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Report of Activities

DEMERSAL FISH COMMITTEE

by

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1991



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BELGIUM

(R. de Clerck)

Densities and growth rates of the 1990 and 1991 year classes of sole, plaice, dab, flounder, cod and whiting were recorded. Two cruises were undertaken for this purpose according to the criteria of the International Demersal Young Fish Survey. The beam trawl survey was continued in order to estimate the stock size of adult flatfish in the southern North Sea in August. This was part of an international survey in collaboration with the Dutch and English Institutes.

The market sampling programme was continued covering cod (North Sea), whiting (North Sea, haddock (North Sea), plaice and sole (North Sea, English Channel, Celtic Sea and Irish Sea (see tables).

SAMPLING DATA FOR : SOLE 1991 BELGIUM

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IV	1	-	12	1175	230
	2	-	10	965	220
	3	-	9	855	220
	4	-	7	638	218
VII f,g	1	-	3	280	70
	2	-	1	80	80
	3	-	3	290	80
	4	-	4	385	160
VII a	1	-	-	-	-
	2	-	10	1010	230
	3	-	2	160	160
	4	-	1	79	79
VII d,e	1	-	1	70	70
	2	-	6	571	230
	3	-	3	280	70
	4	-	-	-	-
VIII	1	-	1	280	70
	4	-	2	140	140

SAMPLING DATA FOR : PLAICE 1991 BELGIUM

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IV	1	-	12	778	130
	2	-	10	665	140
	3	-	10	629	140
	4	-	8	465	140
VII f,g	1	-	3	194	50
	2	-	1	40	40
	3	-	3	190	40
	4	-	4	212	80
VII a	1	-	-	-	-
	2	-	10	616	130
	3	-	2	80	80
	4	-	1	40	40
VII d,e	1	-	1	40	40
	2	-	6	342	129
	3	-	3	184	40
	4	-	-	-	-

SAMPLING DATA FOR : **COD** **1991** **BELGIUM**

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IV	1	-	2	100	100
	2	-	4	210	210
	3	-	2	93	93
	4	-	5	250	250

SAMPLING DATA FOR : **WHITING** **1991** **BELGIUM**

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IV	1	-	4	165	165
	2	-	3	205	205
	3	-	3	258	135
	4	-	5	225	225

CANADA

(R.O'Boyle)

Canada had no fisheries and no research vessel activity on demersal fish in the ICES area in 1991. Activities in the Northwest Atlantic have been reported to NAFO.

DENMARK

(H.Gislason)

< No report received >

FAROEES

(J.Reinert)

The sampling programme for commercial catches of saithe, cod, haddock, Norway pout, tusk, ling, blue ling, Greenland halibut and redfish was continued in 1991. In addition samples of the species mentioned were taken from research vessel catches. The tables provide more details.

The following research cruises with relevance to the Demersal Fish Committee were made in 1991:

In January *R/V "Magnus Heinason"* carried out a Groundfish Survey around the Faroes as a part of the Faroese Stomach Sampling Programme.

In January-February *R/V "Magnus Heinason"* carried out an exploratory fishery for blue ling to the S and SW of the Faroes.

In February *R/V "Magnus Heinason"* carried out an exploratory fishery with bottom trawl for cod on the Faroe Plateau and the Iceland-Faroe Ridge.

In February-March *R/V "Magnus Heinason"* continued the Faroese Groundfish Surveys specially designed to obtain information on the stock sizes of cod and haddock.

In April *R/V "Magnus Heinason"* carried out a bottom trawl survey for redfish around the Faroes. The survey was continued in October.

In April-May *R/V "Magnus Heinason"* carried out a bottom trawl survey for Norway pout around the Faroes.

In May-June the commercial trawler *M/S Skálafjall* was chartered to carry out exploratory fishing for redfish in the Irminger Sea.

In June-July *R/V "Magnus Heinason"* continued the O-Group Surveys in Faroese Waters to get information on the year-class strength of cod, haddock, Norway pout and sandeel.

In June-July the commercial trawler *M/S "Skarðhamar"* was chartered to carry out an exploratory fishery with bottom trawl around the Faroes for flatfish, particularly lemon sole.

In August-September *R/V "Magnus Heinason"* carried out a Groundfish Survey around the Faroes, especially designed for saithe.

In September a stomach sampling survey was carried out with *R/V "Magnus Heinason"* designed to elucidate the amount of predation on Norway pout.

In September-October *R/V "Magnus Heinason"* carried out fishing experiments around the Faroes with a bottom trawl mounted with a sorting grid. These experiments were continued in December.

In October-November *R/V "Magnus Heinason"* carried out a combined acoustic and trawl survey for demersal fish around the Faroes.

On all cruises with *R/V "Magnus Heinason"* biological samples are taken as a routine for most fish species from almost every haul and the measurements are entered into the vessel computer automatically. Since all data have not been edited yet, the number of samples and measurements by species for 1991 can not be given at this stage except for selected species in the Faroese Groundfish Surveys in February-March and in August-September, and in the Norway pout surveys in April-May and September.

SAMPLING DATA FOR : COD				1991	FAROES		
		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	6	*	261	77	13 298	698
	2	*			34	4 120	784
	3	3	*	140	29	3 432	690
	4	*			37	5 109	853

SAMPLING DATA FOR : HADDOCK				1991	FAROES		
		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	7	*	342	30	11 277	301
	2	*			18	3 979	398
	3	3	*	150	21	6 548	496
	4	*			25	8 818	552

SAMPLING DATA FOR : SAITHE				1991	FAROES		
		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	7	*	299	48	11 146	606
	2	*			41	10 419	500
	3	2	*	100	41	9 279	551
	4	*			43	8 377	600

SAMPLING DATA FOR : NORWAY POUT					1991	FAROES	
		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	26	783	*	15	1 781	750
	2	54	9 881	503	4	401	200
	3	68	8 467	503	6	594	250
	4	15	154	*	9	952	448

SAMPLING DATA FOR : <i>Sebastes marinus</i>				1991	FAROES		
		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	*			5	1 063	-
	2	*			1	46	-
	3	*			-	-	-
	4	*			1	141	-

SAMPLING DATA FOR : <i>Sebastes mentella</i>				1991	FAROES		
		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	*			8	4 367	-
	2	*			12	6 313	-
	3	*			20	12 748	-
	4	*			15	9 256	-

SAMPLING DATA FOR : TUSK				1991	FAROES		
		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	*			2	762	-
	2	*			1	878	-
	3	*			5	1 378	50
	4	*			3	404	-

SAMPLING DATA FOR : LING 1991 FAROES

		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	*			3	588	-
	2	*			2	164	-
	4	*			1	165	-

SAMPLING DATA FOR : BLUE LING 1991 FAROES

		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	16	*	299	2	335	-
	2	*			3	315	-
	3	*			9	995	-
	4	*			4	424	-

SAMPLING DATA FOR : GREENLAND HALIBUT 1991 FAROES

		Research vessel			Market		
Area	Season	N Samples	N Measured	N Aged	N Samples	N Measured	N Aged
Vb	1	*			1	364	-
	2	*			0	189	-
	3	*			2	143	-
	4	*			1	103	-

* Not possible to quantify at this stage (see text).

GERMANY*

(G.Rauck)

The biological sampling programme of demersal species on board of research vessels, commercial trawlers and on fish markets has been continued.

A comprehensive sampling scheme, including length frequency measurements, otolith sampling, individual fish weights, tagging of fish, stomach sampling, as well as studies on fish density and distribution of demersal fish species was carried out during groundfish surveys.

The monthly by-catch analysis of the shrimp fishery has been continued, as well as the joint investigations in the Wadden Sea area of Niedersachsen and Schleswig-Holstein (Young Fish and Brown Shrimp Survey) in spring and autumn together with vessels from the Netherlands and Belgium.

A North Sea groundfish survey with special emphasis on the gadoid and pelagic species covering the area IVa and b has been repeated.

Research vessel cruises related to the national sampling scheme of the demersal species were as follows:

Months	ICES area	Objectives
R.V. "Walther Herwig"		
January	IVa,b,c	Groundfish survey (fish diseases)
Jan./Febr.	IVa,b,c	IYFS
Febr./March	VIa,b, VII	Groundfish and pelagic survey
March/May	XIV + NAFO	Groundfish survey
May/June	IVa,b	Groundfish survey
June/July	IVa,b, Va,b	Groundfish survey(fish diseases)
Sept./October	XIVa, NAFO SA1	Groundfish survey
Oct./November	XIV	Groundfish survey
R.V."Solea"		
January	IVb	Brown shrimp beam trawl survey
February	IVb,c	Groundfish survey
May//June	IVb	Sole beam trawl survey
July	IVb,c	Groundfish survey
September	IVb	Sole beam trawl survey

Notes to tables:

- 1) Samples taken on board of commercial trawler
- 2) Groundfish surveys
- 3) Young Fish and Brown Shrimp Survey
- 4) Shrimp by-catch investigations
- 5) Brown shrimp beamtrawl survey
- 6) Sole beamtrawl survey

* The sampling programme of the former German Democratic Republic has been included in the tables.

SAMPLING DATA FOR: **COD** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IIa	2	3 1)	21 962	817				
IVa	1	602)	452	365				
	2	442)	676	630				
	3	142)	162					
IVb	1	124 2)	4 508	1 404				
	1	54)	17					
	1	275)	113					
	2	138 2)	3 261	1 153				
	2	373)	93					
	2	194)	46					
	2	516)	306	275				
	3	83 2)	1 388	668				
	3	193)	50					
	3	264)	73					
	3	56)	5					
	4	403)	320					
	4	184)	70					
IVc	1	14 2)	80	74				
	3	28 2)	217	207				
Va	3	16 2)	22					
Vb1	3	13 2)	49					
VIa	1	21 2)	76	76				
VIIb,c	1	2 2)	10	10				
VIIe	1	4 2)	4					
VIIg-k	1	2 2)	2					
XIV	1					3	1 341	733
	2	74 2)	7 450	429		2	1 217	587
	3	54 2)	607	605		4	1 600	571
	4	53 2)	599	599		1	345	179
NAFO SA1	4	112 2)	776	776				

SAMPLING DATA FOR: **BLUE WHITING** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
VIa	1	2 2)	127					
VIIb,c	1	1 2)	126					
VIIe	1	3 2)	7					
VIIg-k	1	11 2)	1 298					

SAMPLING DATA FOR : **HADDOCK** **1991** **F.R.G.**

			Research vessels			Market sampling		
			Nr of fish			Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IIa	1	15 1)	2 981			1	277	138
IVa	1	70 2)	21 718	668				
	2	31 2)	4 906	407				
	3	14 2)	1 402					
IVb	1	64 2)	9 794	422				
	2	78 2)	6 390	555				
	3	22 2)	1 631	234				
Va	3	16 2)	2 174					
VIa	1	27 2)	2 730	293				
VIIb,c	1	6 2)	426	48				
VIIe	1	1 2)	1					
VIIg-k	1	1 2)	1					
XIV	4	1 2)	192	192				

SAMPLING DATA FOR : **WHITING** **1991** **F.R.G.**

			Research vessels			Market sampling		
			Nr of fish			Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVa	1	66 2)	10 910	476				
	2	28 2)	2 770	302				
	3	14 2)	310					
IVb	1	117 2)	20 121	465				
	1	26 5)	2 130					
	1	6 4)	278					
	2	109 2)	16 840	801				
	2	92 3)	2 059					
	2	59 4)	2 022					
	3	47 2)	5 992	625				
	3	26 3)	91					
	3	39 4)	211					
	4	41 2)	8 145	126				
	4	39 3)	189					
	4	16 4)	41					
IVc	1	12 2)	13 095					
	3	13 2)	15 035	219				
Va	3	14 2)	14					
VIa	1	22 2)	15 045	180				
VIIb,c	1	7 2)	145	53				
VIIId	4	7 2)	636	-				
VIIe	1	6 2)	248					
VIIg-k	1	3 2)	21					

SAMPLING DATA FOR : **LING** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVa	1	162)	143					
VIa	1	122)	43					
VIIb,c	1	22)	2					
VIIe	1	32)	5					

SAMPLING DATA FOR : **BLUE LING** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
Vb	1					1	273	136
XIV	3					4	1 225	639
	4	12)	220	220				

SAMPLING DATA FOR : **SAITHE** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IIa	4					6	2 549	1 316
IIIc	4					1	62	62
IVa	1	162)	4 390	737		4	2 067	1 064
	2	12)	44	44		10	5 009	2 865
	3					10	4 440	2 003
	4					4	2 088	1 073
Vb	1					1	440	248
VIa	1	82)	211					
VIIb,c	1	62)	59					
VIIg-k	1	62)	61					
VII	1	12)	121	67				

SAMPLING DATA FOR : **POLLOCK** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVa	1	22)	28	8				
VIa	1	22)	44	41				
VIIg-k	1	42)	21					

SAMPLING DATA FOR : **HAKE** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVa	1	7 2)	12					
VIa	1	21 2)	406					
VIIb,c	1	9 2)	73					
VIIe	1	10 2)	41					
VIIg-k	1	25 2)	611					

SAMPLING DATA FOR : **SOLE** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVb	1	5 5)	19			2	487	293
	2	61 3)	295					
	2	46 4)	190					
	2	93 6)	5 858					
	3	36 3)	524					
	3	77 4)	1 537					
	3	31 6)	741	739				
	4	53 3)	914					
	4	17 4)	181					

SAMPLING DATA FOR : **DAB** **1991** **F.R.G.**

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVa	1	31 2)	1 100					
	2	14 2)	904					
	3	6 2)	869					
IVb	1	114 2)	18 275					
	1	3 4)	65					
	1	26 6)	2 130					
	2	103 2)	11 133					
	2	106 3)	2 781					
	2	54 4)	1 043					
	2	6 5)	340					
	3	48 2)	3 483					
	3	74 3)	1 952					
	3	79 4)	2 206					
	3	46 5)	4 025					
	4	36 2)	2 979					
	4	72 3)	2 035					
	4	32 4)	2 100					
IVc	1	11 2)	1 850					
	3	3 2)	19					
VIa	1	1 2)	71					

SAMPLING DATA FOR : **PLAICE** 1991 F.R.G.

			Research vessels			Market sampling		
			Nr of fish			Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVa	1	9 2)	49					
	2	33 2)	177					
IVb	1	102 2)	1 760					
	1	7 4)	935					
	1	48 5)	2 039					
	2	130 2)	447					
	2	123 3)	4 367					
	2	62 4)	5 590					
	2	13 6)	778					
	3	89 2)	528					
	3	77 3)	2 005					
	3	91 4)	7 971					
	3	46 6)	4 284					
	4	26 2)	803					
	4	72 3)	3 202					
	4	33 4)	2 518					
IVc	1	12 2)	439					
	3	10 2)	15					
VIa	1	17 2)	194					
VIIb,c	1	3 2)	20					
VIIe	1	2 2)	3					
VIIg-k	1	1 2)	1					

SAMPLING DATA FOR : **FLOUNDER** 1991 F.R.G.

			Research vessels			Market sampling		
			Nr of fish			Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVb	1	20 2)	101					
	1	7 4)	47					
	2	87 3)	777					
	2	47 4)	296					
	2	2 6)	95					
	3	24 3)	47					
	3	52 4)	278					
	3	7 6)	854					
	4	49 3)	211					
	4	19 4)	133					
IVc	1	2 2)	13					

SAMPLING DATA FOR : **GREENLAND HALIBUT** 1991 F.R.G.

			Research vessels			Market sampling		
			Nr of fish			Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
XIV	3					2		534
	4	1 2)	79					

SAMPLING DATA FOR : **TURBOT** 1991 F.R.G.

		Research vessels			Market sampling			
		Nr of fish			Nr of fish			
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IVb	2	154)	28					
	2	556)	182					
	3	24)	2					
	3	206)	50	42				
	4	23)	2					
	4	24)	2					

SAMPLING DATA FOR : *Sebastes marinus* 1991 F.R.G.

		Research vessels				Market sampling		
			Nr of fish				Nr of fish	
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
IIa	2	3 1)	1 183					
	4					3	1 596	307
XIV	1					1	482	
	2	8 2)	2 202					
	3	28 2)	2 156	600				
	4	41 2)	3 473	552				

SAMPLING DATA FOR : *Sebastes mentella* 1991 F.R.G.

		Research vessels				Market sampling		
		Nr of fish				Nr of fish		
Area	Season	Nr samp.	Meas.	Aged	Other	Nr samp.	Meas.	Aged
Vb	1					2	1 145	320
	2	6 1)	2 433			1	447	100
XIV	1					1	392	
	2	30 1)	13 373	694				
	2	12 2)	4 839	308				
	3	37 2)	8 680	633		2	755	150
	4	14 2)	1 675	169				

Notes to tables:

- 1) Samples taken on board of commercial trawler
- 2) Groundfish surveys
- 3) Young Fish and Brown Shrimp Survey
- 4) Shrimp by-catch investigations
- 5) Brown shrimp beamtrawl survey
- 6) Sole beamtrawl survey

FINLAND

(E. Aro)

No work was carried out on demersal fishes other than that reported to the Baltic Fish Committee.

FRANCE

(A.Souplet)

SAMPLING DATA FOR : COD 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVa	1	52	-	252	-
IVb	1	54	-	380	148
IVc	1	11	-	53	59
	1	-	40	974	-
VIa	1	-	38	979	275
	2	-	31	581	218
	3	-	20	292	138
	4	-	24	482	189
VIIId	4	10	-	10	10

SAMPLING DATA FOR : HADDOCK 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVa	1	52	-	990	-
IVb	1	19	-	5 337	565
VIa	1	-	10	569	-
	2	-	5	266	-
	3	-	18	1 347	-
	4	-	25	1 289	-

SAMPLING DATA FOR : SAITHE 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVa	1	52	-	774	
VIa	1	-	55	1 921	412
	2	-	56	1 857	402
	3	-	61	2 001	413
	4	-	50	1 723	292
VIIg,h,j	4	11	-	26	-

SAMPLING DATA FOR : POLLACK 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VII	1	-	x	350	175
	2	-	x	220	110
VIIe	1	-	15	958	-
	2	-	12	1 354	-
	3	-	9	685	-
	4	-	7	463	-

SAMPLING DATA FOR : **BIB** **1990** **FRANCE**

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVb	1	31	-	227	-
IVc	1	9	-	1 154	-
	4	39	-	474	-
VIIId	1	-	7	751	571
	2	-	12	1 331	385
	3	-	7	1 285	107
	4	-	8	867	-
	4	17	-	2 212	492

SAMPLING DATA FOR : **NORWAY POUT** **1991** **FRANCE**

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVb	1	15	-	8 256	62

SAMPLING DATA FOR : **HAKE** **1991** **FRANCE**

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VI	2	-	8	310	-
	4	-	11	479	-
VII	1	-	11	516	-
	2	-	15	501	-
	3	-	22	769	-
	4	-	3	207	-
VIIe,f	1	-	3	624	-
	2	-	2	220	-
	3	-	3	230	-
	4	-	3	1 655	-
VIII	1	-	64	2 199	-
	1	39	-	3 139	180
	2	-	33	1 828	-
	2	44	-	5 885	233
	3	-	55	2 349	-
	3	44	-	2 792	260
	4	-	66	3 540	-
	4	35	-	2 869	274

SAMPLING DATA FOR : **BLUE LING** **1991** **FRANCE**

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIa	1	-	8	123	66
	2	-	24	383	201

SAMPLING DATA FOR : LING 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIa	1	-	3	605	202
	2	-	3	687	216
	3	-	3	438	183
	4	-	3	445	127
VIIe	1	-	10	500	-
	2	-	11	572	-
	3	-	5	343	-
	4	-	6	373	-
VII+VIII	1	-	12	508	268
	2	29	8	439	273
	3	-	12	521	285
	4	-	12	928	346

SAMPLING DATA FOR : MEGRIM 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIA	4	-	1	423	-
VIIg,h	1	-	17	4 392	-
	2	-	12	3 513	-
	3	-	12	3 388	-
	4	-	14	2 665	-
VIIIa	1	-	1	157	-
	2	-	10	2 007	-
	3	-	9	2 599	-
	4	-	1	169	-

SAMPLING DATA FOR : ALBACORE 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIII	3	-	55	639	-

SAMPLING DATA FOR : RED GURNARD 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVc	4	24	-	241	-
VIIId	1	-	16	1 776	212
	2	-	6	977	284
	3	-	10	1 043	181
	4	-	7	506	220
	4	48	-	477	-

SAMPLING DATA FOR : BASS 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIIe	1	-	8	359	-
	2	-	6	151	-
	3	-	8	327	-
	4	-	5	48	-

SAMPLING DATA FOR : CUCKOO RAY 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIIh	1	-	9	1 320	-
	2	-	9	1 172	-
	3	-	7	810	-
	4	-	9	1 174	-

SAMPLING DATA FOR : PLAICE 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVb	1	62	-	765	324
IVc	1	12	-	111	98
	2	-	3	86	-
	3	-	10	454	-
	4	-	1	45	-
	4	44	-	527	22
VIIId	1	-	25	1 815	289
	2	-	18	1 422	283
	3	-	23	711	308
	4	27	-	131	101
	4	-	16	1 037	131

SAMPLING DATA FOR : TURBOT 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIIe	1	-	9	52	-
	2	-	10	280	-
	3	-	10	275	-
	4	-	6	21	-

SAMPLING DATA FOR : BRILL 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIIId	1	-	13	335	-
	2	-	10	415	-
	3	-	11	310	-
	4	-	6	112	-

SAMPLING DATA FOR : DAB 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVb	1	65	-	6 637	452
IVc	1	12	-	1 026	361
	4	5	-	353	179
VIIId	1	-	28	1 841	246
	2	-	10	1 092	176
	3	-	10	762	102
	4	61	-	1 631	337
	4	-	16	906	79

SAMPLING DATA FOR : LEMON SOLE 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVb	1	30	-	147	43
IVc	1	5	-	66	52
	4	2	-	3	2
VIIId	4	5	-	24	19

SAMPLING DATA FOR : SOLE 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IVc	1	8	-	45	-
	1	-	11	771	-
	2	-	4	300	-
	3	-	11	711	-
	4	19	-	24	-
	4	-	11	805	-
VIIId	1	-	45	1 898	238
	2	-	54	1 788	250
	3	-	21	1 144	177
	4	9	-	9	9
	4	-	28	1 357	144
VIIe	1	-	4	41	-
	2	-	10	533	-
	3	-	7	885	-
	4	-	13	694	-
VIII	1	-	40	2 901	-
	1	32	-	387	220
	2	-	39	2 802	-
	2	44	-	513	279
	3	-	30	2 314	-
	3	38	-	302	103
	4	-	37	2 571	-
	4	32	-	1 014	300

SAMPLING DATA FOR : RED MULLET 1991 FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIII	1	-	8	309	-
	1	22	-	72	-
	2	-	8	468	-
	2	38	-	198	-
	3	-	2	93	-
	3	6	-	35	-
	4	-	9	552	-
	4	26	-	256	-

SAMPLING DATA FOR : **ROUNDNOSE GRENADIER 1991**

FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VI	1	-	x	140	140
	2	-	x	135	135
	3	-	x	130	130
	4	-	x	140	140

SAMPLING DATA FOR : **WHITE ANGLER***

1991

FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIII	1	-	11	222	-
	1	18	-	34	34
	2	-	18	106	-
	2	13	-	14	14
	3	-	22	246	-
	3	10	-	12	12
	4	-	16	209	-
	4	11	-	23	23
VIIe	1	-	11	1 134	-
	2	-	9	919	-
	3	-	12	793	-
	4	-	5	-	-
VII+VIII	1	x	x	4 040	245
	2	x	x	2 780	250
	3	x	x	2 690	260
	4	x	x	3 400	250

**Lophius piscatorius*

SAMPLING DATA FOR : **BLACK ANGLER***

1991

FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIIe	1	-	2	2	-
	2	-	2	5	-
	3	-	4	58	-
	4	-	2	23	-
VIII	1	-	10	21	-
	1	3	-	3	3
	2	-	14	153	-
	2	8	-	14	14
	3	-	20	339	-
	3	10	-	10	10
	4	-	15	284	-
	4	3	-	4	4
VII+VIII	1	x	x	4 550	170
	2	x	x	4 890	180
	3	x	x	4 690	175
	4	x	x	4 640	170

**Lophius budegassa*

SAMPLING DATA FOR : NEPHROPS

1991

FRANCE

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIIg,h	1	-	9	1 475	-
	2	-	9	1 478	-
	3	-	9	1 305	-
	4	-	9	1 446	-
VIII	1	-	4	480	-
	1	21	-	1 329	-
	2	-	5	705	-
	2	32	-	3 007	-
	3	-	4	619	-
	3	29	-	2 729	-
	4	-	5	563	-
	4	26	-	2 059	-
VIIIa	1	-	58	3 128	-
	2	-	55	2 630	-
	3	-	52	2 755	-
	4	-	58	2 478	-

ICELAND

(S.A.Schopka)

The biological sampling programme and research work on demersal fish was carried out along the same lines as in previous years and is thus based both on research vessel data and market samples.

The greatest part of the research vessel data was collected during the annual groundfish survey in March. The survey is carried out simultaneously with five commercial stern trawlers of the same type covering the whole shelf area around Iceland with some 600 trawling stations.

Market samples were collected at the headquarters of the Marine Research Institute in Reykjavík and the five branches of MRI located at other important fishing ports. Fishery inspectors collected a considerable amount of data both on board of commercial fishing vessels and at the landing places.

Emphasis was laid on assessment work, as usual, and steps were taken to increase studies on species interactions.

The number of fish sampled by species are shown in the following tables

SAMPLING DATA FOR : COD				1991		ICELAND
		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	Tagged
Va	1	1 272		70 910	5 057	
			93	10 876	4 460	
	2	281		23 308	1 614	1 278
			62	7 081	2 928	
	3	286		49 080	1 849	
			16	1 484	640	
	4	217		20 951	1 062	
			17	1 314	914	
Total		2 056	188	185 004	18 524	1 278

SAMPLING DATA FOR : HADDOCK				1991		ICELAND
		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	
Va	1	926		69 442	3 085	
			20	2 187	901	
	2	172		35 039	1 090	
			13	2 140	493	
	3	97		17 398	1 667	
			11	1 643	300	
	4	127		18 610	1 160	
			2	687		
Total		1 322	46	147 146	8 696	

SAMPLING DATA FOR : SAITHE

1991

ICELAND

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
Va	1	345		7 404	801
			39	5 047	1 501
	2	56		1 799	273
			14	1 464	500
	3	19		2 620	274
			10	1 495	300
	4	56		4 935	660
			4	394	100
Total		476	67	25 158	4 409

SAMPLING DATA FOR : LING

1991

ICELAND

		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	Counted
Va	1	132		326	143	
	2	10		17		
Total		142		343	143	

SAMPLING DATA FOR : BLUE LING

1991

ICELAND

		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	Counted
Va	1	59		353	110	
	2	4		4		
	4	2		2		
Total		65		359	110	

SAMPLING DATA FOR : TUSK

1991

ICELAND

		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	Counted
Va	1	294		1 298	847	
	2	17		28		
	2		2	420		
	3		1	240		
	4	10		19		
	4		1	209		
Total		321	4	2 214	847	

SAMPLING DATA FOR : *Sebastes marinus*

1991

ICELAND

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
Va	1	548		62 303	
			6	1 442	182
	2	76		5 036	
			8	2 013	409
	3		5	1 658	166
	4	95		2 871	
			10	2 605	480
Total		719	29	77 928	1 237

SAMPLING DATA FOR : *Sebastes mentella*

1991

ICELAND

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
Va	1	34		2 834	
			1	333	
	2	20		2 247	100
			4	567	
	3		1	3	
	4	5		1 183	
			3	405	126
Total		59	98	7 572	226

SAMPLING DATA FOR : PLAICE

1991

ICELAND

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
Va	1	195		5 021	856
	3		10	1 816	1 085
	4		3	552	227
Total		195	12	7 389	2 168

SAMPLING DATA FOR : DAB

1991

ICELAND

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
Va	1	145		4 220	

SAMPLING DATA FOR : GREAT. SILVERSMELT 1991

ICELAND

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
Va	1	57		2 574	235
	2	13		890	
	4	2		3	
Total		72		3 467	235

SAMPLING DATA FOR : CATFISH

1991

ICELAND

		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	Counted
Va	1	481		18 353	2 006	
	2		1		100	
	4	32		229		
Total		513	1	18 582	2 106	

SAMPLING DATA FOR : LUMPSUCKER

1991

ICELAND

		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	Counted
Va	1	200		639		
	2		56	3 400		
Total		200	56	4 039		

SAMPLING DATA FOR : **WITCH** **1991** ICELAND

		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	Counted
V a	1	203		1 472		
			1	141		
	2	13		86		
	4		13	595	200	
Total		216	14	2 294	200	

SAMPLING DATA FOR : **GREENLAND HALIBUT** **1991** ICELAND

		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	
V a	1	60		695		
			6	1 715	100	
	2		38	8 100	1 113	
	3	147		4 499	709	
			1	50	50	
	4		9	1 415	140	
Total		207	54	16 475	2 112	

SAMPLING DATA FOR : **HALIBUT** **1991** ICELAND

		Nr of samples		Nr of fish		
Area	Season	Res. vessels	Market	Measured	Aged	
V a	1	1		105	214	

IRELAND

(E. Fahy)

In 1991 four young fish surveys were undertaken:

- The Irish Sea juvenile plaice survey (MFV Sealgair, ICES division VIIa).
- The Irish Sea young fish survey (RV Lough Beltra, ICES division VIIa).
- The South coast young fish survey (RV Lough Beltra, ICES division VIIg).
- The West Coast young fish survey (RV Lough Foyle, ICES division VIa and VIIb).

SAMPLING DATA FOR : COD 1991 IRELAND

		Nr of fish		
Area	Season	Nr samples	Aged	Meas. only
VIa	1/4	-	674	4 937
VIIa	1/4	-	1 224	2 783
VIIb	1/4	-	-	2 049
VIIg	1/4	-	290	1 485
VIIj	1/4	-	-	2 210

SAMPLING DATA FOR : HADDOCK 1991 IRELAND

		Nr of fish		
Area	Season	Nr samples	Aged	Meas. only
VIa	1/4	-	1 583	13 035
VIb	1/4	-	140	288
VIIb	1/4	-	-	1 492

SAMPLING DATA FOR : WHITING 1991 IRELAND

		Nr of fish			
Area	Season	Nr samples	Aged	Weighed	Meas. only
VIa	1/4	-	1 277		21 503
VIIa	1/4	-	2 958		20 147
VIIb	1/4	-	105		9 084
VIIg	1/4	-	554		9 139

SAMPLING DATA FOR : HAKE 1991 IRELAND

		Nr of fish			
Area	Season	Nr samples	Aged	Weighed	Meas. only
VIa	1/4	-	-		736
VIIb	1/4	-	40		1 006
VIIg	1/4	-	185		1 267
VIIj	1/4	-	857		4 893

SAMPLING DATA FOR : **SOLE** **1991** **IRELAND**

		Nr of fish			
Area	Season	Nr samples	Aged	Weighed	Meas. only
VIa	1/4	-	-		393
VIIa	1/4	-	612		1 645
VIIb	1/4	-	-		245
VIIg	1/4	-	83		654
VIIj	1/4	-	-		846

SAMPLING DATA FOR : **PLAICE** **1991** **IRELAND**

		Nr of fish			
Area	Season	Nr samples	Aged	Weighed	Meas. only
VIa	1/4	-	507		4 011
VIIa	1/4	-	2 767		7 303
VIIb	1/4	-	-		9 016
VIIg	1/4	-	403		5 654
VIIj	1/4	-	-		1 358

SAMPLING DATA FOR : **MEGRIM** **1991** **IRELAND**

		Nr of fish			
Area	Season Total nr	Nr samples	Aged	Weighed	Meas. only
VIa	1/4	-	-		1 735
VIIb	1/4	-	-		5 090
VIIg	1/4	-	69		4 300
VIIj	1/4	-	992		3 785

SAMPLING DATA FOR : **FOUR SPOT MEGRIM** **1991** **IRELAND**

		Nr of fish			
Area	Season Total nr	Nr samples	Aged	Weighed	Meas. only
VIIj	1/4	-	67		129

SAMPLING DATA FOR : ***Lophius budegassa*** **1991** **IRELAND**

		Nr of fish			
Area	Season	Nr samples	Aged		Meas. only
VIa	1/4	-	-		768
VIIb	1/4	-	-		823
VIIg	1/4	-	-		1 254
VIIj	1/4	-	1 124		2 341

SAMPLING DATA FOR : *Lophius piscatorius* 1991 IRELAND

		Nr of fish		
Area	Season	Nr samples	Aged	Meas. only
VIa	1/4	-	-	933
VIIb	1/4	-	-	697
VIIg	1/4	-	-	2 121
VIIj	1/4	-	2 213	2 011

THE NETHERLANDS

(F. van Beek)

In 1991 the market sampling of landings of the Dutch fleet from the North Sea in The Netherlands was continued for the following species: cod (*Gadus morhua*), plaice (*Pleuronectes platessa*), sole (*Solea solea*), whiting (*Merlangius merlangus*) and the greater silver smelt (*Argentina silus*). Market sampling for brill (*Scophthalmus rhombus*), and turbot (*Scophthalmus maximus*) was not continued. For all species samples were taken stratified by harbour. All samples were also stratified by market category. The tables below indicate the level of sampling.

In each quarter surveys were carried out with R.V. "Tridens" (13 weeks) and R.V. "Isis" (10 weeks) in the southern and central North Sea with the standard GOV trawl in the framework of the International Bottom Trawl Survey (IBTS) program. These surveys are also a continuation of the International Young Fish Survey (IYFS) and the Dutch Groundfish Survey (DGS). During the trips stomachs were sampled for the multispecies program (1991 was the year of the stomach). During the surveys 857 adult plaice were tagged with a yellow Peterson tag (codes: YMN 8291-9148) and injected with tetracycline.

In the second quarter R.V. "Tridens" (1 week) carried out a survey off the coast of Jutland with the IYGPT on juvenile pelagic gadoids.

An international egg survey in the period April-July on sole and horse mackerel was carried out by R.V. "Isis" (9 weeks) and R.V. "Tridens" (3 weeks) in the southern North Sea and English Channel. The other countries participating in this survey are Germany and the U.K. The aim of these surveys is to estimate the egg production and stock size of these species in this area.

In September-October a SNS survey (Sole Net Survey) was carried out by R.V. "Tridens" (3 weeks). This survey provides recruitment indices for 1- and 2-year old plaice and sole.

In August-September the International Beam Trawl Survey (BTS) was carried out by R.V. "Isis" (4 weeks) in the southern North Sea and in the English Channel in collaboration with Belgium Germany and the U.K in order to investigate the abundance and distribution of adult plaice and sole in this area.

In September-October R.V. "Isis" (4 weeks), R.V. "Stern" (3 weeks) and R.V. "Schollebaar" (2 weeks) participated in the Demersal Young Fish Surveys (DYFS). These surveys estimate the relative abundance of brown shrimp (*Crangon crangon*) and juvenile plaice and sole in the continental nursery areas. The surveys are carried out since 1969 in collaboration with Belgium and the Federal Republic of Germany.

SAMPLING DATA FOR : **COD** **1991** **THE NETHERLANDS**

		Market		Research vessels
Area *	Season	Measured	Aged	Aged
NRFA 1	1	-	-	55
	3	-	-	92
NRFA 2	2	-	-	137
	3	-	-	99
	4	-	-	36
NRFA 3	1	-	-	33
	2	-	-	13
	3	-	-	80
NRFA 4	2	-	-	24
	4	-	-	4
NRFA 5	1	-	-	24
	2	141	50	49
	3	470	51	-
	4	50	-	4
NRFA 6	1	1 995	495	404
	2	700	140	614
	3	751	284	30
	4	1 586	415	303
NRFA 7	2	-	-	123
	3	61	-	93
	4	-	-	18
Total	1/4	5 754	1 435	2 235

(*) North Sea Roundfish Sampling Areas

SAMPLING DATA FOR : **SILVER SMELT** **1991** **THE NETHERLANDS**

		Market		Research vessels
Area	Season	Measured	Aged	Aged
VIa	2	325	325	-
VIIc	2	44	25	-
Total	1/4	369	350	-

SAMPLING DATA FOR : **HADDOCK** **1991** **THE NETHERLANDS**

		Market		Research vessels
Area*	Season	Measured	Aged	Aged
NRFA 1	1	-	-	197
	3	-	-	208
NRFA 2	2	-	-	146
	3	-	-	180
	4	-	-	83
NRFA 3	1	-	-	182
	2	-	-	114
	3	-	-	146
NRFA 4	2	-	-	155
	4	-	-	4
NRFA 6	2	-	-	7
	3	-	-	1
	4	-	-	23
NRFA 7	2	-	-	94
	3	-	-	150
Total	1/4	-	-	1 690

SAMPLING DATA FOR : **NORWAY POUT** **1991** **THE NETHERLANDS**

		Market		Research vessels
Area*	Season	Measured	Aged	Aged
NRFA 1	1	-	-	60
	3	-	-	47
NRFA 2	2	-	-	30
	3	-	-	45
	4	-	-	15
NRFA 3	1	-	-	25
	2	-	-	34
	3	-	-	34
NRFA 4	1	-	-	51
	3	-	-	14
NRFA 6	4	-	-	16
NRFA 7	3	-	-	20
Total	1/4	-	-	391

(*) North Sea Roundfish Sampling Areas

SAMPLING DATA FOR : **WHITING** **1991** **THE NETHERLANDS**

		Market		Research vessels
Area *	Season	Measured	Aged	Aged
NRFA 1	1	79	50	116
	3	-	-	125
NRFA 2	2	-	-	123
	3	-	-	141
	4	-	-	158
NRFA 3	1	-	-	141
	2	-	-	115
	3	-	-	100
NRFA 4	2	-	-	96
	3	-	-	71
	4	-	-	79
NRFA 5	1	-	-	133
	2	-	150	94
	3	532	-	70
	4	40	-	50
NRFA 6	1	2 258	200	417
	2	1 612	100	495
	3	1 984	375	152
	4	2 743	300	589
NRFA 7	2	-	-	111
	3	230	-	129
	4	-	-	130
Total	1/4	9 469	1 175	3 530

SAMPLING DATA FOR : **SAITHE** **1991** **THE NETHERLANDS**

		Market		Research vessels
Area *	Season	Measured	Aged	Aged
NRFA 1	1	-	-	24
	3	-	-	143
NRFA 2	2	-	-	7
	3	-	-	1
NRFA 3	1	-	-	2
NRFA 6	3	-	-	1
NRFA 7	3	-	-	1
Total	1/4	-	-	179

* North Sea Roundfish Sampling Areas

SAMPLING DATA FOR : PLAICE **1991** **THE NETHERLANDS**

		Market		Research vessels
Area	Season	Measured	Aged	Aged
IV	1	-	1 496	-
	2	-	1 080	-
	3	-	1 080	541
	4	-	1 062	1 326
Waddensea	4	-	-	224
Zeeland estuary	3	-	-	151
Total	1/4	-	4 718	2 242

SAMPLING DATA FOR : SOLE **1991** **THE NETHERLANDS**

		Market		Research vessels
Area	Season	Measured	Aged	Aged
IV	1	-	850	-
	2	-	1 397	-
	3	-	844	342
	4	-	500	815
Waddensea	4	-	-	61
Zeeland estuary	3	-	-	77
Total	1/4	-	3 591	1 295

SAMPLING DATA FOR : TURBOT **1991** **THE NETHERLANDS**

		Market		Research vessels
Area	Season	Measured	Aged	Aged
IV	1	-	-	-
	2	-	-	-
	3	-	-	180
	4	-	-	216
Waddensea	-	-	-	-
Zeeland estuary	-	-	-	-
Total	1/4	-	-	396

SAMPLING DATA FOR : BRILL 1991 THE NETHERLANDS

		Market		Research vessels
Area	Season	Measured	Aged	Aged
IV	1	-	-	-
	2	-	-	-
	3	-	-	75
	4	-	-	82
Waddensea	-	-	-	-
Zeeland estuary	-	-	-	-
Total	1/4	-	-	157

SAMPLING DATA FOR : DAB 1991 THE NETHERLANDS

		Market		Research vessels
Area	Season	Measured	Aged	Aged
IV	2	-	-	-
	3	-	-	311
	4	-	-	622
Waddensea	4	-	-	47
Zeeland estuary	3	-	-	28
Total	1/4	-	-	1 008

SAMPLING DATA FOR : FLOUNDER 1991 THE NETHERLANDS

		Market		Research vessels
Area	Season	Measured	Aged	Aged
IV	1	-	-	-
	2	-	-	-
	3	-	-	86
	4	-	-	133
Zeeland estuary	3	-	-	37
Waddensea	4	-	-	91
Total	1/4	-	-	347

NORWAY

(T.Jakobsen & O.M.Smedstad)

Sub-areas I and II.

Routine research surveys were carried out as in previous years, accounting for most of the activity at sea. The experiment to use commercial trawlers for a bottom trawl survey in the Barents Sea/Svalbard area was continued with five trawlers for two weeks. Stomach sampling for multispecies research was carried out during routine surveys throughout most of the year. Investigations on cod and haddock spawning (eggs, larvae) were combined with other surveys.

The abundance of cod, haddock and redfish in the Barents Sea was investigated during a combined acoustic and stratified bottom trawl survey in February-March. The distribution and abundance of spawning cod was investigated by acoustic surveys in the Lofoten area in February-March. Combined with shrimp investigations, the distribution of young cod and haddock was studied in the central Barents Sea in May-June. The distribution of shrimp, cod, haddock, redfish, and Greenland halibut was investigated in the Svalbard area in September. Part of this survey was included in a combined O-group/multispecies survey carried out together with U.S.S.R. vessels during the same period, when the distribution of cod, haddock, redfish and pelagic species was investigated in the Barents Sea. Stomach samples from cod and haddock were collected during all the routine surveys for cod/haddock in the Barents Sea and at Svalbard, and in addition during shrimp and pelagic fish surveys.

In November, a bottom trawl survey with five commercial trawlers was carried out during two weeks in the Barents Sea under the supervision of the Institute of Marine Research. The intention is to repeat the survey for at least two more years. In addition to the abundance estimation, emphasis was put on comparisons between commercial trawls and the standard sampling trawl used by research vessels.

The post-larvae were studied in July. In August-September the International O-group survey was carried out in the Barents Sea and adjacent waters in cooperation with U.S.S.R. vessels.

An O-group (post-larvae) survey for saithe was carried out from 62°N to the Lofoten Islands in May, and an acoustic survey for saithe and redfish was carried out on the coastal banks from North Cape to 62°N in October.

The sampling programme for commercial catches of cod, haddock, saithe, redfish and Greenland halibut was continued.

Sub-area IV

Norway participated in the quarterly International Bottom Trawl Surveys in three quarters. The International Young Fish Survey was carried out in January-February for four weeks. In June, R/V "Johan Hjort" carried out a survey in the northeastern part of the North Sea for two weeks. In October-November, the distribution and abundance of demersal and pelagic fish were investigated in the northern North Sea during a combined acoustic and bottom trawl survey. The annual acoustic survey for saithe in the North Sea was carried out in February. Stomach samples were collected during all surveys. In May, the distribution of saithe post-larvae was studied. The sampling of commercial catches of saithe, sandeel and Norway pout was continued.

SAMPLING DATA FOR : COD

1991

NORWAY

Area	Season	Market				Research vessels			
		Measured		Aged		Measured		Aged	
		Samp	Fish	Samp	Fish	Samp	Fish	Samp	Fish
I	1	18	1 507	10	1 050	330	30 772	72	2 651
	2	-	-	5	589	125	16 901	22	885
	3	-	-	8	583	242	10 584	20	797
	4	-	-	8	605	450	48 432	27	1 713
IIa	1	33	4 385	165	14 409	187	9 383	66	2 665
	2	6	1 1593	33	3 453	125	13 722	20	899
	3	-	-	31	1 274	116	4 147	6	165
	4	-	-	27	3 032	248	21 043	13	845
IIb	1	-	-	-	-	65	6 891	5	278
	2	-	-	-	-	72	3 976	4	221
	3	-	-	-	-	363	24 017	33	1 154
	4	-	-	-	-	309	48 960	22	1 393
III	3	-	-	-	-	10	30	-	-
IVa	1	-	-	7	415	56	454	26	348
	2	-	-	-	-	21	169	19	143
	4	-	-	-	-	44	499	21	174
IVb	1	-	-	-	-	16	246	11	126
	2	-	-	-	-	7	193	5	80

SAMPLING DATA FOR : HADDOCK

1991

NORWAY

Area	Season	Market				Research vessels			
		Measured		Aged		Measured		Aged	
		Samp	Fish	Samp	Fish	Samp	Fish	Samp	Fish
I	1	6	55	5	242	304	23 183	43	1 052
	2	-	-	3	244	138	7 182	8	145
	3	-	-	14	1 272	150	4 117	9	175
	4	-	-	5	387	302	18 494	17	910
IIa	1	9	400	43	3 208	180	11 535	25	849
	2	3	352	15	1 329	148	4 515	8	201
	3	-	-	24	2 076	113	4 950	-	-
	4	-	-	19	1 425	208	7 001	13	389
IIb	1	-	-	-	-	41	2 808	3	51
	2	-	-	-	-	55	908	-	-
	3	-	-	-	-	253	12 733	9	184
	4	-	-	-	-	127	4 049	-	-
III	4	-	-	-	-	32	1 600	-	-
IVa	1	-	-	-	-	70	5 031	16	410
	2	-	-	-	-	33	2 296	8	266
	4	-	-	-	-	80	6 422	7	108
IVb	1	-	-	-	-	14	816	6	133
	2	-	-	-	-	8	496	6	171

SAMPLING DATA FOR : SAITHE 1991 NORWAY

Area	Season	Market				Research vessels			
		Samp	Measured Fish	Samp	Aged Fish	Samp	Measured Fish	Samp	Aged Fish
I	1	-	-	-	-	25	403	-	-
	2	-	-	1	101	28	793	-	-
	3	1	237	14	1 229	14	19	-	-
	4	-	-	5	355	64	4 253	3	111
IIa	1	5	806	21	1 151	67	2 141	7	296
	2	7	1 802	38	3 432	179	6 418	1	50
	3	1	173	50	3 847	13	23	-	-
	4	1	123	32	2 663	115	4 726	25	744
IIb	1	-	-	-	-	2	2	-	-
	3	-	-	-	-	9	9	-	-
	4	-	-	-	-	10	10	-	-
IVa	1	-	-	-	-	20	553	33	7-1
	2	-	-	-	-	53	1 213	-	-
	4	-	-	-	-	30	939	20	204
IVb	1	-	-	-	-	3	243	1	98
	2	-	-	-	-	2	109	-	-

SAMPLING DATA FOR : GREENLAND HALIBUT 1991 NORWAY

Area	Season	Market				Research vessels			
		Samp	Measured Fish	Samp	Aged Fish	Samp	Measured Fish	Samp	Aged Fish
I	1	-	-	-	-	68	521	1	34
	2	-	-	3	249	70	1 227	3	74
	3	-	-	1	73	28	152	-	-
	4	-	-	1	78	186	1 821	4	149
IIa	1	-	-	1	105	37	1 519	2	39
	2	-	-	-	-	37	807	2	43
	3	-	-	-	-	24	736	3	48
	4	-	-	1	70	44	551	2	60
IIb	1	-	-	-	-	34	1 385	5	145
	2	-	-	-	-	49	3 554	8	191
	3	-	-	-	-	114	4 874	21	700
	4	-	-	-	-	154	4 414	4	272

SAMPLING DATA FOR : TUSK 1991 NORWAY

Area	Season	Market				Research vessels			
		Samp	Measured Fish	Samp	Aged Fish	Samp	Measured Fish	Samp	Aged Fish
I	1	-	-	-	-	4	4	-	-
	2	-	-	-	-	3	7	-	-
	4	-	-	-	-	10	10	-	-
IIa	1	-	-	-	-	47	209	-	-
	2	-	-	-	-	23	91	-	-
	3	-	-	-	-	10	47	-	-
	4	-	-	-	-	35	125	-	-
IIb	1	-	-	-	-	2	5	-	-
	3	-	-	-	-	6	7	-	-
IVa	1	-	-	-	-	8	21	-	-
	2	-	-	-	-	4	4	-	-
	4	-	-	-	-	7	11	-	-

SAMPLING DATA FOR : WHITING

1991

NORWAY

Area	Season	Market				Research vessels			
		Samp	Measured Fish	Samp	Aged Fish	Samp	Measured Fish	Samp	Aged Fish
I	1	-	-	-	-	2	8	-	-
	4	-	-	-	-	1	1	-	-
IIa	1	-	-	-	-	6	16	-	-
	2	-	-	-	-	3	7	-	-
	3	-	-	-	-	7	25	-	-
	4	-	-	-	-	26	535	-	-
IVa	1	-	-	-	-	69	4 305	13	327
	2	-	-	-	-	28	1 681	9	278
	4	-	-	-	-	56	4 392	5	90
IVb	1	-	-	-	-	17	1 468	9	138
	2	-	-	-	-	3	249	3	53

SAMPLING DATA FOR : NORWAY POULT

1991

NORWAY

Area	Season	Market				Research vessels			
		Samp	Measured Fish	Samp	Aged Fish	Samp	Measured Fish	Samp	Aged Fish
I	1	-	-	-	-	37	830	-	-
	2	-	-	-	-	3	143	-	-
	3	-	-	-	-	7	221	-	-
	4	-	-	-	-	14	663	-	-
IIa	1	-	-	-	-	70	2 942	-	-
	2	-	-	-	-	40	1 198	-	-
	3	-	-	-	-	12	489	-	-
	4	-	-	-	-	55	2 351	-	-
IIb	1	-	-	-	-	2	60	-	-
	3	-	-	-	-	4	191	-	-
III	4	-	-	-	-	20	1 200	-	-
IVa	1	-	-	2	100	66	5 397	6	186
	2	-	-	5	300	56	2 374	6	185
	3	-	-	4	125	-	-	-	-
	4	-	-	4	160	51	4 149	-	-
IVb	1	-	-	-	-	14	1 104	3	27
	2	-	-	-	-	5	201	1	20
Vb	2	-	-	-	-	1	120	-	-

SAMPLING DATA FOR : BLUE WHITING

1991

NORWAY

Area	Season	Market				Research vessels			
		Samp	Measured Fish	Samp	Aged Fish	Samp	Measured Fish	Samp	Aged Fish
I	1	-	-	-	-	26	255	-	-
	2	-	-	-	-	12	358	-	-
	3	-	-	-	-	8	504	-	-
	4	-	-	-	-	6	46	-	-
IIa	1	1	100	1	50	76	3 657	1	88
	2	-	-	-	-	58	3 336	17	1 009
	3	-	-	-	-	40	2 421	-	-
	4	-	-	-	-	59	1 714	1	100
IIb	1	-	-	-	-	8	144	-	-
	2	-	-	-	-	5	28	-	-
	3	-	-	-	-	38	1 685	-	-
	4	-	-	-	-	2	82	-	-
III	4	-	-	-	-	65	3 250	2	100
IVa	1	1	100	1	50	2	151	-	-
	2	6	610	4	180-	3	127	1	100
	4	5	243	5	241	-	-	-	-
IVb	1	-	-	-	-	1	1	-	-
Vb	1	-	-	-	-	17	1 855	17	1 243
	2	-	-	-	-	12	1 819	12	840

SAMPLING DATA FOR : LONG ROUGH DAB

1991

NORWAY

Area	Season	Market				Research vessels			
		Samp	Measured Fish	Samp	Aged Fish	Samp	Measured Fish	Samp	Aged Fish
I	1	-	-	-	-	155	8 699	-	-
	2	-	-	-	-	75	2 923	-	-
	3	-	-	-	-	110	3 907	-	-
	4	-	-	-	-	52	3 310	-	-
IIa	1	-	-	-	-	89	3 169	-	-
	2	-	-	-	-	49	1 637	-	-
	3	-	-	-	-	38	1 264	-	-
	4	-	-	-	-	62	872	-	-
IIb	1	-	-	-	-	31	2 062	-	-
	2	-	-	-	-	36	1 825	-	-
	3	-	-	-	-	221	11 895	-	-
	4	-	-	-	-	88	2 658	-	-
IVa	1	-	-	-	-	70	2 249	-	-
	2	-	-	-	-	20	312	-	-
	4	-	-	-	-	20	563	-	-
IVB	1	-	-	-	-	14	317	-	-
	2	-	-	-	-	2	12	-	-

SAMPLING DATA FOR : LING

1991

NORWAY

Area	Season	Market				Research vessels			
		Samp	Measured Fish	Samp	Aged Fish	Samp	Measured Fish	Samp	Aged Fish
IIa	1	-	-	-	-	18	30	-	-
	2	-	-	-	-	12	17	-	-
	4	-	-	-	-	11	31	-	-
IIb	3	-	-	-	-	2	107	-	-
IVa	1	-	-	-	-	13	25	-	-
	2	-	-	-	-	7	12	-	-
	4	-	-	-	-	21	102	-	-
IVb	2	-	-	-	-	1	4	-	-

SAMPLING DATA FOR : SILVER SMELT 1991 NORWAY

Area	Season	Market				Research vessels			
		Measured		Aged		Measured		Aged	
		Samp	Fish	Samp	Fish	Samp	Fish	Samp	Fish
I	1	-	-	-	-	4	11	-	-
	2	-	-	-	-	1	1	-	-
	3	-	-	-	-	1	1	-	-
	4	-	-	-	-	3	16	-	-
IIa	1	2	155	1	98	22	553	-	-
	2	2	200	2	198	31	1 648	20	971
	3	2	297	2	199	10	250	-	-
	4	-	-	-	-	39	792	-	-
IIb	1	-	-	-	-	1	4	-	-
	3	-	-	-	-	2	4	-	-
III	4	-	-	-	-	12	480	-	-
IVa	1	-	-	-	-	3	10	-	-
	2	5	63	-	-	18	743	2	103
	3	1	1	-	-	-	-	-	-
	4	1	3	-	-	-	-	-	-
Vb	1	-	-	-	-	6	408	6	389
	2	-	-	-	-	8	412	8	391

SAMPLING DATA FOR : SANDEEL 1991 NORWAY

Area	Season	Market				Research vessels			
		Measured		Aged		Measured		Aged	
		Samp	Fish	Samp	Fish	Samp	Fish	Samp	Fish
I	3	-	-	-	-	57	811	-	-
	4	-	-	-	-	2	6	-	-
IIa	2	-	-	-	-	49	218	-	-
	3	-	-	-	-	14	56	-	-
	4	-	-	-	-	1	1	-	-
IIb	3	-	-	-	-	9	22	-	-
IVa	1	-	-	-	-	1	1	-	-
	2	-	-	-	-	18	509	-	-
IVb	2	-	-	-	-	2	117	-	-

SAMPLING DATA FOR : REDFISH 1991 NORWAY

Area	Season	Market				Research vessels			
		Measured		Aged		Measured		Aged	
		Samp	Fish	Samp	Fish	Samp	Fish	Samp	Fish
I	1	6	769	1	54	310	14 092	9	374
	2	-	-	-	-	233	9 896	-	-
	3	-	-	-	-	92	3 390	5	175
	4	1	103	-	-	183	5 195	1	50
IIa	1	8	714	4	163	289	15 600	13	384
	2	5	1 260	8	387	253	10 905	9	209
	3	5	752	10	498	142	7 666	1	53
	4	2	464	3	148	258	5 065	9	414
IIb	1	-	-	-	-	74	5 040	5	145
	2	-	-	-	-	135	6 045	-	-
	3	-	-	-	-	401	23 315	1	43
	4	-	-	-	-	120	1 761	-	-
IVa	1	-	-	1	50	15	71	-	-
	2	-	-	-	-	10	179	-	-

POLAND

(J.Janusz and M.Liwoch)

No biological samples were collected in the northeast Atlantic area by Poland.

PORTUGAL

(F.Cardador)

During 1991 the National Institute of Fisheries Research (INIP, Lisbon) has continued its National Sampling Programme at the main fishing ports. The main objective of this sampling programme is to provide length frequency distributions of the landings for the most important commercial species.

INIP has carried out two groundfish surveys on board of the R/V "NORUEGA". These surveys covered the entire Portuguese coast in depths ranging from 20 to 750 m. The main goal of these surveys was to provide abundance indices and to study the distribution pattern of the most important species. The second aim comprised the estimation of the abundance and distribution of eggs and larvae of the main species associated with basic environmental parameters.

The surveys took place in summer (July) and in autumn (October/November). The methodology adopted is a fixed station scheme. Each survey had a duration of 30 fishing days, using a bottom trawl net (Norwegian Campell Trawl) with 20 mm cod-end mesh size. Trawl stations were fished during day light, with a mean tow duration of 60 minutes and a mean trawl speed of 3.5 knots:

The following tables present the sampling data collected by INIP for hake (*Merluccius merluccius*), black scabbard fish (*Aphanopus carbo*), some species of seabreams (*Boops boops*, *Pagellus acarne* and *Spondyliosoma cantharus*), monkfish (*Lophius budegassa* and *L. piscatorius*), and megrim (*Lepidorhombus boscii* and *L. whiffiagonis*).

SAMPLING DATA FOR : HAKE				1991	PORTUGAL
		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IXa	1	33	253	37 675	
	2	22	261	28 876	
	3	141	167	30 109	
	4	134	206	38 618	
Total		330	887	135 278	

SAMPLING DATA FOR : **BLACK SCABBARD FISH 1991**

PORTUGAL

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IXa	1	-	29	3 211	
	2	-	36	3 740	
	3	-	39	3 191	
	4	-	21	1 672	
Total		-	125	11 814	

SAMPLING DATA FOR : *Boops boops*

1991

PORTUGAL

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IXa	1	-	44	2 061	
	2	-	42	2 007	
	3	32	29	2 544	
	4	21	28	2 747	
Total		53	143	9 359	

SAMPLING DATA FOR : *Pagellus acarne*

1991

PORTUGAL

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IX	1	-	39	2 648	
	2	-	44	3 330	
	3	15	33	2 410	
	4	18	37	3 771	
Total		33	153	12 159	

SAMPLING DATA FOR : *Spondyliosoma cantharus*

1991

PORTUGAL

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IX	1	-	19	383	
	2	-	27	631	
	3	18	20	488	
	4	8	18	429	
Total		26	84	1 931	

SAMPLING DATA FOR : **MONKFISH***

1991

PORTUGAL

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IXa	1	-	92	1 411	
	2	-	91	996	
	3	11	47	469	
	4	7	93	2 149	
Total		18	323	5 025	

* *Lophius budegassa* & *Lophius piscatorius*

SAMPLING DATA FOR : MEGRIM(*) 1991 PORTUGAL

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IXa	1	-	-	-	-
	2	-	-	-	-
	3	47	-	310	-
	4	39	-	987	-
Total		86	-	1 297	-

* *Lepidorhombus boscii* & *Lepidorhombus whiffiagonis*

RUSSIA

(V.N.Schleinik)

In 1991, as previously, trawl, trawl-acoustic and ichthyoplankton surveys have been conducted to estimate abundance and biomass of the main commercial fish species, and the potential recruitment to demersal commercial fish stocks in the Barents Sea and adjacent waters.

Investigations were continued to determine the influence of abiotic and biotic environmental factors on fish distribution and behaviour. Population structure, dynamics of the biological characteristics, trophic interrelations between stocks and migration patterns of major commercial fish species were studied.

The tables present the information collected during 1991

SAMPLING DATA FOR : COD		1991		RUSSIA
		Nr of fish		
Area	Season	Measured	Feeding investigations	Aged
I	1	3 096	325	-
	2	11 166	1 008	722
	3	16 778	1 985	501
	4	14 721	2 630	1 717
IIb	2	9 332	1 207	608
	3	32 229	3 261	1 603
	4	10 376	1 774	1 141
IIa	1	14 752	1 250	-
	3	11 458	1 021	963
	4	3 518	713	190
Total	1/4	127 426	15 174	7 445

SAMPLING DATA FOR : HADDOCK		1991		RUSSIA
		Nr of fish		
Area	Season	Measured	Feeding investigations	Aged
I	1	905	175	-
	2	4 135	136	136
	3	17 683	1 650	200
	4	25 772	2 407	1 999
IIb	2	1 335	202	268
	3	400	109	101
	4	7 498	224	543
IIa	1	1 823	350	-
	2	1 434	56	222
	4	2 570	754	359
Total	1/4	63 555	6 603	3 828

SAMPLING DATA FOR : REDFISH 1991 RUSSIA

		Nr of fish		
Area	Season	Measured	Feeding investigations	Aged
I	2	2 995	100	100
	3	11	-	-
	4	8 036	151	151
IIb	2	18 166	2 340	360
	3	333	-	-
	4	2 357	369	326
IIa	1	3 513	629	300
	2	4 691	475	430
	4	4 683	386	603
Total	1/4	44 785	4 450	2 270

SAMPLING DATA FOR : GREENLAND HALIBUT 1991 RUSSIA

		Nr of fish		
Area	Season	Measured	Feeding investigations	Aged
I	2	134	-	109
	3	31	-	-
	4	819	25	2
IIb	3	689	280	336
	4	3 736	809	609
IIa	4	227	18	19
Total	1/4	5 636	1 132	1 075

SAMPLING DATA FOR : SAITHE 1991 RUSSIA

		Nr of fish		
Area	Season	Measured	Feeding investigations	Aged
I	2	302	25	-
	3	1	-	-
	4	6	-	-
IIb	3	1	-	-
	4	4	-	-
IIa	1	5	-	-
	2	229	55-	19
	4	10	-	-
Total	1/4	558	80	19

SAMPLING DATA FOR : WOLFFISHES 1991 RUSSIA

		Nr of fish		
Area	Season	Measured	Feeding investigations	Aged
I	2	6	-	-
	3	70	-	-
	4	562	13	3
IIb	3	2 054	110	110
	4	1 631	236	11
IIa	4	68	1	1
Total	1/4	4 391	360	125

SAMPLING DATA FOR : LONG ROUGH DAB 1991 RUSSIA

		Nr of fish		
Area	Season	Measured	Feeding investigations	Aged
I	3	175	25	-
	4	18 321	271	221
IIb	2	192	137	192
	3	2 049	349	264
	4	9 334	50	100
IIa	1	10	-	-
	4	1 584	28	12
Total	1/4	31 665	860	789

SAMPLING DATA FOR : PLAICE 1991 RUSSIA

		Nr of fish		
Area	Season	Measured	Feeding investigations	Aged
I	3	234	115	284
	4	1 126	382	382
Total	1/4	1 360	497	666

SPAIN

(P.Pereda)

A groundfish survey has been carried out on board of R/V "CORNIDE DE SAAVEDRA" in September and October along the continental shelf of Divisions VIIIc and IXa North to estimate recruitment indices, abundance indices and spatial distribution patterns of the main demersal species. In addition, stomach samples of species belonging to the demersal community were collected.

Selectivity experiments have been conducted on board of a commercial vessel in Division VIIIc with the aim of estimating differences in size composition of the trawl catches using covered 40, 65 and 80 mm diamond and square mesh codends

The market sampling programme was continued in 1991. The number of fish sampled in Sub-Areas VI and VII and in Divisions VIIIa,b,c and IXa are given in the tables below.

SAMPLING DATA FOR : HAKE				1991	SPAIN
		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VI	1		2	164	
	2		1	71	
	3		1	108	
	4		12	301	
VII	1		29	7 093	
	2		32	7 759	
	3		34	7 112	
	4		27	5 771	
VIIIa,b	1		56	8 071	
	2		42	8 323	
	3		62	6 779	
	4		71	10 123	
VIIIc	1		121	8 167	
	2	60	92	6 564	
	3		79	7 508	
	4	72	55	15 976	
IXa	1		24	2 026	
	2		38	3 026	
	3		38	11 080	
	4	20	37	10 049	
Total		152	853	126 071	

SAMPLING DATA FOR : *L. whiffiagonis*

1991

SPAIN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VI	1		2	126	
	3		2	111	
	4		3	163	
VII	1		26	5 221	293
	2		36	5 513	143
	3		30	4 789	502
	4		26	4 038	267
VIIIa,b	1		27	2 064	66
	2		22	1 615	72
	3		22	1 305	46
	4		30	2 067	
VIIIc	1		36	1 957	156
	2	60	37	1 926	145
	3		38	2 454	253
	4	65	35	2 228	331
IXa	1		14	2	1
	2		13	43	40
	3		17	63	53
	4	17	13	47	
Total		142	429	35 732	2368

SAMPLING DATA FOR : *Lepidorhombus boscii*

1991

SPAIN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VI	1		2	21	
	3		1	27	
	4		3	66	
VII	1		22	929	12
	2		30	853	17
	3		23	1 258	25
	4		22	1 016	32
VIIIa,b	1		26	149	48
	2		21	384	72
	3		22	156	58
	4		23	293	
VIIIc	1		17	655	71
	2		19	1 036	339
	3		20	2 581	291
	4	76	18	3 462	437
IXa	1		32	2 716	63
	2	60	31	2 147	177
	3		34	3 105	393
	4	20	30	2 990	
Total		156	396	23 844	2 035

SAMPLING DATA FOR : *Lophius piscatorius* 1991 SPAIN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VI	1		2	85	
	3		2	91	
	4		3	135	
VII	1		20	1 329	
	2		26	1 555	
	3		25	1 403	
	4		16	1 106	
VIIIa,b	1		12	581	
	2		13	533	
	3		13	514	
	4		14	457	
VIIIc	1		43	1 318	
	2	60	52	1 434	
	3		45	1 668	
	4	25	75	2 105	
IXa	1		4	73	
	2		5	62	
	3		5	106	
	4	3	7	92	
Total		88	382	14 647	

SAMPLING DATA FOR : *Lophius budegassa* 1991 SPAIN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VII	1		20	1 781	
	2		27	1 504	
	3		28	1 375	
	4		20	1 425	
VIIIa,b	1		35	1 358	
	2		33	1 462	
	3		22	772	
	4		55	2 015	
VIIIc	1		32	592	
	2	60	40	868	
	3		43	821	
	4	31	35	956	
IXa	1		6	384	
	2		5	336	
	3		5	265	
	4	7	7	756	
Total		98	413	18 670	

SAMPLING DATA FOR : *Pagellus bogaraveo*

1991

SPAIN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
VIIIa,b	2		3	42	
VIIIc	1		27	324	
	2		34	793	
	3		10	139	
	4		6	64	
Total			80	1 362	

SWEDEN

(P-O.Larsson)

An IBTS ("Young Fish Survey") was performed in February in Division IIIa and the eastern North Sea. Bottom trawl surveys were also made in Division IIIa in the second and third quarter. In all surveys, stomach samples were collected according to the special programme for 1991. The number of stomachs sampled is shown in the following table.

Species		February				Apr	Sept
Division		IVa	IVb	IIIa	Total	IIIa	IIIa
Cod	Gadus morhua	40	124	1086	1250	498	729
Whiting	Merlangius merlangus	53	375	968	1396	304	639
Haddock	Melanogrammus aeglefinus	58	50	302	410	134	111
Saithe	Pollachius virens	1		64	65		
Ling	Molva molva			1	1		
Hake	Merluccius merluccius			27	27	8	200
Mackerel	Scomber scomber		1	3	4	4	
Grey gurnard	Eutrigla gurnardus	3	22	190	215	15	
Long rough dab	Hippoglossoides platessoides	8	22	54	84		
Turbot	Scophthalmus maximus		2	34	36		
Brill	Scophthalmus rhombus		2	2	4		
Halibut	Hippoglossus hippoglossus	1					
Spurdog	Squalus acanthias			2	2		
Starry ray	Raja radiata	4	27	56	87		

Some 500 adult plaice were tagged and released in a fjord at the Skagerrak coast (Division IIIa), mainly to study spawning migrations.

A research project was started on recruitment and year class dimensioning mechanisms in flatfish, mainly plaice and flounder, in Division IIIa. O-group flatfish were sampled from settling onwards in shallow nursery areas.

Numbers of fish sampled for size and age are given in the following tables.

SAMPLING DATA FOR : COD 1991 SWEDEN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IIIa	1	42		1 884	496
	2	40		1 744	503
	3	49		2 772	485
IVa	1	2		59	32
IVb	1	11		185	65

SAMPLING DATA FOR : HADDOCK 1991 SWEDEN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IIIa	1	42		1 539	187
	2	40		582	134
	3	49		2 271	111
IVa	1	2		324	49
IVb	1	11		429	78

SAMPLING DATA FOR : WHITING 1991 SWEDEN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IIIA	1	42		3 604	431
	2	40		3 023	336
	3	49		4 080	294
IVa	1	2		121	22
IVb	1	11		1 819	135

SAMPLING DATA FOR : NORWAY POUT 1991 SWEDEN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IIIA	1	42		1 800	140
	2	40		1 545	
	3	49		2 007	41
IVa	1	2		149	12
IVb	1	11		245	22

SAMPLING DATA FOR : PLAICE 1991 SWEDEN

		Nr of samples		Nr of fish	
Area	Season	Res. vessels	Market	Measured	Aged
IIIA	1	42		800	292
	2	40		890	340
	3	49		770	435
IVa	1	2			
IVb	1	11		235	37

UNITED KINGDOM (England and Wales)

(C.T.Macer)

The market sampling programme was continued in 1991. Details of number of fish measured and otolithed are presented in the tables.

The following research vessel cruises took place in 1990:

Vessel	Cruise	Area	Period	Comment
Cirolana	3	SW Approaches, W Channel	8 Mar-2 Apr	PHH trawl survey (stomach samples; juvenile fish)
Cirolana	5	North Sea	10 May - 7 Jun	GOV trawl survey (stomach samples)
Cirolana	7	North Sea	9 Aug - 5 Sep	Granton trawl survey (stomach samples; Macrobenthos)
Cirolana	9	North Sea	23 Oct - 20 Nov	GOV trawl survey (stomach samples)
Corystes	8	Southern Bight, Channel	16 - 31 Aug	Beam trawl survey
Corystes	9	Irish Sea, Bristol Channel	10 Sep - 1 Oct	Beam trawl survey

PHH = Portuguese High Headline

GOV = Grande Ouverture verticale

SAMPLING DATA FOR : SPURDOG 1991 ENGLAND

Area	Season	Market		Research vessels	
		Measured Samp	Aged Fish	Aged Fish	
IVb	1	9	403	-	-
	2	14	755	-	-
	3	10	452	-	-
	4	15	913	-	-
IVc	1	9	383	-	-
	2	5	278	-	-
	4	9	354	-	-
VIa	4	4	328	-	-
VIIa	1	1	98	-	-
	2	8	431	-	-
	3	9	890	-	-
	4	5	416	-	-
VIIIf	4	1	148	-	-
VIIg	4	3	292	-	-

SAMPLING DATA FOR : COD 1991 ENGLAND

Area	Season	Market		Research vessels
		Samp	Measured Fish	Aged Fish
IIe	1	6	778	292
IVa	1	3	741	75
	2	6	912	139
	3	11	1 293	162
	4	2	236	34
IVb	1	135	18 152	1 245
	2	131	18 956	1 320
	3	133	19 123	1 303
	4	123	17 765	1 453
IVc	1	28	3 006	311
	2	26	1 882	276
	3	20	1 540	250
	4	16	837	227
VIa	1	2	343	22
	2	2	344	50
	4	1	168	-
VIIa	1	14	1 297	243
	2	11	1 415	168
	3	15	2 448	209
	4	21	2 840	239
VIIId	1	4	191	43
	4	12	284	102
VIIe	1	10	346	112
	2	9	347	58
	3	16	795	143
	4	9	459	146
VIIIf	1	5	301	37
	2	3	129	-
	4	10	660	20
VIIg	1	4	305	-
	4	6	290	66
VIIh	1	-	-	-
	2	-	-	-
	3	2	111	-
	4	1	45	6
VIIj	1	-	-	-
	4	1	43	3

SAMPLING DATA FOR : SAITHE 1991 ENGLAND

Area	Season	Market		Research vessels
		Samp	Measured Fish	Aged Fish
IVa	1	1	109	-
	2	1	177	-
	3	4	686	-
	4	2	305	-
IVb	1	5	322	-
	2	10	535	-
	3	10	701	-
	4	7	363	-

SAMPLING DATA FOR : **HADDOCK**

1991

ENGLAND

Area	Season	Market			Research vessels
		Samp	Measured Fish	Aged Fish	Aged Fish
IIe	1	5	546	118	-
	1	1	86	106	-
IVa	1	1	177	-	-
	2	6	595	76	821
	3	7	1 260	119	625
	4	2	479	28	717
IVb	1	60	8 808	728	-
	2	89	12 021	896	517
	3	76	10 882	898	356
	4	70	9 197	756	261
VIa	4	1	133	-	-
VIb	3	1	272	-	-
VIIe	3	1	99	-	-
VIIh	1	1	53	-	-

SAMPLING DATA FOR : **WHITING**

1991

ENGLAND

Area	Season	Market			Research vessels
		Samp	Measured Fish	Aged Fish	Aged Fish
IVa	1	1	51	-	-
	2	-	-	-	493
	3	-	-	-	507
	4	-	-	-	618
IVb	1	47	4 162	467	-
	2	44	3 801	487	781
	3	53	4 791	561	718
	4	51	4 621	681	691
IVc	1	10	483	120	-
	2	8	690	117	158
	3	10	748	114	168
	4	9	651	128	105
VIa	1	1	91	-	-
VIIa	1	17	1 728	-	-
	2	10	1 088	123	-
	3	11	1 232	-	78
	4	17	1 788	-	-
VIIId	1	2	284	-	-
	2	3	318	-	-
	3	3	266	-	-
	4	2	147	-	-
VIIe	1	9	1 134	-	-
	2	10	1 441	-	-
	3	8	1 159	-	-
	4	6	1 119	-	-
VIIIf	1	7	946	-	-
	2	2	124	-	-
	3	3	347	-	-
	4	8	1 124	-	-
VIIIf	1	2	241	-	-

SAMPLING DATA FOR : **BLUE WHITING** **1991** **ENGLAND**

Area	Season	Market		Research vessels
		Samp	Measured Fish	Aged Fish
IVa	2	-	-	32

SAMPLING DATA FOR : **HAKE** **1991** **ENGLAND**

Area	Season	Market		Research vessels
		Samp	Measured Fish	Aged Fish
VIa	1	1	96	-
	2	1	207	-
	3	2	439	-
VIIa	1	5	543	-
	2	3	643	-
	3	2	292	-
	4	4	494	-
VIIe	1	7	513	-
	2	10	888	1
	3	9	892	-
	4	11	1 187	28
VIIf	1	17	1 728	-
	2	10	1 088	123
	3	11	1 232	-
	4	17	1 788	78
VIId	1	2	129	7
	2	1	49	-
	4	6	730	23
VIIfg	1	1	34	38
	2	2	139	-
	4	3	207	81
VIIfh	1	1	65	9
	2	2	170	-
	3	1	41	-
	4	3	378	34
VIIfj	1	-	-	98
	3	1	164	-
	4	1	59	18
VIIIa	1	-	-	5

SAMPLING DATA FOR : **NORWAY pout** **1991** **ENGLAND**

Area	Season	Market		Research vessels
		Samp	Measured Fish	Aged Fish
IVa	2	-	-	214
	3	-	-	244
	4	-	-	297
IVb	2	-	-	119
	3	-	-	95
	4	-	-	91

SAMPLING DATA FOR : LOPHIUS PISCATORIUS 1991 ENGLAND

Area	Season	Market		Research vessels
		Samp	Measured Fish	Aged Fish
VIIa	3	-	-	16
	4	-	-	4
VIIe	1	-	-	1
	4	-	-	1
VIIf	3	-	-	10
	4	-	-	2
VIIg	1	-	-	6
	4	-	-	16
VIIh	1	-	-	10
	4	-	-	2
VIIj	1	-	-	14
	4	-	-	3
VIIIa	1	-	-	3

SAMPLING DATA FOR : LOPHIUS BUDEGASSA 1991 ENGLAND

Area	Season	Market		Research vessels
		Samp	Measured Fish	Aged Fish
VIIg	1	-	-	2
	4	-	-	3
VIIh	1	-	-	1
	4	-	-	4
VIIj	1	-	-	10
	4	-	-	7

SAMPLING DATA FOR : ANGLER FISH 1991 ENGLAND

Area	Season	Market		Research vessels
		Samp	Measured Fish	Aged Fish
VIa	2	1	120	-
VIIa	4	1	139	4
VIIId	2	1	153	-
VIIe	1	9	1 232	-
	2	13	1 262	1
	3	14	1 474	-
	4	14	1 449	1
VIIIf	1	4	624	-
	2	4	487	-
	4	2	338	2
VIIg	1	1	203	8
	2	2	216	-
	4	1	151	16
VIIh	1	5	833	11
	2	5	717	-
	3	6	974	-
	4	6	905	-
VIIj	1	-	-	24
	4	-	-	3
VIIIa	1	-	-	3

SAMPLING DATA FOR : **PLAICE**

1991

ENGLAND

Area	Season	Market		Research vessels	
		Samp	Measured Fish	Aged Fish	Aged Fish
IVa	2	4	895	120	15
	3	7	1 346	197	165
	4	1	168	23	20
IVb	1	40	8 459	899	-
	2	39	9 133	569	275
	3	39	8 493	537	651
	4	35	6 046	605	378
IVc	2	-	-	-	55
	3	-	-	-	162
	4	-	-	-	11
VIa	1	1	138	-	-
VIIa	1	12	1 727	243	-
	2	10	1 459	177	-
	3	9	1 606	469	320
	4	10	1 743	229	-
VIIId	1	11	1 717	89	-
	2	40	5 275	440	-
	3	31	2 680	698	488
	4	36	3 429	422	-
VIIe	1	16	2 653	304	-
	2	20	3 210	394	-
	3	21	2 612	358	-
	4	21	2 503	520	-
VIIf	1	9	1 069	95	10
	2	4	540	85	-
	3	-	-	466	122
	4	1	64	32	32
VIIg	1	5	556	7	7
	2	-	-	16	-
	4	4	266	23	23
VIIh	1	-	-	-	1
	4	4	436	5	5
VIIj	4	-	-	2	6

SAMPLING DATA FOR : **LEMON SOLE**

1991

ENGLAND

Area	Season	Market		Research vessels	
		Samp	Measured Fish	Aged Fish	Aged Fish
VIIa	3	-	-	30	30
VIIId	1	1	148	-	-
VIIe	1	11	1 687	108	-
	2	10	1 428	157	-
	3	12	1 599	62	-
	4	8	1 028	163	-
VIIf	1	-	-	44	44
	3	-	-	11	11
	4	4	1	86	-
VIIg	1	-	-	21	21
VIIh	1	-	-	19	68
	3	1	107	-	-
	4	3	475	-	-
VIIj	1	-	-	-	20
VIIIa	1	-	-	-	6

SAMPLING DATA FOR : **SOLE**

1991

ENGLAND

Area	Season	Market		Research vessels	
		Samp	Measured Fish	Aged Fish	Aged Fish

IVa	2	-	-	18	-
IVb	1	24	3 292	638	-
	2	11	655	128	4
	3	9	861	54	-
	4	20	2 206	382	-
IVc	1	1	52	-	-
	2	15	2 661	311	4
	3	23	2 707	457	-
	4	10	1 615	90	-
VIIa	1	7	670	66	-
	2	16	2 566	333	-
	3	10	1 750	569	381
	4	13	1 986	157	1
VIIId	1	-	-	4	-
	2	83	10 411	744	-
	3	32	5 119	710	828
	4	7	1 230	47	-
VIIe	1	18	2 494	239	-
	2	27	2 464	251	-
	3	29	3 228	281	59
	4	18	2 123	445	2
VIIIf	1	17	2 254	366	3
	2	10	1 329	135	-
	3	-	-	358	200
	4	5	951	250	3
VIIg	1	5	580	2	2
	2	1	254	-	-
	4	4	850	7	7
VIIh	2	3	264	-	-
	3	6	823	119	-
	4	9	1 376	103	1

SAMPLING DATA FOR : MEGRIM 1991 ENGLAND

Area	Season	Market		Research vessels
		Measured Samp Fish	Aged Fish	Aged Fish
IVa	2	-	-	16
VIIa	3	-	-	1
VIIe	1	-	27	6
	2	-	6	-
	3	1	182	-
	4	1	160	15
VIIIf	1	-	35	3
	2	2	232	48
	4	-	38	11
VIIg	1	1	83	45
	2	-	48	-
	4	3	418	71
VIIh	1	2	199	258
	2	1	143	55
	3	1	160	162
	4	2	308	60
VIIj	1	-	809	934
	4	-	99	99
VIIIa	1	-	58	57

SAMPLING DATA FOR : BASS 1991 ENGLAND

Area	Season	Market		Research vessels
		Measured Samp Fish	Aged Fish	Aged Fish
IVc	2	7	24	186
	3	8	80	247
	4	4	35	202

VIIa	2	2	156	28	-
	3	-	-	111	-
	4	1	2	-	1
VIIId	2	32	424	677	-
	3	5	97	369	-
	4	3	22	52	-
VIIe	1	5	159	143	-
	2	-	-	177	-
	3	2	28	305	-
	4	7	389	203	-
VIIf	1	8	51	5	-
	2	8	198	333	-
	3	16	361	402	-
	4	6	100	56	-
VIIg	1	3	39	-	-
VIIh	1	-	-	1	-

UNITED KINGDOM (Scotland)

(R.Cook)

Monitoring of the main demersal species by Scotland is undertaken through three main sampling activities. These are market sampling of fish landed by the commercial fishery, sampling fish caught but discarded at sea and annual trawl surveys by the Department's research vessels. Most of the data collected are used by the ICES Roundfish Working Group (RFWG) and Industrial Fisheries Working Group.

During 1991 sampling continued at the same level as in previous years. Port samples are stratified by month, gear type and sea area. The numbers of fish sampled in ICES sub-area IV and Divisions VIa and VIb are given in the table below.

Species	North Sea (IV)		West of Scotland (VIa)		Rockall (VIb)	
	measured	aged	measured	aged	measured	aged
Cod	61 767	11 288	9 638	3 431	349	125
Haddock	120 235	11 985	23 875	4 142	2 636	531
Whiting	95 890	6 743	29 320	2 990	-	-
Saithe	17 130	6 597	6 381	2 388	123	60
Lemon sole	27 050	2 634	4 453	671	-	-
Plaice	28 767	3 443	10 519	1 219	-	-
Megrim	1 182	0	10 595	284	345	0
Angler	792	0	7 290	526	133	0
Spurdog	517	0	1 426	0	-	-
Sandeel	-	-	696	271	-	-

In 1991, approximately 64 commercial vessels were sampled for discards. Discard sampling, like port sampling is stratified by gear type and sea area but because of resource limitations sampling is undertaken on a quarterly basis. Aggregate numbers of fish sampled are given below:

Species	North Sea (IV)		West of Scotland (VIa)	
	measured	aged	measured	aged
Cod	4 980	1 085	244	208
Haddock	41 639	2 787	11 735	1 098
Whiting	34 349	2 159	14 298	1 380
Saithe	617	274	27	27

The following bottom trawl surveys were carried out for groundfish:

Vessel	Area	Period	Comment
Scotia	North Sea (IV)	February	IYFS Commitment
Scotia	West of Scotland (VIa)	March	Indices used by RFWG
Scotia	North Sea (IV)	May	New survey, IBTS commitment
Scotia	North Sea (IV)	August	SGFS, indices used by RFWG
Scotia	Rockall (VIb)	September	Indices used by RFWG
Clupea	Shetland	November	Indices used by Industrial Fisheries WG

U.S.A

(F.Serchuk and B.Rothschild)

The U.S.A. had no fisheries and no research vessel activity on demersal fish in the ICES area in 1990. Activities in the Northwest Atlantic have been reported to NAFO.