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# Atlantic cod and Yellowtail flounder indices from the Spanish Survey conducted in Divisions 3NO of the NAFO Regulatory Area

by

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## Abstract

Since 1995, Spain carries out a stratified random spring bottom trawl survey in Div. 3NO of the NAFO Regulatory Area. The entire series of mean catches, biomass and length distribution for Atlantic cod (*Gadus morhua*) are presented for the period 1997-2008 and for Yellowtail flounder (*Limanda ferruginea*) for the period 1995-2008. For Atlantic cod we can see a general decreasing in the biomass between 2002 and 2005, and an increasing since then, especially in 2006 and 2008. In 2007 the biomass decreased, but the level is over the value in the period 2002-2005. For this species, an increase in the recruitment can be seen in 2004 and 2005, and in years 2007 and 2008 the youngest length classes are much over the rest of the length classes. For Yellowtail flounder, there is no a clear trend since 1998; its indices are almost constant along this period.

## Material and methods

The survey in Div. 3NO of NAFO Regulatory Area was initiated by Spain in 1995. Until 2001, the survey was carried out in Spring (May), on board the Spanish vessel C/V *Playa de Menduiña* (338 GT and 800 HP) using bottom trawl net type *Pedreira*. Since 2001, the R/V *Vizconde de Eza* replaced the C/V *Playa de Menduíña* as the research vessel for the survey, and *Campelen* net replaced *Pedreira* net as survey gear. The main specifications and geometry of these gears, as the rigging profile and the net plan, and a sheet with the resume of the main technical data of the survey are described in a previous paper (Walsh *et. al.*, 2001). Table 1 presents the number of valid tows, the depth strata covered and the dates of the survey series. The survey area was stratified following the standard stratification schemes (Bishop, 1994). Set number was allocated to strata proportionally to their size, with a minimum of two planned hauls per stratum and the trawl positions were chosen at random (Doubleday, 1981). Biomass indices were calculated by the swept area method (Cochran, 1997), assuming catchability factor of 1.

For Atlantic cod, the series are presented since 1997 because in years 1995 and 1996 the surveyed depth strata were only until 1000 meters, so they are not representative. As the strata where the Yellowtail flounder is presented were well surveyed, the series for this species are presented since 1995.

The catch from each haul was sorted by species and weighted. Random samples of each species catches were measured to total length to the nearest lower cm. Length distribution scaled from catches was estimated for the period 1997-2008 (Atlantic cod) and 1995-2008 (Yellowtail flounder) in two cm range. Data were grouping beginning with the pair number.

For each species, the haul mean catch, with its variance, and the stratified mean catches by stratum and year, with the annual variance, are presented, transformed until 2000 and no-transformed in the period 2002-2008. In the year

2001, there are data transformed from the former vessel with original data from the new vessel. Besides this, the biomass per stratum and year, with the annual variance, are presented, as the stratified mean catches per haul length distribution. To more information about the calculation of these indices, see González Troncoso *et al.*, 2004 and Paz *et al.*, 2004.

## Results

### Atlantic cod

Atlantic cod in Divisions 3NO has been under moratorium to directed fishing since 1994. According to the NAFO Scientific Council, the stock of Atlantic cod in Divisions 3NO declined dramatically during the mid-1980s, and the total biomass and the spawning biomass are currently at an extremely low levels (NAFO, 2008).

#### Mean Catches and Biomass

The Atlantic cod haul mean catches by stratum are presented in Table 2, included swept area, number of hauls and SD. Atlantic cod stratified mean catches per tow by stratum and year and their SD are presented in Table 3.

The entire time series (1997-2008) of biomass and their SD estimates for Atlantic cod are presented in Table 4. Estimated parameters *a* and *b* values of length-weight relationship are presented in Table 5.

We can see a great variation in the cod indices since 1997, but this is due to a few hauls in which the presence of cod was very high. For example, in 1998 and 2001, the C/V *Playa de Menduíña* made a more than seven tons cod catch in a single haul. Besides this, in 2001, the R/V *Vizconde de Eza* made two hauls with more than a ton of cod catches. But before year 2006, and apart from those hauls, the catches of cod were very poor. Between 2002 and 2005 there was a decreasing in the biomass. In 2006, we can see a great increase in the biomass of this species. Although this increase is above all for a single catch of almost 2 tons, in general the catches of Atlantic cod in the survey of 2006 were over the mean. In 2007 we can see a decrease in the biomass over the 2006 biomass, but still remains greater than in the 2002-2005 period. And in 2008 a new high increase is shown, reaching the second highest value in the time series, and in this case there is no haul with very high catches (the maximum was 585.5 kg). The great value of the variance in some years is due to the tows with a large catch (Fig. 1 and 2).

#### Length Distribution

Table 6 and Figures 3 and 4 show the stratified mean catches per haul length distribution by year, besides the sampled size and its catch, for the period 1997-2008. The data have been grouped two by two**,** so we present the data every two cm. Except in 2001, 2006, 2007 and 2008 the modal values are very low. In general all lengths presence is very low, even it is very difficult to follow the modal values. In 2001 we have a good presence of individuals between 36 and 58 cm, probably due to the three hauls with great catches of this year, and in 2006 there is two modes in the length distribution, one around 30 cm and another one around 40 cm. There is no good recruitment until 2004, in which the individuals between 12 and 16 cm correspond to the greatest presence in the series, and in 2005 between 24 and 32, with a new mode between 12 and 16 cm, as in last year. In 2007 and 2008 the youngest lengths dominate the length range. In 2007, the highest mode is in the lengths 12-16, that are between 2 and 4 times the abundance of the 48 cm length class, the following mode. In 2008, the lengths between 20 and 26 dominate, all of them between 2.8 and 4.8 times the abundance of the 54 cm length class, the following mode.

### Yellowtail flounder

After a moratorium between 1994 and 1997, the Yellowtail flounder fishery is under TAC. According to the Report of NAFO Scientific Council Meeting, the stock size had a minimum in the mid 1990´s, but since 1994 has steadily increased and now it is estimated to be at a level well above that of the mid-1980s (NAFO, 2008).

**Mean Catches and Biomass**

In Table 7 we present the haul mean catches by stratum for Yellowtail flounder, included swept area, number of hauls and SD. The stratified mean catches per tow by stratum and year and their SD are presented in Table 8 for this species.

The entire time series (1995-2008) of biomass by the swept area method and their SD estimates of Yellowtail flounder are presented in Table 9. The parameters *a* and *b* for the calculation of the length-weight relationship are presented in Table 10.

The Yellowtail flounder indices show no clear trend along the time (in the entire series). There was an increasing between 1995 and 1999 and since 2001 the indices are stabilised at a high level (Figures 5 and 6).

**Length Distribution**

The stratified mean catches per haul length distribution by sex and year, besides the sampled size and its catch, are presented in Table 11 and Figure 7 the period 1995-2008. The data have been grouped two by two**,** so we present the data every two cm. There is no presence of good recruitment last years. In Figure 8, we can see the evolution of a modal value since the beginning of the series, but, although there is a presence of juveniles in the lengths, this presence is very low.

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**TABLE 1.-** Spanish spring bottom trawl surveys on NAFO Div. 3NO: 1995-2008

| Year | Vessel | Valid tows | Depth strata covered (m) | Dates |
|---|---|---|---|---|
| 1995 | C/V *Playa de Menduíña* | 77 | 42-684 | May 18-May 29 |
| 1996 | C/V *Playa de Menduíña* | 112 | 41-1135 | May 07-May 24 |
| 1997 | C/V *Playa de Menduíña* | 128 | 42-1263 | April 26-May 18 |
| 1998 | C/V *Playa de Menduíña* | 124 | 42-1390 | May 06-May 26 |
| 1999 | C/V *Playa de Menduíña* | 114 | 41-1381 | May 07-May 26 |
| 2000 | C/V *Playa de Menduíña* | 118 | 42-1401 | May 07-May 28 |
| 2001(*) | R/V *Vizconde de Eza* | 83 | 36-1156 | May 03-May 24 |
| | C/V *Playa de Menduíña* | 121 | 40-1500 | May 05-May 23 |
| 2002 | R/V *Vizconde de Eza* | 125 | 38-1540 | April 29-May 19 |
| 2003 | R/V *Vizconde de Eza* | 118 | 38-1666 | May 11-June 02 |
| 2004 | R/V *Vizconde de Eza* | 120 | 43-1539 | June 06–June 24 |
| 2005 | R/V *Vizconde de Eza* | 119 | 47-1485 | June 10–June 29 |
| 2006 | R/V *Vizconde de Eza* | 120 | 45-1480 | June 7–June 27 |
| 2007 | R/V *Vizconde de Eza* | 110 | 45-1374 | May 29–June 19 |
| 2008 | R/V *Vizconde de Eza* | 122 | 38-1460 | May 27–June 16 |

(*) We took, for the calculation of the series, 83 hauls from the R/V *Vizconde de Eza* and 40 hauls from the C/V *Playa de Menduíña* (123 hauls in total)

**TABLE 2.-** Swept area, number of hauls and Atlantic cod mean catch (kg) and SD by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2008. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| | 1997 | | | | 1998 | | | | 1999 | | | | 2000 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stratum | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD |
| 353 | 0.0480 | 4 | 0.00 | 0.000 | 0.0465 | 4 | 0.00 | 0.004 | 0.0360 | 3 | 6.26 | 8.593 | 0.0356 | 3 | 8.59 | 9.984 |
| 354 | 0.0233 | 2 | 0.00 | 0.000 | 0.0356 | 3 | 17.67 | 29.046 | 0.0218 | 2 | 4.92 | 3.192 | 0.0356 | 3 | 18.44 | 27.099 |
| 355 | 0.0233 | 2 | 4.29 | 5.711 | 0.0221 | 2 | 27.05 | 3.662 | 0.0229 | 2 | 6.39 | 2.549 | 0.0233 | 2 | 94.83 | 76.209 |
| 356 | 0.0225 | 2 | 7.80 | 0.495 | 0.0221 | 2 | 6.23 | 0.247 | 0.0229 | 2 | 41.19 | 0.346 | 0.0225 | 2 | 16.34 | 17.172 |
| 357 | 0.0443 | 4 | 91.55 | 174.202 | 0.0240 | 2 | 7.45 | 0.742 | 0.0236 | 2 | 10.12 | 11.461 | 0.0124 | 1 | 9.15 | - |
| 358 | 0.0563 | 5 | 1.77 | 1.655 | 0.0236 | 3 | 4.46 | 4.030 | 0.0349 | 3 | 9.98 | 4.006 | 0.0341 | 3 | 184.88 | 194.829 |
| 359 | 0.0690 | 6 | 1.13 | 2.385 | 0.0698 | 6 | 0.39 | 0.858 | 0.0364 | 3 | 7.25 | 11.394 | 0.0469 | 4 | 18.26 | 17.367 |
| 360 | 0.3754 | 32 | 0.11 | 0.226 | 0.2561 | 25 | 0.22 | 0.700 | 0.2325 | 19 | 2.33 | 3.801 | 0.2396 | 20 | 2.16 | 3.561 |
| 374 | 0.0353 | 3 | 0.06 | 0.099 | 0.0353 | 3 | 0.00 | 0.000 | 0.0244 | 2 | 0.58 | 0.594 | 0.0240 | 2 | 0.00 | 0.000 |
| 375 | 0.0116 | 1 | 0.00 | - | 0.0345 | 3 | 0.78 | 0.403 | 0.0236 | 2 | 0.97 | 0.579 | 0.0244 | 2 | 0.00 | 0.000 |
| 376 | 0.1583 | 14 | 0.00 | 0.000 | 0.0930 | 10 | 0.20 | 0.187 | 0.1219 | 10 | 0.62 | 0.545 | 0.1200 | 10 | 0.90 | 1.852 |
| 377 | 0.0116 | 1 | 0.27 | - | 0.0229 | 2 | 1.89 | 2.375 | 0.0240 | 2 | 0.21 | 0.302 | 0.0229 | 2 | 0.02 | 0.027 |
| 378 | 0.0210 | 2 | 2.34 | 3.316 | 0.0120 | 2 | 3.46 | 0.940 | 0.0229 | 2 | 7.76 | 5.951 | 0.0233 | 2 | 10.65 | 11.169 |
| 379 | 0.0206 | 2 | 3.68 | 0.307 | 0.0356 | 3 | 8.30 | 5.847 | 0.0236 | 2 | 5.22 | 4.147 | 0.0225 | 2 | 41.12 | 54.683 |
| 380 | 0.0210 | 2 | 0.36 | 0.515 | 0.0113 | 2 | 2.33 | 1.361 | 0.0236 | 2 | 38.58 | 48.720 | 0.0236 | 2 | 8.21 | 3.236 |
| 381 | 0.0221 | 2 | 0.07 | 0.099 | 0.0229 | 2 | 0.21 | 0.187 | 0.0229 | 2 | 0.87 | 0.388 | 0.0236 | 2 | 1.74 | 0.730 |
| 382 | 0.0461 | 4 | 0.00 | 0.000 | 0.0229 | 3 | 0.32 | 0.336 | 0.0484 | 4 | 0.05 | 0.036 | 0.0499 | 4 | 0.71 | 0.561 |
| 721 | 0.0221 | 2 | 20.98 | 7.052 | 0.0203 | 2 | 0.61 | 0.866 | 0.0244 | 2 | 88.29 | 106.743 | 0.0236 | 2 | 28.34 | 17.122 |
| 722 | 0.0214 | 2 | 0.31 | 0.139 | 0.0101 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.90 | 1.277 |
| 723 | 0.0210 | 2 | 9.90 | 2.425 | 0.0233 | 2 | 4.39 | 3.736 | 0.0229 | 2 | 16.87 | 20.735 | 0.0248 | 2 | 22.02 | 12.010 |
| 724 | 0.0225 | 2 | 1.30 | 1.269 | 0.0206 | 2 | 1488.84 | 2101.820 | 0.0225 | 2 | 0.02 | 0.032 | 0.0233 | 2 | 0.70 | 0.341 |
| 725 | 0.0206 | 2 | 23.50 | 17.734 | 0.0086 | 1 | 30.86 | - | 0.0229 | 2 | 13.65 | 19.102 | 0.0210 | 2 | 4.34 | 3.857 |
| 726 | n.s. | n.s. | n.s. | n.s. | 0.0094 | 2 | 4.74 | 5.617 | 0.0225 | 2 | 0.81 | 0.492 | 0.0221 | 2 | 8.85 | 12.221 |
| 727 | 0.0094 | 1 | 0.12 | - | 0.0233 | 2 | 2.66 | 2.821 | 0.0236 | 2 | 9.20 | 4.701 | 0.0210 | 2 | 9.16 | 10.803 |
| 728 | 0.0214 | 2 | 1.17 | 0.569 | 0.0206 | 2 | 1.54 | 2.177 | 0.0233 | 2 | 0.00 | 0.000 | 0.0210 | 2 | 0.90 | 1.267 |
| 752 | 0.0218 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0206 | 2 | 0.00 | 0.000 |
| 753 | 0.0214 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 754 | 0.0330 | 3 | 0.00 | 0.000 | 0.0210 | 2 | 0.00 | 0.000 | 0.0206 | 2 | 0.00 | 0.000 | 0.0195 | 2 | 0.00 | 0.000 |
| 755 | n.s. | n.s. | n.s. | n.s. | 0.0206 | 2 | 0.00 | 0.000 | 0.0311 | 3 | 0.00 | 0.000 | 0.0431 | 4 | 0.00 | 0.000 |
| 756 | 0.0109 | 1 | 0.00 | - | 0.0225 | 2 | 0.32 | 0.449 | 0.0225 | 2 | 0.24 | 0.334 | 0.0203 | 2 | 0.36 | 0.257 |
| 757 | 0.0304 | 3 | 0.00 | 0.000 | 0.0206 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 758 | 0.0214 | 2 | 0.00 | 0.000 | 0.0105 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 | 0.0210 | 2 | 0.00 | 0.000 |
| 759 | n.s. | n.s. | n.s. | n.s. | 0.0214 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0210 | 2 | 0.00 | 0.000 |
| 760 | 0.0105 | 1 | 0.00 | - | 0.0214 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0210 | 2 | 0.00 | 0.000 |
| 761 | 0.0315 | 3 | 0.00 | 0.000 | 0.0206 | 2 | 0.00 | 0.000 | 0.0210 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 762 | 0.0308 | 3 | 0.00 | 0.000 | 0.0094 | 2 | 0.00 | 0.000 | 0.0210 | 2 | 0.00 | 0.000 | 0.0203 | 2 | 0.00 | 0.000 |
| 763 | n.s. | n.s. | n.s. | n.s. | 0.0218 | 2 | 0.00 | 0.000 | 0.0311 | 3 | 0.00 | 0.000 | 0.0416 | 4 | 1.08 | 2.170 |
| 764 | 0.0206 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 765 | 0.0206 | 2 | 0.00 | 0.000 | 0.0098 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0203 | 2 | 0.00 | 0.000 |
| 766 | 0.0308 | 3 | 0.00 | 0.000 | 0.0191 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 767 | n.s. | n.s. | n.s. | n.s. | 0.0109 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 | 0.0210 | 2 | 0.00 | 0.000 |

**TABLE 2 (cont.).-** Swept area, number of hauls and Atlantic cod mean catch (kg) and SD by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2008. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| | 2001 | | | | 2002 | | | | 2003 | | | | 2004 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stratum | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD |
| 353 | 0.0341 | 3 | 7.33 | 8.145 | 0.0476 | 4 | 0.00 | 0.003 | 0.0334 | 3 | 0.00 | 0.000 | 0.0338 | 3 | 10.21 | 8.691 |
| 354 | 0.0338 | 3 | 16.07 | 3.315 | 0.0356 | 3 | 0.01 | 0.012 | 0.0338 | 3 | 7.63 | 13.221 | 0.0345 | 3 | 4.76 | 3.335 |
| 355 | 0.0240 | 2 | 56.11 | 64.898 | 0.0236 | 2 | 0.96 | 0.370 | 0.0229 | 2 | 3.02 | 2.390 | 0.0229 | 2 | 5.09 | 3.267 |
| 356 | 0.0240 | 2 | 149.60 | 76.650 | 0.0233 | 2 | 15.20 | 10.889 | 0.0225 | 2 | 15.61 | 1.605 | 0.0221 | 2 | 2.97 | 0.714 |
| 357 | 0.0244 | 2 | 27.20 | 36.062 | 0.0240 | 2 | 6.65 | 1.909 | 0.0229 | 2 | 5.28 | 7.460 | 0.0229 | 2 | 13.30 | 17.727 |
| 358 | 0.0345 | 3 | 3.42 | 2.592 | 0.0345 | 3 | 2.63 | 1.429 | 0.0338 | 3 | 207.22 | 260.186 | 0.0330 | 3 | 14.41 | 12.455 |
| 359 | 0.0803 | 7 | 176.35 | 433.935 | 0.0686 | 6 | 2.72 | 3.436 | 0.0791 | 7 | 1.03 | 1.522 | 0.0791 | 7 | 29.83 | 54.712 |
| 360 | 0.2423 | 20 | 11.36 | 27.470 | 0.2865 | 25 | 0.82 | 2.887 | 0.2254 | 20 | 1.14 | 2.952 | 0.2310 | 20 | 3.55 | 4.484 |
| 374 | 0.0240 | 2 | 0.00 | 0.000 | 0.0345 | 3 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0232 | 2 | 0.00 | 0.000 |
| 375 | 0.0338 | 3 | 0.00 | 0.000 | 0.0353 | 3 | 0.47 | 0.503 | 0.0330 | 3 | 0.48 | 0.826 | 0.0338 | 3 | 0.05 | 0.081 |
| 376 | 0.1155 | 10 | 0.04 | 0.119 | 0.1140 | 10 | 0.00 | 0.000 | 0.1125 | 10 | 0.65 | 1.987 | 0.1166 | 10 | 0.60 | 0.733 |
| 377 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 1.25 | 1.768 | 0.0218 | 2 | 19.60 | 24.020 |
| 378 | 0.0236 | 2 | 11.98 | 15.726 | 0.0233 | 2 | 1.45 | 2.051 | 0.0225 | 2 | 19.18 | 19.141 | 0.0225 | 2 | 17.75 | 3.989 |
| 379 | 0.0229 | 2 | 9.54 | 9.001 | 0.0229 | 2 | 24.83 | 32.492 | 0.0229 | 2 | 4.35 | 0.481 | 0.0124 | 1 | 23.95 | - |
| 380 | 0.0206 | 2 | 6.00 | 2.895 | 0.0225 | 2 | 0.31 | 0.035 | 0.0229 | 2 | 1.09 | 0.976 | 0.0221 | 2 | 7.77 | 2.305 |
| 381 | 0.0236 | 2 | 0.66 | 0.891 | 0.0229 | 2 | 0.04 | 0.057 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 5.47 | 4.150 |
| 382 | 0.0469 | 4 | 0.12 | 0.145 | 0.0341 | 3 | 0.04 | 0.076 | 0.0454 | 4 | 0.00 | 0.000 | 0.0461 | 4 | 0.47 | 0.888 |
| 721 | 0.0248 | 2 | 4.85 | 6.859 | 0.0233 | 2 | 1.01 | 1.430 | 0.0225 | 2 | 9.40 | 13.287 | 0.0221 | 2 | 2.20 | 3.111 |
| 722 | 0.0233 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 1.73 | 2.447 | 0.0218 | 2 | 0.00 | 0.000 |
| 723 | 0.0240 | 2 | 676.15 | 932.179 | 0.0233 | 2 | 55.60 | 69.155 | 0.0229 | 2 | 0.65 | 0.919 | 0.0229 | 2 | 1.94 | 2.744 |
| 724 | 0.0353 | 3 | 6.16 | 10.254 | 0.0225 | 2 | 49.80 | 70.428 | 0.0225 | 2 | 10.46 | 14.786 | 0.0214 | 2 | 0.00 | 0.000 |
| 725 | 0.0116 | 2 | 1367.61 | 1856.733 | 0.0225 | 2 | 9.25 | 7.849 | 0.0229 | 2 | 2.17 | 3.062 | 0.0225 | 2 | 0.29 | 0.403 |
| 726 | 0.0116 | 2 | 1.83 | 2.593 | 0.0214 | 2 | 1122.95 | 1569.289 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 727 | 0.0225 | 2 | 10.40 | 4.810 | 0.0233 | 2 | 2.80 | 3.960 | 0.0218 | 2 | 7.45 | 9.405 | 0.0232 | 2 | 0.00 | 0.000 |
| 728 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 21.40 | 30.264 | 0.0225 | 2 | 0.00 | 0.000 | 0.0180 | 2 | 0.00 | 0.000 |
| 752 | 0.0210 | 2 | 0.00 | 0.000 | 0.0116 | 1 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 753 | 0.0214 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 754 | 0.0195 | 2 | 0.00 | 0.000 | 0.0341 | 3 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 755 | 0.0416 | 4 | 0.00 | 0.000 | 0.0338 | 3 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0319 | 3 | 0.00 | 0.000 |
| 756 | 0.0113 | 2 | 0.04 | 0.057 | 0.0229 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 757 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 64.40 | 91.075 | 0.0221 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 758 | 0.0218 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 2.80 | 3.960 | 0.0221 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 759 | 0.0221 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0113 | 1 | 0.00 | - | 0.0214 | 2 | 0.00 | 0.000 |
| 760 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 761 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.17 | 0.236 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 762 | 0.0116 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.15 | 0.212 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 763 | 0.0330 | 3 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0311 | 3 | 0.00 | 0.000 | 0.0326 | 3 | 0.00 | 0.000 |
| 764 | 0.0240 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 765 | 0.0113 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 | 0.0113 | 1 | 0.00 | - | 0.0225 | 2 | 0.00 | 0.000 |
| 766 | 0.0203 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 767 | 0.0225 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |

**TABLE 2 (cont.).-** Swept area, number of hauls and Atlantic cod mean catch (kg) and SD by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1997-2008. Swept area in square miles. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| | 2005 | | | | 2006 | | | | 2007 | | | | 2008 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stratum | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD | Swept area | Tow number | A. cod Mean catch | A. cod SD |
| 353 | 0.0353 | 3 | 4.20 | 3.962 | 0.0371 | 3 | 11.53 | 7.341 | 0.0364 | 3 | 0.14 | 0.138 | 0.0341 | 3 | 0.04 | 0.070 |
| 354 | 0.0353 | 3 | 6.76 | 8.311 | 0.0364 | 3 | 10.98 | 14.032 | 0.0364 | 3 | 16.81 | 14.624 | 0.0345 | 3 | 64.76 | 69.913 |
| 355 | 0.0225 | 2 | 1.97 | 0.255 | 0.0248 | 2 | 3.04 | 0.078 | 0.0240 | 2 | 41.34 | 12.820 | 0.0221 | 2 | 2.30 | 3.253 |
| 356 | 0.0233 | 2 | 1.43 | 1.478 | 0.0240 | 2 | 3.88 | 3.247 | 0.0240 | 2 | 0.96 | 1.351 | 0.0236 | 2 | 13.45 | 13.011 |
| 357 | 0.0233 | 2 | 3.98 | 4.603 | 0.0244 | 2 | 12.75 | 8.400 | 0.0360 | 3 | 1.42 | 1.323 | 0.0233 | 2 | 6.31 | 8.917 |
| 358 | 0.0349 | 3 | 22.75 | 17.967 | 0.0349 | 3 | 82.54 | 80.442 | 0.0368 | 3 | 113.84 | 43.776 | 0.0345 | 3 | 249.58 | 302.829 |
| 359 | 0.0814 | 7 | 57.31 | 134.609 | 0.0975 | 8 | 372.36 | 643.214 | 0.0855 | 7 | 3.17 | 4.658 | 0.0799 | 7 | 224.94 | 196.538 |
| 360 | 0.2325 | 20 | 2.47 | 4.698 | 0.2340 | 19 | 7.35 | 8.119 | 0.2378 | 20 | 2.42 | 4.606 | 0.2340 | 20 | 10.10 | 14.465 |
| 374 | 0.0229 | 2 | 0.11 | 0.148 | 0.0236 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.57 | 0.812 |
| 375 | 0.0349 | 3 | 0.00 | 0.000 | 0.0364 | 3 | 13.53 | 15.862 | 0.0364 | 3 | 1.71 | 1.646 | 0.0334 | 3 | 18.64 | 29.958 |
| 376 | 0.1174 | 10 | 0.76 | 0.963 | 0.1219 | 10 | 6.84 | 11.380 | 0.1185 | 10 | 0.68 | 1.167 | 0.1129 | 10 | 11.60 | 9.917 |
| 377 | 0.0233 | 2 | 61.19 | 64.955 | 0.0236 | 2 | 90.62 | 69.919 | 0.0240 | 2 | 698.56 | 987.885 | 0.0233 | 2 | 234.80 | 189.646 |
| 378 | 0.0225 | 2 | 8.59 | 10.087 | 0.0240 | 2 | 90.32 | 85.680 | 0.0233 | 2 | 85.98 | 23.723 | 0.0240 | 2 | 213.40 | 239.992 |
| 379 | 0.0236 | 2 | 5.70 | 7.078 | 0.0236 | 2 | 6.30 | 8.627 | 0.0240 | 2 | 3.13 | 0.394 | 0.0229 | 2 | 2.26 | 1.965 |
| 380 | 0.0229 | 2 | 27.53 | 24.784 | 0.0229 | 2 | 8.70 | 1.697 | 0.0240 | 2 | 4.20 | 5.945 | 0.0225 | 2 | 21.80 | 11.738 |
| 381 | 0.0233 | 2 | 3.63 | 3.765 | 0.0229 | 2 | 8.43 | 1.167 | 0.0240 | 2 | 2.19 | 0.354 | 0.0229 | 2 | 4.49 | 6.242 |
| 382 | 0.0458 | 4 | 0.97 | 0.639 | 0.0469 | 4 | 0.75 | 1.033 | 0.0484 | 4 | 0.00 | 0.000 | 0.0458 | 4 | 0.13 | 0.167 |
| 721 | 0.0229 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 | 0.0116 | 1 | 0.00 | - | 0.0225 | 2 | 1.24 | 1.747 |
| 722 | 0.0233 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0206 | 2 | 0.00 | 0.000 |
| 723 | 0.0233 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 3.15 | 4.455 | 0.0225 | 2 | 5.54 | 7.835 |
| 724 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 725 | 0.0236 | 2 | 1.47 | 2.073 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 11.89 | 11.823 | 0.0229 | 2 | 0.61 | 0.863 |
| 726 | 0.0113 | 1 | 0.00 | - | 0.0225 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 727 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.39 | 0.554 |
| 728 | 0.0109 | 1 | 0.00 | - | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 752 | 0.0236 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 753 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 754 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 755 | 0.0450 | 4 | 0.00 | 0.000 | 0.0338 | 3 | 0.00 | 0.000 | 0.0338 | 3 | 0.00 | 0.000 | 0.0431 | 4 | 0.00 | 0.000 |
| 756 | 0.0233 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 757 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 758 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 759 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0221 | 2 | 0 | 0 |
| 760 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 761 | 0.0221 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 762 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0214 | 2 | 0 | 0 |
| 763 | 0.0334 | 3 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0311 | 3 | 0 | 0 |
| 764 | 0.0233 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 765 | 0.0229 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 766 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0218 | 2 | 0 | 0 |
| 767 | 0.0113 | 1 | 0.00 | - | 0.0233 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0214 | 2 | 0 | 0 |

**TABLE 3.-** Stratified mean catches (Kg) by stratum and year and SD by year of Atlantic cod (1997-2008). n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| Stratum | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 353 | 0.00 | 0.59 | 1684.29 | 2310.56 | 1972.67 | 0.40 | 0.00 | 2746.49 | 1129.80 | 3100.67 | 36.76 | 10.85 |
| 354 | 0.00 | 4347.10 | 1209.44 | 4536.47 | 3954.04 | 1.64 | 1877.80 | 1172.11 | 1662.39 | 2700.42 | 4134.28 | 15931.78 |
| 355 | 317.46 | 2001.63 | 472.57 | 7017.36 | 4152.14 | 71.15 | 223.48 | 376.66 | 145.78 | 224.59 | 3058.79 | 170.20 |
| 356 | 366.75 | 292.75 | 1935.74 | 768.05 | 7031.20 | 714.40 | 733.44 | 139.36 | 66.98 | 182.17 | 44.89 | 632.15 |
| 357 | 15014.55 | 1222.35 | 1659.07 | 1500.68 | 4460.80 | 1090.60 | 865.10 | 2180.38 | 651.90 | 2091.00 | 232.33 | 1034.02 |
| 358 | 397.76 | 1002.53 | 2246.51 | 41597.12 | 768.75 | 592.50 | 46625.25 | 3241.50 | 5119.50 | 18570.75 | 25614.00 | 56156.25 |
| 359 | 473.87 | 164.50 | 3052.91 | 7687.04 | 74245.15 | 1146.52 | 435.31 | 12557.95 | 24128.71 | 156764.14 | 1334.99 | 94698.54 |
| 360 | 301.58 | 616.24 | 6478.57 | 6017.33 | 31605.14 | 2283.17 | 3169.28 | 9886.61 | 6869.14 | 20449.63 | 6724.01 | 28119.71 |
| 374 | 12.23 | 0.00 | 124.31 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 22.47 | 0.00 | 0.00 | 122.84 |
| 375 | 0.00 | 211.79 | 261.73 | 0.00 | 0.00 | 126.47 | 129.18 | 12.65 | 0.00 | 3665.73 | 464.22 | 5050.09 |
| 376 | 0.00 | 263.27 | 822.50 | 1202.94 | 50.03 | 0.00 | 864.70 | 801.87 | 1010.91 | 9129.90 | 911.39 | 15474.27 |
| 377 | 26.59 | 188.96 | 21.35 | 1.92 | 0.00 | 0.00 | 125.00 | 1959.50 | 6119.00 | 9062.00 | 69855.95 | 23480.00 |
| 378 | 325.88 | 481.53 | 1078.58 | 1480.09 | 1665.22 | 201.55 | 2665.33 | 2466.56 | 1194.36 | 12553.79 | 11950.53 | 29662.60 |
| 379 | 390.21 | 880.31 | 553.41 | 4358.29 | 1010.71 | 2631.45 | 461.10 | 2538.70 | 603.67 | 667.80 | 331.94 | 239.51 |
| 380 | 34.94 | 223.39 | 3703.59 | 788.08 | 576.11 | 30.19 | 104.64 | 745.92 | 2642.40 | 835.20 | 403.58 | 2092.80 |
| 381 | 10.08 | 30.36 | 125.22 | 250.68 | 95.74 | 5.76 | 0.00 | 787.90 | 523.08 | 1213.20 | 315.36 | 646.06 |
| 382 | 0.00 | 108.42 | 18.00 | 243.65 | 41.41 | 14.98 | 0.00 | 160.78 | 332.28 | 255.54 | 0.00 | 45.96 |
| 721 | 1363.56 | 39.80 | 5738.57 | 1842.35 | 315.25 | 65.75 | 610.68 | 143.00 | 0.00 | 0.00 | 0.00 | 80.28 |
| 722 | 26.16 | 0.00 | 0.00 | 75.84 | 0.00 | 0.00 | 145.32 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 723 | 1534.94 | 680.69 | 2614.28 | 3413.20 | 104803.25 | 8618.00 | 100.75 | 300.70 | 0.00 | 0.00 | 488.25 | 858.70 |
| 724 | 161.20 | 184615.64 | 2.82 | 87.21 | 764.25 | 6175.20 | 1296.42 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 725 | 2467.77 | 3240.64 | 1432.94 | 455.78 | 143598.88 | 971.25 | 227.33 | 29.93 | 153.93 | 0.00 | 1248.45 | 64.05 |
| 726 | n.s | 341.39 | 58.07 | 637.55 | 132.02 | 80852.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 727 | 11.42 | 255.30 | 883.49 | 879.12 | 998.37 | 268.80 | 715.20 | 0.00 | 0.00 | 0.00 | 0.00 | 37.58 |
| 728 | 91.43 | 120.09 | 0.00 | 69.87 | 0.00 | 1669.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 752 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 753 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 754 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 755 | n.s | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 756 | 0.00 | 32.07 | 23.86 | 36.40 | 4.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 757 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 6568.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 758 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 277.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 759 | n.s | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | n.s | 0.00 |
| 760 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 761 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 28.56 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 762 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 31.80 | 0.00 | 0.00 | 0.00 | 0.00 | n.s | 0.00 |
| 763 | n.s | 0.00 | 0.00 | 283.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | n.s | 0.00 |
| 764 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 765 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 766 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | n.s | 0.00 |
| 767 | n.s | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | n.s | 0.00 |
| TOTAL | 23328 | 201361 | 36202 | 87541 | 382245 | 114437 | 61375 | 42249 | 52376 | 241467 | 127150 | 274608 |
| $\overline{Y}$ | 2.50 | 19.47 | 3.50 | 8.46 | 36.96 | 11.07 | 5.93 | 4.09 | 5.06 | 23.35 | 13.47 | 26.55 |
| S.D. | 1.54 | 17.82 | 0.75 | 2.58 | 17.97 | 7.82 | 3.29 | 0.95 | 2.16 | 9.39 | 7.44 | 5.71 |

**TABLE 4.-** Survey estimates (by the swept area method) of Atlantic cod biomass (t) and SD by stratum and year on NAFO Div. 3NO. n.s. means stratum not surveyed. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| Stratum | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 353 | 0 | 0 | 140 | 195 | 173 | 0 | 0 | 244 | 96 | 251 | 3 | 1 |
| 354 | 0 | 366 | 111 | 382 | 351 | 0 | 167 | 102 | 141 | 223 | 341 | 1385 |
| 355 | 27 | 181 | 41 | 604 | 346 | 6 | 20 | 33 | 13 | 18 | 255 | 15 |
| 356 | 33 | 26 | 169 | 68 | 586 | 61 | 65 | 13 | 6 | 15 | 4 | 54 |
| 357 | 1357 | 102 | 140 | 121 | 366 | 91 | 76 | 191 | 56 | 172 | 19 | 89 |
| 358 | 35 | 86 | 194 | 3657 | 67 | 52 | 4144 | 295 | 440 | 1597 | 2091 | 4883 |
| 359 | 41 | 14 | 252 | 656 | 6476 | 100 | 39 | 1111 | 2076 | 12863 | 109 | 8299 |
| 360 | 26 | 53 | 529 | 502 | 2609 | 199 | 281 | 856 | 591 | 1660 | 566 | 2403 |
| 374 | 1 | 0 | 10 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 11 |
| 375 | 0 | 18 | 22 | 0 | 0 | 11 | 12 | 1 | 0 | 302 | 38 | 454 |
| 376 | 0 | 23 | 67 | 100 | 4 | 0 | 77 | 69 | 86 | 749 | 77 | 1371 |
| 377 | 2 | 17 | 2 | 0 | 0 | 0 | 11 | 180 | 526 | 767 | 5821 | 2020 |
| 378 | 31 | 41 | 95 | 127 | 141 | 17 | 237 | 219 | 106 | 1046 | 1028 | 2472 |
| 379 | 38 | 74 | 47 | 387 | 88 | 230 | 40 | 205 | 51 | 57 | 28 | 21 |
| 380 | 3 | 20 | 314 | 67 | 56 | 3 | 9 | 67 | 231 | 73 | 34 | 186 |
| 381 | 1 | 3 | 11 | 21 | 8 | 1 | 0 | 70 | 45 | 106 | 26 | 56 |
| 382 | 0 | 10 | 1 | 20 | 4 | 1 | 0 | 14 | 29 | 22 | 0 | 4 |
| 721 | 123 | 4 | 471 | 156 | 25 | 6 | 54 | 13 | 0 | 0 | 0 | 7 |
| 722 | 2 | 0 | 0 | 7 | 0 | 0 | 13 | 0 | 0 | 0 | 0 | 0 |
| 723 | 146 | 59 | 229 | 276 | 8734 | 741 | 9 | 26 | 0 | 0 | 41 | 76 |
| 724 | 14 | 17902 | 0 | 8 | 65 | 549 | 115 | 0 | 0 | 0 | 0 | 0 |
| 725 | 239 | 376 | 125 | 43 | 12347 | 86 | 20 | 3 | 13 | 0 | 111 | 6 |
| 726 | n.s. | 33 | 5 | 58 | 11 | 7565 | 0 | 0 | 0 | 0 | 0 | 0 |
| 727 | 1 | 22 | 75 | 84 | 89 | 23 | 66 | 0 | 0 | 0 | 0 | 3 |
| 728 | 9 | 12 | 0 | 7 | 0 | 146 | 0 | 0 | 0 | 0 | 0 | 0 |
| 752 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 753 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 754 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 755 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 756 | 0 | 3 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 757 | 0 | 0 | 0 | 0 | 0 | 584 | 0 | 0 | 0 | 0 | 0 | 0 |
| 758 | 0 | 0 | 0 | 0 | 0 | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 759 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 760 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 761 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 |
| 762 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 763 | n.s. | 0 | 0 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 764 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 765 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 766 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 767 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| TOTAL | 2131 | 19444 | 3054 | 7576 | 32548 | 10502 | 5455 | 3712 | 4509 | 19921 | 10592 | 23817 |
| S.D. | 1322 | 18206 | 655 | 2566 | 15903 | 7971 | 3016 | 848 | 1984 | 8109 | 5853 | 5221 |

**TABLE 5.-** Length weight relationships in the calculation of Atlantic cod biomass. The equation is $Weight = a(l + 0.5)^b$ Spanish Spring Surveys on NAFO Div. 3NO: 1997-2008.

| | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 |
|---|---|---|---|---|---|---|
| a | 0.0102 | 0.0061 | 0.0048 | 0.0060 | 0.0048 | 0.0057 |
| | Error = 0.2480 | Error = 0.0748 | Error = 0.0788 | Error = 0.0706 | Error = 0.0893 | Error = 0.1025 |
| b | 2.9387 | 3.0671 | 3.1313 | 3.0822 | 3.1198 | 3.0783 |
| | Error = 0.0629 | Error = 0.0197 | Error = 0.0203 | Error = 0.0179 | Error = 0.0228 | Error = 0.0274 |
| | $R^2$ = 0.975 | R2 = 0.997 | $R^2$ = 0.997 | $R^2$ = 0.997 | $R^2$ = 0.996 | $R^2$ = 0.995 |
| | N = 431 | N = 687 | N = 430 | N = 877 | N = 488 | N = 678 |

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|
| a | 0.0046 | 0.0052 | 0.0052 | 0.0058 | 0.0059 | 0.0047 |
| | Error = 0.0581 | Error = 0.0698 | Error = 0.0715 | Error = 0.0678 | Error = 0.0570 | Error = 0.0858 |
| b | 3.1370 | 3.1107 | 3.1238 | 3.0965 | 3.0762 | 3.1341 |
| | Error = 0.0153 | Error = 0.0185 | Error = 0.0189 | Error = 0.0174 | Error = 0.0153 | Error = 0.0217 |
| | $R^2$ = 0.998 | $R^2$ = 0.997 | $R^2$ = 0.997 | $R^2$ = 0.999 | R2 = 0.998 | R2 = 0.998 |
| | N = 516 | N = 656 | N = 612 | N = 1129 | N= 1011 | N= 1266 |

**TABLE 6.-** Atlantic cod length distribution per haul mean catches by sex and year. Number per stratified mean catches. Spanish Spring Survey on NAFO 3NO: 1997-2008. Indet. means indeterminate. 1997-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original R/V *Vizconde de Eza* data. (*) indicates untransformed data.

| Length (cm.) | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.014 | 0.000 | 0.000 |
| 8 | 0.000 | 0.000 | 0.013 | 0.000 | 0.009 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.015 | 0.000 |
| 10 | 0.000 | 0.000 | 0.011 | 0.000 | 0.000 | 0.039 | 0.000 | 0.408 | 0.088 | 0.014 | 0.416 | 0.000 |
| 12 | 0.000 | 0.010 | 0.010 | 0.006 | 0.000 | 0.030 | 0.054 | 2.141 | 0.722 | 0.008 | 4.160 | 0.000 |
| 14 | 0.000 | 0.025 | 0.205 | 0.020 | 0.000 | 0.000 | 0.065 | 1.542 | 1.129 | 0.014 | 8.177 | 0.013 |
| 16 | 0.000 | 0.011 | 0.741 | 0.124 | 0.021 | 0.040 | 0.028 | 0.828 | 0.644 | 0.013 | 4.890 | 0.057 |
| 18 | 0.000 | 0.007 | 0.774 | 0.115 | 0.019 | 0.007 | 0.037 | 0.186 | 0.245 | 0.007 | 1.020 | 0.910 |
| 20 | 0.000 | 0.004 | 0.287 | 0.211 | 0.103 | 0.000 | 0.061 | 0.063 | 0.036 | 0.041 | 0.070 | 5.006 |
| 22 | 0.000 | 0.002 | 0.478 | 0.285 | 0.184 | 0.083 | 0.062 | 0.076 | 0.094 | 0.367 | 0.024 | 8.175 |
| 24 | 0.002 | 0.005 | 1.173 | 0.241 | 0.175 | 0.096 | 0.075 | 0.119 | 0.224 | 0.948 | 0.008 | 8.532 |
| 26 | 0.002 | 0.009 | 1.740 | 0.319 | 0.194 | 0.139 | 0.150 | 0.219 | 0.515 | 3.595 | 0.000 | 6.053 |
| 28 | 0.013 | 0.028 | 1.251 | 0.385 | 0.216 | 0.153 | 0.189 | 0.141 | 1.044 | 5.313 | 0.041 | 1.953 |
| 30 | 0.013 | 0.037 | 0.525 | 0.417 | 0.132 | 0.284 | 0.243 | 0.162 | 1.151 | 3.854 | 0.086 | 1.112 |
| 32 | 0.051 | 0.028 | 0.172 | 0.327 | 0.162 | 0.312 | 0.087 | 0.149 | 0.551 | 1.710 | 0.317 | 0.301 |
| 34 | 0.087 | 0.030 | 0.096 | 0.438 | 0.380 | 0.524 | 0.067 | 0.330 | 0.393 | 1.102 | 0.442 | 0.152 |
| 36 | 0.142 | 0.022 | 0.070 | 0.559 | 0.923 | 0.596 | 0.071 | 0.421 | 0.189 | 2.258 | 0.729 | 0.176 |
| 38 | 0.184 | 0.026 | 0.090 | 1.038 | 1.787 | 0.572 | 0.121 | 0.420 | 0.129 | 5.496 | 0.925 | 0.539 |
| 40 | 0.108 | 0.105 | 0.086 | 1.030 | 3.363 | 0.689 | 0.081 | 0.217 | 0.135 | 5.305 | 0.881 | 0.962 |
| 42 | 0.066 | 0.075 | 0.031 | 0.897 | 3.463 | 1.005 | 0.078 | 0.248 | 0.113 | 4.004 | 0.885 | 1.337 |
| 44 | 0.106 | 0.365 | 0.047 | 0.473 | 4.234 | 1.141 | 0.117 | 0.101 | 0.097 | 2.317 | 0.788 | 1.617 |
| 46 | 0.073 | 0.603 | 0.025 | 0.307 | 5.028 | 1.483 | 0.111 | 0.110 | 0.136 | 1.054 | 1.632 | 1.683 |
| 48 | 0.091 | 0.931 | 0.045 | 0.183 | 5.686 | 1.090 | 0.175 | 0.077 | 0.173 | 0.487 | 2.035 | 1.327 |
| 50 | 0.043 | 0.963 | 0.044 | 0.137 | 4.959 | 1.058 | 0.225 | 0.060 | 0.101 | 0.279 | 1.748 | 1.465 |
| 52 | 0.074 | 0.924 | 0.063 | 0.099 | 4.098 | 1.111 | 0.298 | 0.088 | 0.128 | 0.276 | 1.412 | 1.556 |
| 54 | 0.087 | 1.499 | 0.106 | 0.109 | 3.195 | 0.895 | 0.390 | 0.072 | 0.026 | 0.227 | 0.651 | 1.750 |
| 56 | 0.142 | 1.537 | 0.081 | 0.069 | 1.224 | 0.691 | 0.428 | 0.065 | 0.028 | 0.231 | 0.401 | 1.537 |
| 58 | 0.124 | 1.764 | 0.113 | 0.136 | 0.693 | 0.223 | 0.322 | 0.110 | 0.012 | 0.256 | 0.262 | 1.104 |
| 60 | 0.195 | 1.026 | 0.130 | 0.101 | 0.532 | 0.370 | 0.306 | 0.074 | 0.055 | 0.229 | 0.094 | 0.624 |
| 62 | 0.114 | 0.540 | 0.098 | 0.065 | 0.181 | 0.126 | 0.183 | 0.093 | 0.078 | 0.204 | 0.054 | 0.348 |
| 64 | 0.088 | 0.505 | 0.072 | 0.152 | 0.032 | 0.005 | 0.227 | 0.104 | 0.092 | 0.114 | 0.079 | 0.280 |
| 66 | 0.111 | 0.163 | 0.049 | 0.134 | 0.047 | 0.057 | 0.098 | 0.063 | 0.089 | 0.098 | 0.056 | 0.241 |
| 68 | 0.014 | 0.271 | 0.067 | 0.101 | 0.014 | 0.000 | 0.093 | 0.071 | 0.077 | 0.092 | 0.096 | 0.075 |
| 70 | 0.029 | 0.157 | 0.019 | 0.137 | 0.015 | 0.061 | 0.085 | 0.042 | 0.093 | 0.074 | 0.037 | 0.075 |
| 72 | 0.004 | 0.193 | 0.013 | 0.104 | 0.028 | 0.007 | 0.027 | 0.031 | 0.083 | 0.096 | 0.029 | 0.121 |
| 74 | 0.013 | 0.136 | 0.018 | 0.142 | 0.012 | 0.000 | 0.011 | 0.033 | 0.078 | 0.071 | 0.012 | 0.087 |
| 76 | 0.002 | 0.086 | 0.011 | 0.066 | 0.017 | 0.002 | 0.015 | 0.030 | 0.079 | 0.121 | 0.042 | 0.056 |
| 78 | 0.003 | 0.080 | 0.008 | 0.034 | 0.022 | 0.000 | 0.010 | 0.017 | 0.056 | 0.051 | 0.029 | 0.031 |
| 80 | 0.006 | 0.079 | 0.015 | 0.073 | 0.039 | 0.000 | 0.027 | 0.036 | 0.047 | 0.103 | 0.008 | 0.038 |
| 82 | 0.001 | 0.038 | 0.005 | 0.032 | 0.013 | 0.000 | 0.000 | 0.009 | 0.018 | 0.057 | 0.036 | 0.051 |
| 84 | 0.003 | 0.000 | 0.004 | 0.044 | 0.000 | 0.011 | 0.025 | 0.003 | 0.006 | 0.041 | 0.000 | 0.086 |
| 86 | 0.001 | 0.048 | 0.012 | 0.026 | 0.021 | 0.000 | 0.008 | 0.000 | 0.022 | 0.041 | 0.000 | 0.057 |
| 88 | 0.000 | 0.042 | 0.010 | 0.021 | 0.003 | 0.007 | 0.002 | 0.022 | 0.014 | 0.013 | 0.000 | 0.030 |
| 90 | 0.001 | 0.000 | 0.000 | 0.016 | 0.011 | 0.000 | 0.000 | 0.008 | 0.014 | 0.039 | 0.015 | 0.024 |
| 92 | 0.000 | 0.003 | 0.019 | 0.020 | 0.000 | 0.000 | 0.000 | 0.009 | 0.000 | 0.005 | 0.000 | 0.000 |
| 94 | 0.000 | 0.000 | 0.000 | 0.005 | 0.003 | 0.000 | 0.000 | 0.013 | 0.000 | 0.000 | 0.000 | 0.026 |
| 96 | 0.000 | 0.000 | 0.005 | 0.003 | 0.012 | 0.000 | 0.008 | 0.000 | 0.000 | 0.026 | 0.000 | 0.057 |
| 98 | 0.000 | 0.000 | 0.005 | 0.003 | 0.008 | 0.000 | 0.000 | 0.000 | 0.000 | 0.025 | 0.000 | 0.000 |
| 100 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.020 |
| 102 | 0.000 | 0.000 | 0.000 | 0.010 | 0.000 | 0.000 | 0.008 | 0.000 | 0.000 | 0.014 | 0.000 | 0.019 |
| 104 | 0.000 | 0.001 | 0.000 | 0.000 | 0.000 | 0.011 | 0.000 | 0.027 | 0.000 | 0.014 | 0.000 | 0.026 |
| 106 | 0.000 | 0.000 | 0.000 | 0.005 | 0.000 | 0.000 | 0.014 | 0.000 | 0.000 | 0.000 | 0.000 | 0.013 |
| 108 | 0.000 | 0.000 | 0.000 | 0.000 | 0.011 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 110 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 112 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 114 | 0.001 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.004 | 0.000 |
| 116 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 118 | 0.002 | 0.000 | 0.000 | 0.003 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.016 |
| 120 | 0.000 | 0.000 | 0.006 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 122 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 124 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 126 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 128 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 130 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 132 | 0.000 | 0.000 | 0.000 | 0.000 | 0.009 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total | 1.997 | 12.378 | 8.847 | 9.220 | 41.290 | 12.930 | 4.684 | 9.035 | 9.005 | 40.718 | 32.605 | 49.717 |
| Nº samples (*): | 40 | 55 | 72 | 70 | 32 | 41 | 42 | 58 | 59 | 64 | 58 | 66 |
| Nº Ind. (*): | 742 | 967 | 2770 | 2753 | 1591 | 1030 | 539 | 939 | 1126 | 2909 | 2301 | 4404 |
| Sampled catch: | 248 | 410 | 527 | 752 | 1107 | 776 | 654 | 554 | 778 | 2026 | 1115 | 3394 |
| Range (*): | 24-118 | 12-104 | 9-121 | 13-118 | 8-132 | 9-104 | 12-106 | 10-105 | 11-91 | 7-104 | 9-114 | 14-118 |
| Total catch: | 572 | 3873 | 613 | 1274 | 3487 | 2806 | 846 | 554 | 794 | 3994 | 2182 | 3907 |
| Total hauls (*): | 128 | 124 | 114 | 118 | 123 | 125 | 118 | 120 | 119 | 120 | 110 | 122 |

**TABLE 7.-** Swept area, number of hauls and Yellowtail flounder mean catch (kg) and SD by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1995-2008. Swept area in square miles. n.s. means stratum not surveyed. 1995-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| | 1995 | | | | 1996 | | | | 1997 | | | | 1998 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stratum | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD |
| 353 | 0.0353 | 3 | 5.82 | 4.105 | 0.0371 | 3 | 74.88 | 94.62 | 0.0480 | 4 | 12.55 | 14.26 | 0.0465 | 4 | 12.22 | 20.16 |
| 354 | 0.0353 | 3 | 1.78 | 3.089 | 0.0319 | 3 | 1.11 | 0.84 | 0.0233 | 2 | 1.41 | 1.56 | 0.0356 | 3 | 1.22 | 0.24 |
| 355 | n.s. | n.s. | n.s. | n.s. | 0.0221 | 2 | 0.25 | 0.35 | 0.0233 | 2 | 2.20 | 0.31 | 0.0221 | 2 | 0.13 | 0.18 |
| 356 | n.s. | n.s. | n.s. | n.s. | 0.0203 | 2 | 0.00 | 0.00 | 0.0225 | 2 | 0.32 | 0.46 | 0.0221 | 2 | 0.00 | 0.00 |
| 357 | 0.0109 | 1 | 0.00 | - | 0.0218 | 2 | 0.00 | 0.00 | 0.0443 | 4 | 0.00 | 0.00 | 0.0240 | 2 | 0.00 | 0.00 |
| 358 | 0.0319 | 3 | 0.00 | 0.000 | 0.0319 | 3 | 0.13 | 0.23 | 0.0563 | 5 | 0.02 | 0.04 | 0.0236 | 3 | 0.00 | 0.00 |
| 359 | 0.0345 | 3 | 1.35 | 2.336 | 0.0548 | 5 | 0.92 | 0.83 | 0.0690 | 6 | 0.08 | 0.14 | 0.0698 | 6 | 0.17 | 0.22 |
| 360 | 0.3563 | 31 | 20.44 | 40.707 | 0.3761 | 31 | 142.09 | 128.86 | 0.3754 | 32 | 80.92 | 155.59 | 0.2561 | 25 | 373.90 | 629.84 |
| 374 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.00 | 0.0353 | 3 | 0.00 | 0.00 | 0.0353 | 3 | 0.04 | 0.02 |
| 375 | 0.0225 | 2 | 1.48 | 1.875 | 0.0229 | 2 | 41.40 | 58.54 | 0.0116 | 1 | 0.20 | - | 0.0345 | 3 | 12.37 | 21.37 |
| 376 | 0.1729 | 15 | 35.06 | 58.691 | 0.1650 | 14 | 71.40 | 86.94 | 0.1583 | 14 | 162.35 | 179.83 | 0.0930 | 10 | 279.27 | 181.29 |
| 377 | 0.0221 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.00 | 0.0116 | 1 | 0.00 | - | 0.0229 | 2 | 0.00 | 0.00 |
| 378 | 0.0435 | 4 | 0.00 | 0.000 | 0.0330 | 3 | 0.06 | 0.10 | 0.0210 | 2 | 0.00 | 0.00 | 0.0120 | 2 | 0.00 | 0.00 |
| 379 | 0.0221 | 2 | 0.00 | 0.000 | 0.0113 | 1 | 0.00 | - | 0.0206 | 2 | 0.00 | 0.00 | 0.0356 | 3 | 0.00 | 0.00 |
| 380 | n.s. | n.s. | n.s. | n.s. | 0.0221 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 | 0.0113 | 2 | 0.00 | 0.00 |
| 381 | n.s. | n.s. | n.s. | n.s. | 0.0229 | 2 | 0.00 | 0.00 | 0.0221 | 2 | 0.00 | 0.00 | 0.0229 | 2 | 0.00 | 0.00 |
| 382 | n.s. | n.s. | n.s. | n.s. | 0.0338 | 3 | 0.00 | 0.00 | 0.0461 | 4 | 0.00 | 0.00 | 0.0229 | 3 | 0.00 | 0.00 |
| 721 | n.s. | n.s. | n.s. | n.s. | 0.0214 | 2 | 0.03 | 0.05 | 0.0221 | 2 | 0.75 | 1.06 | 0.0203 | 2 | 0.00 | 0.00 |
| 722 | n.s. | n.s. | n.s. | n.s. | 0.0206 | 2 | 0.00 | 0.00 | 0.0214 | 2 | 0.00 | 0.00 | 0.0101 | 2 | 0.00 | 0.00 |
| 723 | n.s. | n.s. | n.s. | n.s. | 0.0109 | 1 | 0.00 | - | 0.0210 | 2 | 0.00 | 0.00 | 0.0233 | 2 | 0.00 | 0.00 |
| 724 | 0.0105 | 1 | 0.00 | - | 0.0203 | 2 | 0.00 | 0.00 | 0.0225 | 2 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.00 |
| 725 | 0.0334 | 3 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.00 | 0.0086 | 1 | 0.00 | - |
| 726 | 0.0214 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.00 | n.s. | n.s. | n.s. | n.s. | 0.0094 | 2 | 0.00 | 0.00 |
| 727 | n.s. | n.s. | n.s. | n.s. | 0.0210 | 2 | 0.00 | 0.00 | 0.0094 | 1 | 0.00 | - | 0.0233 | 2 | 0.00 | 0.00 |
| 728 | n.s. | n.s. | n.s. | n.s. | 0.0218 | 2 | 0.00 | 0.00 | 0.0214 | 2 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.00 |
| 752 | n.s. | n.s. | n.s. | n.s. | 0.0109 | 1 | 0.00 | - | 0.0218 | 2 | 0.00 | 0.00 | 0.0229 | 2 | 0.00 | 0.00 |
| 753 | n.s. | n.s. | n.s. | n.s. | 0.0199 | 2 | 0.00 | 0.00 | 0.0214 | 2 | 0.00 | 0.00 | 0.0218 | 2 | 0.00 | 0.00 |
| 754 | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | 0.0330 | 3 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 |
| 755 | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | 0.0206 | 2 | 0.00 | 0.00 |
| 756 | n.s. | n.s. | n.s. | n.s. | 0.0210 | 2 | 0.00 | 0.00 | 0.0109 | 1 | 0.00 | - | 0.0225 | 2 | 0.00 | 0.00 |
| 757 | n.s. | n.s. | n.s. | n.s. | 0.0188 | 2 | 0.00 | 0.00 | 0.0304 | 3 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.00 |
| 758 | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | 0.0214 | 2 | 0.00 | 0.00 | 0.0105 | 2 | 0.00 | 0.00 |
| 759 | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | 0.0214 | 2 | 0.00 | 0.00 |
| 760 | n.s. | n.s. | n.s. | n.s. | 0.0210 | 2 | 0.00 | 0.00 | 0.0105 | 1 | 0.00 | - | 0.0214 | 2 | 0.00 | 0.00 |
| 761 | n.s. | n.s. | n.s. | n.s. | 0.0199 | 2 | 0.00 | 0.00 | 0.0315 | 3 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.00 |
| 762 | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | 0.0308 | 3 | 0.00 | 0.00 | 0.0094 | 2 | 0.00 | 0.00 |
| 763 | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | 0.0218 | 2 | 0.00 | 0.00 |
| 764 | n.s. | n.s. | n.s. | n.s. | 0.0210 | 2 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.00 | 0.0218 | 2 | 0.00 | 0.00 |
| 765 | n.s. | n.s. | n.s. | n.s. | 0.0199 | 2 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.00 | 0.0098 | 2 | 0.00 | 0.00 |
| 766 | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | 0.0308 | 3 | 0.00 | 0.00 | 0.0191 | 2 | 0.00 | 0.00 |
| 767 | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | n.s. | 0.0109 | 2 | 0.00 | 0.00 |

**TABLE 7 (cont.).-** Swept area, number of hauls and Yellowtail flounder mean catch (kg) and SD by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1995-2008. Swept area in square miles. n.s. means stratum not surveyed. 1995-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001,there are data from the two vessels.

| | 1999 | | | | 2000 | | | | 2001 | | | | 2002 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stratum | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD |
| 353 | 0.0360 | 3 | 150.18 | 182.44 | 0.0356 | 3 | 67.87 | 91.37 | 0.0341 | 3 | 61.42 | 102.797 | 0.0476 | 4 | 75.13 | 88.259 |
| 354 | 0.0218 | 2 | 0.08 | 0.12 | 0.0356 | 3 | 1.79 | 1.93 | 0.0338 | 3 | 0.34 | 0.322 | 0.0356 | 3 | 0.17 | 0.289 |
| 355 | 0.0229 | 2 | 0.00 | 0.00 | 0.0233 | 2 | 0.00 | 0.00 | 0.0240 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 |
| 356 | 0.0229 | 2 | 0.00 | 0.00 | 0.0225 | 2 | 0.00 | 0.00 | 0.0240 | 2 | 0.01 | 0.007 | 0.0233 | 2 | 0.00 | 0.000 |
| 357 | 0.0236 | 2 | 0.00 | 0.00 | 0.0124 | 1 | 0.00 | - | 0.0244 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 |
| 358 | 0.0349 | 3 | 0.00 | 0.00 | 0.0341 | 3 | 0.00 | 0.00 | 0.0345 | 3 | 0.00 | 0.000 | 0.0345 | 3 | 0.00 | 0.000 |
| 359 | 0.0364 | 3 | 0.34 | 0.47 | 0.0469 | 4 | 2.36 | 2.93 | 0.0803 | 7 | 1.42 | 2.836 | 0.0686 | 6 | 0.11 | 0.261 |
| 360 | 0.2325 | 19 | 545.18 | 424.37 | 0.2396 | 20 | 391.18 | 331.64 | 0.2423 | 20 | 536.80 | 488.657 | 0.2865 | 25 | 340.23 | 356.687 |
| 374 | 0.0244 | 2 | 74.16 | 103.18 | 0.0240 | 2 | 20.47 | 23.55 | 0.0240 | 2 | 238.75 | 111.369 | 0.0345 | 3 | 32.04 | 52.542 |
| 375 | 0.0236 | 2 | 347.15 | 168.25 | 0.0244 | 2 | 153.36 | 2.06 | 0.0338 | 3 | 100.33 | 68.319 | 0.0353 | 3 | 48.61 | 68.927 |
| 376 | 0.1219 | 10 | 551.60 | 165.61 | 0.1200 | 10 | 435.27 | 236.60 | 0.1155 | 10 | 443.12 | 196.619 | 0.1140 | 10 | 533.62 | 416.745 |
| 377 | 0.0240 | 2 | 0.00 | 0.00 | 0.0229 | 2 | 0.05 | 0.06 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 378 | 0.0229 | 2 | 0.00 | 0.00 | 0.0233 | 2 | 0.00 | 0.00 | 0.0236 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 379 | 0.0236 | 2 | 0.00 | 0.00 | 0.0225 | 2 | 0.00 | 0.00 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 380 | 0.0236 | 2 | 0.00 | 0.00 | 0.0236 | 2 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 381 | 0.0229 | 2 | 0.00 | 0.00 | 0.0236 | 2 | 0.00 | 0.00 | 0.0236 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 382 | 0.0484 | 4 | 0.00 | 0.00 | 0.0499 | 4 | 0.00 | 0.00 | 0.0469 | 4 | 0.02 | 0.030 | 0.0341 | 3 | 0.00 | 0.000 |
| 721 | 0.0244 | 2 | 0.00 | 0.00 | 0.0236 | 2 | 0.00 | 0.00 | 0.0248 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 722 | 0.0229 | 2 | 0.00 | 0.00 | 0.0218 | 2 | 0.00 | 0.00 | 0.0233 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 |
| 723 | 0.0229 | 2 | 0.00 | 0.00 | 0.0248 | 2 | 0.00 | 0.00 | 0.0240 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 724 | 0.0225 | 2 | 0.00 | 0.00 | 0.0233 | 2 | 0.00 | 0.00 | 0.0353 | 3 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 725 | 0.0229 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 | 0.0116 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 726 | 0.0225 | 2 | 0.00 | 0.00 | 0.0221 | 2 | 0.00 | 0.00 | 0.0116 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 727 | 0.0236 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 728 | 0.0233 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 752 | 0.0233 | 2 | 0.00 | 0.00 | 0.0206 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.06 | 0.083 | 0.0116 | 1 | 0.00 | - |
| 753 | 0.0229 | 2 | 0.00 | 0.00 | 0.0218 | 2 | 0.00 | 0.00 | 0.0214 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 754 | 0.0206 | 2 | 0.00 | 0.00 | 0.0195 | 2 | 0.00 | 0.00 | 0.0195 | 2 | 0.00 | 0.000 | 0.0341 | 3 | 0.00 | 0.000 |
| 755 | 0.0311 | 3 | 0.00 | 0.00 | 0.0431 | 4 | 0.00 | 0.00 | 0.0416 | 4 | 0.00 | 0.000 | 0.0338 | 3 | 0.00 | 0.000 |
| 756 | 0.0225 | 2 | 0.00 | 0.00 | 0.0203 | 2 | 0.00 | 0.00 | 0.0113 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 757 | 0.0233 | 2 | 0.00 | 0.00 | 0.0214 | 2 | 0.00 | 0.00 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 758 | 0.0214 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 | 0.0218 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 759 | 0.0218 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 | 0.0221 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 760 | 0.0225 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 761 | 0.0210 | 2 | 0.00 | 0.00 | 0.0221 | 2 | 0.00 | 0.00 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 762 | 0.0210 | 2 | 0.00 | 0.00 | 0.0203 | 2 | 0.00 | 0.00 | 0.0116 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 763 | 0.0311 | 3 | 0.00 | 0.00 | 0.0416 | 4 | 0.00 | 0.00 | 0.0330 | 3 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 764 | 0.0225 | 2 | 0.00 | 0.00 | 0.0218 | 2 | 0.00 | 0.00 | 0.0240 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 |
| 765 | 0.0221 | 2 | 0.00 | 0.00 | 0.0203 | 2 | 0.00 | 0.00 | 0.0113 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 |
| 766 | 0.0218 | 2 | 0.00 | 0.00 | 0.0214 | 2 | 0.00 | 0.00 | 0.0203 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 767 | 0.0214 | 2 | 0.00 | 0.00 | 0.0210 | 2 | 0.00 | 0.00 | 0.0218 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |

**TABLE 7 (cont.).-** Swept area, number of hauls and Yellowtail flounder mean catch (kg) and SD by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1995-2008. Swept area in square miles. n.s. means stratum not surveyed. 1995-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| | 2003 | | | | 2004 | | | | 2005 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stratum | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD |
| 353 | 0.0334 | 3 | 11.15 | 19.307 | 0.0338 | 3 | 8.79 | 14.005 | 0.0353 | 3 | 58.83 | 99.610 |
| 354 | 0.0338 | 3 | 0.00 | 0.000 | 0.0345 | 3 | 0.62 | 1.065 | 0.0353 | 3 | 0.21 | 0.188 |
| 355 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 356 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 357 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 358 | 0.0338 | 3 | 0.00 | 0.000 | 0.0330 | 3 | 0.26 | 0.442 | 0.0349 | 3 | 0.00 | 0.000 |
| 359 | 0.0791 | 7 | 0.00 | 0.000 | 0.0791 | 7 | 25.01 | 38.371 | 0.0814 | 7 | 99.52 | 142.727 |
| 360 | 0.2254 | 20 | 360.55 | 298.992 | 0.2310 | 20 | 403.19 | 333.463 | 0.2325 | 20 | 342.14 | 223.566 |
| 374 | 0.0225 | 2 | 16.13 | 8.238 | 0.0233 | 2 | 193.46 | 225.058 | 0.0229 | 2 | 300.46 | 128.092 |
| 375 | 0.0330 | 3 | 28.45 | 35.557 | 0.0338 | 3 | 543.04 | 155.015 | 0.0349 | 3 | 288.64 | 138.290 |
| 376 | 0.1125 | 10 | 391.60 | 257.289 | 0.1166 | 10 | 481.06 | 140.810 | 0.1174 | 10 | 500.53 | 238.908 |
| 377 | 0.0225 | 2 | 0.70 | 0.990 | 0.0218 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 42.84 | 60.518 |
| 378 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 379 | 0.0229 | 2 | 0.00 | 0.000 | 0.0124 | 1 | 0.00 | - | 0.0236 | 2 | 0.00 | 0.000 |
| 380 | 0.0229 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 381 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 382 | 0.0454 | 4 | 0.00 | 0.000 | 0.0461 | 4 | 0.00 | 0.000 | 0.0458 | 4 | 0.00 | 0.000 |
| 721 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 722 | 0.0221 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 723 | 0.0229 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 724 | 0.0225 | 2 | 0.52 | 0.735 | 0.0214 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 725 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 |
| 726 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0113 | 1 | 0.00 | - |
| 727 | 0.0218 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 728 | 0.0225 | 2 | 0.00 | 0.000 | 0.0180 | 2 | 0.00 | 0.000 | 0.0109 | 1 | 0.00 | - |
| 752 | 0.0229 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 |
| 753 | 0.0229 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 754 | 0.0218 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 755 | 0.0221 | 2 | 0.00 | 0.000 | 0.0319 | 3 | 0.00 | 0.000 | 0.0450 | 4 | 0.00 | 0.000 |
| 756 | 0.0221 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 757 | 0.0221 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 758 | 0.0221 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 759 | 0.0113 | 1 | 0.00 | - | 0.0214 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 760 | 0.0218 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.35 | 0.488 |
| 761 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 762 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 763 | 0.0311 | 3 | 0.00 | 0.000 | 0.0326 | 3 | 0.00 | 0.000 | 0.0334 | 3 | 0.00 | 0.000 |
| 764 | 0.0221 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 765 | 0.0113 | 1 | 0.00 | - | 0.0225 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 766 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 767 | 0.0229 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 | 0.0113 | 1 | 0.00 | - |

**TABLE 7 (cont.).-** Swept area, number of hauls and Yellowtail flounder mean catch (kg) and SD by stratum. Spanish Spring Surveys on NAFO Div. 3NO: 1995-2008. Swept area in square miles. n.s. means stratum not surveyed. 1995-2000 data are transformed C/V *Playa de Menduíña* data, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| | 2006 | | | | 2007 | | | | 2008 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stratum | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD | Swept area | Tow number | Y. flounder Mean catch | Y. flounder SD |
| 353 | 0.0371 | 3 | 71.98 | 122.954 | 0.0364 | 3 | 0.64 | 0.172 | 0.0341 | 3 | 18.63 | 30.202 |
| 354 | 0.0364 | 3 | 0.21 | 0.371 | 0.0364 | 3 | 0.16 | 0.283 | 0.0345 | 3 | 1.03 | 0.775 |
| 355 | 0.0248 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 356 | 0.0240 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0236 | 2 | 0.00 | 0.000 |
| 357 | 0.0244 | 2 | 0.00 | 0.000 | 0.0360 | 3 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 |
| 358 | 0.0349 | 3 | 0.00 | 0.000 | 0.0368 | 3 | 0.00 | 0.000 | 0.0345 | 3 | 0.00 | 0.000 |
| 359 | 0.0975 | 8 | 169.33 | 359.779 | 0.0855 | 7 | 102.63 | 116.690 | 0.0799 | 7 | 26.40 | 38.865 |
| 360 | 0.2340 | 19 | 361.02 | 266.205 | 0.2378 | 20 | 349.70 | 307.902 | 0.2340 | 20 | 339.09 | 220.066 |
| 374 | 0.0236 | 2 | 610.03 | 73.518 | 0.0240 | 2 | 1057.60 | 455.094 | 0.0233 | 2 | 696.25 | 157.331 |
| 375 | 0.0364 | 3 | 287.65 | 109.715 | 0.0364 | 3 | 145.73 | 86.977 | 0.0334 | 3 | 574.00 | 461.113 |
| 376 | 0.1219 | 10 | 489.81 | 231.495 | 0.1185 | 10 | 460.24 | 203.990 | 0.1129 | 10 | 421.05 | 280.644 |
| 377 | 0.0236 | 2 | 6.09 | 8.605 | 0.0240 | 2 | 165.35 | 233.840 | 0.0233 | 2 | 173.40 | 8.202 |
| 378 | 0.0240 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 |
| 379 | 0.0236 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.05 | 0.067 |
| 380 | 0.0229 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 381 | 0.0229 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 382 | 0.0469 | 4 | 0.00 | 0.000 | 0.0484 | 4 | 0.00 | 0.000 | 0.0458 | 4 | 0.00 | 0.000 |
| 721 | 0.0236 | 2 | 0.00 | 0.000 | 0.0116 | 1 | 0.00 | - | 0.0225 | 2 | 0.00 | 0.000 |
| 722 | 0.0240 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0206 | 2 | 0.00 | 0.000 |
| 723 | 0.0236 | 2 | 0.18 | 0.247 | 0.0240 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 724 | 0.0233 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 725 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 |
| 726 | 0.0225 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 727 | 0.0225 | 2 | 0.00 | 0.000 | 0.0240 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 728 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 752 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 753 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 754 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 755 | 0.0338 | 3 | 0.00 | 0.000 | 0.0338 | 3 | 0.00 | 0.000 | 0.0431 | 4 | 0.00 | 0.000 |
| 756 | 0.0229 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 757 | 0.0225 | 2 | 0.00 | 0.000 | 0.0229 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 758 | 0.0225 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0218 | 2 | 0.00 | 0.000 |
| 759 | 0.0225 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0221 | 2 | 0.0000 | 0.0000 |
| 760 | 0.0225 | 2 | 0.00 | 0.000 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 |
| 761 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 762 | 0.0233 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0214 | 2 | 0.0000 | 0.0000 |
| 763 | 0.0225 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0311 | 3 | 0.0000 | 0.0000 |
| 764 | 0.0233 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0221 | 2 | 0.00 | 0.000 |
| 765 | 0.0236 | 2 | 0.00 | 0.000 | 0.0225 | 2 | 0.00 | 0.000 | 0.0214 | 2 | 0.00 | 0.000 |
| 766 | 0.0229 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0218 | 2 | 0.0000 | 0.0000 |
| 767 | 0.0233 | 2 | 0.00 | 0.000 | n.s. | n.s. | n.s. | n.s. | 0.0214 | 2 | 0.0000 | 0.0000 |

$$SD = \frac{\sum \left( x_i - \bar{x} \right)^2}{n-1}$$

**TABLE 8.-** Stratified mean catches (Kg) by stratum and year and SD by year of Yellowtail flounder (1995-2008). n.s. means stratum not surveyed. 1995-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001,there are data from the two vessels.

| Stratum | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 353 | 1565 | 20142 | 3377 | 3288 | 40399 | 18256 | 16521 | 20209 | 2998 | 2365 | 15825 | 19364 | 173 | 5011 |
| 354 | 439 | 0 | 346 | 299 | 21 | 440 | 84 | 41 | 0 | 151 | 52 | 53 | 40 | 253 |
| 355 | n.s. | 0 | 163 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 356 | n.s. | 0 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 357 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 358 | 0 | 30 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 57 | 0 | 0 | 0 | 0 |
| 359 | 568 | 386 | 34 | 73 | 143 | 995 | 598 | 45 | 0 | 10528 | 41896 | 71290 | 43209 | 11113 |
| 360 | 56885 | 395449 | 225203 | 1040562 | 1517233 | 1088648 | 1493909 | 946848 | 1003413 | 1122078 | 952164 | 1004708 | 973222 | 943689 |
| 374 | 0 | 0 | 0 | 10 | 15871 | 4380 | 51093 | 6857 | 3451 | 41400 | 64297 | 130545 | 226326 | 148998 |
| 375 | 402 | 11218 | 54 | 3353 | 94077 | 41561 | 27190 | 13173 | 7710 | 147165 | 78221 | 77953 | 39494 | 155554 |
| 376 | 46775 | 95247 | 216576 | 372549 | 735836 | 580654 | 591126 | 711849 | 522389 | 641737 | 667712 | 653413 | 613960 | 561677 |
| 377 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 70 | 0 | 4284 | 609 | 16535 | 17340 |
| 378 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 379 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 380 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 381 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 382 | n.s. | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 721 | n.s. | 2 | 49 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 722 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 723 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 27 | 0 | 0 |
| 724 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 64 | 0 | 0 | 0 | 0 | 0 |
| 725 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 726 | 0 | 0 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 727 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 728 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 752 | n.s. | 0 | 0 | 0 | 0 | 0 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 753 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 754 | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 755 | n.s. | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 756 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 757 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 758 | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 759 | n.s. | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 760 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 53 | 0 | 0 | 0 |
| 761 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 762 | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 763 | n.s. | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 764 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 765 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 766 | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 767 | n.s. | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| TOTAL | 106633 | 522481 | 445822 | 1420143 | 2403580 | 1734937 | 2180533 | 1699022 | 1540096 | 1965481 | 1824505 | 1957961 | 1912960 | 1843639 |
| $\overline{Y}$ | 16.22 | 59.54 | 47.74 | 137.32 | 232.41 | 167.76 | 210.84 | 164.28 | 148.92 | 190.05 | 176.42 | 189.32 | 202.64 | 178.27 |
| S.D. | 4.37 | 8.41 | 10.69 | 34.70 | 27.41 | 22.21 | 30.58 | 24.92 | 20.84 | 21.27 | 17.06 | 19.83 | 23.61 | 19.00 |

**TABLE 9.-** Survey estimates (by the swept area method) of Yellowtail flounder biomass (t) and SD by stratum and year on NAFO Div. 3NO. n.s. means stratum not surveyed. 1995-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels.

| Stratum | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 353 | 133 | 1628 | 281 | 282 | 3367 | 1537 | 1452 | 1697 | 270 | 210 | 1347 | 1565 | 14 | 440 |
| 354 | 37 | 26 | 30 | 25 | 2 | 37 | 7 | 3 | 0 | 13 | 4 | 4 | 3 | 22 |
| 355 | n.s. | 2 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 356 | n.s. | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 357 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 358 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 |
| 359 | 49 | 35 | 3 | 6 | 12 | 85 | 52 | 4 | 0 | 931 | 3604 | 5849 | 3538 | 974 |
| 360 | 4950 | 32593 | 19198 | 89742 | 123989 | 90863 | 123341 | 82622 | 89057 | 97150 | 81907 | 81579 | 81869 | 80657 |
| 374 | 0 | 0 | 0 | 0 | 1302 | 365 | 4258 | 596 | 307 | 3561 | 5622 | 11051 | 18861 | 12817 |
| 375 | 36 | 981 | 5 | 291 | 7964 | 3410 | 2417 | 1121 | 701 | 13081 | 6729 | 6429 | 3257 | 13982 |
| 376 | 4059 | 8082 | 19160 | 32255 | 60376 | 48388 | 51175 | 62443 | 46435 | 55026 | 56887 | 53613 | 51811 | 49761 |
| 377 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 0 | 368 | 52 | 1378 | 1492 |
| 378 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 379 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 380 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 381 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 382 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 721 | n.s. | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 722 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 723 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 |
| 724 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 725 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 726 | 0 | 0 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 727 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 728 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 752 | n.s. | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 753 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 754 | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 755 | n.s. | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 756 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 757 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 758 | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 759 | n.s. | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 760 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 |
| 761 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 762 | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 763 | n.s. | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 764 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 765 | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 766 | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| 767 | n.s. | n.s. | n.s. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | n.s. | 0 |
| TOTAL | 9264 | 43349 | 38697 | 122601 | 197012 | 144685 | 182704 | 148487 | 136775 | 169978 | 156472 | 160145 | 160731 | 160146 |
| S.D. | 2484 | 6032 | 8527 | 31359 | 22938 | 19097 | 25847 | 23368 | 19287 | 18869 | 15271 | 16458 | 18852 | 17297 |

**TABLE 10.-** Length weight relationships in the calculation of Yellowtail flounder biomass. The equation is $Weight = a(l + 0.5)^b$ Spanish Spring Surveys on NAFO Div. 3NO: 1995-2008. To calculate the parameters for the indeterminate individuals, we used the total data (males + females + indeterminate individuals). *E* means Error.

| | | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Males | a | 0.0079 | 0.008 | 0.0081 | 0.0075 | 0.0084 | 0.0036 | 0.0081 | 0.0075 | 0.0121 | 0.0053 | 0.0027 | 0.0096 | 0.0074 | 0.0085 |
| | | E = 0.2653 | E = 0.0907 | E = 0.0936 | E = 0.1034 | E = 0.2119 | E = 0.0994 | E = 0.1248 | E = 0.0729 | E = 0.1109 | E = 0.1352 | E = 0.0882 | E = 0.0825 | E = 0.0655 | E = 0.1149 |
| | b | 3.0416 | 3.0342 | 3.0197 | 3.0376 | 3.0098 | 3.2403 | 3.0176 | 3.0271 | 2.8978 | 3.1236 | 3.3274 | 2.9463 | 3.0190 | 2.9716 |
| | | E = 0.0799 | E = 0.0269 | E = 0.0281 | E = 0.0313 | E = 0.0610 | E = 0.0300 | E = 0.0374 | E = 0.0226 | E = 0.0348 | E = 0.0419 | E = 0.0274 | E = 0.0263 | E = 0.0201 | E = 0.0353 |
| | | R2 = 0.984 | R2 = 0.998 | R2 = 0.997 | R2 = 0.997 | R2 = 0.994 | R2 = 0.997 | R2 = 0.995 | R2 = 0.998 | R2 = 0.995 | R2 = 0.995 | R2 = 0.997 | R2 = 0.999 | R2 = 0.999 | R2 = 0.998 |
| | | N=137 | N=430 | N=556 | N=523 | N=56 | N=270 | N=271 | N=274 | N=316 | N=411 | N=311 | N=371 | N= 578 | N= 479 |
| Females | a | 0.0063 | 0.0056 | 0.0056 | 0.0067 | 0.0073 | 0.0026 | 0.006 | 0.0051 | 0.0061 | 0.0047 | 0.0027 | 0.0069 | 0.0043 | 0.0060 |
| | | E = 0.1251 | E = 0.0632 | E = 0.0517 | E = 0.1290 | E = 0.2607 | E = 0.0914 | E = 0.0841 | E = 0.0901 | E = 0.0995 | E = 0.0630 | E = 0.0634 | E = 0.1137 | E = 0.1973 | E = 0.0801 |
| | b | 3.1083 | 3.1496 | 3.1382 | 3.0788 | 3.0577 | 3.3504 | 3.1122 | 3.1448 | 3.1079 | 3.1768 | 3.329 | 3.0584 | 3.1915 | 3.0850 |
| | | E = 0.0367 | E = 0.0179 | E = 0.0152 | E = 0.0384 | E = 0.0739 | E = 0.0267 | E = 0.0249 | E = 0.0274 | E = 0.0307 | E = 0.0191 | E = 0.0177 | E = 0.0.347 | E = 0.0582 | E = 0.0237 |
| | | R2 = 0.995 | R2 = 0.999 | R2 = 0.999 | R2 = 0.994 | R2 = 0.989 | R2 = 0.998 | R2 = 0.997 | R2 = 0.997 | R2 = 0.996 | R2 = 0.999 | R2 = 0.998 | R2 = 0.997 | R2 = 0.987 | R2 = 0.999 |
| | | N=246 | N=735 | N=910 | N=682 | N=62 | N=344 | N=378 | N=343 | N=513 | N=547 | N=569 | N=507 | N= 731 | N= 594 |
| Indet. | a | 0.0088 | 0.006 | 0.006 | 0.0071 | 0.0078 | 0.0026 | 0.0092 | 0.006 | 0.0069 | 0.004 | 0.0025 | 0.0102 | 0.0068 | 0.0065 |
| | | E = 0.1109 | E = 0.0656 | E = 0.0580 | E = 0.0652 | E = 0.1656 | E = 0.0835 | E = 0.1075 | E = 0.0402 | E = 0.1095 | E = 0.0608 | E = 0.0523 | E = 0.1453 | E = 0.1078 | E = 0.0785 |
| | b | 3.0144 | 3.1285 | 3.1166 | 3.0614 | 3.0406 | 3.3423 | 2.9883 | 3.0977 | 3.0737 | 3.2137 | 3.3552 | 2.9471 | 3.0606 | 3.0642 |
| | | E = 0.0330 | E = 0.0188 | E = 0.0171 | E = 0.0195 | E = 0.0477 | E = 0.0245 | E = 0.0329 | E = 0.0123 | E = 0.0337 | E = 0.0186 | E = 0.0148 | E = 0.0448 | E = 0.0327 | E = 0.0.33 |
| | | R2 = 0.996 | R2 = 0.999 | R2 = 0.999 | R2 = 0.994 | R2 = 0.995 | R2 = 0.999 | R2 = 0.994 | R2 = 0.999 | R2 = 0.995 | R2 = 0.999 | R2 = 0.999 | R2 = 0.995 | R2 = 0.995 | R2 = 0.999 |
| | | N=391 | N=1181 | N=1466 | N=1211 | N=118 | N=614 | N=703 | N=620 | N=833 | N=969 | N=884 | N=887 | N= 1312 | N= 1074 |

**TABLE 11.-** Yellowtail flounder length distribution. Estimated numbers per haul mean catches. Spanish Spring Survey on NAFO 3NO: 1995-2008. Indet. means indeterminate. 1995-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

| | 1995 | | | | 1996 | | | | 1997 | | | | 1998 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lenght (cm.) | Males | Females | Indet. | Total | Males | Females | Indet. | Total | Males | Females | Indet. | Total | Males | Females | Indet. | Total |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 8 | 0.000 | 0.000 | 0.185 | 0.185 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 10 | 0.000 | 0.000 | 0.456 | 0.456 | 0.000 | 0.000 | 0.498 | 0.498 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.071 | 0.071 |
| 12 | 0.103 | 0.870 | 2.350 | 3.323 | 0.000 | 0.000 | 0.877 | 0.877 | 1.356 | 0.560 | 0.000 | 1.916 | 0.000 | 0.000 | 1.538 | 1.538 |
| 14 | 1.557 | 1.441 | 2.842 | 5.840 | 0.000 | 0.048 | 2.711 | 2.759 | 0.155 | 0.819 | 0.000 | 0.974 | 0.121 | 0.157 | 0.000 | 0.278 |
| 16 | 2.045 | 3.581 | 0.277 | 5.903 | 0.288 | 3.152 | 5.167 | 8.607 | 2.947 | 1.811 | 0.000 | 4.758 | 1.500 | 1.535 | 0.000 | 3.034 |
| 18 | 2.649 | 3.358 | 0.031 | 6.038 | 2.334 | 15.279 | 3.167 | 20.780 | 5.076 | 4.415 | 0.000 | 9.491 | 8.365 | 5.129 | 0.000 | 13.495 |
| 20 | 2.984 | 3.212 | 0.000 | 6.196 | 5.319 | 26.981 | 0.750 | 33.050 | 13.857 | 15.055 | 0.000 | 28.912 | 8.974 | 10.166 | 0.000 | 19.140 |
| 22 | 4.807 | 6.015 | 0.000 | 10.823 | 8.522 | 32.231 | 0.065 | 40.818 | 28.296 | 23.048 | 0.000 | 51.345 | 25.957 | 20.452 | 0.000 | 46.409 |
| 24 | 4.810 | 6.082 | 0.000 | 10.892 | 10.962 | 32.203 | 0.000 | 43.165 | 31.348 | 27.786 | 0.000 | 59.134 | 44.950 | 37.421 | 0.000 | 82.371 |
| 26 | 2.340 | 2.446 | 0.000 | 4.786 | 9.552 | 16.875 | 0.000 | 26.427 | 24.015 | 26.970 | 0.000 | 50.985 | 72.376 | 60.520 | 0.000 | 132.896 |
| 28 | 2.704 | 2.544 | 0.000 | 5.248 | 9.151 | 11.591 | 0.000 | 20.742 | 13.921 | 21.248 | 0.000 | 35.169 | 57.459 | 62.401 | 0.000 | 119.861 |
| 30 | 2.588 | 4.738 | 0.000 | 7.325 | 7.206 | 9.915 | 0.000 | 17.122 | 6.159 | 10.349 | 0.000 | 16.508 | 32.472 | 56.275 | 0.000 | 88.747 |
| 32 | 1.664 | 4.451 | 0.000 | 6.115 | 6.379 | 6.166 | 0.000 | 12.545 | 3.761 | 5.090 | 0.000 | 8.851 | 15.566 | 32.294 | 0.000 | 47.859 |
| 34 | 1.290 | 3.070 | 0.000 | 4.361 | 5.565 | 6.928 | 0.000 | 12.493 | 1.894 | 2.803 | 0.000 | 4.698 | 5.840 | 22.613 | 0.000 | 28.453 |
| 36 | 0.661 | 1.797 | 0.000 | 2.459 | 4.143 | 9.508 | 0.000 | 13.651 | 1.195 | 2.683 | 0.000 | 3.878 | 2.638 | 12.385 | 0.000 | 15.023 |
| 38 | 0.475 | 1.395 | 0.000 | 1.870 | 2.083 | 6.687 | 0.000 | 8.771 | 0.485 | 2.407 | 0.000 | 2.892 | 2.475 | 8.439 | 0.000 | 10.914 |
| 40 | 0.373 | 0.937 | 0.000 | 1.310 | 0.724 | 5.018 | 0.000 | 5.742 | 0.245 | 1.723 | 0.000 | 1.968 | 1.060 | 7.705 | 0.000 | 8.765 |
| 42 | 0.059 | 0.588 | 0.000 | 0.647 | 0.694 | 3.305 | 0.000 | 4.000 | 0.099 | 0.801 | 0.000 | 0.899 | 0.065 | 3.260 | 0.000 | 3.324 |
| 44 | 0.004 | 0.471 | 0.000 | 0.475 | 0.087 | 1.550 | 0.000 | 1.637 | 0.031 | 0.281 | 0.000 | 0.311 | 0.008 | 1.729 | 0.000 | 1.737 |
| 46 | 0.004 | 0.081 | 0.000 | 0.085 | 0.081 | 0.969 | 0.000 | 1.050 | 0.006 | 0.044 | 0.000 | 0.049 | 0.000 | 0.600 | 0.000 | 0.600 |
| 48 | 0.000 | 0.191 | 0.000 | 0.191 | 0.018 | 0.286 | 0.000 | 0.304 | 0.000 | 0.052 | 0.000 | 0.052 | 0.004 | 0.273 | 0.000 | 0.277 |
| 50 | 0.000 | 0.027 | 0.000 | 0.027 | 0.000 | 0.045 | 0.000 | 0.045 | 0.000 | 0.018 | 0.000 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 |
| 52 | 0.000 | 0.052 | 0.000 | 0.052 | 0.000 | 0.053 | 0.000 | 0.053 | 0.000 | 0.018 | 0.000 | 0.018 | 0.000 | 0.000 | 0.000 | 0.000 |
| 54 | 0.000 | 0.005 | 0.000 | 0.005 | 0.000 | 0.039 | 0.000 | 0.039 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 56 | 0.000 | 0.005 | 0.000 | 0.005 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total | 31.117 | 47.358 | 6.141 | 84.616 | 73.109 | 188.829 | 13.235 | 275.173 | 134.845 | 147.982 | 0.000 | 282.827 | 279.828 | 343.354 | 1.609 | 624.791 |
| Nº samples (*): | | | | 43 | | | | 33 | | | | 54 | | | | 48 |
| Nº Ind. (*): | 1876 | 3003 | 81 | 4960 | 1837 | 4584 | 249 | 6670 | 3635 | 4469 | 0 | 8104 | 2848 | 3693 | 3 | 6544 |
| Sampled catch: | | | | 375 | | | | 532 | | | | 585 | | | | 536 |
| Range (*): | | | | 9-56 | | | | 10-55 | | | | 12-53 | | | | 11-49 |
| Total catch: | | | | 2731 | | | | 5721 | | | | 4956 | | | | 12231 |
| Total hauls (*): | | | | 77 | | | | 112 | | | | 128 | | | | 124 |

**TABLE 11 (cont.).-** Yellowtail flounder length distribution. Estimated numbers per haul mean catches. Spanish Spring Survey on NAFO 3NO: 1995-2008. Indet. means indeterminate. 1995-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

| | 1999 | | | | 2000 | | | | 2001 | | | | 2002 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lenght (cm.) | Males | Females | Indet. | Total | Males | Females | Indet. | Total | Males | Females | Indet. | Total | Males | Females | Indet. | Total |
| 4 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 6 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.325 | 0.325 | 0.000 | 0.141 | 0.475 | 0.616 |
| 8 | 0.000 | 0.000 | 1.516 | 1.516 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 1.937 | 1.937 | 0.349 | 0.639 | 0.332 | 1.321 |
| 10 | 5.154 | 3.352 | 2.960 | 11.465 | 0.000 | 0.793 | 0.000 | 0.793 | 0.104 | 0.356 | 1.850 | 2.310 | 1.315 | 0.712 | 0.000 | 2.027 |
| 12 | 12.807 | 8.911 | 0.000 | 21.718 | 3.716 | 1.266 | 0.000 | 4.982 | 0.320 | 1.239 | 1.187 | 2.746 | 0.620 | 0.675 | 0.000 | 1.295 |
| 14 | 19.227 | 16.710 | 0.000 | 35.938 | 7.773 | 11.915 | 0.000 | 19.687 | 0.952 | 1.477 | 1.114 | 3.543 | 1.544 | 1.064 | 0.000 | 2.608 |
| 16 | 13.999 | 15.356 | 0.000 | 29.355 | 10.311 | 10.506 | 0.000 | 20.817 | 3.575 | 4.509 | 0.412 | 8.497 | 1.889 | 2.134 | 0.000 | 4.023 |
| 18 | 8.893 | 10.757 | 0.000 | 19.650 | 14.266 | 16.475 | 0.000 | 30.741 | 10.107 | 10.530 | 0.149 | 20.786 | 3.180 | 2.479 | 0.000 | 5.660 |
| 20 | 14.809 | 10.199 | 0.000 | 25.008 | 16.177 | 19.576 | 0.000 | 35.753 | 17.815 | 24.898 | 0.000 | 42.713 | 7.908 | 6.122 | 0.000 | 14.030 |
| 22 | 33.285 | 22.789 | 0.000 | 56.073 | 17.231 | 18.660 | 0.000 | 35.891 | 21.299 | 29.178 | 0.000 | 50.477 | 16.552 | 12.664 | 0.000 | 29.217 |
| 24 | 61.756 | 39.009 | 0.000 | 100.765 | 21.395 | 20.983 | 0.000 | 42.378 | 24.254 | 23.840 | 0.000 | 48.094 | 21.724 | 22.245 | 0.000 | 43.968 |
| 26 | 98.561 | 59.521 | 0.000 | 158.083 | 48.000 | 33.100 | 0.000 | 81.100 | 28.911 | 24.809 | 0.000 | 53.720 | 27.246 | 24.307 | 0.000 | 51.553 |
| 28 | 107.816 | 84.193 | 0.000 | 192.009 | 67.229 | 39.182 | 0.000 | 106.412 | 58.237 | 33.305 | 0.000 | 91.542 | 40.151 | 22.443 | 0.000 | 62.594 |
| 30 | 72.947 | 92.236 | 0.000 | 165.183 | 64.336 | 44.684 | 0.000 | 109.020 | 72.412 | 45.107 | 0.000 | 117.519 | 57.549 | 34.445 | 0.000 | 91.994 |
| 32 | 28.850 | 75.169 | 0.000 | 104.018 | 36.450 | 53.416 | 0.000 | 89.865 | 49.179 | 59.052 | 0.000 | 108.232 | 46.938 | 50.680 | 0.000 | 97.618 |
| 34 | 15.810 | 43.595 | 0.000 | 59.405 | 12.695 | 39.970 | 0.000 | 52.665 | 22.267 | 64.772 | 0.000 | 87.039 | 18.047 | 57.599 | 0.000 | 75.646 |
| 36 | 9.185 | 24.775 | 0.000 | 33.960 | 6.653 | 25.712 | 0.000 | 32.365 | 8.702 | 46.598 | 0.000 | 55.300 | 7.014 | 45.699 | 0.000 | 52.713 |
| 38 | 3.658 | 14.964 | 0.000 | 18.623 | 3.526 | 15.747 | 0.000 | 19.274 | 6.293 | 30.315 | 0.000 | 36.608 | 2.651 | 25.514 | 0.000 | 28.165 |
| 40 | 1.466 | 8.582 | 0.000 | 10.049 | 1.996 | 10.642 | 0.000 | 12.638 | 2.145 | 12.925 | 0.000 | 15.070 | 1.183 | 12.427 | 0.000 | 13.610 |
| 42 | 0.262 | 5.318 | 0.000 | 5.580 | 0.286 | 6.803 | 0.000 | 7.089 | 0.857 | 7.788 | 0.000 | 8.645 | 0.616 | 6.257 | 0.000 | 6.873 |
| 44 | 0.111 | 2.620 | 0.000 | 2.731 | 0.013 | 4.005 | 0.000 | 4.018 | 0.614 | 4.596 | 0.000 | 5.210 | 0.042 | 2.690 | 0.000 | 2.732 |
| 46 | 0.028 | 0.988 | 0.000 | 1.016 | 0.000 | 1.806 | 0.000 | 1.806 | 0.221 | 1.968 | 0.000 | 2.190 | 0.024 | 1.150 | 0.000 | 1.174 |
| 48 | 0.096 | 0.486 | 0.000 | 0.582 | 0.003 | 0.845 | 0.000 | 0.848 | 0.000 | 0.775 | 0.000 | 0.775 | 0.000 | 0.818 | 0.000 | 0.818 |
| 50 | 0.000 | 0.140 | 0.000 | 0.140 | 0.000 | 0.246 | 0.000 | 0.246 | 0.000 | 0.242 | 0.000 | 0.242 | 0.020 | 0.149 | 0.000 | 0.169 |
| 52 | 0.000 | 0.032 | 0.000 | 0.032 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.051 | 0.000 | 0.051 | 0.000 | 0.038 | 0.000 | 0.038 |
| 54 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.033 | 0.000 | 0.033 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| 56 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total | 508.721 | 539.702 | 4.475 | 1052.898 | 332.057 | 376.364 | 0.000 | 708.421 | 328.265 | 428.326 | 6.975 | 763.567 | 256.565 | 333.090 | 0.807 | 590.462 |
| Nº samples (*): | | | | 39 | | | | 42 | | | | 43 | | | | 43 |
| Nº Ind. (*): | 4616 | 5076 | 6 | 9698 | 3323 | 4100 | 0 | 7423 | 3358 | 4684 | 80 | 8122 | 3419 | 4576 | 7 | 8002 |
| Sampled catch: | | | | 796 | | | | 717 | | | | 2298 | | | | 2269 |
| Range (*): | | | | 8-52 | | | | 11-54 | | | | 6-53 | | | | 6-52 |
| Total catch: | | | | 17169 | | | | 12742 | | | | 16141 | | | | 14385 |
| Total hauls (*): | | | | 114 | | | | 118 | | | | 123 | | | | 125 |

**TABLE 11 (cont.).-** Yellowtail flounder length distribution. Estimated numbers per haul mean catches. Spanish Spring Survey on NAFO 3NO: 1995-2008. Indet. means indeterminate. 1995-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

| | 2003 | | | | 2004 | | | | 2005 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lenght (cm.) | Males | Females | Indet. | Total | Males | Females | Indet. | Total | Males | Females | Indet. | Total |
| 4 | 0.000 | 0.000 | 0.009 | 0.009 | 0.000 | 0.000 | 0.116 | 0.116 | 0.000 | 0.000 | 0.000 | 0.000 |
| 6 | 0.000 | 0.107 | 0.297 | 0.404 | 0.000 | 0.000 | 0.337 | 0.337 | 0.000 | 0.013 | 0.192 | 0.205 |
| 8 | 0.036 | 0.121 | 0.274 | 0.431 | 0.109 | 0.049 | 0.741 | 0.899 | 0.269 | 0.018 | 0.054 | 0.341 |
| 10 | 0.847 | 0.572 | 0.140 | 1.559 | 0.528 | 0.637 | 0.000 | 1.165 | 1.725 | 0.467 | 0.051 | 2.243 |
| 12 | 0.969 | 1.205 | 0.000 | 2.174 | 2.005 | 1.577 | 0.000 | 3.582 | 2.353 | 1.877 | 0.000 | 4.229 |
| 14 | 0.977 | 0.869 | 0.000 | 1.846 | 3.503 | 2.632 | 0.000 | 6.135 | 4.728 | 3.053 | 0.000 | 7.780 |
| 16 | 0.946 | 0.289 | 0.000 | 1.234 | 4.580 | 3.608 | 0.000 | 8.188 | 4.674 | 3.630 | 0.000 | 8.304 |
| 18 | 1.665 | 1.689 | 0.000 | 3.355 | 4.649 | 3.543 | 0.000 | 8.192 | 3.334 | 3.348 | 0.000 | 6.682 |
| 20 | 1.695 | 2.233 | 0.000 | 3.928 | 5.414 | 6.205 | 0.000 | 11.619 | 4.905 | 4.847 | 0.000 | 9.752 |
| 22 | 4.214 | 4.602 | 0.000 | 8.817 | 5.563 | 5.757 | 0.000 | 11.321 | 8.934 | 6.836 | 0.000 | 15.770 |
| 24 | 11.364 | 8.741 | 0.000 | 20.105 | 8.232 | 7.732 | 0.000 | 15.964 | 8.930 | 7.162 | 0.000 | 16.092 |
| 26 | 27.765 | 19.581 | 0.000 | 47.347 | 25.572 | 16.572 | 0.000 | 42.145 | 15.997 | 8.451 | 0.000 | 24.447 |
| 28 | 37.413 | 29.153 | 0.000 | 66.566 | 57.974 | 27.637 | 0.000 | 85.611 | 34.840 | 17.504 | 0.000 | 52.344 |
| 30 | 52.296 | 29.328 | 0.000 | 81.624 | 87.376 | 52.285 | 0.000 | 139.661 | 75.001 | 34.103 | 0.000 | 109.105 |
| 32 | 45.761 | 40.076 | 0.000 | 85.836 | 74.712 | 58.683 | 0.000 | 133.396 | 70.556 | 58.866 | 0.000 | 129.423 |
| 34 | 19.769 | 52.100 | 0.000 | 71.869 | 30.847 | 58.596 | 0.000 | 89.443 | 28.072 | 62.961 | 0.000 | 91.032 |
| 36 | 6.757 | 39.555 | 0.000 | 46.312 | 7.531 | 46.290 | 0.000 | 53.820 | 8.105 | 48.672 | 0.000 | 56.777 |
| 38 | 2.130 | 23.649 | 0.000 | 25.779 | 2.056 | 26.594 | 0.000 | 28.650 | 1.965 | 26.547 | 0.000 | 28.512 |
| 40 | 0.832 | 9.444 | 0.000 | 10.276 | 1.716 | 10.932 | 0.000 | 12.648 | 0.908 | 11.697 | 0.000 | 12.606 |
| 42 | 0.256 | 3.895 | 0.000 | 4.151 | 0.514 | 3.725 | 0.000 | 4.240 | 0.172 | 4.746 | 0.000 | 4.918 |
| 44 | 0.268 | 2.432 | 0.000 | 2.700 | 0.028 | 2.033 | 0.000 | 2.061 | 0.050 | 2.020 | 0.000 | 2.070 |
| 46 | 0.000 | 1.113 | 0.000 | 1.113 | 0.000 | 0.575 | 0.000 | 0.575 | 0.000 | 1.128 | 0.000 | 1.128 |
| 48 | 0.000 | 0.525 | 0.000 | 0.525 | 0.000 | 0.303 | 0.000 | 0.303 | 0.000 | 0.200 | 0.000 | 0.200 |
| 50 | 0.000 | 0.202 | 0.000 | 0.202 | 0.000 | 0.009 | 0.000 | 0.009 | 0.000 | 0.030 | 0.000 | 0.030 |
| 52 | 0.000 | 0.009 | 0.000 | 0.009 | 0.000 | 0.055 | 0.000 | 0.055 | 0.000 | 0.000 | 0.000 | 0.000 |
| 54 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.079 | 0.000 | 0.079 |
| 56 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |
| Total | 215.959 | 271.489 | 0.721 | 488.169 | 322.910 | 336.032 | 1.193 | 660.136 | 275.518 | 308.254 | 0.297 | 584.069 |
| Nº samples (*): | | | | 37 | | | | 45 | | | | 48 |
| Nº Ind. (*): | 2424 | 3254 | 12 | 5690 | 3703 | 4234 | 16 | 7953 | 4790 | 6556 | 6 | 11352 |
| Sampled catch: | | | | 1864 | | | | 2587 | | | | 3784 |
| Range (*): | | | | 5-52 | | | | 5-53 | | | | 6-55 |
| Total catch: | | | | 11280 | | | | 15117 | | | | 14275 |
| Total hauls (*): | | | | 118 | | | | 120 | | | | 119 |

**TABLE 11 (cont.).-** Yellowtail flounder length distribution. Estimated numbers per haul mean catches. Spanish Spring Survey on NAFO 3NO: 1995-2008. Indet. means indeterminate. 1995-2000 data are transformed C/V *Playa de Menduíña* data. 2002-2008 data are original R/V *Vizconde de Eza* data. In 2001, there are data from the two vessels. (*) indicates untransformed data.

| | 2006 | | | | 2007 | | | | 2008 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lenght (cm.) | Males | Females | Indet. | Total | Males | Females | Indet. | Total | Males | Females | Indet. | Total |
| 4 | 0.06 | 0 | 0 | 0.06 | 0 | 0 | 0 | 0 | 0 | 0 | 0.054 | 0.054 |
| 6 | 0 | 0 | 0.079 | 0.079 | 0 | 0 | 0.103 | 0.103 | 0 | 0 | 0 | 0 |
| 8 | 0.187 | 0.162 | 0.245 | 0.594 | 0 | 0 | 0 | 0 | 0.013 | 0 | 0 | 0.013 |
| 10 | 0.686 | 0.384 | 0.276 | 1.346 | 0.041 | 0.059 | 0 | 0.101 | 0.039 | 0 | 0.037 | 0.076 |
| 12 | 2.026 | 1.734 | 0 | 3.76 | 0.536 | 0.449 | 0 | 0.985 | 0.184 | 0.183 | 0 | 0.367 |
| 14 | 3.645 | 3.862 | 0 | 7.507 | 1.148 | 0.578 | 0 | 1.725 | 0.238 | 0.331 | 0.054 | 0.624 |
| 16 | 5.776 | 6.009 | 0 | 11.785 | 2.222 | 2.551 | 0 | 4.773 | 0.741 | 0.964 | 0 | 1.705 |
| 18 | 5.989 | 5.547 | 0 | 11.536 | 5.728 | 4.614 | 0 | 10.342 | 2.364 | 2.973 | 0 | 5.337 |
| 20 | 9.721 | 8.196 | 0 | 17.917 | 9.024 | 7.293 | 0 | 16.317 | 7.593 | 6.16 | 0 | 13.753 |
| 22 | 10.735 | 10.545 | 0 | 21.28 | 13.286 | 14.19 | 0 | 27.476 | 11.867 | 13.532 | 0 | 25.399 |
| 24 | 11.073 | 12.977 | 0 | 24.05 | 17.38 | 19.046 | 0 | 36.426 | 18.209 | 18.285 | 0 | 36.495 |
| 26 | 13.117 | 13.439 | 0 | 26.556 | 20.689 | 18.113 | 0 | 38.802 | 23.627 | 25.866 | 0 | 49.493 |
| 28 | 26.251 | 15.412 | 0 | 41.663 | 35.157 | 19.17 | 0 | 54.327 | 37.293 | 23.056 | 0 | 60.349 |
| 30 | 64.18 | 25.059 | 0 | 89.238 | 75.144 | 25.235 | 0 | 100.379 | 67.815 | 22.281 | 0 | 90.096 |
| 32 | 74.126 | 52.415 | 0 | 126.541 | 76.329 | 50.253 | 0 | 126.582 | 73.491 | 42.91 | 0 | 116.401 |
| 34 | 38.379 | 67.737 | 0 | 106.116 | 42.232 | 68.548 | 0 | 110.78 | 38.26 | 59.348 | 0 | 97.609 |
| 36 | 11.021 | 63.706 | 0 | 74.727 | 12.733 | 61.691 | 0 | 74.424 | 9.789 | 54.19 | 0 | 63.979 |
| 38 | 3.046 | 39.877 | 0 | 42.923 | 3.973 | 41.839 | 0 | 45.812 | 2.389 | 37.201 | 0 | 39.59 |
| 40 | 0.981 | 17.493 | 0 | 18.474 | 1.43 | 20.92 | 0 | 22.35 | 0.914 | 16.185 | 0 | 17.099 |
| 42 | 0.081 | 5.709 | 0 | 5.789 | 0.213 | 6.891 | 0 | 7.104 | 0.288 | 6.719 | 0 | 7.007 |
| 44 | 0.072 | 2.19 | 0 | 2.262 | 0 | 2.454 | 0 | 2.454 | 0 | 3.12 | 0 | 3.12 |
| 46 | 0 | 1.341 | 0 | 1.341 | 0.071 | 1.043 | 0 | 1.114 | 0 | 1.097 | 0 | 1.097 |
| 48 | 0 | 0.56 | 0 | 0.56 | 0 | 0.367 | 0 | 0.367 | 0 | 0.616 | 0 | 0.616 |
| 50 | 0 | 0.231 | 0 | 0.231 | 0 | 0.107 | 0 | 0.107 | 0 | 0.077 | 0 | 0.077 |
| 52 | 0 | 0.012 | 0 | 0.012 | 0 | 0.12 | 0 | 0.12 | 0 | 0 | 0 | 0 |
| 54 | 0 | 0.091 | 0 | 0.091 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 56 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 281.15 | 354.688 | 0.601 | 636.44 | 317.336 | 365.532 | 0.103 | 682.971 | 295.113 | 335.096 | 0.145 | 630.355 |
| Nº samples (*): | | | | 45 | | | | 47 | | | | 50 |
| Nº Ind. (*): | 4404 | 6012 | 10 | 10426 | 5083 | 5533 | 1 | 10617 | 4795 | 5147 | 3 | 9945 |
| Sampled catch: | | | | 3407 | | | | 2761 | | | | 2759 |
| Range (*): | | | | May-54 | | | | Jul-52 | | | | May-51 |
| Total catch: | | | | 15424 | | | | 15200 | | | | 14697 |
| Total hauls (*): | | | | 120 | | | | 110 | | | | 122 |

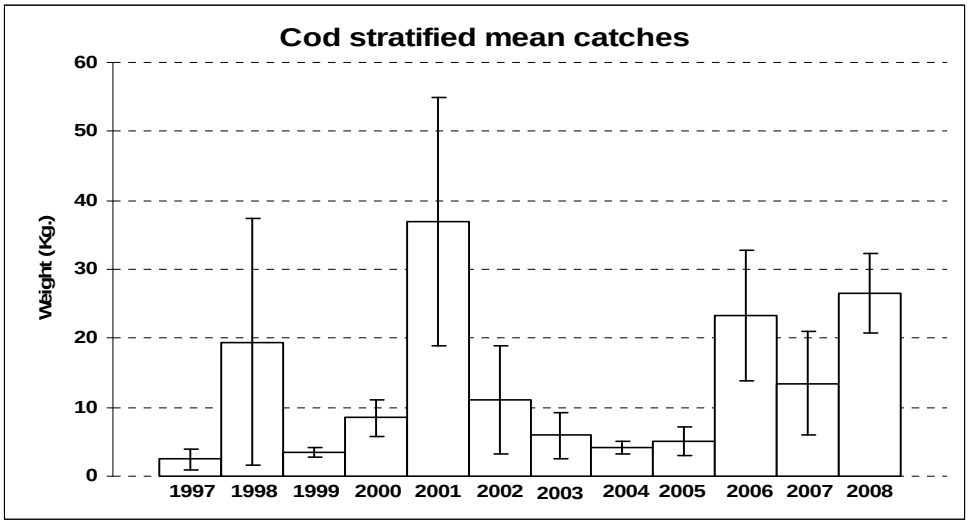


**FIGURE 1.-** Atlantic cod stratified mean catches in Kg and ±SD by year. Spanish Spring surveys on NAFO Div. 3NO: 1997-2008 (1997-2000 transformed data from C/V *Playa de Menduíña*; 2002-2008 original data from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels).

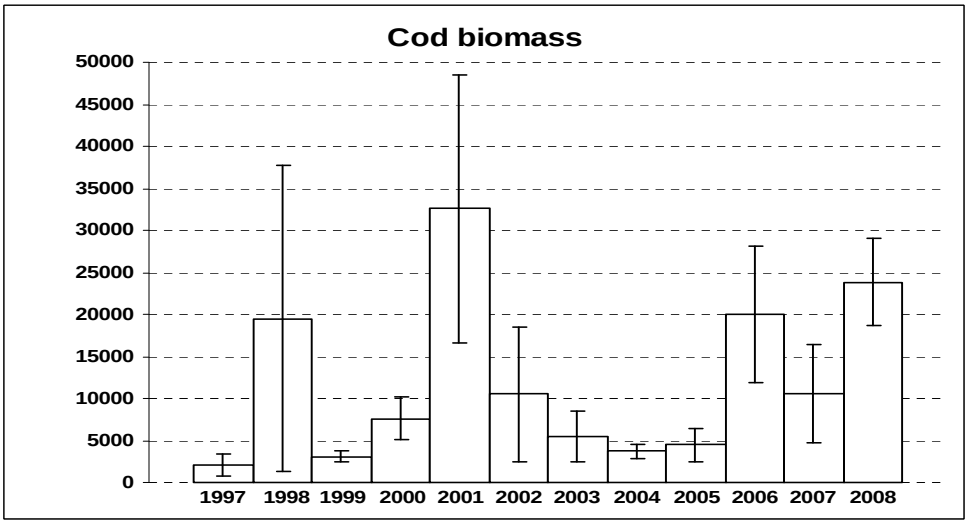


**FIGURE 2.-** Atlantic cod biomass calculated by the swept area method in tons and ±SD by year. Spanish Spring surveys on NAFO Div. 3NO: 1997-2008 (1997-2000 transformed data from C/V *Playa de Menduíña*; 2002-2008 original data from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels).

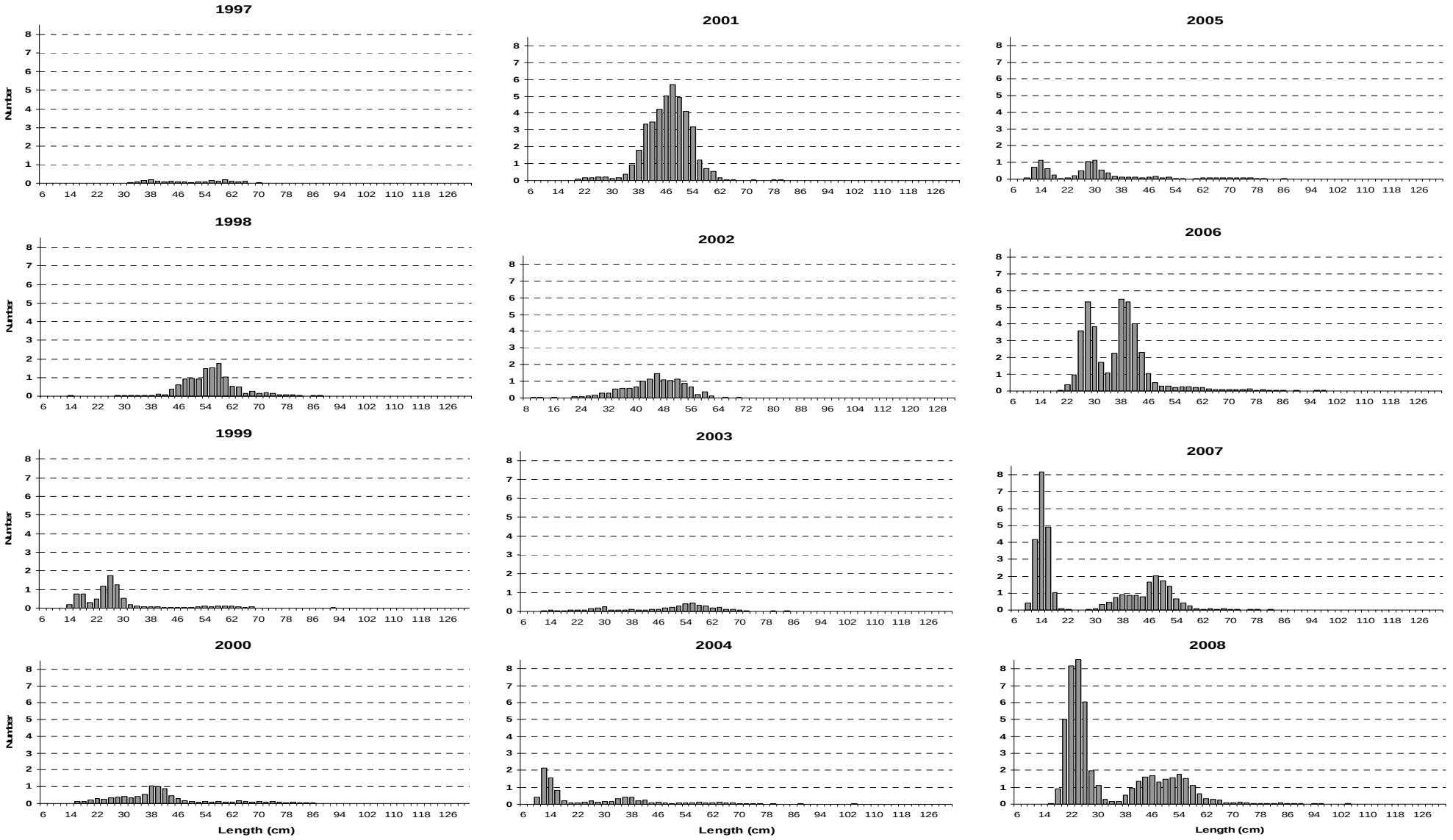


**FIGURE 3.-** Atlantic cod length distribution (cm) on NAFO 3NO: 1997-2008 . Mean catches per tow numbers. 1997-2000 data are transformed data from C/V *Playa de Menduíña*, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data form the two vessels.

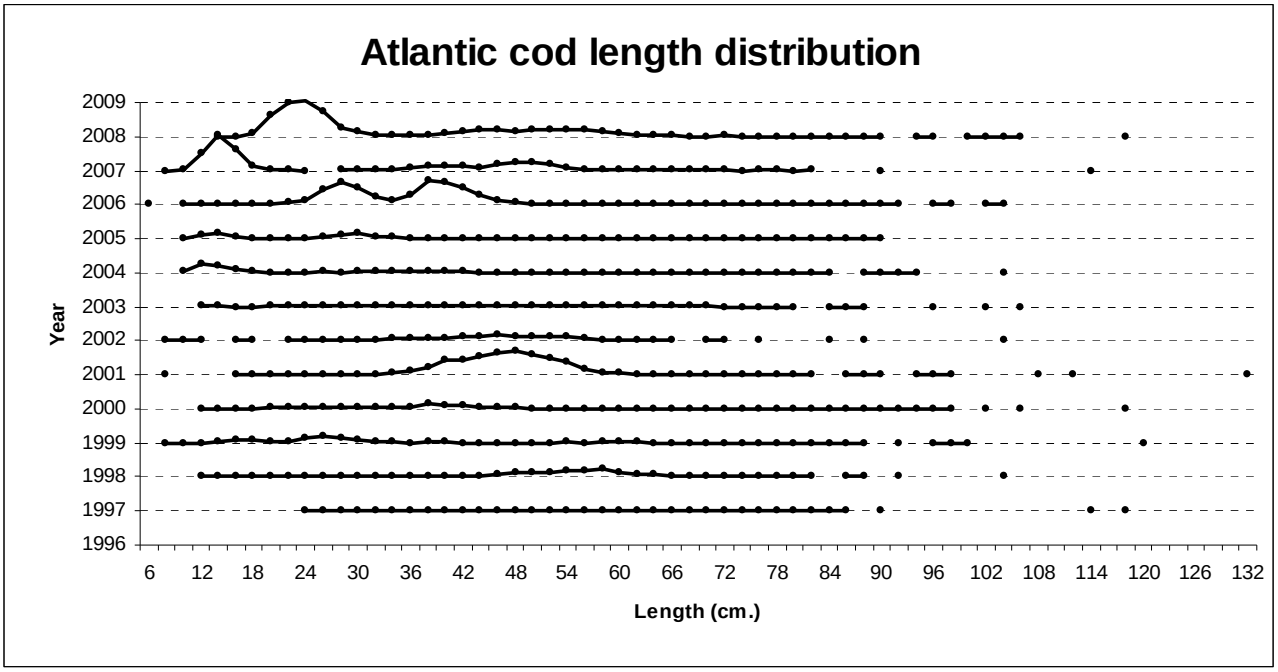


**FIGURE 4.-** Atlantic cod mean catches per tow length distribution (cm) on NAFO 3NO: 1997-2008.

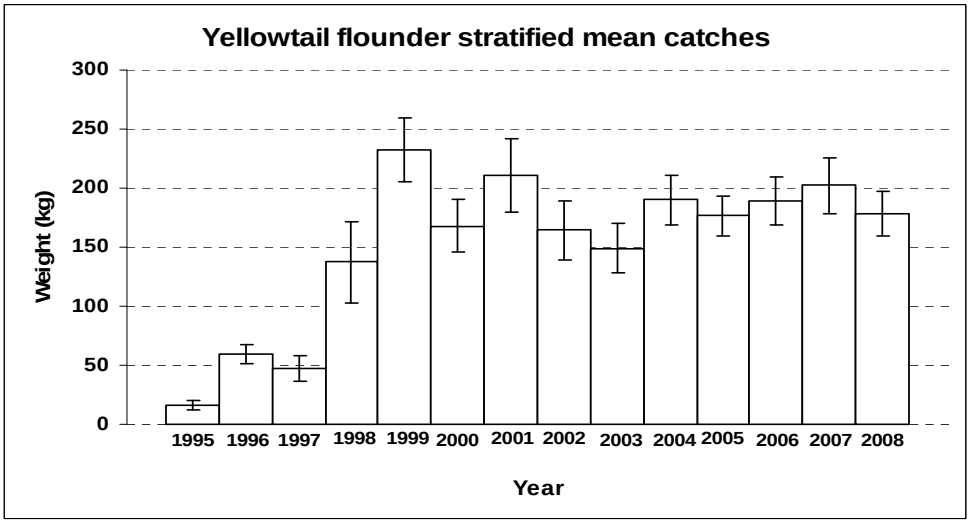


**FIGURE 5.-** Yellowtail flounder stratified mean catches in Kg and ±SD by year. Spanish Spring surveys on NAFO Div. 3NO: 1995-2008 (1995-2000 transformed data from C/V *Playa de Menduíña*; 2002-2008 original data from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels).

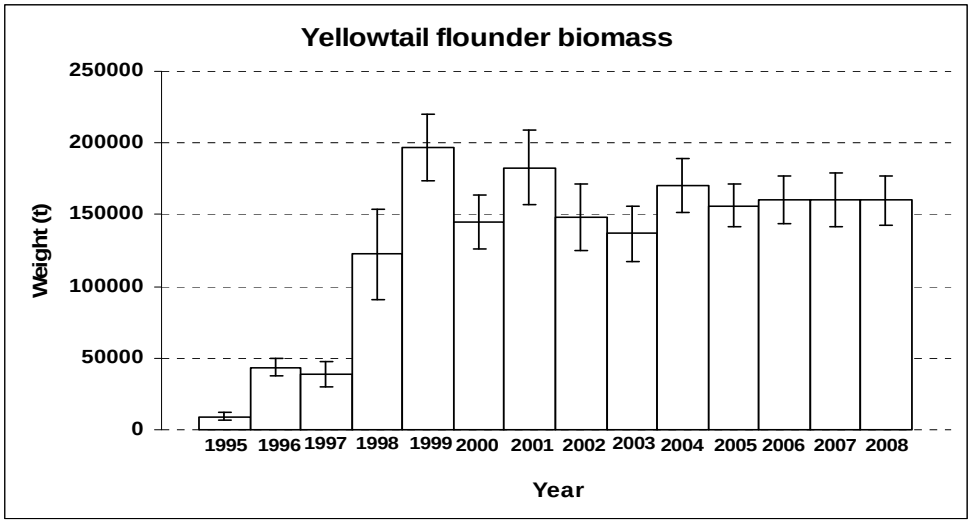


**FIGURE 6.-** Yellowtail flounder biomass calculated by the swept area method in tons and ±SD by year. Spanish Spring surveys on NAFO Div. 3NO: 1995-2008 (1995-2000 transformed data from C/V *Playa de Menduíña*; 2002-2008 original data from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels).

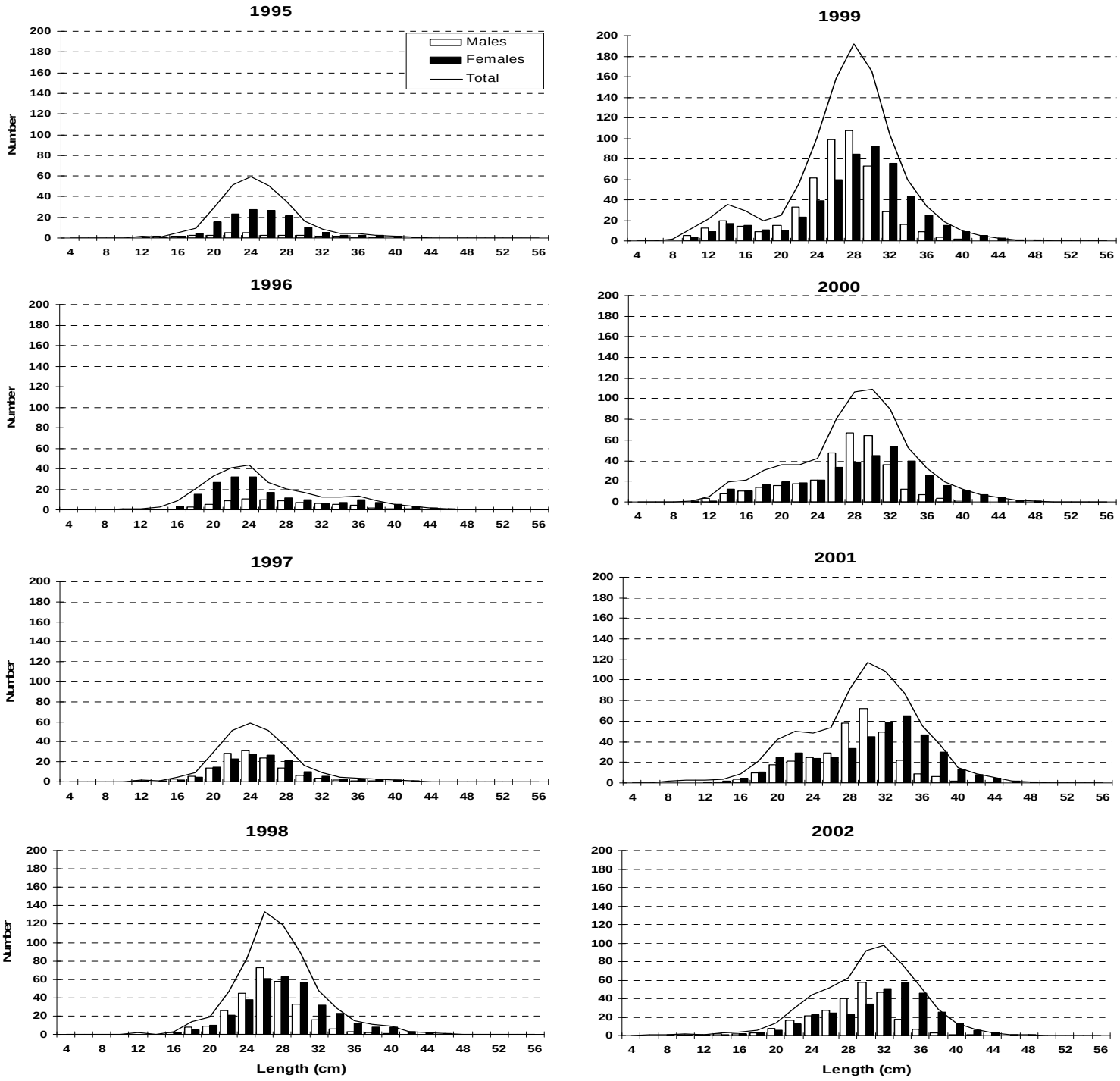


**FIGURE 7.-** Yellowtail flounder length distribution (cm) on NAFO 3NO: 1995-2008. Mean catches per tow numbers. 1995-2000 data are transformed data from C/V *Playa de Menduiña*, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels

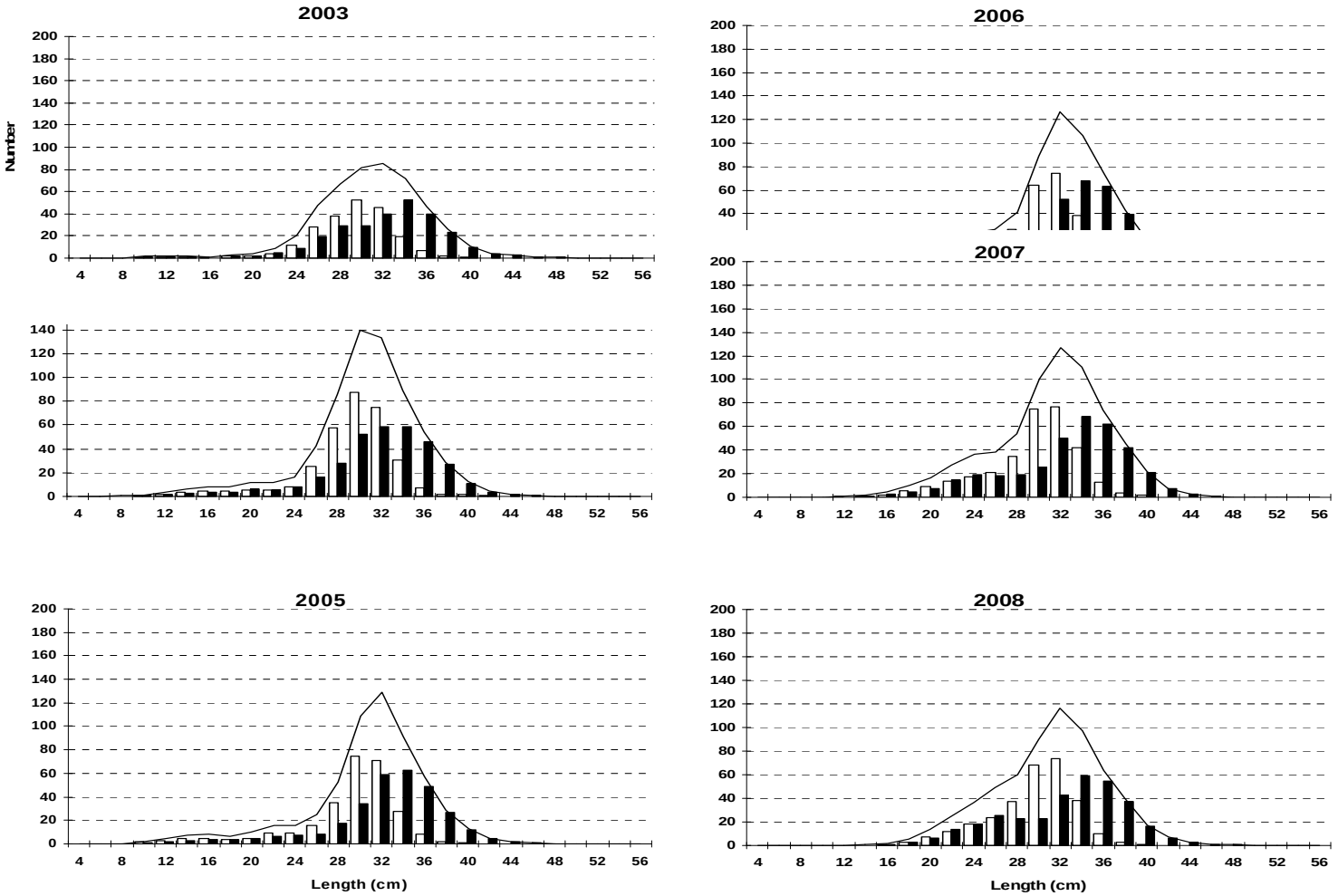


**FIGURE 7 (Cont.).-** Yellowtail flounder length distribution (cm) on NAFO 3NO: 1995-2008. Mean catches per tow numbers. 1995-2000 data are transformed data from C/V *Playa de Menduíña*, and 2002-2008 data are original from R/V *Vizconde de Eza*. In 2001, there are data from the two vessels

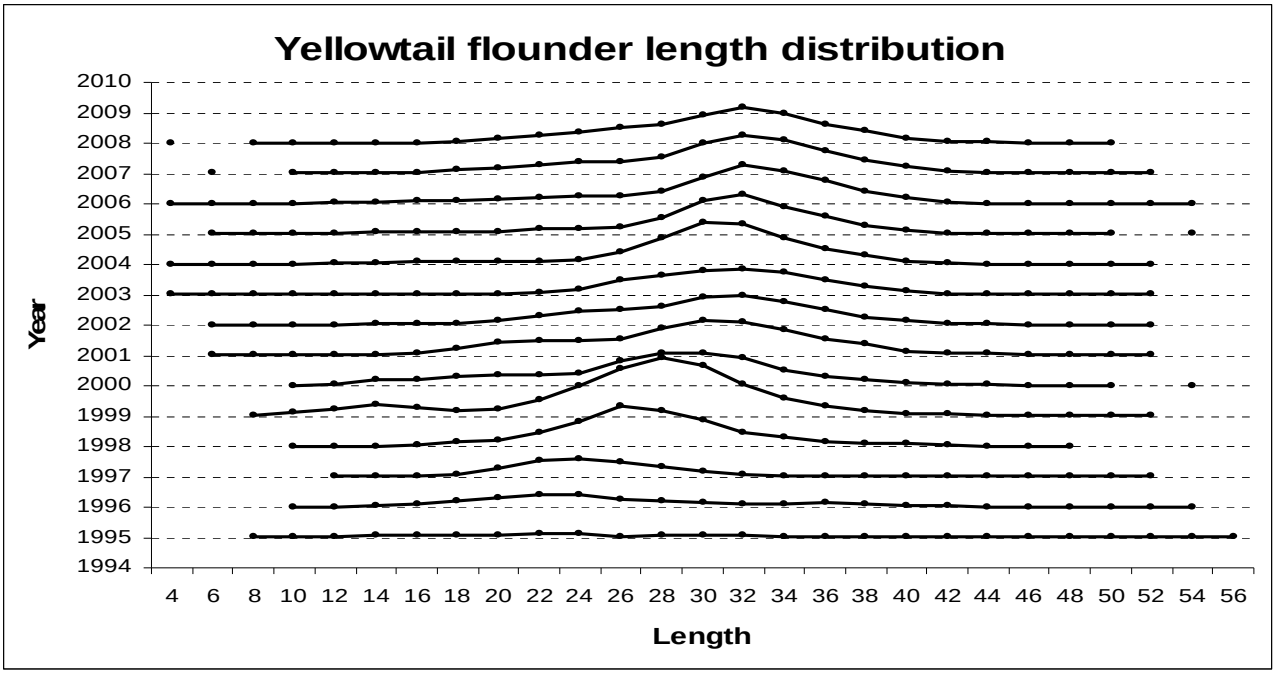


**FIGURE 8.-** Yellowtail flounder mean catches per tow length distribution (cm) on NAFO 3NO: 1995-2008.