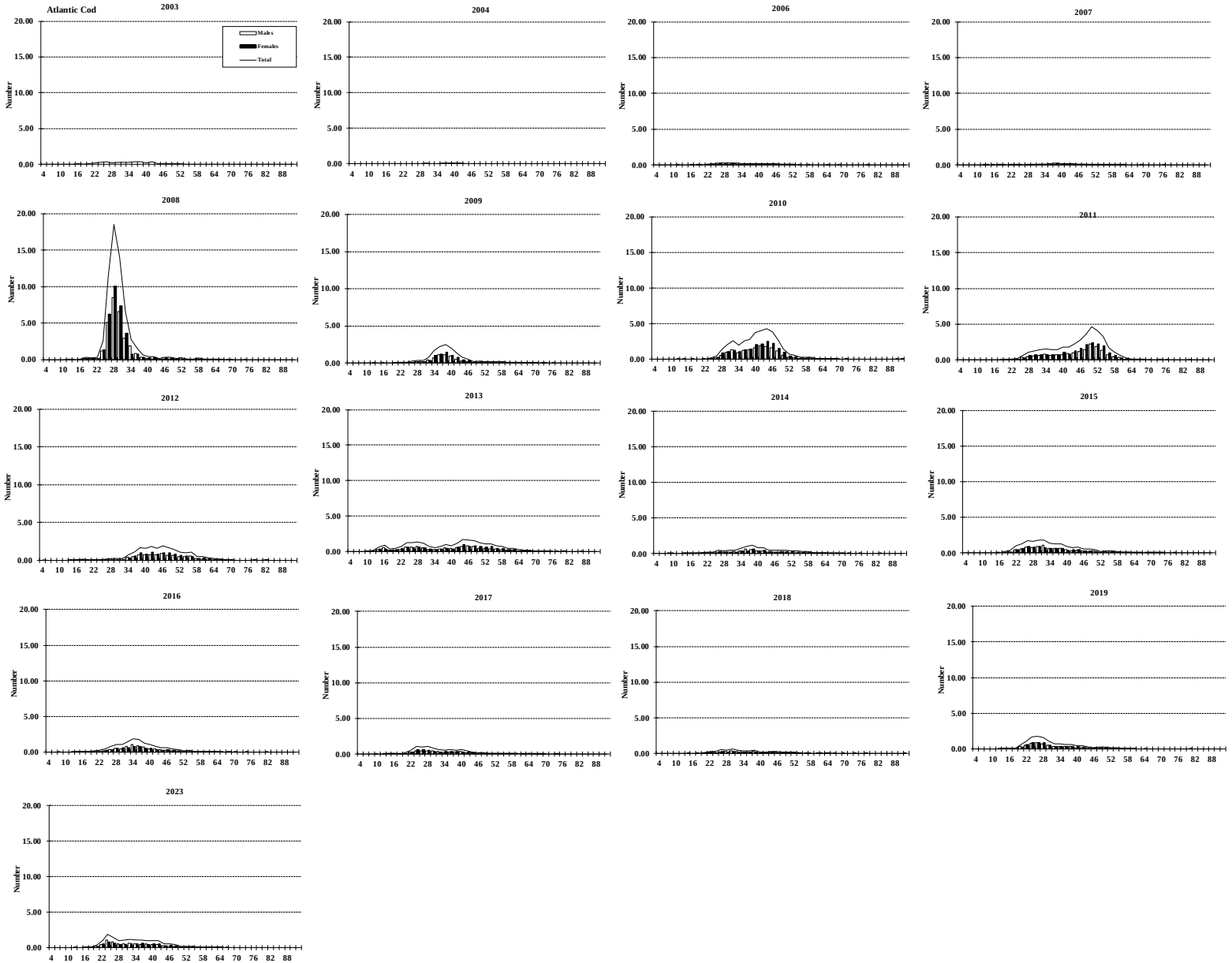


Figure 9. **Atlantic cod** length distribution (cm) in NAFO 3L: 2003-2023. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

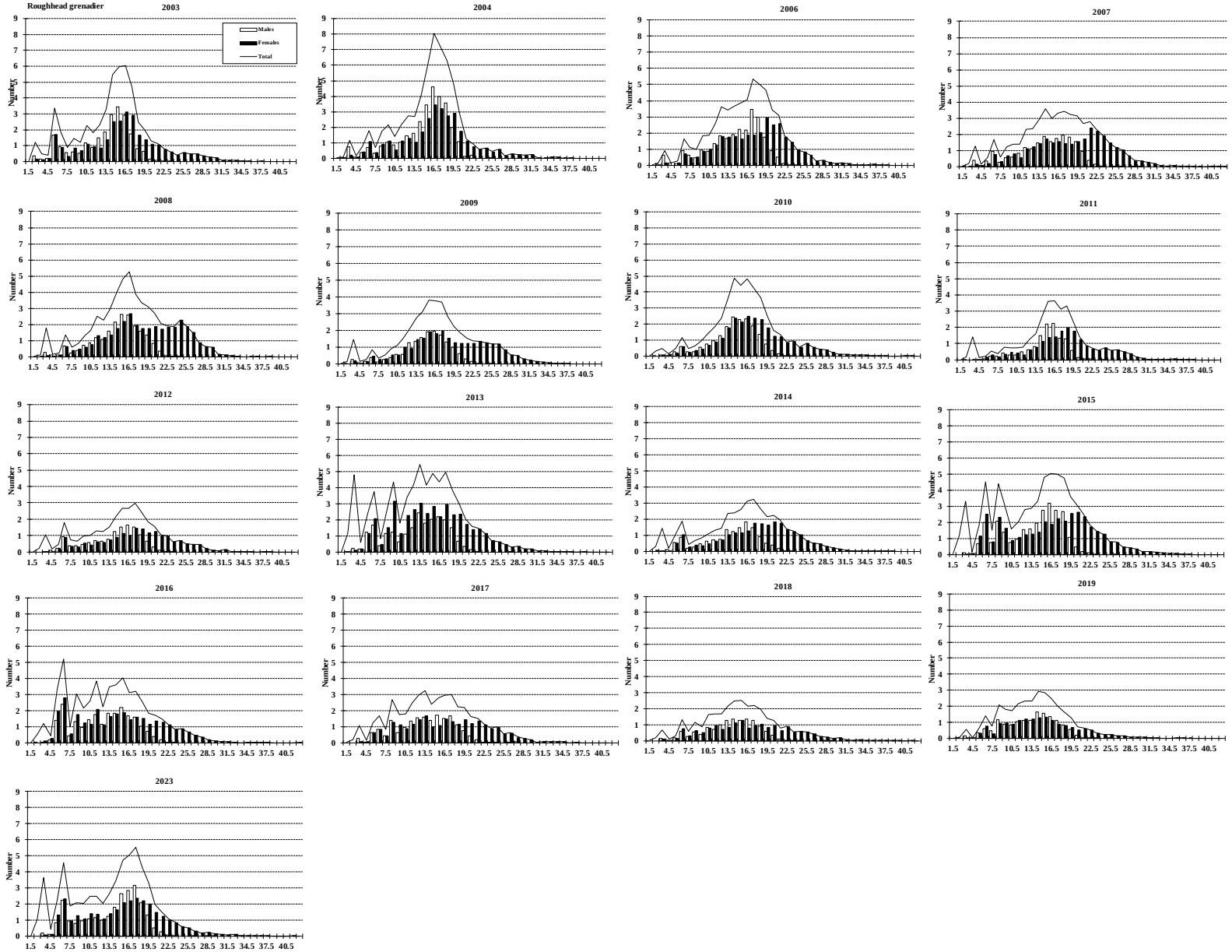


Figure 10. **Roughhead grenadier** length distribution (cm) in NAFO 3L: 2003-2023. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

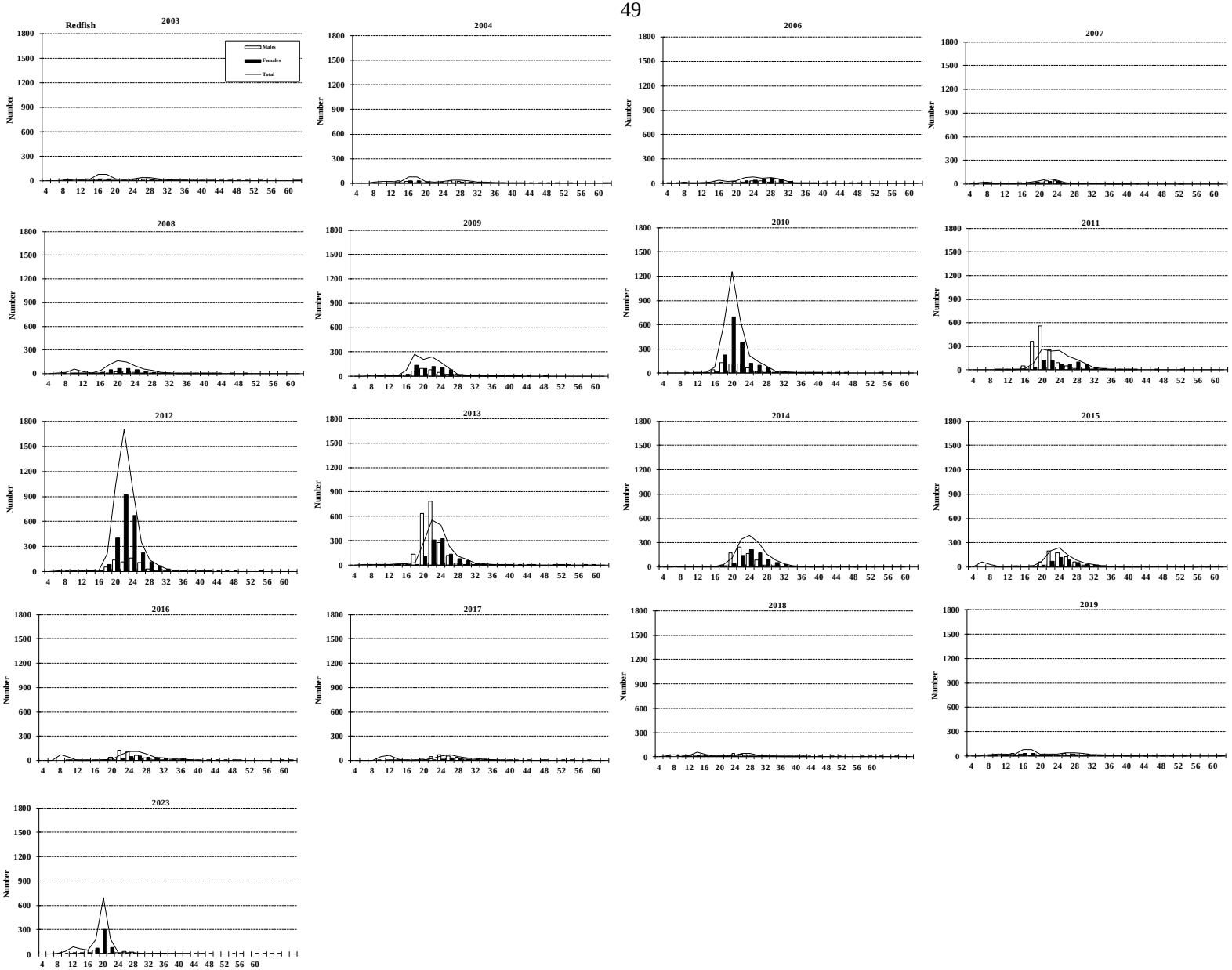


Figure 11. **Redfish** length distribution (cm) in NAFO 3L: 2003-2023. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

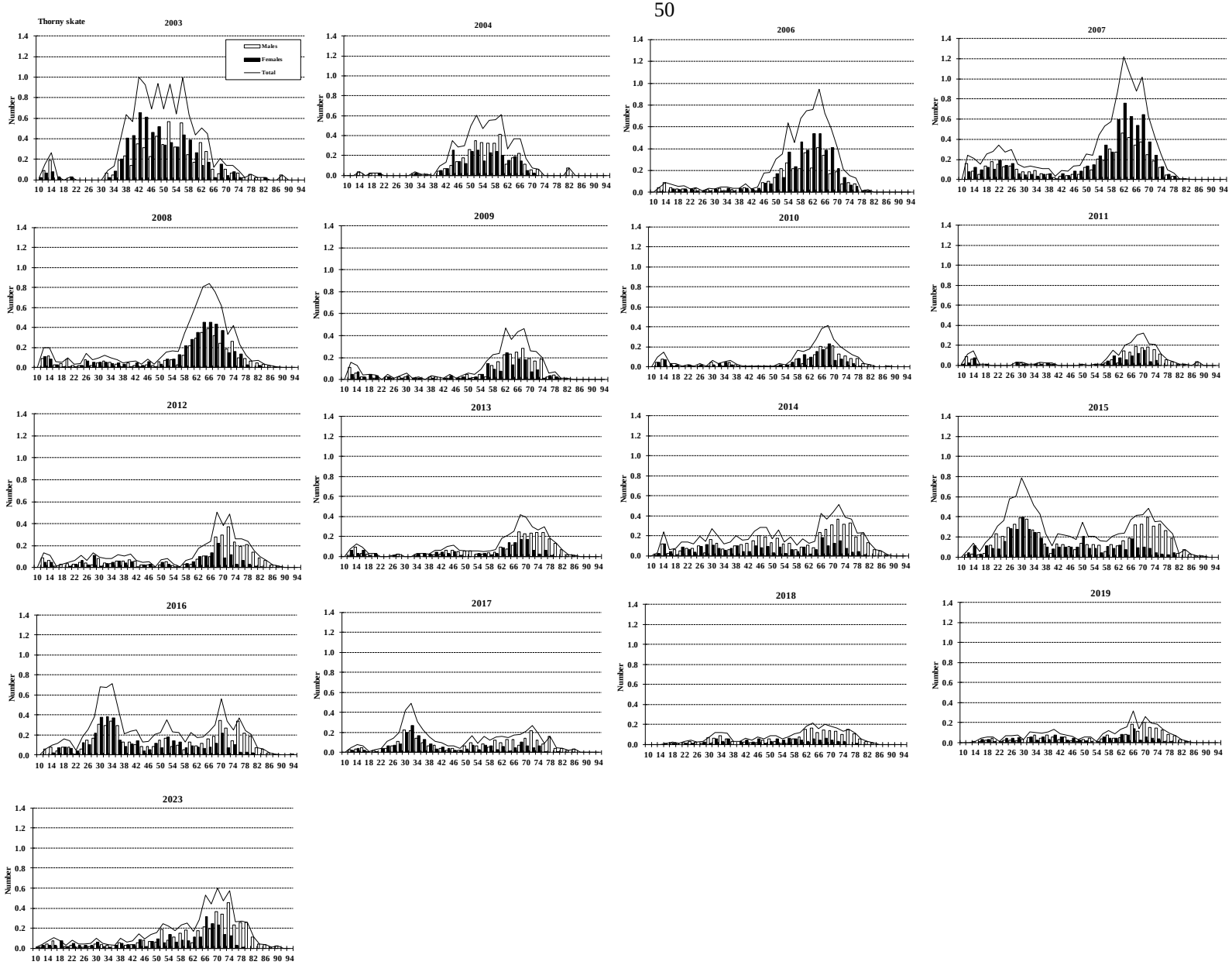


Figure 12. **Thorny skate** length distribution (cm) in NAFO 3L: 2003-2023. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2023.

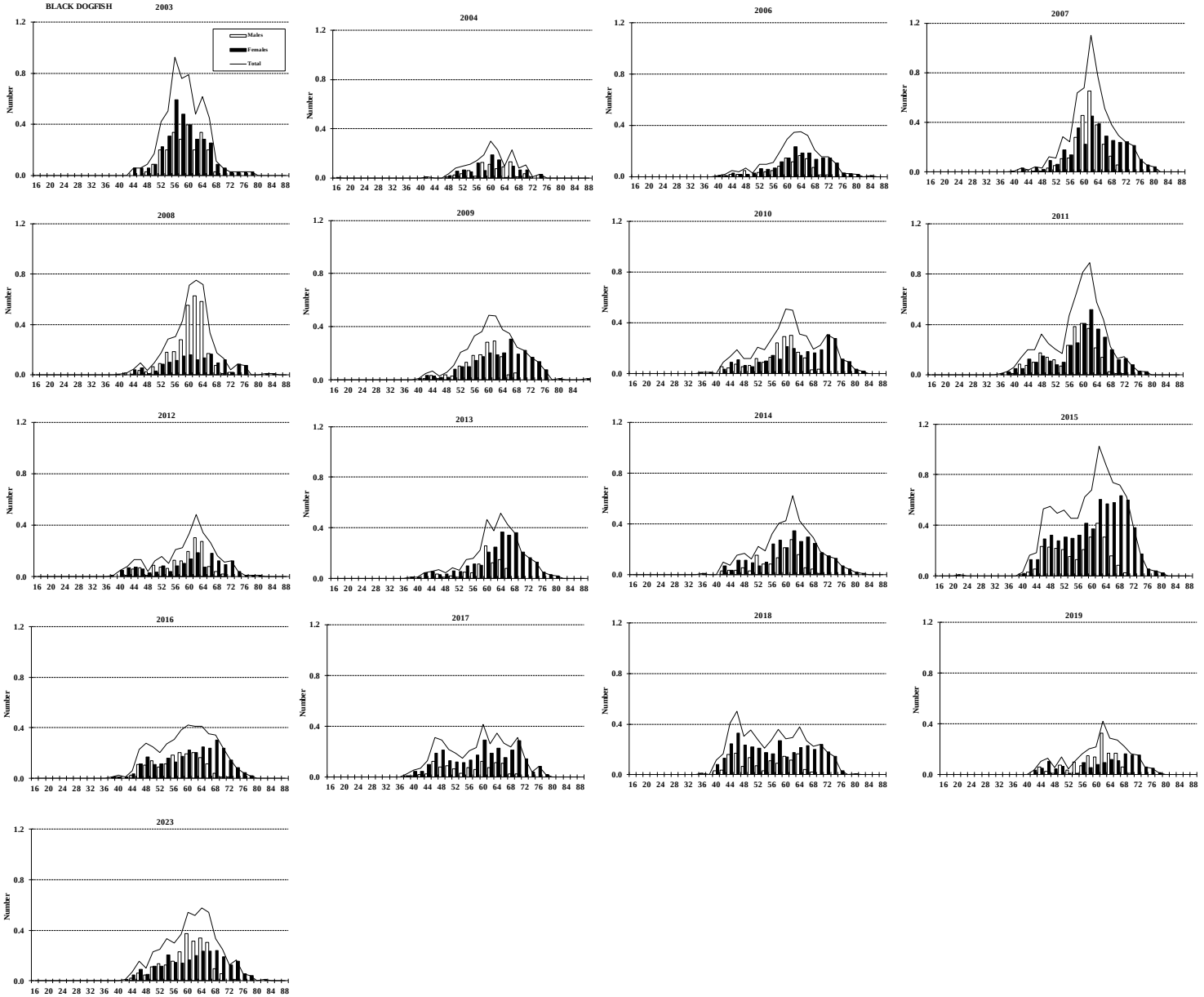
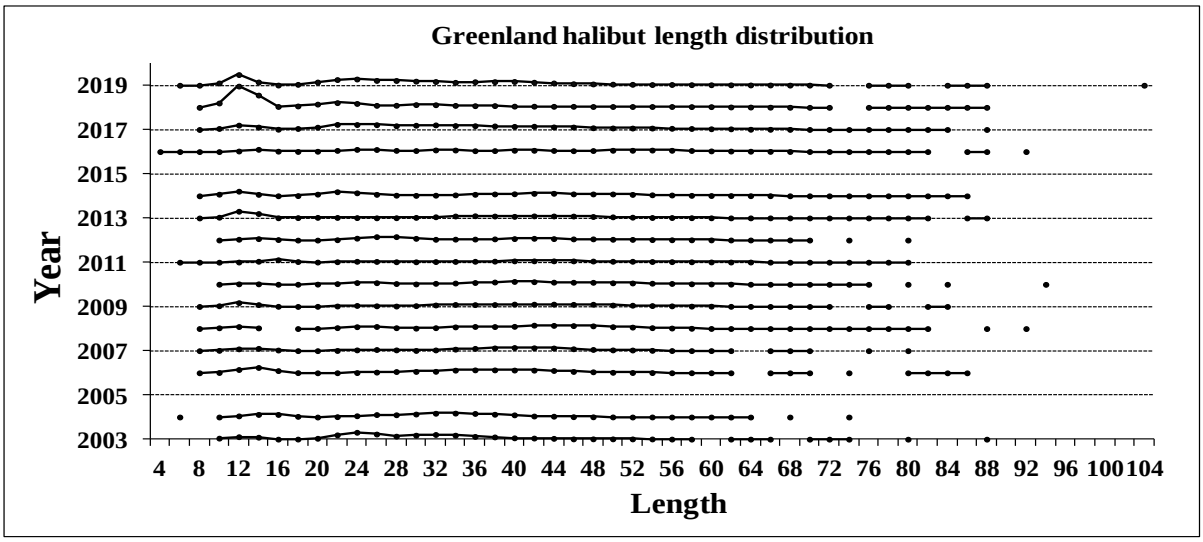
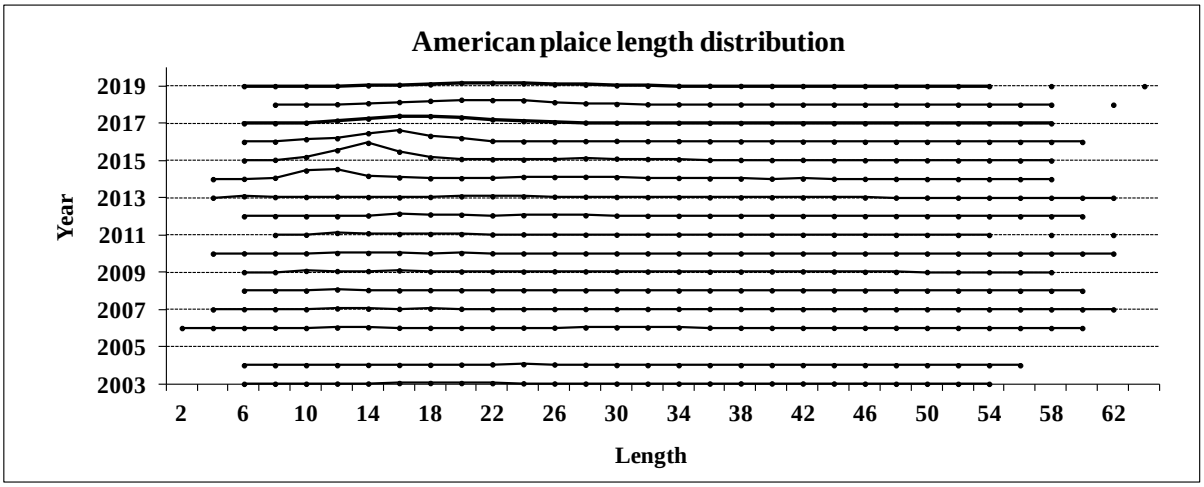


Figure 13. **Black dogfish** length distribution (cm) in NAFO 3L: 2003-2023. Number per stratified mean catches. In 2003, the data correspond to 69% of the total area prospected in 2006-2023.





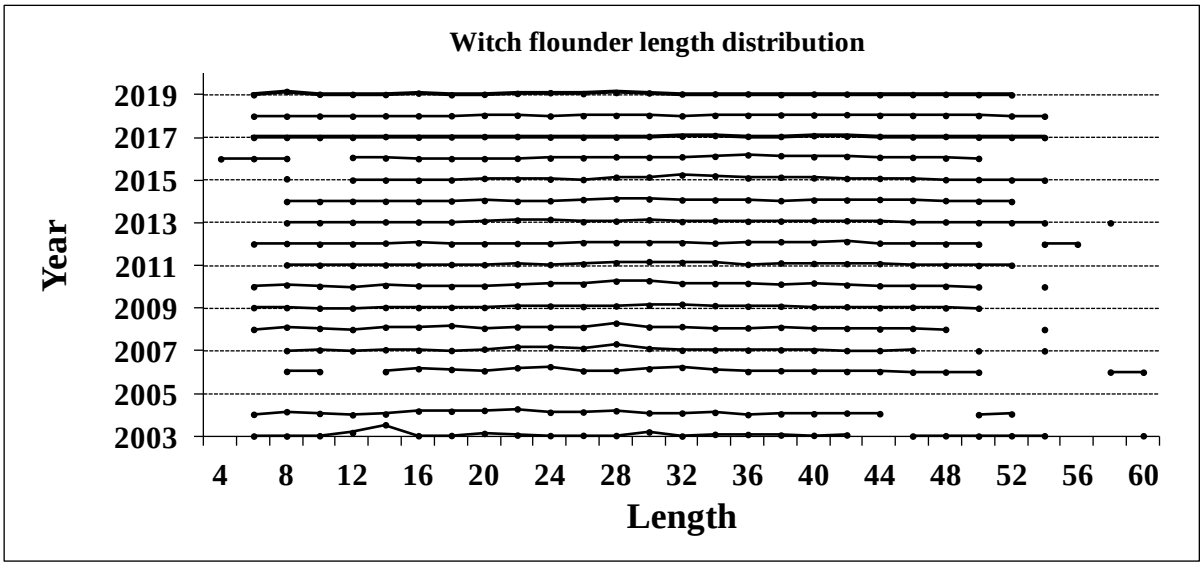
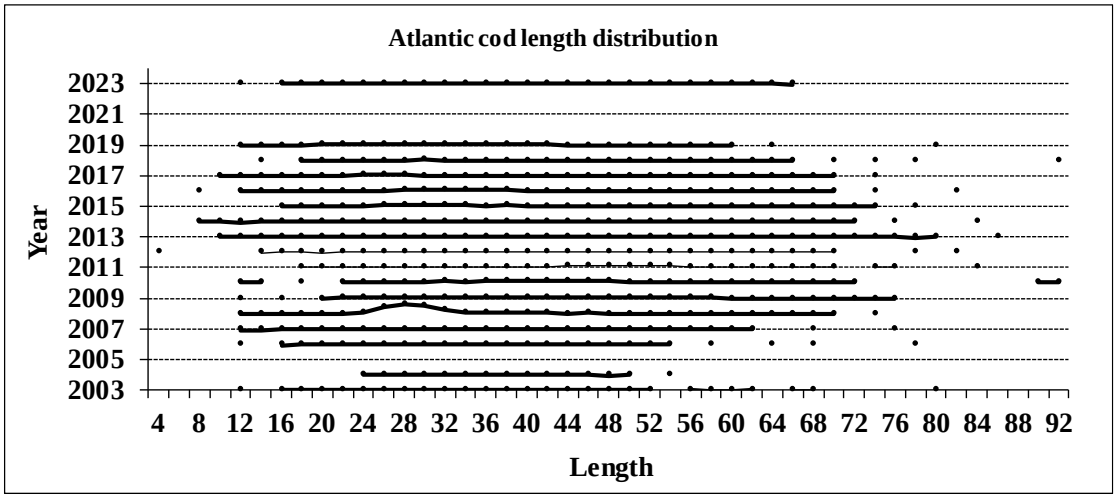
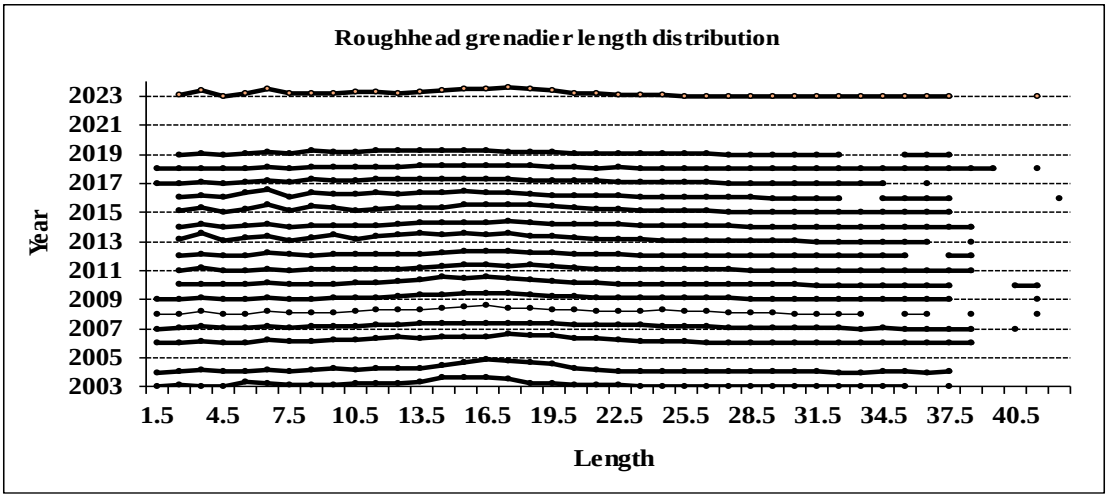


Figure 14. **Greenland halibut, American plaice** and **witch flounder** length distribution (cm) in NAFO 3L: 2003-2023.





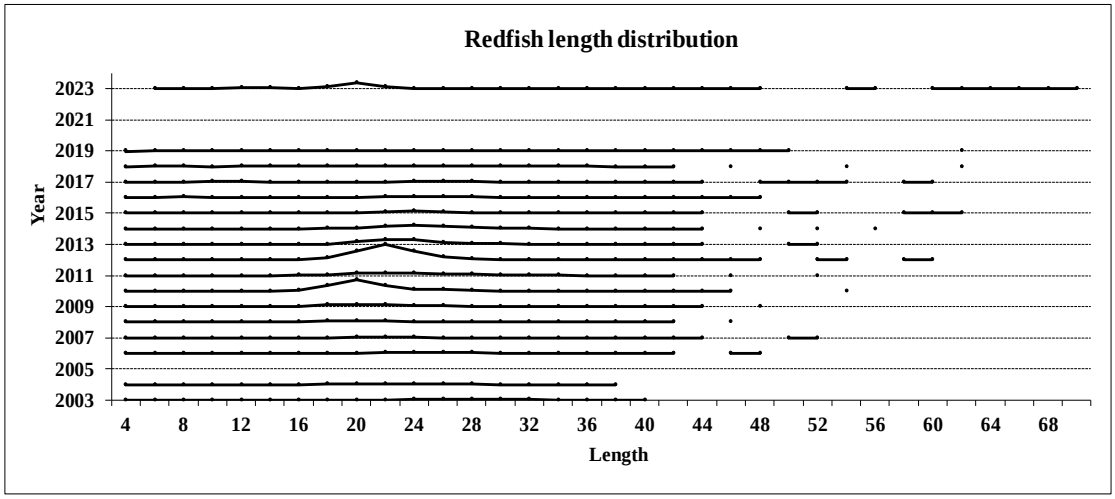
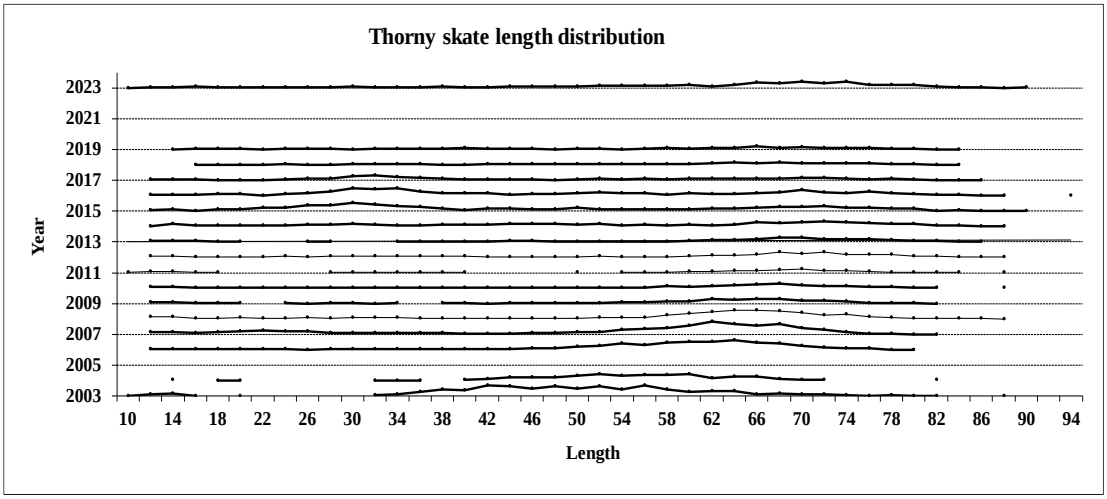


Figure 15. Atlantic cod, roughhead grenadier and redfish length distribution (cm) in NAFO 3L: 2003-2023.



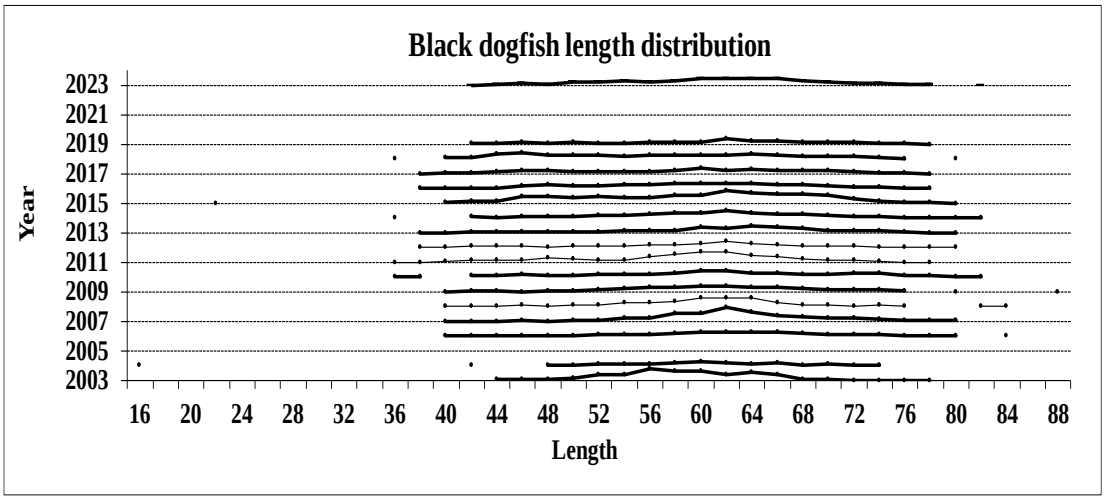


Figure16. **Thorny skate and black dogfish** length distribution (cm) in NAFO 3L: 2003-2023.