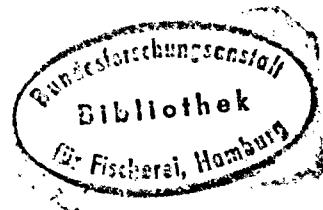


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**REPORT ON THE CATCHES OF COD, HADDOCK, WHITING AND NORWAY POUT  
DURING THE ICES YOUNG HERRING SURVEY 1981**

by

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Introduction

The ICES Young Fish Surveys carried out since 1965 have so far been used to estimate the abundance, the distribution and the mean size of the youngest two age groups of roundfish in the catch. The older fish were treated cursorily as a plus group. During the Council Meeting in 1980 the Demersal Fish Committee stressed the possible value of the survey in providing data on spawning stock biomasses, which could be used as an independent check on the estimates from VPA on deteriorating commercial catch data. In order to allow for a more extensive analysis of the survey data a different sampling regime has been introduced in 1981 and the standard computer analysis was adapted to take account of the new requirements. For this reason the present report deviates in several aspects from former reports.

For a general description of the survey in 1981 in terms of planning and participation reference is made to the report on the herring data (CORTEN & KUITER, ICES C.M. 1981/H : 17).

The survey in 1981 has also been used as the basis for collecting stomach contents of several fish species during the first quarter of the year within the frame work of the Stomach Sampling Programme. More details are given in the Progress Report on this Programme (DAAN, ICES C.M. 1981/G : 72). Since the interpretation of the results requires that the samples taken in different areas for the different size groups are weighted according to the spatial abundance of these size groups and that the size groups can be translated to age groups, the analysis of the IYFS was adapted to provide the required output.

Sampling methods

The major change introduced in 1981 referred to the otolith sampling. Since it has been agreed at an earlier occasion that all data should be worked up by North Sea Roundfish areas as defined in ICES C.M. 1979/G : 35, sampling for otoliths by four statistical rectangles was replaced by sampling by these Roundfish areas. Since the same overall intensity of sampling should be maintained approximately 30 fish per

cm group per area was aimed at. Additional information on sexe and maturity was required so that Sexe-maturity-age-length keys (SMALK's) could be constructed. Table 0 provides the details on sampling intensity arrived at in 1981.

### Analysis

In contrast with former years when participants were asked to report the age distribution of the catch per haul based on the national ALK's and when the length statistics went directly into the computer, they were now asked to provide 3 kinds of input information for subsequent computer analysis: a trawl station list, length distributions of the catches per haul and the SMALK's. The latter as provided by the different participants were first combined and then used for calculating the age distribution of the catch in each individual haul. The abundance analysis then continued as before. In order to reduce the size of this report the older age groups have in the charts been combined in a 3+ group, which can be compared with former reports. However, data are available for age groups 1 to 6+ separately and in tables I-1/IV-1 the indices of abundance are given for each age group separately.

In order to estimate the sexe-maturity-age-length distribution the size distributions of the catches were first summed over the areas and then the total catch in each area was treated with the corresponding SMALK. Tables I-2a/IV-2a and I-2b/IV-2b present the maturity-age-length distributions of males and females respectively. The length statistics are given in tables I-3/IV-3. Tables I-4/IV-4 and I-5/IV-5 present the sexe-maturity-age-length distributions and the age-length distributions respectively. Lastly I-6/IV-6 give the age distributions and the corresponding mean sizes by length classes as required for the stomach sampling programme. All these tables refer to the total North Sea catch summed over the North Sea Roundfish areas. Although details are available for each area separately, there did not seem to be much use in reproducing all these extensive tables in this report, because in any stock assessment of North Sea Roundfish as yet no split by sub-stocks is possible.

The changes in the set up carried through in 1981 may to some extent influence the results and therefore hamper the comparability with former surveys. Although the differences resulting from applying ALK's from larger areas than before are supposed to be relatively small, it is intended to process the 1980 survey data according to the new system and to compare the results for that year.

According to the joint report of the International Gadoid Survey Working Group and the International Young Herring Survey Working Group (ICES C.M. 1981/H : 10) there was little or no gain in the adjustment procedure for unfished squares and therefore the adjusted indices are excluded from the present report. Also the logarithmic transformations were skipped on the grounds given in that report.

Sweden did not collect length-age samples and therefore the Kattegat stations could not be incorporated in the analysis. However, the Skagerrak stations between 8° and 10° E, which belong to the standard areas for which abundance indices are calculated have been treated with the ALK for the neighbouring area 7.

It should be noted that since otoliths are taken from a species specific size class onwards, all the smaller fish being assumed to represent I-group, information on the sexe and maturity distribution of these size classes is lacking. In all species the first mature fish were observed beyond the lower the size limit and therefore these smaller fish could be taken to represent immature fish. For the sexe distribution a 50-50 proportion was assumed. This could result in a bias in the mean length at age for the sexes in 1 year old fish and therefore the results for this age group should be treated with caution.

TABLE 0

Number of otoliths included in the SMALK's by species and Roundfish areas during the IYFS 1981.

<u>Area</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>Kattegat</u>
<b>Species:</b>								
Cod	541	555	282	278	75	1264	675	--
Haddock	1400	939	1255	330	7	346	652	--
Whiting	392	304	721	424	135	798	350	--
Norway pout	138	20	237	114	--	2	--	--

## Results

### I COD

The abundance of I-group cod was very low in all areas except for area 6, where it was moderate (table I-1). Inspecting figure I-2 indicates that just one square (37F8) yielded more fish per hour than all other squares combined. Thus it seems possible that even the overall index of 13 young cod per hour may be over-estimated.

Year class 1979 was as II-group in 1981 even more abundant than as I-group in 1980 (30 vs 26) indicating that this year class had previously been underestimated. Although 1979 now should be considered to be a strong year class, it does not appear to be as good as year class 1970 (38) and 1976 (42).

One problem in interpreting the IYFS results for cod is that the different areas contribute differently to individual year classes as can be seen from table I-7. Also I-group and II-group behave differently in different areas and there is little congruency between the two sets of data. Since recruitment to the North Sea stock appears to be rather inhomogeneous, any regional differences in catchability might be expected to introduce considerable bias in the overall index.

The sexe-maturity-age-length data are given in tables I-2 a/b. The corresponding biomass, estimated from the length distributions from the relationship  $W = 0,0104 * L^3$ , are given at the bottom. Only 51 % of the 4 year old cod in number and 61 % in weight is mature.

From table I-5 it appears that in 1981 the preliminary estimate of year class strength of the 1980 year class based on the length distribution should have included fish below 23 cm rather than 25. However, since the 1979 year class was exceptionally abundant in general 25 cm would appear to be an appropriate limit. The difference between the preliminary index of 17 and the final index of 13 is only or minor importance.

TABLE I - 1  
AVERAGE CATCH / HOUR PER SQUARE BY RNDF-AREA AND AGE GROUP  
(arithmetic abundance analysis; Unadjusted values)

SPECIES: COD

SEGR	YEARCL	SUBAREA:	RNDF-1	RNDF-2	RNDF-3	RNDF-4	RNDF-5	RNDF-6	RNDF-7	KATTEGAT	STAND.	NS AREA
		n hauls	58	57	31	27	8	89	40	11		314
		N squares	37	25	19	11	5	30	12	4		137
0	1981	mean NR/n	0	0	0	0	0	0	0	0	0	0
		Stand.dev.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	1980	mean NR/n	0	3	1	2	0	55	3	9	13	8.0
		Stand.dev.	0.1	0.7	0.6	1.2	0.6	36.7	1.2	2.6		
2	1979	mean NR/n	8	49	7	37	3	44	25	93	30	4.6
		Stand.dev.	2.4	14.2	3.1	17.9	1.3	12.0	21.1	38.5		
3	1978	mean NR/n	8	5	3	1	0	2	2	7	4	0.8
		Stand.dev.	2.3	2.3	1.2	1.2	0.3	0.8	2.1	3.5		
4	1977	mean NR/n	5	2	2	2	1	1	3	0	2	0.5
		Stand.dev.	1.5	0.6	0.8	0.8	1.0	0.7	2.2	0.4		
5	1976	mean NR/n	2	1	1	0	1	2	3	0	2	0.4
		Stand.dev.	0.8	0.3	0.3	0.2	0.7	0.8	2.4	0.2		
6+	OLDER	mean NR/n	1	1	0	1	1	1	1	0	1	1
		Stand.dev.	1.0	0.5	0.1	0.3	1.4	0.3	0.5	0.0		0.3

TABLE I - 2<sup>a</sup>  
AGE - LENGTH - SEX - MATURITY DISTRIBUTION

- 6 -

SPECIES: COD - MALES  
ROUNDFISH AREAS COMBINED

AGE GROUP	1 IMM	1 MAT	2 IMM	2 MAT	3 IMM	3 MAT	4 IMM	4 MAT	5 IMM	5 MAT	6+ IMM	6+ MAT	TOTAL
L-MIN	67		156	156	198	237	340	421	198	500	165	557	
L-MAX	155		329	235	376	308	440	575	235	640	170	775	
CM													
6	2												2
7	1												1
8	1												1
9	1												1
10	6												6
11	19												19
12	33												33
13	57												57
14	66												66
15	104												104
16	91												91
17	133												133
18	109		12										121
19	449		11										460
20	282		26										308
21	248		37										284
22	422		90										512
23	84		117										202
24	99		241		6								345
25	63		257		7								327
26	13		338		2								352
27	4		307	5									316
28			350		5								355
29			218		4								222
30			273	4									278
31			252	3	3								258
32			225		2								227
33			212		4								216
34			176	8	6								190
35			128	12	4								144
36			150	9	2								161
37			117	35	3								156
38			82	23	2								107
39			74	25	21								119
40			123	12	7								141
41			114	21	18								153
42			89	18	21								128
43			75	40	18	3							136
44			106	22	10	1							138
45			48	23	22	1							95
46			14	5	23								41
47			35		24								58
48			45		8	1							54
49			28	7	17	0		0					53
50			16	6	27	4	1						54
51			3	6	23	8							39
52			21		25								46
53			1		3	3	5						13
54			9	1	16	6							31
55					32	5	10	1					49
56					24	4	3	2					33
57			2		6	4	5					2	19
58			22		13	3	3	4					44
59			28		7	6							41
60			48		45	31	17						147
65			12		43	48	33						144
70			3		11	27	66	7					133
75					2	7	96	4					138
80						4	55	8					1156
85							18	2					73
90							3						89
95													44
100													18
105													9
110													4
115													3
120													3
125													0
TOTAL	2285		4417	288	507	162	150	295	25	260	8	104	8500
% MAT	0		6		24		66		91			93	
Biomass	204		1752	219	724	409	458	1358	116	1713	55	1000	8008
% MAT	0		11		36		75		94			95	

TABLE I - 2<sup>b</sup>  
AGE - LENGTH - SEX - MATURITY DISTRIBUTION

- 7 -

SPECIES: COD - FEMALES  
ROUNDFISH AREAS COMBINED

AGE GROUP	1 IMM	1 MAT	2 IMM	2 MAT	3 IMM	3 MAT	4 IMM	4 MAT	5 IMM	5 MAT	6+ IMM	6+ MAT	TOT
L-MIN	67	19	157	170	225	253	320	441	168	438		610	
L-MAX	141	19	337	198	388	324	465	553	255	580		790	
CM													
6	2											2	
7	1											1	
8	1											1	
9	1											1	
10	6											6	
11	19											19	
12	33											33	
13	42											42	
14	54											54	
15	48											48	
16	74											74	
17	106											106	
18	120											120	
19	214	25	2									241	
20	172		26									198	
21	228		57									286	
22	288		106									394	
23	104		181									285	
24	184		246									430	
25	99		333									433	
26	26		274		8							308	
27	4		343									347	
28			289	6								295	
29			251									251	
30			250	8								258	
31			295	8								303	
32			280									280	
33			219	23	4							246	
34			202	3	5							210	
35			151	3	3							158	
36			134	10	3							148	
37			121		6							127	
38			145	3	8							156	
39			144	6	9							158	
40			88	6	8							103	
41			103		11							114	
42			93	3	20							116	
43			85	1	11							97	
44			95		16							111	
45			60		11							71	
46			127		4							150	
47			62		16							78	
48			45	3	17	3	4					70	
49			40		19	2	0					61	
50			8		5	8						21	
51			17		27	2	3					50	
52			14		19							33	
53			4		10		2			2	2	20	
54					8	11						19	
55					22		3	5	3			33	
56					19	4	3					26	
57					14	10	7					30	
58		2			18		3	8				30	
59		1			16	1	1					19	
60					49	23	32	6	5			115	
65					25	21	35	3	9			94	
70					2	9	50	38	9	8		117	
75						2	10	39	9	17		6	83
80							6	51	3	49		3	112
85							4	23	6	69		6	107
90										40		21	61
95										34		25	59
100										5		42	47
105												32	32
110												23	23
115												7	7
120												3	3
125												2	2
TOTAL	1824	25	4893	84	429	99	163	172	46	224		170	8130
% MAT	1		2		19		51		83		100		
Biomass (kg)	178	2	2033	40	659	243	548	848	189	1597		1945	8282
% MAT	1		2		27		61		89		100		

TABLE I - 3  
AGE - LENGTH - SEXE - MATURITY STATISTICS

SPECIES: COD  
ROUNDFISH AREAS COMBINED

AGE GROUP:		Nr	MEAN L	Sd	L-min	L-max
0	SEXES COMB. IMM					
1						
MALES	IMM	2285	20.0	9.7	6	27
	MAT					
	TOTAL	2285	20.0	3.1	6	27
FEMALES	IMM	1824	20.5	12.0	6	27
	MAT	25	19.5	0.0	19	19
	TOTAL	1849	20.5	3.4	6	27
2						
MALES	IMM	4417	32.2	47.3	18	54
	MAT	288	41.1	23.9	27	57
	TOTAL	4705	32.7	7.1	18	57
FEMALES	IMM	4893	32.6	51.5	19	59
	MAT	84	35.2	19.9	28	48
	TOTAL	4977	32.6	7.1	19	59
3						
MALES	IMM	507	49.8	91.0	24	70
	MAT	162	61.8	46.1	43	75
	TOTAL	669	52.7	10.3	24	75
FEMALES	IMM	429	51.3	84.6	26	70
	MAT	99	60.7	59.4	46	75
	TOTAL	528	53.1	9.7	26	75
4						
MALES	IMM	150	65.8	45.0	50	80
	MAT	295	75.6	49.3	49	90
	TOTAL	445	72.3	8.3	49	90
FEMALES	IMM	163	67.7	62.6	48	85
	MAT	172	77.1	65.3	55	85
	TOTAL	335	72.5	9.3	48	85
5						
MALES	IMM	25	75.7	74.0	58	85
	MAT	260	85.2	67.0	60	100
	TOTAL	285	84.4	8.6	58	100
FEMALES	IMM	46	72.0	89.8	53	85
	MAT	224	87.4	58.6	53	100
	TOTAL	270	84.8	9.9	53	100
6						
MALES	IMM	8	82.4	134.3	70	95
	MAT	104	95.8	132.5	57	120
	TOTAL	112	94.9	11.9	57	120
FEMALES	IMM	170	102.2	94.4	75	125
	MAT	170	102.2	9.7	75	125
TOTAL POPULATION		16628	35.8	345.7	6	125

TABLE I - 4  
L E N G T H - S E X E - M A T U R I T Y D I S T R I B U T I O N

- 9 -

SPECIES: COD  
ROUNDFISH AREAS COMBINED

L-min	MALES		FEMALES		TOTAL	
	IMM	MAT	IMM	MAT	IMM	MAT
L-max	6	27	6	19	6	19
	95	120	85	125	95	125
6	2		2		4	
7	1		1		2	
8	1		1		2	
9	1		1		2	
10	6		6		11	
11	19		19		37	
12	33		33		65	
13	57		42		99	
14	66		54		119	
15	104		48		152	
16	91		74		165	
17	133		106		239	
18	121		120		241	
19	460		216	25	676	25
20	308		198		506	
21	284		286		570	
22	512		394		906	
23	202		285		487	
24	345		430		775	
25	327		433		760	
26	352		308		660	
27	311	5	347		658	5
28	355		289	6	644	6
29	222		251		473	
30	273	4	250	8	524	12
31	255	3	295	8	550	11
32	227		280		507	
33	216		223	23	439	23
34	182	8	207	3	389	11
35	132	12	154	3	286	16
36	152	9	137	10	289	20
37	120	35	127		248	35
38	84	23	153	3	237	26
39	95	25	152	6	247	31
40	130	12	96	6	226	18
41	132	21	114		246	21
42	110	18	113	3	223	21
43	93	43	96	1	189	44
44	115	23	111		226	23
45	71	24	71		142	24
46	36	5	146	4	182	9
47	58		78		136	
48	53	1	65	5	118	6
49	46	7	59	2	105	9
50	44	10	13	8	57	18
51	26	14	47	2	73	16
52	46		33		79	
53	9	3	18	2	27	6
54	24	7	8	11	32	17
55	42	6	28	5	71	11
56	26	6	22	4	48	11
57	11	8	20	10	31	18
58	28	16	22	8	51	23
59	34	7	18	1	52	8
60	79	68	86	29	165	97
65	61	83	70	24	131	107
70	40	94	61	55	101	149
75	14	125	19	64	33	188
80	12	144	9	103	21	247
85	2	71	9	98	11	169
90		89		61		150
95	3	41		59	3	100
100		18		47		65
105		9		32		41
110		4		23		27
115		3		7		9
120		3		3		6
125				2		2
TOTAL	7391	1109	7354	775	14745	1884

TABLE I - 5  
AGE - LENGTH DISTRIBUTION

SPECIES: COD  
ROUNDFISH AREAS COMBINED

AGE	0	1	2	3	4	5	6+	TOTAL
L-min	6	18	24	48	53	57	6	
L-max	27	59	75	90	100	125	125	
6	4						4	
7	2						2	
8	2						2	
9	2						2	
10	11						11	
11	37						37	
12	65						65	
13	99						99	
14	119						119	
15	152						152	
16	165						165	
17	239						239	
18	229	12					241	
19	683	13					701	
20	454	52					506	
21	476	94					570	
22	710	196					906	
23	189	298					487	
24	282	487	6				775	
25	163	591	7				760	
26	39	611	10				660	
27	8	655					663	
28	645	5					650	
29	469	4					473	
30	536						536	
31	558	3					561	
32	505	2					507	
33	455	7					462	
34	389	11					400	
35	295	7					302	
36	304	5					309	
37	274	9					283	
38	252	11					263	
39	248	30					278	
40	229	15					244	
41	238	29					267	
42	204	40					244	
43	201	32					233	
44	222	27					249	
45	131	35					166	
46	145	46					191	
47	97	34					136	
48	92	28	4				124	
49	74	39	1				114	
50	30	44	1				75	
51	26	60	3				89	
52	35	44					79	
53	5	16	7	4			33	
54	9	41					50	
55		59	20	3			82	
56		51	8				59	
57	2	33	12		2		49	
58	2	53	16	4			74	
59	1	52	7				60	
60		165	86	11			262	
65		102	120	16			238	
70		25	181	40	4		250	
75		4	152	55	11		221	
80			116	138	14		268	
85			45	125	10		180	
90			3	94	53		150	
95				56	47		103	
100				9	56		65	
105					41		41	
110					27		27	
115					9		9	
120					6		6	
125					2		2	
TOTAL	4135	9682	1197	780	555	282	16629	

TABLE I - 6 -  
AGE - SIZE CLASS DISTRIBUTION

SPECIES: COD  
ROUNDFISH AREAS COMBINED

SIZE CLASS	AGE	N						6+	TOTAL
		0	1	2	3	4	5		
4- 5	N								
	L								
5- 7	N			4					4
	L			6.5					6.5
7- 10	N			6					6
	L			8.5					8.5
10- 15	N		331						331
	L		13.3						13.3
15- 20	N	1473	25						1498
	L	18.3	19.0						18.3
20- 25	N	2111	1127	6					3244
	L	22.2	23.5	24.5					22.6
25- 30	N	209	2970	26					3206
	L	25.8	27.4	27.1					27.3
30- 40	N		3816	85					3901
	L		34.2	37.0					34.2
40- 50	N		1633	331	4				1968
	L		44.0	45.4	48.7				44.3
50- 70	N	111	721	279	38	2			1150
	L	52.2	58.6	63.1	62.6	57.5			59.2
70- 100	N		28	496	508	139			1172
	L		73.1	77.8	85.9	91.1			82.8
100- 150	N				9	141	150		
	L				102.5	108.0	107.7		

TABLE I-7

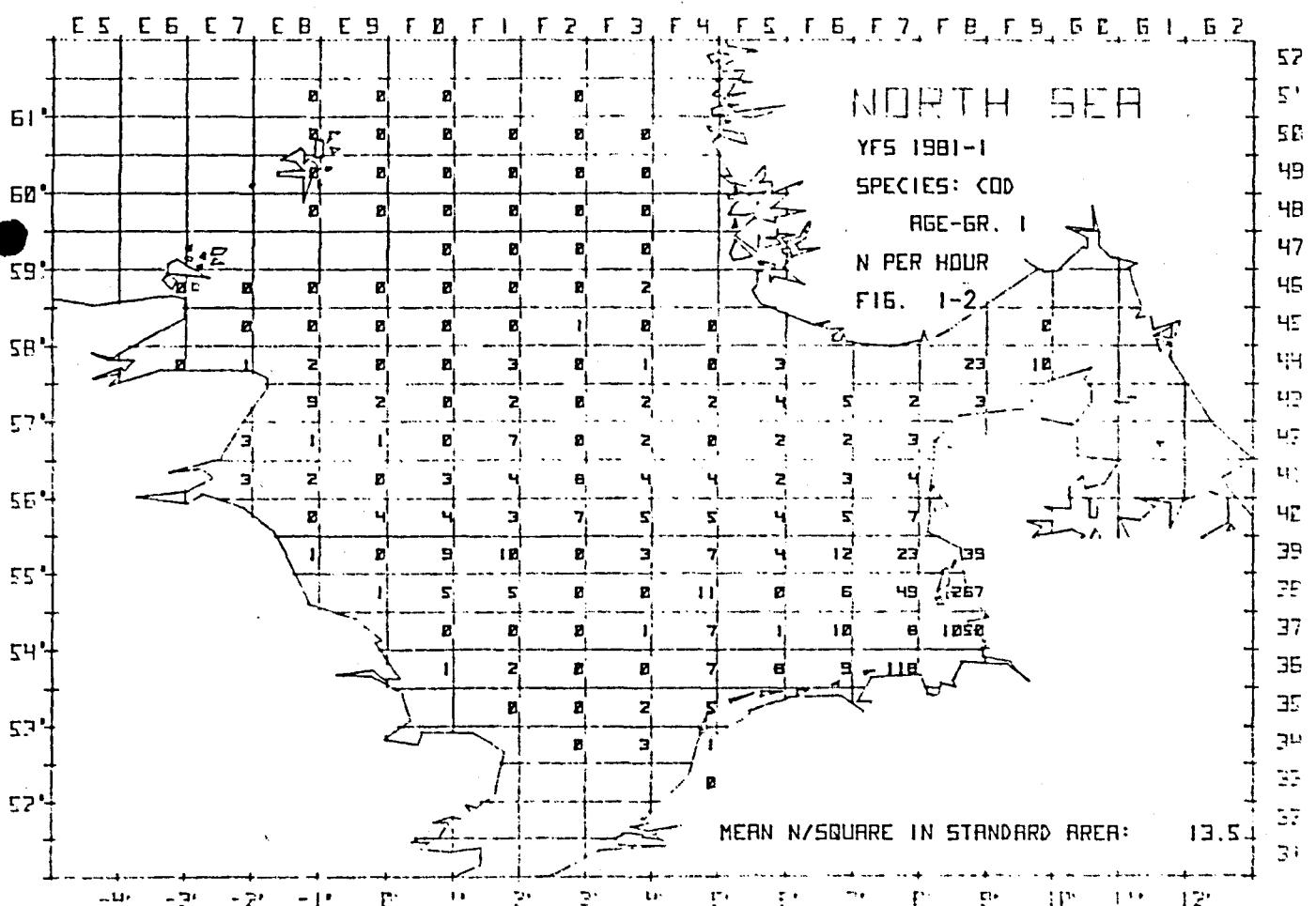
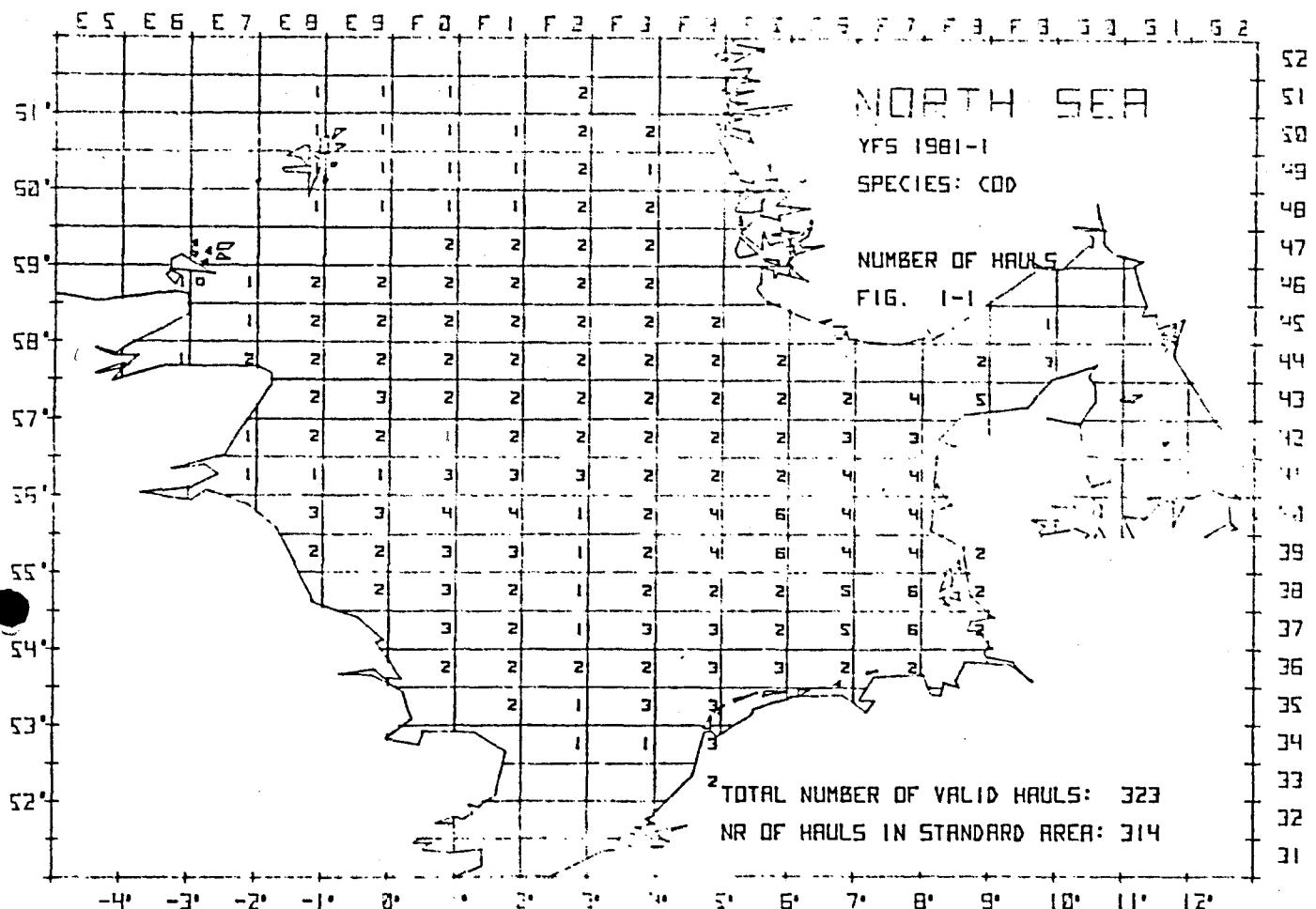
The three prominent year classes of cod in each North Sea Roundfish area during the surveys 1970-1981 ranked by the index of abundance for I-group and II-group separately. Corresponding ranking positions are underlined twice, other year classes occurring in both sets of survey data are underlined once.

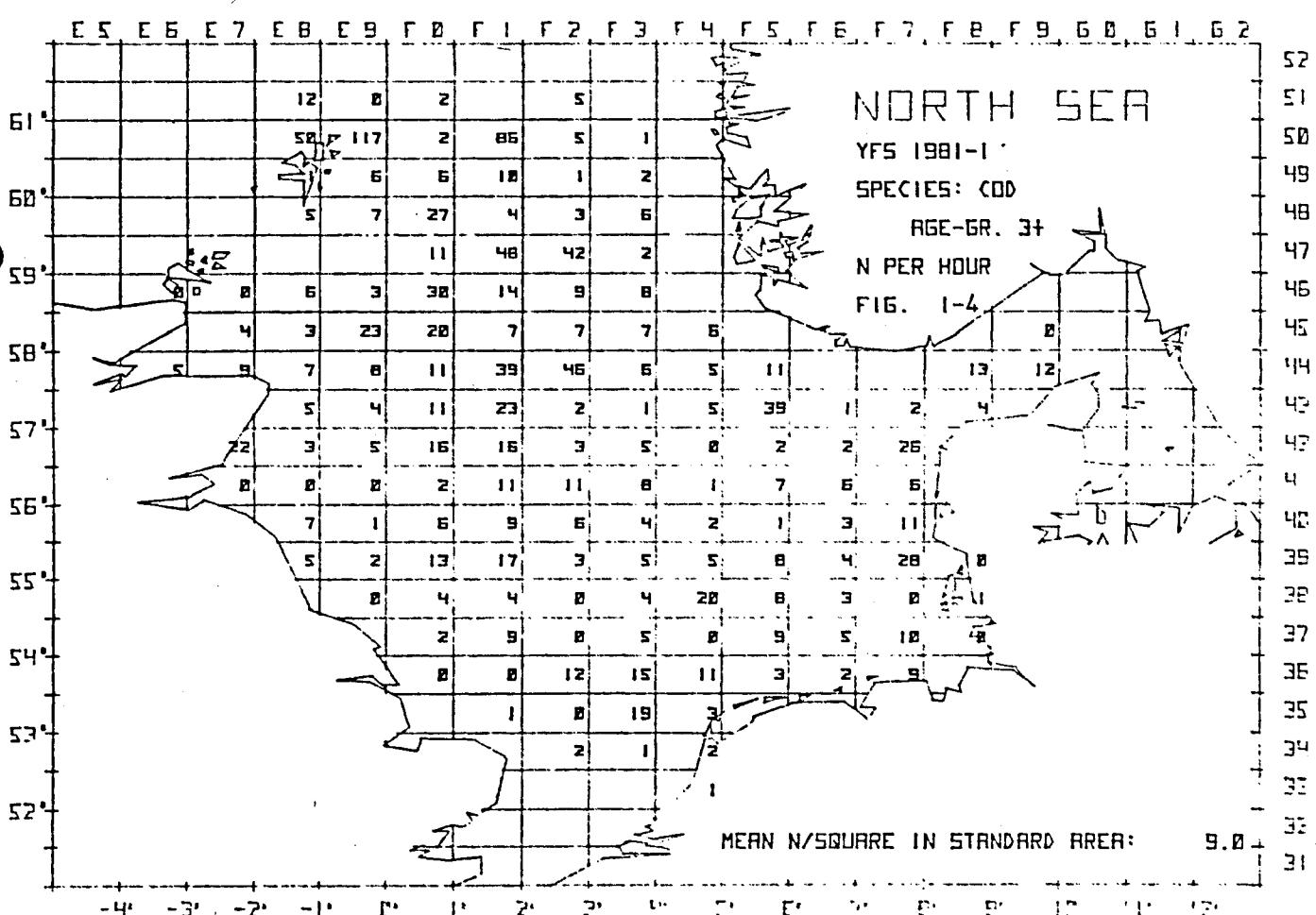
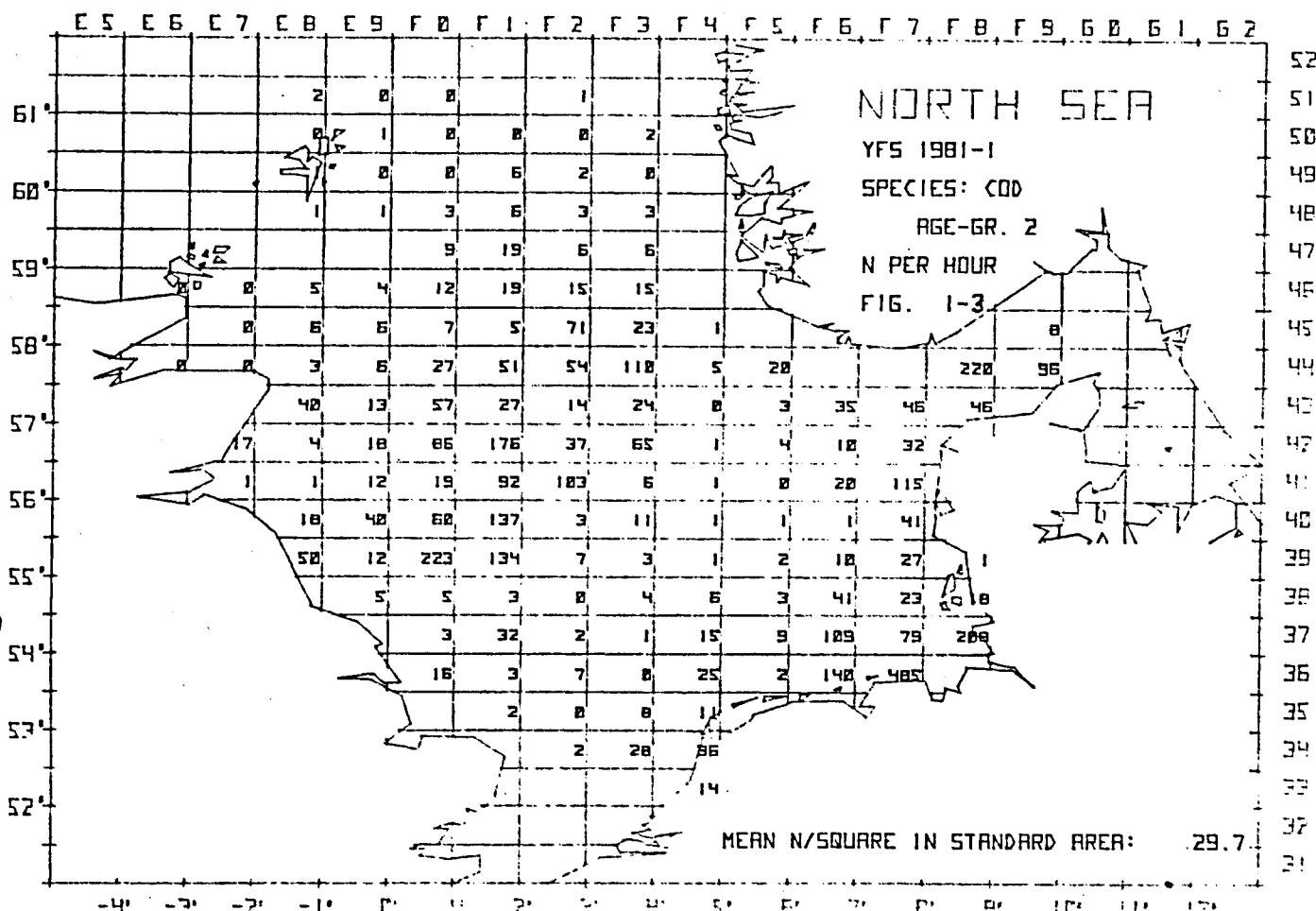
A. Surveyed as I-group:

	Highest index	Second	Third
	Year class - Index	Year class - Index	Year class - Index
NSRF Area	1 1970 - 23	1973 - 20	1975 - 3
	2 <u>1970</u> - 79	<u>1976</u> - 29	1969 - 28
	3 <u>1969</u> - 71	<u>1970</u> - 6	1974 - 6
	4 1972 - 60	1974 - 41	<u>1970</u> - 25
	5 <u>1976</u> - 50	1969 - 20	<u>1970</u> - 7
	6 1974 - 345	1970 - 201	1969 - 171
	7 <u>1970</u> - 238	<u>1976</u> - 156	1972 - 96
Standard area	1970 - 100	1974 - 96	1969 - 74
	_____		

B. Surveyed as II-group:

	Highest index	Second	Third
	Year class - Index	Year class - Index	Year class - Index
NSRF area	1 1969 - 23	1974 - 20	1971 - 16
	2 <u>1970</u> - 53	1979 - 49	<u>1976</u> - 17
	3 <u>1969</u> - 13	1979 - 7	<u>1970</u> - 6
	4 1979 - 37	1971 - 28	<u>1970</u> - 21
	5 <u>1970</u> - 74	<u>1976</u> - 23	1972 - 6
	6 1976 - 137	<u>1969</u> - 64	1979 - 44
	7 <u>1970</u> - 110	<u>1976</u> - 47	1974 - 31
Standard area	1976 - 42	<u>1970</u> - 38	1979 - 33





II HADDOCK

Year class 1980 was poorly represented in the catches and the index of 268 (table II-1) per hour indicates a poor year class. Year class 1979 was still abundant as II-group, confirming the result from the 1980 survey which indicated a good year class. The main area of high abundance was located off the Scottish coast (area 3, cf figure II-3). Older cod were caught in rather larger numbers than during the past 6 years.

The sexe-maturity-age-length distributions are given in tables II-2 a/b. Approximately 50 % of the males are mature at 2 years old and females become mature one year later. The weight-length relationship used in calculating the biomasses is  $W = 0,009 * L^3$ . The upper limit of 20 cm used in the preliminary estimate of the recruiting year class appears to be appropriate (table II-5) and difference between the preliminary estimate (260) and the final index (268) is very small indeed.

TABLE II - 1  
AVERAGE CATCH / HOUR PER SQUARE BY RNDP-AREA AND AGE GROUP  
Arithmetic abundance analysis; Unadjusted values)

SPECIES: BADDOCK

TABLE II - 2<sup>a</sup>  
AGE - LENGTH - SEX - MATURITY DISTRIBUTION

SPECIES: HADDOCK - MALES  
OUNDFISH AREAS COMBINED

AGE GROUP	1		2		3		4		5		6+		TOTAL
	IMM	MAT	IMM	MAT	IMM	MAT	IMM	MAT	IMM	MAT	IMM	MAT	
L-MIN	89	77	124	159	122	194	121	212	84	195	46	206	
L-MAX	154	86	213	258	185	327	155	313	89	278	46	310	
CM													
8	4												
9	31												31
10	586												586
11	1936												1936
12	182												182
13	397												397
14	5256												5256
15	3668												3668
16	2014												2014
17	1912		13										
18	721	23	231	17									1924
19	1028	184	929	105									991
20	1067	195	1816	350									2246
21	753	165	3237	429									3427
22	833	121	4863	2871	110								4584
23	139	125	5520	4532	74	119							8798
24	117		3740	5401		128	76						10510
25			4543	5066	134	151							9461
26			2530	4106	581	153							9493
27			1512	3183	570	568							7371
28			1151	3140	152	451	6						5832
29			379	1909	654	814							4900
30			263	1523	286	1499	89	93					3755
31			124	923	451	995	4	4					3754
32			33	616	283	1159		262					2502
33			44	324	55	927	52	20					2352
34			16	318	76	885		187					1425
35			16	212	194	861		188					1485
36			11	171	28	745	51	138					1488
37			19	49	107	625		205					1154
38			3	39	24	623	24	65	3	13			802
39			4	16	41	306	5	143	8				548
40				15	17	271		147	3	41			19
41				.5	3	166		155		24			512
42			2	7		70		90		4			361
43				1		89		51	4	38			207
44						33		90		20			195
45						42		82		22			151
46					4	23		32	5	12	4		156
47						6		28		12			90
48							4	27					82
49							2	14					62
50							9	8					36
51							2	3					47
52							3	18					13
53							1	4					29
54								6					20
55								2					25
56								8					9
57								3					11
58													19
59								2					0
60								2					2
65										8			20
70										3			11
75										4			4
TOTAL	20641	813	30997	35326	3843	11723	310	2074	15	265	4	371	106383
% MAT	4		53		75		87		91			99	
Biomass (kg)	862	70	4015	6043	952	4080	95	1131	11	221	4	.437	17921
% MAT	8		60		81		92		95			99	

TABLE II - 2<sup>b</sup>  
AGE - LENGTH - SEX - MATURITY DISTRIBUTION

SPECIES: HADDOCK - FEMALES  
WONDERTH AREA COMBINED

AGE GROUP	1 IMM	1 MAT	2 IMM	2 MAT	3 IMM	3 MAT	4 IMM	4 MAT	5 IMM	5 MAT	6+ IMM	6+ MAT	TOTAL	
L-MIN	90		115	145	160	180	93	209	117	241	42	276		
L-MAX	151		213	228	247	300	157	321	141	329	42	372		
24													4	
28	4												31	
29	31												586	
30	586												586	
31	1936												1936	
32	7846												7846	
33	7897												7897	
34	1930												1930	
35	2189												2189	
36	1814												1814	
37	654	25											680	
38	371	414											784	
39	588	1017											1605	
40	829	2222	49										3099	
41	728	4392	89										5210	
42	198	5209	450	170									6027	
43	119	7662	448	74									8303	
44	234	7875	1506	76									9769	
45	6831	1087											7919	
46		7287	1430	773	290								9779	
47		5701	1381	927	48								8056	
48		2491	1523	1117	51								5215	
49		2026	1333	807	357	5							4527	
50		1453	1114	989	196								3753	
51		512	1101	472	575	88							2748	
52		285	745	427	864	48	43						2413	
53		160	525	755	967	108	34						2549	
54		137	206	208	738	76	7						1371	
55		118	150	263	789	101	32						1453	
56		41	112	303	621	40	147	3	8				1276	
57		34	67	217	598	20	83	11	6			11	1048	
58		18	63	192	576	54	42	13	11				970	
59		7	24	167	265	25	154	15	28				686	
60		3	6	81	285	36	136						547	
61			3	28	228	27	72						373	
62				27	153		144	7	30			3	370	
63				25	88		116	4	27				287	
64				9	67	18	135	13	37				23	
65				3	68	3	115	3	14				301	
66				4	40	5	63		27				209	
67				4	27	5	53		20				141	
68				3	8	4	41	4	17				10	
69					17	4	38		26				87	
70					14	5	65		21				25	
71						6	29		258				130	
72							19		17				295	
73							16		16				47	
74							10	8	21				51	
75							15		4				11	
76													37	
77													27	
78													27	
79													6	
80													17	
81													22	
82													14	
83													7	
84													48	
85													27	
86													48	
87													9	
88													0	
89													2	
90													2	
91														
% MAT	27952	0	55919	13413	8124	49	7936	680	1739	82	88	616	310	116772
Biom.	832		8228	2866	2264	3259	307	1214	58	663	2	420	20113	
% MAT	0		26		59		80		92		100			

TABLE II - 3  
AGE - LENGTH - SEX - MATURITY STATISTICS

SPECIES: HADDOCK  
ROUNDFISH AREAS COMBINED

		Nr	MEAN L	Sd	L-min	L-max
AGE GROUP:	0					
SEXES COMB.	IMM					
MALES	IMM	20641	16.1	9.4	8	24
	MAT	813	21.2	2.1	18	23
	TOTAL	21455	16.3	3.2	8	24
FEMALES	IMM	27952	14.3	7.6	8	24
	MAT					
	TOTAL	27952	14.3	2.8	8	24
AGE GROUP:	2					
MALES	IMM	30997	24.1	6.3	17	42
	MAT	35326	26.3	9.5	18	43
	TOTAL	66322	25.3	3.0	17	43
FEMALES	IMM	55919	25.0	8.2	17	40
	MAT	13413	28.3	11.5	20	41
	TOTAL	69331	25.7	3.2	17	41
AGE GROUP:	3					
MALES	IMM	3843	29.8	13.0	22	46
	MAT	11723	33.3	17.8	23	53
	TOTAL	15566	32.4	4.3	22	53
FEMALES	IMM	8124	30.9	16.5	22	48
	MAT	7936	35.2	17.6	26	54
	TOTAL	16060	33.0	4.7	22	54
AGE GROUP:	4					
MALES	IMM	310	31.5	26.0	24	48
	MAT	2074	38.6	26.8	30	60
	TOTAL	2384	37.7	5.7	24	60
FEMALES	IMM	680	36.3	20.6	29	59
	MAT	1739	41.6	44.4	24	60
	TOTAL	2419	40.1	6.6	24	60
AGE GROUP:	5					
MALES	IMM	15	42.9	10.2	38	46
	MAT	265	44.4	34.9	33	65
	TOTAL	280	44.3	5.8	33	65
FEMALES	IMM	82	42.4	26.2	36	54
	MAT	616	48.8	25.3	36	65
	TOTAL	697	48.0	5.4	36	65
AGE GROUP:	6					
MALES	IMM	4	46.5	-0.0	46	46
	MAT	371	48.0	60.6	35	75
	TOTAL	375	48.0	7.7	35	75
FEMALES	IMM	3	42.5	0.0	42	42
	MAT	310	52.2	47.6	37	75
	TOTAL	313	52.1	6.9	37	75
TOTAL POPULATION		223131	24.7	50.7	.8	75

TABLE II - 4  
LENGTH - SEX - MATURITY DISTRIBUTION

SPECIES: HADDOCK  
ROUNDFISH AREAS COMBINED

	MALES		FEMALES		TOTAL	
	IMM	MAT	IMM	MAT	IMM	MAT
L-min	8	18	8	20	8	18
L-max	48	75	59	75	59	75
8	4		4		8	
9	31		31		62	
10	586		586		1171	
11	1936		1936		3871	
12	182		7846		8028	
13	397		7897		8294	
14	5256		1930		7186	
15	3668		2189		5857	
16	2014		1814		3828	
17	1924		680		2604	
18	951	39	784		1736	39
19	1957	289	1605		3562	289
20	2883	544	3050	49	5933	593
21	3990	594	5120	89	9110	684
22	5805	2993	5577	450	11382	3442
23	5734	4776	7855	448	13588	5225
24	3933	5528	8186	1583	12119	7111
25	4676	5217	6831	1087	11507	6305
26	3112	4259	8059	1720	11171	5979
27	2083	3750	6629	1428	8713	5178
28	1309	3591	3609	1606	4918	5197
29	1033	2722	2837	1690	3869	4413
30	638	3116	2443	1310	3081	4426
31	579	1922	1072	1676	1651	3599
32	316	2036	760	1652	1076	3689
33	150	1275	1023	1526	1173	2801
34	92	1393	421	950	513	2343
35	209	1278	482	971	691	2250
36	91	1063	388	888	479	1951
37	126	889	283	765	408	1655
38	53	748	278	693	331	1441
39	50	498	214	472	264	970
40	20	492	120	426	140	919
41	3	358	55	318	58	676
42	2	205	38	333	40	537
43	4	191	29	258	33	449
44		151	39	261	39	413
45		156	9	199	9	356
46	13	87	9	132	22	218
47		82	9	115	9	197
48	4	58	11	76	15	134
49		36	4	84	4	120
50		47	5	126	5	172
51		13	6	289	6	302
52		29		83		117
53		25		51		76
54		36	8	43	8	79
55		9		37		46
56		19		27		45
57		13		6		19
58				22		22
59		4	3	11	3	15
60		20		48		68
65		11		8		19
70		4				4
75		2		2		4
TOTAL	55811	50567	92756	24013	148566	74580

TABLE II - 5  
AGE-LENGTH DISTRIBUTION

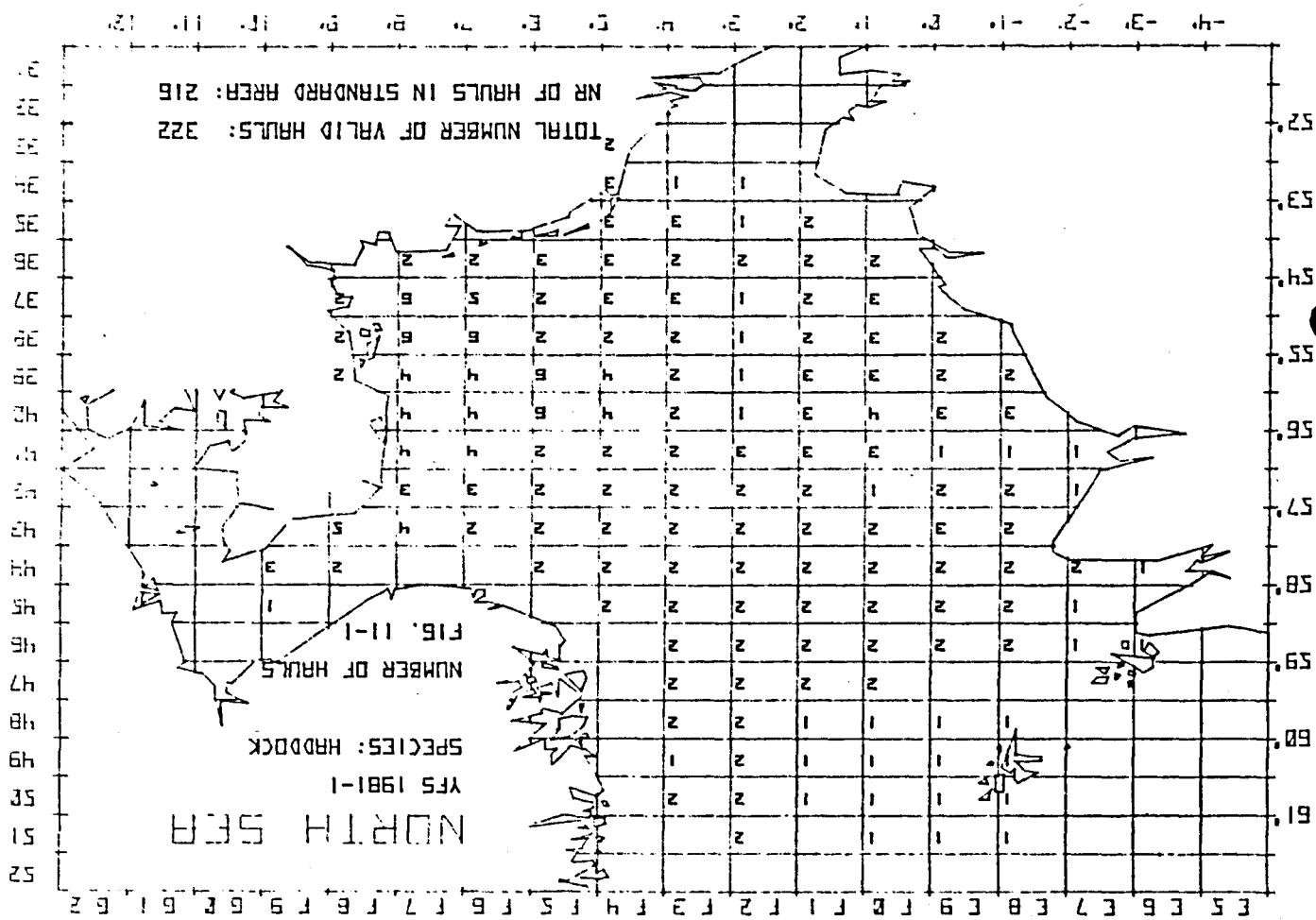
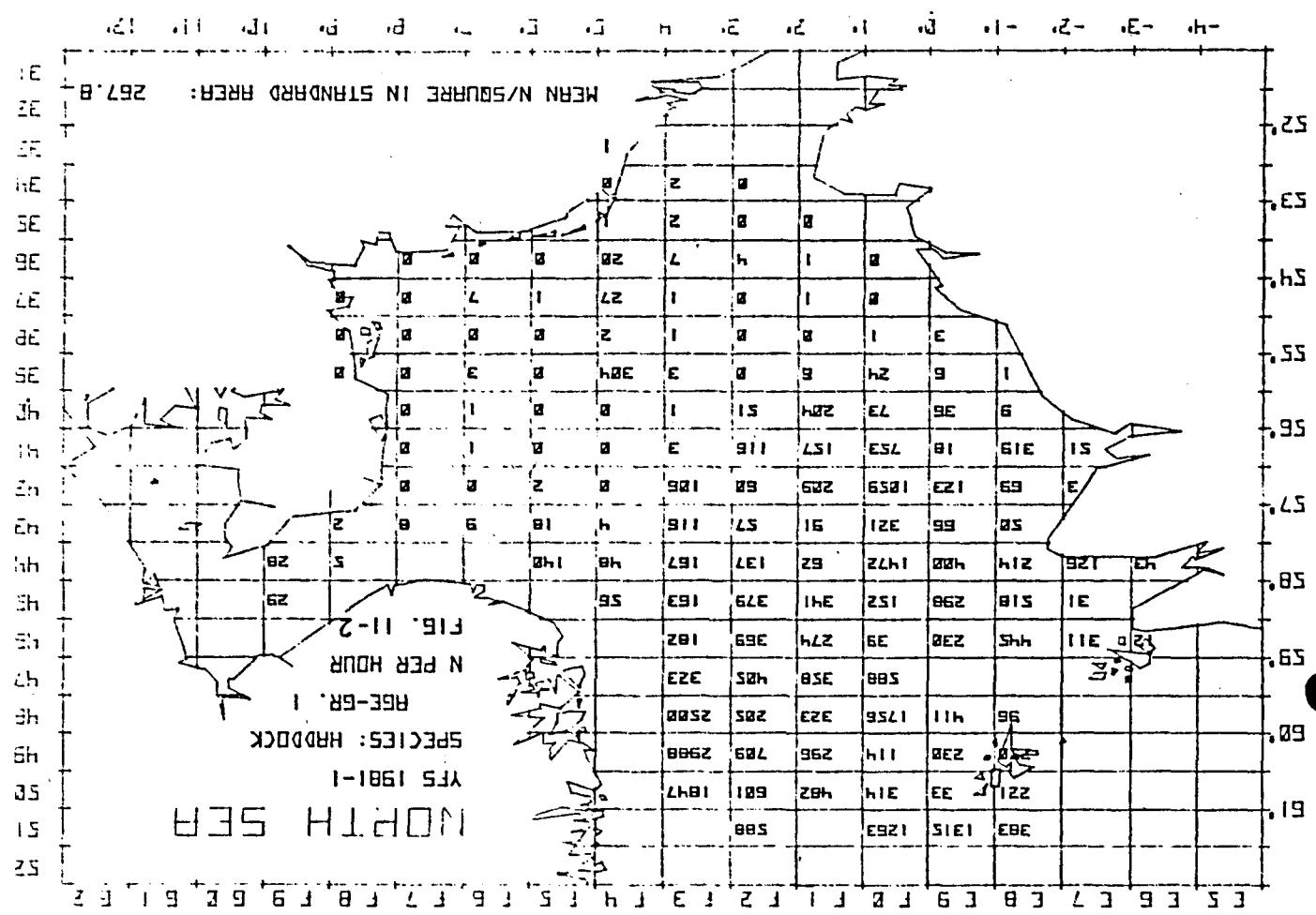
SPECIES: BADDOCK  
ROUNDFISH AREAS COMBINED

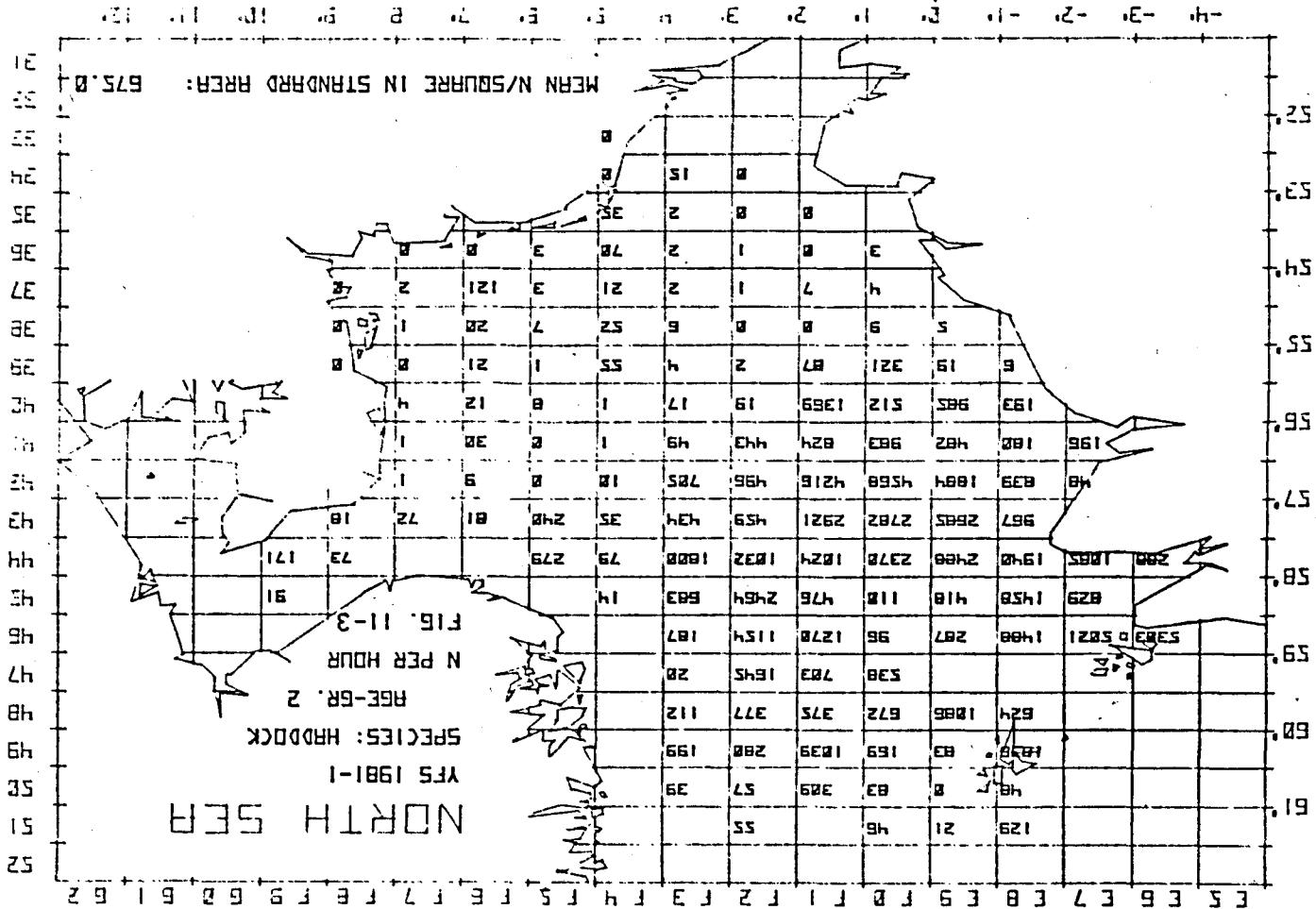
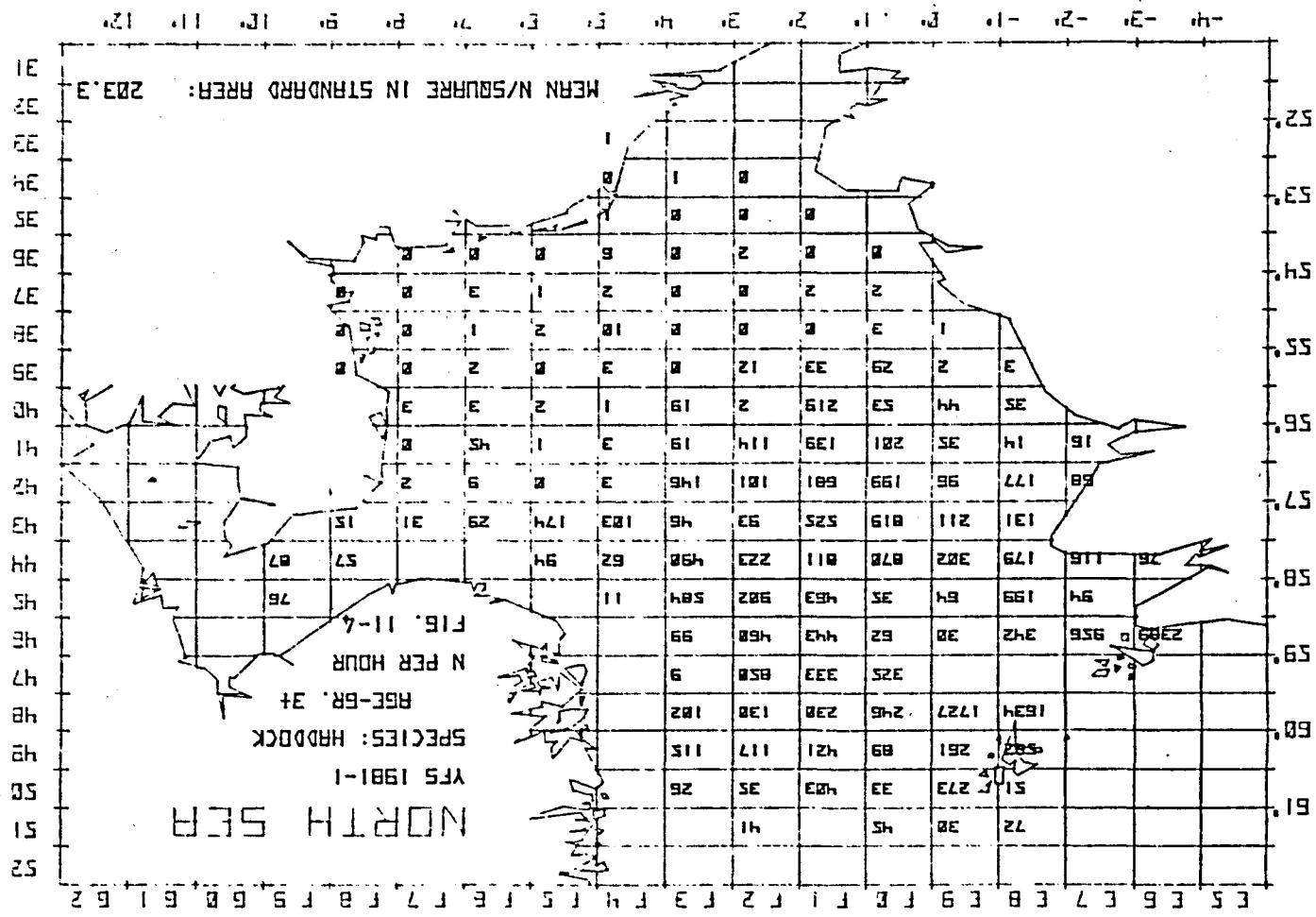
AGE	0	1	2	3	4	5	6+	TOTAL
L-min	27	8	17	22	24	33	35	8
L-max	27	24	43	54	60	65	75	75
8		3						3
9		62						62
10		1171						1171
11		3371						3371
12		8023						8023
13		3294						3294
14		7186						7186
15		5857						5857
16		3828						3828
17		2604						2604
18		1775						1775
19		3851						3851
20		6526						6526
21		9794						9794
22		14825						14825
23		18813						18813
24		19230						19230
25		17812						17812
26		17150						17150
27		13888						13888
28		10115						10115
29		8282						8282
30		7507						7507
31		5250						5250
32		4765						4765
33		3974						3974
34		2856						2856
35		2941						2941
36		2430						2430
37		2063						2063
38		1772						1772
39		1231						1231
40		1059						1059
41		734						734
42		577						577
43		482						482
44		452						452
45		365						365
46		240						240
47		206						206
48		149						149
49		124						124
50		177						177
51		108						108
52		117						117
53		76						76
54		37						37
55		46						46
56		45						45
57		19						19
58		22						22
59		13						13
60		68						68
61		19						19
62		4						4
63		4						4
64		4						4
65		4						4
TOTAL	49407	135652	31624	4803	977	683	223149	

TABLE II - 6  
AGE - SIZE CLASS DISTRIBUTION

SPECIES: HADDOCK  
ROUNDFISH AREAS COMBINED

SIZE CLASS	AGE	0	1	2	3	4	5	6+	TOTAL
4-	5	N							
		L							
5-	7	N							
		L							
7-	10	N		70					70
		L		9.4					9.4
10-	15	N		28550					28550
		L		13.1					13.1
15-	20	N		15165	2750				17915
		L		16.8	19.2				17.2
20-	25	N		5622	62662	750	153		69187
		L		21.7	23.1	23.4	24.5		23.0
25-	30	N		58610	8595	44			67246
		L		27.0	28.0	28.6			27.1
30-	40	N		11595	20357	2631	141	66	34791
		L		32.1	34.1	35.4	38.2	37.8	33.6
40-	50	N		41	1889	1734	441	283	4388
		L		41.2	42.3	43.7	44.6	45.2	43.3
50-	70	N			35	241	395	332	1003
		L			51.2	53.2	52.6	55.7	53.7
70-	100	N						8	8
		L						75.0	75.0
100-	150	N							
		L							





III WHITING

Catches of I-group whiting indicate a poor year class 1980 (table III-1). The catch of II-group confirmed that 1979 was a strong year class. Catches of older whiting were the highest on record. A remarkable feature of the distribution of older whiting (figure III-4) is the almost complete lack of fish in the central North Sea and off the Danish coast.

A significant part of the male whiting reaches maturity at the end of the first year of life and at 2 years old the majority of fish of both sexes are mature (table III-2 a/b). The weight-length relationship used in calculating the biomass is  $W = 0,0083$ .

The final index of 227 is somewhat higher than the preliminary estimate of 200.

TABLE III - 1  
AVERAGE CATCH / HOUR PER SQUARE BY RNDF-AREA AND AGE GROUP  
(Arithmetical abundance analysis; Unadjusted values)

SPECIES: WHITING

AGE GR	YEAR CL	SUBAREA:	RNDF-1	RNDF-2	RNDF-3	RNDF-4	RNDF-5	RNDF-6	RNDF-7	KAPTEGAT	STAND.	NS AREA
		n hauls	58	56	31	27	8	89	40	11	313	
		N squares	37	25	19	11	5	30	12	4	137	
0	1981	mean NR/h	0	0	0	0	0	0	0	0	0	0
		Stand.dev.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	1980	mean NR/h	89	375	306	250	69	254	105	164	227	
		Stand.dev.	20.0	213.2	136.3	112.6	48.2	71.3	41.1	127.5		47.5
2	1979	mean NR/h	176	912	1024	293	571	395	25	62	485	
		Stand.dev.	53.2	672.3	317.8	180.5	688.4	200.5	15.6	28.9		141.2
3	1978	mean NR/h	237	208	368	75	179	172	9	32	200	
		Stand.dev.	69.5	153.7	115.5	44.5	199.0	91.5	7.0	23.3		42.9
4	1977	mean NR/h	104	34	52	26	37	56	5	22	57	
		Stand.dev.	30.7	23.4	18.9	18.5	40.0	30.2	4.2	23.9		11.9
5	1976	mean NR/h	17	9	10	4	2	14	1	4	11	
		Stand.dev.	5.2	6.1	4.1	3.0	2.0	7.7	0.6	6.1		2.5
6+ OLDER		mean NR/h	7	1	6	1	6	2	0	2	3	
		Stand.dev.	2.3	0.8	2.7	1.0	7.9	1.2	0.3	3.8		0.8

TABLE III - 2<sup>a</sup>  
AGE - LENGTH - SEX - MATURITY DISTRIBUTION

SPECIES: WHITING - MALES  
ROUNDFISH AREAS COMBINED

AGE GROUP	1 IMM	1 MAT	2 IMM	2 MAT	3 IMM	3 MAT	4 IMM	4 MAT	5 IMM	5 MAT	6+ IMM	6+ MAT	TOTAL
L-MIN	41	97	119	136	76	162	73	185	71	197			154
L-MAX	144	123	148	198	78	226	73	252	71	261			201
CM													
5	2												2
6	25												25
7	129												129
8	463												463
9	832												832
10	948												948
11	1155												1155
12	1834												1834
13	2604												2604
14	3812												3812
15	4248	254											4248
16	4324	722											4324
17	2739	1111											2739
18	3106	1333	89	159									3106
19	2240	1028	603	827									2240
20	1638	1038	136	2541									1638
21	777	1872	562	6398									777
22	387	1377	609	9434									387
23	145		686	13321	11	2476							145
24			333	11109	215	2514							333
25			508	5746		4143		222		148			508
26				3781	134	5206		401		41			3781
27					169	2044	4149		791				169
28					341	1578	4396		444		107		341
29					148	760	148	2851	1591	340			148
30						180	1898		1226		286		180
31							977		1391		72		977
32							445		573		197		445
33							486	12	400		285		486
34							59		266		115		59
35							77		243	15	54		77
36								60	2	114		14	60
37									77		32		77
38									64		22		64
39									15		45		15
40								14	14		14		14
41									7		7		7
42									8		8		8
43										4			4
44										1			1
45											0		0
46											5		5
47												0	0
48												0	0
49												0	0
50												0	0
51												0	0
52												2	2
55													0
TOTAL	31406	8733	4183	57876	509	31124	26	7793	16	1929		561	144155
% MAT	22		92		98		100		99		100		
BIOM. (kg)	1160	576	466	6686	80	5275	12	1885	7	548		176	16871
% MAT	33		93		99		99		99		100		

TABLE III - 2<sup>b</sup>  
AGE - LENGTH - SEX - MATURITY DISTRIBUTION

SPECIES: WHITING - FEMALES  
ROUND FISH AREAS COMBINED

AGE GROUP	1 IMM	1 MAT	2 IMM	2 MAT	3 IMM	3 MAT	4 IMM	4 MAT	5 IMM	5 MAT	6+ IMM	6+ MAT	TOTAL
L-MIN	41	55	131	140	109	170	55	193	32	189	39	252	
L-MAX	150	60	175	219	125	261	62	285	32	255	39	323	
<b>CM</b>													
5	2												2
6	25												25
7	129												129
8	463												463
9	832												832
10	948												948
11	1155												1155
12	1834												1834
13	2604												2604
14	3601												3601
15	3072												3072
16	3410	60											3470
17	3823	310	83										4216
18	4335		173										4554
19	3472	240	782	76									4560
20	2180	129	1140	1501									4951
21	1595		2277	6097									9968
22	1106	634	1905	12458									16102
23	494		1524	10518									12547
24		918	11538										13345
25		602	9997	222	3352								14472
26		898	8914	82	1864								11758
27			4675		2524	30	457						7686
28		170	1824	179	2999	50	503						5724
29			1472		2859		640						5102
30			645	39	1994		431						3109
31			541		1447	11	675						2686
32			130		1600	12	956	12	17				2740
33				12	1323		893		149				2389
34		38			900		757		148				1843
35				4	313	4	341		132				861
36				13	327		425		148				963
37					193		264		112				578
38					67		130		69				302
39					49		340		84	2	4		479
40					29		119		107		31		286
41					41		69		49		9		167
42							17		20		19		56
43							43		68		44		154
44							5		4		16		26
45							5		1		14		19
46									2		25		27
47								4			10		10
48									4		4		12
49									2		4		6
50											2		2
51											2		2
52													0
55											2		2
TOTAL	35126	1364	10473	70422	551	22830	107	7373	12	1247	2	381	149887
% MAT	4		87		98		99		99		99		
Biom. (kg)	1488	100	1041	8900	97	4936	22	2246	3	521	1	207	19562
% MAT	6		90		98		99		99		100		

TABLE III - 3  
AGE - LENGTH - SEX - MATURITY STATISTICS

SPECIES: WHITING  
ROUNDFISH AREAS COMBINED

		Nr	MEAN L	Sd	L-min	L-max
AGE GROUP:	0					
SEXES COMB.	IMM					
MALES	IMM	31406	15.9	9.8	5	23
	MAT	8733	19.7	4.2	15	22
	TOTAL	40139	16.7	3.3	5	23
FEMALES	IMM	35126	16.6	11.6	5	23
	MAT	1364	20.4	4.8	16	22
	TOTAL	36490	16.7	3.4	5	23
AGE GROUP:	2					
MALES	IMM	4183	23.4	8.3	18	29
	MAT	57876	23.9	4.2	18	30
	TOTAL	62059	23.8	2.1	18	30
FEMALES	IMM	10473	22.7	4.7	17	28
	MAT	70422	24.6	5.1	19	34
	TOTAL	80894	24.3	2.3	17	34
AGE GROUP:	3					
MALES	IMM	509	26.5	4.5	23	29
	MAT	31124	27.1	6.6	20	35
	TOTAL	31633	27.1	2.6	20	35
FEMALES	IMM	551	27.5	5.9	25	36
	MAT	22830	29.3	10.2	23	41
	TOTAL	23380	29.3	3.2	23	41
AGE GROUP:	4					
MALES	IMM	26	37.2	12.7	33	40
	MAT	7793	30.5	7.0	25	42
	TOTAL	7818	30.6	2.7	25	42
FEMALES	IMM	107	29.3	4.4	27	35
	MAT	7373	32.8	14.4	25	48
	TOTAL	7480	32.7	3.8	25	48
AGE GROUP:	5					
MALES	IMM	16	35.6	0.1	35	36
	MAT	1929	32.0	14.4	25	47
	TOTAL	1945	32.0	3.8	25	47
FEMALES	IMM	12	32.5	-0.0	32	32
	MAT	1247	36.5	14.7	29	49
	TOTAL	1259	36.5	3.8	29	49
AGE GROUP:	6					
MALES	IMM					
	MAT	561	33.3	9.3	28	52
	TOTAL	561	33.3	3.1	28	52
FEMALES	IMM	2	39.5	0.0	39	39
	MAT	381	39.9	23.0	31	55
	TOTAL	383	39.9	4.8	31	55
TOTAL POPULATION		294023	23.4	29.3	5	55

TABLE III - 4  
LENGTH - SEXE - MATURITY DISTRIBUTION

SPECIES: WHITING  
ROUNDFISH AREAS COMBINED

	MALES		FEMALES		TOTAL	
	IMM	MAT	IMM	MAT	IMM	MAT
L-min	4	15	4	16	4	15
L-max	40	52	39	55	40	55
4	1		1		2	
5	2		2		4	
6	25		25		50	
7	129		129		258	
8	463		463		925	
9	832		832		1663	
10	948		948		1895	
11	1155		1155		2309	
12	1834		1834		3668	
13	2604		2604		5207	
14	3812		3601		7413	
15	4248	254	3072		7319	254
16	4324	722	3410	60	7734	781
17	2739	1111	3906	310	6646	1420
18	3195	1491	4559		7754	1491
19	2843	1855	4254	306	7097	2161
20	1774	3617	3320	1630	5095	5247
21	1339	8539	3872	6097	5211	14635
22	996	11963	3010	13092	4006	25055
23	843	15797	2018	10529	2861	26326
24	548	13622	918	12477	1465	26100
25	508	10258	823	13648	1331	23907
26	134	9428	980	10778	1114	20206
27	169	6984	30	7656	199	14640
28	341	6542	400	5325	740	11867
29	297	5542		5102	297	10644
30		3648	39	3070	39	6718
31		2568	11	2674	11	5243
32		1297	24	2716	24	4013
33	12	1281	12	2377	24	3658
34		532		1843		2375
35	15	379	9	852	23	1231
36	2	189	13	951	14	1140
37		108		578		686
38		92		302		394
39		62	2	477	2	539
40	14	44		286	14	329
41		48		167		215
42		28		56		84
43		4		154		158
44		4		26		30
45		1		19		20
46				27		27
47		5		10		15
48				12		12
49				6		6
50				2		2
51				2		2
52		2				2
55				2		2
TOTAL	36141	108010	46271	103609	82412	211619

TABLE III - 5  
AGE - LENGTH DISTRIBUTION

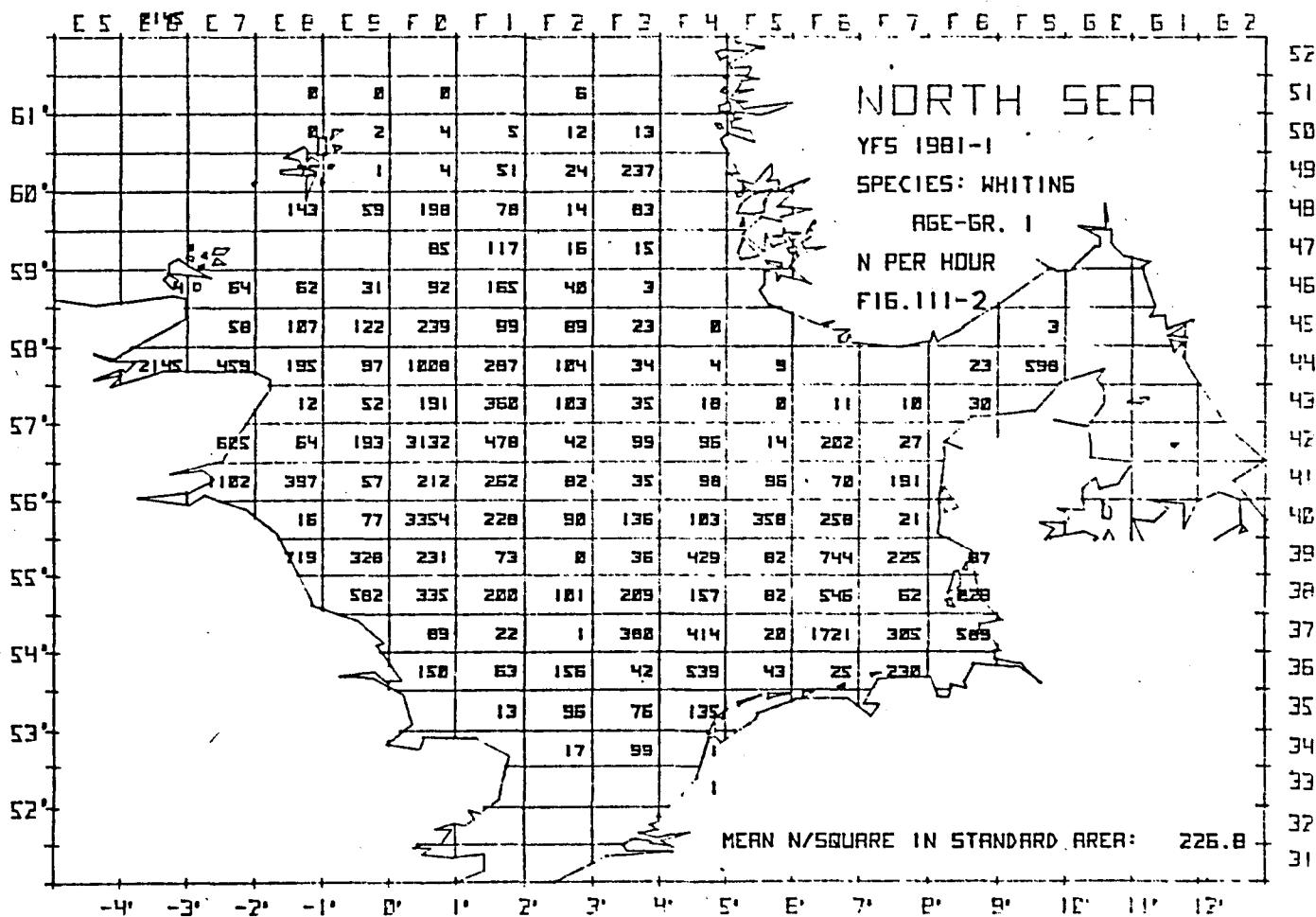
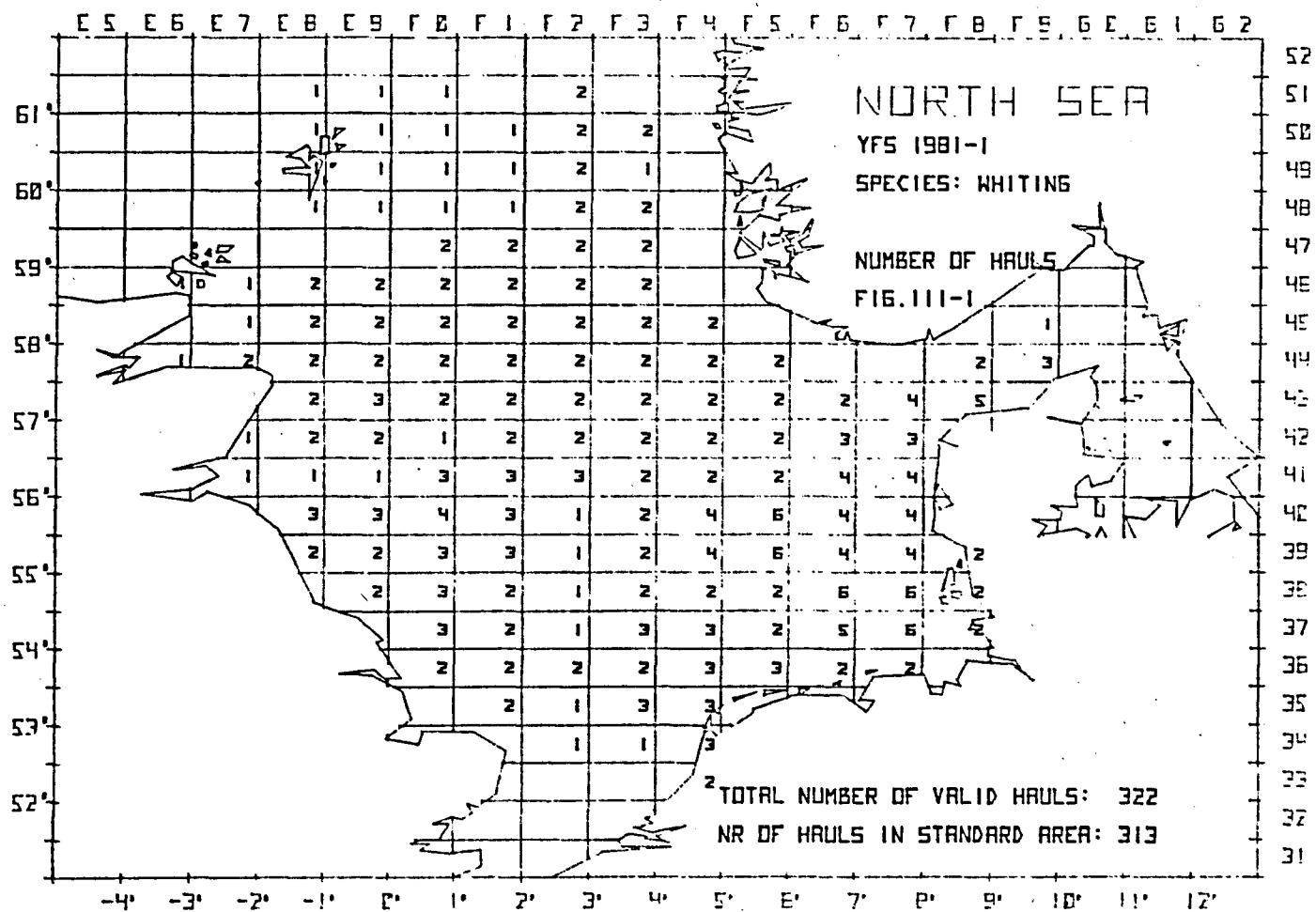
SPECIES: WHITING  
ROUNDFISH AREAS COMBINED

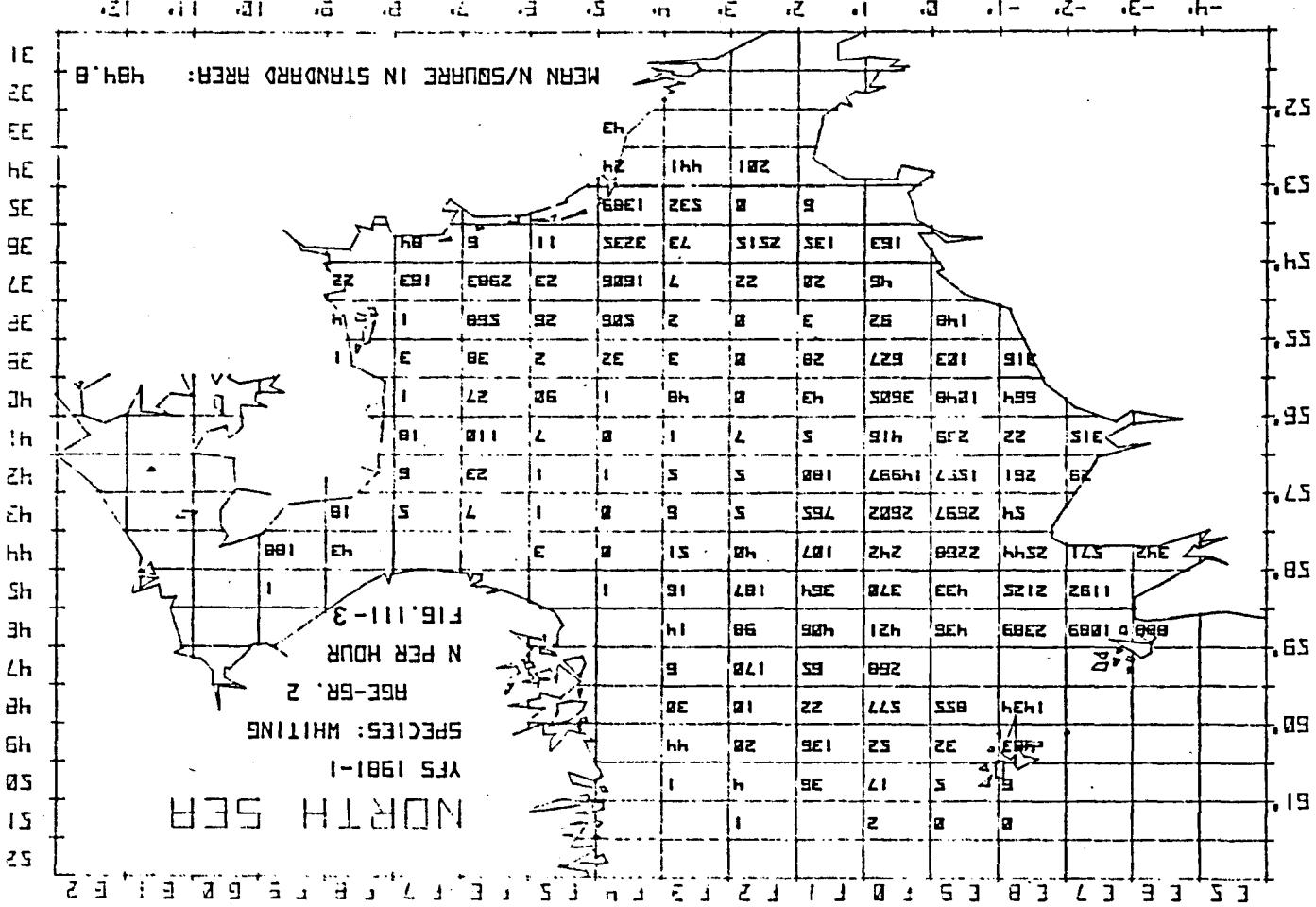
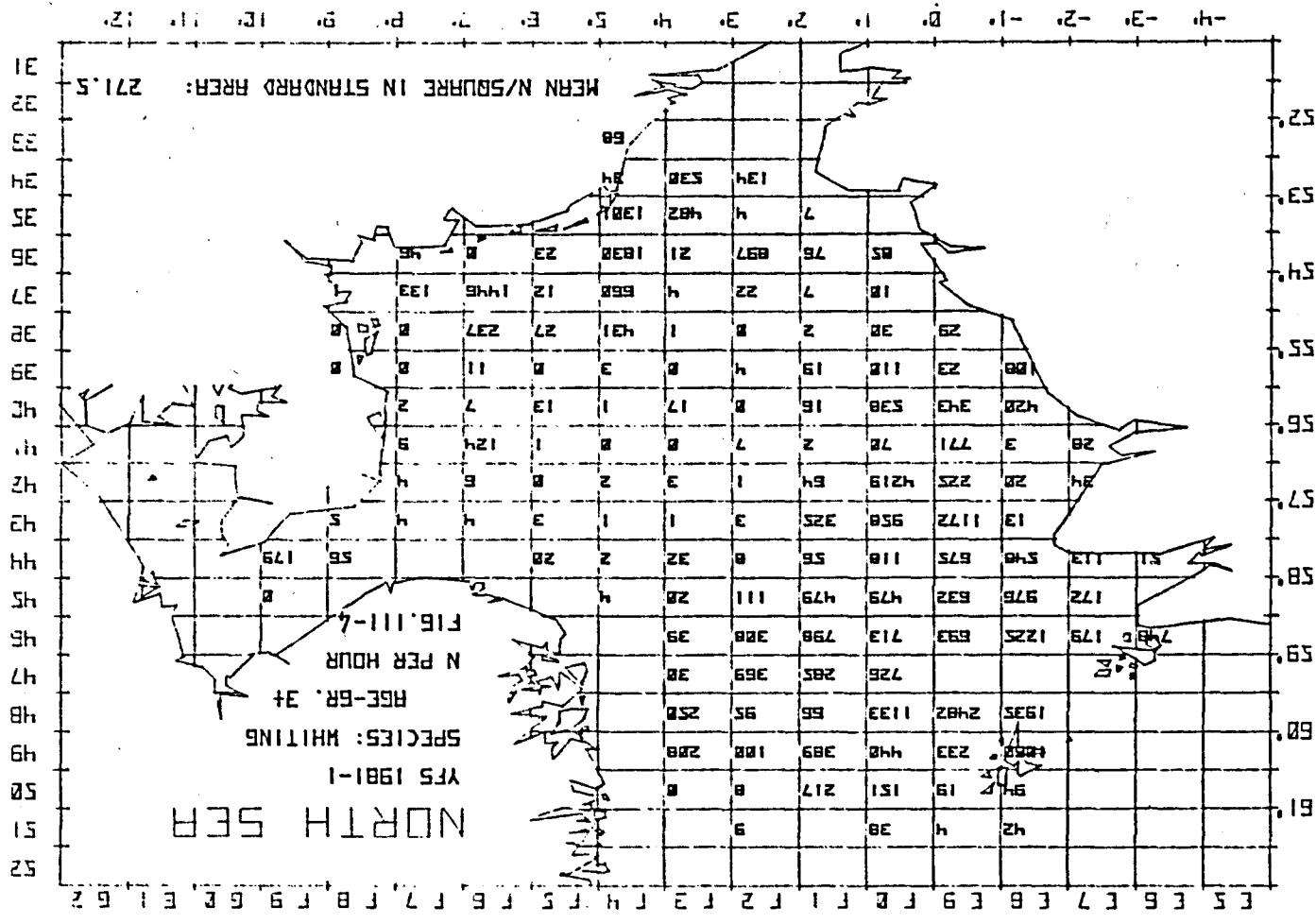
AGE	0	1	2	3	4	5	6+	TOTAL
L-min	4							
L-max	23	34	41	48	49	55	55	
4		2						
5		4						4
6		50						50
7		258						258
8		925						925
9		1663						1663
10		1895						1895
11		2309						2309
12		3668						3668
13		5207						5207
14		7413						7413
15		7573						7573
16		8515						8515
17		7483	83					8066
18		8824	421					9245
19		6970	2288					9258
20		4936	5318	39				10342
21		4243	15334	263				19846
22		3504	24405	1152				29061
23		640	26048	2494				29187
24		23897	3657					27565
25		16852	7717	521	148			25238
26		13593	7236	401	41			21320
27		6888	6673	1273				14839
28		3912	7574	997	107	17		12607
29		2381	5858	2232	471			10941
30		825	3921	1057	286	69		6757
31		541	2424	2077	72	139		5254
32		130	2045	1542	226	93		4037
33			1821	1306	134	121		3682
34		38	954	1023	263	92		2375
35			394	589	201	69		1254
36			340	485	264	66		1154
37			193	310	144	9		686
38			67	195	91	41		394
39			49	355	128	9		541
40			29	146	121	47		343
41			11	76	83	16		215
42				25	33	26		84
43				43	71	44		158
44					5	21		30
45					5	2		20
46						2		27
47						5		15
48					4	4		12
49						2		6
50								2
51								2
52								2
55								2
TOTAL	76636	142952	55012	15299	3204	944	294036	

TABLE III - 6  
AGE - SIZE CLASS DISTRIBUTION

SPECIES: WHITING  
ROUNDFISH AREAS COMBINED

SIZE CLASS	AGE	0	1	2	3	4	5	6+	TOTAL
	4-	5	N	L		2			
					4.5				
5-	7	N	L		54				54
					6.4				6.4
7-	10	N	L		2846				2846
					9.0				9.0
10-	15	N	L		20492				20492
					13.2				13.2
15-	20	N	L		34864	2792			42656
					17.5	19.3			17.6
20-	25	N	L		13373	95002	7625		115999
					21.5	23.0	23.7		22.9
25-	30	N	L		43626	35107	5428	766	17
					26.6	27.4	28.2	28.4	28.5
30-	40	N	L		1534	12213	9567	2111	709
					31.1	32.3	33.2	34.5	33.7
40-	50	N	L			70	303	327	210
						41.1	41.6	42.0	43.5
50-	70	N	L						8
									52.5
70-	100	N	L						8
100-	150	N	L						52.5





IV NORWAY POUT

Catches of I-group Norway pout were very poor and the abundance index of 1375 fish per hour for year class 1980 is the lowest on record. (Table IV-1). Good catches were restricted to a small area along the Norwegian deeps (Figure IV-2). Year class 1979 was relatively more abundant but also should be considered a weak year class.

Although part of the I-group Norway pout has reached maturity, it is at two years old that they have recruited completely to the spawning stock. (Table IV-2 a/b). Among the older age groups females are far more abundant than males.

TABLE IV - 1  
AVERAGE CATCH / HOUR PER SQUARE BY RNDF-AREA AND AGE GROUP  
(Arithmetic abundance analysis; Unadjusted values)

SPECIES: NORWAY POUT

		SUBAREA:	RNDF-1	RNDF-2	RNDF-3	RNDF-4	RNDF-5	RNDF-6	RNDF-7	KATTEGAT	STAND. VS AREA
		n hauls	58	57	31	27	8	89	40	8	158
		N squares	37	25	19	11	5	30	12	3	86
AGEGR	YEARCL	mean NR/h	0	0	0	0	0	0	0	0	0
0	1981	Stand.dev.	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1	1980	mean NR/h	298.9	8	440	46	0	0	0	1	1375
		Stand.dev.	1335.5	3.8	190.9	17.2	0.0	0.0	0.3	1.3	579.0
2	1979	mean NR/n	1306	1	67	1	0	0	0	0	527
		Stand.dev.	616.9	0.6	13.1	0.7	0.0	0.0	0.0	0.7	265.1
3	1978	mean NR/h	85	0	3	0	0	0	0	0	35
		Stand.dev.	63.3	0.0	2.0	0.3	0.0	0.0	0.1	0.0	27.2
4	1977	mean NR/n	1	0	1	0	0	0	0	0	1
		Stand.dev.	0.6	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.1
5	1976	mean NR/n	0	0	0	0	0	0	0	0	0
		Stand.dev.	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
6+ OLDER		mean NR/n	0	0	0	0	0	0	0	0	0
		Stand.dev.	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0

TABLE IV - 2<sup>a</sup>  
A S E - LENGTH - BUXE - ANNUALITY DISTRIBUTION

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SPECIES: NORWAY POUT - MALES  
ROUNDFISH AREAS COMBINED

AGE GROUP	1	2	3	4	5	6+	TOTAL
	IMM	MAT	IMM	MAT	IMM	MAT	
L-MIN	33	46	76	55	21	44	
L-MAX	65	70	103	64	21	44	
CY							
L-MAX	65	70	103	64	21	44	
7	71						71
8	5965						5965
9	27355						27355
10	33244	43					33244
11	14523	9341					23861
12	3567	5992					9559
13	3920	2941	3136				9997
14	68	2137	8944				11149
15	56	167	4111				4333
16			1746				1796
17			227				227
18			202	2			203
19			43	16			59
20				27			27
21				18	14		31
22				5		4	3
23							0
24							0
25							0
TOTAL	88778	20632	18471	68	14	4	127957
% MAT	19		100		100		100

TABLE IV - 2<sup>b</sup>  
AGE - LENGTH - SEX - MATURITY DISTRIBUTION

SPECIES: NORWAY POUT - FEMALES  
GUNDFISH AREAS COMBINED

AGE GROUP	1		2		3		4		5		6+		TOTAL
	IMM	MAT	IMM	MAT	IMM	MAT	IMM	MAT	IMM	MAT	IMM	MAT	
L-MIN	33	40		80		57		69		48		24	
L-MAX	67	54		120		85		94		49		23	
CM													
L-MAX	67	54		120		85		94		49		24	
7	71												71
8	5965												5965
9	27355												27355
10	26655												26655
11	11453												11453
12	8798	1406											3064
13	1336	2332											1933
14	19	340			4574								11449
15	2	223			14274								10615
16					16615								14368
17				14368									5213
18				4821		342							3088
19				1211		1876							1479
20				223		1253							1167
21				212		948		7					1154
22						1154							35
23						7		27		1			11
24						1		5		3			1
25										1			2
TOTAL	81664	4311		56314		5648		62		5			138007
% MAT		5		100		100		100		100			100

TABLE IV - 3  
AGE - LENGTH - SEX - AND MORTALITY STATISTICS

SPECIES: NORWAY COD  
ROUNDFTSH AREAS COMBINED

AGE GROUP:	0	Nr	MEAN L.	SUM X	SUM X^2	Sd	L-min	L-max
SEXES COMB.	TOT							
AGE GROUP:	1							
MALES	IM	88778	10.4	926554.0	9788950.00	1.3	2	15
	MAT	20632	12.4	256031.0	3201860.00	1.1	2	15
	TOTAL	109410	10.8	1182635.0	12990810.00	1.4	2	15
FEMALES	IM	81664	10.4	851039.0	8479880.00	1.4	2	15
	MAT	4311	13.3	57461.0	769719.00	0.9	2	15
	TOTAL	85975	10.6	408500.6	9749599.00	1.3	2	15
AGE GROUP:	2							
MALES	IM	18471	14.8	273950.0	4083610.00	1.1	2	19
	MAT	18471	14.8	273950.0	4083610.00	1.1	2	19
FEMALES	IM	56314	16.6	935131.0	15616500.00	1.6	2	21
	MAT	56314	16.6	935131.0	15616500.00	1.3	2	21
AGE GROUP:	3							
MALES	IM	68	20.6	1401.2	28967.90	0.9	18	22
	MAT	68	20.6	1401.2	28967.90	1.0	18	22
FEMALES	IM	5648	20.6	116099.0	2401110.00	2.6	2	24
	MAT	5648	20.6	116099.0	2401110.00	1.6	2	24
AGE GROUP:	4							
MALES	IM	14	21.5	309.6	6656.40	0.0	21	21
	MAT	14	21.5	309.6	6656.40	0.0	21	21
FEMALES	IM	62	15.5	961.5	21199.70	102.8	2	24
	MAT	62	15.5	961.5	21199.70	10.1	2	24
AGE GROUP:	5							
MALES	IM	4	22.5	89.2	1916.51	-0.0	22	22
	MAT	4	22.5	89.2	1916.51	-1.0	22	22
FEMALES	IM	5	24.5	130.7	3203.33	0.5	23	25
	MAT	5	24.5	130.7	3203.33	0.7	23	25
AGE GROUP:	6							
MALES	IM							
	MAT							
	TOTAL							
FEMALES	IM	2	24.5	40.8	1000.41	0.0	24	24
	MAT	2	24.5	40.8	1000.41	0.0	24	24
TOTAL POPULATION		275360	12.4	3413340.0	44902500.00	9.2	2	25

TABLE IV - 4  
LITTLE GULF OF ST. DOMINIQUE - SPAT FORTUNE - OBTENTION

SPECIES: LORAY POINT  
ROUNDFISH AREAS COMBINED

	MALES		FISH MALES		TOTAL	
	IMM	MAP	IMM	MAP	IMM	MAP
L-min	7	10	7	12	7	10
L-max	15	22	15	25	15	25
7	71		71		142	
8	5465		5465		11929	
9	27355		27355		54709	
10	33244	43	26655		59899	43
11	14523	9341	11453		25976	9341
12	3567	5992	8798	1406	12365	7398
13	3929	6177	1336	2332	5256	8409
14	65	11081	19	4914	87	15995
15	50	4278	2	14197	59	13774
16		1796		10515		14412
17		227		11393		11545
18		203		5213		5416
19		50		3083		3147
20		27		1475		1502
21		33		1167		1200
22		9		1151		1163
23				15		35
24				11		11
25				1		1
TOTAL	43739	39136	81667	66351	170447	105547

TABLE IV - 5  
LITTLE GULF OF ST. DOMINIQUE - OBTENTION

SPECIES: LORAY POINT  
ROUNDFISH AREAS COMBINED

AGE	0	1	2	3	4	5	6+	TOTAL
L-min		7	13	19	21	22	24	7
L-max		15	21	24	24	25	24	25
7		142						142
8		11929						11929
9		54709						54709
10		59942						59942
11		35318						35318
12		19763						19763
13		10529	3136					13665
14		2564	13518					16082
15		419	15384					18332
16			13412					13412
17			11545					14595
18			5022	391				5416
19			1255	1892				3147
20			223	1279				1502
21			212	166	22			1200
22				1159		4		1163
23				7	27	1		35
24				1	5	3	2	11
25						1		1
TOTAL		195346	74792	5719	76	9	2	275962

TABLE IV - 6  
AGE = SIZE IN CM. CLASS DISTRIBUTION

SPECIES: NORWAY, PUFF  
ROUND FISH AREAS COMBINED

SIZE CLAS S	4-	5-	N	L	AGE						TOTAL
					0	1	2	3	4	5	
5-	7	4	N	L							
7-	10	N		L	66780						66780
					9.3						9.3
10-	15	4	N	L	128111	16654					144764
					11.4	14.3					11.7
15-	20	N		L	413	57668	2286				60401
					15.5	16.7	19.3				16.8
20-	25	N		L		435	3413	53	8	2	3911
						21.0	21.5	22.3	23.4	24.5	21.4
25-	30	N		L					1		1
									25.5		25.5
30-	35	N		L							
40-	50	N		L							
50-	70	N		L							
70-	150	N		L							
100-	150	N		L							

