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REPORT OF THE

WORKING GROUP ON BEAM TRAWL SURVEYS

Ijmuiden, The Netherlands
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International Council for the Exploration of the Sea

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1 INTRODUCTION

Fisheries independent beam trawl surveys using research vessels were established in the 1980s by countries bordering the North Sea to monitor stocks of plaice and sole. Collation and analysis of some of the data derived from these surveys was undertaken by the Beam Trawl Study Group, which in 1998 was re-established as the Working Group on Beam Trawl Surveys. Although the initial focus of its efforts was in the North Sea and Eastern Channel, the Working Group now evaluates all major surveys in Sub-area IV and VII (ICES 1991).

The Working Group comprises regular participants from Belgium, Germany, Netherlands and the UK. In addition this year there was a representative from ICES. An annual report describing the surveys and summarising the distribution and catch rate of fish species has been produced every year since 1990.

1.1 Terms of reference

At the 2001 Annual Science Conference it was resolved that the **Working Group on Beam Trawl Surveys** [WGBEAM] (Chair: Dr. G.J. Piet, Netherlands) will meet from 27-30 May in IJmuiden to:

a) further co-ordinate offshore and coastal beam trawl surveys in the North Sea and Divisions VIIa and VIId-g;
b) analyse gear efficiencies in these surveys;
c) continue work of developing and standardising an international database of beam trawl survey data and co-ordinate such activities with those of the IBTSWG in particular on the expansion of the ICES bottom trawl database;
d) prepare a progress report summarising the results of the 2001 beam trawl surveys;
e) calculate population abundance indices by age-group for sole and plaice in the North Sea, Division VIIa and Divisions VIId-g;
f) collate information describing epibenthic invertebrate by-catch species as advised by the BEWG during beam trawl surveys and discuss which summary results should be reported;
g) prepare a summary report listing relevant marine bio-ecological variables and indicators suitable for operational use.

1.2 Participants

Bart Maertens	Belgium
Brian Harley	UK, England
Lena Larsen	ICES
Gerjan Piet	Netherlands
Henny Welleman	Netherlands
Ingeborg de Boois	Netherlands
Thomas Neudecker	Germany
Ulrich Damm	Germany

2 RESULTS OFFSHORE SURVEYS 2002

2.1 Coverage of the area

The total number of beam trawl hauls by these surveys is shown by rectangle in Figure 2.1.1, both for 2002, and for all years from 1990 onwards.The areas covered by surveys from the various participants are shown in figure 2.1.2.

2.2 Target species

Table 2.2.1: Catch rate of sole from Netherlands and UK surveys in the North Sea and VII d,a,e,f&g

Netherlands (N.hr^-1/8m trawl) North Sea

Age	0	1	2	3	4	5	6	7	8	9	10+
1985	0.0	2.6	7.3	3.8	2.0	0.8	0.3	0.0	0.0	0.0	0.0
1986	0.0	7.8	4.6	1.7	0.8	0.6	0.2	0.1	0.0	0.0	0.1
1987	0.1	7.0	12.5	1.8	0.5	0.6	0.2	0.2	0.1	0.0	0.0
1988	0.0	81.2	12.8	2.8	1.0	0.1	0.2	0.1	0.1	0.0	0.1
1989	0.8	8.7	67.8	4.2	4.1	0.7	0.1	0.2	0.0	0.1	0.0
1990	0.1	22.4	22.3	20.1	0.6	0.7	0.5	0.1	0.1	0.0	0.0
1991	1.0	3.4	23.2	5.8	6.0	0.2	0.1	0.1	0.0	0.0	0.0
1992	0.1	72.7	22.7	9.6	2.3	2.9	0.1	0.1	0.1	0.0	0.1
1993	0.0	4.6	26.6	1.6	5.2	2.7	4.8	0.2	0.1	0.2	0.0
1994	0.9	5.9	4.9	15.5	0.1	1.4	0.1	1.0	0.0	0.0	0.0
1995	0.7	26.3	8.7	8.3	6.5	0.4	1.0	0.3	0.9	0.0	0.0
1996	0.2	3.5	5.9	1.8	1.4	2.4	0.3	0.4	0.1	0.3	0.1
1997	1.0	173.5	5.4	3.2	0.8	0.8	0.4	0.1	0.0	0.0	0.1
1998	0.3	14.2	29.1	2.0	1.3	0.1	0.0	0.4	0.0	0.0	0.0
1999	6.6	11.2	19.5	16.6	0.6	2.1	0.3	0.2	0.7	0.0	0.3
2000	0.1	13.6	6.1	4.5	1.1	0.3	0.1	0.0	0.0	0.1	0.0
2001	9.4	8.1	10.1	2.4	2.1	1.0	0.1	0.0	0.0	0.0	0.2

United Kingdom (N.hr^-1/8m trawl) Eastern Channel (VIId)

Age	0	1	2	3	4	5	6	7	8	9	10+
1988	0.0	8.2	14.2	9.9	0.8	1.3	0.6	0.1	0.1	0.2	0.2
1989	0.0	2.6	15.4	3.4	1.7	0.6	0.2	0.2	0.0	0.0	0.7
1990	0.0	12.1	3.7	3.7	0.7	0.8	0.2	0.1	0.2	0.0	0.1
1991	0.0	8.9	22.8	2.2	2.3	0.3	0.5	0.1	0.2	0.1	0.1
1992	0.0	1.4	12.0	10.0	0.7	1.1	0.3	0.5	0.1	0.2	0.6
1993	0.0	0.5	17.5	8.4	7.0	0.8	1.0	0.3	0.2	0.0	0.4
1994	0.0	4.8	3.2	8.3	3.3	3.3	0.2	0.6	0.1	0.3	0.3
1995	0.0	5.2	16.9	2.1	3.8	2.2	2.4	0.2	0.3	0.2	0.2
1996	0.0	3.5	7.3	3.8	0.7	1.3	0.9	1.1	0.1	0.5	0.4
1997	0.0	19.0	7.3	3.2	1.3	0.2	0.5	0.4	0.9	0.0	0.7
1998	0.1	2.1	20.9	2.3	0.9	0.9	0.1	0.3	0.0	0.1	0.3
1999	1.2	25.5	9.0	12.4	2.6	1.5	0.7	0.2	0.9	0.8	0.5
2000	0.1	11.0	26.8	5.3	4.6	1.4	0.7	0.4	0.0	0.2	0.9
2001	1.2	8.5	25.1	11.2	1.9	2.4	0.8	0.6	0.3	0.1	0.9

United Kingdom (N.hr^-1/8m trawl) Western Channel (VIIe)

Age	0	1	2	3	4	5	6	7	8	9	10+
1989	0.0	0.2	2.5	4.9	4.3	1.5	1.6	0.7	0.3	0.3	0.4
1990	0.0	0.6	1.7	3.1	1.3	1.0	0.3	0.6	0.1	0.2	0.5
1991	0.0	0.3	7.9	2.9	2.1	1.0	0.8	0.3	0.7	0.2	0.7
1992	0.0	0.2	5.8	11.6	1.5	1.3	0.5	0.3	0.2	0.4	0.5
1993	0.0	0.3	2.7	5.4	5.4	1.0	0.5	0.3	0.2	0.1	0.7
1994	0.0	0.1	1.7	3.3	2.4	1.4	0.2	0.3	0.0	0.1	0.3
1995	0.1	1.1	1.5	1.9	1.7	1.0	1.3	0.2	0.2	0.2	0.5
1996	0.0	1.9	4.7	2.4	1.0	1.3	0.7	0.6	0.1	0.0	0.4
1997	0.2	3.0	5.5	5.1	1.7	0.5	0.6	0.5	0.4	0.2	0.6
1998	0.0	0.9	6.0	4.4	2.6	0.9	0.3	0.4	0.2	0.3	0.4
1999	0.0	0.9	4.4	5.5	2.0	1.0	0.2	0.2	0.1	0.1	0.7
2000	0.0	0.9	5.3	2.9	2.0	1.1	0.6	0.2	0.1	0.2	0.3
2001	0.0	0.6	7.8	5.9	2.2	1.3	.4	0.5	0.2	0.0	0.3

United Kingdom (N.hr^-1/8m trawl) Bristol Channel (VIIf)

Age	0	1	2	3	4	5	6	7	8	9	10+
1988	3.7	10.0	40.3	6.0	2.3	0.7	0.0	0.0	0.0	0.0	1.0
1989	22.0	34.0	50.7	27.0	3.0	2.3	1.0	0.7	0.3	0.3	0.7
1990	4.2	53.8	43.8	7.0	2.2	0.6	1.0	0.4	0.0	0.0	0.2
1991	4.8	36.0	77.3	10.1	2.5	2.2	0.6	0.0	0.4	0.2	0.1
1992	0.6	58.0	38.2	20.5	4.4	2.7	1.4	0.1	0.2	0.1	0.6
1993	0.7	24.2	51.2	6.1	3.3	0.4	0.2	0.2	0.1	0.1	0.2
1994	0.1	51.4	52.1	16.1	2.8	1.3	1.1	0.0	0.0	0.4	0.4
1995	4.3	16.3	29.4	6.6	1.6	0.9	1.6	0.4	0.3	0.3	0.5
1996	0.7	22.5	30.2	7.6	3.4	0.7	0.4	0.5	0.4	0.4	0.4
1997	4.8	64.9	27.8	2.9	1.7	2.1	0.7	0.5	0.8	0.0	0.7
1998	12.0	105.6	57.5	6.9	1.1	1.7	0.9	0.3	0.1	0.7	0.7
1999	3.5	358.2	35.2	4.7	2.0	0.8	0.5	0.8	0.3	0.0	1.1
2000	1.8	128.3	173.3	4.9	3.4	0.6	0.0	0.3	0.1	0.3	0.5
2001	2.6	42.8	72.3	31.7	2.7	0.8	0.3	0.3	0.1	0.0	1.2

Table 2.2.2: Catch rate of plaice from Netherlands and UK surveys in the North Sea and VII d,a,e,f&g

Netherlands (N.hr^-1/8m trawl) North Sea

Age	0	1	2	3	4	5	6	7	8	9	10+
1985	120.1	130.0	180.0	38.8	11.8	1.4	1.0	0.4	0.2	0.1	0.2
1986	16.5	660.2	131.8	50.9	8.9	3.3	0.5	0.4	0.1	0.1	0.2
1987	44.1	225.1	765.0	33.1	4.8	2.0	1.0	0.3	0.1	0.1	0.3
1988	51.3	605.1	139.9	173.2	9.2	2.7	0.7	0.4	0.1	0.1	0.2
1989	56.9	426.6	332.6	38.6	47.3	5.9	0.8	0.4	0.6	0.1	0.1
1990	12.0	107.0	99.8	57.7	24.8	7.6	0.8	0.2	0.3	0.2	0.1
1991	5.4	184.4	122.1	28.5	11.9	4.3	5.7	0.3	0.2	0.1	0.1
1992	11.1	172.8	125.7	27.3	5.6	3.2	2.7	1.1	0.3	0.1	0.1
1993	54.7	122.6	181.0	38.8	6.1	1.0	0.8	0.6	0.4	0.1	0.1
1994	144.1	141.7	65.7	37.4	11.9	3.2	0.7	0.8	1.0	0.4	0.1
1995	94.8	249.4	43.6	14.2	8.3	1.2	0.9	0.4	1.1	0.2	0.1
1996	209.9	215.8	206.8	22.8	4.8	3.7	0.9	0.0	0.2	0.1	0.1
1997	31.9	443.6	739.3	19.9	2.8	0.2	0.4	0.2	0.1	0.0	0.0
1998	242.9	337.0	433.1	47.3	8.9	1.5	0.7	0.1	0.1	0.1	0.1
1999	203.4	298.9	133.1	181.8	4.0	2.0	0.1	0.1	0.0	0.0	0.1
2000	178.8	275.9	72.9	32.4	23.0	0.7	0.2	0.5	0.0	0.0	0.0
2001	604.4	219.0	84.2	19.5	10.8	9.5	0.4	0.1	0.1	0.0	0.2

United Kingdom (N.hr^-1/8m trawl) Eastern Channel (VIId)

Age	0	1	2	3	4	5	6	7	8	9	10+
1988	0.0	26.5	31.3	43.8	7.0	4.6	1.5	0.8	0.7	0.6	1.2
1989	0.0	2.3	12.1	16.6	19.9	3.3	1.5	1.3	0.5	0.3	1.7
1990	0.6	5.2	4.9	5.8	6.7	7.5	1.8	0.7	1.0	0.8	0.4
1991	0.0	11.7	9.1	7.0	5.3	5.4	3.2	1.2	1.0	0.1	1.2
1992	0.0	16.5	12.5	4.2	4.2	5.6	4.9	3.4	0.7	0.5	0.7
1993	0.1	3.2	13.4	5.0	1.7	1.9	1.6	2.0	2.8	0.4	0.6
1994	1.2	8.3	7.5	9.2	5.6	2.0	0.8	0.9	1.8	1.2	0.8
1995	0.0	11.3	4.1	3.0	3.7	1.5	0.6	0.6	1.3	0.8	0.8
1996	13.6	13.2	11.9	1.3	0.7	1.3	0.9	0.4	0.3	0.4	2.8
1997	0.7	33.2	13.5	4.2	0.7	0.3	0.3	0.2	0.2	0.2	1.9
1998	0.3	11.4	27.3	7.0	3.1	0.3	0.2	0.2	0.1	0.0	1.0
1999	1.6	9.2	11.6	15.7	2.8	0.9	0.1	0.0	0.2	0.1	0.6
2000	1.2	17.9	24.9	14.6	19.1	4.5	1.7	0.5	0.3	0.4	2.2
2001	4.9	21.6	26.7	16.2	9.3	14.6	2.9	0.8	0.4	0.3	1.9

United Kingdom (N.hr^-1/8m trawl) Western Channel (VIIe)

Age	0	1	2	3	4	5	6	7	8	9	10+
1989	0.0	0.8	2.2	10.6	7.5	1.4	0.2	0.3	0.2	0.1	0.3
1990	0.0	0.8	1.1	7.0	3.4	2.4	0.0	0.2	0.1	0.1	0.3
1991	0.0	0.6	0.8	1.4	2.7	2.1	1.6	0.7	0.1	0.0	0.3
1992	0.0	4.3	1.0	1.4	0.5	1.3	0.7	0.5	0.1	0.2	0.2
1993	0.0	0.7	2.4	3.3	1.1	0.5	1.2	0.7	0.6	0.0	0.1
1994	0.0	0.8	0.8	3.6	1.2	0.4	0.2	0.5	0.6	0.3	0.0
1995	0.3	2.1	1.7	1.9	2.1	0.5	0.2	0.3	0.2	0.1	0.2
1996	5.4	2.3	3.9	1.3	0.8	0.9	0.2	0.0	0.1	0.3	0.4
1997	10.4	8.1	4.8	8.1	0.9	0.3	0.6	0.3	0.1	0.0	0.4
1998	0.1	5.7	5.2	4.7	3.2	0.4	0.2	0.2	0.1	0.0	6.0
1999	5.1	2.0	2.1	8.2	2.1	1.3	0.1	0.1	0.3	0.1	0.1
2000	0.0	3.3	2.7	5.7	7.0	1.6	1.0	0.0	0.1	0.0	0.3
2001	4.1	1.4	2.8	1.9	3.9	3.7	0.8	0.6	0.0	0.1	0.2

United Kingdom (N.hr^-1/8m trawl) Bristol Channel (VIIf)

Age	0	1	2	3	4	5	6	7	8	9	10+
1988	0.0	12.8	45.2	11.5	0.0	0.3	0.3	0.0	0.0	0.3	0.0
1989	0.3	34.3	52.2	12.0	2.5	0.8	0.0	0.3	0.0	0.0	0.0
1990	2.4	32.2	43.0	12.8	3.0	1.2	0.0	0.0	0.4	0.0	0.2
1991	0.2	101.9	4.0	7.9	2.5	1.5	0.4	0.0	0.1	0.0	0.0
1992	0.4	57.3	36.1	1.5	0.6	1.8	0.2	0.6	0.0	0.0	0.2
1993	0.5	14.1	12.6	5.2	0.2	0.6	0.1	0.1	0.0	0.0	0.0
1994	17.5	15.4	4.8	2.4	1.3	0.1	0.0	0.0	0.0	0.0	0.0
1995	0.1	31.4	11.0	2.1	0.5	1.0	0.1	0.0	0.0	0.3	0.0
1996	1.2	32.0	41.8	4.8	0.1	0.4	0.1	0.0	0.0	0.0	0.0
1997	1.1	34.3	15.2	5.2	0.7	0.3	0.1	0.1	0.0	0.0	0.0
1998	0.7	31.5	18.2	6.7	1.5	0.5	0.3	0.0	0.0	0.0	0.1
1999	24.9	22.1	11.7	4.3	2.9	1.4	0.0	0.0	0.1	0.0	0.0
2000	11.2	46.1	8.1	4.3	0.8	0.8	0.0	0.3	0.0	0.0	0.0
2001	3.8	26.6	18.5	2.3	1.2	0.4	0.5	0.2	0.0	0.0	0.0

United Kingdom (N.hr^-1/8m trawl) Irish Sea (VIIa)

Age	0	1	2	3	4	5	6	7	8	9	10+
1988	2.9	72.6	145.3	30.8	1.2	6.8	1.2	0.5	0.0	0.1	0.8
1989	5.9	41.3	67.6	64.8	11.3	1.4	3.4	0.3	0.0	0.0	0.1
1990	63.4	146.9	36.7	19.9	9.1	4.8	4.1	0.2	0.1	0.9	0.3
1991	6.7	60.4	59.8	8.1	4.4	0.1	0.9	1.8	0.1	0.0	0.4
1992	4.8	50.7	96.1	38.0	2.0	2.1	1.5	1.6	0.1	0.0	2.0
1993	9.3	168.5	155.4	38.7	13.0	2.0	1.9	1.0	0.4	0.4	0.6
1994	14.6	207.0	124.6	81.4	17.5	5.6	1.4	1.4	0.6	0.2	0.6
1995	17.8	249.7	101.0	38.8	32.2	2.9	1.5	0.6	0.4	0.4	0.3
1996	6.3	144.0	69.3	20.4	9.1	7.1	2.3	1.0	0.1	0.4	0.5
1997	33.3	169.2	98.1	41.4	13.5	7.4	6.1	2.7	0.9	0.5	0.9
1998	23.8	124.4	112.1	41.9	1.6	10.4	4.9	4.3	1.1	0.5	1.2
1999	52.9	108.2	106.4	61.8	28.1	13.3	4.8	3.2	2.1	2.0	0.3
2000	61.3	200.4	81.7	44.0	34.6	16.3	3.6	3.0	1.6	1.5	0.9
2001	34.2	121.5	88.4	28.1	15.9	13.1	6.1	2.1	1.2	0.8	0.3

Table 2.2.3 Indices of juvenile sole and plaice abundance from other coastal beam trawl surveys. Abundance indices for sole and plaice are given as numbers per 1000 m2 sampled during the DYFS (NL), as millions of fish sampled during the UKYFS (IVc and VIId) and as numbers per 100 fishing hours of the SNS, (see section 3.2 for details).

SOLE

	DYFS		UKYFS(IVc)		SNS				UKYFS(VIId)	
Year class	0	1	0	1	0	1	2	3	0	1
1967								204		
1968							745	99		
1969		0.66				4938	1961	161		
1970	12.18	0.04			669	613	341	73		
1971	7.93	0.07			6327	1410	905	69		
1972	0.29	0.22			24	4686	397	174		
1973	4.53	0.33			847	1924	887	187		
1974	0.84	0.03			140	597	79	77		
1975	8.07	0.19			565	1413	762	267		
1976	3.38	0.22			475	3724	1379	325		
1977	1.07	0.03			1620	1552	388	99		
1978	4.36	0.13			10529	104	80	51		
1979	20.65	2.05			3908	4483	1411	231		
1980	19.83	0.51		5.99	5518	3739	1124	107		0.45
1981	15.15	0.67	32.06	4.02	3194	5098	1137	307	0.11	0.36
1982	17.61	1.11	26.99	5.64	2528	2640	1081	159	4.63	1.52
1983	4.93	0.41	70.66	11.30	769	2359	709	67	25.45	4.04
1984	9.17	0.10	59.84	2.80	3473	2151	456	59	4.33	2.94
1985	15.80	0.58	20.53	3.10	4268	3791	955	284	7.65	1.45
1986	3.50	0.24	28.98	1.89	901	1890	594	248	6.45	1.38
1987	28.55	0.76	20.87	9.70	13690	11227	5369	907	16.85	1.87
1988	2.07	0.28	35.55	3.78	523	3052	1078	527	2.59	0.62
1989	2.62	0.21	47.20	12.27	2171	2900	2515	319	6.67	1.90
1990	0.60	0.03	36.82	19.69	53	1265	114	46	6.70	3.69
1991	19.37	0.54	22.72	5.21	3640	11081	3489	943	1.81	1.50
1992	0.82	0.03	33.45	24.46	303	1351	475	126	2.26	1.33
1993	0.76	0.03	36.42	9.14	231	559	234	27	14.19	2.68
1994	3.62	0.11	27.32	13.04	5114	1501	473	231	13.07	2.91
1995	0.47	0.07	33.55	6.78	1365	691	143	131	7.53	0.57
1996	2.32	0.48	50.16	4.91	2197	10132	1993	381	1.85	1.12
1997	2.69	0.52	14.87	2.12	972	2875	919	189	4.23	1.12
1998	5.06	0.17	37.99	7.67	235	1649	150	99	7.97	1.47
1999	4.57	0.05	19.02	9.76	1867	1735	638		2.63	2.47
2000	0.65	0.11	13.54	2.31	71	949			1.16	0.38
2001	4.10		39.83		140				4.75	

Plaice

Year class	DYFS		UKYFS(IVc)		SNS				UKYFS(VIId)	
	0	1	0	1	0	1	2	3	0	1
1967								2813		
1968							9450	1008		
1969		2.87				8033	23848	4484		
1970	6.70	0.93			3678	18101	9584	1631		
1971	4.59	2.63			6705	6437	4191	1261		
1972	2.46	6.79			9242	57238	17985	10744		
1973	2.57	1.96			5451	15648	9171	791		
1974	2.29	3.03			2193	9781	2274	1720		
1975	2.17	4.04			1151	9037	2900	345		
1976	7.03	4.84			11544	19119	12714	1577		
1977	3.70	2.99			4378	13924	9540	456		
1978	8.11	7.91			3252	21681	12084	785		
1979	17.06	10.53			27835	58049	16106	1146		
1980	5.02	6.92		5.95	4039	19611	8503	308		0.11
1981	28.84	13.83	59.24	13.15	31541	70108	14708	2480	0.55	0.06
1982	24.01	7.82	11.65	6.86	23987	34884	10413	1584	0.58	0.77
1983	17.99	5.74	74.11	10.85	36722	44667	13789	1155	10.71	0.41
1984	10.72	4.65	76.52	13.74	7958	27832	7558	1232	3.62	1.16
1985	36.98	13.41	48.33	17.93	47385	93573	33021	13140	5.18	1.08
1986	17.69	9.98	23.62	5.41	8658	33426	14430	3709	12.53	1.07
1987	28.46	4.97	20.38	7.72	21270	36672	14952	3248	13.95	0.81
1988	15.50	6.32	28.12	12.90	15598	37238	7287	1507	9.31	0.70
1989	22.35	6.25	27.80	10.25	24198	24903	11149	2257	2.26	0.52
1990	22.02	6.88	31.75	9.06	9559	57349	13742	988	4.73	0.43
1991	24.50	5.88	14.89	5.64	17120	48223	9484	884	1.34	1.09
1992	10.84	3.41	26.16	7.96	5398	22184	4866	415	2.92	0.64
1993	12.32	0.87	43.10	9.38	9226	18225	2786	1189	5.77	0.59
1994	22.92	0.95	19.14	11.65	27901	24900	10377	1393	12.63	2.47
1995	6.94	6.17	51.58	4.07	13029	24663	36374	5739	7.42	0.72
1996	24.68	8.11	60.16	5.48	91713	64524	29431	14347	1.22	0.26
1997	8.17	1.67	11.19	0.92	15363	33391	9235	902	1.20	0.29
1998	4.30	0.34	40.26	1.65	22720	35188	2487	226	5.23	0.16
1999	3.70	0.40	14.38	4.82	39201	23027	1828		4.83	0.72
2000	8.66	0.23	10.57	0.74	18874	7983			0.29	0.05
2001	21.47		76.96		50280				2.52	

Table 2.2.4 Mean length-at-age for plaice and sole in the North Sea based on BTS

Plaice	Age0	Age1	Age2	Age3	Age4	Age5	Age6	Age7	Age8	Age9	Age10+
1985	7.91	15.56	23.64	27.67	30.33	34.26	39.25	41.19	42.53	42.76	47.72
1986	9.18	16.53	23.30	28.22	30.29	34.56	37.33	37.16	38.72	39.49	45.61
1987	9.66	16.34	22.03	24.55	28.01	31.16	31.77	38.07	38.00	39.71	43.01
1988	10.79	15.22	21.68	26.20	30.11	36.61	37.95	41.02	41.21	46.26	51.67
1989	12.14	16.05	21.06	26.55	27.65	29.82	40.84	40.07	42.62	43.68	50.20
1990	9.20	17.05	23.30	25.15	27.73	30.87	36.40	39.08	40.63	41.19	44.87
1991	13.16	17.44	23.90	27.39	28.72	32.17	34.71	33.83	34.94	33.69	45.06
1992	12.43	17.66	23.20	27.98	30.79	32.44	31.21	34.83	38.24	45.25	46.26
1993	11.64	17.85	21.86	25.49	30.78	35.93	34.89	38.23	36.91	45.39	46.16
1994	11.03	17.53	21.91	26.88	29.16	33.98	37.41	38.63	31.01	44.46	47.78
1995	11.72	17.85	23.97	29.48	34.19	37.04	36.23	35.26	33.86	38.08	45.86
1996	9.54	17.50	22.92	27.95	29.46	31.74	32.75	34.29	35.40	41.30	43.49
1997	8.80	14.74	16.68	26.77	28.31	27.89	31.64	38.12	33.58	37.87	43.36
1998	9.87	15.76	20.27	21.91	25.48	27.29	28.64	33.48	35.20	39.99	39.26
1999	10.43	16.71	20.68	24.96	31.06	35.97	41.34	40.54	41.42	47.00	44.00
2000	10.23	17.56	23.01	25.52	27.75	29.96	37.56	24.00	43.00	.	40.27
2001	10.74	17.80	22.38	26.87	28.58	31.79	36.65	42.53	39.86	46.77	47.40

Sole	Age0	Age1	Age2	Age3	Age4	Age5	Age6	Age7	Age8	Age9	Age10+
1985	.	17.13	23.38	27.21	30.59	31.21	31.85	.	.	.	37.00
1986	.	17.22	22.82	27.30	30.05	32.94	35.92	37.89	.	40.00	41.16
1987	11.00	16.64	24.22	28.00	33.61	33.67	34.04	33.52	38.00	.	.
1988	.	16.30	21.53	26.98	24.50	32.00	29.32	26.82	29.65	24.10	40.57
1989	10.29	18.24	23.02	26.94	29.41	30.95	35.05	36.06	.	39.29	35.65
1990	12.40	18.05	22.42	26.42	30.01	32.90	35.22	31.66	40.49	43.00	45.00
1991	9.74	20.00	23.92	26.62	28.72	29.95	33.92	34.02	36.99	39.00	30.02
1992	12.94	18.29	21.51	26.52	29.39	30.33	32.40	35.78	34.12	40.31	32.40
1993	8.67	19.78	22.88	23.72	25.90	26.21	27.09	24.39	32.14	25.41	38.31
1994	13.91	19.40	22.94	25.78	31.66	27.88	27.64	32.84	46.00	.	34.00
1995	11.74	18.61	22.96	24.53	27.38	29.74	30.64	30.65	28.57	42.23	33.00
1996	8.88	19.07	23.03	25.18	26.67	28.14	28.04	27.87	31.00	32.05	34.70
1997	10.51	17.82	24.73	26.68	27.64	29.28	33.75	29.32	30.91	31.00	38.40
1998	11.20	18.89	23.44	22.94	25.64	24.01	23.58	26.05	28.00	23.93	27.00
1999	9.19	19.44	22.93	26.04	26.48	25.88	32.32	28.25	27.52	32.00	29.29
2000	8.35	18.95	23.27	26.84	29.10	29.17	27.70	35.40	32.14	31.79	31.41
2001	7.55	18.53	22.73	25.21	27.26	28.46	25.87	28.00	26.49	.	26.47

2.3 Abundance and distribution of fish species

The catch rates of fish from the 2002 beam trawl surveys (numbers/8m beam/hour) were averaged by rectangle, and these averages were averaged for the sub-areas shown in ICES 1999. The data for selected fish species are presented by management area and year for the last 10 years, and by ICES rectangle (Tables 2.3.1 to 2.3.9; Figures 2.3.1 to 2.3.26).

Table 2.3.1 Abundance of fish species (per hour fishing) in sub-area VIIa per year

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
AMERICAN PLAICE (LR DAB)	2	6	6	15	46	13	32	19	12	9	6
ANGLERFISH (MONK)	3	3	7	6	7	5	3	4	3	3	4
BRILL	3	2	3	2	2	4	3	3	2	2	4
COD	12	4	36	18	12	10	6	1	15	20	9
COMMON DRAGONET	155	179	199	192	125	143	151	127	190	211	109
DAB	484	184	499	702	615	575	835	739	1032	1156	1088
EDIBLE CRAB	10	9	9	12	8	4	8	8	8	13	9
EUROPEAN PLAICE	138	136	417	521	470	371	615	566	542	683	573
FLOUNDER (EUROPEAN)	4	4	4	4	2	3	9	8	10	7	92
GREY GURNARD	47	142	103	95	60	53	51	71	61	65	45
HADDOCK		3	6	37	5	13	7	11	24	10	22
JOHN DORY	1	1	1	1	1	1	7	2	3	4	1
LEMON SOLE	2	4	18	15	22	14	21	15	12	10	24
LESSER SPOTTED DOGFISH	22	33	35	25	23	22	43	42	38	30	59
LESSER WEEVER FISH	23	89	39	101	100	32	61	47	40	79	26
POGGE (ARMED BULLHEAD)	28	31	54	45	40	32	34	40	33	46	29
POOR COD	127	166	332	124	188	148	158	107	191	183	93
RAZOR CLAMS	33	28	19	18	28	23	29	23	24	19	29
RED GURNARD	11	6	9	11	7	9	22	12	17	17	23
RED MULLET	1	1	1		8		2	1	3	1	6
SCALD FISH	44	32	61	63	58	64	51	47	53	82	90
SOLE (DOVER SOLE)	114	88	43	46	49	57	124	98	78	73	52
SOLENETTE	264	99	192	231	249	151	211	234	310	321	291
THICKBACK SOLE	29	71	50	48	28	37	32	34	32	53	66
TUB GURNARD	5	10	6	7	9	9	11	15	10	12	10
TURBOT	1	1	1	1	1	1	1	1	1	1	1
WHITING	58	63	130	157	175	86	146	135	101	72	93
WHITING POUT (BIB)	36	24	9	4	15	7	17	36	20	10	12

Table 2.3.2 Abundance of fish species (per hour fishing) in sub-area VIId per year

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
ANGLERFISH (MONK)			0	2		1	2	0			
BRILL	2	1	2	2	2	2	2	1	2	2	3
COD		1	1	1	1	1	1	0	2	0	1
COMMON DRAGONET	192	287	236	272	129	227	239	513	298	213	240
DAB	93	127	40	123	79	48	65	41	57	30	62
EDIBLE CRAB	4	4	3	3	4	4	2	11	3	4	7
EUROPEAN PLAICE	60	53	38	39	34	60	86	111	59	64	68
FLOUNDER (EUROPEAN)	9	13	6	5	6	35	5	6	6	10	8
GREY GURNARD	2	1	0	1	0	1	1	1	4	0	1
JOHN DORY	2	1	1	1	0	1	1	1	1	1	1
LEMON SOLE	6	5	12	13	13	11	4	4	2	6	13
LESSER SPOTTED DOGFISH	7	13	19	17	13	11	25	9	12	7	10
LESSER WEEVER FISH	7	12	12	16	8	18	7	13	13	17	17
POGGE (ARMED BULLHEAD)	23	31	40	44	42	31	58	27	37	22	58
POOR COD	178	90	78	99	119	100	62	62	88	75	65
RAZOR CLAMS	5	7	7	6	4	5	6	5	7	7	5
RED GURNARD	11	10	10	18	15	17	8	15	18	24	20
RED MULLET		1	1		1	1	0	1	2	1	1
SCALD FISH	36	17	17	13	8	11	13	12	15	12	8
SOLE (DOVER SOLE)	42	27	40	31	25	25	40	34	51	38	44
SOLENETTE	189	161	202	208	97	163	177	141	172	129	131
THICKBACK SOLE	5	7	10	10	8	10	12	20	19	23	29
TUB GURNARD	3	5	7	5	4	3	4	4	5	3	4
TURBOT	1	1	1	1	2	1	1	1	2	1	1
WHITING	2	8	1	4	10	1	0	1	1	4	2
WHITING POUT (BIB)	59	70	53	66	56	82	96	184	104	31	72

Table 2.3.3 Abundance of fish species (per hour fishing) in sub-area VIIe per year

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
ANGLERFISH (MONK)	1	1	2	2	3	1	1	0	0	1	1
BRILL	1	1	0	1	1	1	1	1	1	1	1
COD		0		1			0	0	0	0	0
COMMON DRAGONET	225	7							6	3	23
DAB	12	16	38	24	21	19	19	26	22	9	57
EUROPEAN PLAICE	11	13	9	8	9	14	21	19	22	24	28
FLOUNDER (EUROPEAN)			0		1	1		0	0	0	2
GREY GURNARD	9	3	4	8	6	9	4	12	17	8	1
HADDOCK					0						
JOHN DORY	2	2	2	1	0	0	1	1	1	1	2
LEMON SOLE	2	1	1	1	2	1	1	1	1	1	1
LESSER SPOTTED DOGFISH	15	5	18	11	15	15	40	21	26	12	22
LESSER WEEVER FISH		16							0	1	1
POGGE (ARMED BULLHEAD)	1									0	1
POOR COD	208	48							35	9	15
RED GURNARD	11	21	26	43	23	25	21	18	25	21	15
RED MULLET	1	1	2	2	2	2	2	1	4	2	6
SCALD FISH	6									1	9
SOLE (DOVER SOLE)	19	21	16	10	10	15	16	17	21	15	20
SOLENETTE									0	3	59
THICKBACK SOLE	6								3	5	5
TUB GURNARD	1	2	1	1	1	1	1	2	1	1	1
TURBOT	0	0	0	0	0	0	0	0	0	0	0
WHITING	22	7	28	5	4	6	10	6	2	1	10
WHITING POUT (BIB)	29	9	8	6	3	11	15	9	3	2	0

Table 2.3.4 Abundance of fish species (per hour fishing) in sub-area VIIf per year

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
ANGLERFISH (MONK)	3	8	10	9	7	4	3	1	7	3	3
BRILL	3	2	2	2	3	2	3	1	2	3	1
COD	1	2	0	2	1	1	1	2	2	32	2
COMMON DRAGONET	31	89	33	63	38	95	31	30	54	53	28
DAB	58	180	51	111	58	72	42	86	127	76	75
EUROPEAN PLAICE	91	82	35	23	34	54	32	43	52	53	35
FLOUNDER (EUROPEAN)	2	2	2	4	3	2	0	1	1	4	7
GREY GURNARD	40	74	42	37	29	25	21	22	58	46	41
HADDOCK				1		1	2			6	
JOHN DORY	2	1	3	1	1	1	2	1	3	3	7
LEMON SOLE	2	4	4	11	7	19	6	5	7	9	10
LESSER SPOTTED DOGFISH	60	83	26	35	29	24	39	39	79	47	31
LESSER WEEVER FISH	3	1	7	5	4	4	2	2	3	12	11
POGGE (ARMED BULLHEAD)	2	4	6	3	4	5	4	13	10	8	10
POOR COD	187	236	213	130	102	121	153	244	242	250	90
RED GURNARD	6	3	21	15	12	15	13	1	5	16	35
RED MULLET	0		0	1	0	1	2		3	2	3
SCALD FISH	2	2	10	5	8	9	7	1	2	10	5
SOLE (DOVER SOLE)	111	112	46	70	35	38	49	139	307	181	92
SOLENETTE	201	121	65	160	81	96	48	142	255	197	92
THICKBACK SOLE	32	37	25	29	27	28	18	12	26	22	15
TUB GURNARD	6	15	2	6	5	5	5	11	18	6	6
TURBOT	3	2	1	2	2	2	1	2	4	3	2
WHITING	67	79	75	60	41	86	83	58	105	50	28
WHITING POUT (BIB)	91	58	21	12	13	25	144	88	60	17	46

Table 2.3.5 Abundance of fish species (per hour fishing) in sub-area VIIg per year

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
AMERICAN PLAICE (LR DAB)			64	122	96	64	50				
ANGLERFISH (MONK)			22	25	22	12	12	10	9		3
BRILL		4	1	2				5			
COD			1	2	2	4	1		4		
COMMON DRAGONET	4	4	76	99	92	46	48	30	67	4	92
DAB	4		47	62	42	40	169	141	340	4	103
EUROPEAN PLAICE	12	4	10	7	10	12	31	46	28	12	5
GREY GURNARD	32	4	72	91	56	33	31	131	133	8	66
HADDOCK			14	43	18	23	36	2	200		32
JOHN DORY			1	1		1		3	16		
LEMON SOLE			23	24	19	12	9	24	12		12
LESSER SPOTTED DOGFISH		8	16	15	36	36	138	6	108	8	201
LESSER WEEVER FISH	4			2		3					
POGGE (ARMED BULLHEAD)			20	23	15	24	56	44	62		48
POOR COD	468	180	220	73	56	63	255	138	215	232	77
RED GURNARD			10	4	2	4	5	4	4		3
SCALD FISH			89	53	58	56	59	130	212		2
SOLE (DOVER SOLE)	60	16	26	15	29	23	45	13	53	28	95
SOLENETTE		4	92	104	103	12	144	106	284		
THICKBACK SOLE	8		65	61	92	45	59	92	176		117
TUB GURNARD	4					1	1	2	4		
TURBOT		4	1		1			8		4	6
WHITING	108	40	83	20	64	26	86	141	793	308	130
WHITING POUT (BIB)	12	4		3			13	4			

Table 2.3.6 Abundance of fish species (per hour fishing) in roundfish area 4 per year

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
AMERICAN PLAICE (LR DAB)					85	106	131	191	112	112
ANGLERFISH (MONK)	1				2	2	4	2	3	2
BRILL	3	8	1	2	4	4	2		2	
COD	1	16	7	10	7	73	13	9	8	6
COMMON DRAGONET					22	20	15	16	55	22
DAB	380	462	135	291	493	377	232	505	478	448
EUROPEAN PLAICE	92	116	25	259	35	47	34	25	56	35
GREY GURNARD	110		7	24	209	45	47	176	49	127
HADDOCK				6	41	42	42	18	49	30
LEMON SOLE	6	34	64	87	41	55	37	28	47	33
LESSER SPOTTED DOGFISH								0		
LESSER WEEVER FISH					398	6	52	10	36	23
POGGE (ARMED BULLHEAD)					3	8	4	13	16	8
POOR COD						9	6	2	1	2
RED GURNARD				17						
RED MULLET							1		0	
SCALD FISH	59			15	237	20	14	33	23	45
SOLE (DOVER SOLE)	12	48	92	130	22	40	46	1	31	6
SOLENETTE	11			39	143	166	37	11	13	25
THICKBACK SOLE									4	
TUB GURNARD	1	10		3					1	
TURBOT	2			1		2			2	1
WHITING	6	30	24	126	42	99	144	13	81	23
WHITING POUT (BIB)		22	43	8	10	50	9		26	2

Table 2.3.7 Abundance of fish species (per hour fishing) in roundfish area 5 per year

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
ANGLERFISH (MONK)		0								0	
BRILL	1	2	1	2	1	2	2	1	0	0	1
COD	5	2	1	8	3	4	20	3	1	2	2
COMMON DRAGONET	19	9	3	4	38	64	6	7	12	10	299
DAB	67	289	86	139	285	335	333	154	78	246	192
EUROPEAN PLAICE	40	38	20	54	56	56	64	64	22	49	36
FLOUNDER (EUROPEAN)	15	7	1	26	16	6	14	2	13	10	8
GREY GURNARD	47	38	23	26	21	26	42	34	26	13	5
HADDOCK								0		5	
LEMON SOLE	16	9	35	36	39	43	29	18	17	16	43
LESSER SPOTTED DOGFISH	17	7	10	4	6	6	2	8	8	9	14
LESSER WEEVER FISH	101	52	40	57	4	124	45	19	29	18	40
POGGE (ARMED BULLHEAD)	31	8	22	20	64	64	24	7	11	25	184
POOR COD	130	13	25	36	35	9	9	16	28	14	61
RED GURNARD	4	1	2	1	27	3	3	1	2	2	2
RED MULLET	1	1	0	1	2	2	1	2	1	1	
SCALD FISH	13	75	37	25	108	90	44	34	21	41	19
SOLE (DOVER SOLE)	82	104	127	170	116	80	103	76	53	96	132
SOLENETTE	9	134	24	17	127	165	123	74	22	74	23
THICKBACK SOLE	2						0	1			0
TUB GURNARD	1	3	7	2	1	1	0	1	1	2	1
TURBOT	1	1	0	0	0	1	0		0	0	0
WHITING	16	85	51	43	52	56	49	131	16	95	62
WHITING POUT (BIB)	95	28	20	122	117	28	44	126	105	44	174

Table 2.3.8 Abundance of fish species (per hour fishing) in roundfish area 6 per year

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
AMERICAN PLAICE (LR DAB)	16	11	16	12	15	25	39	72	41	22	20
ANGLERFISH (MONK)		1	1	1	1	2		1		1	1
BRILL	1	5	3	2	2	1	2	3	1	3	2
COD	10	4	3	17	16	21	18	5	3	9	6
COMMON DRAGONET	63				138	18	102	123	128	67	70
DAB	1179	1152	1180	1035	741	1391	1241	1395	1213	945	837
EUROPEAN PLAICE	736	684	798	629	490	700	938	1013	731	539	986
FLOUNDER (EUROPEAN)	30	18	33	15	16	21	22	13	3	8	9
GREY GURNARD	30	44	50	75	44	48	48	77	119	60	37
HADDOCK			0		6			2		5	3
JOHN DORY				0		1					
LEMON SOLE	4	2	13	18	13	11	67	8	7	7	11
LESSER SPOTTED DOGFISH	1	0		1			1		1	1	
LESSER WEEVER FISH	66	93	100	118	121	85	181	120	157	122	229
POGGE (ARMED BULLHEAD)	84	87	54	191	141	87	181	147	66	56	66
POOR COD	4	7	3	3	14	34	10	70	15	4	1
RED GURNARD	16	6	17	5	4	7	3	2		2	2
RED MULLET	7	4	3	11	5	1	4	2	34	2	10
SCALD FISH	81	93	203	93	94	38	60	118	107	77	142
SOLE (DOVER SOLE)	50	117	92	49	55	19	167	61	51	37	32
SOLENETTE	122	137	187	182	151	81	116	98	333	390	222
THICKBACK SOLE	3				1			2			1
TUB GURNARD	13	15	14	12	8	8	6	9	5	8	5
TURBOT	4	4	4	5	3	3	3	5	4	8	3
WHITING	88	79	102	137	148	57	74	230	221	216	307
WHITING POUT (BIB)	9	19	7	17	69	7	123	77	568	63	55

Table 2.3.9 Abundance of fish species (per hour fishing) in roundfish area 7 per year

	1991	1993	1996	1997	1998	1999	2000	2001
AMERICAN PLAICE (LR DAB)	49	127	430	100	199	35	73	87
ANGLERFISH (MONK)	1		8	2	3	0	3	1
BRILL	8	3	1	8	1		1	
COD	135	7	168	14	24	5	11	10
COMMON DRAGONET	44		8	3	10	2	7	5
DAB	1981	3002	870	369	1377	78	583	568
EUROPEAN PLAICE	813	244	98	215	518	30	140	78
FLOUNDER (EUROPEAN)	6	3	17	11	5		1	
GREY GURNARD	96	100	68	27	95	11	57	44
HADDOCK			36	11	4	11	45	27
LEMON SOLE	8	3	10	7	8	1	4	7
LESSER WEEVER FISH		13				0		
POGGE (ARMED BULLHEAD)	97	103	19	14	19	1	7	5
POOR COD				1				
SCALD FISH	18	25			9	2	25	20
SOLE (DOVER SOLE)	18	12	5	2	11	1	4	2
SOLENETTE	15	56	3	1	5	1	16	27
TUB GURNARD	4	3	15	27	8		2	3
TURBOT	2	1	1	3	1		2	1
WHITING	454	78	12	4	10	7	21	150

Figure 2.1 Total number of beam trawl hauls per rectangle.
Total hauls in 2001

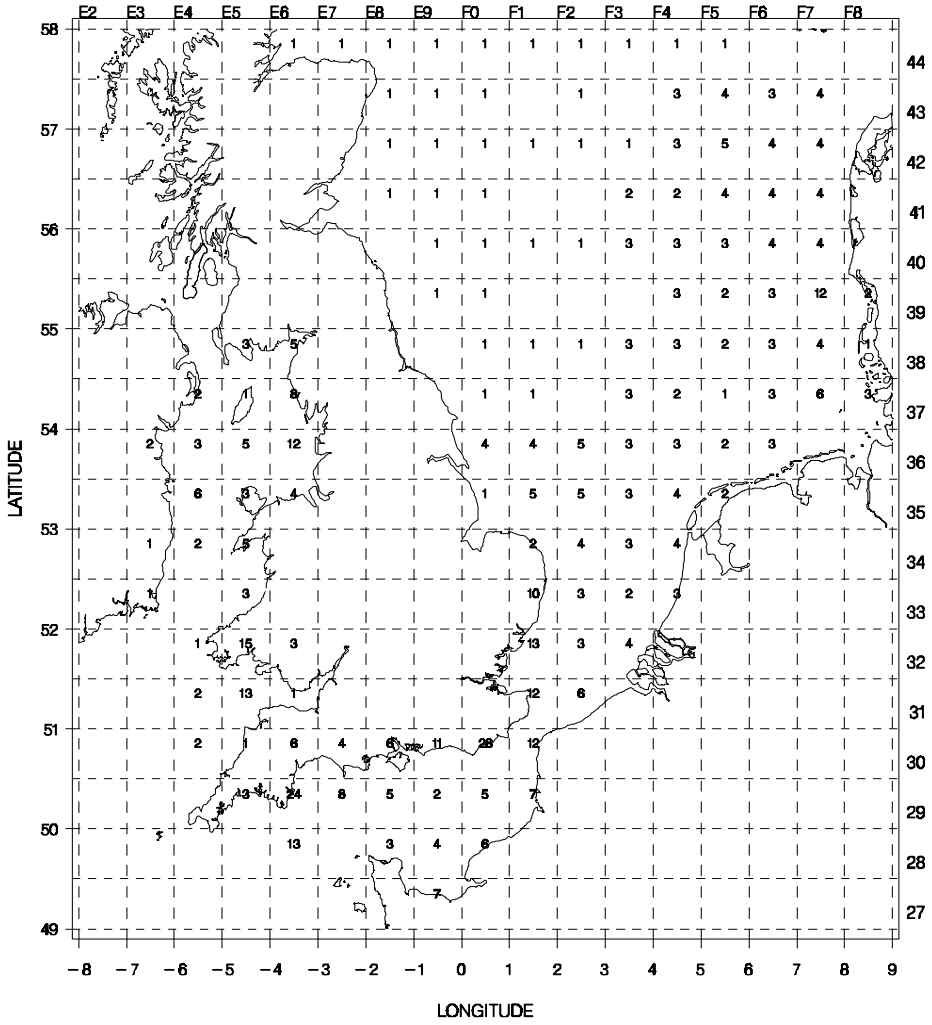


Figure 2.1.1 Total number of beam trawl hauls per rectangle.
Total hauls in 2001 (above) and total for 1990 – 2001 (below) for BEL .

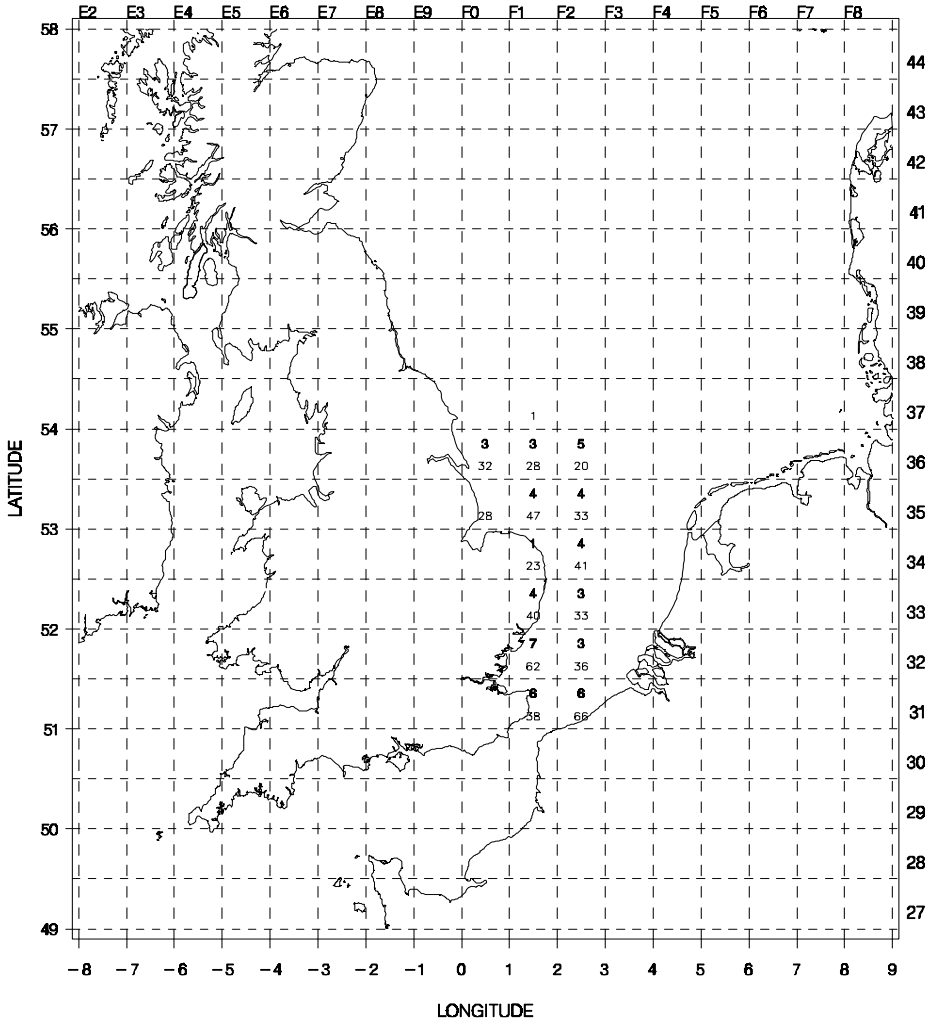


Figure 2.1.2 Total number of beam trawl hauls per rectangle.
Total hauls in 2001 (above) and total for 1990−2001 (below) for ENG .

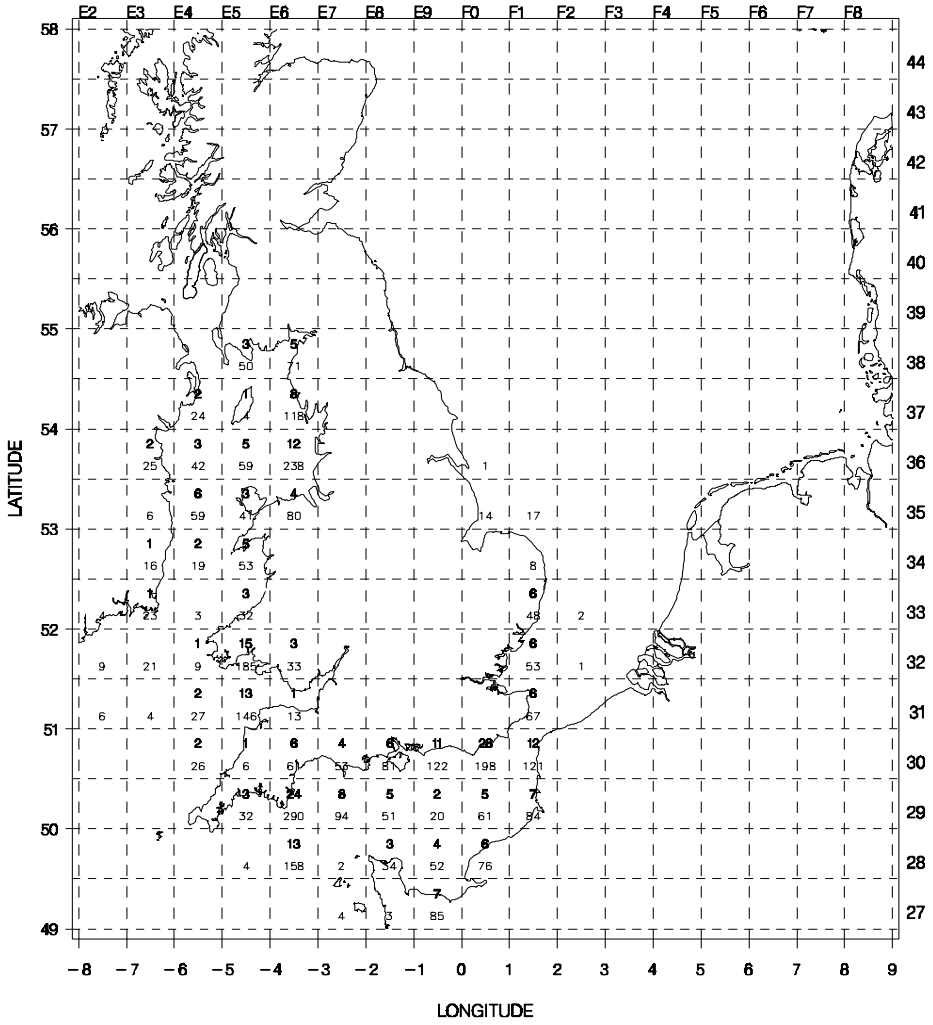


Figure 2.1.3 Total number of beam trawl hauls per rectangle.
Total hauls in 2001 (above) and total for 1990 – 2001 (below) for GFR .

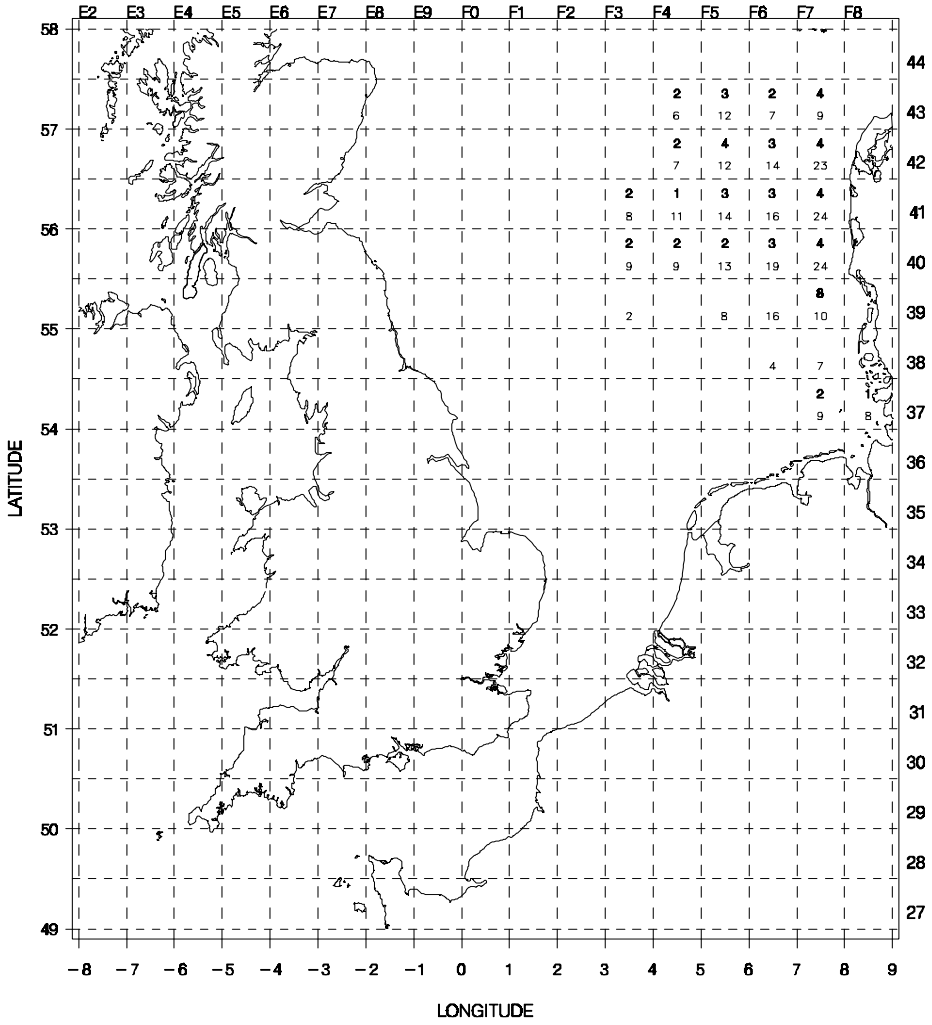


Figure 2.1.4 Total number of beam trawl hauls per rectangle.
Total hauls in 2001 (above) and total for 1990−2001 (below) for NED .

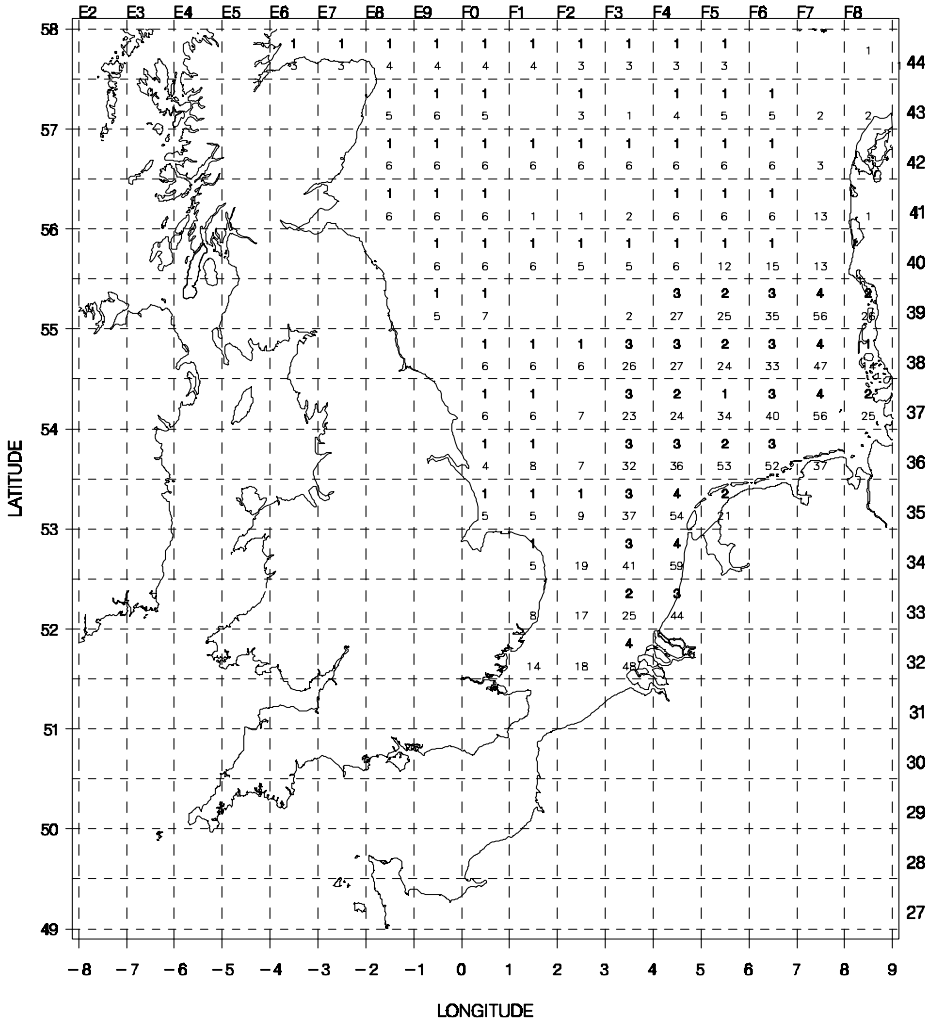


Figure 2.3.1 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Dab

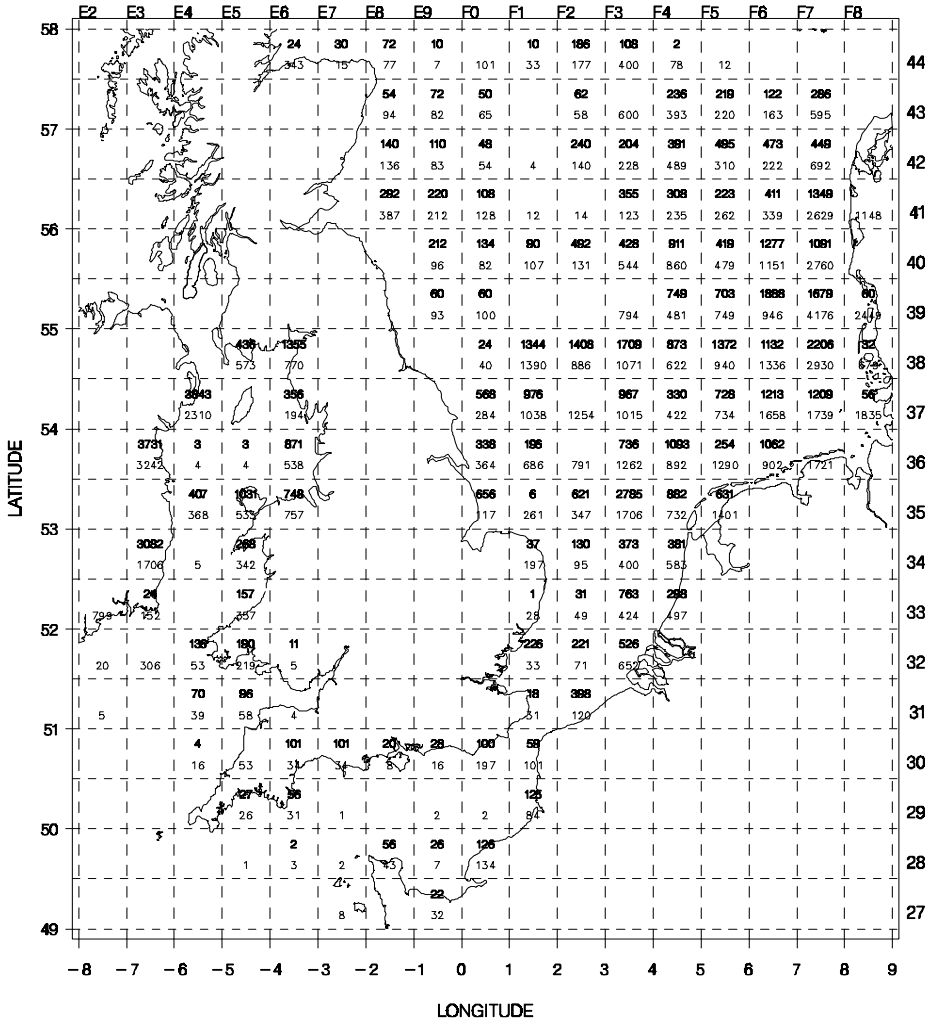


Figure 2.3.2 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Sole

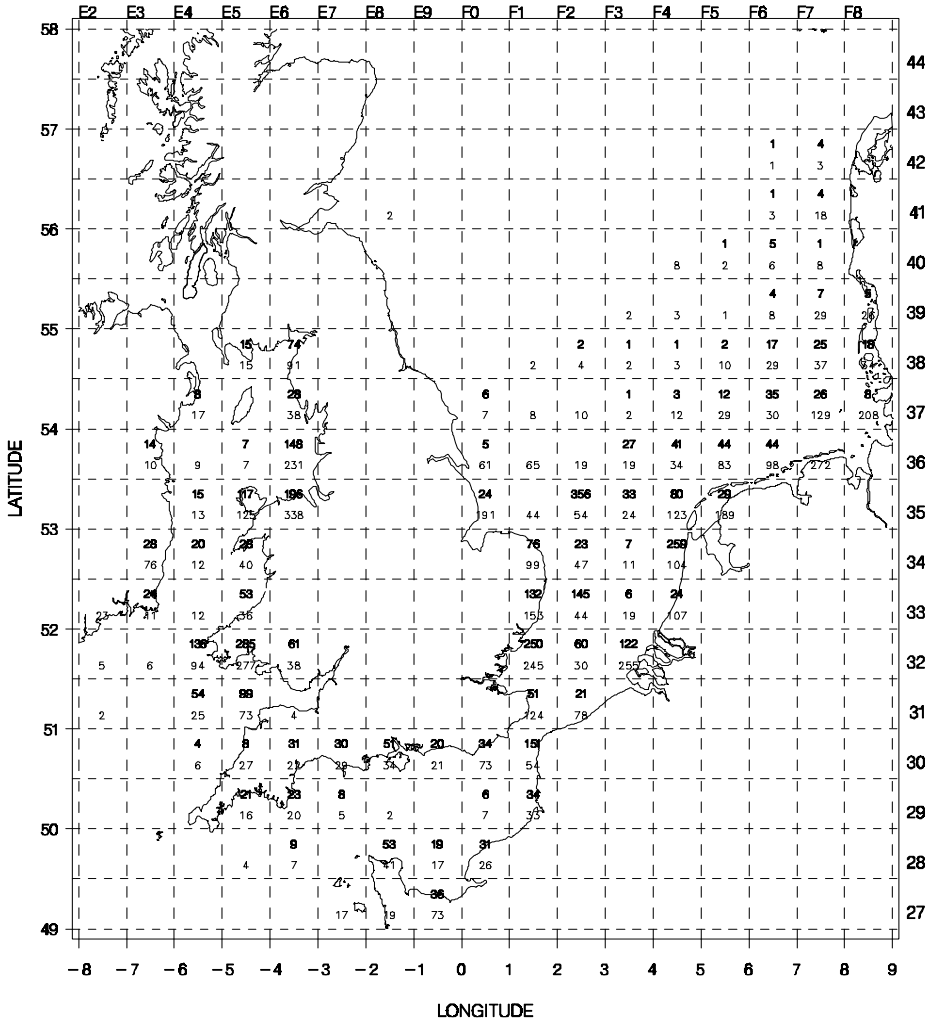


Figure 2.3.3 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Plaice

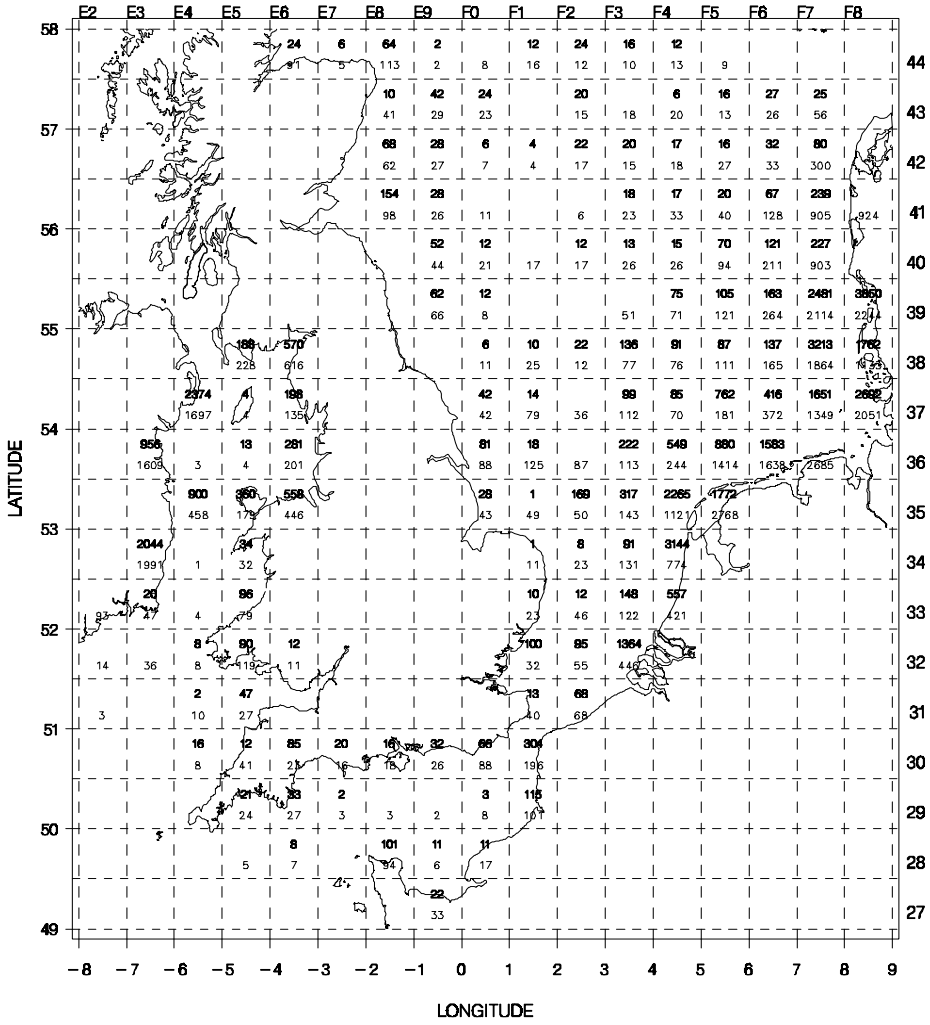


Figure 2.3.4 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Turbot

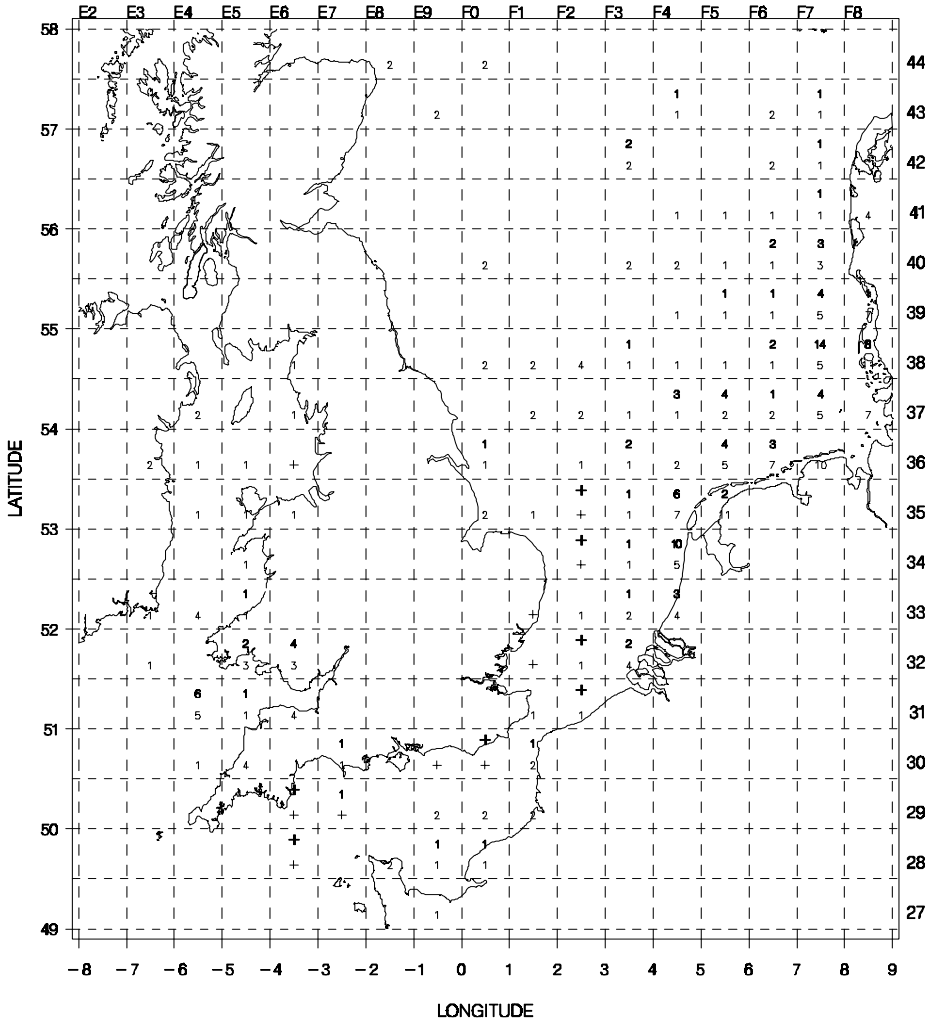


Figure 2.3.5 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Brill

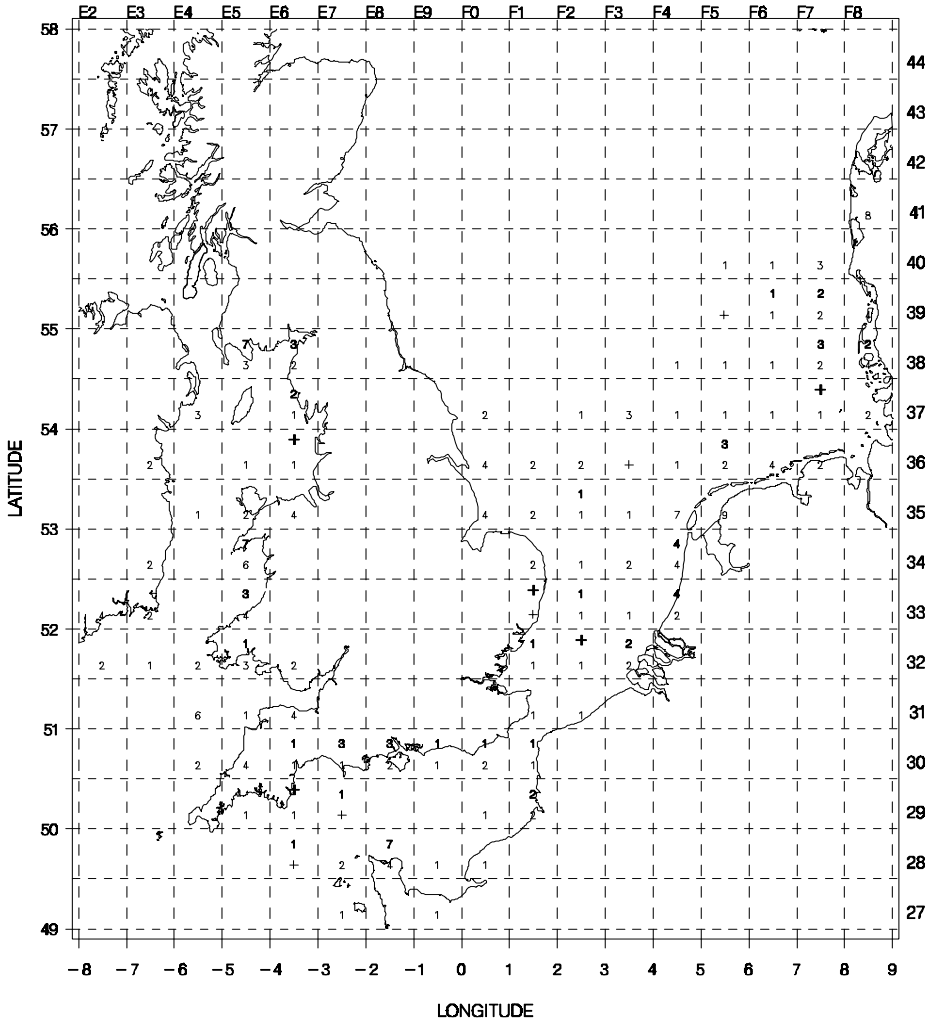


Figure 2.3.6 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Scaldfish

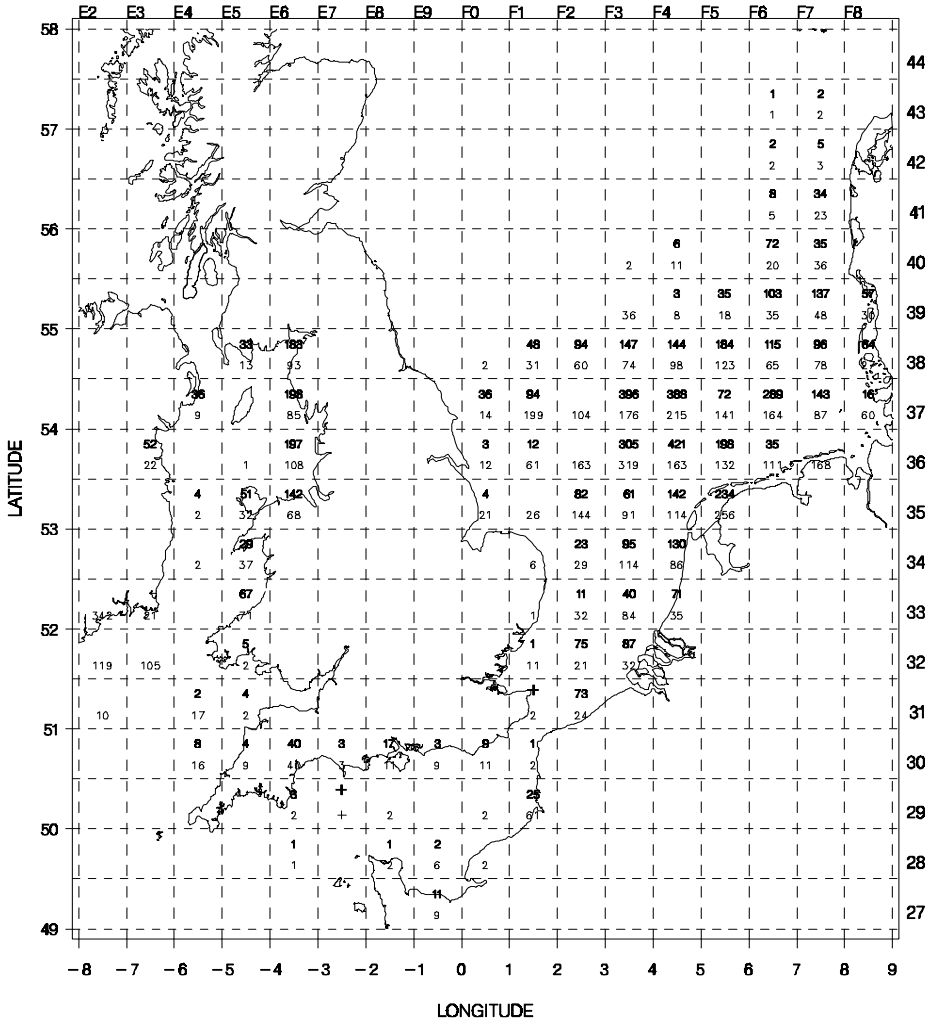


Figure 2.3.7 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Lemon sole

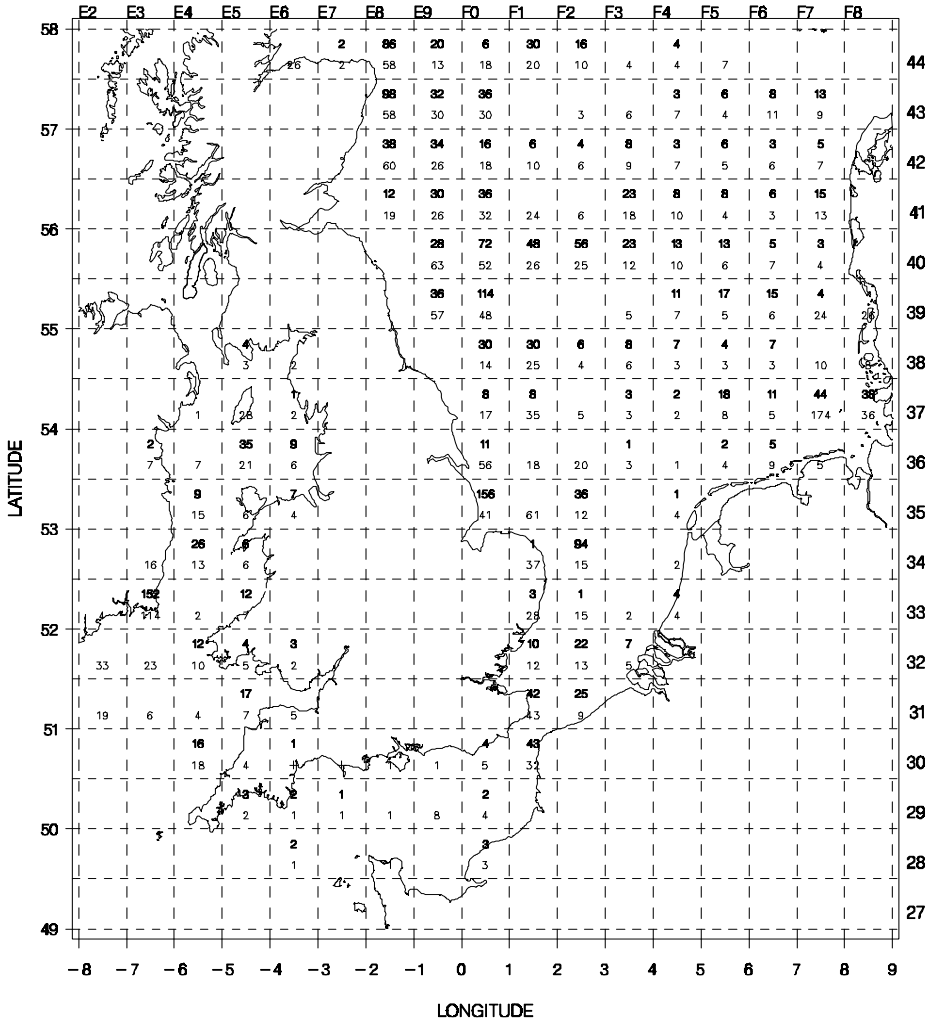


Figure 2.3.8 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)
American plaice (Long rough dab)

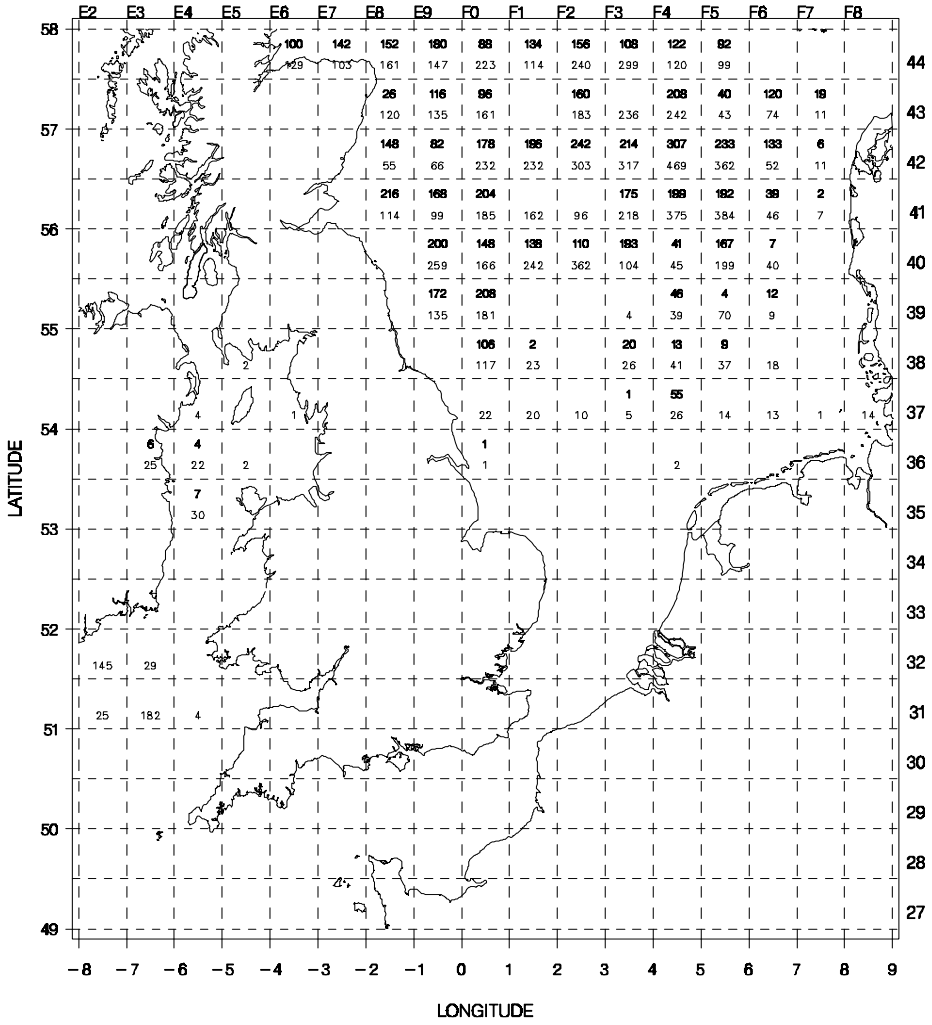


Figure 2.3.9 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Flounder

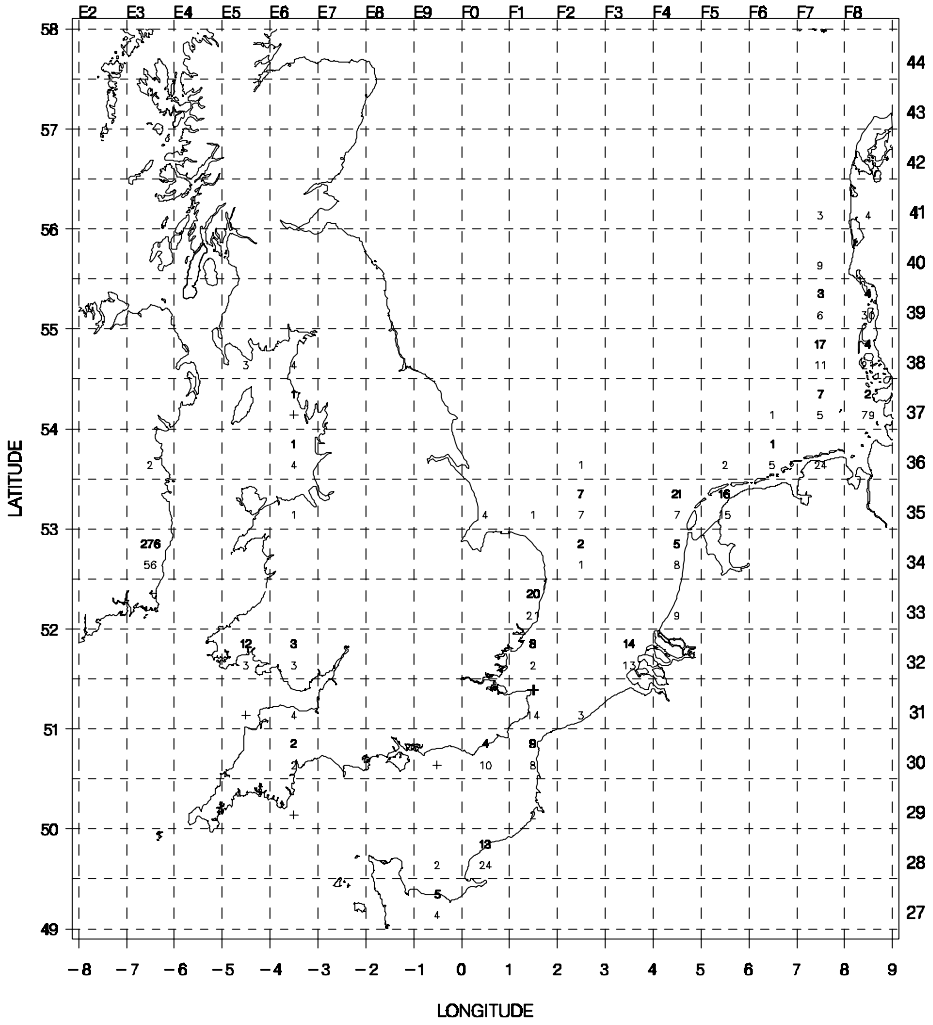


Figure 2.3.10 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Solenette

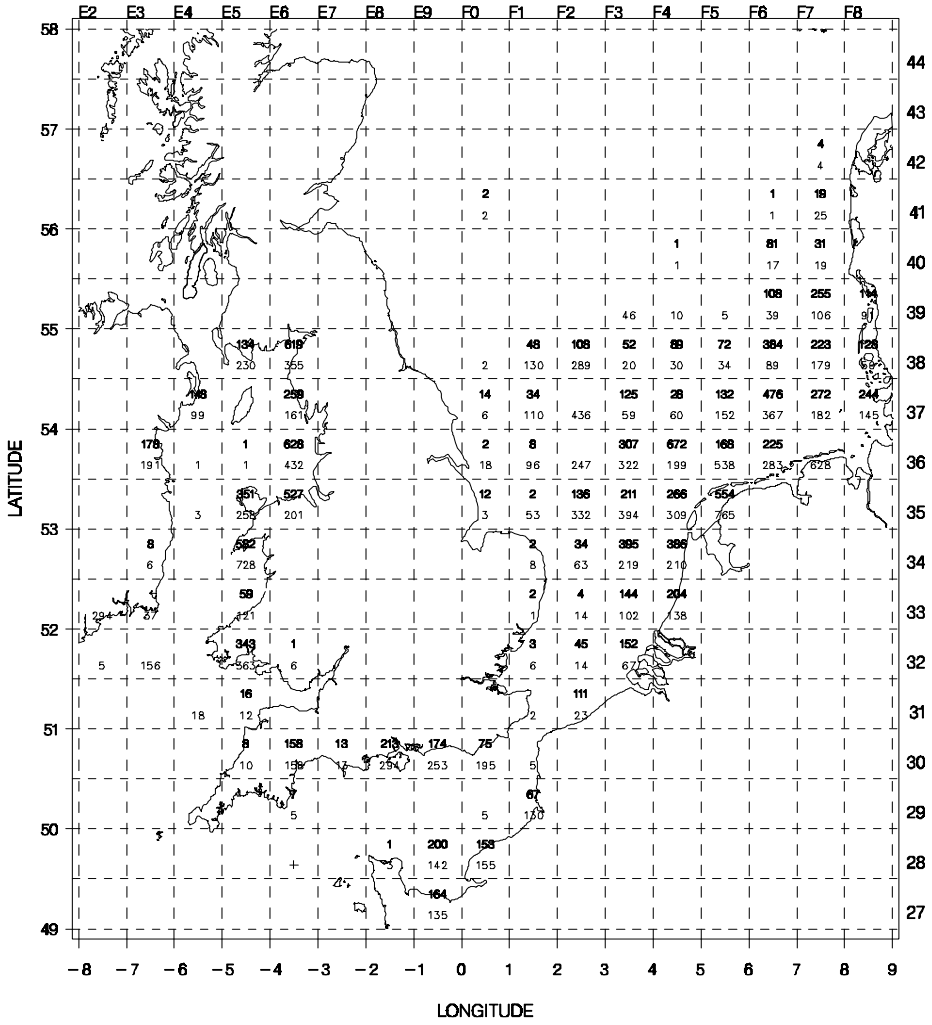


Figure 2.3.11 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Thickback sole

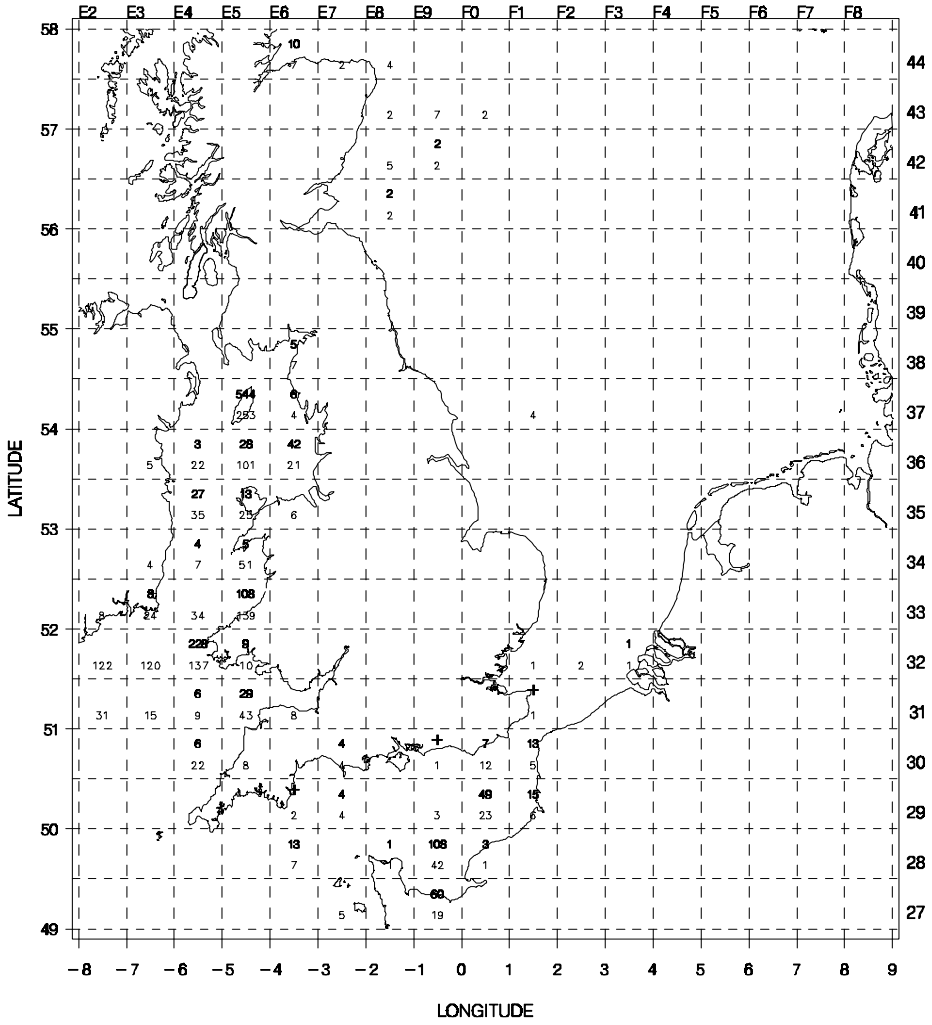


Figure 2.3.12 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Pogge (Armoured bullhead)

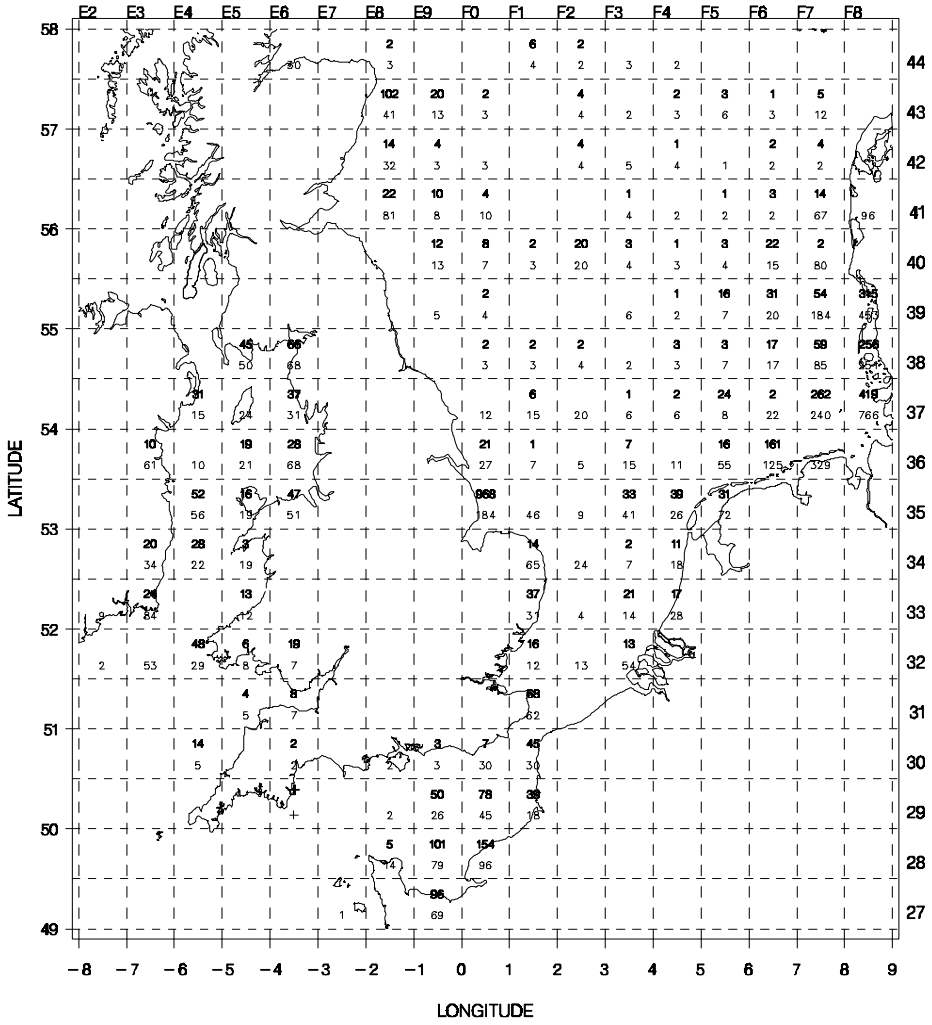


Figure 2.3.13 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Tub gurnard

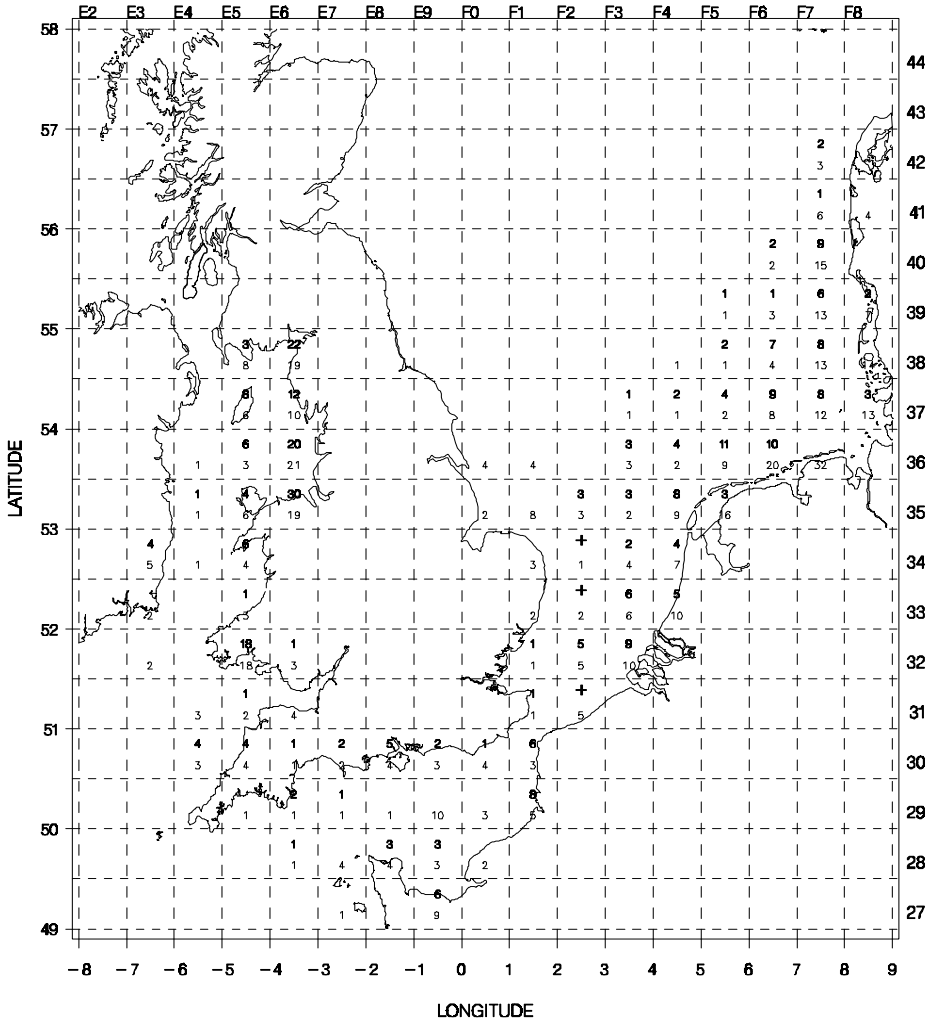


Figure 2.3.14 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Grey gurnard

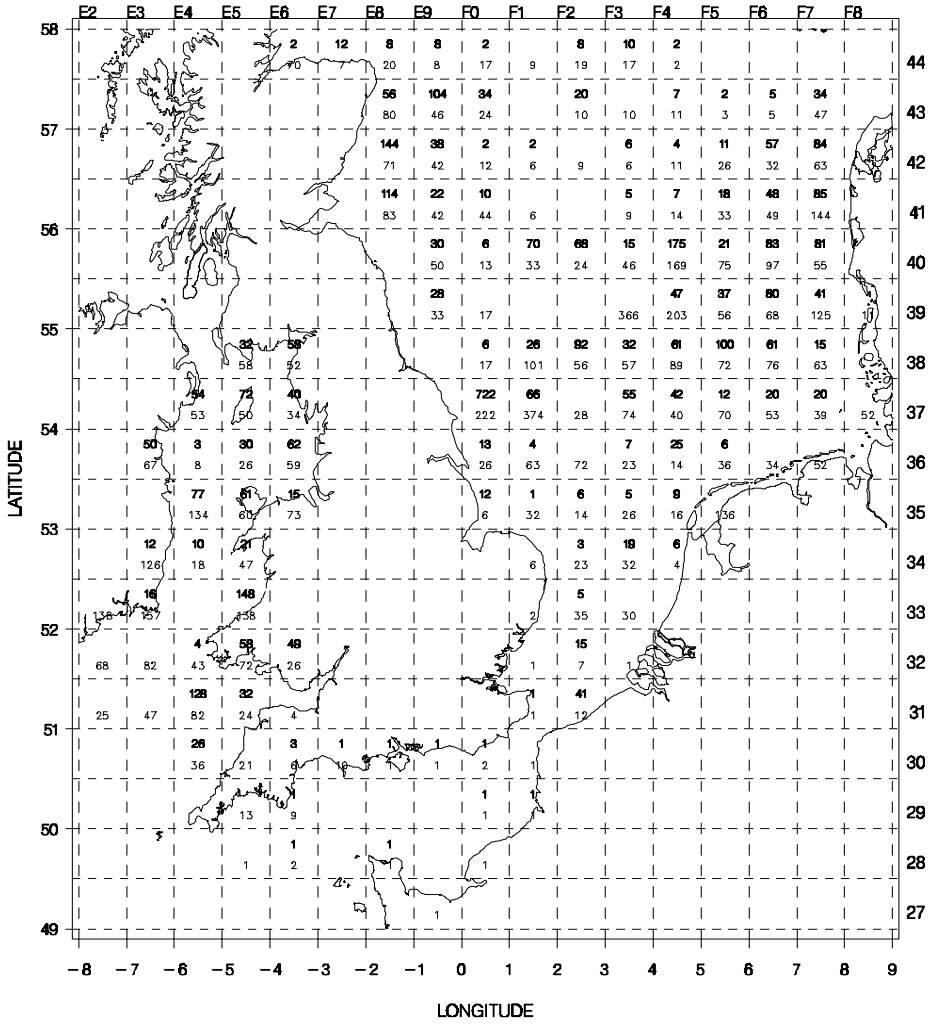


Figure 2.3.15 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Lesser weever

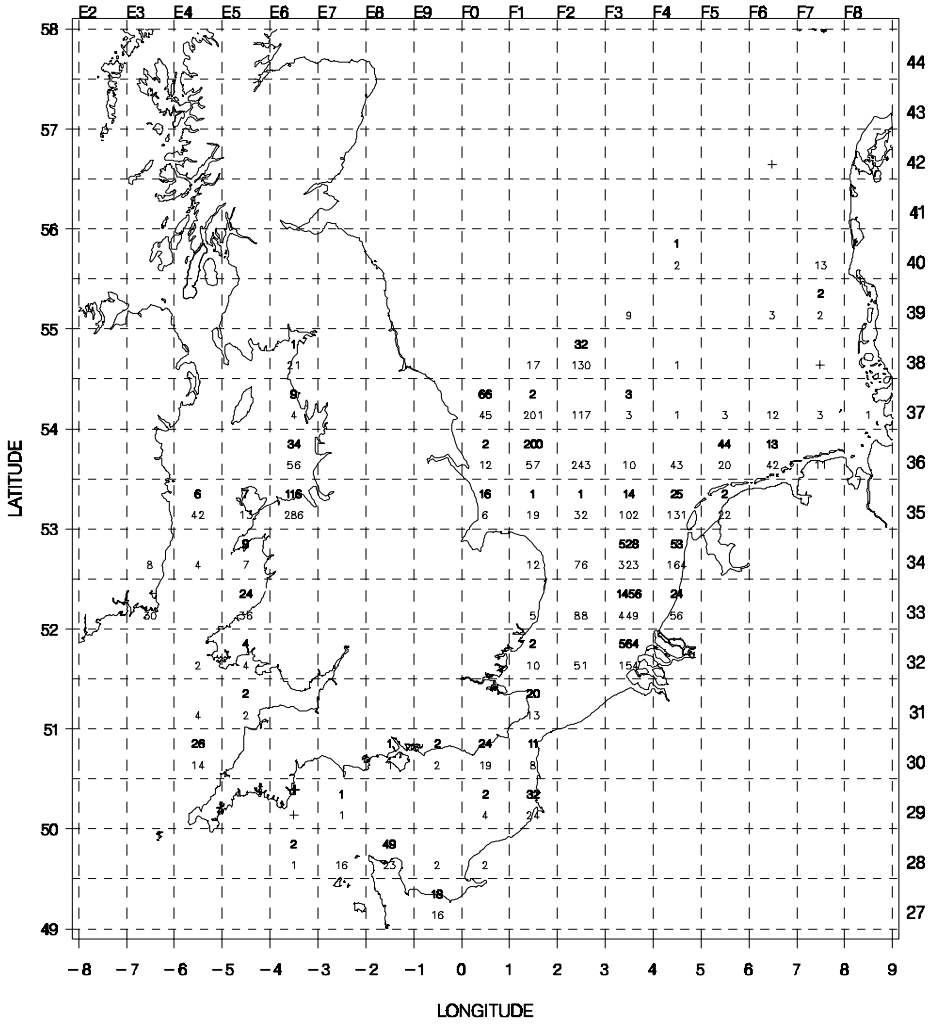


Figure 2.3.16 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Common dragonet

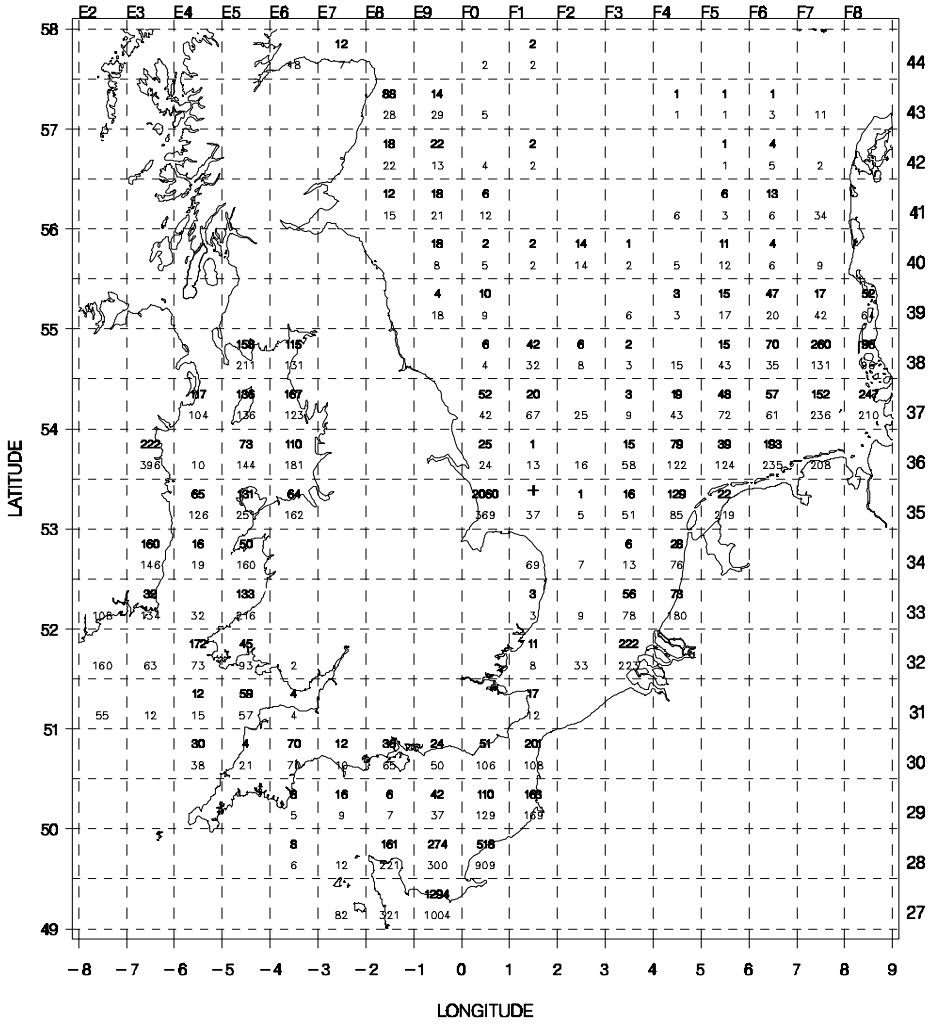


Figure 2.3.17 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Lesser spotted dogfish

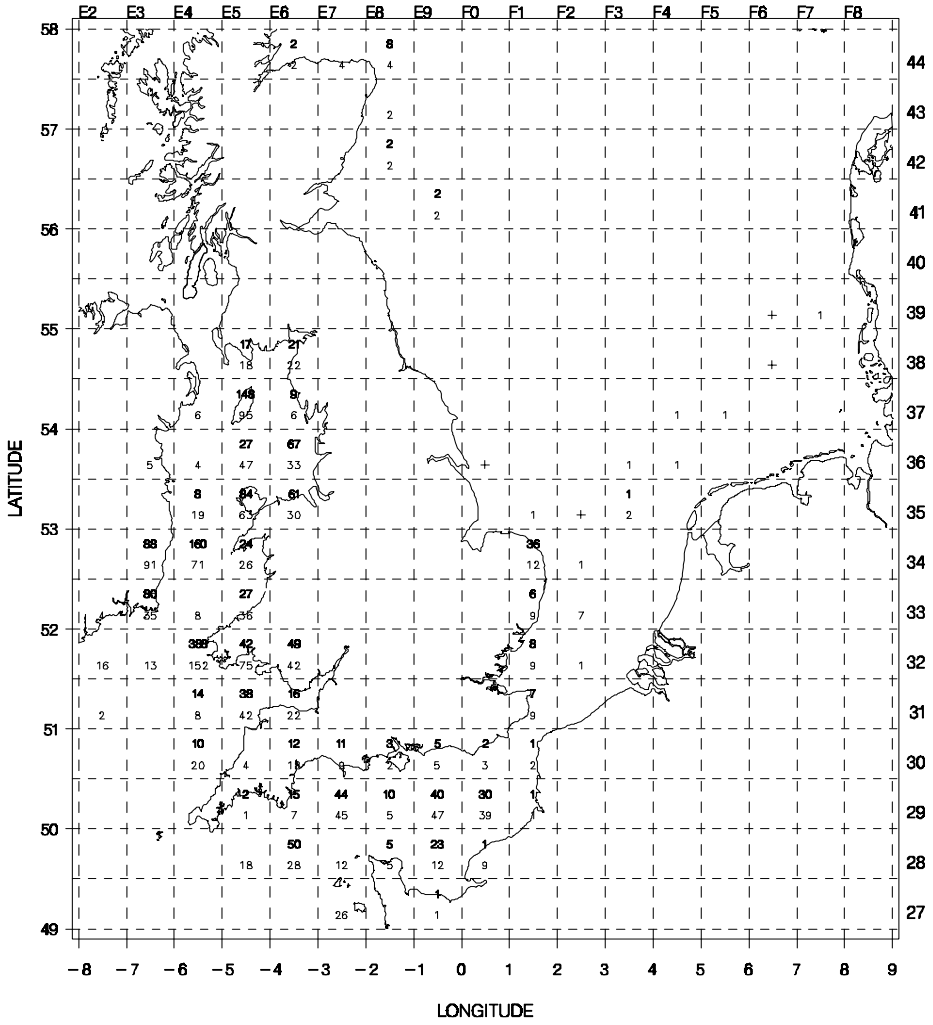


Figure 2.3.18 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Rays

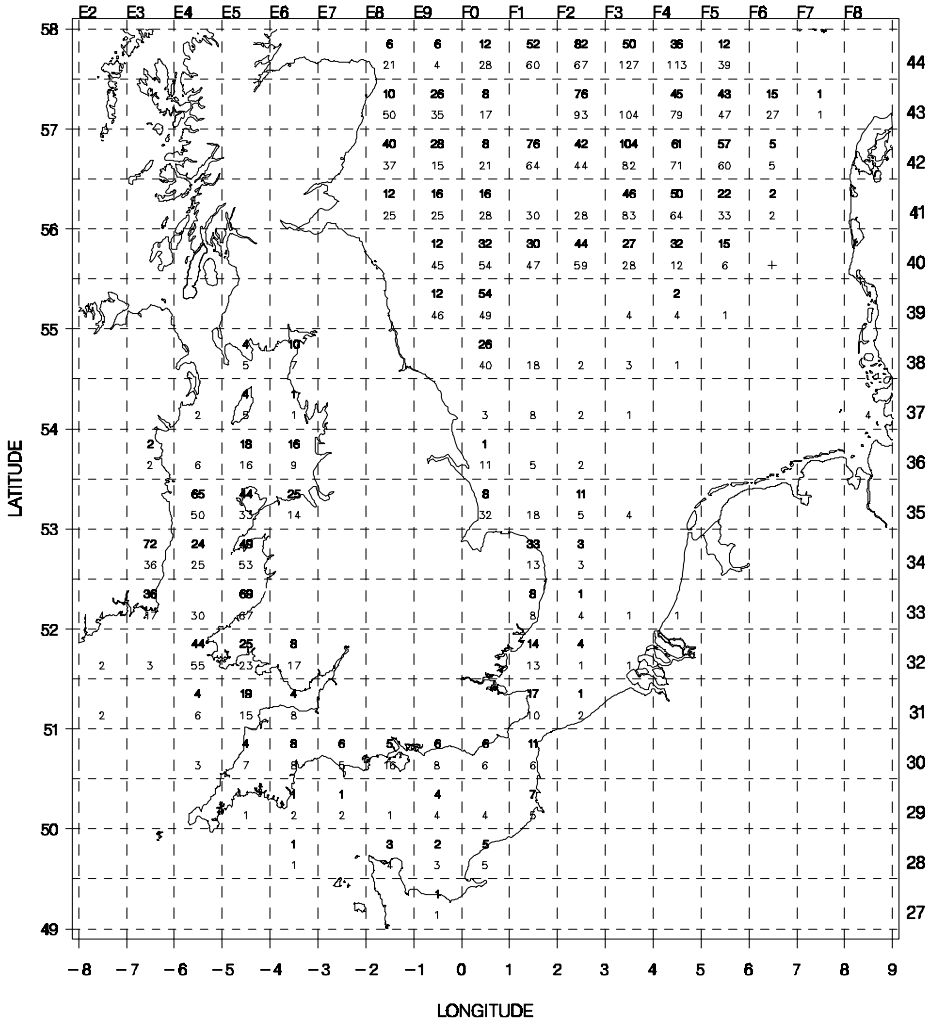


Figure 2.3.19 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Cod

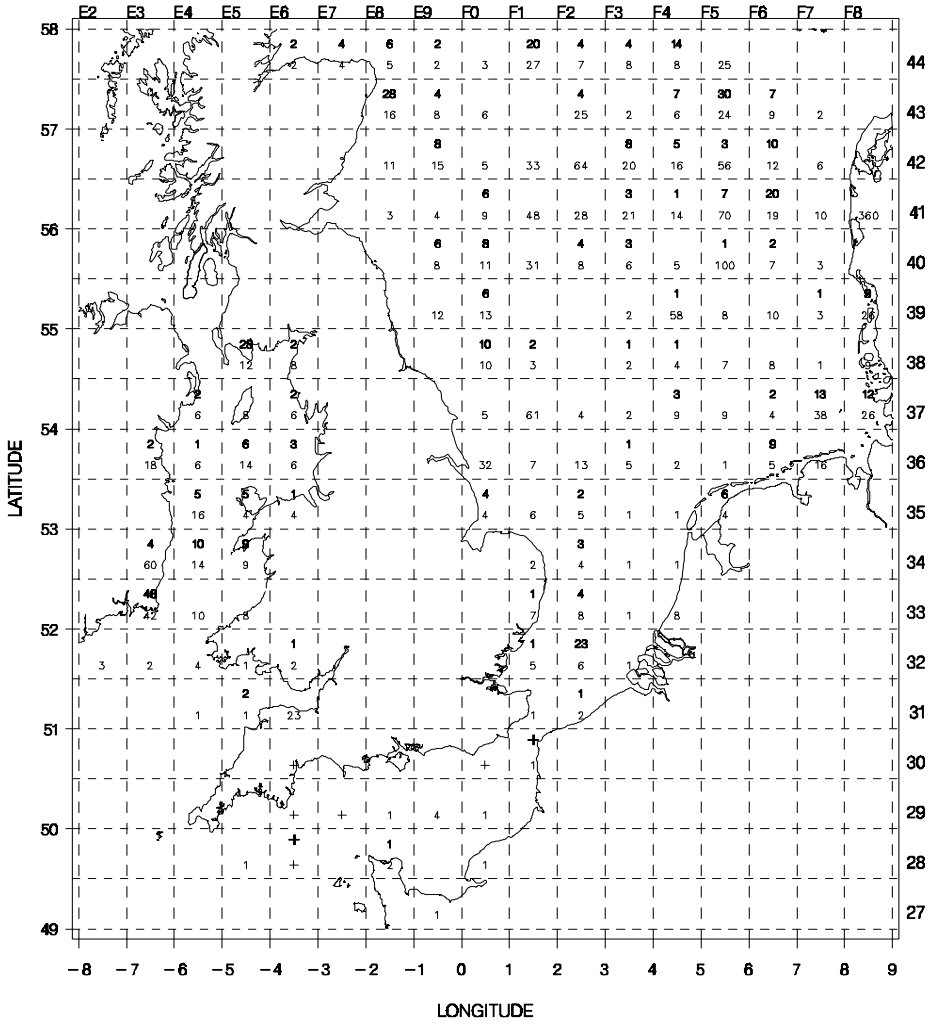


Figure 2.3.20 International Beam Trawl Surveys 1990–2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Poor cod

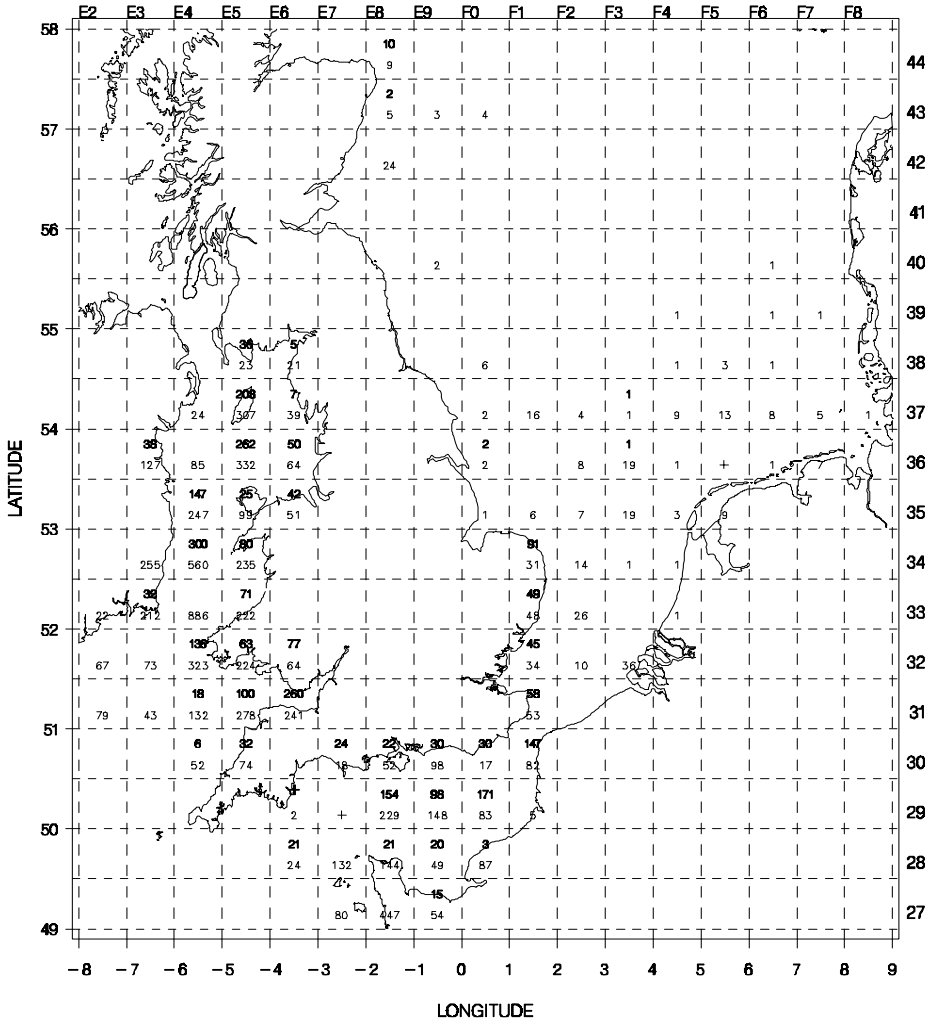


Figure 2.3.21 International Beam Trawl Surveys 1990 – 2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Haddock

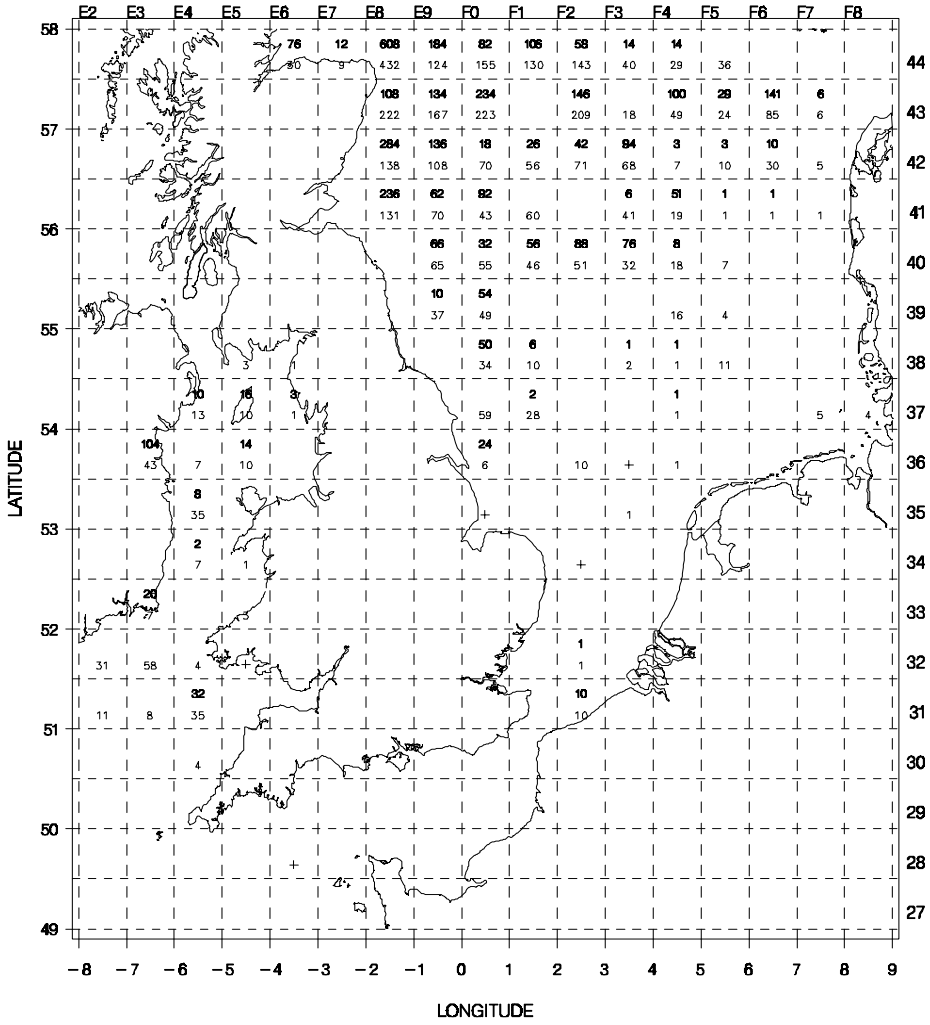


Figure 2.3.22 International Beam Trawl Surveys 1990–2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Pout whiting (Bib)

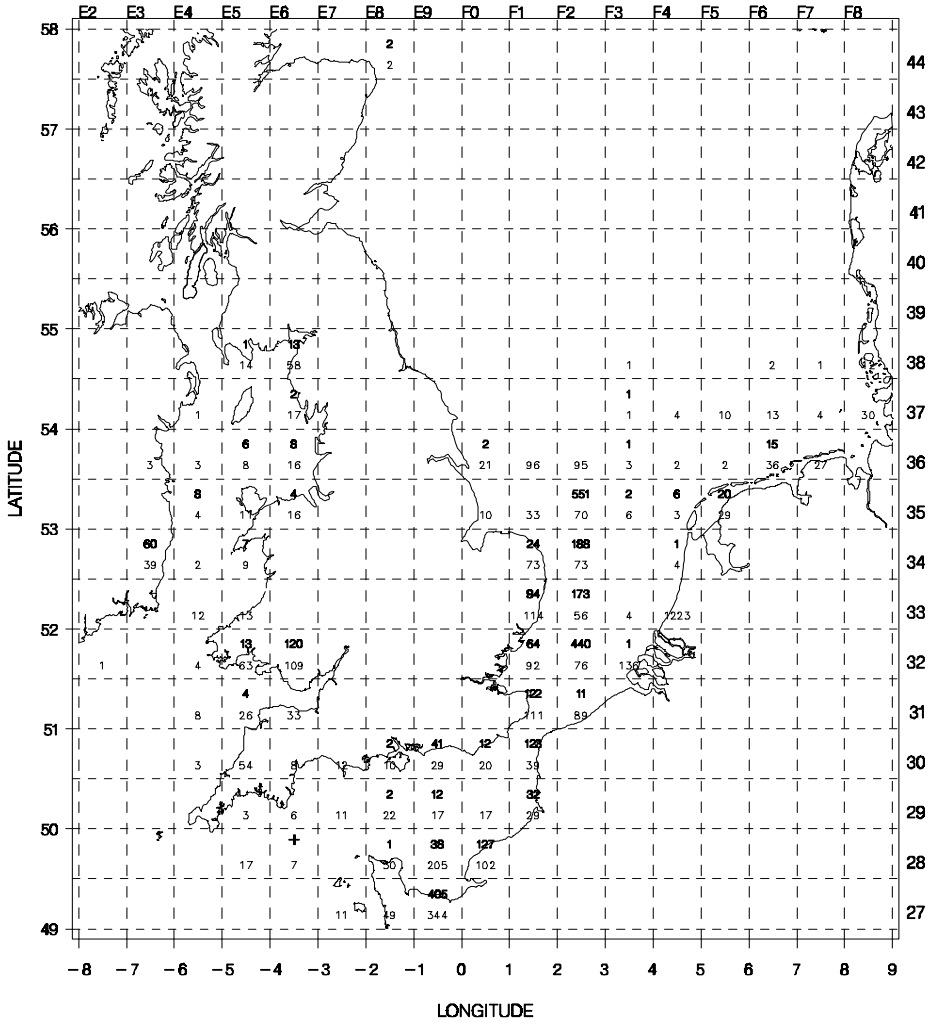


Figure 2.3.23 International Beam Trawl Surveys 1990–2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Whiting

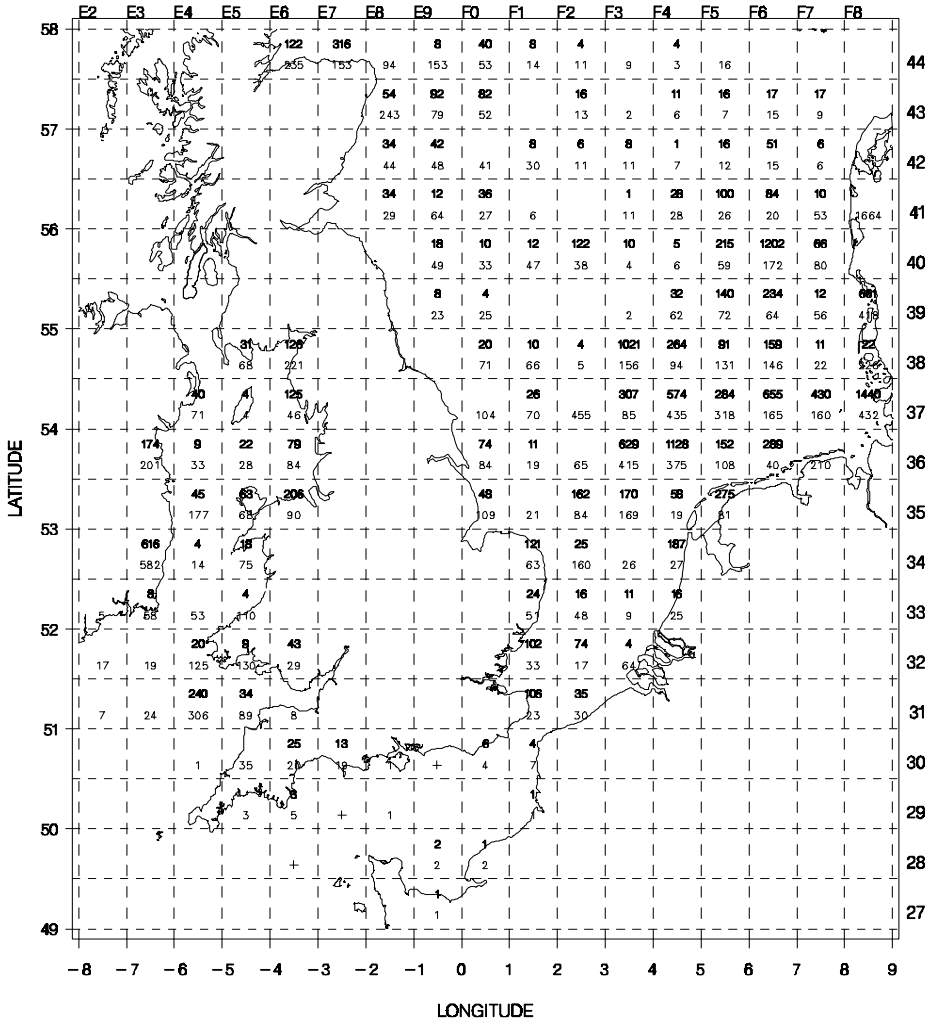


Figure 2.3.24 International Beam Trawl Surveys 1990–2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Angler fish (Monk fish)

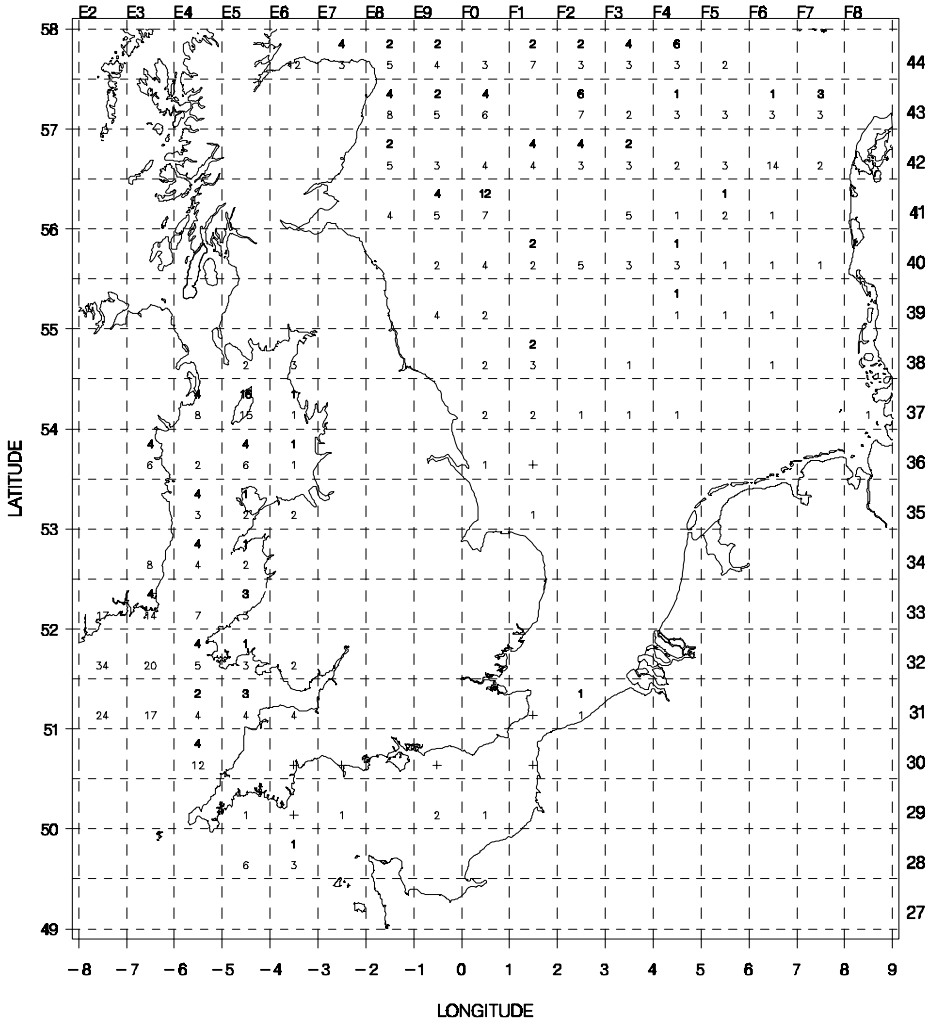


Figure 2.3.25 International Beam Trawl Surveys 1990–2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

John dory

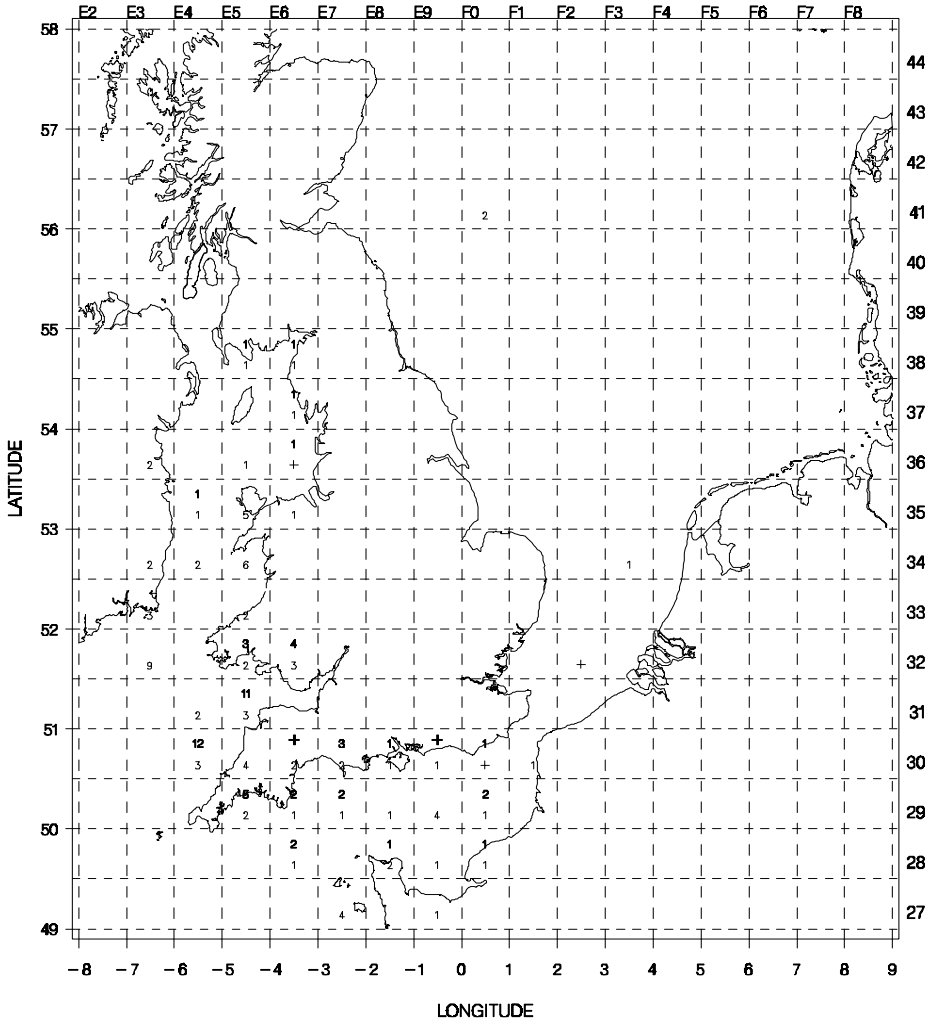
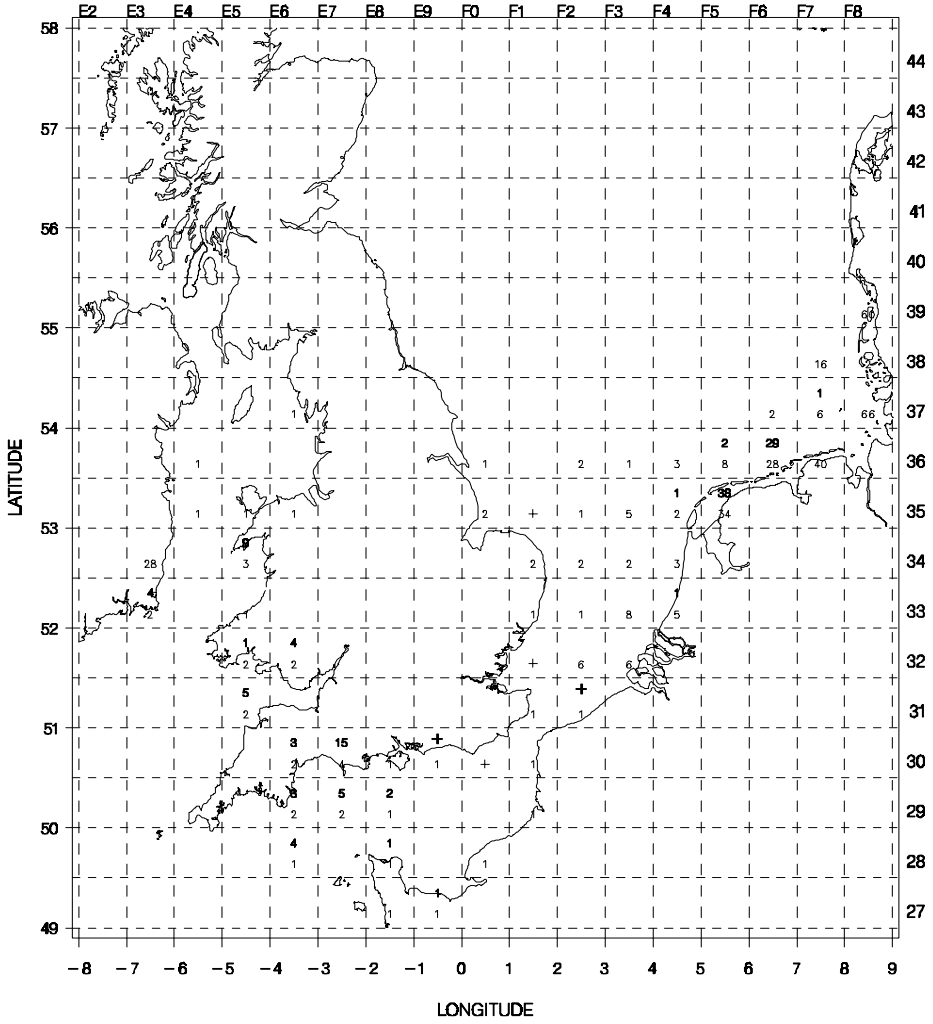


Figure 2.3.26 International Beam Trawl Surveys 1990–2001
Catches in number / 8m beam / hour / rectangle
2001 data in bold, above the survey mean ('+'= < 0.5)

Red mullet



3 EXISTING BEAM TRAWL SURVEYS

For an overview of the beam trawl surveys available a distinction is made between the offshore beam trawl surveys that use a sampling design based on ICES rectangles and the inshore surveys that use a different sampling design and often lighter gear.

3.1 Offshore beam trawl surveys

WGBEAM reviewed the available beam trawl surveys in the North Sea and ICES area VII which are used to derive indices of year class strength for plaice and sole. Table 3.1.1 lists the existing surveys of which their sampling design is based on ICES rectangles. The gears deployed by research vessels are different because of differences in substrate type and the ability of vessels to deploy the trawls. Despite these differences, the survey and data analysis procedures are standardised, and have been described in detail elsewhere (ICES 1993; ICES 1994; Rogers et al. 1997). A summary description of the beam trawl survey characteristics of each country is given in Table 3.1.1.

Sampling stations are stratified according to ICES rectangle and depth zone. In the UK surveys of the Channel and western UK waters, the station grid comprises fixed station positions, identified as Prime Station Numbers. In the Netherlands survey the stations are distributed pseudo-randomly over the rectangle, taking untrawlable areas into account.

Length stratified otolith samples of sole, plaice and dab are taken by sub-area. In the UK surveys the position of all otolithed fish is recorded but in North Sea surveys pooled samples are taken from hauls within otolith sampling areas. These sampling areas are shown in earlier reports of the study group (e.g. ICES 1999).

Table 3.1.1 Details of the beam trawl surveys currently undertaken by each country.

	Belgium	Germany	Netherlands	Netherlands	UK	UK	UK
Survey area:	IVb&c west	IVb east	IVb&c east	Central N Sea	VIId	VIIe	VIIa, f&g
Year survey started:	1992	1991	1985	1996	1988	1988	1988
Dates:	August	early September	end August	end August	early August	late September	late August
Ship:	RV Belgica	RV Solea	RV Isis	RV Tridens	RV Corystes	MFV Carhelmar	RV Corystes
Ship length:	50 m	35 m	28 m	73.5	53 m	22 m	53 m
Beam trawl length:	4 m	7 m	8 m	8 m	4 m	4 m	4 m
Number of beams fished:	1	2	2	2	1	2	1
Trawl duration (min):	30	30	30	30	30	30	30
Tow speed (knots):	4	4	4	4	4	4	4
Cod end liner stretched mesh (mm):	40	44	40	40	40	40	40
Number of ticklers:	0	5	8	8	0	0	0
Gear code:	BT4M	BT7	BT8	BT8S	BT4FM	BT4FM	BT4FM
Attachment:	*	(none)	(none)	**	*	*	*
Station positions:	fixed	pseudo-random	pseudo-random	pseudo-random	fixed	fixed	fixed
Benthos sampling since:	1992	1992	1985	1996	1991	1992	1992

* chain mat & flip-up rope xxx
** flip-up rope only

3.2 Inshore surveys

Table 3.2.1 lists the inshore surveys together with the geographic area covered, the gear used and the date started. The main features of the surveys are described below:

- Netherlands Sole Net Survey (SNS) - 6m BT. This survey is carried out using the RV TRIDENS until 1995 and RV ISIS from 1996. The gear used is a pair of heavy 6m beam trawls with 40mm stretched mesh cod-ends and 4 tickler chains. The survey fishes a series of fixed transects with stations perpendicular to the coast (areas 601-607 and 630,640,660, 670-673; Fig 3.1). All flatfish are sampled for length and age and other species for length only. Indices for age groups 0-3 have been prepared annually from 1977 as numbers per 100h fishing averaged from all stations covered.
- Netherlands Demersal Fish Survey (NDFS)- 3m BT. A number of surveys are carried out in the Wadden Sea and Scheldt estuaries (areas 610, 612, 616-620, 631,634,638). Two small research vessels are used, fishing a single light 3m beam trawl with a 20mm cod-end and one light tickler chain from the shoes.
- Netherlands Demersal Fish Survey (NDFS)- 6m BT. The coastal zone (areas 400-407) are fished by RV ISIS with a pair of light 6m beam trawls also rigged with a 20mm cod-end and single tickler chain.
- English Young Fish Survey (UKYFS)- 2m BT. A number of charter vessels are used to sample inshore along the English east coast. A depth stratified sampling scheme is used. Between 1973-1999 sampling was carried out with a light 2m beam trawl in depths from 2m-20m. In shallow water (<2m), sampling was carried out using a 1.5m push net. In 2000, the survey area was revised to exclude sites where flatfish were less abundant and the push net sampling was discontinued. The complete time series has been revised to reflect the new sampling procedure. No ALKs are available and length of 0 and 1-gp plaice and sole are derived using length frequency distributions.
- Belgian Demersal Fish Survey (BDFS) – 6m BT. The survey uses the RV BROODWINNER to sample inshore waters at fixed stations along the Belgian coast from 1982 onwards, using a 6m beam trawl with no tickler chains and a 18mm mesh cod-end. Data for the period 1970-1982 were collected using the research vessel Hinders. No ALKs are available and length of 0 and 1-gp plaice and sole are derived using length frequency distributions.
- German Demersal Young Fish Survey (GDYFS) – 3m BT. Surveys are carried out in the Niedersachsen Waddensea/Elbe estuary and in the Schlesweig-Holstein Waddensea using chartered inshore fishing vessels. The same 3m shrimp trawl with no tickler chains and 18mm mesh cod-end (18mm inner distance from knot to knot, but is called 20mm cloth) are used in both surveys.

Table 3.2.1 Inventory of International Inshore Young fish Surveys

Country	Netherlands (SNS)	Netherlands (DFS)	Netherlands (DFS)	Netherlands (DFS)	England (YFS)	Belgium (DFS)	Germany (DFS)	Germany (DFS)
Geographical Area of Survey	Dutch coastal to Danish coastal, Scheveningen to Esbjerg	Waddensea	Scheldt Estuary	Dutch coastal to Danish coastal areas 1- 4 inner stations	Eastern/South-Eastern English Coast	Belgian Coast	Niedersachsen Waddensea + Elbe Estuary	Schlesweig-Holstein Waddensea
Ship	Tridens/ISIS	Stern/Waddenzee	Schollevaar	ISIS/ Breukels/G)28	Chartered vessels	Hinders/Brood winner	Chartered vessels	Chartered vessels
Date started	1969-1984 Tridens 1984 - ISIS	1970	1970	1970	1973	1970	1972	1974
Sampling Period	Sept/Oct	Sept/Oct	Sept/Oct	Sept/Oct	Sept/Oct	Sept/Oct	Apr/May Sept/Oct	Apr/May Sept/Oct
Gear Type	6m Beam Trawl	3m Beam Trawl	3m Beam Trawl	6m Beam Trawl	2m Beam Trawl	6m Beam trawl	3m shrimp trawl	3m shrimp trawl
Tickler Chains	4	1	1	1	3	0	0	0
Mesh size net in cm. Cod-end	80 40	35 20	35 20	35 20	10 4	40 18	32 18	32 18
Speed fished	3.5 knots / 4 knots	3 knots	3 knots	3 knots	1 knot	3 knots	3 knots	3 knots
Time Fished	15 min	15 min	15 min	15 min	10 min	15 min	15 min	15 min
Species Target	1- 2-group sole/plaice	0-1-group sole/plaice	0-1-group sole/plaice	0-1-group sole/plaice	0 -1 - 2+ sole/plaice	0 -1 - 2 sole/plaice	0-1-group sole/plaice	0-1-group sole/plaice
other	All	crangon/All	crangon/All	crangon/All	Turbot Brill crangon/All	All (no crangon since 1992)	crangon/All	crangon/All
Age information	All years	All years	All years	All years	None	None	None	None

4 CO-ORDINATION BEAM TRAWL SURVEYS

4.1 Inshore surveys

ToR a) requested the further co-ordination of coastal beam trawl surveys. Though the coastal and inshore surveys have been conducted for more than 30 years in some countries, no co-ordination took place for many years. A different development was to be expected and the need for a status quo check was obvious.

The outlines of the single surveys for NL and D were presented to the group. Areas, working procedures, parameters, units and digitising schemes were discussed. It became clear, that most basic data were collected in a similar manner, though differences exist in the way of their acquisition from traditional hand measuring and paper file to almost complete electronic recording and storage in data bases. Shifts and breaks have occurred in Dutch and German DYFS programmes due to practical reasons, which need to be listed and evaluated in detail for their effects on catch results and calculation of indices.

As not all data were available in data bases and comparable formats and as a lot of digitising and plausibility checks are still ahead, the 2001 stations of the single surveys have been plotted in maps (Figures 4.1.4) to give a first overview of the present survey extent.

A species list of the 2001 surveys is presented in Appendix 1 showing differences between the areas. It needs to be completed in future by data from previous years as well as by some indication of the abundance of the single taxa.

Manuals are more or less available for each single, national survey scheme. They should be completed and be compared at a future meeting.

For the demersal Young fish programs fish have to be measured to one cm below (minimum accuracy).

For the species other than fish it was recommended by the group that Cancer pagurus (maximum carapace width) and Nephrops norvegicus (eye socket to middle of the end of carapace) should be measured on mm below by sex.

Dutch and Belgium Demersal Fish Survey (DFS)

The coastal survey is carried out by different ships in more or less the same weeks of the year. The Belgian coast is fished by the RV Broodwinner and data are coupled to the Dutch data prior to calculation of indices.

In time there has been a major shift in the weeks of the RV ISIS conducting the coastal survey (from the Belgium border to Denmark at the latitude of Esbjerg). In table 4.1.1 this shift is notable. Since the results of the RV ISIS are the dominant ones in the calculation of the international indices, the effects of this time-shift should be evaluated.

The data of the Dutch survey are an important element in other research projects with special focus to the quality and importance of the national estuarine areas. Time series of non-target species (e.g. juvenile *Dicentrarchus labrax*) can be compiled for regional areas like the Western Scheldt of the Wadden Sea.. Environmental Impact studies (EIA's) are also heavily dependent on the long term DFS series. Like last year, an EIA for an artificial island in front of the Dutch coast was calculated for the brown shrimp stock. The necessary modelling was based on the DFS shrimp catches.

Since 2001 a CTD sensor is connected to the upper part of the netting (see Fig. 4.1.1) to log the conductivity, temperature, depth, visibility, oxygen saturation and pH during the fishing. Especially in estuarine areas or in the locality of freshwater outlets these water parameters are meaningful. Also the coupling of catch data to the informative maps of the seafloor characteristics, current flows will help to establish habitat mapping for the target species. In future time statistical techniques might be useable to improve the design and index calculation of the survey. For instance the 0-group series of plaice in the Wadden Sea area shows a relative increase of abundance in the deeper waters (Fig. 4.1.2a). The distribution of 1-group CPUEs over depth in the Wadden Sea are unpredictable (Fig. 4.1.2b).

Table 4.1.1. Number of hauls per Month and Year for the coastal DFS survey by the RV ISIS

Year	August	September	October	November	Total
1970		50			50
1971		27	23		50
1972			54		54
1973			44		44
1974		4	50		54
1975		14	34		48
1977			58		58
1978			91		91
1979			80		80
1980		81	17		98
1981		64	9		73
1982		84	23		107
1983		72	15		87
1984		52	64		116
1985		69	39		108
1986		77	31		108
1987		35	75		110
1988		7	103		110
1989		32	83		115
1990		36	81		117
1991		36	72		108
1992		83	42		125
1993		37	83		120
1994		26	92		118
1995		10	96		106
1996			109		109
1997		6	74		80
1998			27		27
1999			54		54
2000			76		76
2001			70	13	83

German Demersal Young Fish Survey (G DYFS)

As presented in figure 4.1.4 the G-DYFS covers the following areas according to the Dutch area-codes with approximately (in brackets) following numbers of hauls per campaign (spring and autumn): 405 (10), 406 (10), 409 (10), 410 (12), 411 (30), 412 (22), 414 (25). Only areas 407, which extends to the total Danish Wadden Sea area, 408, which has been surveyed in former times to a certain extent, and 413 are missing, besides 620, which is partly covered by Dutch samplings. So approx. 250 hauls are taken each year during 22 days at sea by 2 people on board. Nevertheless, the coverage within single areas is limited and not evenly distributed because of the tidal channel systems and available survey time.

Survey months (April – May) and (September – October) have remained stable in the surveys, nevertheless dates were shifting sometimes, leading to probably different results in flat fish catches due to known migration patterns.

Vessels are still chartered commercial shrimpers, 4 different ones, each one in an area and always the same for quite some years in sequence unless external reasons forced for a change.

Trawling speed is approx. 3 knots varying according to nautical requirements (1.5 knots reported in 1979 is not realistic and may have been through water)

Haul duration is maintained at 15 minutes as a standard with little variation. More precise recording is attempted by electronic means in future, but with no effects assumed for catches and indices.

Trawl distance depends very much on prevailing tidal currents and is recorded haul wise along the actual, sometimes curved tracks, no longer from the distance between shot and haul position, by electronic sea map software. Differences had been found between tidal channels as well, and for older data at present a mean of 1400 metres is applied for index calculations. It is attempted though, to replace the general mean haul wise by an area and tidal phase specific mean value, which seems to be the maximum achievable accuracy. It is not expected though, that the already calculated indices will be very much affected by this improvement.

The depth range is still 2 to approximately 25 metres.

Trawl depth is recorded by the captain according to his echo sounder readings for minimum and maximum depth. An electronic continuos pressure recording at the net will give a better information on actual trawling depths and variation in certain areas, helpful in judging for meaningful depth strata decisions and tidal effects.

The beam width remained 3 metres over the whole survey period as did the total weight of the gear. The roller gear chain of 13 rollers of 20 cm diameter, 12 cm broad was formerly of a wooden type and was changed to rubber as in commercial fisheries. No tickler chain has been used in German DYFS except for a single comparison trial. The cod end is of 20 mm mesh, but was reported of having had 18mm (1983) and even 25mm around1979 (O-group report 1985).

Catches are normally small and can be sampled completely. If sub-sampling becomes necessary, raising factors are used by species. Since 2001 all catches are weighed on board. Formerly volumes have been used.

Fish is counted and measured giving the possibility of applying length-weight-keys for recalculating weight. This is under way but not completed for the G-DYFS.

Invertebrates are only counted and weighed with the except for Crangon, which is measured by mm by image processing since 2000 (200 g sub sample, approx. 150 to 250 specimen). Formerly a classification by small (<54 mm), medium (54 to 67 mm) and large (> 67 mm) was applied, raised from 300 ml sub samples. Invertebrate data are computerised only for a limited list of twelve main occurring taxa.

Standard station data are recorded on paper files on board and digitised later, including water temperature, salinity, Secchi depth and standard meteorological information. Haul positions and time are recorded at the beginning and end of each haul. Hydrographic and meteorological data are taken for an area, as fishing goes with the current, and for each haul.

For comparison of index values sampling area 406 was chosen because it is covered by both the Dutch and the German survey in autumn. A comparison of the 0-group plaice index for 2001 shows a low level of correlation (Figure 4.1.3). The difference in overall level is probably due to the tickler chain employed in the Dutch gear, but the lack of coincidence could not be explained.

4.2 Sampling protocol

As an aid to the co-ordination and further standardisation of the surveys it was decided to fill in the sampling protocol initially designed for the IBTS survey (ICES 2002). One table describes the sampling procedures in the offshore surveys (table 4.2.1) the other those of the inshore surveys (table 4.2.2).

The following explanations may help to interpret the information. Most questions have yes (y) or no (n) answers. Where p appears this will mean partial unless a different meaning is given. In the species lists, '-' means that species is not normally encountered in the area surveyed. Some questions have superscripts to indicate the extended explanations given below.

a) This is to imply that a gross weight is recorded before any sorting takes place. It could also be a count of baskets. It will be essential for calculating a raising factor if some of the catch is discarded unprocessed.
b) Indicates that one person makes decisions such as the sort strategy and species categorisation.
c) If any part of the catch is discarded unprocessed the answer to this question will be yes. It means that no fish have been selected from that part of the catch nor has it been inspected for any specific species/size class. It will have

been weighed or a volumetric estimate made in order to calculate a raising factor. If the answer to this question is yes the answer to 'all fish species measured' must be no as there may have been species in the discarded catch that do not appear in the retained catch. Conversely, if the answer is no, it implies that a representative sample of every fish species in the catch will have been selected out.

d) This will indicate that the species (identified elsewhere in the tables) are separated by sex before length measuring takes place. Even in the event of a large catch of these species, a sufficient number of individuals would be separated by sex to provide an adequate representative length distribution for each sex.

e) Length measurements for a species are generally accepted as being normally distributed, with a small number of fish at either end of the range. If either or both of these groups of smallest and largest individuals are selected out and treated as a separate category for length measurements, the answer to this question is yes.

f) If on inspection, a species appears to have two or more distinct modes in the length range, and you would separate these modes and treat them as different categories for length measuring, the answer to this question is yes.

Table 4.2.1. Processing protocol for the offshore beam trawl surveys

		Germany BTS	Netherlands (BTS Tridens)	Netherlands (BTS Isis)	UK(Eng) VIIa-f+g	UK(Eng) VIIe	UK(Eng) IVc-VIId	Belgium (Belgica)
Staffing	number available for catch processing	4-5	4	2	6(+2)	2	6(+2)	7
Hauls	Total for survey	60	42-74	59-100	96-115	58	90-105	60
	Average number hauls per day and ship	6	4/5	4/5	7	9	8	7
Catch	retention in hopper or bin	n	y	y	n	y	n	b
	codend c:cleaned s:shaken	s	c	c	c	c	c	c
	net cleaned	n	y	y	n	n	n	y
	cleanings added to catch	y	y	y	y	y	y	y
	total weight[a]	p	n	n	n	n	n	y
Sorting	'deckmaster' in charge[b]	?	y	y	y	y	y	y
	sorting facility - **b**ench or **c**onveyor	b	c	c	b	c	b	b
	complete sort upto no. bstkts	2	?	?	10	10	10	y
	small fish mixture sub sorting	benthos/ small fish	y	y	n	n	n	y
	part of the catch discarded unprocessed[c]	p	n	n	n	y	n	n
Categories	by sex (1)[d]	p	n	n	y	y	y	n
	by size large or small[e]	n	y	y	y	y	y	n
	by size multi modal[f]	n	y	y	y	n	y	n
Sub sample	re-mix before selection	n	y	y	y	y	y	y
	selection random	y	y	y	y	y	y	y
Weighing	all catch components	n	n	n	y	n	y	n
	all sub samples	y	n	n	y	n	y	n
Measuring	all fish species (2)	y	y	y	y	n	y	n
	minimum sample size	50	50	50	50	50	50	y
	commercial benthos	n	y	y	y	y	y	y
	cephalopods	n	a	a	n	n	n	n
	other benthos - **w**eigh, **c**ount, **o**bserve	c	w	c	w/c/o	o	w/c/o	c

biological sampling	prescribed species (3)	n	y	y	y	y	y	y
	other species (4)	n	y	y	y	y	y	y
	weight	n	y	y	y	n	y	n
	sex	3	y	y	y	y	y	n
	maturity	n	y	y	y	y	y	n
	age material	3	y	y	y	y	y	y
	ageing - at sea or ashore	a	a	a	a	a	a	a
Data capture	station detail - **e**lectronic or **p**aper/pencil	e	p	p	p	p	p	p
	catch detail - **e**lectronic or **p**aper/pencil	p	e	p	p	p	p	p
	length detail - **e**lectronic or **p**aper/pencil	p	e	p	p	p	p	e
	biological detail - **e**lectronic or **p**aper/pencil	p	e/p	p	p	p	p	p
	error checking	y	y	y	y	y	y	n
	back up	y	y	y	y	y	y	y
(1) Categories by sex	plaice	y	n	n	y	y	y	n
	dab	y	n	n	y	y	y	n
	elasmobranchs	n	y	y	y	y	y	p
(2) Measuring 0.5cm	herring	n	n	n	y	y	y	n
	sprat	n	n	n	y	y	y	n
	pilchard	n	n	n	y	y	y	n
	anchovie	n	n	n	y	y	y	n
(2) Measuring mm	commercial benthos	n	n	n	y	y	y	n
(3) Prescribed species	plaice	n	y	y	y	y	y	y
	sole	n	y	y	y	y	y	y
(4) Other species	dab	age	y	y	y	y	y	n
	brill	n	y	y	y	y	y	y
	turbot	n	y	y	y	y	y	y
	lemon sole	n	y	y	y	y	y	n
	scaldfish	n	y	y	n	n	n	n
	red gurnard	n	n	n	n	n	n	n
	long rough dab	n	y	y	n	n	n	n
	flounder	n	y	y	n	n	y	n
	solenette	n	y	y	n	n	n	n
	thickback sole	n	y	y	n	n	n	n
	Norwegian topknot	n	y	y	n	n	n	n
	anglers	n	n	n	y	y	y	n
	megrim	n	n	n	y	n	n	n
	elasmobranchs	n	n	n	y	y	y	n
	whiting	n	n	n	y	n	n	n
	cod	n	n	n	y	y	y	n

Table 4.2.2. Processing protocol for the inshore beam trawl surveys

		Germany DYFS	Netherlands DFS	UK YFS	Belgium DFS
Staffing	number available for catch processing	2	2	2	3
Hauls	Total for survey	250	290	314	33
	Average number per day and ship	12	10	10	3/4
Catch	retention in hopper or bin	y	y	n	b
	codend c:cleaned s:shaken	s	s	s	c
	net cleaned	n	n	n	y
	cleanings added to catch	y	y	y	y
	total weight[a]	p	estimated	n	n
Sorting	'deckmaster' in charge[b]	y	y	y	y
	sorting facility - **b**ench or **c**onveyor	b	c, b	fishtray	b
	complete sort upto no. bstkts	1	1	y	?
	small fish mixture sub sorting	y	y	y	n
	part of the catch discarded unprocessed[c]	p	n	y	y
Categories	by sex (1)[d]	n	n	n	n
	by size large or small[e]	p	n	y	n
	by size multi modal[f]	n	n	y	n
Sub sample	re-mix before selection	n	y	n	y
	selection random	y	y	y	y
Weighing	all catch components	p	n	n	n
	all sub samples	y	n	n	n
Measuring	all fish species (2)	y	y	y	n
	minimum sample size	n	50	50	y
	commercial benthos	p	y	y	only shrimp
	cephalopods	n	n	n	n
	other benthos - **w**eigh, **c**ount, **o**bserve	W,C	c	o	n

Biological sampling	prescribed species (3)	Y	y	y	n
	other species (4)	y	y	n	n
	weight	n	y	n	n
	sex	n	y	y	n
	maturity	n	y	y	n
	age material	n	y	y	n
	ageing - at sea or ashore	n	a	a	n
Data capture	station detail - **e**lectronic or **p**aper/pencil	e/p	p	p	e/p
	catch detail - **e**lectronic or **p**aper/pencil	p	p	p	p
	length detail - **e**lectronic or **p**aper/pencil	e (shrimp)	p	p	e
	biological detail - **e**lectronic or **p**aper/pencil		p	p	-
	error checking	y	y	y	y
	back up	y	y	y	y
(1) Categories by sex	plaice	n	n	n	n
	dab	n	n	n	n
	elasmobranchs	n	n	n	n
(2) Measuring 0.5cm	herring	p	n	y	n
	sprat	p	n	y	n
	pilchard	n	n	y	n
	anchovie	n	n	y	n
(2) Measuring mm	commercial benthos	p (shrimp)	y	y	n
(3) Prescribed species	plaice	n	y	y	n
	sole	n	y	y	n
(4) Other species	dab	n	y	y	n
	brill	n	y	y	n
	turbot	n	y	y	n
	lemon sole	n	y	y	n
	scaldfish	n	y	y	n
	red gurnard	n	n	y	n
	long rough dab	n	n	y	n
	flounder	n	y	y	n
	solenette	n	y	y	n
	thickback sole	n	y	y	n
	Norwegian topknot	n	n	y	n
	anglers	n	n	y	n
	megrim	n	n	y	n
	elasmobranchs	n	n	y	n
	whiting	n	n	y	n
	cod	n	n	y	n

Figure 4.1.1. The connection of a CTD to the 3 meter DFS beam trawl of the STERN

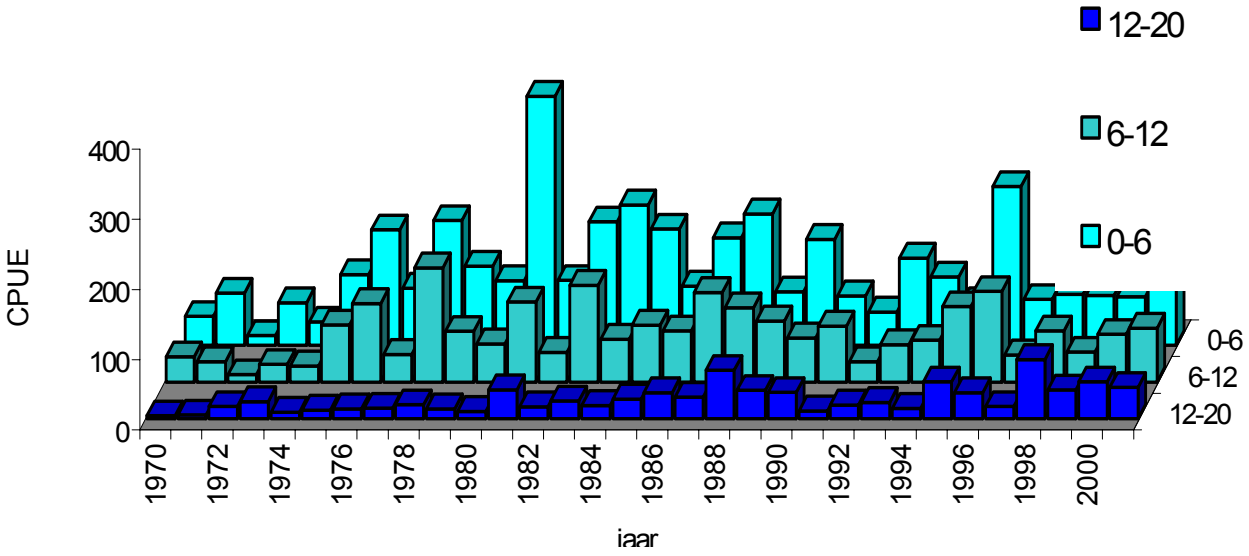


Figure 4.1.2a. The CPUE of 0-group plaice in the Wadden Sea per depth stratum and year.

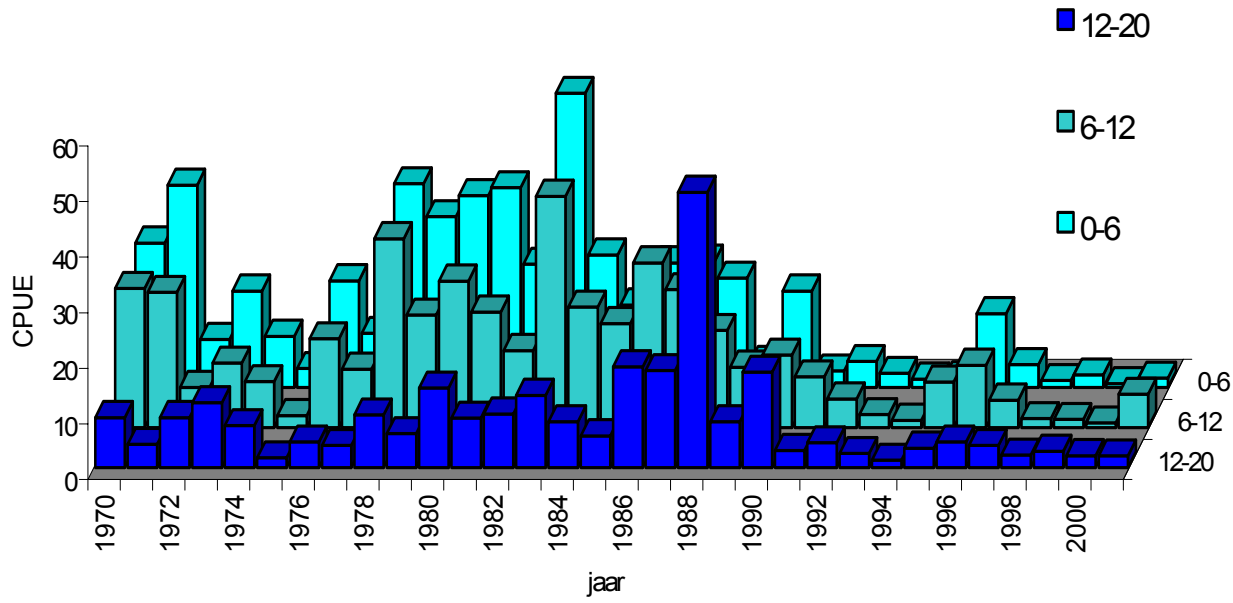


Figure 4.1.2b. The CPUE of 1-group plaice in the Wadden Sea per depth stratum and year.

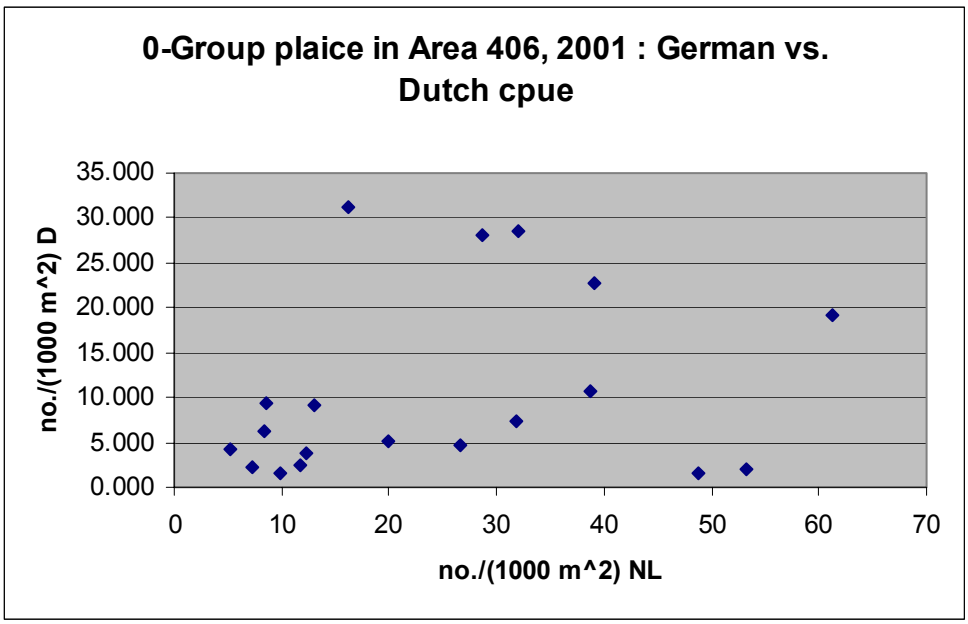


Figure 4.1.3. Comparison 0-group plaice catches (2001) of Netherlands and Germany in Area 406

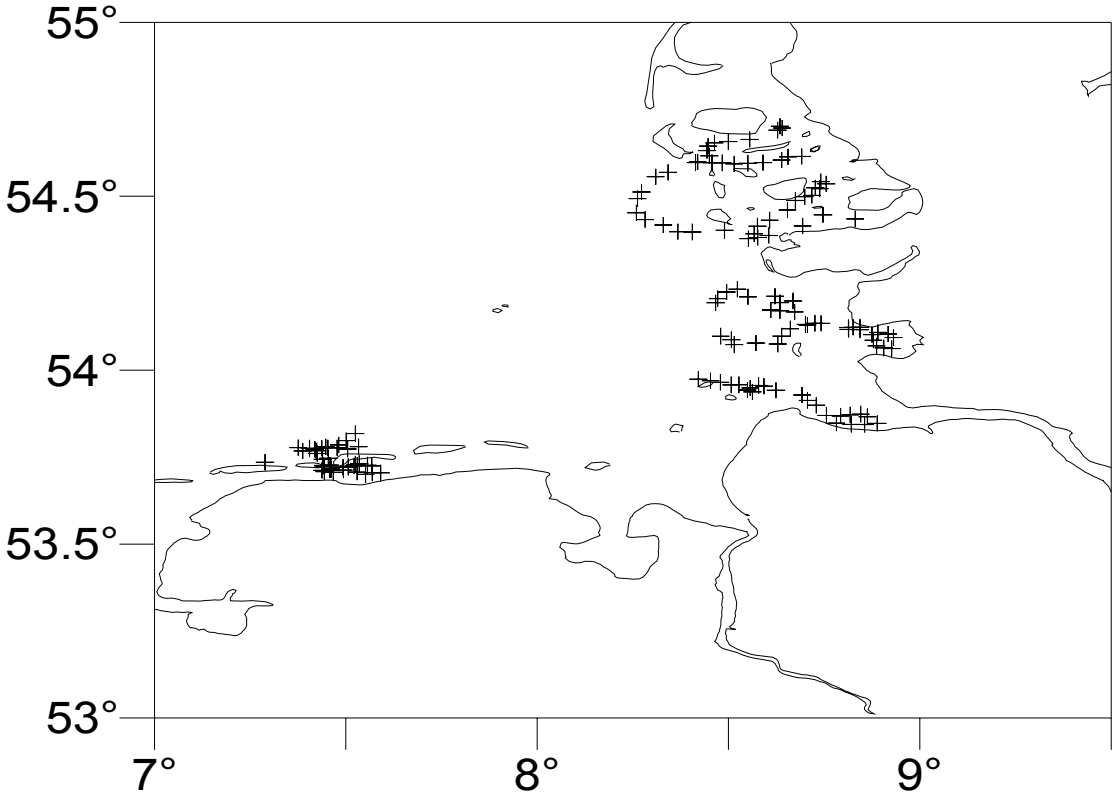


Figure 4.1.4a. The Demersal Fish Survey spring stations of 2001 (by Germany).

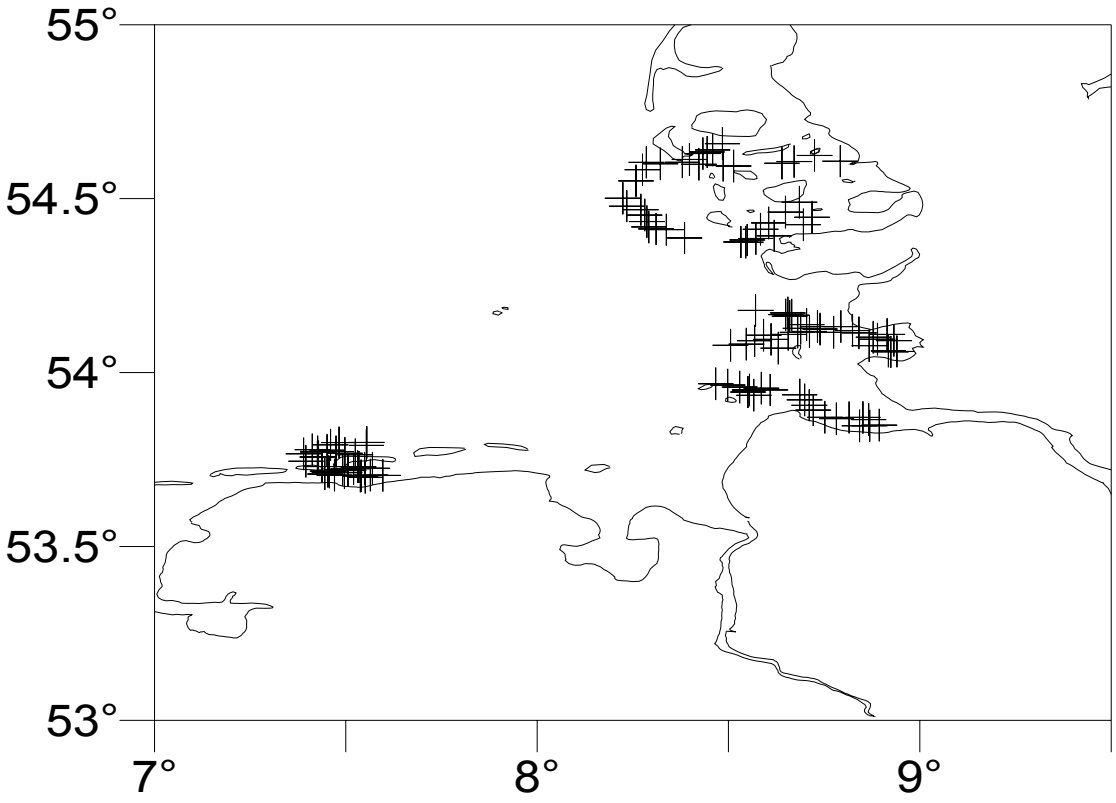


Figure 4.1.4b. The Demersal Fish Survey autumn stations of 2001 (by Germany).

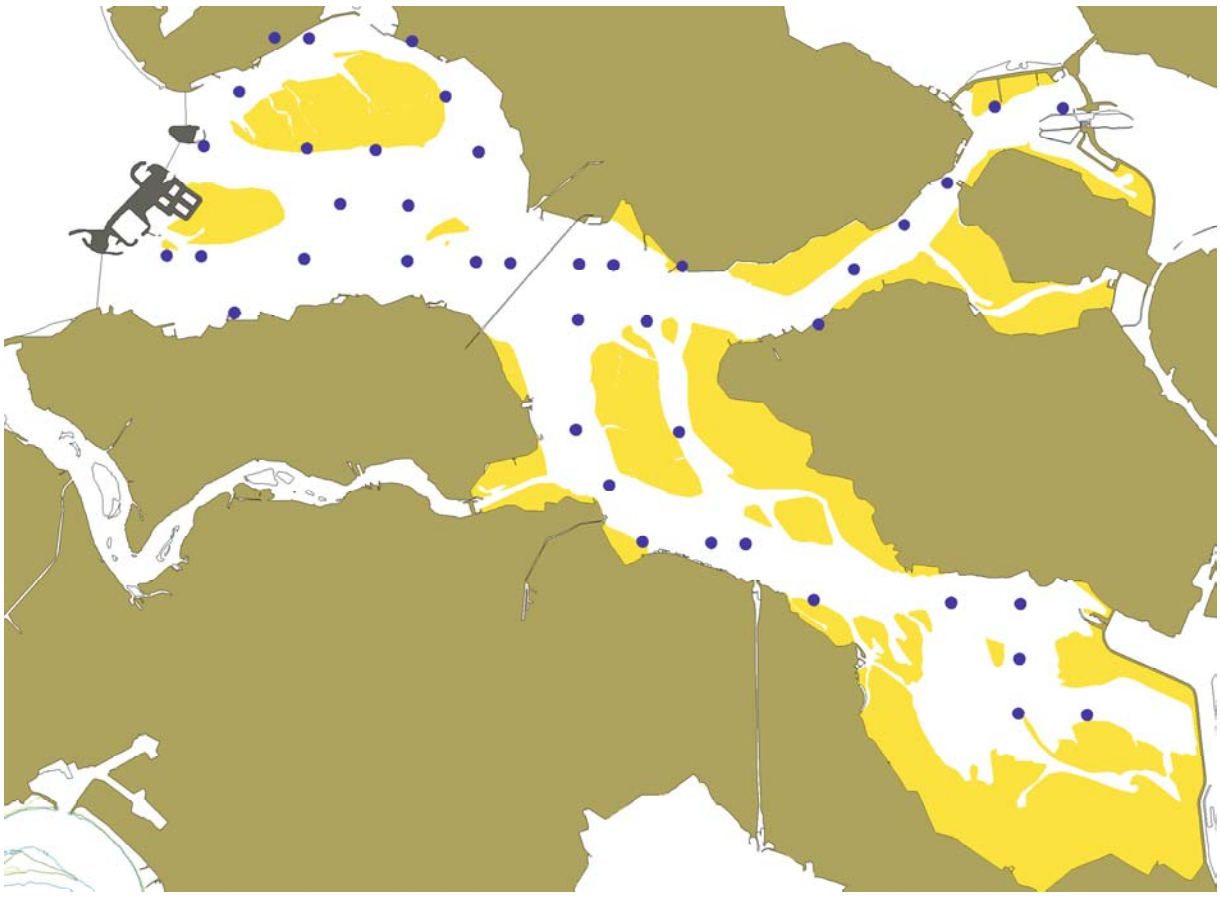


Figure 4.1.4c. The Demersal Fish Survey autumn stations of 2001 in the Oosterschelde area (by the Netherlands).

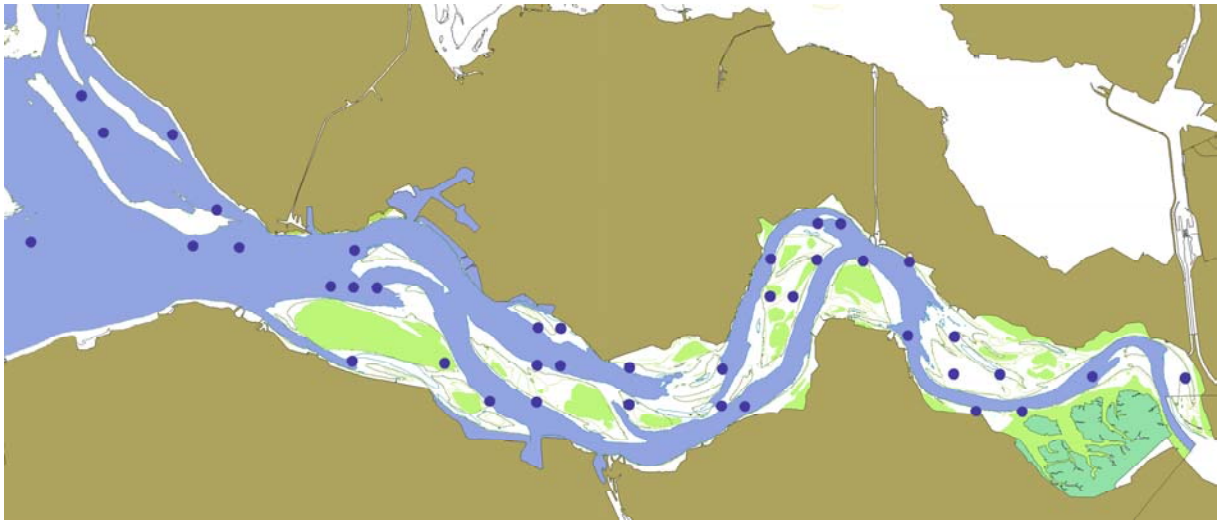


Figure 4.1.4d. The Demersal Fish Survey autumn stations of 2001 in the Westerschelde area (by the Netherlands).

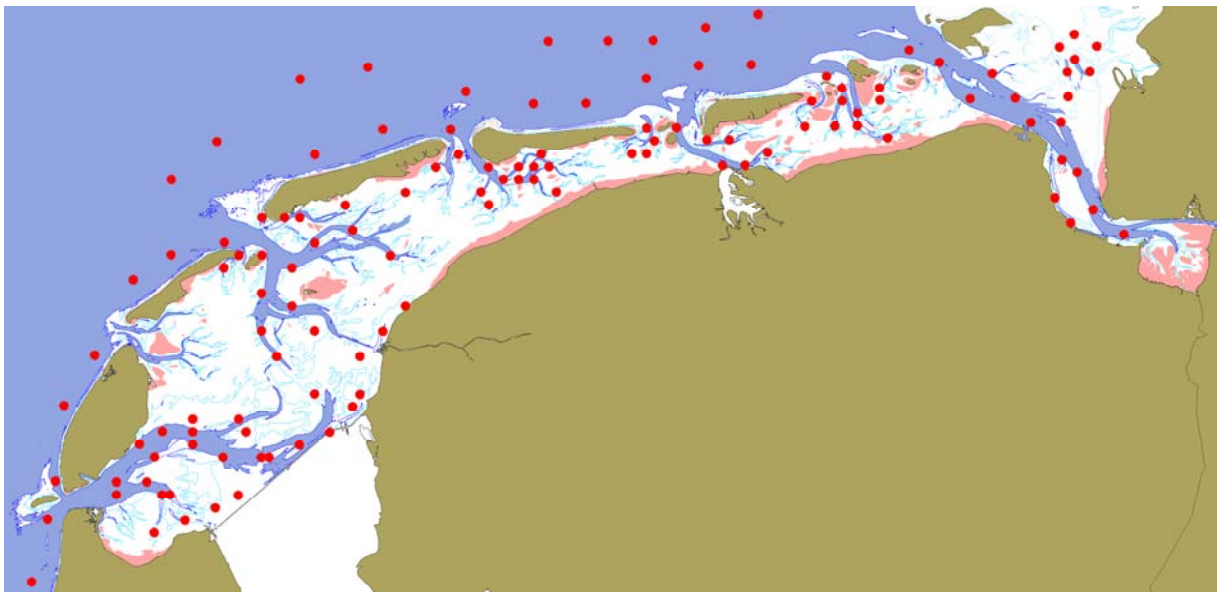


Figure 4.1.4e. The Demersal Fish Survey autumn stations of 2001 in the Dutch Wadden Sea area (by the Netherlands).

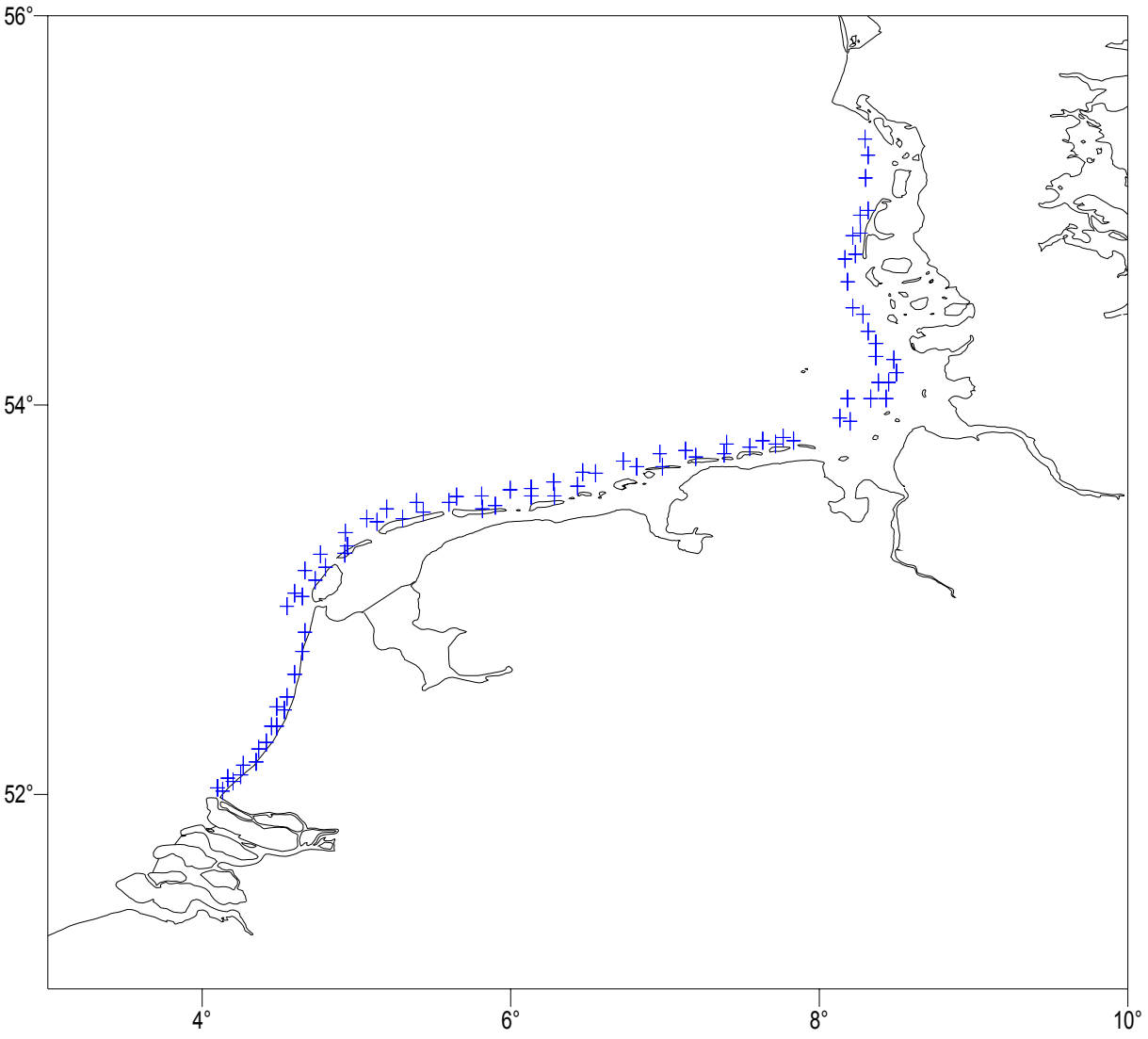


Figure 4.1.4f. The Demersal Fish Survey autumn stations of 2001 in the international coastal zone (by the Netherlands).

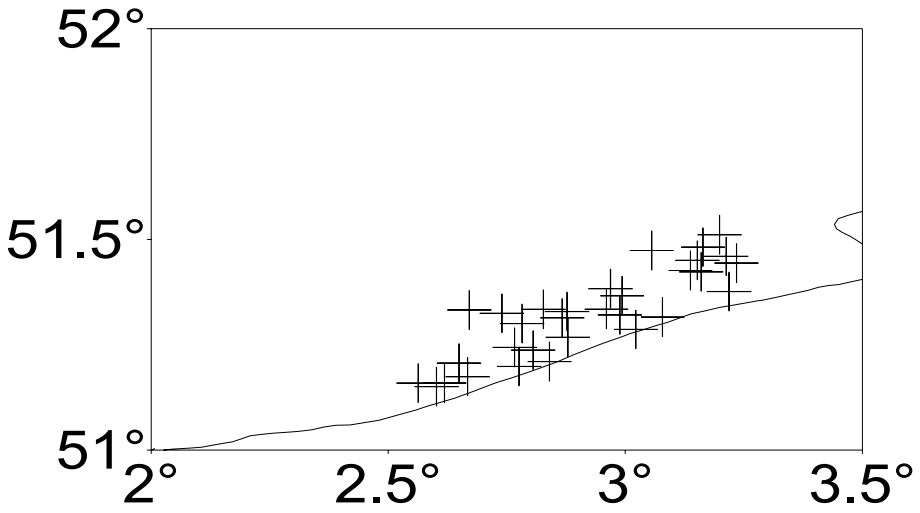


Figure 4.1.4g The Demersal Fish Survey autumn stations of 2001 in the Belgian coastal zone (by Belgium).

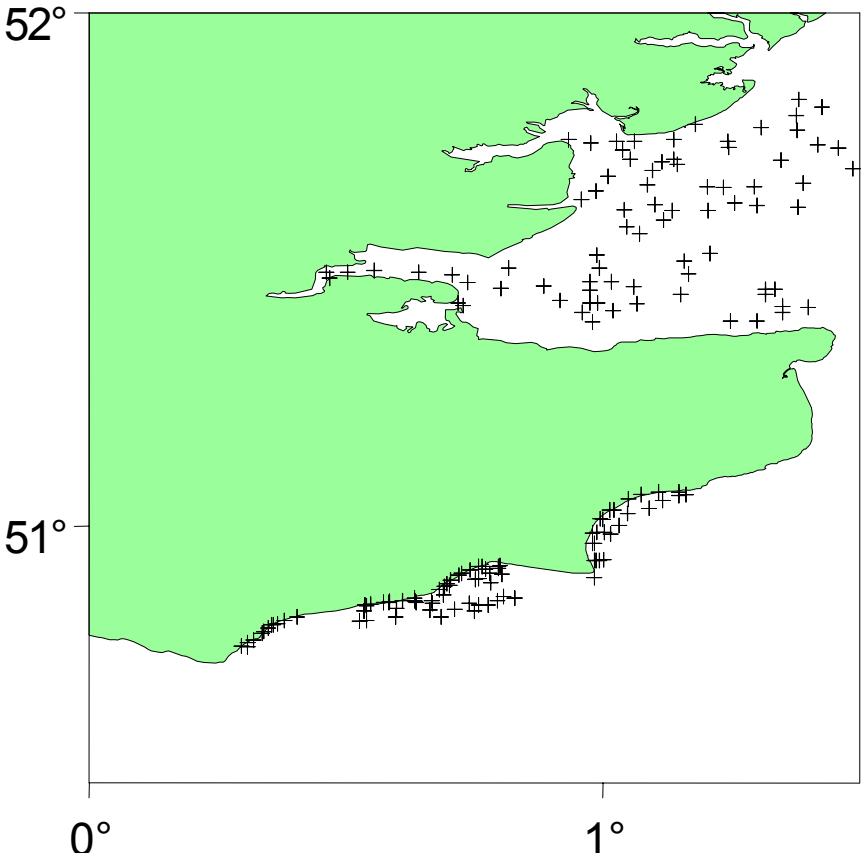


Figure 4.1.4h. The UK young fish survey stations of 2001 – Thames Estuary and South-East Coast

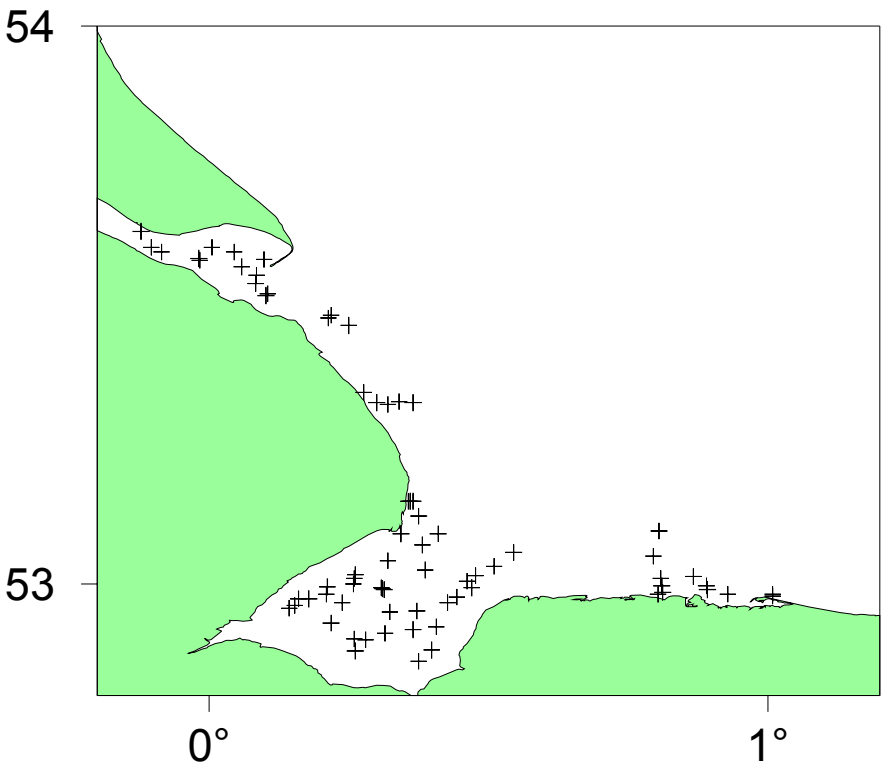


Figure 4.14i. The UK young fish survey stations of 2001 – Humber Estuary and the Wash

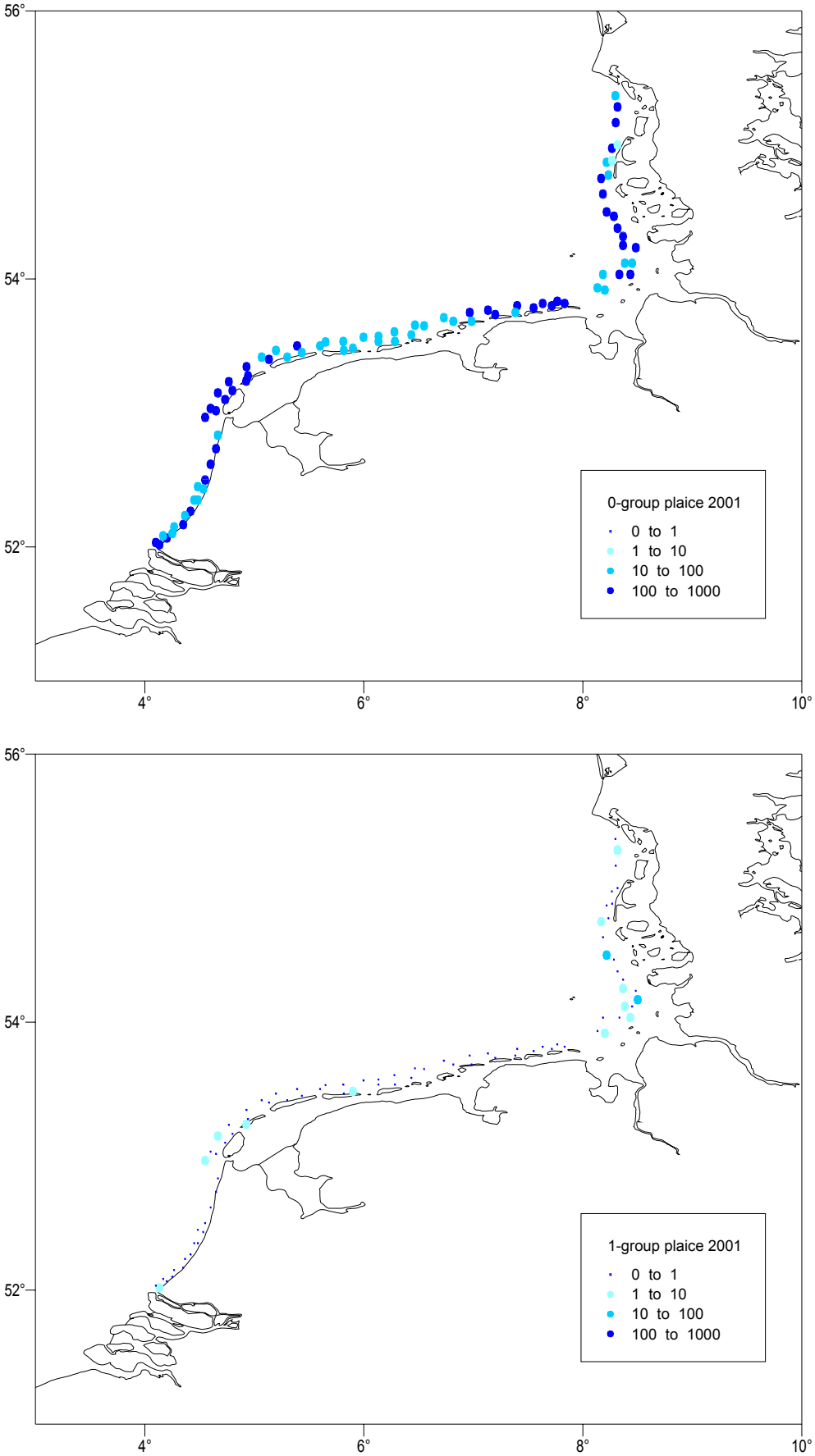
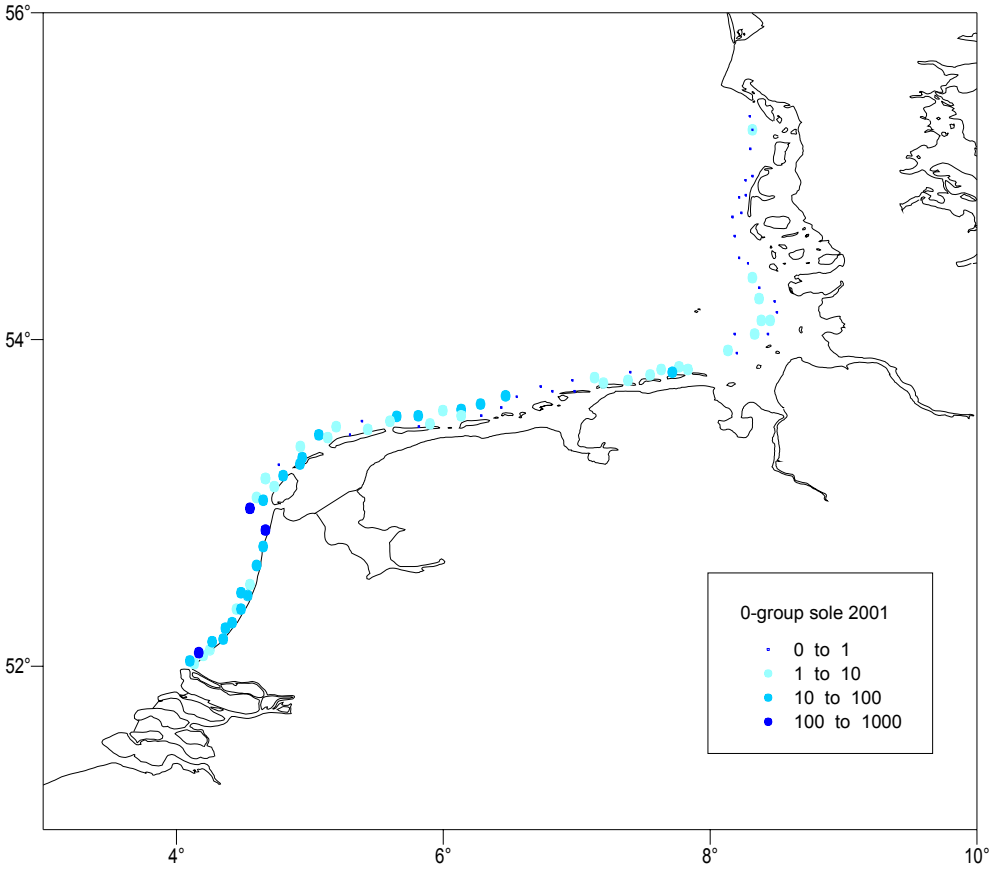


Figure 4.15a. Catches 0-group and 1 group plaice in Dutch coastal survey



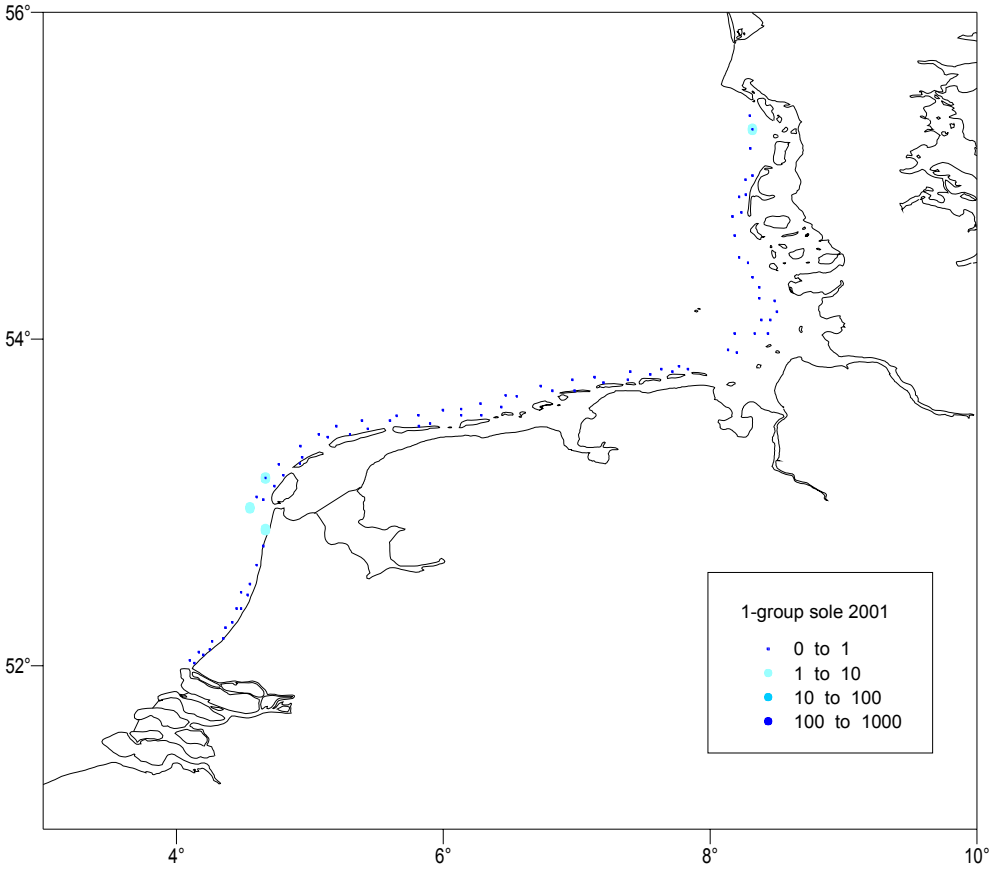


Figure 4.15b. Catches 0-group and 1 group sole in Dutch coastal survey

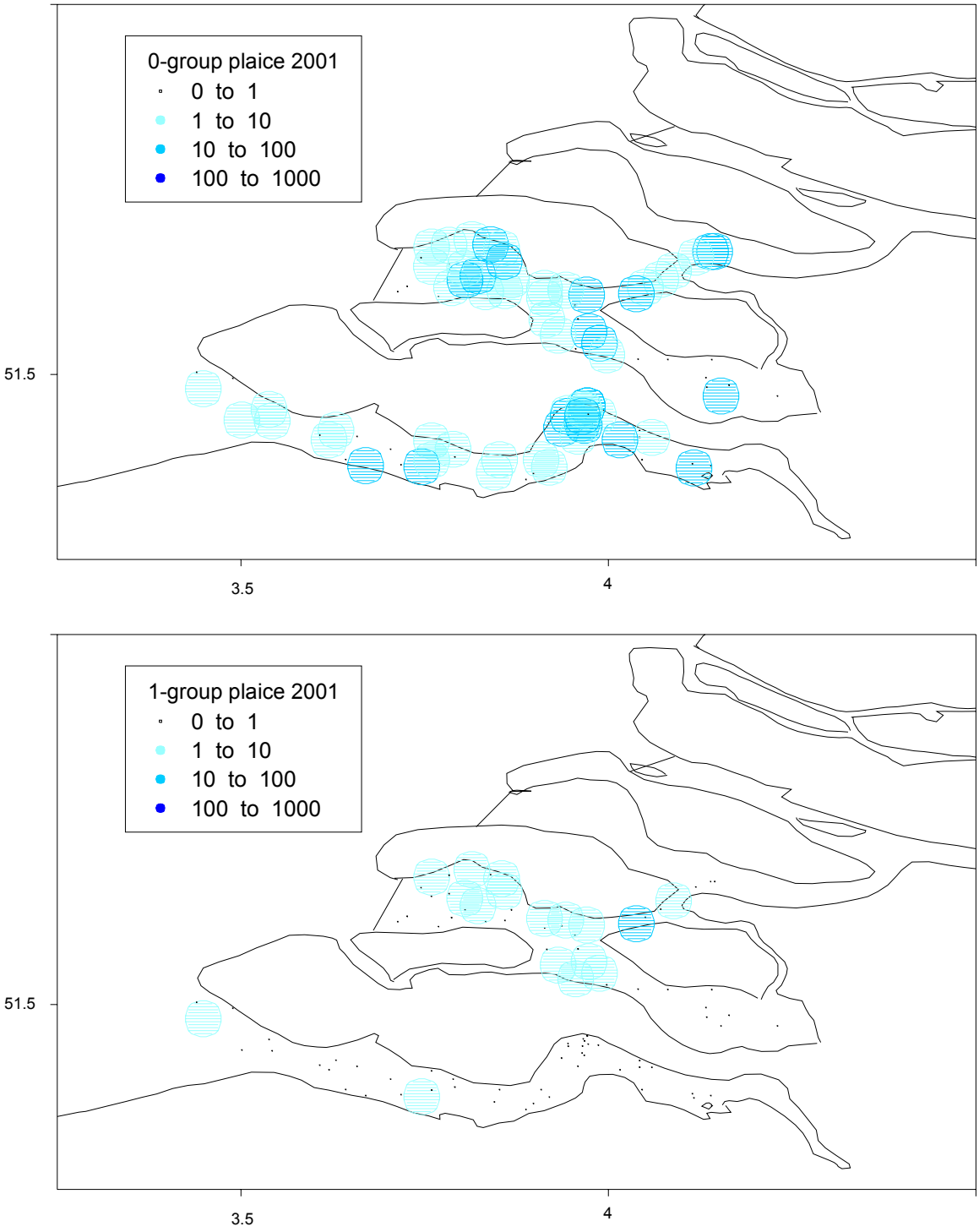


Figure 4.15c. Catches 0-group and 1 group plaice in the Zeeland estuaries covered by the Dutch survey

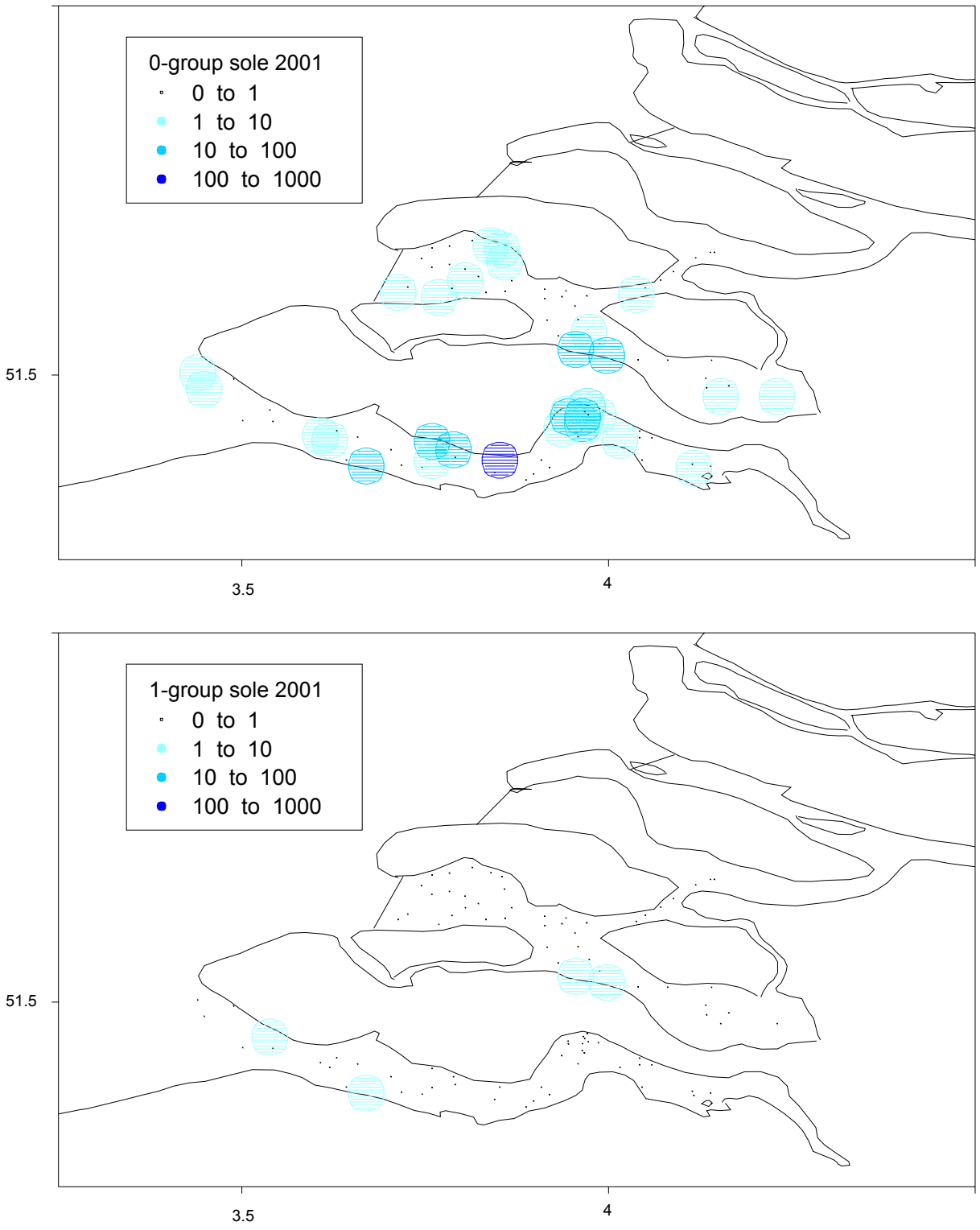
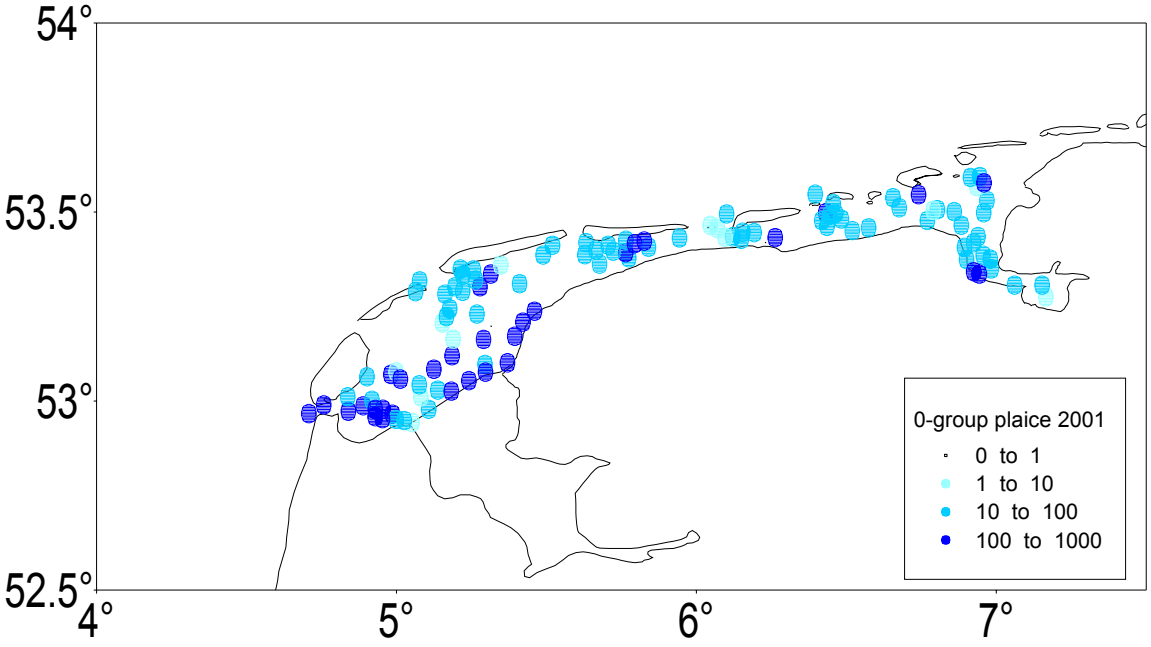


Figure 4.15d. Catches 0-group and 1 group sole in the Zeeland estuaries covered by the Dutch survey



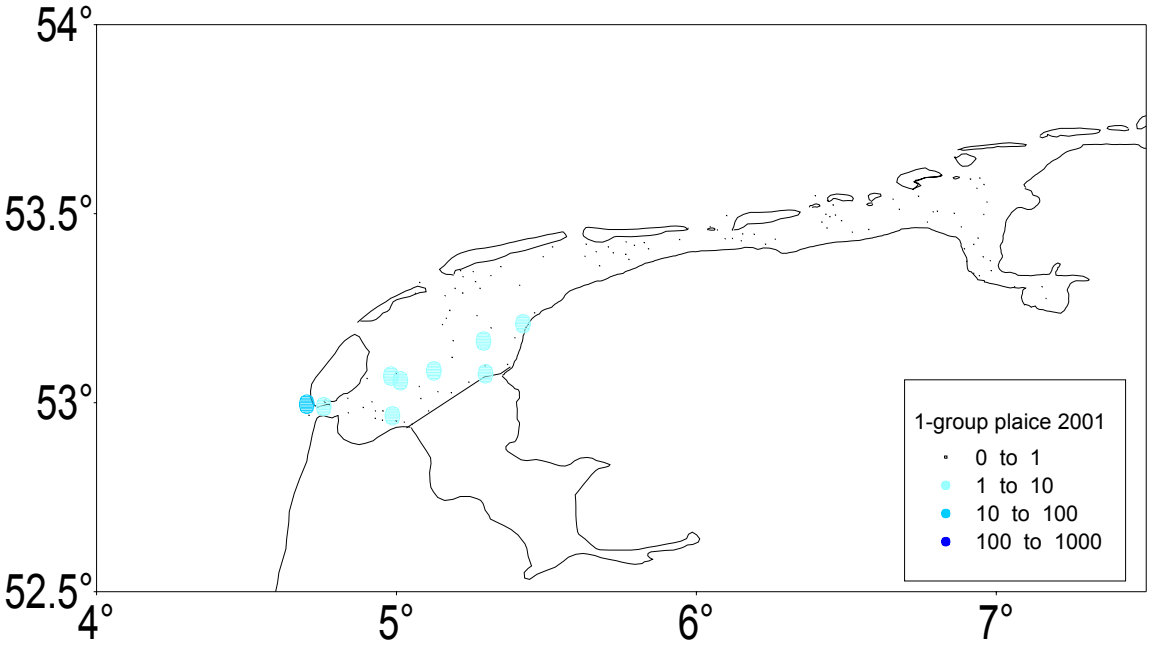
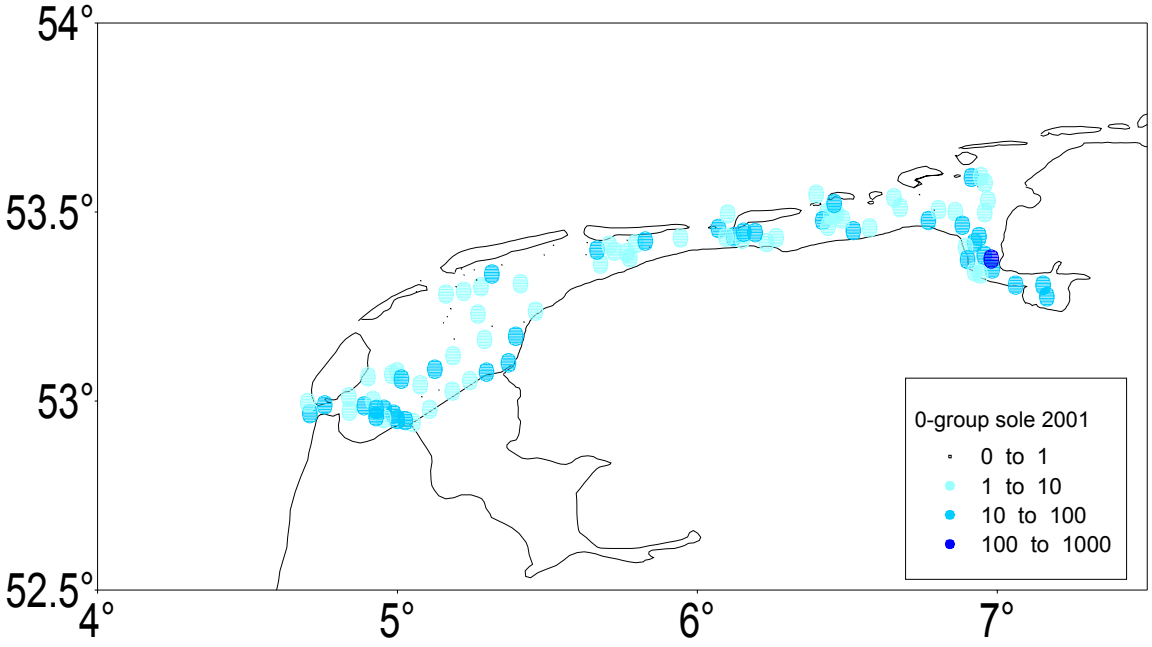


Figure 4.15e. Catches 0-group and 1 group plaice in the Wadden Zee estuaries covered by the Dutch survey



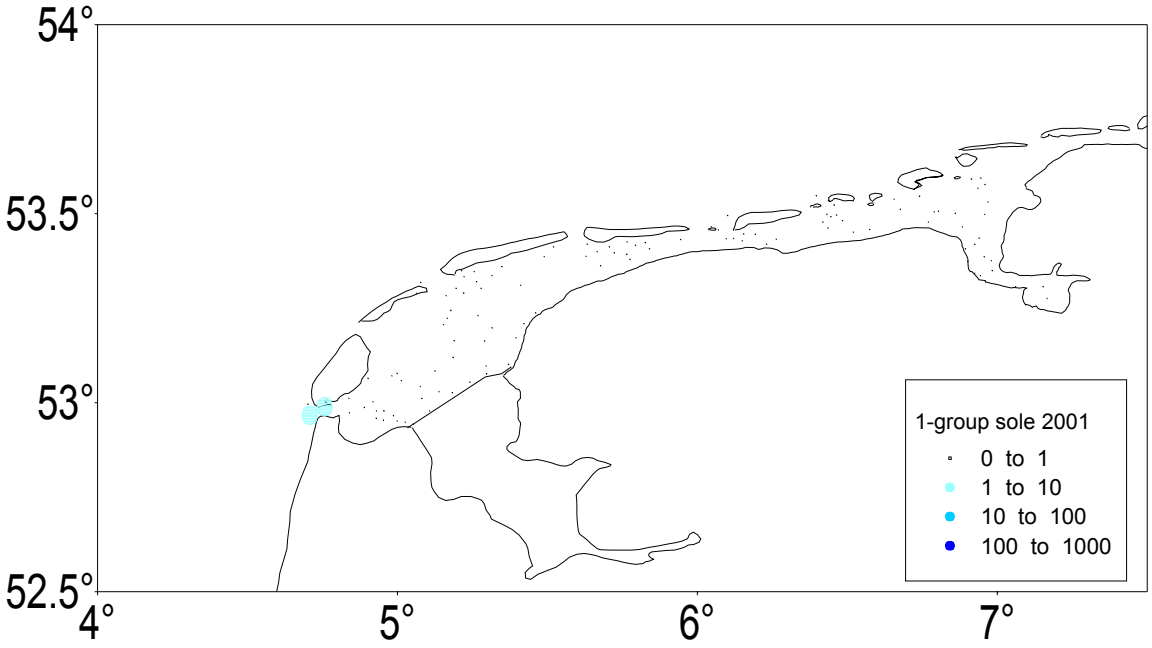
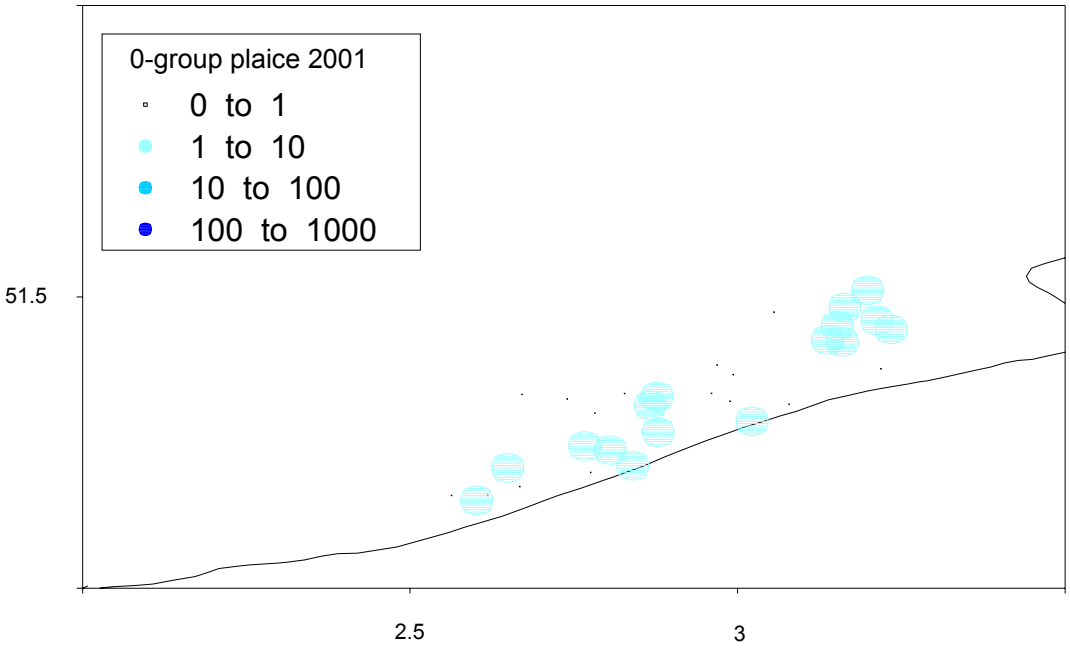


Figure 4.15f. Catches 0-group and 1 group sole in the Wadden Zee estuaries covered by the Dutch survey



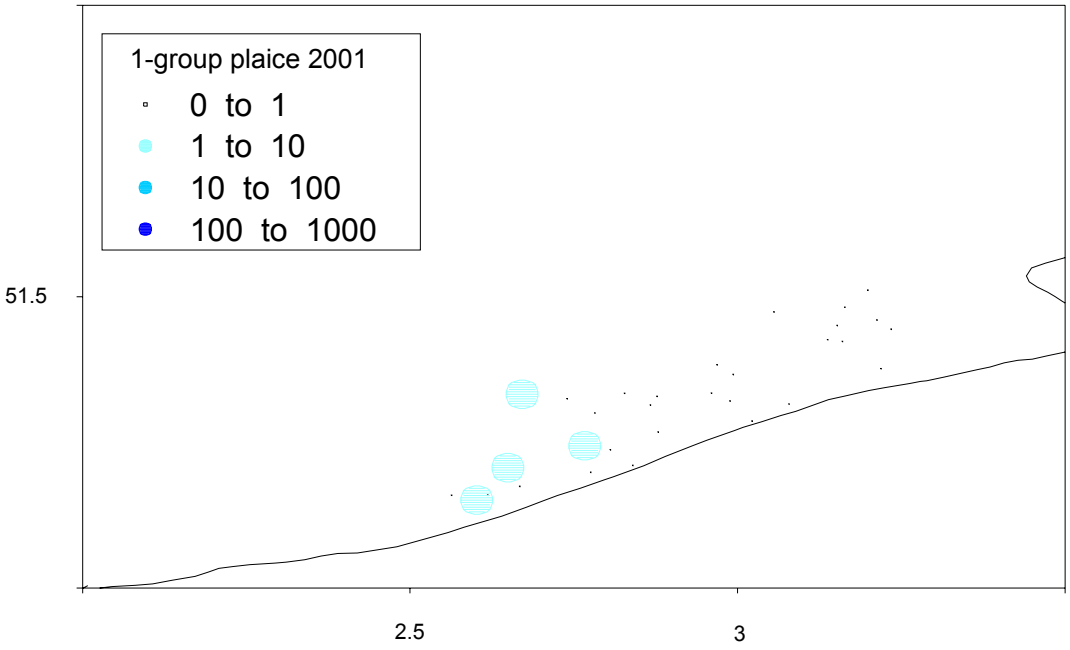
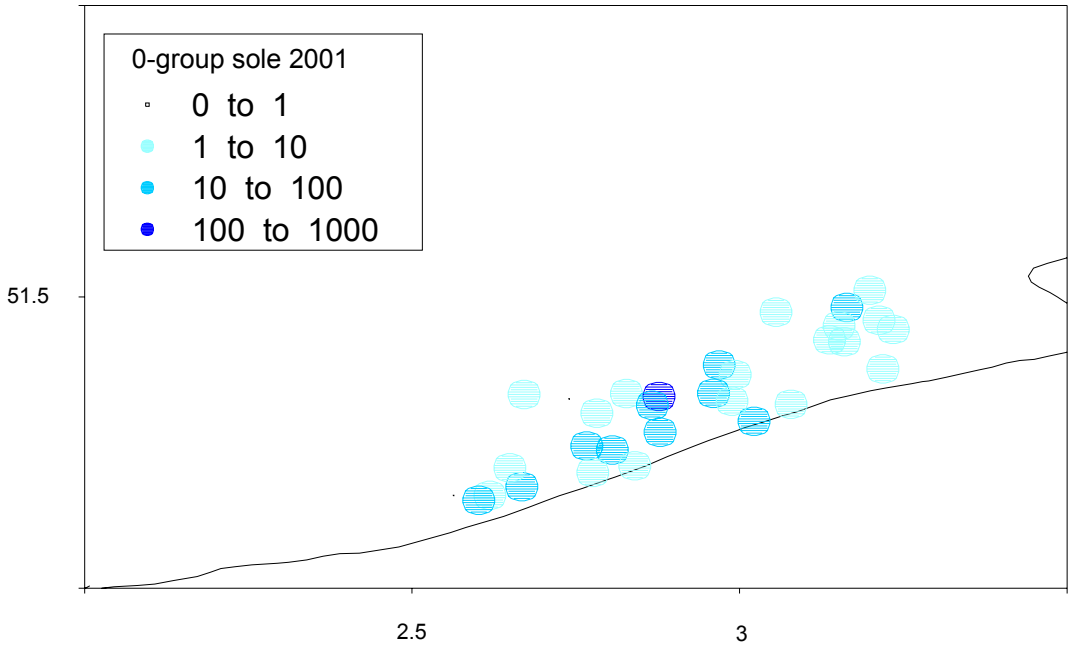


Figure 4.15g. Catches 0-group and 1 group plaice along the Belgian coast (Belgium)



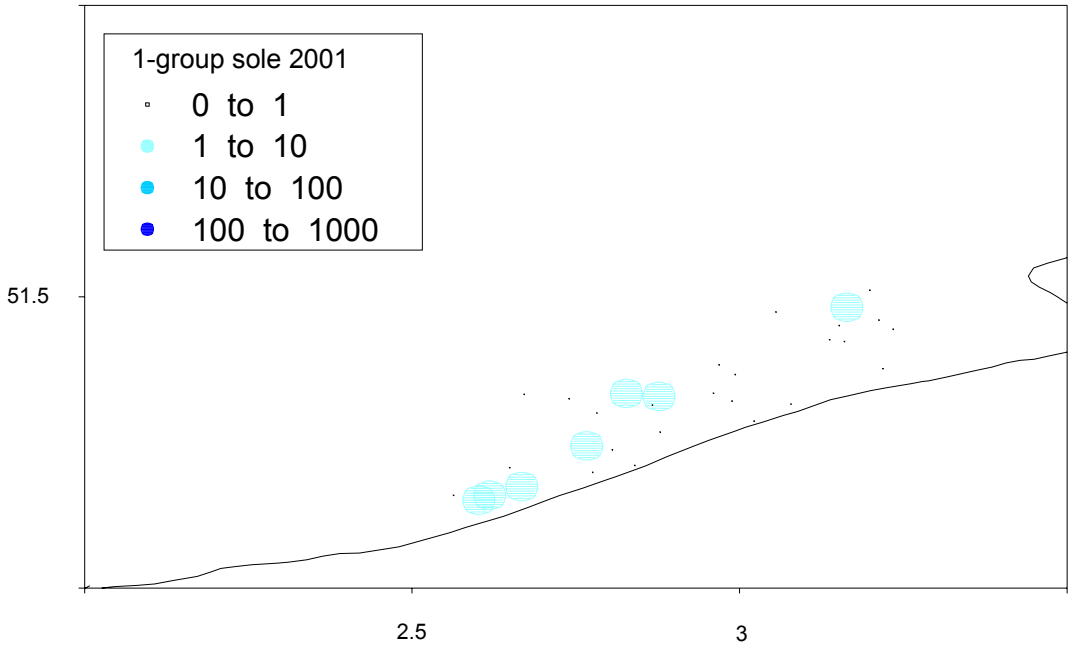


Figure 4.15h. Catches 0-group and 1 group sole along the Belgian coast (Belgium)

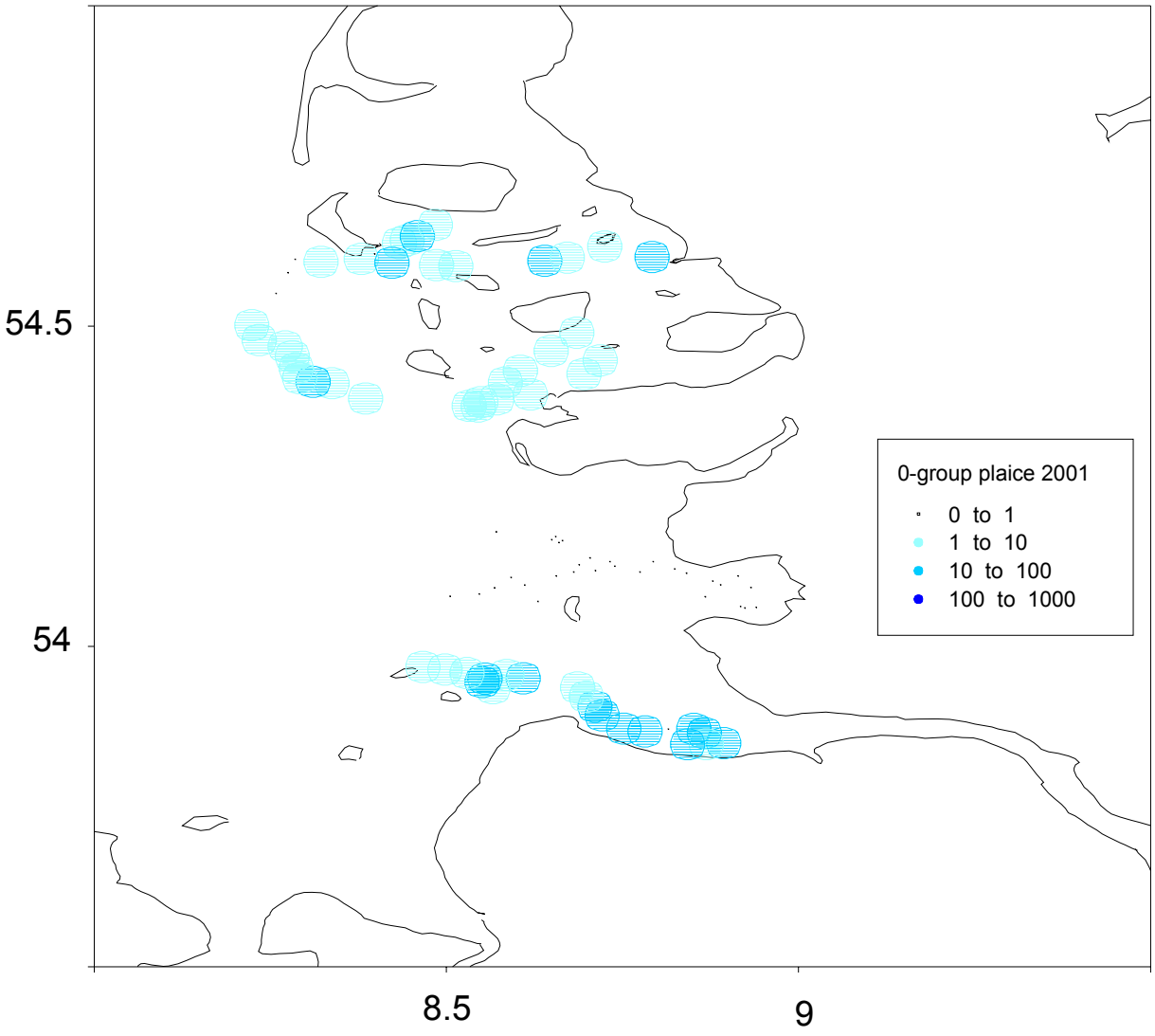


Figure 4.15i. Catches 0-group plaice in the German DFS

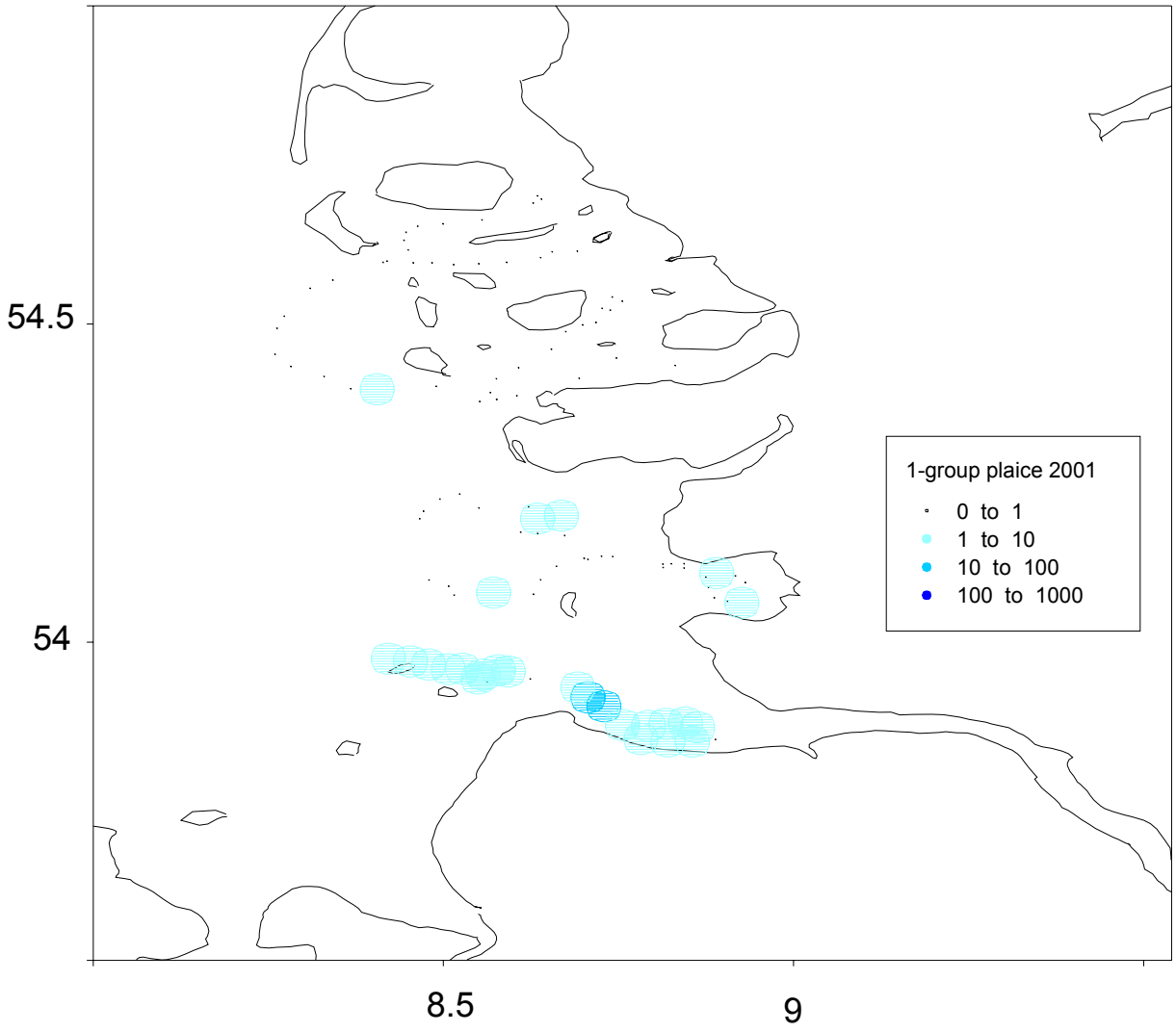


Figure 4.15j. Catches 1-group plaice in the German DFS

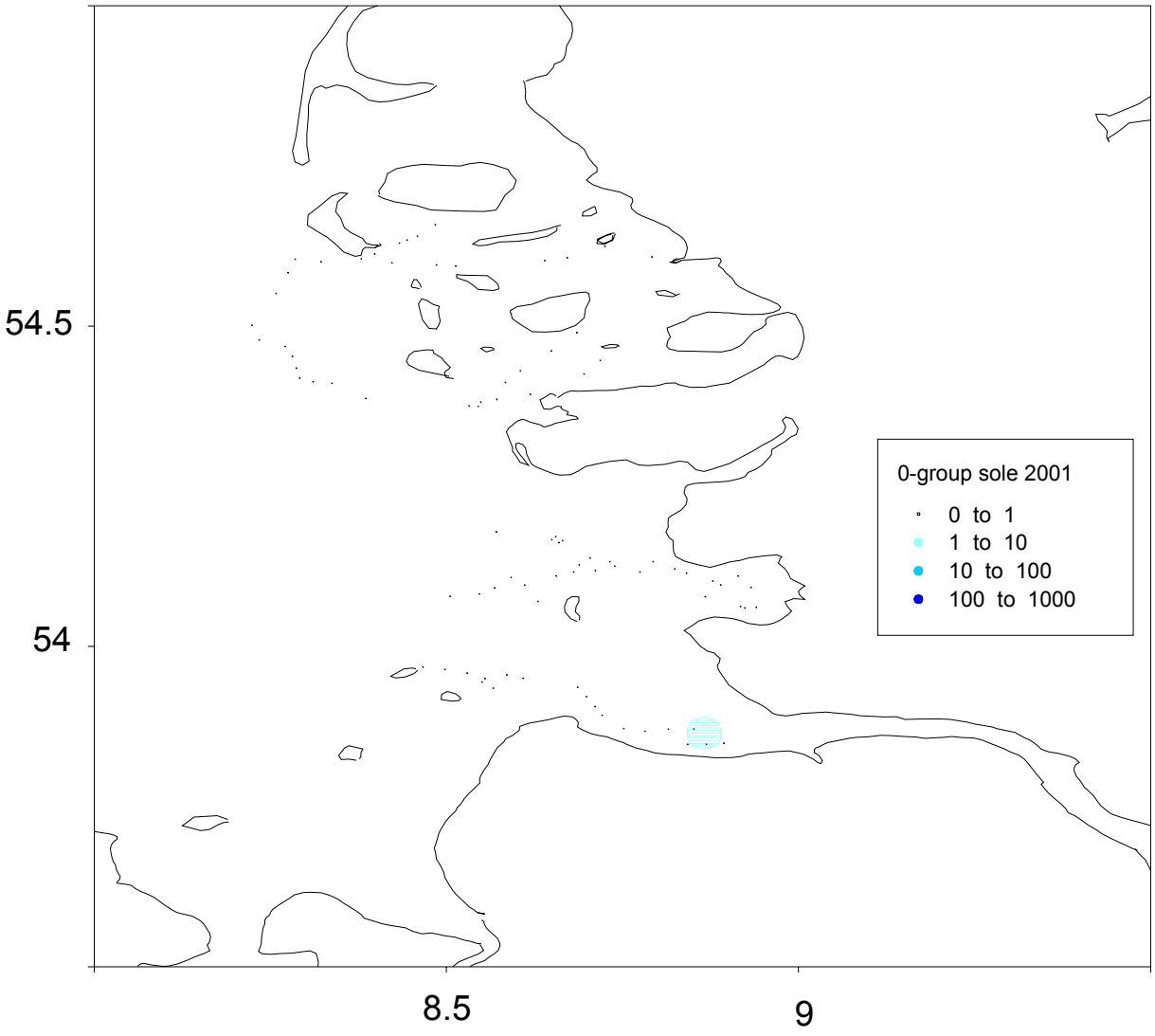


Figure 4.15k. Catches 0-group sole in the German DFS

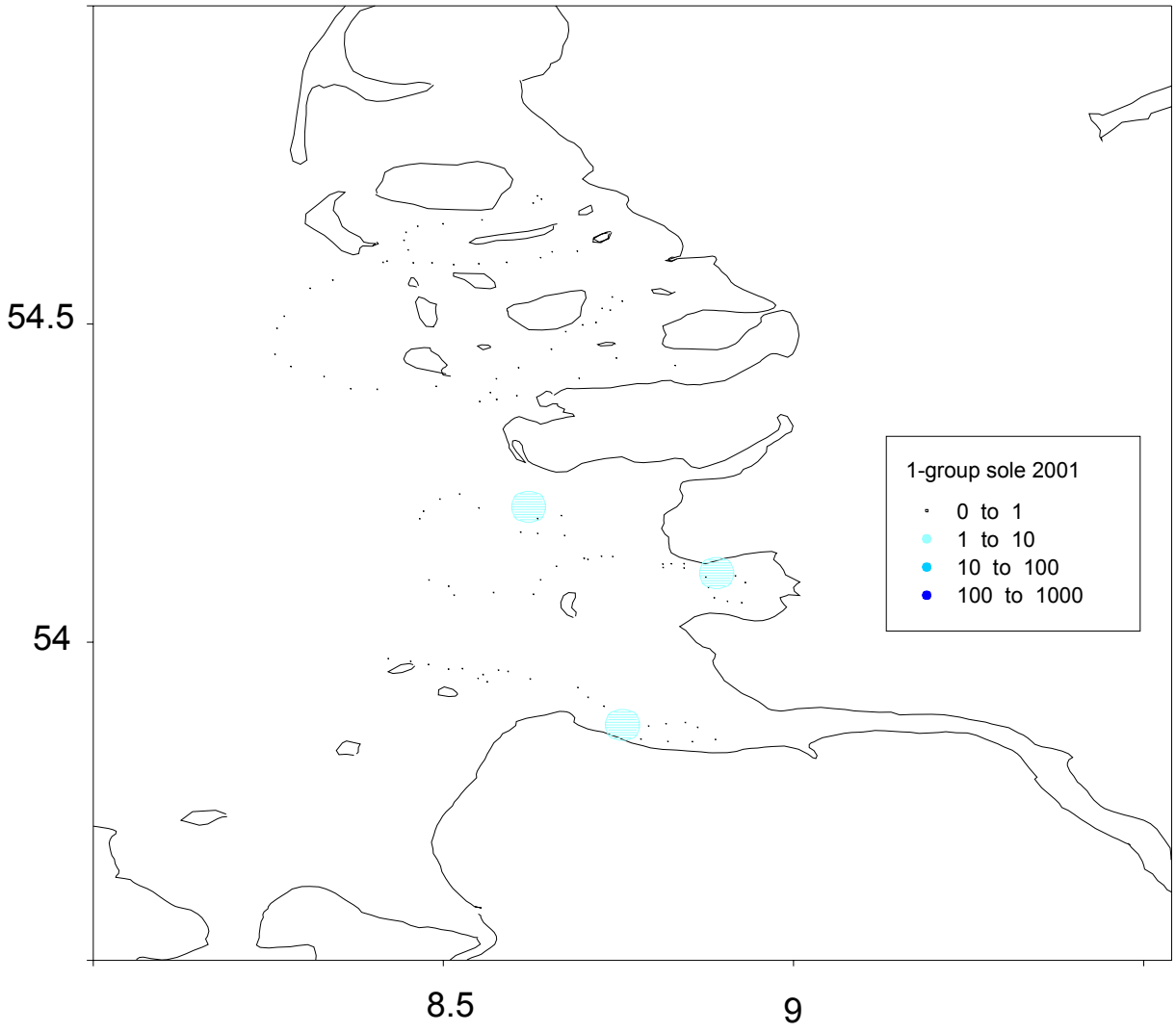


Figure 4.15l. Catches 1-group sole in the German DFS

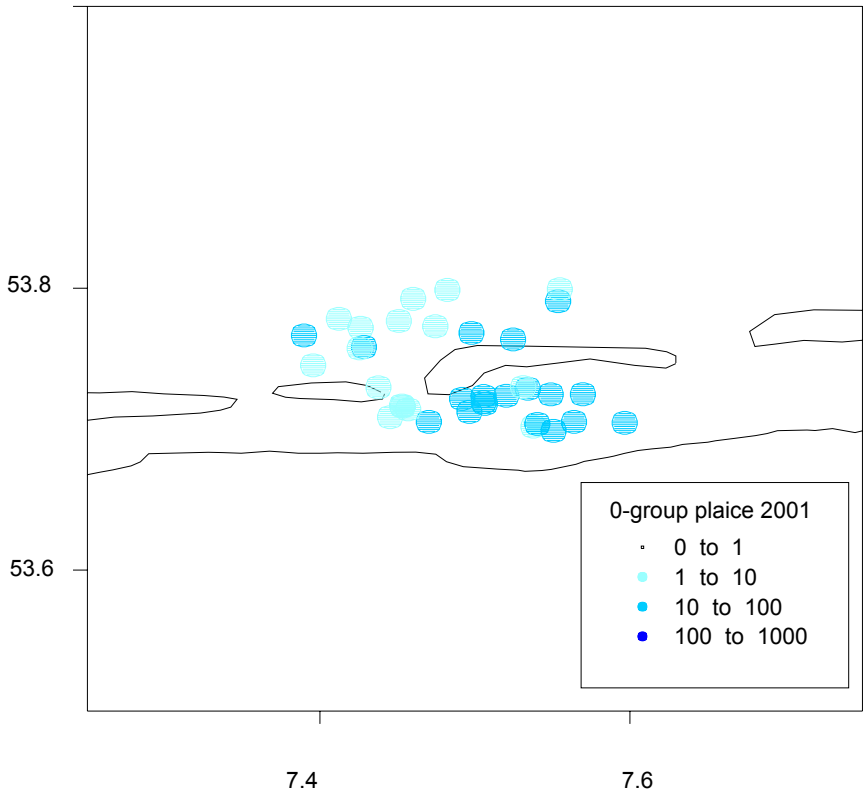


Figure 4.15m. Catches 0-group plaice in the German DFS

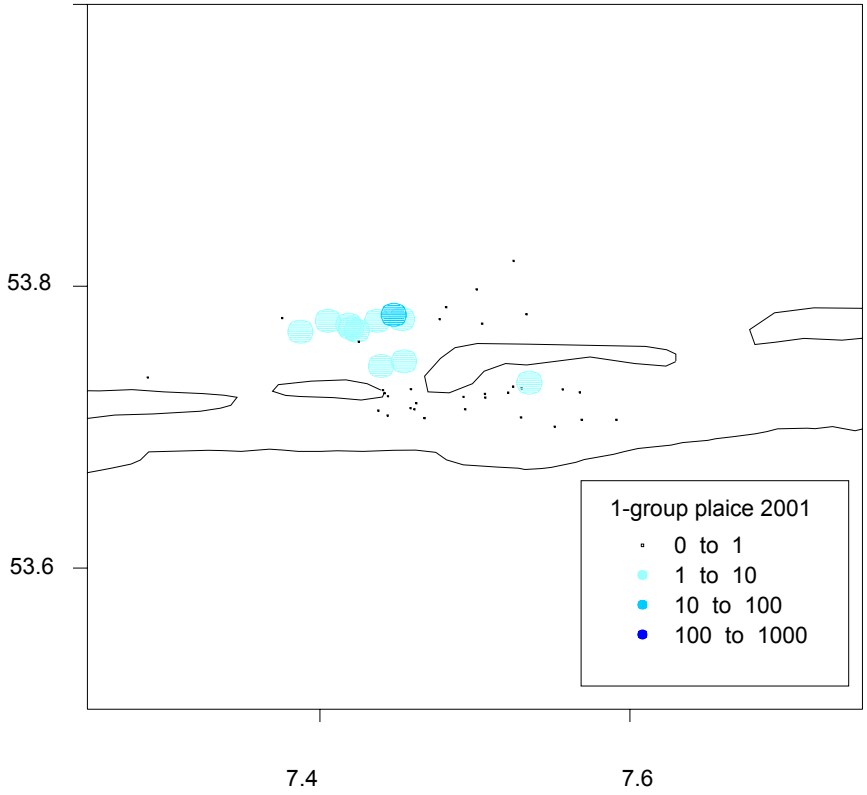


Figure 4.15n. Catches 1-group plaice in the German DFS

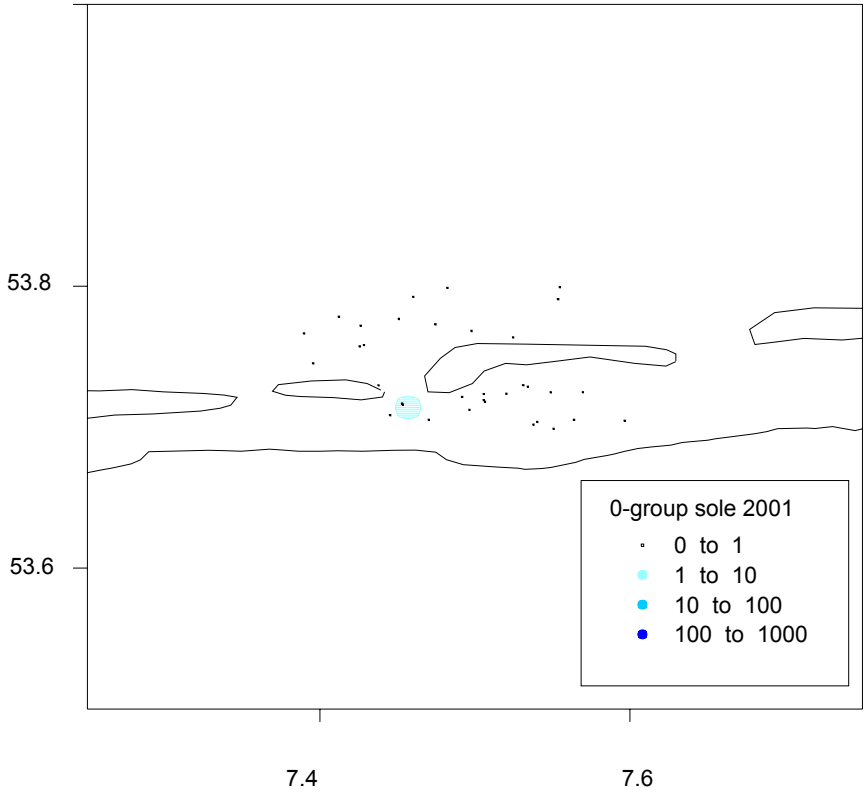


Figure 4.15o. Catches 0-group sole in the German DFS

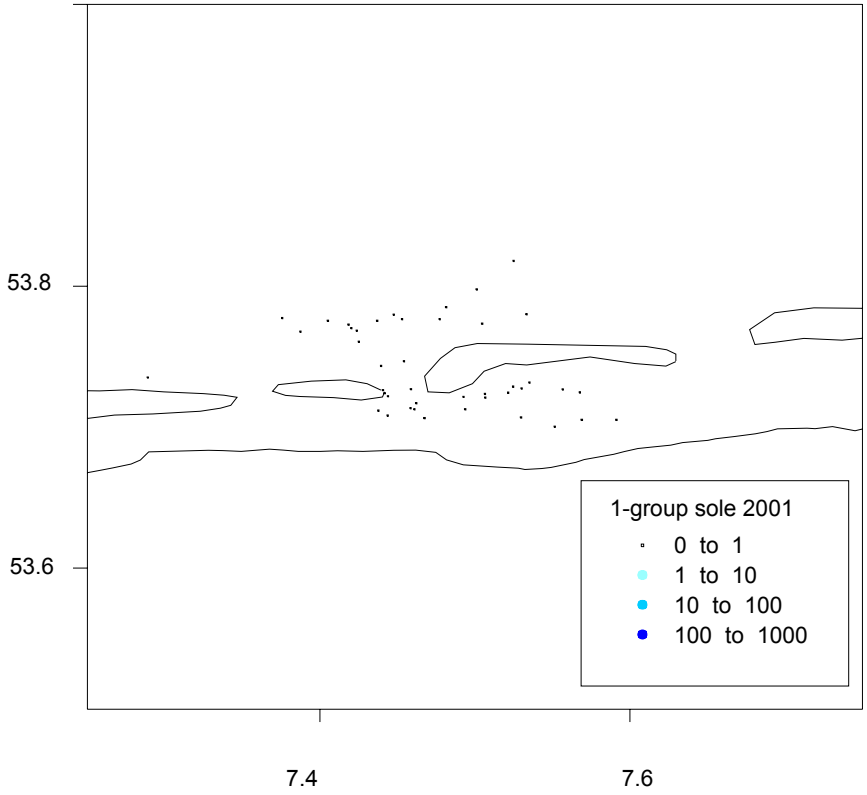


Figure 4.15p. Catches 1-group sole in the German DFS

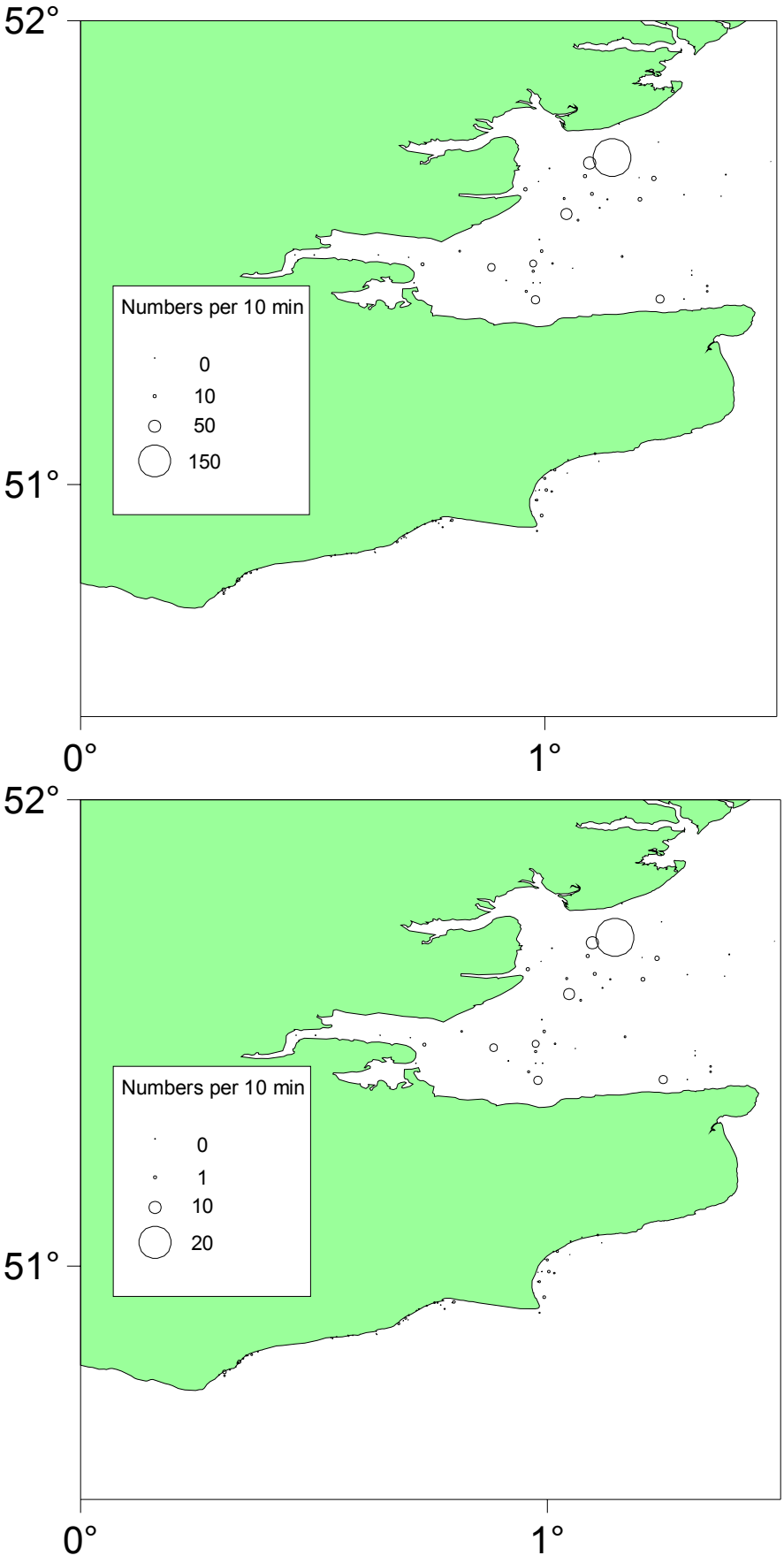


Figure 4.1.5q UK YFS 0-group and 1-group plaice Thames Estuary and South-East coast

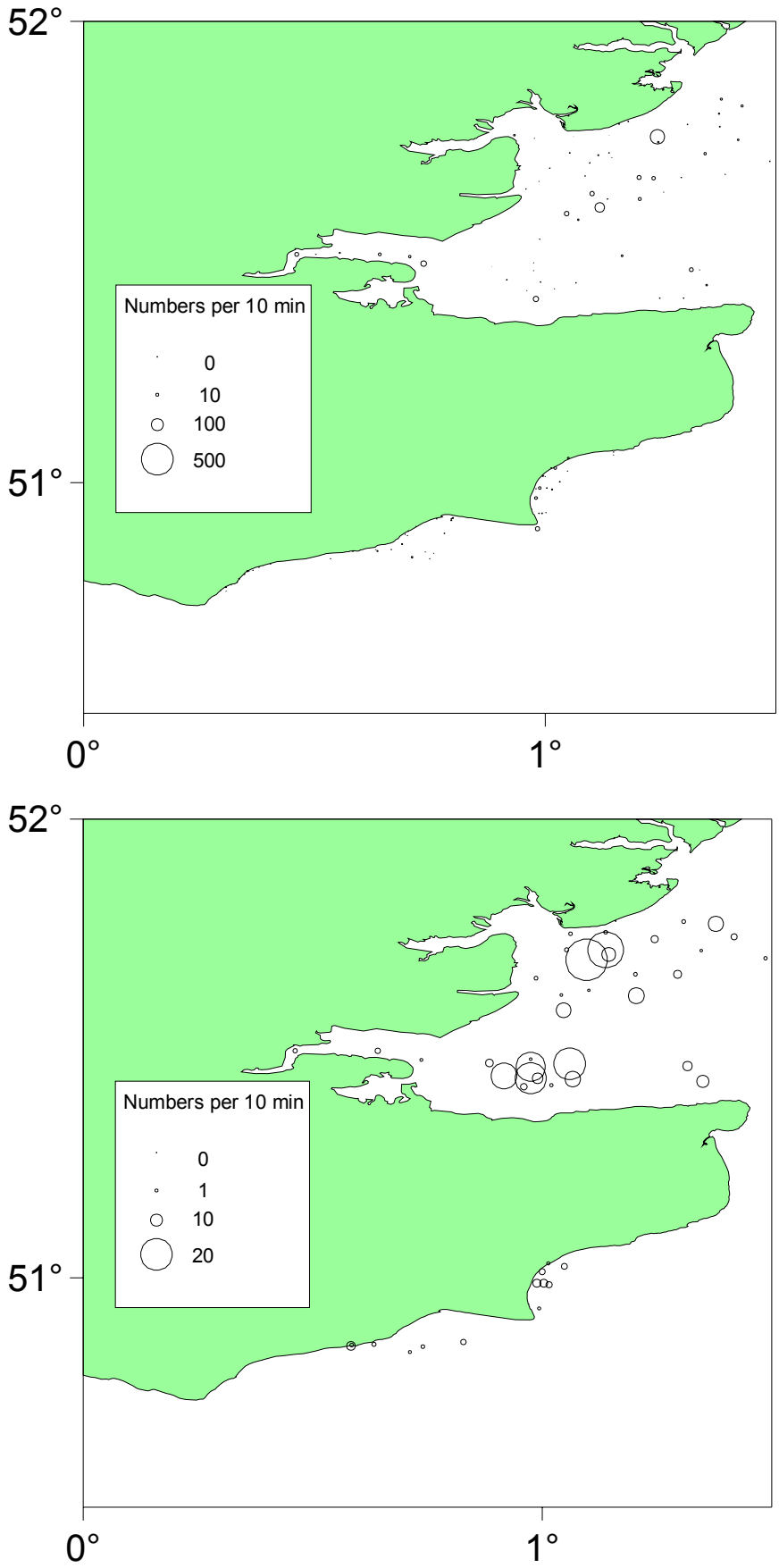
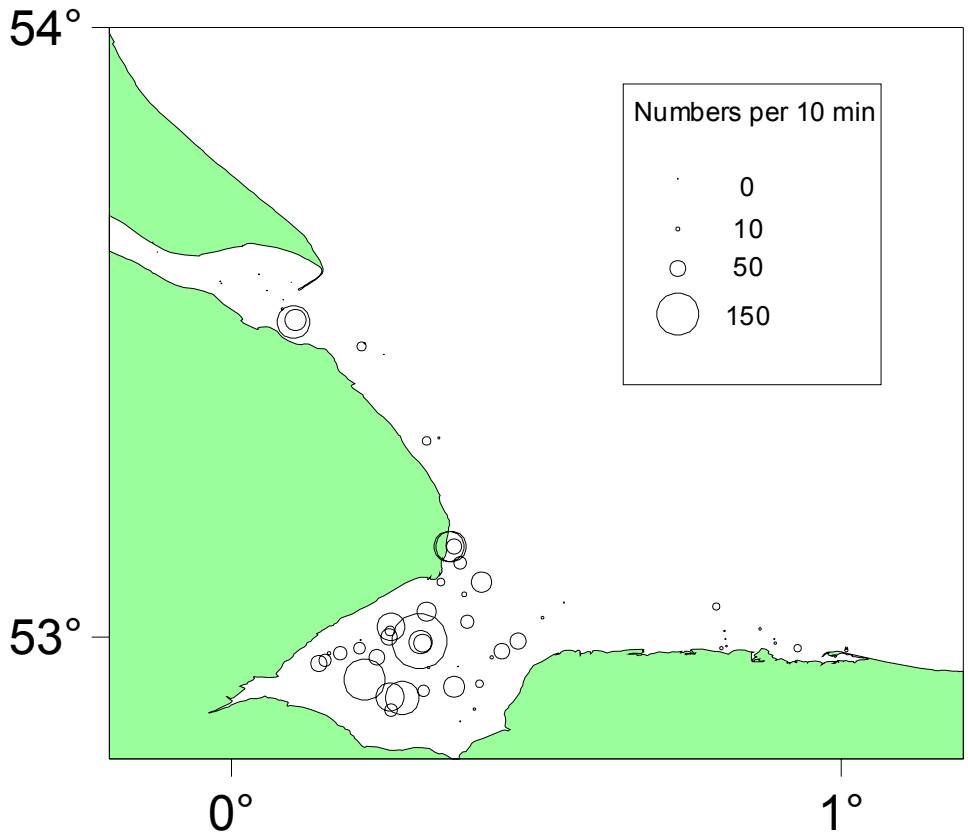


Figure 4.1.5r UK YFS 0-group and 1-group sole Thames Estuary and South-East coast (UK)



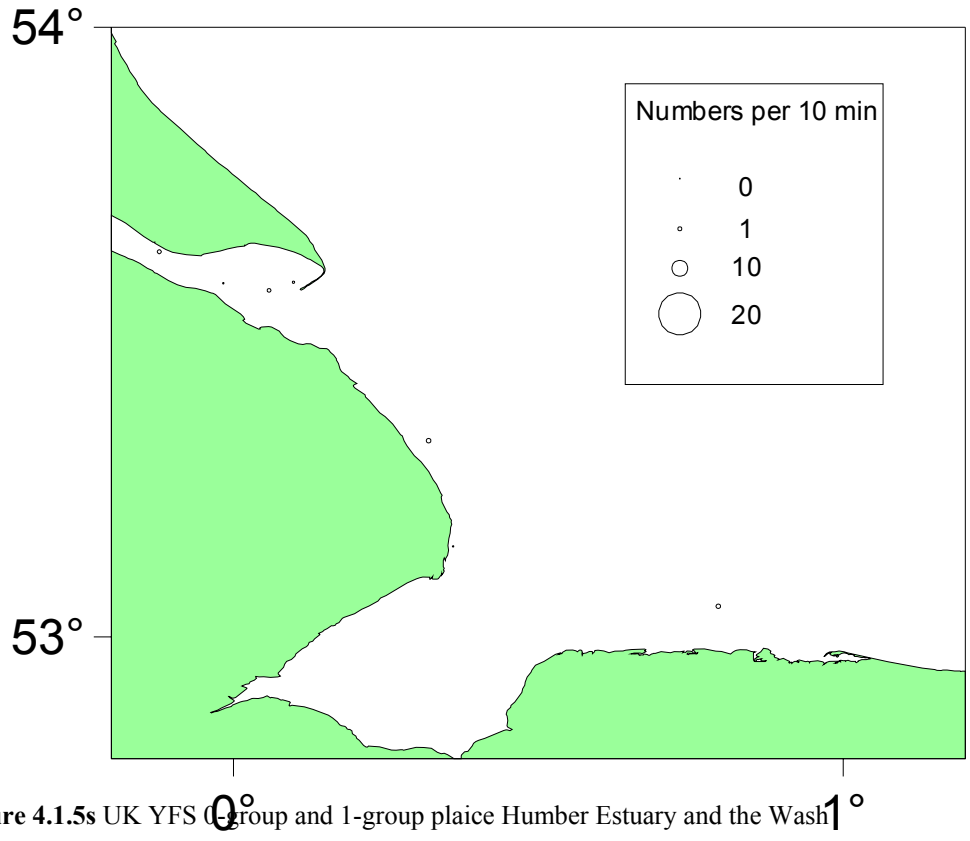


Figure 4.1.5s UK YFS 0-group and 1-group plaice Humber Estuary and the Wash

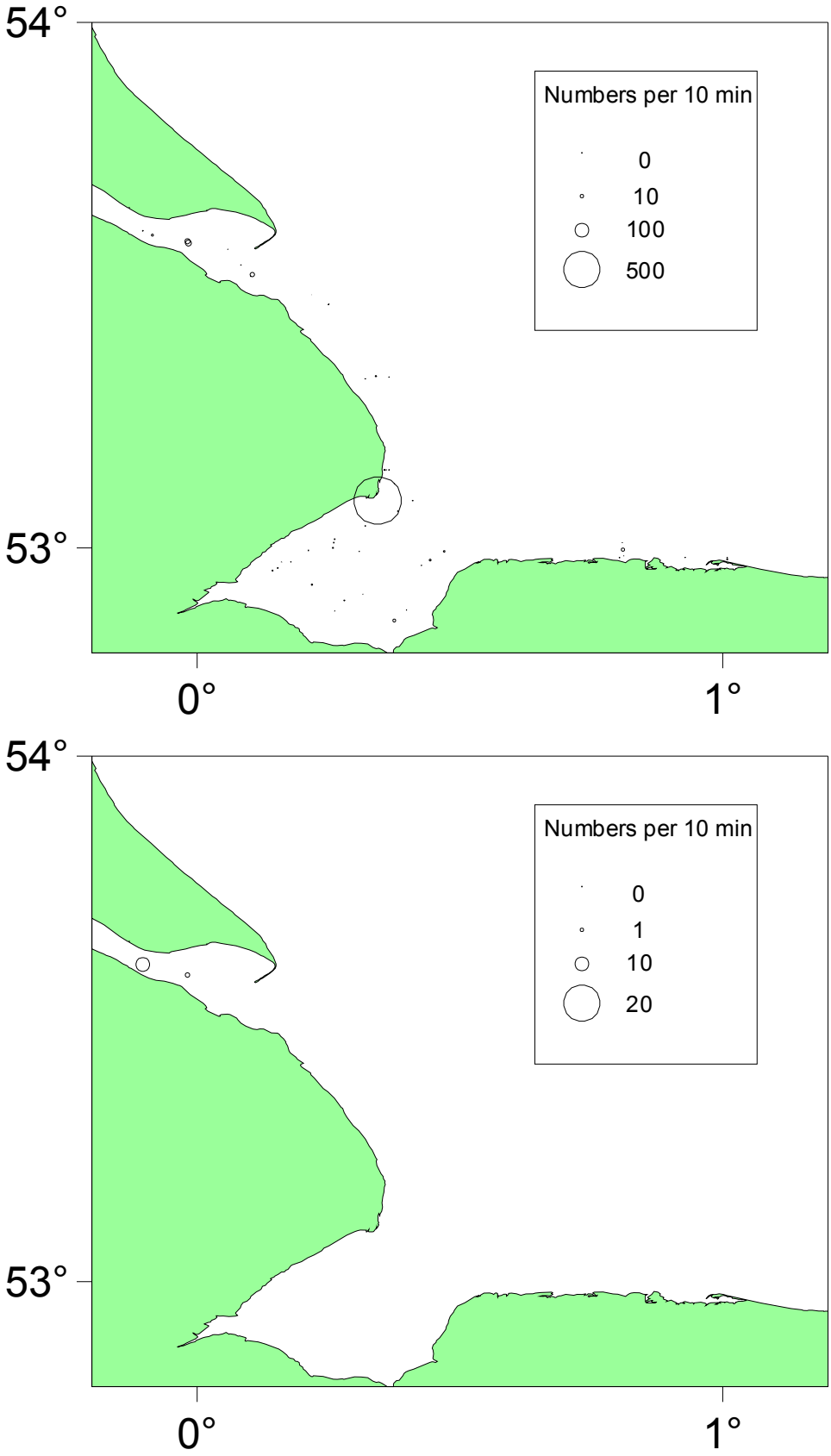


Figure 4.1.5t UK YFS 0-group and 1-group sole Humber Estuary and the Wash

5 GEAR EFFICIENCIES

No work was done on the analysis of gear efficiencies.

6 COMPLIANCE TO DATRAS

ToR c) requested the Working Group to contribute to the development and further standardisation of an international database for beam trawl survey data. This work will to a great extend be done through the EU project DAtabase TRawl Survey (DATRAS) in collaboration with the relevant WGs: WGBEAM, WGIBTS and WGBIFS. Following upon last year's initiatives WGBEAM further discussed compliance of the WGBEAM database to DATRAS.

A working document describing the progress of DATRAS was presented at the meeting. In this report a number of questions were brought forward that needed to be addressed by the WG in order to further proceed with DATRAS. The three issues that emerged from these questions and which were dealt with by the group were:

- Exchange format
- Data quality checks
- Data output and access

6.1 Exchange format

The WG decided to accept the proposed exchange format with a few modifications. The exchange format is a revised version of the old IBTS exchange format. The format will be briefly described in the following text. The exchange format is provided in appendix 3.

The exchange format consists of 3 record types;

- HH record: Haul record with gear specifications and environmental data
- HL record: Species information and length frequency
- CA record: SMALK and weight information

Most national databases store longitude and latitude as degree decimals. This will also be the case for the DATRAS database. Furthermore, the position is often used for mapping of data and for this the position has to be in degree decimals. Therefore, the most logical, and also most precise, way of exchanging the position would be as degree decimals and the position will be delivered as such.

During surveys, when measuring single fish species length distributions, sub-sampling may be necessary. The raising factors for sub-sampling are either based on taking the total weight of the whole category and the weight of the sub-sample, or by volume. The information on sub-sampling is held in several databases at the individual institutes as numbers measured per category with either a sub-sampling factor or weights of the sub-sample and total weight that allows calculation of that factor. The new ICES database will be able to contain this information and the institutes are recommended to deliver the raw data in the future.

If an institute does not hold or cannot extract the data in this form they can either deliver the data to ICES as numbers per haul or numbers per hour fishing. Thus, there will be three ways of delivering data. This should be indicated in the "data type" field:

- Sub sample (S): number measured per sub-sample and sub-sample factor or weight per sub-sample and total weight should be known, sub-sample factor = total weight/ weight sub-sample
- Raised data (R): number measured*sub-sample factor=catch per haul
- Calculated catch per hour trawling (C): catch per haul * 60/haul duration

In case the data are delivered as type S or R the possibility exists to also calculate the catch per hour trawling by multiplying with (60/haul duration).

WGIBTS found that combining IBTS data with the oceanographic data in ICES is problematic. To overcome this problem they decided that they wants to include surface and bottom temperature, surface and bottom salinity and whether or not a thermocline was observed.

Unknown data have to be reported as –9. For sex U means unidentifiable because it could not be determined (e.g. fish too small) as opposed to –9 when it was not recorded.

Since sex maturity and age-length keys (SMALK) should become part of DATRAS it was decided to start collating this information in the WGBEAM database. In next year's WGBEAM these data will be brought forward by the participants and incorporated into the database.

6.2 Data quality checks

All institutes participating in the beam survey will make the methods they use for data quality checks available to DATRAS. Based on this and information from IBTS, BITS and the old ICES checking program one comprehensive data quality checking program will be developed and presented at next year meeting of the Working Group.

6.3 Data output and access

Three types of output from the new trawl database in ICES will be provided:

1. Standard maps and graphs. Per survey/area combination (e.g. IBTS North Sea, IBTS southern division, IBTS western division, BTS and BITS) the following output will be generated (if possible) for age-groups 0-3+ (or different per species?) of all species for which assessments are conducted:

    - Bubble plots indicating abundance per ICES rectangle (IBTS North Sea, BTS and Baltic) or per haul (IBTS southern and western divisions).

    - Time series of the indices

    - A graph showing the proportion of the age-groups

      An output will only be provided for those quarters that are used for assessments.

    For BTS North Sea, Channel and Irish Sea indices will be created for the following species:

    plaice (*Pleuronectes platessa*)

    sole (*Solea vulgaris).*

2. A query of the database using pivot tables. This can be done similarly to the new web-based database called BALTCOM which has been designed and implemented under the EU Study program International Baltic Sea Sampling Program II (IBSSP II, EU study project 98/024). In connection with this database a data warehouse has been developed. The data warehouse offers the possibility to calculate all input tables of biological information necessary for the assessment WGs and to design several other tables on a pivot basis similar to what is possible in EXCEL. Based on these tables, plots and graphs can be made on an interactive basis. Furthermore, the data warehouse makes it possible to export data to a number of formats including EXCEL, SAS, and ASCII for additional analysis.

3. Un-aggregated (raw) data. These are catch (numbers at length and/or numbers at age) data on a haul-by-haul basis and SMALK (Sex, Maturity, Age-Length-Keys) data per individual.

Access to the different levels of output has been discussed not only in relation to DATRAS but also during the years in the IBTS and BITS working group. Thus far, ICES data policy was applied with regard to the access of survey data, however, for a web-based database several participants in the WGs indicated that procedures for data access need to be further formalised.

Furthermore the EU Commission is working on new data regulations ((EC) No 1639/2001 of 25 July 2001), which the DATRAS project might need to adapt.

Because DATRAS needs decisions on data access that go beyond the competence of individual WGs it was decided that this issue should be taken to the ICES fishery adviser and the General Secretary and then to the Bureau. This will be done by the DATRAS co-ordinator.

7 BENTHIC INVERTEBRATE BYCATCH

Invertebrates are an important part of the bycatch on beam trawl surveys. Catch efficiency varies depending on the gear and the level of sampling varies between countries, but (except for Belgium) the larger, (epi)benthic invertebrates are generally all identified and their abundance's recorded.

7.1 Sampling procedures

UK (England)

Before 1997 the benthic by-catch of the UK Beam Trawl surveys was recorded as species observed by an estimated abundance in orders of magnitude 1, 1-10, 11-100, 101-1000, 1001-10000, > 10001. From 1997 up until 2000, a complete sort of the benthos occurred. During these surveys, the total number and weight of each individual benthic species was recorded. As from 2002 it is hoped that for each of the beam trawl surveys, complete benthic sampling will occur on a tri-annual basis. In the future when complete benthic sampling does not occur, benthic species will be observed. For the first reporting level species (table 6.1.1), the total number of individuals at each station will be noted. Only for Cancer pagurus and Nephrops norvegicus sex was determined and each specimen measured.

None of the benthic catch data for the beam trawl surveys is held on the UK institutes main survey database, but when the new fishing survey system database is in use, all catch data will by held centrally on it.

Netherlands

From the start of each of the beam trawl surveys all benthos was sampled. The same processing procedures apply as for fish: per species the total number of specimen (per sub-sample) are counted and identified to the lowest possible taxonomic level. Only for Cancer pagurus sex was determined and each specimen measured.

Germany

The composition of benthic invertebrates in the catch is estimated according to a sub-sample of typically 20-25 kg. Items are identified to a feasible taxonomic level. Catch in numbers is estimated by raising over the pooled weight of an appropriate number of individuals (e.g. 50 or 100). No measurements are taken up to now. Invertebrate and fish data are kept in the same database.

Belgium

Benthos is not being sampled by Belgium except for Cancer pagurus for which also sex is determined.

The less frequently observed, and smaller, epibenthic species do not form part of the database, but standardised sampling methods for this part of the biota are now becoming established by the UK and The Netherlands. There is still much that needs to be done by the Working Group to set quality standards for species identification, and to describe the main species that need to be recorded. As a step forwards the WG adopted a three level hierarchical order for reporting the epibenthic taxa. The following criteria were used to arrange taxa according to these levels:

- Consistent identification over time within each survey as well as between surveys
- Suitability of the gear to sample the species/taxon
- Relatively high abundance or commercial importance in at least one of the surveys or management areas

In case there are reservations as to the reliability of the identification of a group of taxa it can be decided to group them into a higher taxonomic level thereby assuring compliance to the criteria.

The three reporting levels are shown below:

1) First reporting level: Results of these taxa are presented in the WGBEAM report. All criteria must apply for these taxa.
2) Second reporting level: These taxa can be used for analyses and as such are part of the WGBEAM database. For these taxa apply the first two criteria but not necessarily the third.
3) Third reporting level: All other taxa that are identified. The aim of the WG is to further improve the accuracy of species identification in order to be able to shift taxa to the second level. These species will only be available from the databases of the national laboratories responsible for the particular survey in which the taxon occurs.

Table 6.1.1 List of taxa of which results will be reported in the annual WGBEAM report (First level) and taxa that will be kept in the WGBEAM database (Second level).

Taxon	First level	Second level
Aphrodita aculeata	X	X
Asterias rubens	X	X
Astropecten irregularis	X	X
Buccinum undatum	X	X
Cancer pagurus	X	X
Corystes cassivelaunus	X	X
Echinocardium spec.	X	X
Liocarcinus spec.	X	X
Nephrops norvegicus	X	X
Ophiuridae	X	X
Pagurus spec.	X	X

For identification of the epibenthic invertebrate taxa the WG decided to use two codes:

- The NODC code in accordance with the use of this code for the identification of bycatch in the IBTS
- The hierarchical code which is becoming the standard for identification of benthic species

The main invertebrate species routinely sampled are given in ICES (1994), and all epibenthic invertebrates identified since 1997 by the UK and The Netherlands are shown in Appendix 1. Table 6.1.1 is a list of species that apply for the first two reporting levels. Only these species will be kept in the WGBEAM database. The ongoing process of improving species identification necessitates future evaluation and update of this list.

In the 2001 report WGBEAM recommended that the Benthos Ecology WG (BEWG) should provide a list of species or higher taxa that can be monitored with a beam trawl and allow identification of ecosystem changes in the communities present in the area covered by the beam trawl surveys.

Four points of the reply of the BEWG on this TOR were discussed at this year's WGBEAM:

- It was acknowledged that there were errors in spelling and taxonomic status in the species provided in the appendix. However, this list consists of "third level" species and as such only exist in national databases and is not (yet) part of the WGBEAM database. Therefore WGBEAM recommends the relevant institutes to try to correct the errors but does not consider it a task of the WG.

- The remark on the variable effects of the different configurations of beam trawls on the monitoring potential of the beam trawl surveys again stresses the importance of a comparison of gear efficiencies of the different trawls. Not just for fish but also for benthos.

- The suggestion that changes in the benthic community caused by fishing would be better detected by looking at the size composition initiated the exploration of the feasibility of incorporating size measurements of benthic species into the sampling practices. Immediately it was recognised that measuring all benthic species or even a subset (i.e. the first level species) was not possible given the time available to process the catch. Two methods were brought forward that

might be fitted into the sampling practices: (1) to measure only the largest specimen or (2) to weigh a representative sample of a known number of specimen of a particular species. These methods might be applied to the "first level" species. Only for Cancer pagurus (NL and UK) and Nephrops norvegicus (UK) sex was determined and specimen measured. It was decided to analyse these data in next year's WGBEAM.

- The information provided by BEWG distinguishing geographic categories and species sensitive to water mass change was considered useful for interpretation of changes in distribution of those benthic species. However, considering the status of benthos sampling, notably quantification and identification, in several of the participating institutes it was decided that these need to be further developed before any of these species can be added to the list of "second level" species.

Because sampling methodologies of the benthic invertebrate bycatch still differs between participating countries it was decided not to report results of the benthos. WGBEAM recommends that at least the "first level" and "second level" species should be quantitatively sampled on a yearly basis in order for the data to be used in the database or report.

8 RECOMMENDATIONS AND SUGGESTED TORS

- The "first level" and "second level" species of the benthic invertebrate bycatch should be quantitatively sampled in the offshore surveys on a yearly basis
- Manuals of the various beam trawl surveys should be completed and be compared at the future meeting in order to further the process of standardisation of the surveys
- The coastal beam trawl surveys should report on the abundance of crangon in the WGBEAM report
- The list of species that are routinely sampled for biological data information needs to be re-evaluated.

WGBEAM will work by corrspondence to prepare a progress report in May 2003 summarising the results of the 2002 beam trawl surveys and calculating population abundance indices by age-group for sole and plaice in the North Sea, Division VIIa and Divisions VIId-g. From 1-4 December 2003 WGBEAM should convene in IJmuiden with the suggested Terms of Reference as outlined below:

a) Further co-ordinate offshore and coastal beam trawl surveys in the North Sea and Divisions VIIa and VIId-g;

b) Explore possibilities of delivering an improved DFS index;

c) Continue the work on developing relative catchabilities of the different gears used in the surveys;

d) Continue work of developing and standardising an international database of beam trawl survey data and co-ordinate such activities with those of the IBTSWG in particular on the compliance to DATRAS, the bottom trawl database to be developed at ICES;

e) Prepare a progress report summarising the results of the 2003 beam trawl surveys;

f) calculate population abundance indices by age-group for sole and plaice in the North Sea, Division VIIa and Divisions VIId-g;

g) Continue the work on collating information on the epibenthic invertebrate by-catch during beam trawl surveys into a common database and discuss which summary results should be reported;

h) Discuss and comment on the results of the EVARES project (Call for Tenders FISH/2001/02)

9 REFERENCES

ICES. 1985. Report of the 0-Group North Sea Flatfish Working Group, IJmuiden, 21-25 November 1983. ICES CM 1985/G:2

ICES. 1991 Report of the Study Group on Beam Trawl Surveys in 1990. ICES C.M. **1991/G:81**, 57.

ICES. 1993 Report of the Study Group on Beam Trawl Surveys. ICES C.M. **1991/G:5**, 92.

ICES. 1994 Report of the Study Group on beam trawl surveys in the North Sea and Eastern Channel. ICES C.M. **1990/G:59.**

ICES. 1995 Report of the Study Group on Beam Trawl Surveys in 1994. ICES C.M. **1995/G:5**, 32.

ICES. 1999 Report of the Working Group on beam trawl surveys. ICES C.M. **1999/G:6.**

Rogers, S. I., Damm, U., Rijnsdorp, A. D. & Vanhee, W. 1997 Description and evaluation of the international beam trawl surveys of the European continental shelf. ICES C.M. **1997/Y:23**, 20.

ICES. 2002 Report of the International Bottom Trawl Survey Working Group. ICES C.M.2002/D:03

APPENDIX 1: DYFS FISH SPECIES LIST FOR 2001 SURVEYS (* THE BELGIAN YFS DOES NOT SAMPLE NON-COMMERICIAL SPECIES)

Species	DYFS-NL	DYFS-GER	DYFS-UK	DYFS-BEL*	Species	DYFS-NL	DYFS-GER	DYFS-UK	DYFS-BEL*
Agonus cataphractus	X	X	X		*Merlangius merlangus*	X	X	X	X
Alosa fallax	X	X			*Microstomus kitt*	X	X	X	
Ammodytidae	X	X	X		Mugilidae	X			
Ammodytes tobianus			X		*Mullus surmuletus*	X			
Anguilla anguilla	X	X			*Mustelus mustelus*			X	
Arnoglossus laterna	X	X	X		*Myoxocephalus scorpius*	X	X	X	
Atherina presbyter	X								
Belone belone	X				*Osmerus eperlanus*	X	X	X	
Buglossidium luteum	X	X	X						
Callionymus lyra	X	X	X						
Callionymus reticulatu	X				*Pegusa (solea) lascaris*			X	
Callionymus maculatus		X			*Pholis gunnellus*	X	X	X	
					Platichthys flesus	X	X	X	
Ciliata mustela	X	X	X		*Pleuronectes platessa*	X	X	X	X
Clupea harengus	X	X	X		*Pollachius pollachius*	X			
Clupeidae		X			*Pomatoschistus spp*			X	
					Psetta maxima		X		
					Raniceps raninus	X			
					Raja brachyura			X	
Cyclopterus lumpus	X				*Raja clavata*			X	
Dicentrarchus labrax	X		X		*Raja fullonica*			X	
Echiichthys vipera	X		X		*Rhinonemus cimbrius*	X		X	
Engraulis encrasicolus		X			*Scomber scombrus*	X		X	
Eutrigla gurnardus	X	X	X		*Scophthalmus maximus*	X		X	X
Gadus morhua	X	X	X	X	*Scophthalmus rhombus*	X	X	X	X
Gaidropsarus vulgaris		X			*Scyliorhinus canicula*			X	
Gasterosteus aculeatus	X	X			*Solea solea*	X	X	X	X
Gobiidae	X	X	X		*Sprattus sprattus*	X	X	X	
Gymnammodytes semisquamatus			X		Syngnathidae	X			
Gymnocephalus cernua		X			*Syngnathus acus*	X		X	
Hyperoplus lanceolatus	X	X			*Syngnathus rostellatus*	X	X	X	
Lepidorhombus whiffiagonis			X		*Syngnathus typhle*			X	
Lampetra fluviatilis	X				*Taurulus bubalis*			X	
Limanda limanda	X	X	X	X	*Trachurus trachurus*	X	X	X	
Liparis liparis	X	X	X		*Trigla lucerna*	X	X	X	
Liparis montagui			X		*Trisopterus luscus*	X	X	X	
					Trisopterus minutus	X		X	
Lophius piscatorius			X		*Zoarces viviparus*	X	X	X	

APPENDIX 2. BENTHIC TAXA CAUGHT IN THE NETHERLANDS AND UK BTS SURVEYS SINCE 1997

TAXON	UK		Netherlands	
	English Channel	Irish Sea	South-eastern North Sea	Western Central North Sea
ABIETINARIA				X
ABRA ALBA	X	X		
ABRA SPEC.				X
ACANTHOCARDIA ECHINATA			X	X
ACANTHOCARDIA SPEC.	X	X		
ACANTHOCHITON	X			
ACANTHODORIS PILOSA				X
ACANTHODORIS PILOSA	X	X		
ACTINAUGE RICHARDI				X
ACTINIA EQUINA	X			
ACTINIA SPEC.	X	X		
ADAMSIA CARCINIOPADOS				X
AEQUIPECTEN OPERCULARIS			X	X
AGLAOPHENIA				X
ALCYONIDIUM DIAPHANUM	X	X	X	X
ALCYONIDIUM PARASITICUM				X
ALCYONIUM DIGITATUM	X	X	X	X
ALCYONIUM GLOMERATUM	X	X		
ALLOTEUTHIS SUBULATA	X	X	X	X
ALPHEUS MACROCHELES	X			
AMPHARETE SPEC.				X
AMPHIPODA		X		
AMPHIURA CHIAJEI	X			
AMPHIURA FILIFORMIS	X			X
AMPHIURIDAE	X	X		
ANAPAGURUS IN EPIZOANTHUS		X		
ANAPAGURUS LAEVIS				X
ANEMONE SPEC.	X	X		
ANOMIA EPHIPPIUM				X
ANSEROPODA PLACENTA				X
ANTALIS ENTALIS				X
ANTEDON BIFIDA	X	X		X
APHRODITA ACULEATA	X	X	X	X
APHRODITIDAE		X		
APLIDIUM				X
APLYSIA PUNCTATA	X			
APORRHAIS PESPELICANI	X	X		
APORRHAIS SERRESIANUS				X
APORRHAIS SPEC.				X
ARCHIDORIS PSEUDARGUS	X	X		X
ARCTICA ISLANDICA		X	X	X
ASCIDIA				X
ASCIDIA CONCHILEGA	X			
ASCIDIA MENTULA	X	X		
ASCIDIA SPEC.				X
ASCIDIA VIRGINEA				X
ASCIDIACEA		X		
ASCIDIACEA-PLEUROGONA	X			

ASCIDIANS /ASCIDIACEA	X			
ASCIDIANS/TUNICATES	X			
ASCIDIELLA ASPERSA	X	X		
ASCIDIELLA SCABRA	X	X		X
ASCIDIELLA SPEC.				X
ASTARTE SULCATA				X
ASTERIAS RUBENS	X	X	X	X
ASTERONYX LOVENI				X
ASTROPECTEN IRREGULARIS		X	X	X
ATELYCYCLUS ROTUNDATUS	X	X	X	X
ATELYCYCLUS UNDECIMDENTATUS	X			
AXINELLA INFUNDIBULIFORMIS				X
BARNEA CANDIDA				X
BERINGIUS TURTONI				X
BIVALVIA	X	X		
BOLOCERA TUEDIAE				X
BOTRYLLOIDES LEACHII	X	X		
BOTRYLLUS SCHLOSSERI	X	X		
BOTRYLLUS SPEC.				X
BRISSOPSIS LYRIFERA		X		X
BRYOZOA	X	X		
BUCCINUM EGGS		X		
BUCCINUM UNDATUM	X	X	X	X
BUGULA SPEC.		X		
CALLIANASSA				X
CALLIOSTOMA ZIZIPHINUM	X	X		
CALOCARIS MACANDREAE		X		
CANCER PAGURUS	X	X	X	X
CAPULUS UNGARICUS		X		X
CARCINUS MAENAS	X	X	X	X
CELLARIA SPEC.	X	X		
CEPHALOPODA			X	
CEPHALOPODA-SEPIIDA	X	X		
CERAMASTER PLACENTA	X	X		
CHAETOPTERUS TUBES	X			
CHAETOPTERUS VARIOPEDATUS TUBES		X		
CHAMELEA GALLINA				X
CHLAMYS OPERCULARIS	X	X		
CHLAMYS VARIA	X	X		
CIONA INTESTINALIS	X	X		X
CIRCOMPHALUS CASINA		X		
CIRREPEDIA (SCALPELLUM SCALPELLUM)		X		
CNIDARIA			X	X
COLUS GRACILIS		X		X
COLUS ISLANDICA				X
COLUS JEFFREYSIANUS				X
CORYSTES CASSIVELAUNUS	X	X	X	X
CRANGON ALLMANI	X	X		X
CRANGON CRANGON	X	X	X	X
CRANGON SPEC.			X	
CRANGONIDAE		X		
CREPIDULA FORNICATA	X			
CROSSASTER PAPPOSUS	X	X	X	X
CULTELLUS PELLUCIDUS	X			
CUTTLE EGGS	X	X		

CYANEA SPEC.				X
DENDROBEANIA SPEC.				X
DENDRONOTUS FRONDOSUS	X	X		
DEVONSHIRE CUP CORAL		X		
DICHELOPANDALUS BONNIERI		X		
DIPHASIA				X
DISTOMUS VARIOLOSUS	X			
DOSIMA FASCICULARIS				X
DOSINIA EXOLETA	X			
DROMIA PERSONATA	X	X		
EBALIA CRANCHI				X
EBALIA SPEC.	X	X		
EBALIA TUBEROSA	X	X		X
ECHINIDAE			X	X
ECHINOCARDIUM CORDATUM	X	X		X
ECHINOCARDIUM FLAVESCENS				X
ECHINOCARDIUM SPEC.			X	X
ECHINUS ACUTUS				X
ECHINUS ELEGANS				X
ECHINUS ESCULENTUS		X		X
ECHINUS SPEC.				X
E-D-PLEOCYEMATA-BRACHYURA		X		
ELEDONE CIRRHOSA				X
ELEDONE SPEC.				X
ENDEIS SPINOSA	X			
ENSIS ARCUATUS	X			X
ENSIS ENSIS	X			
ENSIS SILIQUA		X		X
ENSIS SPEC.			X	X
EPIZOANTHUS				X
EPIZOANTHUS INCRUSTATUS				X
EUPAGURUS / PAGURUS IN SUBERITES	X	X		
EURYNOME ASPERA	X	X		
EURYNOME SPINOSA	X			
EUSPIRA CATENA			X	X
FILOGRANA IMPLEXA	X			X
FILOGRANA SPEC.		X		
FLUSTRA FOLIACEA	X	X	X	X
GALATHEA SPEC.	X			
GALATHEA SPEC.				X
GALATHEA SQUAMIFERA	X			
GALATHEA STRIGOSA	X	X		
GALITHEIDAE		X		
GASTROPOD EGGS (HINIA)		X		
GASTROPODA		X		
GASTROPODA MURICIDAE	X			
GERYON TRIDENS				X
GIBBULA CINERARIA	X			
GLYCYMERIS GLYCYMERIS	X	X		
GONEPLAX RHOMBOIDES		X		X
HALICHONDRIA BOWERBANKI				X
HALICHONDRIA PANICEA				X
HALICLONA OCULATA				X
HARMOTHOE SPEC.				X
HENRICIA OCULATA	X	X		

HENRICIA SANGUINOLENTA		X		X
HETEROANEMIA (ANOMIA) EPHIPPIUM		X		
HIATELLA ARCTICA				X
HIPPASTERIA PHARYGINIA				X
HOLOTHUROIDEA	X	X		
HOMARUS GAMMARUS	X	X	X	X
HORMATHIA DIGITATA				X
HYALINOECIA TUBICOLA		X		X
HYAS ARANEUS	X	X		
HYAS COARCTATUS	X	X		X
HYAS SPEC.			X	X
HYDRACTINIA ECHINATA				X
HYDRALLMANIA FALCATA				X
HYDROIDA	X	X		
IDOTEA LINEARIS	X	X		
INACHUS DORSETTENSIS	X	X		X
INACHUS SPEC.				X
ISOPODA		X		
LAETMONICE (HERMIONE) HISTRIX	X	X		
LAEVICARDIUM CRASSUM	X			
LANICE CONCHILEGA	X			
LEPTASTERIAS MUELLERI		X		X
LIOCARCINUS CORRUGATUS		X		
LIOCARCINUS DEPURATOR	X	X		X
LIOCARCINUS HOLSATUS	X	X	X	X
LIOCARCINUS MARMOREUS	X	X		X
LIOCARCINUS PUSILLUS	X	X		X
LITHODES MAJA				X
LOLIGO FORBESI				X
LOLIGO SPEC.		X	X	X
LOLIGO VULGARIS	X	X		X
LUIDIA CILIARIS		X		X
LUIDIA SARSI		X		X
LUIDIA SPEC.			X	
LUNATIA FUSCA				X
LUTRARIA LUTRARIA				X
MACROPODIA ROSTRATA	X	X		
MACROPODIA SPEC.			X	X
MACROPODIA TENUIROSTRIS				X
MACTRA CORRALINA			X	
MACTRA SPEC.		X		
MACTRA STULTORUM	X			
MACTRIDAE		X		
MAIA SQUINADO	X	X	X	X
MAJA SPEC.				X
MARTHASTERIAS GLACIALIS		X		
MAXMUELLERIA LANKESTERI	X			
METRIDIUM SENILE	X	X		X
MODIOLUS BARBATUS		X		
MODIOLUS MODIOLUS		X		X
MOLGULA SPEC.	X			
MUNIDA RUGOSA		X		X
MYA ARENARIA		X		
MYA SPEC.	X	X	X	
MYA SYPHONS	X			

MYA TRUNCATA				X
MYS SIPHONS		X		
MYTILUS EDULIS	X	X	X	X
MYTILUS GALLOPROVINCIALIS	X			
MYTILUS SPEC.		X		
NASSARIUS RETICULATUS	X	X		
NATICA ALDERI	X	X		
NATICA CATENA		X		
NATICA EGG MASSES	X	X		
NECORA PUBER	X	X	X	X
NEMERTEA	X			
NEMERTESIA ANTENNINA				X
NEMERTESIA RAMOSA				X
NEMERTESIA SPEC.	X			X
NEPHROPS NORVEGICUS		X	X	X
NEPTUNEA ANTIQUA		X	X	X
NEPTUNEA EGGS		X		
NEREIS SPEC.			X	
NUCULA NUCLEUS				X
NUDIBRANCHIA	X	X		X
OCENEBRA ERINACEA	X			
OCTOPODIDAE		X		
ONCHIDORIS BILAMELLATA	X			
ONCHIDORIS MURICATA				X
OPHIOCOMINA NIGRA	X	X		
OPHIOTHRIX FRAGILIS	X	X	X	X
OPHIURA ALBIDA	X	X		X
OPHIURA OPHIURA				X
OPHIURA SPEC.			X	X
OPHIURA TEXTURATA	X	X		X
OSTREA EDULIS	X			
OSTREA SPEC.			X	
PAGURIDAE	X	X		
PAGURUS BERNHARDUS	X	X		X
PAGURUS PRIDEAUX	X	X		
PAGURUS PUBESCENS				X
PAGURUS SPEC.			X	X
PALAEMON SERRATUS	X	X		
PALAEMON SPEC.			X	
PALAEMONIDAE		X		
PANDALINA BREVIROSTRIS	X			
PANDALUS BOREALIS				X
PANDALUS MONTAGUI	X	X		X
PECTEN MAXIMUS	X	X	X	X
PECTEN SPEC.			X	X
PECTINARIA SPEC.	X	X		
PECTINIDAE		X		
PENNATULA PHOSPHOREA				X
PENTAPORA FOLIACEA		X		
PENTAPORA SPEC.	X			
PHALLUSIA MAMMILLATA	X	X		
PHILINE APERTA	X	X		
PILUMNUS HIRTELLUS	X	X	X	
PINNOTHERES PISUM	X			
PISA ARMATA	X	X		

PISA TETRODON	X			
PISIDIA LONGICORNIS	X	X		X
PLEUROBRANCHUS MEMBRANACEUS	X	X		
POLINICES PULCHELLUS			X	
POLYCARPA POMARIA	X	X		
POLYCHAETA	X	X		
POLYMASTIA				X
POLYMASTIA PAPILLARIA				X
POMATOCEROS TRIQUETER	X			
PONTOBDELLA MURICATA		X		
PONTOPHILUS SPINOSUS		X		X
PORANIA PULVILLUS		X		X
PORIFERA	X	X	X	X
PORTUMNUS LATIPES				X
PROCESSA CANALICULATA	X			X
PROCESSIDAE		X		
PSAMMECHINUS MILIARIS	X	X	X	X
PSEUDAMUSSIUM SEPTEMRADIATA				X
PSEUDARCHASTER PARELII				X
PSOLUS PHANTAPUS				X
PYCNOGONUM LITTORALE	X	X		X
ROSSIA MACROSOMA	X			X
SABELLARIA	X	X		
SCALPELLUM SCALPELLUM	X			
SCAPHANDER LIGNARIUS		X		X
SCAPHOPODA	X	X		
SECURIFLUSTRA SECURIFRONS	X	X		X
SEPIA OFFICINALIS			X	
SEPIIDAE		X		
SEPIOLA ATLANTICA	X	X	X	X
SERTELLA BEANIANA				X
SIPUNCULIDAE	X	X		
SOLASTER ENDECA		X		X
SOLENIDAE		X		
SPATANGUS PURPUREUS	X	X		X
SPIRONTOCARIS LILLJEBORGI				X
SPISULA ELLIPTICA				X
SPISULA SOLIDA	X			X
SPISULA SPEC.			X	
SPISULA SUBTRUNCATA	X	X		
SQUILLA MANTIS	X			
STICHASTRELLA ROSEA		X		X
STOMPHIA COCCINEA				X
STYELA CLAVA	X			
SUBERITES				X
SUBERITES FICUS				X
SUBERITES PAGURORUM				X
TAPES (VENERUPIS) RHOMBOIDES	X			
TEALIA FELINA	X	X		
THALASSINOIDEA		X		
THELEPUS CINCINNATUS				X
THELEPUS SPEC.				X
THIA SCUTELLATA	X			
THUIARIA THUJA				X
TIMOCLEA OVATA				X

TODAROPSIS				X
TODAROPSIS EBLANAE				X
TRIDONTA MONTAGUI				X
TRITONIA HOMBERGII	X	X		X
TROSCHELIA				X
TUBULARIA INDIVISA				X
TUBULARIA SP	X	X		X
TUNICATA			X	X
TURRITELLA COMMUNIS		X	X	X
UPOGEBIA DELTAURA	X			X
URTICINA				X
URTICINA EQUES				X
URTICINA FELINA				X
URTICINA SPEC.				X
VARICORBULA GIBBA	X	X		
VENERIDAE		X		
VIRGULARIA MIRABILIS		X		X
VOLUTOPSIUS				X
WHELK EGGS	X			X
XANTHIDAE		X		

APPENDIX 3

RECORD TYPE 1 (Haul information - HH)

St. pos.	NAME	TYPE *	M/O**				RANGE				COMMENTS		
			BITS	IBTS	EVHOE	BTS	BITS	IBTS	EVHOE	BTS	BITS	IBTS	BTS
1	Record type	2A	M	M		M	HH	HH		HH	Fixed value: HH	Fixed value: HH	Fixed value: HH
3	Quarter	1N	M	M		M	1 to 4	1 to 4		1 to 4			
4	Country	3A	M	M		M	See Appendix III	See Appendix III		See Appendix III	ICES alpha codes for countries	ICES alpha codes for countries	ICES alpha codes for countries
7	Ship	4AN	M	M		M	See Appendix III	See Appendix III		See Appendix III			
11	Gear	10AN	M	M		M	See Appendix IV	See Appendix IV		See Appendix IV	Preliminary code 1)	Preliminary code 1)	Preliminary code 1)
21	**Standard** station number	6AN	**M**	**M**		M	-9	-9		-9	National coding system	National coding system	National coding system
27	Haul no	3N	M	M		M	1 to 999	1 to 999		1 to 999	Sequential numbering by cruise	Sequential numbering by cruise	Sequential numbering by cruise
30	Year	4N	M	M		M	1900-2099	1900-2099		1900-2099			
34	Month	2N	M	M		M	1 to 12	1 to 12		1 to 12			
36	Day	2N	M	M		M	1 to 28/29/30/31	1 to 28/29/30/31		1 to 28/29/30/31			
38	Time shot	4N	M	M		M	1 to 2400, 9999	1 to 2400, 9999		1 to 2400, 9999	In UTC	In UTC	In UTC
42	**Stratum**	**4A**	**Not**	**Not**		Not	**See Appendix (to be created)**	**See Appendix (to be created)**		See Appendix (to be created)			
46	Haul duration	3N	M	M		M	5 to 150	5 to 90		5 to 90	In minutes 2)	In minutes 2)	In minutes 2)

49	Day/night	1A	M	M	M	D, N, space	D, N	D, N	Not known = -9	Not known = -9	Not known = -9
50	**Shooting latitude decimal**	**3N.4D**	**M**	**M**	M	**53.0000 to 66.0000**	**50.0000 to 64.0000**	50.0000 to 64.0000	**Shooting position: latitude decimals**	**Shooting position: latitude decimals**	Shooting position: latitude decimals
58	**Shooting longitude decimal**	**+/-3N.4D**	**M**	**M**	M	**0.0000 to 59.0000**	**0.0000 to 59.0000**	0.0000 to 59.0000	**Shooting position: longitude decimals**	**Shooting position: longitude decimals**	Shooting position: longitude decimals
67	**Hauling latitude decimal**	**3N.4D**	**M**	**M**	M	**53.0000 to 66.0000**	**50.0000 to 64.0000**	50.0000 to 64.0000	**Hauling position: latitude decimals**	**Hauling position: latitude decimals**	Hauling position: latitude decimals
75	**Hauling longitude decimal**	**+/-3N.4D**	**M**	**M**	M	**0.0000 to 59.0000**	**0.0000 to 59.0000**	0.0000 to 59.0000	**Hauling position: longitude decimals**	**Hauling position: longitude decimals**	Hauling position: longitude decimals
84	Depth	**4N**	M	M	M	10 to 150, space5 to 150 in Sub-div. 22 + 24, **-9**	**10 to 300, -9**	5 to 150, -9	Depth from surface in metres, **Unknown = -9**	Depth from surface in metres, **Unknown = -9**	Depth from surface in metres, Unknown = -9
88	Haul validity	1A	M	M	M	I, V, N	I, P, V	I, P, V	Invalid =I, Valid =V or no oxygen = N, C = calibrated	Invalid=I. Partly valid=P **(only historical data)**.	Invalid=I. Partly valid=P (only historical data).
89	Hydrographic station number	8AN	**M**	**M**	M				Station no as reported to the ICES hydrographer	Station no as reported to the ICES hydrographer	Station no as reported to the ICES hydrographer
97	Species Recording Code	2N	M	M	M	See Appendix V	See Appendix V	See Appendix V	Use position 65 for standard and 66 for bycatch codes	Use position 65 for standard and 66 for bycatch codes	Use position 65 for standard and 66 for bycatch codes
99	**Data type**	**1A**	**M**	**M**	M	**R, C, S**	**R, C, S**	R, C, S	**R = raw data by haul, C = calculated no/hour, S = Sub sample**	**R = raw data by haul, C = calculated no/hour, S = Sub sample**	R = raw data by haul, C = calculated no/hour, S = Sub sample
100	**Netopening**	**2N.1D**	**O**	**O**	Not	**1.5 to 10.0, -9**	**2.5 to 10.0, -9**	2.5 to 10.0, -9	**In metres**	**In metres**	In metres
104	Distance	4N	O	O	O	1850 to 9999**, -9**	1850 to 9999**, -9**	1850 to 9999, -9	Distance towed over ground (m)	Distance towed over ground (m)	Distance towed over ground (m)
108	Warp lenght	**4N**	O	O	O	100 to 999**, -9**	100 to 999**, -9**	10 to 500	in metres	in metres	in metres
112	Warp diameter	2N	O	O	Not	10 to 60**, -9**	10 to 60**, -9**	-9	In millimetres	In millimetres	In millimetres

114	**Door surface**	**2N.1D**	**O**	**O**	Not	**1.0 to 10.0, -9**	**3.0 to 10.0, -9**	-9	**In squaremetres**	**In squaremetres**	In squaremetres
118	Door weight	4N	O	O	Not	50 to 2000**, -9**	500 to 2000**, -9**	-9	In kilogrammes	In kilogrammes	In kilogrammes
122	Door spread	3N	O	O	Not	25 to 200**, -9**	48 to 180**, -9**	-9	In metres	In metres	In metres
125	Wing spread	2N	O	O	Not	12 to 30**, -9**	12 to 30**, -9**	-9	In metres	In metres	In metres
127	Buoyancy	4N	O	O	Not	50 to 200**, -9**	50 to 200**, -9**	-9	In kilogrammes	In kilogrammes	In kilogrammes
131	**Kite dimensions**	**1N.1D**	**O**	**O**	Not	**0.5 to 2.0, -9**	**0.5 to 2.0, -9**	-9	**In squaremetres**	**In squaremetres**	In squaremetres
134	Weight ground rope	4N	O	O	Not	0 to 800**, -9**	0 to 300**, -9**	-9	In kilogrammes	In kilogrammes	In kilogrammes
138	Towing direction	3N	O	O	O	1 to 360**, -9**	1 to 360**, -9**	1 to 360, -9			
141	**Ground speed**	**1N.1D**	**O**	**O**	O	**2.0 to 6.0, -9**	**2.0 to 6.0, -9**	2.0 to 6.0, -9	**Ground speed of trawl. Knots**	**Ground speed of trawl. Knots**	Ground speed of trawl. Knots
144	**Speed through water**	**1N.1D**	**O**	**O**	O	**1.0 to 9.9, -9**	**1.0 to 9.9, -9**	1.0 to 9.9, -9	**Trawl speed through. Knots**	**Trawl speed through. Knots**	Trawl speed through. Knots
147	Surface current direction	3N	O	O	O	0 to 360**, -9**	0 to 360**, -9**	0 to 360, -9	Slack water =0	0 slack water	0 slack water
150	**Surface current speed**	**2N.1D**	**O**	**O**	O	**0 to 10.0, -9**	**0 to 10.0, -9**	0 to 10.0, -9	**Metres per sec**	**Metres per sec**	Metres per sec
154	Bottom current direction	3N	O	O	O	0 to 360**, -9**	0 to 360**, -9**	0 to 360, -9	Slack water =0	0 slack water	0 slack water
157	**Bottom current speed**	**2N.1D**	**O**	**O**	O	**0 to 10.0, -9**	**0 to 10.0, -9**	0 to 10.0, -9	**Metres per sec**	**Metres per sec**	Metres per sec
161	Wind direction	3N	O	O	O	0 to 360**, -9**	0 to 360**, -9**	0 to 360, -9	0 = calm	360=north, 0=variable	360=north, 0=variable
164	Wind speed	3N	O	O	Not	0 to 100**, -9**	0 to 100**, -9**	-9	Metres per sec	Metres per sec	Metres per sec
167	Swell direction	3N	O	O	O	0 to 360**, -9**	0 to 360**, -9**	0 to 360, -9		360=north, 0=variable	360=north, 0=variable

170	**Swell height**	**2N.1D**	**O**	**O**	O	**0 to 25.0, -9**	**0 to 25.0, -9**	0 to 25.0, -9	**Metres**	**Metres**	Metres
174	**Surface temperature**	**2N.1D**	**O**	**O**	O	**-1.0 to 30.0, -9**	**-1.0 to 30.0, -9**	-1.0 to 30.0, -9	**Degree Celsius**	**Degree Celsius**	Degree Celsius
178	**Bottom temperature**	**2N.1D**	**O**	**O**	O	**1.0 to 20.0, -9**	**1.0 to 20.0, -9**	1.0 to 20.0, -9	**Degree Celsius**	**Degree Celsius**	Degree Celsius
182	**Surface salinity**	**2N.2D**	**O**	**O**	O	**10.00-38.00, -9**	**10.00-38.00, -9**	10.00-38.00, -9			
187	**Bottom salinity**	**2N.2D**	**O**	**O**	O	**20.00-38.00, -9**	**20.00-38.00, -9**	20.00-38.00, -9			
192	**Thermo cline**	**1A**	**O**	**O**	O	**y=yes, n=no, -9**	**y=yes, n=no, -9**	y=yes, n=no, -9	Defined as 2 degrees change in temperature over 10 meters	Defined as 2 degrees change in temperature over 10 meters	Defined as 2 degrees change in temperature over 10 meters
193	**Depth of thermo**	**4N**	**O**	**O**	O	**5 to 100, -9**	**5 to 100, -9**	5 to 100, -9	**Depth from surface in metres**	**Depth from surface in metres**	Depth from surface in metres

RECORD TYPE 2 (Length frequency distribution)

St. pos.	NAME	TYPE *	M/O**				RANGE				COMMENTS		
			BITS	IBTS	EVHOE	BTS	BITS	IBTS	EVHOE	BTS	BITS	IBTS	BTS
1	Record type	2A	M	M		M	HL	HL		HL	Fixed value: HL	Fixed value: HL	Fixed value: HL
3	Quarter	1N	M	M		M	1 to 4	1 to 4		1 to 4	See Record Type 1	See Record Type 1	See Record Type 1
4	Country	3A	M	M		M	See Appendix III	See Appendix III		See Appendix III	See Record Type 1	See Record Type 1	See Record Type 1
7	Ship	4AN	M	M		M	See Appendix III	See Appendix III		See Appendix III	See Record Type 1	See Record Type 1	See Record Type 1
11	Gear	10 AN	M	M		M	See Appendix IV	See Appendix IV		See Appendix IV	See Record Type 1	See Record Type 1	See Record Type 1
21	Standard station number	6AN	**M**	**M**		**M**					See Record Type 1	See Record Type 1	See Record Type 1
27	Haul no	3N	M	M		M	1 to 999	1 to 999		1 to 999	See Record Type 1	See Record Type 1	See Record Type 1
30	Year	**4N**	M	M		M	1900 to 2099	1900 to 2099		1900 to 2099	See Record Type 1	See Record Type 1	See Record Type 1

34	**Species code type**	**1A**	**M**	**M**	**M**	**N, T**	**N, T**	N, T	**N = NODC or T = TSN**	**N = NODC or T = TSN**	N = NODC or T = TSN
35	Species code	10 A	M	M	M	See Appendix VII	See Appendix VII	See Appendix VII	Official NODC code or TSN code	Official NODC code or TSN code	Official NODC code or TSN code
45	Validity code	2N	M	M	M	See Appendix VIII	See Appendix VIII	See Appendix VIII			
47	Sex	1A	O	O	O	**M, F, U, -9**	**M, F, U**	M, F, U	Male = M, Female =F, **measured but unknown = U, -9 not measured**	Male = M, Female =F, **U = Unknown**	Male = M, Female =F, U = Unknown
71	Total number	3N	M	M	M	0 to 9999999, -9	0 to 9999999, -9	0 to 9999999, -9	**Not known = -9, total number catch per species and sex. If Data type C then = total number per haul per hour**	**Not known = -9, total number catch per species and sex. If Data type C then = total number per haul per hour**	Not known = -9, total number catch per species and sex. If Data type C then = total number per haul per hour
47	**Category identifier**	**1N**	**M**	**M**	**M**	**1 to 5**	**1 to 5**	1 to 5	**If DataType = C then category number = 1, else 1 to 5, per species and sex**	**If DataType = C then category number = 1, else 1 to 5, per species and sex**	If DataType = C then category number = 1, else 1 to 5, per species and sex
48	**Number measured**	**3N**	**M**	**M**	**M**	**0 to 999, -9**	**0 to 999, -9**	0 to 999, -9	**No specimen measured per sub sample or haul (if data type = C)**	**No specimen measured per sub sample or haul (if data type = C)**	No specimen measured per sub sample or haul (if data type = C)
51	**Subsampling factor**	**3N.3D**	**M**	**M**	**M**	1 - 999.999	1 - 999.999	1 - 999.999	**If data type=R or C then sub sampling factor = 1**	**If data type=R or C then sub sampling factor = 1**	If data type=R or C then sub sampling factor = 1
58	**Sub sampling catch weight**	**5N**	**O**	**O**	O	**0 to 40000, -9**	**0 to 40000, -9**	0 to 40000, -9	**In g. Not known = -9**	**In g. Not known = -9**	In g. Not known = -9

63	**Category catch weight**	8N	O	O	O	**0 to 10000000, -9**	**0 to 10000000, -9**	0 to 10000000, -9	**Catch weight per category or weight per haul per hour (if data type = C), In g. Not known = -9**	**Catch weight per category or weight per haul per hour (if data type = C), In g. Not known = -9**	Catch weight per category or weight per haul per hour (if data type = C), In g. Not known = -9
78	Length class code	1AN	M	M	M	., 0, 1, 2, 5, 9	., 0, 1, 5, 9	., 0, 1, 5, 9	0.1 cm length class=., 0.5 cm length class = 0, 1 cm length class = 1, 2 cm length class = 2, 5 cm length class = 5, +group =9	0.1 cm length class=., 0.5 cm length class = 0, 1 cm length class = 1, 2 cm length class = 2, 5 cm length class = 5, +group =9	0.1 cm length class=., 0.5 cm length class = 0, 1 cm length class = 1, 2 cm length class = 2, 5 cm length class = 5, +group =9
79	Min. length class	3N	M	M	M	1 to 999, -9	1 to 999, -9	1 to 999, -9	Identifier of lower bound of length distribution, eg. 65-70 cm=65 For classes less than 1 cm there will be an implied decimal point after the 2nd digit, eg. 30.5-31.0 cm=305	Identifier of lower bound of length distribution, eg. 65-70 cm=65 For classes less than 1 cm there will be an implied decimal point after the 2nd digit, eg. 30.5-31.0 cm=305	Identifier of lower bound of length distribution, eg. 65-70 cm=65 For classes less than 1 cm there will be an implied decimal point after the 2nd digit, eg. 30.5-31.0 cm=305
82	No at length	6N	M	M	M	1 to 999999, -9	1 to 999999, -9	1 to 999999, -9	No at length is either by category or by haul and hour. Length classes with zero catch should be excluded from the record (Category catch number equals the sum of no at length).	No at length is either by category or by haul and hour. Length classes with zero catch should be excluded from the record (Category catch number equals the sum of no at length).	No at length is either by category or by haul and hour. Length classes with zero catch should be excluded from the record (Category catch number equals the sum of no at length).

RECORD TYPE 4 (SMALK's)

St. pos.	NAME	TYPE*	M/O**			RANGE				COMMENTS			
	BITS	IBTS	BITS	IBTS	EVHOE	BTS	BITS	IBTS	EVHOE	BTS	BITS	IBTS	EVHOE	BTS
1	Record type	2A	M	M		M	CA	CA		CA	Fixed value: CA	Fixed value CA		Fixed value CA
3	Quarter	1N	M	M		M	1 to 4	1 to 4		1 to 4	See Record Type 1	Identical to Record Type 1		Identical to Record Type 1
4	Country	3A	M	M		M	See Appendix III	See Appendix III		See Appendix III	See Record Type 1	Idem		Idem
7	Ship	4AN	M	M		M	See Appendix III	See Appendix III		See Appendix III	See Record Type 1	Idem 1)		Idem 1)
11	Gear	10AN	M	M		M	See Appendix IV	See Appendix IV		See Appendix IV	See Record Type 1	Idem 1)		Idem 1)
21	Station number	6AN	**M**	**M**		M					See Record Type 1	Idem 1)		Idem 1)
27	Haul no	3N	M	M		M	1 to 999	1 to 999		1 to 999	See Record Type 1	Idem 1)		Idem 1)
30	Year	4N	M	M		M	1900 to 2099	1900 to 2099		1900 to 2099	See Record Type 1	Idem		Idem

34	**Species code type**		**1A**	**M**	**M**	M	**N, T**	**N, T**	N, T	**N = NODC or T = TSN**	N = NODC or T = TSN	**N = NODC or T = TSN**
35	Species code		10A	M	M	M	See Appendix VII	See Appendix VII	See Appendix VII	**Official NODC code or TSN code**	Official NODC code or TSN code	**Official NODC code or TSN code**
45	Sub-Division area	Area type	2N	M	M	M	22 to 32, see Appendix IX	0 to 3	0 or 4	ICES Baltic Sub-Division code 7)	ICES Statistical rectangles=0, Four Statistical rectangles=1, Standard NS Roundfish areas=2, Herring Sampling areas=3	ICES Statistical rectangles=0, BTS otoliths area = 4
47	Rectangle area	Area code	4 AN	M	M	M	See Appendix IX	See Appendix IX	See Appendix IX	ICES Statistical Rectangles		
51	Length class code		1A N	M	M	M	., 0, 1, 2, 5, 9	., 0, 1, 5, 9	., 0, 1, 5, 9	0.1 cm length class=., 0.5 cm length class = 0, 1 cm length class = 1, 2 cm length class = 2, 5 cm length class = 5, +group =9	Identical to Record Type 2 (+group not allowed). 2)	Identical to Record Type 2 (+group not allowed). 2)
52	Min. length class		3N	M	M	M	1 to 999, -9	1 to 999, -9	1 to 999, -9	Identifier of lower bound of length distribution, eg. 65-70 cm=65, For classes less than 1 cm there will be an implied decimal point after the 2nd digit, eg. 30.5-31.0 cm=305	Idem	Idem

55	Sex		1A	M	M	M	**M, F, U, -9**	**M, F, U**	M, F, U	Male = M, Female = F, **measured but unknown = U, -9 not measured**	Male=M, Female=F, Unknown=U	Male=M, Female=F, **Unknown=U**
57	Maturity		2AN	M	M	M	1 to 5, -9	1 to 4, space	1 to 4, space	See Appendix I 3)	See Appendix II 3)	See Appendix II 3)
59	+group identifier		2A	M	M	M	+, -9	+, -9	+, -9	Plus group = +, else space 4)	Plus group=+ else space 4)	Plus group=+ else space 4)
61	Age		2N	M	M	M	0 to 99, -9	0 to 99, -9	0 to 99, -9	Unknown age/rings= -9 5)	Unknown age/rings= -9 5)	Unknown age/rings= -9 5)
63	Number		3N	M	M	M	1 to 999	1 to 999	1 to 999	6)	6)	6)
66	Individual weight (g)	**Individual weight (g)**	5N	O	**O**	O	0 to 99999, -9	**0 to 99999, -9**	0 to 99999, -9	**The individual weight of the fish in the record (in gram).**	The individual weight of the fish in the record (in gram).	**The individual weight of the fish in the record (in gram).**