Working Document 19

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Spanish fishery data on plaice (*Pleuronectes platessa*), pollack (*Pollachius pollachius*), sole (*Solea spp.*) and whiting (*Merlangius merlangus*) in Iberian and Bay of Biscay waters

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1. INTRODUCTION

Following a request from ICES throughout the Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim (WGHMM), countries involved in the WGHMM have been asked to provide fishery information on several fish species in geographical areas for which ICES has never provided management advice. The species concerned are plaice (*Pleuronectes platessa*), pollack (*Pollachius pollachius*), and whiting (*Merlangius merlangus*) in Bay of Biscay and Iberian waters (Subarea VIII and Division IXa) and sole (*Solea spp.*) in Iberian waters (Divisions VIIIc and IXa). These species are widely distributed in European coasts, although sole is limited to the southernmost waters. They are mainly caught in small scale fisheries developed on coastal waters and sporadically as by-catch in trawl fisheries.

There are not previous relevant fishery data on these species in the area. The aim of this document is to gather together available fisheries information on that species, and specially those data related to landings, discards, and information from research surveys.

2. SOURCES OF DATA

2.1 Landings

Statistics of Spanish landings are monthly collected by the Instituto Español de Oceanografía (IEO) from different sources (i.e. daily sale reports, port statistics, fishing Associations). Fishing data are properly recorded in the IEO database according to the fishery, fishing gear, métier, fleet segment and landing port. IEO landings estimates are habitually used to the assessment of commercial species. Data prior 2000 related to the species deal with in this document are considered inconsistent and to present a homogeneous set of data, the period 2000 -2010 have been selected (Table 1). Commercial landings in Basque Country is not included in the analysis.

Total weight landings are also presented by gear (Table 2). The contributions of each of these groups of gears to the landings were estimated by IEO. Some difficulties have been found to make further detailed allocations to fishing gears. In all cases "Others" includes known gears with a minor contribution and landings from no identified gears.

Length compositions of landings have been recorded since 2009 due to the implementation of the concurrent sampling methodology, as is required in the Data Collection Framework (DCF) regarding the Common Fisheries Policy (Dec. 2008/949/EC). However, the information is irrelevant, mainly due to the low levels of sampling related with the irregular and low landings of these species.

2.2 Research surveys

Data of Pollack, sole, whiting and plaice from research surveys were extracted from the IEO survey database. These surveys are:

-Spanish groundfish survey (SP-GFS) carried out annually in the north and northwest of Spain during September/October since 1983 (except 1987) (ICES, 2010a). This series was based on a stratified random sampling methodology, using bottom trawl gear and a half hour hauls. The survey aims to collect data on distribution, relative abundance and biology of commercial fish species in the Cantabrian Sea and off Galicia waters.

Spanish Cádiz groundfish surveys –autumn and spring- (SP-GFS-caut and SP-GFS-cspr) carried out annually in the Gulf of Cadiz (in March, since 1994, and in November, from 1997) (ICES, 2010a). A stratified random sampling design with 5 bathymetric strata, covering depths between 15 and 700 m is used in this area, with one hour hauls. These surveys aim to collect data on the distribution, relative abundance, and biology of commercial fish species in the area.

Sampling design and methodology used in these surveys are detailed in ICES (2010b).Methods and temporal and spatial coverage of the surveys have been maintained identical over the time series and resulting information are consequently comparable.

2.3 Discards

Discards sampling programme has been developed by IEO in 1994, 1997, 1999-2000 and 2003 onwards. Information on discarding practices and length distributions of discarded species in Divisions VIIIc and IXa North was obtained by observers on board commercial trawl vessels. Sampling effort varies from quarter to quarter, but shows a quite stable monitoring effort (around 12 trips by quarter) (Table 3).

Discard data were raised to fishing effort to determine the total annual weight discarded by species.

2.4 Biological sampling

No biological information has been collected for these species up to date, as there was not a requirement by Spanish National Programme Data Collection. In 2011, information is being collected for *Pollachius pollachius,* under the multiannual Community programme 2011-2013 for fishing data collection (Dec 2010/93/EU).

3. RESULTS

3.1 Pollack

Annual average of pollack landings (2000-2010) was 293 t (Figure 1). Overall trend of landings during this period was slightly increasing. Landings were above 400 t in 2008 and 2010. Majority of landings come from Division VIIIc (Table 1), and this species was not recorded in IXa South (Gulf of Cádiz). Pollack is caught in small scale fisheries by a wide variety of fishing gears (different types of longline and enmeshing gears). Bottom trawlers have a minor incidence on this species.

Along the time series of SP-GFS surveys, pollack has only been caught in 1983 and regularly 2004 onwards. Abundance and biomass indices and bathymetric distribution of pollack in the Cantabrian Sea and off Galicia from survey data are given in Figures 2-4.

Regarding biological sampling, information is being collected since the beginning of 2011. Thus, little information is available.

3.2 Sole (Solea solea, Solea senegalensis, Pegusa lascaris)

Two species of *Solea* are currently found in landings from ICES Division VIIIc and IXa: *Solea solea* and *Solea senegalensis*. Sand sole *Pegusa lascaris* is also recorded in ICES Division VIIIc (*Pegusa lascaris* has a junior synonym including *Solea lascaris*). These species are landed and marketed together, and they are also recorded together in the fishery statistics. Taking into account the geographical distribution of the species, landings from Divisions VIIIc and IXa-North are made up of *Solea solea* and *Pegusa lascaris. S. solea* is more abundant, but information on the specific proportions in landings is lacking. In the Gulf of Cádiz (Division IXa- South) *Solea solea* and *S. senegalensis* are also landed and reported together.

Average landings (2000-2010) was 64.5 t in Division VIIIc, and 186.7 t in Division IXa (Table 1). Time series of total landings of sole show an overall decreasing trend (Figure 1). Most than a half of the total current landings are made from small scale, multispecies and multigear fisheries (compiled under the term "other gears" in Table 2).

Data on sole from research surveys (abundance and biomass indices, distribution and species proportion in the north and northwest of Spain and yields indices in the Gulf of Cádiz) are presented in Figures 5-7 and Tables 4-7. In Spanish groundfish survey majority of soles catches corresponds to *Solea solea*. In 1989 and 1993 weight of *P. lascaris* were greater than *S. solea*. Abundance indices are very low in general (<1 indiv/haul) compared to other commercial species. For the Southern IXa area, fishing yields-per-hour of both species *(Solea solea* and *Solea senegalensis)* are presented by weight and number for both research surveys series, autumn and spring, Spanish Cadiz Groundfish Survey.

Discards of sole in Divisions VIIIc and IXa were very low (Table 8). Length distribution was not presented due their low number of sole in the discard sampling.

3.3 Whiting

Spanish landings of whiting are anecdotal. Annual average of total landings during 2000-2010 period amounted 1 t. No landings from Division IXa have been recorded (Table 1). Whiting is occasionally caught by different types of gears (Table 2). Neither catches nor discards of whiting were recorded in the time series of research surveys and discarding programme.

3.4 Plaice

Mean annual landings of plaice was 21.5 tonnes for the period 1982-2008, ranging between 6.8 and 72.8 tonnes, maximum peak attained in 2005 (Figure 1). Most of the landings come from Division IXa. Only minor landings from VIIIabd were recorded in 2009 and 2010 (Table1). Small scale fisheries -representing a miscellaneous fleet characterized by multi-species/multi-gear fisheries and high variability in its activity over the time - account for the majority of the landings (96.9%) (Table 2).

Plaice was not recorded in the research surveys.

4. REFERENCES

ICES. 2010a. Report of the Working Group on the Assessment of Southern Shelf Stocks of Hake, Monk and Megrim. 5-11 May 2010, Bilbao, Spain. ICES CM 2010/ACOM: 11.

ICES. 2010b. Manual for the International Bottom Trawl Surveys in the Western and Southern Areas. Revision III. 22-26 March 2010, Lisbon.

5. ACKNOWLEDGEMENTS

The authors wish to thank to technicians and observers involved in sampling and data storage of the ICES database. Special thanks to R. Gancedo, R. Morlán and B. Patiño for the compilation of fishery landings data.

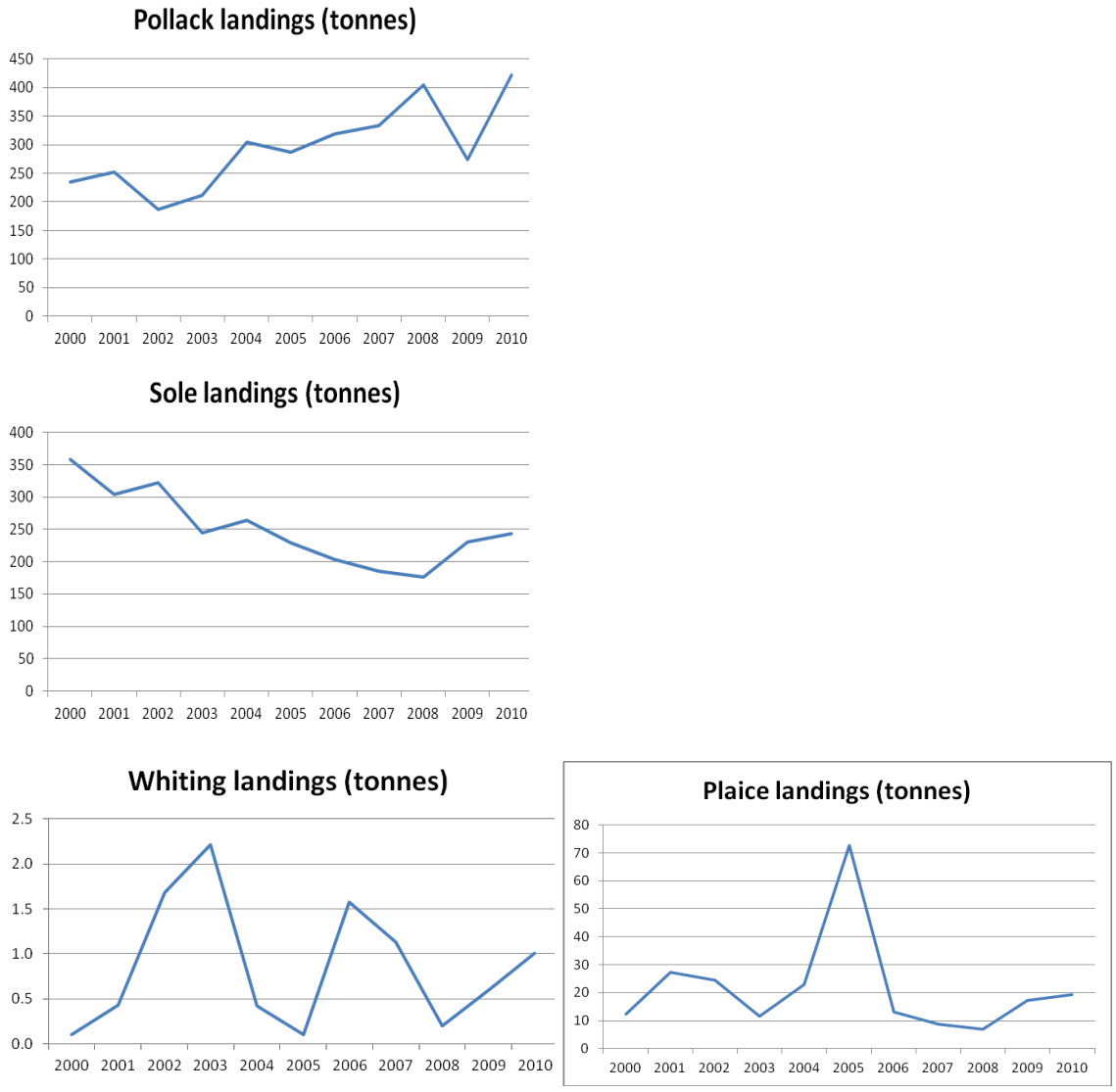

Figure 1. Pollack, sole, whiting and plaice landings in Spain, 2000-2010.

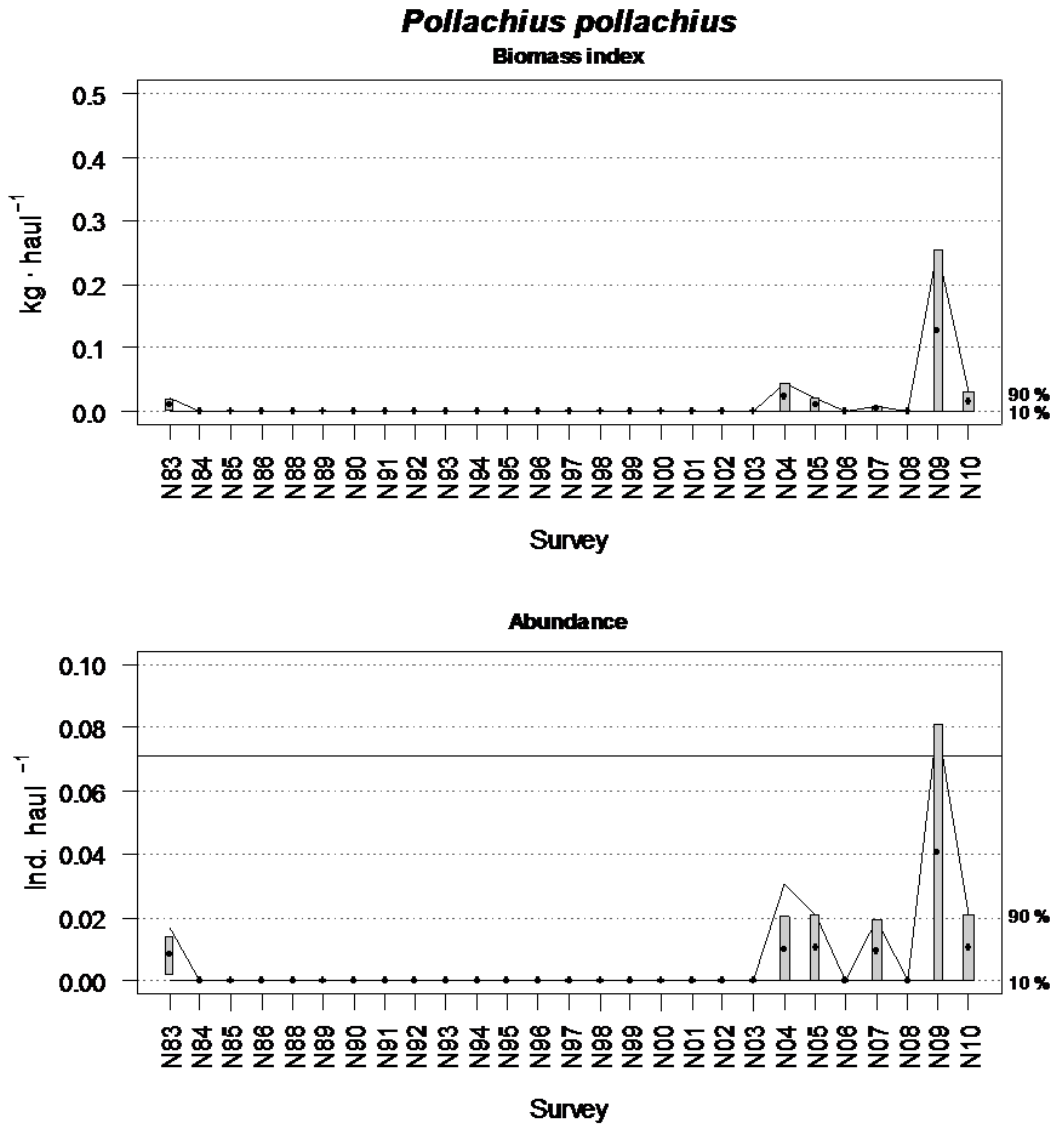

Figure 2. Biomass and abundance indices of pollack from the time series of SP-GFS, 1983-2010 (no survey in 1987)

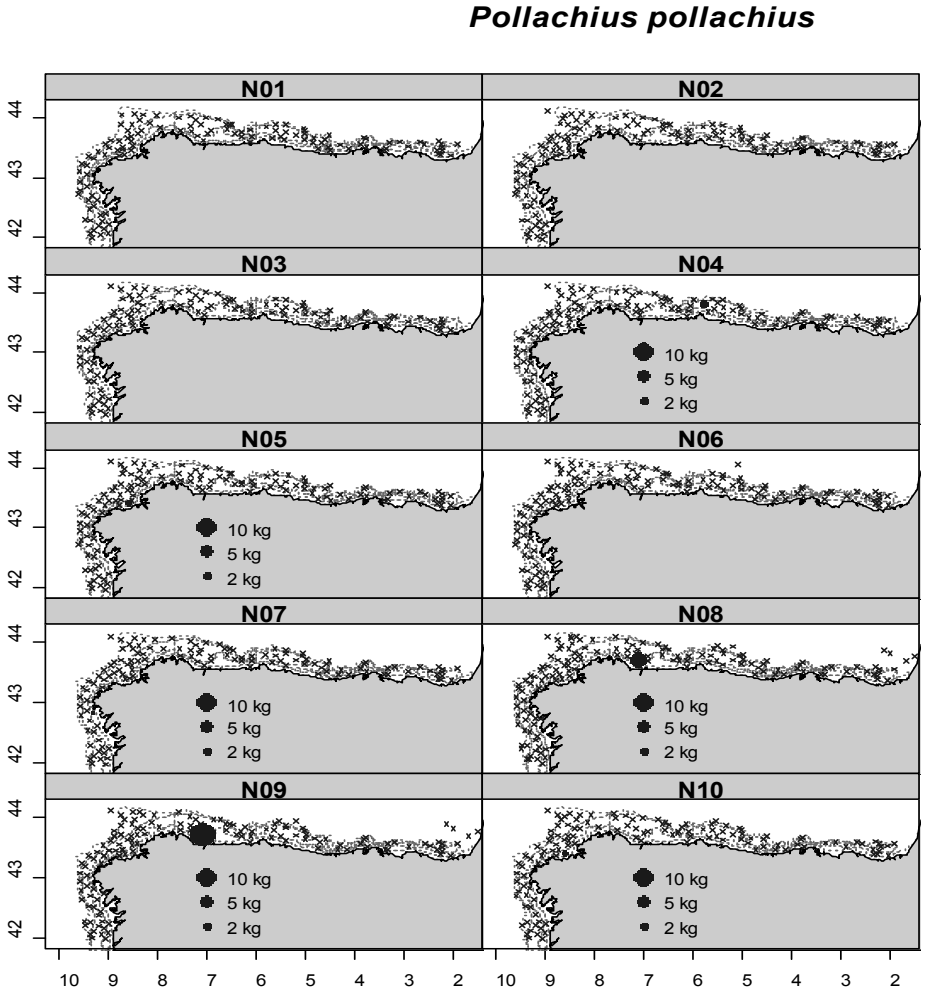

Figure 3.Geographical distribution of Pollack biomass on the north and northwest of Spain, SP-GFS data, 2001-2010.

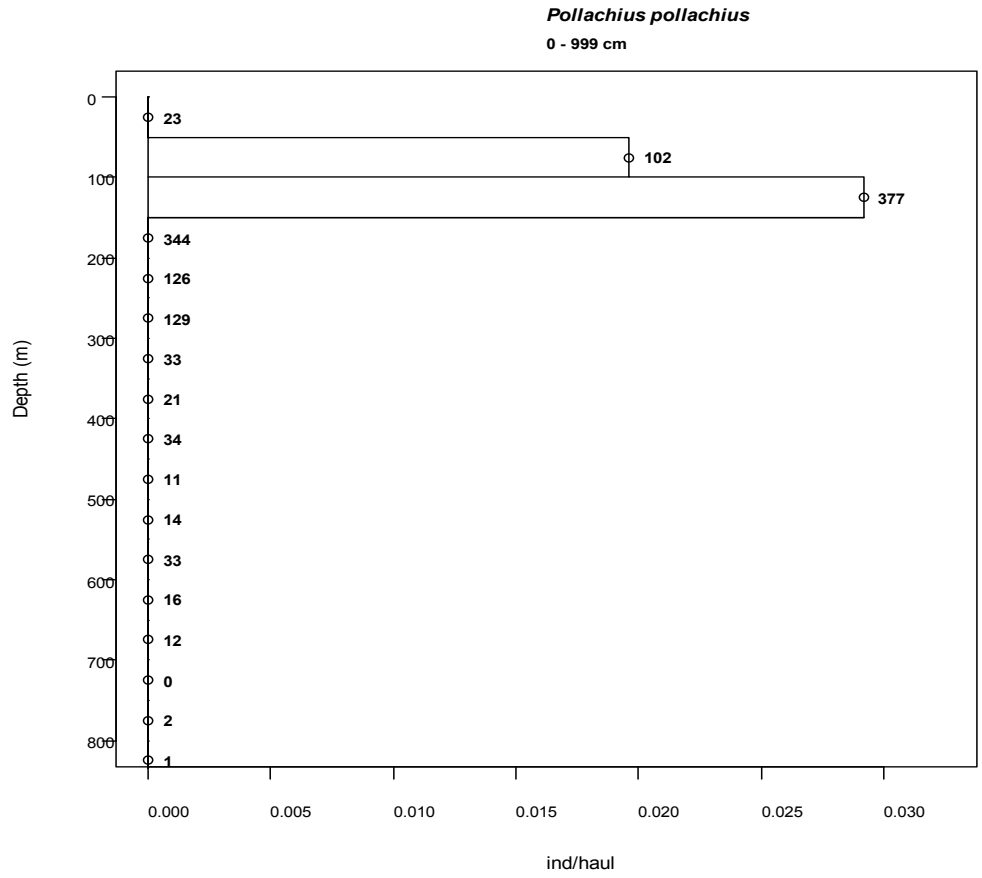

Figure 4. Bathymetric distribution of pollack on the north and northwest of Spain with the number of hauls per depth range, SP-GFS data 2001-2010.

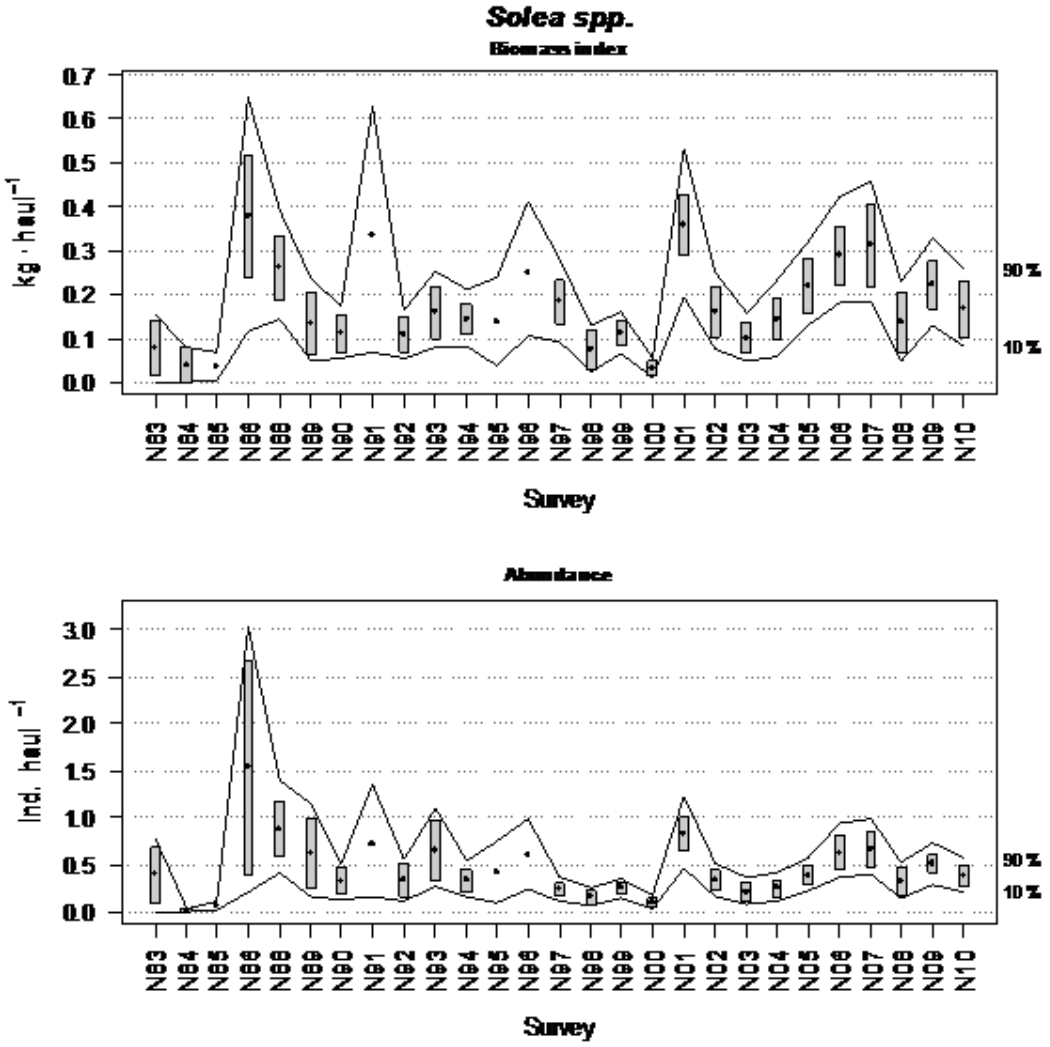

Figure 5. -Biomass and abundance indices of sole (Solea spp: Solea solea and Pegusa lascaris) on the north an northwest of Spain, from SP-GFS, 1983--2010 (no survey in 1987).

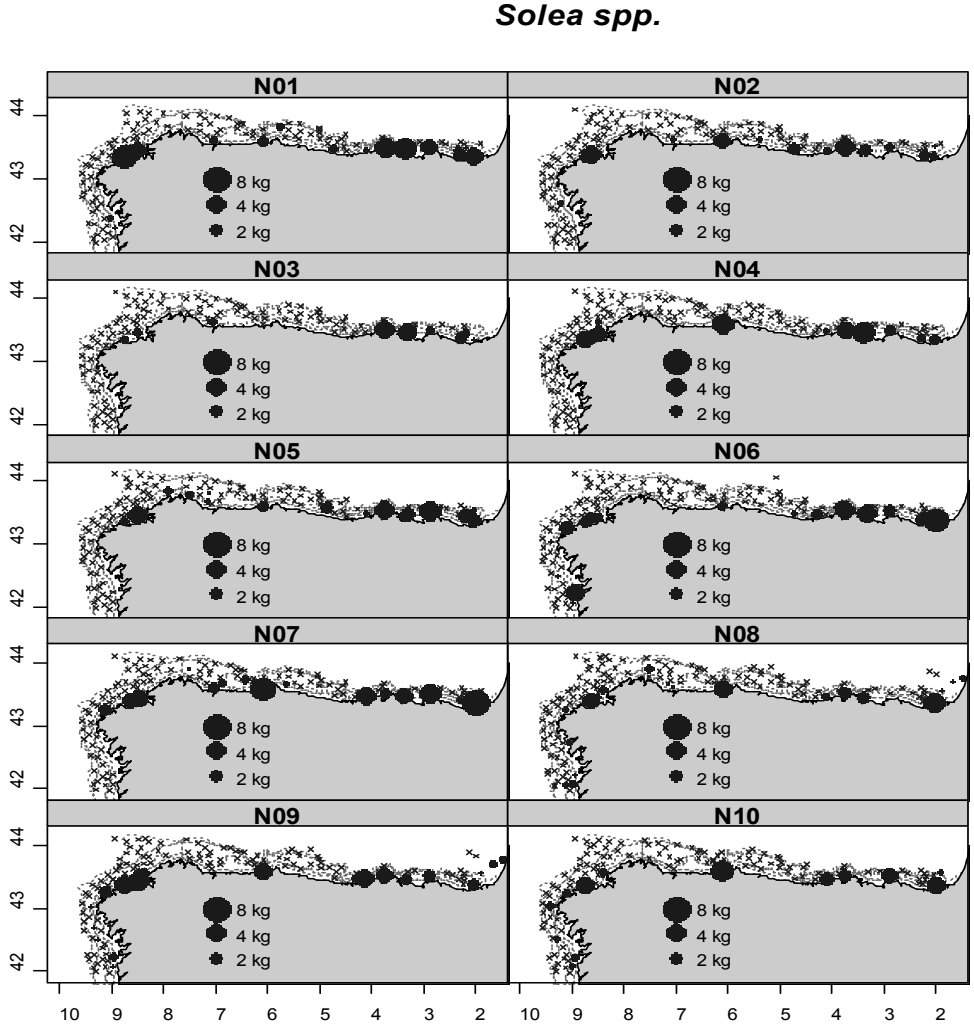

Figure 6. Geographical distribution of sole (*Solea solea* and *Pegusa lascaris*) biomass on the north and northwest of Spain, SP-GFS data 2001-2010.

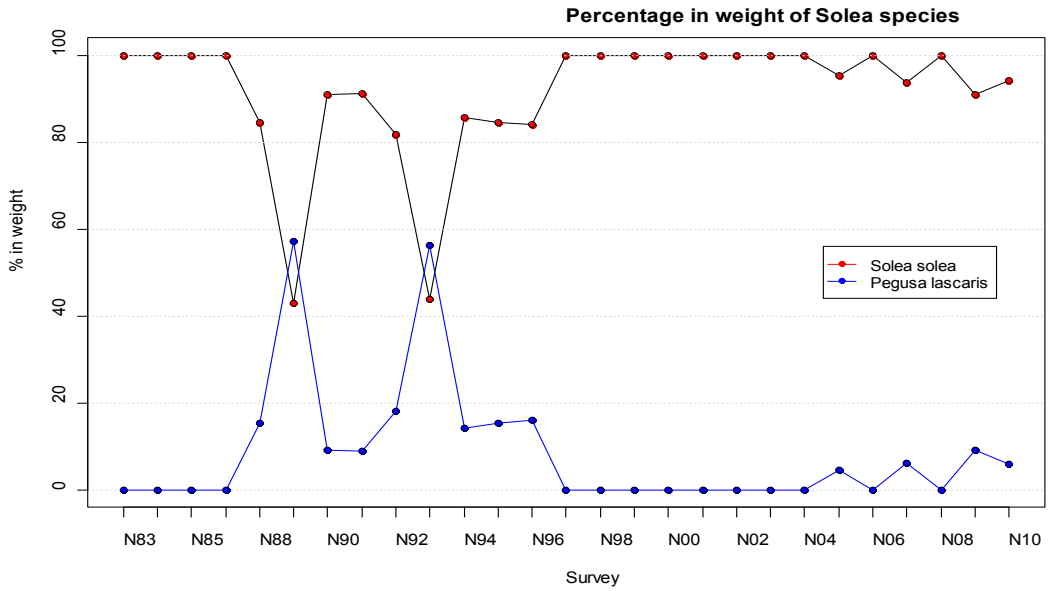

Figure 7. Percentage in weight of the two species of sole (Solea solea and Pegusa lascaris) in SP-GFS time series, 1983-2010.

Table 1. Total landings (tonnes) by specie, ICES area and year.

	Landings (tonnes) by species, ICES area and year										
	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Pollack											
VIIIabd	6.6	17.7	9.1	7.3	7.9	5.8	9.6	1.4	4.4	1.9	2.4
VIIIc	134.2	151.7	122.2	119.9	189.3	184.2	202.9	224.1	276.8	192.1	347.8
IXa	94.6	83.5	55.8	84.0	107.7	97.6	106.9	107.5	123.6	79.7	72.0
Sole											
VIIIc	76.9	47.9	64.7	40.4	77.5	81.8	51.2	55.7	62.1	78.8	72.2
IXa	281.7	256.0	257.1	204.9	186.9	147.4	152.5	129.7	114.6	152.0	171.7
Whiting											
VIIIabd	0.1	0.3	1.7	1.7	0.1	-	0.1	0.4	0.1	0.4	0.6
VIIIc	-	0.1	-	0.5	0.4	0.1	1.5	0.7	0.1	0.2	0.4
Plaice											
VIIIabd	-	-	-	-	-	-	-	-	-	0.1	0.3
VIIIc	2.3	3.5	4.8	1.1	2.5	2.1	1.6	1.6	1.3	2.2	2.0
IXa	10.0	23.8	19.6	10.4	20.4	70.7	11.5	7.2	5.5	14.9	16.9

Table 2. Landings by specie and fishing gears during the period 200-2010.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Pollack											
Longlines	38.1	30.6	25.7	30.5	47.3	90.1	47.6	72.2	146.9	100.7	167.3
Gillnets	37.0	52.8	27.5	34.9	36.1	36.2	29.0	50.9	95.4	75.9	161.5
Others	160.2	169.4	133.9	145.7	221.5	161.4	242.8	210.0	162.5	97.0	93.3
Sole											
Bottom otter trawl	201.2	189.7	215.3	175.7	133.2	111.9	97.8	68.3	53.4	77.1	107.9
Others	157.4	114.2	106.5	69.6	131.2	117.3	105.9	117.1	123.3	153.7	136.0
Whiting											
Bottom otter trawl	0.1	0.2	0.3	1.2	-	-	0.1	0.7	0.1	0.4	0.8
Longlines	-	0.1	1.1	0.6	0.1	-	-	0.4	-	-	0.1
Others	-	0.1	0.2	0.4	0.3	0.1	1.5	-	0.1	0.2	0.1
Plaice											
Small scale	11.7	26.3	23.7	11.2	22.1	72.3	12.8	7.8	6.0	16.7	18.3
Bottom otter trawl	-	1.0	0.7	0.3	0.2	0.4	0.2	0.8	0.8	0.3	0.3
Others	0.6	-	-	-	0.4	0.1	0.1	0.2	0.1	0.2	0.6

Table 3. Discards sampling level. Trips sampled onboard by quarter during the period 1994-2010.

Year	Quarter	Trips	Year	Quarter	Trips
1994	1	10	2005	1	13
	2	15		2	5
	3	16		3	10
	4	12		4	5
1997	1	19	2006	1	8
	2	15		2	6
	3	16		3	6
	4	16		4	4
1999	1		2007	1	8
	2			2	8
	3	27		3	8
	4	17		4	13
2000	1	22	2008	1	11
	2	22		2	11
	3	25		3	10
	4	17		4	2
2003	1		2009	1	4
	2	8		2	11
	3	8		3	8
	4	6		4	10
2004	1	8	2010	1	16
	2	4		2	37
	3	7		3	27
	4	7		4	20

Table 4. SP-GFS-caut (autumn) time series of fishing yields-per-hour of *Solea solea* in the Gulf of Cádiz.

Year	Yield, weight (g/h)	Yield, number (Ind/h)	SmdWeight	SmdNum
1997	73.10	0.22	8.58	0.02
1998	38.25	0.21	3.23	0.02
1999	74.05	0.14	5.31	0.01
2000	36.04	0.08	4.95	0.01
2001	91.08	0.17	6.31	0.01
2002	72.97	0.10	7.05	0.01
2003	9.26	0.05	1.00	0.01
2004	18.21	0.05	2.42	0.01
2005	14.10	0.02	2.18	0.00
2006	24.26	0.07	3.25	0.01
2007	2.09	0.03	0.34	0.00
2008	101.22	0.13	7.07	0.01
2009	51.60	0.09	4.16	0.01
2010	43.41	0.09	4.20	0.01

Table 5. SP-GFS-caut (autumn) time series of fishing yields-per-hour of *Solea senegalensis* in the Gulf of Cádiz.

Year	Yield, weight (g/h)	Yield, number (Ind/h)	SmdWeight	SmdNum
1997	41.62	0.14	5.82	0.02
1998	15.81	0.03	2.71	0.01
1999	27.00	0.09	2.94	0.01
2000	0.00	0.00	-	-
2001	38.11	0.07	3.55	0.01
2002	2.28	0.01	0.37	0.00
2003	8.24	0.02	1.29	0.00
2004	6.52	0.01	1.03	0.00
2005	10.32	0.02	1.59	0.00
2006	38.13	0.08	4.89	0.01
2007	23.38	0.03	3.84	0.00
2008	0.00	0.00	-	-
2009	3.36	0.01	0.51	0.00
2010	10.42	0.06	0.99	0.01

Table 6. SP-GFS-cspr (spring) time series of fishing yields-per-hour of *Solea solea* in the Gulf of Cádiz.

Year	Yield, weight (g/h)	Yield, number (Ind/h)	SmdWeight	SmdNum
1993	236.44	1.28	14.93	0.09
1994	15.38	0.04	2.81	0.01
1995	69.69	0.18	5.63	0.01
1996	157.06	0.28	9.59	0.01
1997	32.34	0.16	3.66	0.02
1998	98.49	0.48	7.37	0.04
1999	0.00	0.00	-	-
2000	24.42	0.10	2.33	0.01
2001	23.18	0.05	2.60	0.01
2002	0.74	0.02	0.12	0.00
2003	-	-	-	-
2004	7.49	0.06	0.72	0.01
2005	22.28	0.09	2.36	0.01
2006	80.88	0.41	4.36	0.02
2007	35.50	0.25	3.94	0.04
2008	45.55	0.10	4.38	0.01
2009	62.72	0.10	9.92	0.02
2010	85.67	0.20	12.90	0.02

Table 7. SP-GFS-cspr (spring) time series of fishing yields-per-hour of *Solea senegalensis* in the Gulf of Cádiz.

Year	Yield, weight (g/h)	Yield, number (Ind/h)	SmdWeight	SmdNum
1993	0.00	0.00	-	-
1994	0.00	0.00	-	-
1995	0.00	0.00	-	-
1996	19.54	0.06	1.79	0.01
1997	17.51	0.06	2.10	0.01
1998	35.96	0.05	5.48	0.01
1999	0.00	0.00	-	-
2000	0.00	0.00	-	-
2001	0.00	0.00	-	-
2002	0.00	0.00	-	-
2003	-	-	-	-
2004	0.00	0.00	-	-
2005	5.15	0.01	0.81	0.00
2006	0.00	0.00	-	-
2007	19.69	0.12	3.08	0.02
2008	28.87	0.49	2.78	0.05
2009	0.00	0.00	-	-
2010	113.21	0.36	9.39	0.03

Table 8. Discards of *Solea solea* in Divisions VIIIc and IXa.

Year	kg
1994	0
1997	973
1999	0
2000	0
2003	0
2004	0
2005	1006
2006	0
2007	0
2008	311
2009	300
2010	0