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Results from the 2000 Spanish Bottom Trawl Survey in the  
NAFO Regulatory Area for Divisions 3NO

by

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**Abstract**

Since 1995 the spanish spring bottom trawl survey was conducted in NAFO Regulatory Area (Divisions 3NO) during May. The main propose of the surveys was obtain abundance and biomass indices for the commercial species: American plaice, Yellowtail flounder, Thorny skate, Greenland halibut, Cod and Wicht flounder.

The stratified-random sampling metod of set selection was used. The area covered was extended until 800 fathoms. A total of 137 successful fishing sets were completed including 13 sets performed with the net Campelen also.

Yellowtail flounder appears highly concentrated in the strata 360 and 376 and the American plaice in the strata 360, 376, 359. The catches for American plaice and Witch flounder are increasing this year. Greenland halibut and Yellowtail flounder catches are decreasing but their indices increasing in the period. Cod indices remains to the very low level.

The length distribution by sexes for the aforementioned species are presented also.

As the previous years a stratified-random bottom trawl survey was performed in NAFO Regulatory Area (Divisions 3NO) during 7 th to 28 th May. The survey, witch covered offshore areas on the Gran Bank, was conducted following the same procedures and the same vessel and gear of the 1995-99 surveys (Paz, et al, 1995,1996,1997,1999 and Durán et al 1998). The area and strata covered by the survey were based on the stratification charts and tables in Bishop (1994).

As 1999, the area covered was extended until 800 fathoms. A total of 137 successful fishing sets were completed including 13 sets performed with the net Campelen also.

For first time was carry out a comparative fishing with the canadian vessel R/V Wilfred Templeman. This experience comprise 14 pair sets.

At touchdown of the net a standard 30 minutes tow started at a mean speed of 3 konws. Trawls with net damage were excluded from analysis. From each set, catch numbers and weights for main species along with length frequency from American plaice, Greenland halibut, Witch flounder, Yellowtail flounder, Cod and Skates. Otoliths were collected from Greenland halibut.Cod and Roughead grenadier.

The abundance and biomass indices by strata for these species are presented in tables 1 to 6 respectively, and their length distribution by sexes in tables 7 to 12. The catches for American plaice and Witch flounder are increasing this year and their value indices estimates resulted greater. Greenland halibut and Yellowtail flounder catches are decreasing and their indices resulted lower than it estimated last year. Cod indices remains to the very low level. In the figure 1 appears the comparison between abundance and biomass indices for the five years considering only the strata covered in 1996, depth until 1100 m.

Following the experience started the last year, this year were conducted 13 pairs sets to standardize the catches obtained in previous years with the "Pedreira" net and to change them into new indices, Campelen indices. This 13 fishing pairs were made at the stratum 353, 354, 355, 359 and 360 on depth range from 71 to 190 m. repeating the same conditions: position, speed, duration, etc. The table 13 show the characteristics of the 13 fishing pairs tows and the catches (Kg) and number from it are shown in Table 14. As last year the Campelen net caught less kilos in almost all fish species in all tows (Figure 2). Only the capelin catches were largest with the Campelen net. To obtain the new indices applicable to the area covered in previous surveys it will necessary to widen the depth ranges and catches, continuing the comparisons next year.

### References

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Table 1.- American plaice abundance and biomass indices by strata in the 2000 Spanish spring bottom trawl survey in Div. 3NO.

Strata	Area	Number Of hauls	Area trawled	Catch (number)	Catch (Kg)	Abundance "(000)	Biomass (t)
353	269	3	0.04	15165.7	4110.4	114514.3	31036.8
354	246	3	0.04	3007.1	1422.5	20765.0	9822.8
355	74	2	0.02	844.3	386.0	2687.3	1228.6
356	47	2	0.02	298.7	180.8	624.0	377.7
357	164	1	0.01	5.0	1.8	66.4	23.6
358	225	3	0.03	3991.5	2881.4	26317.2	18998.2
359	421	4	0.05	18073.1	8487.3	162320.5	76227.3
360	2783	20	0.24	51766.3	20888.9	601212.2	242603.3
374	214	2	0.02	79.0	36.0	704.4	321.0
375	271	2	0.02	314.6	193.7	3497.3	2153.5
376	1334	10	0.12	13253.5	8071.8	147335.0	89731.5
377	100	2	0.02	373.3	173.8	1631.7	759.8
378	139	2	0.02	229.2	127.0	1370.0	759.3
379	106	2	0.02	29.0	14.8	136.7	69.7
380	96	2	0.02	29.0	11.2	117.8	45.6
381	144	2	0.02	72.0	13.0	438.9	79.4
382	343	4	0.05	90.0	24.7	618.7	169.5
721	65	2	0.02	52.0	27.1	143.1	74.6
722	84	2	0.02	11.0	7.8	42.5	30.1
723	155	2	0.02	119.0	68.6	745.3	429.6
724	124	2	0.02	114.0	79.2	608.0	422.4
725	105	2	0.02	136.0	55.6	680.0	278.0
726	72	2	0.02	128.0	53.0	416.5	172.5
727	96	2	0.02	432.0	29.5	1974.9	134.9
728	78	2	0.02	345.0	146.8	1281.3	545.3
752	131	2	0.02	1989.3	824.2	12634.9	5234.9
753	138	2	0.02	2475.8	1093.2	15708.2	6936.2
754	180	2	0.02	0.0	0.0	0.0	0.0
755	385	4	0.04	0.0	0.0	0.0	0.0
756	101	2	0.02	432.0	203.8	2154.5	1016.5
757	102	2	0.02	48.0	33.0	229.1	157.2
758	99	2	0.02	13.0	8.5	61.3	40.1
759	127	2	0.02	27.0	12.8	163.3	77.4
760	154	2	0.02	393.4	280.4	2885.0	2056.3
761	171	2	0.02	0.0	1.2	0.0	9.3
762	212	2	0.02	0.0	0.0	0.0	0.0
763	261	4	0.04	5.0	3.9	31.4	24.5
764	100	2	0.02	0.0	0.0	0.0	0.0
765	124	2	0.02	0.0	0.0	0.0	0.0
766	144	2	0.02	0.0	0.0	0.0	0.0
767	158	2	0.02	1.0	0.7	7.5	5.3
TOTAL	10342	118	1.34	114342.5	49954.35	1124124.2	492052.6
					Error:	13527	12290

Table 2.- Yellowtail flounder abundance and biomass indices by strata in the 2000 Spanish spring bottom trawl survey in Div. 3NO.

Strata	Area	Number Of hauls	Area trawled	Catch (number)	Catch (Kg)	Abundance "(000)	Biomass (t)
353	269	3	0.04	1170.6	608.9	8838.9	4597.7
354	246	3	0.04	38.8	16.0	268.0	110.7
355	74	2	0.02	0.0	0.0	0.0	0.0
356	47	2	0.02	0.0	0.0	0.0	0.0
357	164	1	0.01	0.0	0.0	0.0	0.0
358	225	3	0.03	0.0	0.0	0.0	0.0
359	421	4	0.05	81.7	28.3	733.5	253.9
360	2783	20	0.24	77797.6	23397.6	903539.9	271739.6
374	214	2	0.02	316.7	122.4	2823.5	1091.5
375	271	2	0.02	3410.9	917.3	37922.5	10198.5
376	1334	10	0.12	58877.5	13017.6	654521.5	144711.7
377	100	2	0.02	1.0	0.3	4.4	1.2
378	139	2	0.02	0.0	0.0	0.0	0.0
379	106	2	0.02	0.0	0.0	0.0	0.0
380	96	2	0.02	0.0	0.0	0.0	0.0
381	144	2	0.02	0.0	0.0	0.0	0.0
382	343	4	0.05	0.0	0.0	0.0	0.0
721	65	2	0.02	0.0	0.0	0.0	0.0
722	84	2	0.02	0.0	0.0	0.0	0.0
723	155	2	0.02	0.0	0.0	0.0	0.0
724	124	2	0.02	0.0	0.0	0.0	0.0
725	105	2	0.02	0.0	0.0	0.0	0.0
726	72	2	0.02	0.0	0.0	0.0	0.0
727	96	2	0.02	0.0	0.0	0.0	0.0
728	78	2	0.02	0.0	0.0	0.0	0.0
752	131	2	0.02	0.0	0.0	0.0	0.0
753	138	2	0.02	0.0	0.0	0.0	0.0
754	180	2	0.02	0.0	0.0	0.0	0.0
755	385	4	0.04	0.0	0.0	0.0	0.0
756	101	2	0.02	0.0	0.0	0.0	0.0
757	102	2	0.02	0.0	0.0	0.0	0.0
758	99	2	0.02	0.0	0.0	0.0	0.0
759	127	2	0.02	0.0	0.0	0.0	0.0
760	154	2	0.02	0.0	0.0	0.0	0.0
761	171	2	0.02	0.0	0.0	0.0	0.0
762	212	2	0.02	0.0	0.0	0.0	0.0
763	261	4	0.04	0.0	0.0	0.0	0.0
764	100	2	0.02	0.0	0.0	0.0	0.0
765	124	2	0.02	0.0	0.0	0.0	0.0
766	144	2	0.02	0.0	0.0	0.0	0.0
767	158	2	0.02	0.0	0.0	0.0	0.0
TOTAL	10342	118	1.34	141694.75	38108	1608652.2	432704.8
					Error:	20876	22666

Table 3.- Greenland halibut abundance and biomass indices by strata in the 2000 Spanish spring bottom trawl survey in Div. 3NO.

Strata	Area	Number Of hauls	Area trawled	Catch (number)	Catch (Kg)	Abundance "(000)	Biomass (t)
353	269	3	0.04	20.0	6.0	151.0	45.6
354	246	3	0.04	31.0	3.6	214.0	25.0
355	74	2	0.02	26.0	4.7	82.8	15.0
356	47	2	0.02	19.0	10.7	39.7	22.3
357	164	1	0.01	2.0	1.2	26.5	15.5
358	225	3	0.03	37.5	15.6	247.1	102.9
359	421	4	0.05	153.8	58.2	1381.5	522.9
360	2783	20	0.24	69.0	27.8	801.4	322.4
374	214	2	0.02	0.0	0.0	0.0	0.0
375	271	2	0.02	0.0	0.0	0.0	0.0
376	1334	10	0.12	0.0	0.0	0.0	0.0
377	100	2	0.02	11.0	3.4	48.1	14.7
378	139	2	0.02	90.0	23.5	538.1	140.5
379	106	2	0.02	71.0	26.6	334.5	125.3
380	96	2	0.02	283.0	52.1	1150.0	211.9
381	144	2	0.02	102.0	29.4	621.7	179.0
382	343	4	0.05	10.4	5.3	71.8	36.7
721	65	2	0.02	21.0	10.4	57.8	28.6
722	84	2	0.02	520.4	420.0	2009.7	1622.1
723	155	2	0.02	123.1	61.3	770.8	384.1
724	124	2	0.02	150.0	125.6	800.0	669.9
725	105	2	0.02	488.2	216.0	2441.2	1080.0
726	72	2	0.02	507.1	279.0	1650.3	907.9
727	96	2	0.02	191.0	57.0	873.1	260.6
728	78	2	0.02	1452.3	644.5	5394.2	2393.9
752	131	2	0.02	821.8	502.7	5219.8	3192.9
753	138	2	0.02	1626.4	1072.4	10319.2	6804.2
754	180	2	0.02	900.8	1005.9	8314.7	9285.2
755	385	4	0.04	1811.4	1539.8	16171.0	13746.6
756	101	2	0.02	2378.7	1305.8	11864.0	6512.6
757	102	2	0.02	1024.7	806.0	4889.8	3846.2
758	99	2	0.02	1179.4	1221.0	5560.0	5756.1
759	127	2	0.02	713.7	634.1	4316.2	3834.8
760	154	2	0.02	1021.8	658.0	7492.8	4825.3
761	171	2	0.02	909.0	777.5	7025.4	6009.2
762	212	2	0.02	739.3	783.7	7739.9	8204.7
763	261	4	0.04	1090.9	1104.7	6840.3	6926.8
764	100	2	0.02	418.2	365.4	1922.9	1680.0
765	124	2	0.02	1186.1	800.0	7263.2	4898.8
766	144	2	0.02	296.1	361.1	1994.7	2432.7
767	158	2	0.02	314.0	457.0	2362.1	3438.4
TOTAL	10342	118	1	20811.0	15476.9	129001.3	100521.0
					Error:	1118	1132

Table 4.- Witch flounder abundance and biomass indices by strata in the 2000 Spanish spring bottom trawl survey in Div. 3NO.

Strata	Area	Number Of hauls	Area traweld	Catch (number)	Catch (Kg)	Abundance "(000)	Biomass (t)
353	269	3	0.04	1711.1	710.8	12920.1	5367.2
354	246	3	0.04	1229.7	621.1	8491.6	4289.1
355	74	2	0.02	873.6	301.1	2780.4	958.3
356	47	2	0.02	163.0	64.5	340.5	134.7
357	164	1	0.01	46.0	17.1	609.6	226.6
358	225	3	0.03	148.4	66.4	978.6	437.5
359	421	4	0.05	1062.8	349.3	9545.3	3137.2
360	2783	20	0.24	808.0	435.8	9384.4	5061.3
374	214	2	0.02	0.0	0.0	0.0	0.0
375	271	2	0.02	0.0	0.0	0.0	0.0
376	1334	10	0.12	13.6	11.6	151.7	129.4
377	100	2	0.02	1.0	0.2	4.3	0.7
378	139	2	0.02	2.0	0.7	12.0	4.4
379	106	2	0.02	14.0	6.9	66.0	32.5
380	96	2	0.02	1.0	0.5	4.1	1.9
381	144	2	0.02	0.0	0.0	0.0	0.0
382	343	4	0.05	1.0	0.3	7.0	2.1
721	65	2	0.02	76.5	24.8	210.3	68.1
722	84	2	0.02	519.9	84.5	2007.9	326.3
723	155	2	0.02	221.0	64.3	1384.0	402.7
724	124	2	0.02	661.6	142.0	3528.5	757.3
725	105	2	0.02	423.2	129.2	2115.9	646.1
726	72	2	0.02	1167.4	339.0	3799.0	1103.2
727	96	2	0.02	4.0	1.0	18.3	4.8
728	78	2	0.02	134.0	44.9	497.7	166.8
752	131	2	0.02	199.6	72.2	1267.8	458.6
753	138	2	0.02	447.6	156.9	2839.8	995.5
754	180	2	0.02	27.0	10.4	249.2	96.0
755	385	4	0.04	0.0	0.5	0.0	4.2
756	101	2	0.02	403.2	150.1	2010.8	748.6
757	102	2	0.02	277.1	102.0	1322.3	486.7
758	99	2	0.02	91.0	3.2	429.0	15.2
759	127	2	0.02	40.0	3.2	241.9	19.6
760	154	2	0.02	931.4	252.7	6830.3	1853.1
761	171	2	0.02	596.2	160.8	4607.6	1242.8
762	212	2	0.02	53.0	20.0	554.9	209.4
763	261	4	0.04	84.4	21.7	529.0	135.8
764	100	2	0.02	238.0	51.4	1094.3	236.3
765	124	2	0.02	290.2	55.4	1776.8	339.2
766	144	2	0.02	230.6	54.7	1553.3	368.5
767	158	2	0.02	180.0	47.5	1354.3	357.4
TOTAL	10342	118	1.34	13371.89	4,578.7	85518.5	30825.0
					Error:	939	1139

Table 5.- Cod abundance and biomass indices by strata in the 2000 Spanish spring bottom trawl survey in Div. 3NO.

Strata	Area	Number Of hauls	Area trawled	Catch (number)	Catch (Kg)	Abundance "(000)	Biomass (t)
353	269	3	0.04	56.0	73.6	422.8	556.0
354	246	3	0.04	135.0	158.1	932.2	1091.7
355	74	2	0.02	1461.4	542.0	4651.4	1725.1
356	47	2	0.02	106.0	93.4	221.4	195.1
357	164	1	0.01	28.0	26.2	371.1	346.6
358	225	3	0.03	2036.9	1585.0	13430.3	10450.5
359	421	4	0.05	147.0	208.7	1320.3	1874.6
360	2783	20	0.24	83.0	120.9	964.0	1403.7
374	214	2	0.02	0.0	0.0	0.0	0.0
375	271	2	0.02	0.0	0.0	0.0	0.0
376	1334	10	0.12	44.4	25.8	493.0	286.5
377	100	2	0.02	1.0	0.1	4.4	0.5
378	139	2	0.02	71.0	60.9	424.6	363.9
379	106	2	0.02	276.4	235.0	1302.1	1107.1
380	96	2	0.02	379.6	46.9	1542.3	190.7
381	144	2	0.02	77.0	10.0	469.3	60.6
382	343	4	0.05	53.0	8.1	364.5	55.8
721	65	2	0.02	96.0	162.0	264.1	445.7
722	84	2	0.02	4.0	5.2	15.4	19.9
723	155	2	0.02	90.0	125.9	563.6	788.2
724	124	2	0.02	6.1	4.0	32.5	21.4
725	105	2	0.02	55.0	24.8	275.0	124.1
726	72	2	0.02	95.2	50.6	309.6	164.7
727	96	2	0.02	228.0	52.3	1042.3	239.3
728	78	2	0.02	2.0	5.1	7.4	19.0
752	131	2	0.02	0.0	0.0	0.0	0.0
753	138	2	0.02	0.0	0.0	0.0	0.0
754	180	2	0.02	0.0	0.0	0.0	0.0
755	385	4	0.04	0.0	0.0	0.0	0.0
756	101	2	0.02	4.0	2.1	20.1	10.3
757	102	2	0.02	0.0	0.0	0.0	0.0
758	99	2	0.02	0.0	0.0	0.0	0.0
759	127	2	0.02	0.0	0.0	0.0	0.0
760	154	2	0.02	0.0	0.0	0.0	0.0
761	171	2	0.02	0.0	0.0	0.0	0.0
762	212	2	0.02	0.0	0.0	0.0	0.0
763	261	4	0.04	19.0	12.4	119.1	77.8
764	100	2	0.02	0.0	0.0	0.0	0.0
765	124	2	0.02	0.0	0.0	0.0	0.0
766	144	2	0.02	0.0	0.0	0.0	0.0
767	158	2	0.02	0.0	0.0	0.0	0.0
TOTAL	10342	118	1.34	5554.9	3639.0	29563.1	21618.7
					Error:	1044	814

Table 6.- Thorny skate abundance and biomass indices by strata in the 2000 Spanish spring bottom trawl survey in Div. 3NO.

Strata	Area	Number Of hauls	Area trawled	Catch (number)	Catch (Kg)	Abundance "(000)	Biomass (t)
353	269	3	0.035625	1119.82	1827.9	8455.6	13802.2
354	246	3	0.035625	336.49	1004.09	2323.6	6933.5
355	74	2	0.02325	84.52	269.29	269.0	857.1
356	47	2	0.0225	14.32	17.99	29.9	37.6
357	164	1	0.012375	0	0	0.0	0.0
358	225	3	0.034125	103.77	188.8	684.2	1244.8
359	421	4	0.046875	754.23	1165.9	6773.9	10471.3
360	2783	20	0.239625	4709.86	10739.11	54700.2	124723.8
374	214	2	0.024	4	5.76	35.7	51.4
375	271	2	0.024375	14	28.25	155.7	314.1
376	1334	10	0.12	1348.83	2797.18	14994.5	31095.3
377	100	2	0.022875	3	4.63	13.1	20.2
378	139	2	0.02325	54	45	322.8	269.0
379	106	2	0.0225	0	8.95	0.0	42.2
380	96	2	0.023625	28	10.28	113.8	41.8
381	144	2	0.023625	73.88	32.05	450.3	195.4
382	343	4	0.049875	152.01	87.13	1045.4	599.2
721	65	2	0.023625	16	53.16	44.0	146.3
722	84	2	0.02175	33	112.1	127.4	432.9
723	155	2	0.02475	16.09	32.89	100.7	206.0
724	124	2	0.02325	7.96	18.8	42.4	100.3
725	105	2	0.021	21	33.43	105.0	167.2
726	72	2	0.022125	58.01	78.7	188.8	256.1
727	96	2	0.021	7.31	4.75	33.4	21.7
728	78	2	0.021	14	15	52.0	55.7
752	131	2	0.020625	16.96	9.75	107.7	61.9
753	138	2	0.02175	14	24.5	88.8	155.4
754	180	2	0.0195	374.02	446.6	3452.5	4122.5
755	385	4	0.043125	0	44.5	0.0	397.3
756	101	2	0.02025	26	29.98	129.7	149.5
757	102	2	0.021375	213.61	451	1019.3	2152.1
758	99	2	0.021	265.84	454	1253.2	2140.3
759	127	2	0.021	222.07	340.2	1343.0	2057.4
760	154	2	0.021	50	105.4	366.7	772.9
761	171	2	0.022125	28.88	82.92	223.2	640.9
762	212	2	0.02025	21	45	219.9	471.1
763	261	4	0.041625	0	0	0.0	0.0
764	100	2	0.02175	0	0	0.0	0.0
765	124	2	0.02025	1.99	11	12.2	67.4
766	144	2	0.021375	0	0	0.0	0.0
767	158	2	0.021	0	0	0.0	0.0
TOTAL	10342	118	1.340625	10208.47	20625.99	99277.7	205273.8
					Error:	1403	3661



Table 7.- Length distribution of American plaice in the 2000 Spanish spring bottom trawl in Div. 3NO.  
B/C Playa de Mendiña.

Length Groups (cm)	Frecuency ( ‰ )			Combined
	Males	Females	Indeterm.	
10.00	0.0	0.6	0.0	0.6
12.00	2.3	2.7	0.0	5.0
14.00	21.4	24.8	0.0	46.1
16.00	56.7	75.5	0.0	132.2
18.00	29.2	48.3	0.0	77.5
20.00	5.9	7.3	0.0	13.2
22.00	4.2	4.8	0.0	9.0
24.00	3.4	4.0	0.0	7.4
26.00	5.9	1.8	0.0	7.7
28.00	16.7	4.7	0.0	21.3
30.00	44.4	11.3	0.0	55.7
32.00	62.1	22.8	0.0	84.8
34.00	41.2	41.3	0.4	82.9
36.00	26.4	49.3	0.0	75.6
38.00	12.7	55.3	0.0	68.0
40.00	5.4	77.8	0.0	83.2
42.00	2.9	72.7	0.0	75.7
44.00	1.1	55.0	0.0	56.2
46.00	0.6	35.7	0.0	36.3
48.00	0.5	20.7	0.0	21.2
50.00	0.1	15.0	0.0	15.0
52.00	0.2	8.1	0.0	8.3
54.00	0.0	7.4	0.0	7.4
56.00	0.0	2.3	0.0	2.3
58.00	0.0	2.4	0.0	2.4
60.00	0.0	1.9	0.0	1.9
62.00	0.0	1.9	0.0	1.9
64.00	0.0	1.0	0.0	1.0
66.00	0.0	0.0	0.0	0.0
68.00	0.0	0.0	0.0	0.0
70.00	0.0	0.1	0.0	0.1
	0.0	0.0	0.0	0.0
<b>TOTAL</b>	<b>343.2</b>	<b>656.4</b>	<b>0.5</b>	<b>1000.0</b>
<i>N° Ind. Sampled:</i>	<i>3732</i>	<i>7720</i>	<i>6</i>	<i>11458</i>
<i>N° Samples:</i>	<i>96</i>			
<i>Total Catch:</i>	<i>49954</i>			
<i>Sampled Catch:</i>	<i>49953</i>			
<i>Total Hauls:</i>	<i>118</i>			

Table 8.- Length distribution of Yellowtail flounder in the 2000 Spanish spring bottom trawl in Div. 3NO.  
B/C Playa de Menduïña.

Length Groups (cm)	Frecuency ( ‰ )			Combined
	Males	Females	Indeterm.	
10.00	0.0	0.1	0.0	0.1
12.00	0.6	0.2	0.0	0.9
14.00	3.4	4.2	0.0	7.6
16.00	7.9	8.0	0.0	15.8
18.00	13.0	15.1	0.0	28.0
20.00	17.3	20.9	0.0	38.2
22.00	20.7	22.4	0.0	43.2
24.00	28.3	27.8	0.0	56.1
26.00	68.4	47.2	0.0	115.6
28.00	101.2	59.3	0.0	160.6
30.00	100.8	70.4	0.0	171.1
32.00	58.9	86.7	0.0	145.6
34.00	20.9	66.0	0.0	86.9
36.00	11.2	43.0	0.0	54.2
38.00	5.9	26.3	0.0	32.2
40.00	3.3	17.6	0.0	20.9
42.00	0.5	11.3	0.0	11.8
44.00	0.0	6.5	0.0	6.6
46.00	0.0	2.9	0.0	2.9
48.00	0.0	1.3	0.0	1.3
50.00	0.0	0.4	0.0	0.4
52.00	0.0	0.0	0.0	0.0
54.00	0.0	0.0	0.0	0.0
<b>TOTAL</b>	<b>462.5</b>	<b>537.5</b>	<b>0.0</b>	<b>1000.0</b>
<i>Nº Ind. Sampled:</i>	<i>3323</i>	<i>4100</i>	<i>0</i>	<i>7423</i>
<i>Nº Samples:</i>	<i>42</i>			
<i>Total Catch:</i>	<i>38108</i>			
<i>Sampled Catch:</i>	<i>38078</i>			
<i>Total Hauls:</i>	<i>118</i>			

Table 9 .- Length distribution of Greenland halibut in the 2000 Spanish spring bottom trawl in Div. 3NO.  
B/C Playa de Menduïña .

Length Groups (cm)	Frecuency ( ‰ )			
	Males	Females	Indeterm.	Combined
10.00	0.0	0.0	0.0	0.1
12.00	0.1	0.1	0.0	0.3
14.00	0.1	0.2	0.0	0.3
16.00	0.1	0.1	0.0	0.1
18.00	0.1	0.1	0.0	0.2
20.00	0.0	0.0	0.0	0.1
22.00	0.2	0.1	0.0	0.3
24.00	0.3	0.4	0.0	0.7
26.00	0.2	0.3	0.0	0.5
28.00	0.2	0.3	0.0	0.6
30.00	0.6	0.7	0.0	1.2
32.00	1.1	1.4	0.0	2.5
34.00	2.2	2.6	0.0	4.8
36.00	4.0	4.9	0.0	8.9
38.00	4.9	7.0	0.0	11.9
40.00	5.2	10.6	0.0	15.9
42.00	4.2	9.7	0.0	13.9
44.00	3.0	8.1	0.0	11.1
46.00	2.1	5.3	0.0	7.5
48.00	1.0	3.7	0.0	4.8
50.00	0.9	2.3	0.0	3.1
52.00	0.7	1.8	0.0	2.6
54.00	0.4	1.6	0.0	2.0
56.00	0.4	1.2	0.0	1.6
58.00	0.2	0.7	0.0	0.9
60.00	0.1	0.8	0.0	0.9
62.00	0.1	0.4	0.0	0.5
64.00	0.0	0.4	0.0	0.5
66.00	0.0	0.3	0.0	0.3
68.00	0.0	0.4	0.0	0.4
70.00	0.0	0.2	0.0	0.2
72.00	0.0	0.2	0.0	0.2
74.00	0.0	0.2	0.0	0.2
76.00	0.0	0.1	0.0	0.1
78.00	0.0	0.3	0.0	0.3
80.00	0.0	0.1	0.0	0.1
82.00	0.0	0.1	0.0	0.1
84.00	0.0	0.1	0.0	0.1
86.00	0.0	0.1	0.0	0.1
88.00	0.0	0.0	0.0	0.0
90.00	0.0	0.0	0.0	0.0
92.00	0.0	0.0	0.0	0.0
94.00	0	0.0	0	0.0
<b>TOTAL</b>	<b>325.5</b>	<b>674.0</b>	<b>0.5</b>	<b>1000.0</b>
<i>Nº Ind. Sampled:</i>	<i>2991</i>	<i>6162</i>	<i>10</i>	<i>9163</i>
<i>Nº Samples:</i>	<i>81</i>			
<i>Total Catch:</i>	<i>15477</i>			
<i>Sampled Catch:</i>	<i>15477</i>			
<i>Total Hauls:</i>	<i>118</i>			

Table 10.- Length distribution of Witch flounder in the 2000 Spanish spring bottom trawl in Div. 3NO.  
B/C Playa de Menduïña.

Length Groups (cm)	Frecuency ( ‰ )			Combined
	Males	Females	Indeterm.	
14.00	0.1	0.2	0.0	0.3
16.00	1.8	1.6	0.0	3.4
18.00	3.7	6.7	0.0	10.4
20.00	6.8	12.9	0.0	19.7
22.00	6.7	7.9	0.0	14.7
24.00	3.8	3.8	0.0	7.6
26.00	5.3	12.0	0.0	17.3
28.00	14.9	27.1	0.0	42.0
30.00	37.9	59.0	0.0	96.9
32.00	57.6	71.6	0.0	129.2
34.00	62.9	79.6	0.0	142.5
36.00	59.8	85.8	0.0	145.5
38.00	46.1	64.5	0.0	110.5
40.00	31.1	69.0	0.0	100.1
42.00	14.6	55.4	0.0	70.0
44.00	6.1	27.7	0.0	33.7
46.00	2.0	21.5	0.0	23.6
48.00	1.5	12.0	0.0	13.5
50.00	0.1	8.0	0.0	8.1
52.00	0.2	6.2	0.0	6.4
54.00	0.0	2.7	0.0	2.7
56.00	0.0	1.5	0.0	1.5
58.00	0.0	0.1	0.0	0.1
60.00	0.0	0.3	0.0	0.3
<b>TOTAL</b>	<b>363.0</b>	<b>637.0</b>	<b>0.0</b>	<b>1000.0</b>
<i>Nº Ind. Sampled:</i>	<i>2295</i>	<i>4074</i>	<i>0</i>	<i>6369</i>
<i>Nº Samples:</i>	<i>90</i>			
<i>Total Catch:</i>	<i>4579</i>			
<i>Sampled Catch:</i>	<i>4578</i>			
<i>Total Hauls:</i>	<i>118</i>			

Table 11.- Length distribution of Cod in the 2000 Spanish spring bottom trawl in Div. 3NO.  
B/C Playa de Menduiña.

Length Groups (cm)	Frecuency ( ‰ ) Combined
12.00	1.0
15.00	8.6
18.00	16.9
21.00	48.0
24.00	55.0
27.00	73.7
30.00	73.9
33.00	77.8
36.00	114.5
39.00	183.2
42.00	130.9
45.00	58.1
48.00	26.6
51.00	14.4
54.00	9.9
57.00	9.7
60.00	9.3
63.00	14.6
66.00	15.6
69.00	13.6
72.00	14.0
75.00	9.1
78.00	7.2
81.00	4.1
84.00	4.7
87.00	2.1
90.00	1.6
93.00	0.6
96.00	0.2
99.00	0.2
102.00	0.4
105.00	0.2
108.00	0.0
111.00	0.0
114.00	0.0
117.00	0.2
<b>TOTAL</b>	<b>1000.0</b>
<i>Nº Ind. Sampled:</i>	2746
<i>Nº Samples:</i>	67
<i>Total Catch:</i>	3639
<i>Sampled Catch:</i>	3634
<i>Total Hauls:</i>	118

Table 12.- Length distribution of Thorny skate in the 2000 Spanish spring bottom trawl in Div. 3NO.  
B/C Playa de Mendiña.

Length Groups (cm)	Frecuency ( ‰ )			Combined
	Males	Females	Indeterm.	
12.00	0.1	0.1	0.0	0.2
14.00	0.6	0.7	0.0	1.3
16.00	2.9	1.2	0.0	4.1
18.00	0.5	0.6	0.0	1.1
20.00	2.1	1.7	0.0	3.9
22.00	0.5	1.6	0.0	2.0
24.00	1.9	2.3	0.0	4.3
26.00	3.8	2.7	0.0	6.5
28.00	4.4	3.9	0.0	8.3
30.00	5.6	7.2	0.0	12.8
32.00	8.0	8.4	0.0	16.3
34.00	13.6	13.3	0.0	26.9
36.00	16.3	11.1	0.0	27.4
38.00	19.4	22.6	0.0	42.1
40.00	22.4	24.6	0.0	47.0
42.00	25.6	29.6	0.0	55.3
44.00	29.6	31.7	0.0	61.3
46.00	28.9	37.3	0.0	66.2
48.00	42.9	29.5	0.0	72.5
50.00	28.7	27.2	0.0	55.8
52.00	31.0	25.2	0.0	56.1
54.00	25.5	21.1	0.0	46.6
56.00	25.7	25.2	0.0	50.9
58.00	20.2	17.0	0.0	37.2
60.00	16.7	15.4	0.0	32.1
62.00	15.2	14.1	0.0	29.3
64.00	16.5	14.8	0.0	31.3
66.00	9.5	21.1	0.0	30.6
68.00	11.0	15.7	0.0	26.7
70.00	10.8	20.3	0.0	31.1
72.00	9.2	14.0	0.0	23.2
74.00	11.9	13.3	0.0	25.3
76.00	9.6	9.4	0.0	19.0
78.00	7.9	6.3	0.0	14.2
80.00	5.6	3.7	0.0	9.3
82.00	4.6	2.1	0.0	6.7
84.00	3.3	1.3	0.0	4.6
86.00	2.5	1.8	0.0	4.4
88.00	3.0	0.2	0.0	3.2
90.00	1.4	0.0	0.0	1.4
92.00	0.6	0.0	0.0	0.6
94.00	0.4	0.0	0.0	0.4
96.00	0.6	0.0	0.0	0.6
98.00	0.0	0.1	0.0	0.1
<b>TOTAL</b>	<b>501.1</b>	<b>498.9</b>	<b>0.0</b>	<b>1000.0</b>
<i>N° Ind. Sampled:</i>	<i>2397</i>	<i>2429</i>	<i>0</i>	<i>4826</i>
<i>N° Samples:</i>	<i>83</i>			
<i>Total Catch:</i>	<i>20626</i>			
<i>Sampled Catch:</i>	<i>18800</i>			
<i>Total Hauls:</i>	<i>118</i>			

Table 13.- Characteristics of the comparative fishing between *Pedreira* and *Campelen* gears.

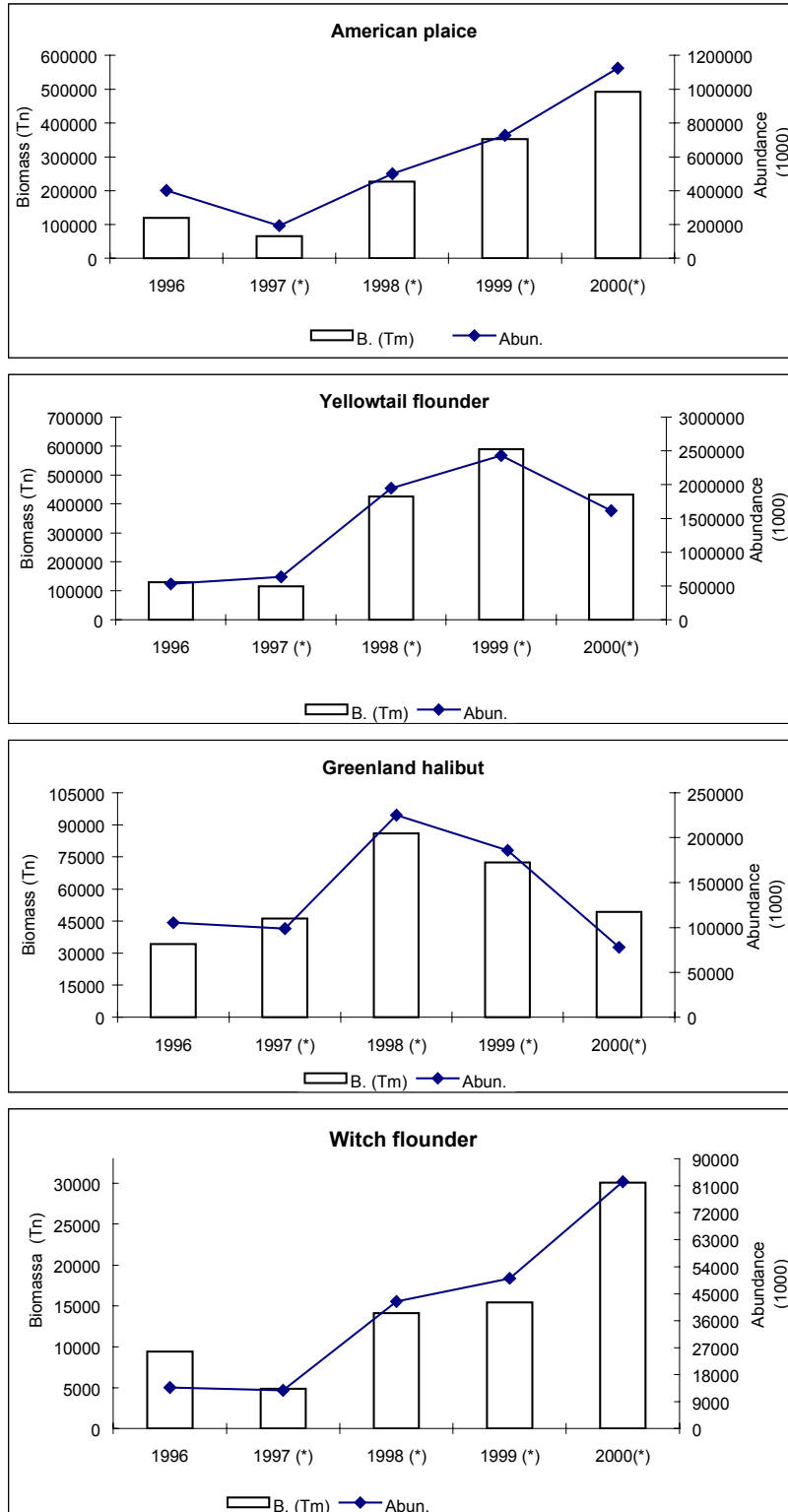
P: Pedreira gear; C Campelen gear.

Haul	Data	Strata	Speed	Gear	Warp	Set out				Haul in			
						Hour	Latitude	Long	Depth	Hour	Latitude	Long	Depth
P1	18/05/00	355	3	P	700	12.4	432398	514087	194	13.12	432704	514290	190
C1	20/05/00	355	3	C	700	6.44	432603	514143	189	7.15	432694	514355	186
P2	18/05/00	354	3.1	P	500	14.35	432796	513284	103	15.07	432817	512980	95
C2	20/05/00	354	3.3	C	500	8.42	432794	513311	104	9.13	432813	513052	95
P3	18/05/00	353	3.2	P	400	16.41	432923	511715	79	17.12	433003	511478	76
C3	20/05/00	353	3.1	C	400	10.49	432940	511683	78	11.2	433009	511472	75
P4	18/05/00	353	3.2	P	400	18.21	433272	510606	71	18.52	433450	510444	71
C4	20/05/00	353	3.2	C	400	14.2	433329	510547	71	14.51	433489	510407	71
P5	18/05/00	360	3.2	P	400	20.09	432976	510003	71	20.4	432803	505850	71
C5	20/05/00	360	3.1	C	400	15.1	432986	510006	71	15.41	432801	505851	69
P6	19/05/00	353	3.1	P	400	7.12	432403	432402	73	7.43	510396	510589	71
C6	20/05/00	353	3.1	C	400	16.57	432419	510397	76	17.28	432441	510597	76
P7	19/05/00	354	3.2	P	500	10.04	431954	511403	104	10.36	431819	511218	104
C7	20/05/00	354	3.2	C	500	19.25	431926	511358	104	19.56	431788	511182	104
P8	19/05/00	354	3.2	P	500	11.16	431181	510322	113	11.48	431045	510120	115
C8	21/05/00	354	3.2	C	500	6.48	431165	510294	111	7.19	431042	510101	113
P9	19/05/00	359	3.2	P	500	13.42	431345	505781	96	14.13	431461	505570	91
C9	21/05/00	359	3.2	C	500	8.1	431354	505777	97	8.41	431464	505501	89
P10	19/05/00	360	3.2	P	400	16.24	431709	505304	83	16.55	431872	505116	81
C10	21/05/00	360	3.2	C	400	9.31	431702	505329	82	10.02	431865	505130	79
P11	19/05/00	360	3.1	P	400	18.39	431528	503651	76	19.1	431356	503475	73
C11	21/05/00	360	3	C	400	12.1	431584	503696	76	12.41	431400	503550	76
P12	22/05/00	359	3.2	P	500	8.43	430690	504793	110	9.14	430582	504598	108
C12	21/05/00	359	3	C	500	17.04	430596	504659	98	17.35	430716	504812	98
P13	22/05/00	359	3.3	P	500	10.39	430188	503439	91	11.1	430133	503180	93
C13	21/05/00	359	3	C	500	14.55	430154	503239	95	15.26	430210	503490	92

Table 14 .- Catches and number of main species in the 13 pair hauls: P: Pedreira gear ; C: Campelen gear.  
 PLA: American plaice ; YEL: Yellowtail flounder ; SKA: Thorny skate ; COD: Atlantic  
 cod ; WIT: Wicht flounder ; GHL: Greenland halibut. W: Weight (Kg) ; N°: Number.

Haul	PLA		YEL		SKA		Cod		WIT		GHL	
	W	N°	W	N°	W	N°	W	N°	W	N°	W	N°
P1	196.5	316	0	0	16.29	8	117	78	99.1	279	4.44	20
C1	90.9	131	0	0	20	-	14.3	23	25.3	75	0.29	7
P2	159.81	582	3.07	8	193.09	75	142	57	251.63	666	0.61	3
C2	249.4	863	0.4	1	200.2	40	14.3	11	38.6	114	1.09	11
P3	751.7	2601	52.2	114	401.1	184	2.32	11	114.2	361	3.82	15
C3	628.2	1455	67	183	167.75	100	2.33	6	15.5	51	0.96	4
P4	1264.5	4696	518.4	970	702.8	321	14.6	17	176.6	336	0	0
C4	759.4	2048	393	876	151.1	72	27.22	15	23.9	51	0	0
P5	1928.5	7418	1670.7	3290	1635.1	677	32.55	9	83.9	151	0	0
C5	748	2054	1142.3	1977	608.9	184	2.6	5	8.4	16	0.034	1
P6	2094.16	7859	38.29	83	724	592	56.72	28	420	1020	2.22	5
C6	1103.6	4821	25.5	74	376	187	35.63	14	54	140	0.98	2
P7	616.3	1098	11.9	-	471	136	12.1	55	258.9	180	1.17	22
C7	561.55	1838	12.85	27	268	56	3.34	29	79.9	273	0.71	7
P8	646.4	1326	1.06	2	340	132	4	23	110.6	382	1.84	6
C8	387	1008	1.32	4	334	130	1.08	15	18	44	2.07	10
P9	2530	5890	18.87	-	834.7	515	23.42	10	155.7	538	46.6	115
C9	2637	7614	20.5	63	432.5	184	69.12	16	55.8	128	25.05	105
P10	1736.4	4445	12.1	33	481.8	-	21.38	10	108.3	238	14.55	36
C10	1429.8	2978	11.14	31	268	148	10.24	6	26	54	10.93	44
P11	2131.8	3197	17.1	49	318.3	-	13.6	2	19.5	33	4.1	10
C11	927	2622	3.97	21	255	89	0.3	1	2.2	4	21.2	60
P12	1569.9	5901	8.57	25	222	169	2.68	9	112.2	340	9.21	30
C12	645.2	3600	8.06	27	151.1	89	9.02	5	6.54	21	1.67	5
P13	1423	3690	8.89	24	240	148	0.21	1	29	253	9.11	23
C13	549.8	2180	4.88	15	165	75	7.63	2	2.34	5	1.26	4





**Figure 1.-** Abundance and biomass indices from Spanish survey for the main species, considering only the strata covered in 1996. NAFO div. 3NO, 1996-2000  
 (\*) Depth until 1100 m.

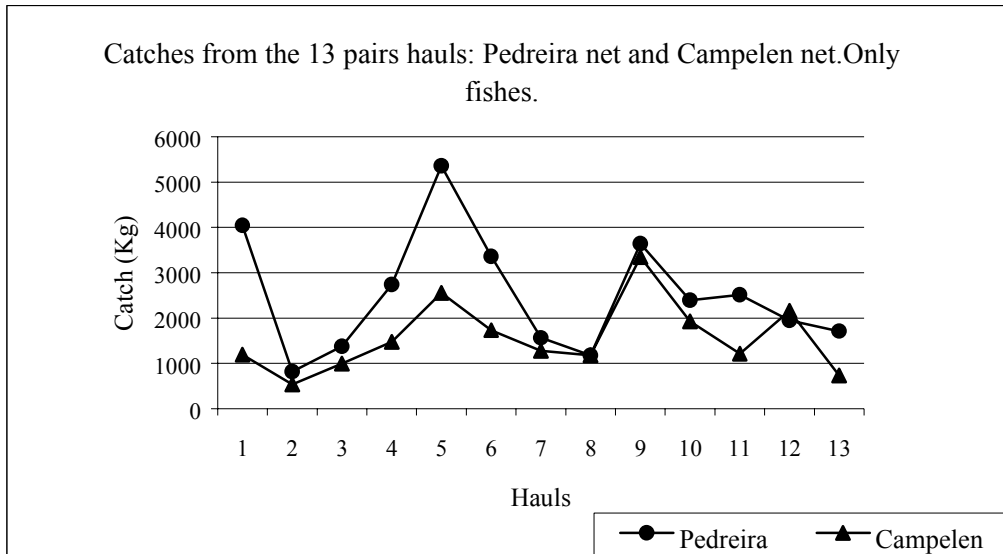


Figure 2.-Comparison between total catches in each tow with the Campelen net and Pedreira net carried out in the strata 353, 354,355,359 and 360. May 2000.