

Figure 246. Herring. Numbers per station 14-19 May 1978.

*Pelagic species.* Some 0-group blue whiting were taken, but they will not be discussed in this report. Of other pelagic species, only herring were caught in significant amounts. In contrast with last year, 0-group herring were only taken regularly during the May cruise. During the July cruise only single specimens were taken on six stations, and three stations rendered catches of 17, 30, and 45 specimens per half hour tow.

In May 0-group herring were much more abundant. The abundance was calculated in the same way as for the demersal species, based on the French surveys in 1976-1979. Regrettably no data for 1977 and none on the length composition were at hand at the time of writing. Data on herring appear in Table 253. The distribution of herring in the three years 1976, 1978, and 1979 is given in Figures 245-247. It is evident that 0-group herring were more widespread in 1978 and 1979 than in 1976. However, the calculated abundance estimates for all three years show that the overall abundance seems to have been of about the same magnitude.

These data thus do not seem to indicate any increase in the spawning at the Faroes in 1978 and 1979 compared with 1976.

K. HOYDAL

Fiskirannsóknarstofan, Tórshavn, Færøerne

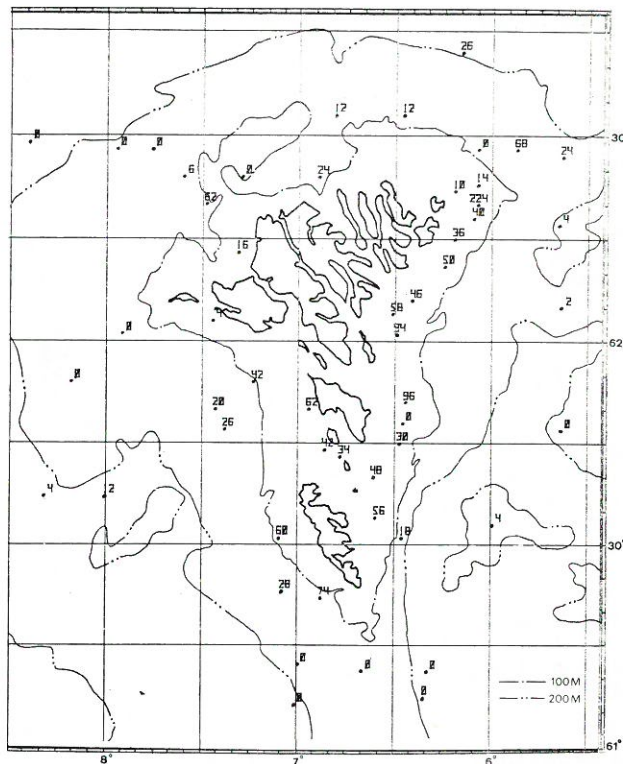


Figure 247. Herring. Numbers per station 18-29 May 1979.

### Report on the International 0-Group Gadoid Survey in the North Sea and an 0-group gadoid survey to the west of Scotland in June/July 1979

(Figures 248-271; Tables 255-259)

Four countries participated in the North Sea International 0-Group Gadoid Survey which was carried out between 13 June and 5 July 1979. The vessels, scientists in charge, and dates of participation were:

England	RV "Corella"	T. Williams	19 June-5 July
Netherlands	RV "Tridens"	N. Daan	19 June-3 July
Norway	RV "Johan Hjort"	S. Iversen	13-27 June
Scotland	RV "Explorer"	J. R. G. Hislop	13-27 June

A survey was also carried out to the west of Scotland by RV "Clupea" (Scotland, scientist in charge: A. P. Robb) from 5 to 14 June in an attempt to delineate the westerly distribution of 0-group gadoids. Both surveys were carried out in a standard manner as described in *Annls biol., Copenh.*, 34: 262-263. The statistical squares fished by each vessel are shown in Figures 248, 249, and 255.

The gadoids. 0-group fish distribution

The International North Sea Survey

*Cod* (Fig. 250) were most abundant off the Danish

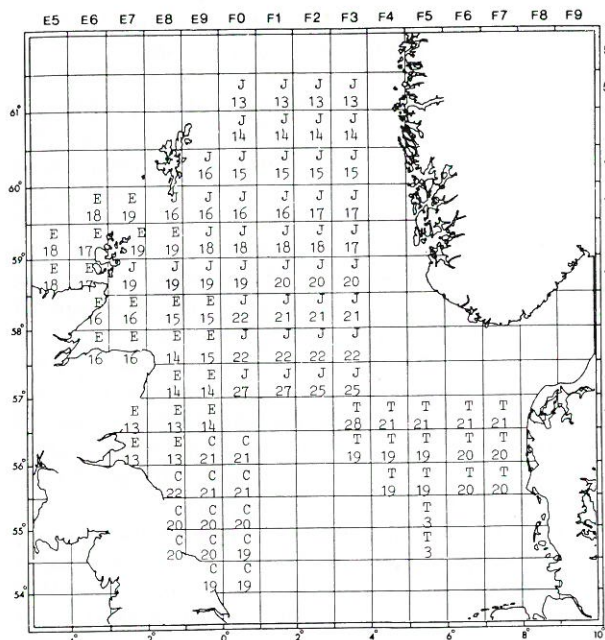


Figure 248. International North Sea Survey. Statistical squares fished for the first time of sampling with date in June when they were fished (except 3 = 3 July). C = "Corella", E = "Explorer", J = "Johan Hjort", T = "Tridens".

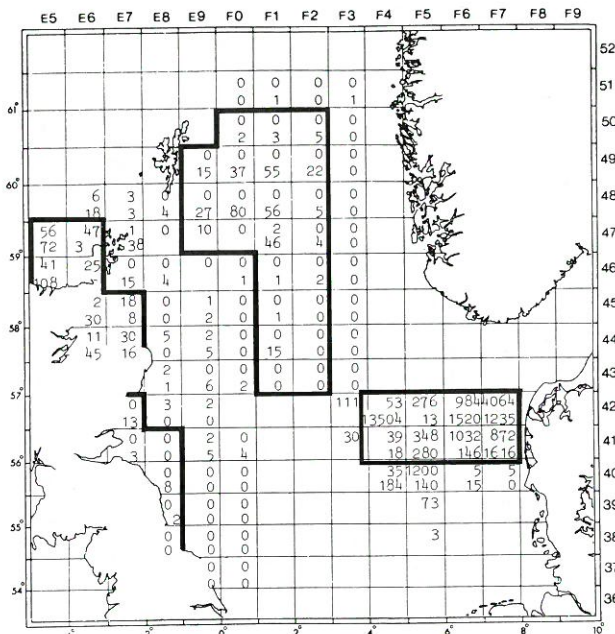


Figure 250. Numbers of 0-group cod caught per hour's tow in each statistical square. Upper figure is for first time of sampling, lower figure is for second time of sampling. Third time of sampling 45 E7-7, 44 E7-21, 41 E8-0, 42 E9-13.

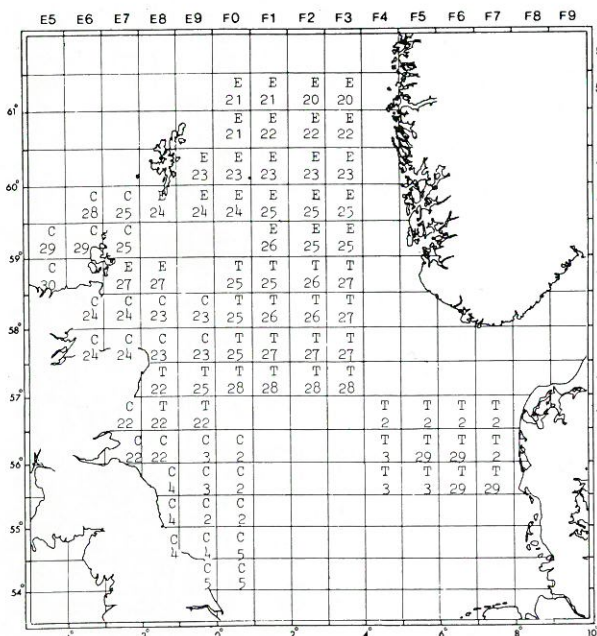


Figure 249. As Figure 248, second time of sampling. Dates are in June except 2-5 which are in July. Squares 45 E7 and 44 E7 were fished a third time on 1 July, as were squares 41 E8 and 41 E7 on 3 July.

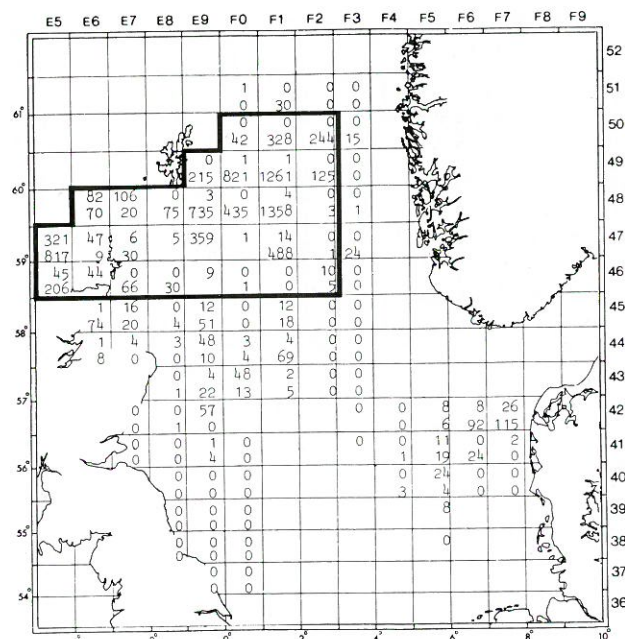


Figure 251. Numbers of 0-group haddock caught per hour's tow in each statistical square. Upper figure is for first time of sampling, lower figure is for second time of sampling. Third time of sampling 45 E7-18, 44 E7-15, 41 E8-1, 41 E7-1.

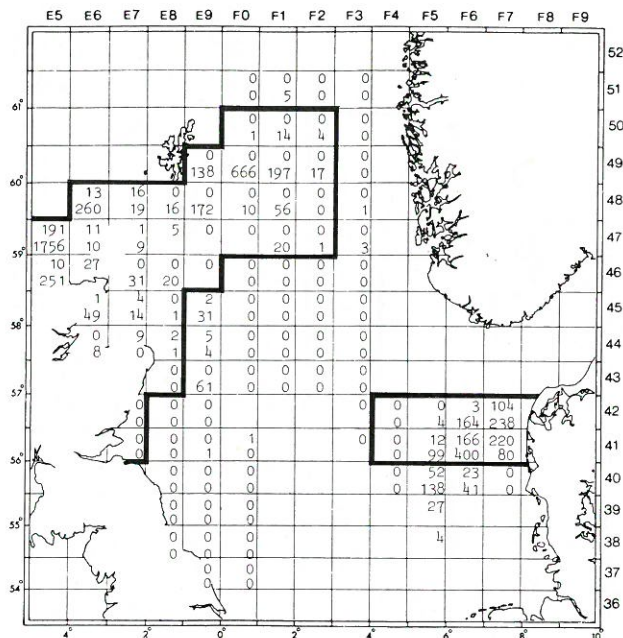


Figure 252. Numbers of 0-group whiting caught per hour's tow in each statistical square. Upper figure is for first time of sampling, lower figure is for second time of sampling. Third time of sampling 45 E7-20, 44 E7-19, 41 E8-0, 41 E7-3.

coast, where numbers taken at the second time of sampling were greater than at any time since the surveys began in 1974. As in 1978, cod were very scarce off the east coasts of England and Scotland as far north as the Moray Firth.

*Haddock* (Fig. 251) were moderately abundant west of the Orkneys, and when the area was sampled for the second time, east of the Shetlands. They also occurred in lesser numbers off the east coast of Scotland, off the Danish coast, and in the Moray Firth. Haddock generally were not very abundant at the first time of sampling, during the period 13 June-3 July.

*Whiting* (Fig. 252) were most abundant west of the Orkneys and off the Danish coast. As with the cod, almost no whiting were caught off the east coasts of England and Scotland as far north as the Moray Firth. Catches at the second time of sampling (20 June-5 July) were generally higher than at the first.

*Norway pout* (Fig. 253) were most abundant east of the Shetlands though their distribution was more southerly than in previous years.

*Saithe* (Fig. 254) were widely distributed, the area of highest abundance being off Norway. A total of 3564 saithe was caught compared with 364 in 1978 and 120 in 1977.

#### The West of Scotland Survey

The numbers of 0-group gadoids caught in each statistical square are shown in Figures 256-260. The

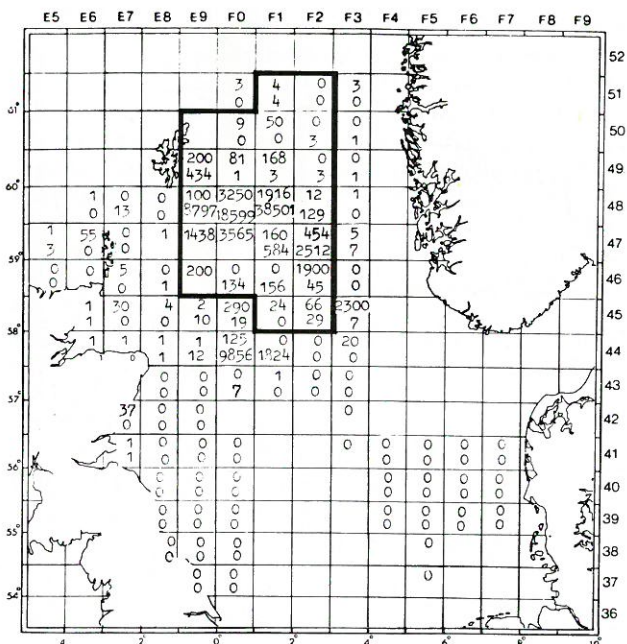


Figure 253. Numbers of 0-group Norway pout caught per hour's tow in each statistical square. Upper figure is for first time of sampling, lower figure is for second time of sampling. Third time of sampling 45 E7-0, 44 E7-0, 41 E8-0, 41 E7-0.

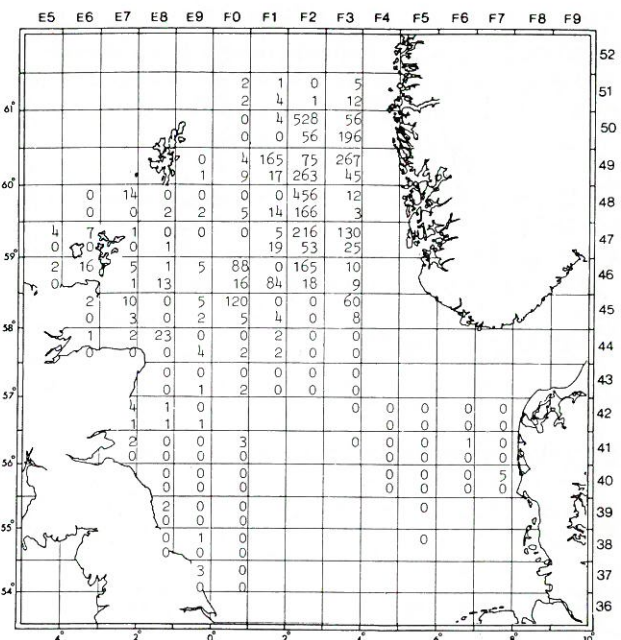


Figure 254. Numbers of 0-group saithe caught per hour's tow in each statistical square. Upper figure is for first time of sampling, lower figure is for second time of sampling. Third time of sampling 45 E7-0, 44 E7-0, 41 E8-0, 41 E7-0.

highest abundance of all species was in the Minches, and in general the level of abundance for each species was similar to that found in the Orkney area during the North Sea Survey (Figs. 250-254). There was no discontinuity in the distributions between the west of

Scotland and the North Sea for any species. The West of Scotland Survey was made earlier than the North Sea Survey and overlapped part of the area covered by the latter. When catch rates of cod, haddock, and whiting in rectangles fished in both surveys are com-

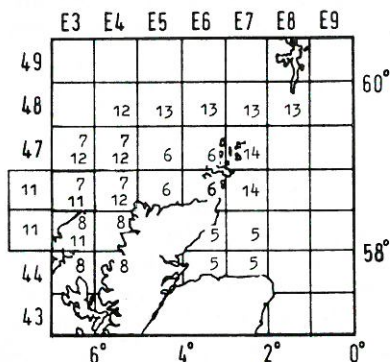


Figure 255. West of Scotland Survey. Dates in June when squares were fished.

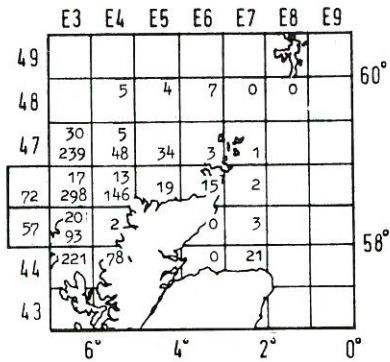


Figure 258. West of Scotland Survey. Numbers of 0-group whiting caught per hour's tow in each statistical square.

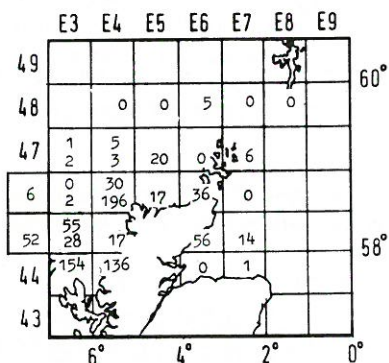


Figure 256. West of Scotland Survey. Numbers of 0-group cod caught per hour's tow in each statistical square.

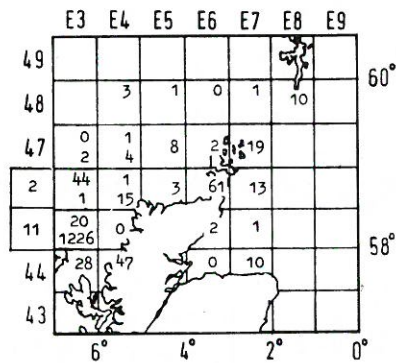


Figure 259. West of Scotland Survey. Numbers of 0-group Norway pout caught per hour's tow in each statistical square.

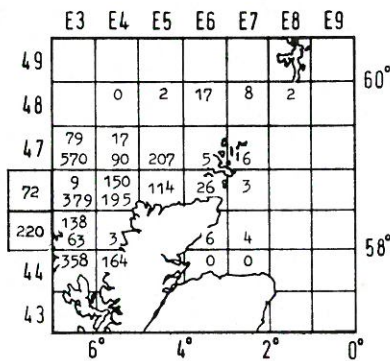


Figure 257. West of Scotland Survey. Numbers of 0-group haddock caught per hour's tow in each statistical square.

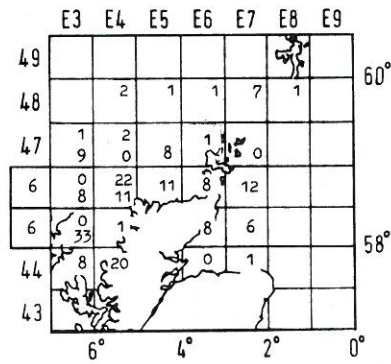


Figure 260. West of Scotland Survey. Numbers of 0-group saithe caught per hour's tow in each statistical square.

Table 255. Geometric means of the numbers of 0-group cod, haddock, whiting, and Norway pout caught per 1 h haul

	Cod	Haddock	Whiting	Norway pout
1979.....	13	42	11	207
1978.....	7	40	8	609
1977.....	11	12	5	122
1976.....	28	40	6	2 222
1975.....	3	20	13	129
1974.....	14	179	27	471

pared it can be seen that numbers generally increased with increasing date, suggesting that 0-group fish of these three species are carried into the North Sea.

Relative abundance indices

The indices of abundance of cod, haddock, whiting, and Norway pout caught on the 1979 International North Sea Survey were calculated using the formula

$$\text{Index} = \exp \left[ \frac{\sum \ln(\bar{x} + 1)}{n} \right] - 1$$

where  $\bar{x}$  = the arithmetic mean catch in a statistical square

and  $n$  = the number of statistical squares in the standard area for each species.

Standard areas, based on those statistical squares where the abundance of each species had been high during the period 1974-1979, are shown bounded by heavy lines in Figures 250-254. Data collected on previous surveys were recalculated to produce new indices using this formula. The results (Table 255) show that the 1979 year class of cod is good, though only half the size of the very strong 1976 year class. The very high numbers of 0-group cod taken off the Danish coast suggest that the 1979 year class may be concentrated in this area. The 1979 year classes of haddock and of whiting are of about average strength.

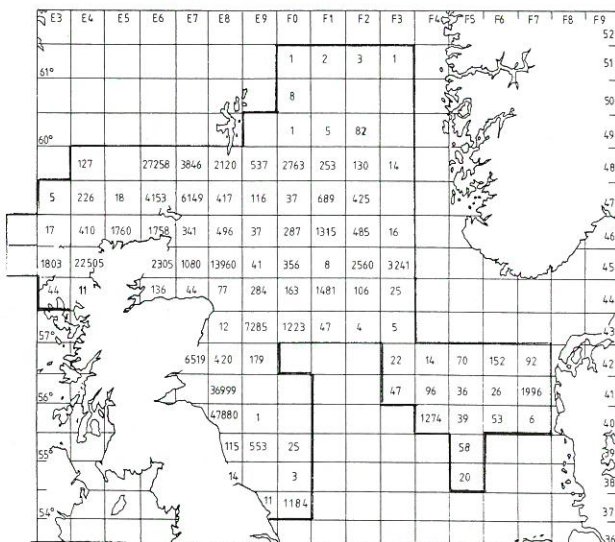


Figure 261. Mean numbers per haul of Ammodytidae caught during 0-group gadoid surveys, 5 June-5 July 1979.

Other species

Data on other species caught during the International Young Gadoid Survey in the North Sea and the

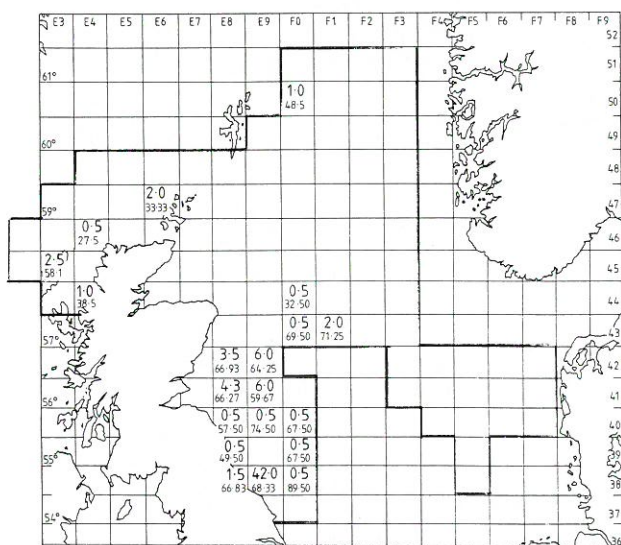


Figure 262. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. *Squalus acanthias* (all ages combined).

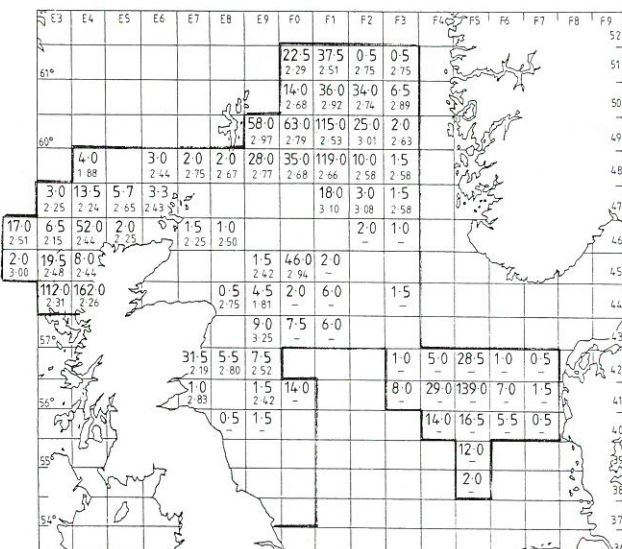


Figure 263. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. Long rough dab (0-group).

West of Scotland Survey are given in Figures 261-271 and Tables 256-259. The results of the two surveys were combined and average catches per haul calculated for each statistical rectangle. Catches of adult gadoids, gurnards, and flatfish, probably taken when the trawl touched the seabed, have been excluded.

The most common and widely distributed species in

the catches were sand-eels (*Ammodytidae*) (Fig. 261; Table 256), as was the case during the surveys of 1977 and 1978 (*Annls biol., Copenh.*, 34: 264-267.) Sprats (Table 257) were abundant in three areas: Orkney and the Moray Firth, the northeast coast of England, and off the Danish coast. The distribution of herring (Table 258) was similar to that of sprats, but their

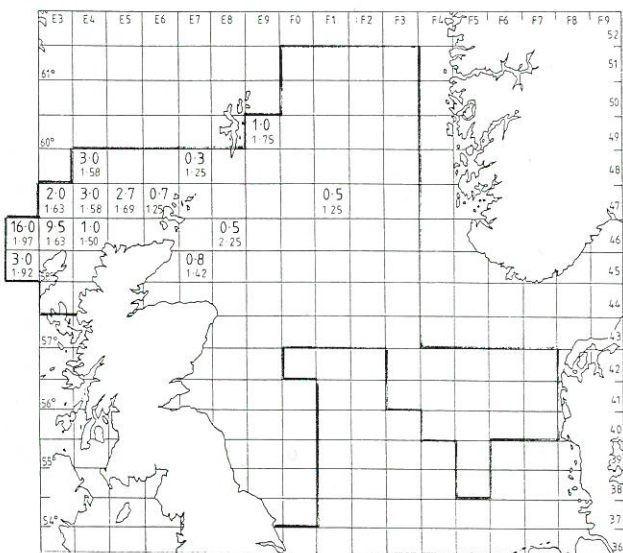


Figure 264. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. Lemon sole (0-group).

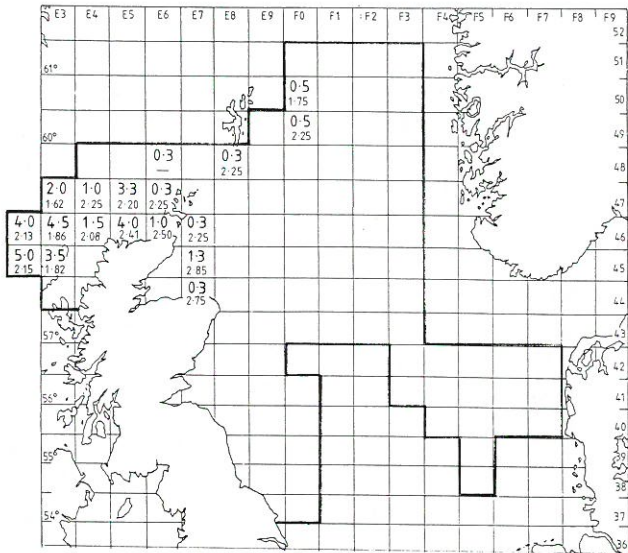


Figure 266. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. Gurnards (0-group).

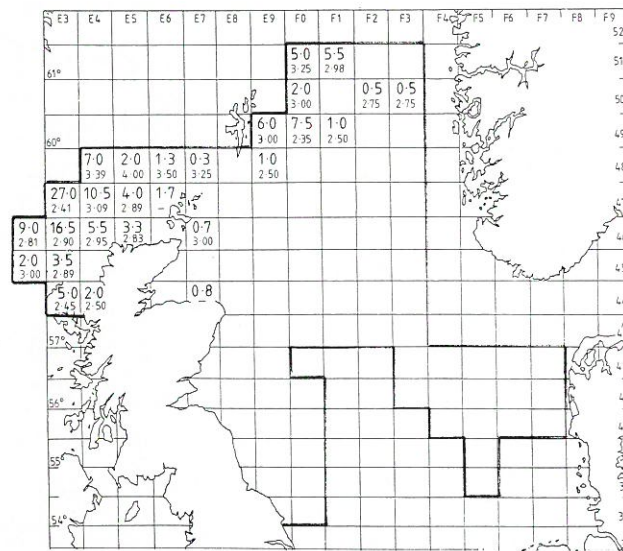


Figure 265. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. Witch sole (0-group).

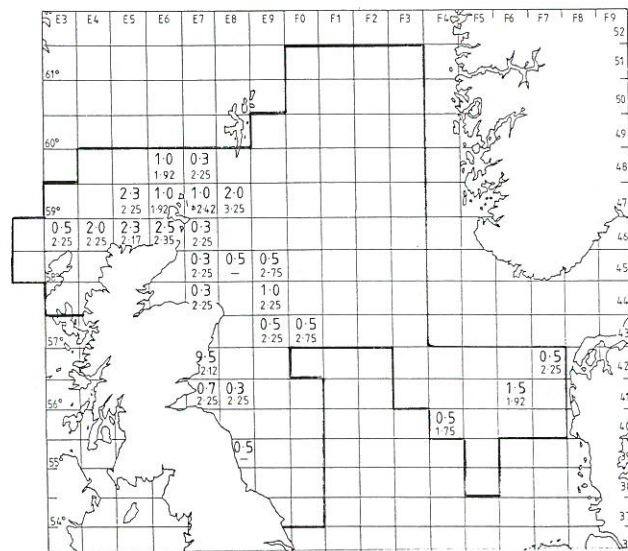


Figure 267. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. *Agonus cataphractus* (0-group).

abundance was much lower. Piked dogfish (*Squalus acanthias*) (Fig. 262) were less abundant, and more restricted in their distribution than in 1977 and 1978.

0-group long rough dab (*Hippoglossoides platessoides*) (Fig. 263) were, as usual, the most abundant and widely distributed of the flatfish species. 0-group lemon sole (*Microstomus kitt*) (Fig. 264) and witch sole

(*Glyptocephalus cynoglossus*) (Fig. 265) were more or less restricted to the northwestern part of the area surveyed, as were 0-group gurnards (Fig. 266).

The catch rates and mean length of 0-group *Agonus cataphractus*, 0-group *Anarhichas lupus*, *Crystallogobius linearis* (= *C. nilssonii*), *Cyclopterus lumpus*, and

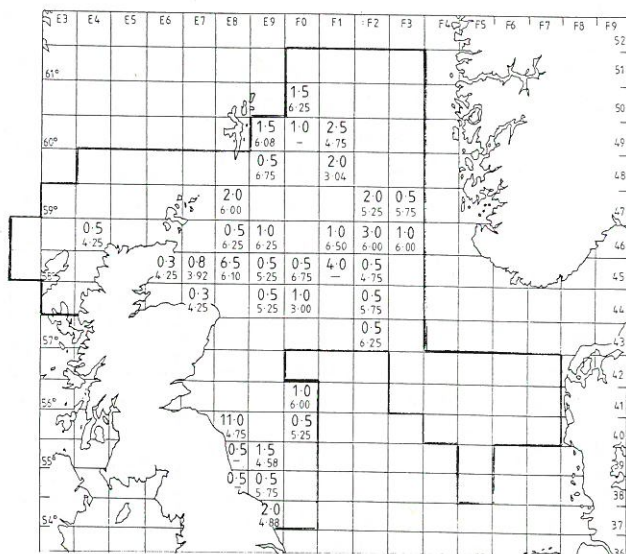


Figure 268. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. *Anarhichas lupus* (0-group).

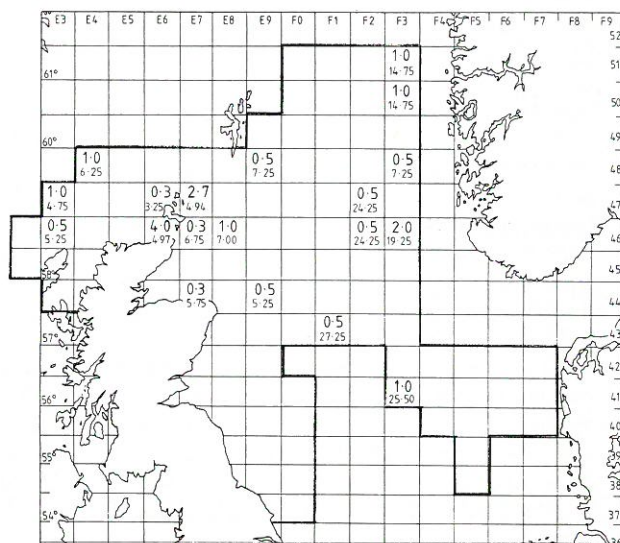


Figure 270. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. *Cyclopterus lumpus* (all ages combined).

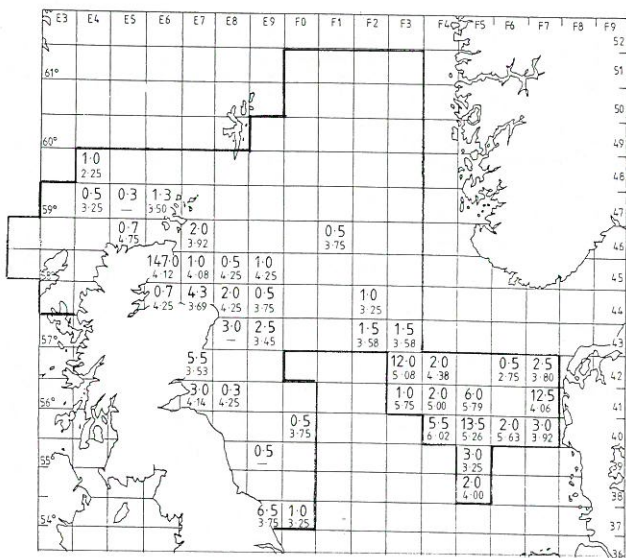


Figure 269. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. *Crystallogobius linearis* (all ages combined).

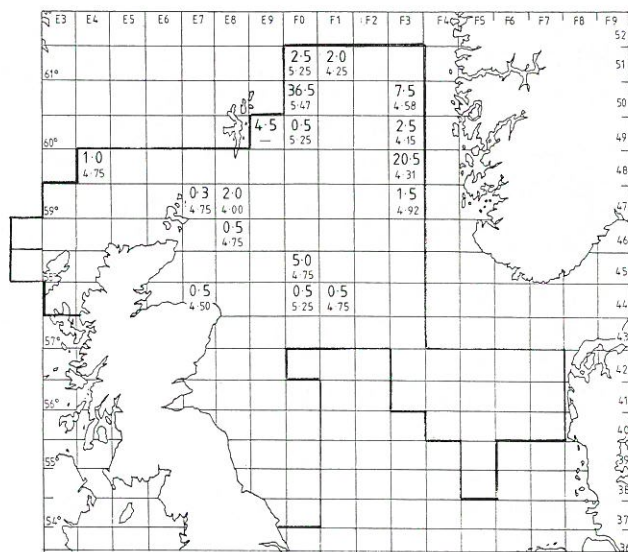


Figure 271. Mean numbers per haul (upper figure) and mean lengths, cm (lower figure) caught during 0-group gadoid surveys, 5 June-5 July 1979. *Maurolicus muelleri* (all ages combined).

Table 256. Length composition, for groups of four statistical rectangles, of Ammodytidae taken during the 0-group gadoid surveys in the North Sea and west of Scotland in June/July 1979

Length (cm)	Rectangle group																
	51,52 F0,F1	51,52 F2,F3	49,50 F0,F1	49,50 F2,F3	47,48 E2,E3	47,48 E4,E5	47,48 E6,E7	47,48 E8,E9	47,48 F0,F1	47,48 F2,F3	45,46 E2,E3	45,46 E4,E5	45,46 E6,E7	45,46 E8,E9	45,46 F0,F1	45,56 F2,F3	43,44 E2,E3
2.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	—	—
2.5	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.0	—	4	2	3	—	2	—	—	—	—	20	10	98	1	—	—	—
3.5	1	—	5	3	1	22	4	—	—	—	23	80	221	1	39	—	—
4.0	—	2	4	3	1	75	49	19	8	—	54	180	670	25	122	93	—
4.5	—	—	—	3	4	175	143	39	77	—	450	141	677	29	396	75	8
5.0	3	—	—	—	2	107	317	56	56	—	406	130	1028	19	570	131	8
5.5	1	—	—	3	1	15	295	149	32	—	111	46	982	12	509	297	8
6.0	—	—	2	2	—	1	497	271	61	5	75	48	2 188	25	364	796	13
6.5	—	—	7	22	—	—	289	127	392	21	60	23	1 597	46	246	1 108	5
7.0	—	—	4	51	—	—	4 571	73	293	47	—	5	1 010	100	211	1 548	2
7.5	—	—	2	40	—	—	18 190	25	248	77	—	—	833	276	18	1 856	—
8.0	—	—	1	24	—	—	18 448	242	88	72	—	—	532	195	93	488	—
8.5	—	—	—	10	—	—	4 547	865	54	32	—	10	511	34	296	822	—
9.0	—	—	—	—	—	—	6 902	924	8	24	—	3	787	7	806	1 414	—
9.5	—	—	—	—	—	—	5 607	144	66	8	—	63	1 103	1	242	2 621	—
10.0	—	—	—	—	—	—	14 807	92	55	—	—	286	1 204	158	18	1 168	—
10.5	—	—	—	—	—	1	13 408	94	5	—	—	465	1 168	529	—	185	—
11.0	—	—	—	—	—	1	10 312	253	—	—	—	638	586	4 527	—	—	—
11.5	—	—	—	—	—	7	12 190	509	—	—	—	939	250	5 375	—	—	—
12.0	—	—	—	—	—	10	5 315	506	—	—	—	1 591	149	5 391	—	—	—
12.5	—	—	—	—	—	19	2 518	670	—	—	—	3 413	26	4 212	—	—	—
13.0	—	—	—	—	—	23	2 507	485	—	—	10	6 165	133	2 466	—	—	—
13.5	—	—	—	—	—	26	804	367	1	—	—	50	6 637	1	1 020	—	—
14.0	—	—	—	—	—	28	256	181	22	32	60	4 061	5	1 274	—	—	—
14.5	—	—	—	—	—	21	273	96	136	182	270	1 711	1	965	—	—	—
15.0	—	—	—	—	—	24	428	214	1 925	365	410	438	9	688	—	—	—
15.5	—	—	—	—	—	22	8	172	2 333	106	450	278	1	553	—	—	—
16.0	—	—	—	—	—	11	424	410	1 086	76	420	586	—	277	—	—	—
16.5	—	—	—	—	—	15	343	405	272	—	310	370	—	545	—	—	—
17.0	—	—	—	—	—	11	424	294	172	—	200	103	—	277	—	—	—
17.5	—	—	—	—	—	7	1	128	54	—	80	93	—	—	—	—	—
18.0	—	—	—	—	—	4	—	84	—	—	40	93	1	—	—	—	—
18.5	—	—	—	—	—	3	—	55	—	—	70	—	—	—	—	—	—
19.0	—	—	—	—	—	2	—	7	—	—	40	—	—	—	—	—	—
19.5	—	—	—	—	—	2	343	9	—	—	30	—	—	—	—	—	—
20+	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
n	5	7	27	164	9	632	124 219	7 966	7 444	1 047	3 639	28 606	15 771	29 029	3 930	12 602	44
Not measured	—	—	—	—	—	—	—	—	—	90	—	—	—	—	—	—	—
Grand total	5	7	27	164	9	632	124 219	7 966	7 444	1 137	3 639	28 606	15 771	29 029	3 930	12 602	44
Number of hauls	4	4	8	8	2	7	12	7	7	8	6	6	12	7	8	8	1
Length (cm)	Rectangle group																
	43,44 E4,E5	43,44 E6,E7	43,44 E8,E9	43,44 F0,F1	43,44 F2,F3	41,42 E6,E7	41,42 E8,E9	41,42 F2,F3	41,42 F4,F5	41,42 F6,F7	39,40 E8,E9	39,40 F0,F1	39,40 F4,F5	39,40 F6,F7	37,38 E8,E9	37,38 F0,F1	37,38 F4,F5
1.0	—	—	—	—	—	—	—	—	2	—	—	—	—	—	—	—	—
1.5	—	—	—	—	—	9	—	—	23	—	—	—	8	1	—	—	5
2.0	—	2	—	—	—	5	—	1	16	1	—	—	48	20	—	—	12
2.5	—	—	—	—	2	14	—	5	8	5	—	—	—	30	—	—	2
3.0	—	—	1	4	10	—	—	6	28	11	—	—	4	22	—	—	—
3.5	1	11	1	4	3	36	7	15	44	15	—	—	38	19	—	—	—
4.0	4	32	12	52	15	217	14	9	67	26	10	—	193	11	—	—	1
4.5	2	66	7	186	58	638	55	16	123	163	29	—	147	2	3	—	—
5.0	2	74	1	371	67	1 404	54	12	63	105	578	—	228	1	6	—	—
5.5	2	21	178	492	32	4 418	55	4	36	60	2 837	—	395	—	4	—	—
6.0	—	7	1 059	948	46	4 366	68	—	18	91	765	—	848	—	2	—	—
6.5	—	5	3 099	1 441	28	1 613	208	1	2	112	2 019	—	710	—	1	—	—
7.0	—	7	2 624	1 108	9	158	144	—	1	312	357	—	64	—	1	—	—
7.5	—	30	271	617	7	158	24	—	—	592	666	—	—	—	—	—	—

cont'd

Table 256 cont'd

Length (cm)	Rectangle group																
	43,44 E4,E5	43,44 E6,E7	43,44 E8,E9	43,44 F0,F1	43,44 F2,F3	41,42 E6,E7	41,42 E8,E9	41,42 F2,F3	41,42 F4,F5	41,42 F6,F7	39,40 E8,E9	39,40 F0,F1	39,40 F4,F5	39,40 F6,F7	37,38 E8,E9	37,38 F0,F1	37,38 F4,F5
8.0	—	69	406	370	—	—	45	—	—	1 400	1 080	—	—	—	1	—	—
8.5	—	53	290	230	—	—	8	—	—	1 232	—	—	—	—	1	—	—
9.0	—	30	191	—	—	—	49	—	—	224	1 080	—	—	—	—	—	—
9.5	—	25	270	1	1	—	205	—	—	—	1 080	—	—	—	—	—	—
10.0	—	50	360	—	—	—	3 568	—	—	—	3 780	—	—	—	—	39	—
10.5	—	47	963	—	—	—	10 125	—	—	—	15 660	—	—	—	1	260	—
11.0	—	11	1 241	—	—	—	17 917	—	—	—	16 200	—	—	—	—	669	—
11.5	—	11	1 423	—	—	—	23 188	—	—	—	14 041	—	—	—	—	777	—
12.0	—	9	983	—	—	—	15 732	—	—	—	1 7021	—	—	—	—	333	—
12.5	—	10	823	—	—	1	19 007	—	—	—	9 316	—	—	—	2	111	—
13.0	—	6	304	—	—	—	14 932	—	—	22	5 402	—	—	—	1	37	—
13.5	—	7	267	—	—	—	2 492	—	—	—	3 244	—	—	—	—	—	—
14.0	—	—	305	—	—	—	1 193	—	—	15	1 819	—	—	—	—	37	—
14.5	—	—	104	—	—	—	1 196	—	—	—	1 278	—	—	—	2	—	—
15.0	—	—	43	—	—	—	12	—	—	21	2 688	—	—	—	1	—	—
15.5	—	1	20	—	—	—	1 185	—	—	—	542	—	—	—	2	37	—
16.0	—	1	41	1	—	—	9	—	—	49	1 333	—	—	—	3	—	—
16.5	—	—	1	—	—	—	653	—	—	—	528	—	—	—	3	—	—
17.0	—	—	1	—	—	—	3	—	—	21	1 278	—	—	1	3	37	—
17.5	—	—	1	—	—	—	9	—	—	—	1 003	—	—	—	5	—	—
18.0	—	—	—	—	—	—	5	—	—	23	132	—	—	—	5	—	—
18.5	—	—	—	—	—	—	8	—	—	—	264	—	—	2	5	37	—
19.0	—	—	21	—	—	—	3	—	—	9	66	—	—	3	—	—	—
19.5	—	—	21	—	—	—	5	—	—	—	—	—	—	4	1	—	—
20+	—	—	—	—	—	—	16	—	—	20	2	—	—	4	1	—	—
n	11	585	15 313	5 825	278	13 037	112 194	69	431	4 530	97 098	—	2 683	116	49	2 374	20
Not measured	—	—	—	—	—	—	—	—	—	—	—	50	—	—	—	—	—
Grand total	11	585	15 313	5 825	278	13 037	112 194	69	431	4 530	97 098	50	2 683	116	49	2 374	20
Number of hauls	1	7	8	8	8	5	9	2	8	8	8	2	5	4	6	4	1

Table 257. Length composition, for groups of four statistical rectangles, of sprats taken during the 0-group gadoid surveys in the North Sea and west of Scotland in June/July 1979

Length (cm)	Rectangle group																			
	47,48 E4,E5	47,48 E6,E7	45,46 E2,E3	45,46 E4,E5	45,46 E6,E7	45,46 E8,E9	43,44 E4,E5	43,44 E6,E7	43,44 E8,E9	41,42 E6,E7	41,42 E8,E9	41,42 F0,F1	41,42 F6,F7	39,40 E8,E9	39,40 F0,F1	39,40 F4,F5	39,40 F6,F7	37,38 E8,E9	37,38 F0,F1	37,38 F4,F5
2.0	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2.5	—	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.0	—	—	—	5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
3.5	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
4.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
5.0	—	—	—	—	—	—	—	1	—	—	1	—	—	183	—	2	—	3	—	—
5.5	—	—	—	—	—	—	—	5	3	11	—	—	—	183	—	1	—	33	—	—
6.0	—	—	—	—	—	—	—	31	20	89	—	—	—	852	—	1	800	64	—	—
6.5	—	—	—	—	—	—	—	28	43	46	2	—	—	730	—	—	4 800	210	—	1
7.0	—	—	—	—	—	2	—	35	114	37	10	—	—	797	—	—	2 160	186	—	—
7.5	—	—	—	—	—	4	—	54	370	—	10	—	—	672	882	1	14 400	269	10	—
8.0	—	—	—	—	18	2	1	66	770	—	—	6	5 377	724	—	—	1 600	126	20	—
8.5	—	—	—	—	53	11	—	87	800	—	15	—	—	4 482	133	—	—	25	30	—
9.0	—	—	—	—	1 318	14	—	31	298	—	11	—	—	2 464	136	1	—	2	50	—
9.5	—	151	—	—	1 1 003	19	—	306	171	—	21	—	—	108	—	—	—	1	15	—
10.0	—	258	—	—	—	—	—	650	32	—	27	—	—	28	1	—	—	1	73	—
10.5	—	299	—	—	510	20	—	743	21	—	26	1	—	17	1	—	—	1	120	—
11.0	—	448	1	1	158	—	—	101	21	—	12	—	—	3	—	—	—	—	140	—
11.5	—	108	—	2	—	1	—	447	9	—	4	—	—	1	—	—	—	—	74	—
12.0	—	264	—	1	—	1	—	446	45	—	5	—	—	3	—	—	—	—	42	—
12.5	—	309	—	1	—	3	—	644	90	—	2	—	—	1	—	—	—	—	20	—
13.0	—	111	—	—	—	—	—	494	86	—	—	—	—	3	—	—	—	—	18	—
13.5	—	65	—	—	—	2	—	148	90	—	—	—	—	4	1	1	—	—	6	—
14.0	—	16	—	1	—	—	—	49	45	—	—	—	—	2	1	—	—	—	5	—
14.5	—	60	—	—	—	2	—	—	—	—	—	—	—	—	—	—	—	—	5	—
15+	—	2	—	—	—	1	—	—	27	—	—	—	—	—	—	—	—	—	—	—
15+	—	4	—	—	—	—	—	—	9	—	—	—	—	—	—	—	—	—	—	—
n	2	2 095	1	19	2 060	85	1	4 366	3 064	183	152	1	13 230	4 786	5	5 43 200	921	633	1	—
Not measured	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Grand total	2	2 095	1	19	2 060	85	1	4 366	3 064	183	152	1	13 230	4 786	5	5 43 200	923	633	1	—
No. of hauls	7	12	6	6	12	7	1	7	8	5	7	2	8	8	4	5	4	6	4	1

Table 258. Length composition, for groups of four statistical rectangles, of herring taken during the 0-group gadoid surveys in the North Sea and west of Scotland in June/July 1979

Length (cm)	Rectangle group														
	52,52 F0,F1	49,50 F2,F3	47,48 <sup>a</sup> E6,E7	45,46 E6,E7	43,44 E6,E7	43,44 E8,E9	41,42 E6,E7	41,42 E8,E9	41,42 F4,F5	41,42 F6,F7	39,40 E8,E9	39,40 F4,F5	39,40 F6,F7	37,38 E8,E9	37,38 F0,F1
1.5	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—
2.0	—	—	14	—	—	—	—	—	—	—	—	—	—	—	—
2.5	—	—	38	2	—	—	—	—	—	—	—	—	—	—	—
3.0	2	1	139	9	11	—	—	2	4	—	3	—	—	—	—
3.5	1	—	51	11	9	—	—	1	12	—	3	—	—	—	—
4.0	—	—	8	4	1	—	2	—	16	3	1	1	6	209	—
4.5	—	—	—	—	5	—	6	—	9	5	271	1	—	345	—
5.0	—	—	—	—	164	—	9	—	—	—	563	—	—	77	—
5.5	—	—	—	—	284	1	5	—	—	—	473	—	—	8	—
6.0	—	—	—	—	78	—	—	—	—	57	22	1	—	1	—
6.5	—	—	1	—	30	—	—	—	—	—	—	—	—	—	—
7.0	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
7.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8.0	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—
8.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
11.0	—	—	—	—	—	—	—	—	—	—	—	—	5	—	—
11.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
12.0	—	—	—	—	31	—	—	—	—	2	—	—	25	—	—
12.5	—	—	—	—	31	—	—	—	—	6	—	—	30	—	—
13.0	—	—	—	—	243	—	—	—	—	6	—	—	30	—	—
13.5	—	—	—	—	423	—	—	—	—	22	—	—	45	—	—
14.0	—	—	—	—	458	—	—	—	—	4	—	—	40	—	—
14.5	—	—	—	1	306	—	—	—	—	10	—	—	40	—	—
15.0	—	—	—	—	62	—	—	—	—	12	—	—	25	—	—
15.5	—	—	—	—	34	—	—	—	—	8	—	—	5	—	—
16.0	—	—	—	—	1	—	—	—	—	2	—	—	—	—	—
16.5	—	—	—	—	1	—	—	1	—	2	—	—	—	—	—
17.0	—	—	—	—	—	—	—	—	—	2	—	—	—	—	—
17.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
18.0	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—
18.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
19.0	—	—	—	—	—	—	—	—	—	4	—	—	—	—	—
19.5	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
20+	—	—	—	—	—	—	—	33	—	6	—	1	—	—	2
n	3	1	255	27	2 173	1	22	34	28	168	1 330	10	256	640	2
Number of hauls	4	8	12	12	7	8	5	7	8	8	8	5	4	6	4

<sup>a</sup> Includes a small number of sprats, length range 1.5-4.0 cm

Table 259. Catches per haul and mean lengths (cm) of those species that occurred in less than ten statistical rectangles during the surveys in the North Sea and west of Scotland in June/July 1979. The data are for 0-group fish

	Statistical rectangle	Number per haul	Mean length (cm)		Statistical rectangle	Number per haul	Mean length (cm)
Angler ( <i>Lophius piscatorius</i> )	47 E3	0.5	3.75	Conger ( <i>Conger conger</i> )	48 E7	0.3	14.75
<i>Argentina</i> sp.	49 E9	1.5	3.08		46 E6	0.5	14.25
	49 F0	1.0	2.75		45 E3	3.5	14.11
	47 E5	0.3	—		45 E7	0.3	14.25
	41 F4	0.5	4.25		44 E7	0.3	14.25
	40 F5	1.0	4.25	Plaice			
Blenny sp.	41 E7	0.3	—	( <i>Pleuronectes platessa</i> )	48 E6	0.3	—
	41 E9	0.5	—		48 E7	0.5	—
	41 F0	1.0	—		47 E5	2.0	—
	39 E8	0.5	—		46 E5	0.3	—
	39 F0	2.0	—	Red bandfish			
	38 E8	0.5	—	( <i>Cepola rubescens</i> )	40 F6	0.5	5.25
	38 F0	0.5	4.75	Sea scorpion ( <i>Cottus</i> sp.)	39 F0	0.5	—
Bothidae	49 E9	2.5	1.25	<i>Sebastes</i> sp.	50 F3	0.5	1.25
	49 F2	0.5	2.25		47 E3	0.5	0.75
	46 E3	0.5	1.25				
	45 E2	1.0	2.25				
	45 E3	0.5	1.75				

*Maurolicus muelleri*, are shown in Figures 267-271. Details of species that were caught infrequently are given in Table 259. Of interest was the capture of an 0-group red bandfish, *Cepola rubescens*, in rectangle 40 F6 and the presence of the *Leptocephalus* stage of *Conger conger* in five rectangles near the north of Scotland.

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**Report on the catches of 1-group cod, haddock, whiting, and Norway pout during the International Young Herring Survey 1979**

(Figures 272-279; Tables 260-264)

General information on participation in the 1979 survey is given in the Report on the ICES Young Fish Survey in the North Sea, Skagerrak, and Kattegat in 1979: Herring data (this volume). The number of valid hauls, including both day and night tows, the average number caught per haul, and the length statistics related to all individuals caught, are given in Table 260.

Computer processing of the data from former surveys has reached backwards to 1972 and Tables 261-264 provide abundance indices and mean lengths of the youngest age groups for the four species respec-

tively. These data refer to the standard areas, which were decided upon by the International Gadoid Survey Working Group in 1979. The boundaries of these standard areas are indicated in Figures 272-275.

*Cod.* The distribution pattern in 1979 (Fig. 272) indicates that young cod were virtually absent off the

Table 261. Abundance indices ( $\bar{N}$ ; mean number per square fished) and mean length ( $\bar{L}$ ) of 1- and 2-group cod caught during the surveys in 1972-1979 within the standard area, and  $\bar{N}$  of older cod. Number of squares fished ( $n$ )

	$n$	1-group		2-group		Older cod
		$\bar{N}$	$\bar{L}$	$\bar{N}$	$\bar{L}$	$\bar{N}$
1972	106	4.1	17.2	37.5	31.0	7.2
1973	110	37.7	19.0	10.5	32.6	37.3
1974	134	14.6	17.5	9.5	38.5	7.7
1975	132	95.7	19.5	6.1	37.9	3.7
1976	131	8.8	18.8	20.2	39.9	6.1
1977	141	40.3	16.5	3.1	34.1	6.4
1978	142	14.4	19.7	42.3	39.1	4.4
1979	140	9.8	19.5	9.2	38.2	6.2

Table 262. Haddock (see Table 261)

	$n$	1-group		2-group		Older haddock
		$\bar{N}$	$\bar{L}$	$\bar{N}$	$\bar{L}$	$\bar{N}$
1972	76	740	16.7	299	27.6	38
1973	78	187	16.5	971	25.0	253
1974	102	1 072	16.2	110	24.4	266
1975	97	1 168	16.6	385	26.2	70
1976	96	177	17.6	670	25.6	131
1977	106	162	16.2	84	26.9	179
1978	107	385	16.3	108	26.0	99
1979	106	480	16.3	240	27.1	53

Table 263. Whiting (see Table 261)

	$n$	1-group		2-group		Older whiting
		$\bar{N}$	$\bar{L}$	$\bar{N}$	$\bar{L}$	$\bar{N}$
1972	86	332	16.5	189	25.7	36
1973	106	1 156	16.1	763	23.9	84
1974	134	322	16.6	496	24.4	59
1975	132	893	17.3	153	26.5	146
1976	130	679	16.2	535	25.2	179
1977	141	418	15.8	219	23.5	109
1978	142	513	17.0	293	25.4	133
1979	140	457	15.5	183	25.1	116

Table 260. Number of valid hauls ( $n$ ), number of 1-group fish per haul ( $\bar{N}$ ), mean length ( $\bar{L}$ ), standard deviation around the mean (s.d.) and length range ( $R$ ) of all 1-group cod, haddock, whiting, and Norway pout (1978 year class) caught during the 1979 survey

Species	$n$	$\bar{N}$	$\bar{L}$ (cm)	s.d. (cm)	$R$ (cm)
Cod	430	4.1	19.1	4.3	7-33
Haddock	430	119.8	16.4	2.2	10-34
Whiting	430	154.7	15.5	2.9	5-27
Norway pout	425	593.0	11.3	1.1	6-17

Table 264. Norway pout (see Table 261)

	$n$	1-group		2-group		Older Norway pout
		$\bar{N}$	$\bar{L}$	$\bar{N}$	$\bar{L}$	$\bar{N}$
1972	38	3 425	10.9	653	15.0	5
1973	32	4 207	11.6	438	15.5	82
1974	65	25 626	11.0	399	16.2	9
1975	81	4 242	11.5	2 412	15.9	43
1976	76	4 599	10.8	385	16.3	33
1977	90	4 813	11.0	334	15.5	27
1978	91	1 913	11.7	1 215	15.9	21
1979	90	2 690	11.3	240	16.4	71