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Section I. Subareas 1 (and East Greenland), 2, and 3

by

J. Messtorff

Subarea 1 (and East Greenland)

A. Status of the Fisheries

1. General trends

The total nominal catch taken by trawlers of the Federal Republic of Germany in Subarea 1 decreased in 1976 by 10% as compared to 1975, although only 93% of the drastically reduced cod quota of 6,300 tons could be obtained. The sharp decrease in cod catches to 54% of the 1975 catch was partly compensated by a 38% increase of redfish catches. Fishing took place in January and March to April, as well as from September to December. There was no fishing activity by trawlers of the Federal Republic of Germany in February and from June to the end of August. The major portion (67%) of the total catch was taken during the second half of the year and according to areas in the most southern Divisions 1E-1F (80% of total catch, 71% of redfish, and 66% of cod catches). Cod amounted to 41% and redfish to 35% of the total catch.

Off East Greenland the total nominal catch almost doubled in 1976 as compared to the previous year. This was mainly due to an increased cod fishery, which resulted in a catch 4.5 times higher than in 1975, whereas the redfish catch remained almost constant. Cod amounted to 52% and redfish to 32% of the total catch.

The catches of Subarea 1 and East Greenland combined increased in 1976 somewhat in total, as well as for both main species. Cod and redfish amounted to 46% and 34% of the total catch.

The nominal catches as well as catches per day fished are given in detail for 1976 in Table 1, and as compared to previous years in Table 3. A species breakdown of the by-catches in 1976 (summarized under "Other Finfish" in Table 1) is given in Table 2.

The critical condition of the cod stock in Subarea 1 is very distinctly reflected by the age compositions of the commercial catches as shown in Table 4. In May 1976, 97% of the catches consisted of newly-recruited year-classes of 1971-73. The 3-year-old and immature cod of the relatively good year-class 1973, however, amounted to 58% of the total catch of cod in the first half of the year. In autumn 1976 the situation became even more pointed, when the share of the year-class 1973 had increased to 88%. Cod of 6 years and older contributed only 3% to the commercial catches of cod. Correspondingly, the mean length of cod was as low as 52.9 cm in May and only 47.8 cm in October 1976.

* Executive Secretary, ICNAF, P.O. Box 638, Dartmouth, Nova Scotia, Canada B2Y 3Y9

2. Forecast for 1977

There is no national quota allocation of cod for the Federal Republic of Germany in 1977 and the small quota for "Others" of 2,000 tons is expected to be taken already early in 1977. Whether the restricted cod fishery will affect the redfish fishery cannot yet be predicted.

B. Special Research Studies

1. Environmental studies

During a groundfish survey by R/V "Walther Herwig" between 17 November and 2 December 1976 in Divisions 1C-1F and off Southeast Greenland, hydrographic measurements consisting of Nansen casts, BT records, and Profiling Current Measurements, as well as sediment samples were obtained on four ICNAF standard sections and routinely on almost all fishing stations. Analyses of the data and material obtained are not yet completed.

2. Biological studies

A groundfish survey consisting of 51 sets with a standard bottom trawl was carried out by R/V "Walther Herwig" between 17 November and 2 December 1976 in Divisions 1C-1F (37 sets) and off Southeast Greenland (14 sets). Preliminary results of the cod investigations confirm very strongly the conclusions regarding the stock condition as drawn from commercial sampling data (see Section A.1.). In Divisions 1C-1F, 80% of the cod in the survey catches were smaller than 50 cm and predominantly belonged to the 1973 year-class. Fig. 1 shows the length frequency obtained from survey catches with a modal length of only 43.5 cm.

Subareas 2 and 3

A. Status of the Fisheries

1. General trends

The report is given for Subareas 2 and 3 combined, as 84% of the total nominal catch was taken in the management area comprising Div. 2J+3KL.

In 1976, as in previous years, the fishing activity of freezer trawlers of the Federal Republic of Germany was mainly concentrated during the first quarter of the year. Later in the year insignificant catches (1% of the total catch) were taken in September in Div. 3O and in October in Div. 3L and 3M.

The nominal catches, as well as the catches per day fished in 1976, are given in detail in Table 5 and a species breakdown of the by-catches (summarized under "Other Finfish" in Table 5) is given in Table 6. The cod catches, as compared to previous years from Div. 2GH and 2J+3KL, are given in Tables 7 and 8, respectively.

The fishing activity in the northern Div. 2GH decreased somewhat as compared to 1975, but remained considerably above the low level of the 1972-74 period. The ratio of cod, however, decreased to 58% (74% in 1975) of the total catch due to increased by-catches, and only 57% of the 1976 quota allocation of 4,000 tons could be obtained.

The fishing activity in Div. 2J+3KL was restricted by a further sharp reduction of the quota allocation for cod from 40,000 tons in 1975 to 20,000 tons in 1976, as well as by an additional effort limitation. Consequently, catch and effort declined as compared to previous years. Cod amounted to 76% of the total nominal catch and 86% of the quota allocation could be obtained. Redfish by-catches decreased to 1/3 of the previous year's amount. Catches of "Other Finfish" (especially of witch and Greenland halibut), however, increased not only by ratio but even in absolute amounts.

As in 1975 cod catches were mainly taken in Div. 2J and 3K (97%). The respective proportion of 2 : 1 in 1975, however, was exactly reverse in 1976. The corresponding length frequencies and age compositions are illustrated in Fig. 2. Although less pronounced as in 1975 the year-classes 1967 and 1968 were still predominant and made up 37% in the combined catches of Div. 2J+3K. The major portion (52%) of the catch, however, consisted of younger cod among which the 1972 year-class was already fairly well represented.

2. Forecast for 1977

In view of an unchanged TAC in Div. 2GH, catches are expected to remain at about the same level. But in Div. 2J+3KL catches will again decline substantially due to a further sharp reduction of the TAC for cod.

B. Special Research Studies

1. Environmental studies

During the groundfish survey conducted by R/V "Walther Herwig" between 23 October and 13 November 1976 in Subarea 2 and Div. 3K, hydrographic measurements consisting of Nansen casts, BT records as well as sediment samples were obtained routinely on almost all fishing stations. In addition the ICNAF standard section off Seal Island was performed including some profiling current measurement. Some results of hydrographic observations are presented in Res.Doc. 77/VI/55, Serial No. 5122.

2. Biological studies

The time-series of late autumn groundfish surveys in Div. 2J and 3K (north of 51°N) was continued by R/V "Walther Herwig" between 23 October and 13 November 1976. Eighty-nine sets, preselected according to the stratified random survey design, were conducted. All finfish species occurring in the catches were at least sampled for length frequencies. Numbers caught and total weight per set have been recorded for each species separately. Cod, redfish, American plaice, witch flounder and Greenland halibut were also sampled for age composition. The cooperation and participation of Canadian colleagues of the Newfoundland Biological Station, St. John's, proved again very expedient and is greatly acknowledged.

Figure 3 illustrated the considerable changes in the length distribution of cod in Div. 2J over recent years as observed in the survey catches. The increasing recruitment of the relatively strong 1972 year-class is very obvious and, as shown in Fig. 2, also already clearly reflected in the commercial catches of the same area.

Section II. Subareas 4 and 5

by

H. Dornheim

A. Status of the Fisheries

1. General trends

According to the 1976 national quota the total catch of the Federal Republic of Germany factory stern trawlers in SA 4 amounted to 1,420 to, in SA 5 14,226 to. Most of the effort in both areas was again directed in the herring fishery yielding 744 to in SA 4 (FRG catch quota for 1976 800 to) and 8,805 to in SA 5 (FRG catch quota for 1976 9,200 to). Compared to the 1975 herring catch a decrease of 44.3% in SA 4 and 61.7% in SA 5 can be stated whereas squid catches in both areas increased from 25 to in 1975 to 1,150 to in 1976 as well as other finfish catches (consisting mainly of Atlantic saury and shad) increased from 1,648 to in 1975 to 2,520 to in 1976. Detailed information about the 1976 catches is given in Table 9.

All catches were done by pelagic trawling.

As in previous years biggest catches especially herring were made in August and September in which time the highest effort could be observed, too.

Besides some days of searching for fish no fishery took place in Stat. Area 6.

2. Forecast for 1977

In 1977 again fishing activities in SA 4 and 5 will be mainly directed to herring in that region agreed upon at the Ninth Special Meeting of the Commission, Tenerife, Spain, in December 1976. Age determinations of 1976 herring samples indicate that the bulk of the 1977 catches again be formed out of the 1970 year-class besides the 1973 year-class which will have some importance, too.

B. Special Research Studies

1. Environmental studies

In 1976 two surveys were carried out in SA 5 by R.V. "Anton Dohrn".

1. ICNAF Juvenile Herring Survey (in investigation area April, 1.-8.)
2. ICNAF Larval Herring Survey (in investigation area November 14.-30.).

During both cruises hydrographic - (Series) and plankton - studies (61-cm-Bongonet, 20-cm-Bongonet, Neustonnet) were carried out in SA 5. Preliminary results of the first cruise are published as a Working Paper at the Szczecin - meeting of the Environmental Working Group, April 26.-30. Results of the second cruise are worked up at this stage.

2. Biological studies

Investigations on especially herring were carried out during the FRG Juvenile Herring Survey by R.V. "Anton Dohrn" in March in Div. 5Z. In addition, during the herring fishing season from July to September samples were taken aboard commercial trawlers. Results (Table 10) show that the 1970 year-class in March as well as in July through September is still predominant as stated in former years since 1973. All other year-classes besides the 1973 year-class in March and the 1971 year-class in August/September are of minor importance. More detailed results of the Juvenile Herring Survey are to be found in ICNAF Res. Doc. 76/VI/118.

Stages of maturity (Table 11) show that all herring investigated were autumn-spawners.

3. Gear and selectivity studies

No activities reported for 1976 in ICNAF area.

Table 1: Nominal catches (tons) in SA 1 per Division and Month and from East Greenland (Total) in 1976 (including industrial fish - converted to fish meal on board).

Div./Month	days fished	COD			REDFISH			OTHER FINFISH*			TOTAL FINFISH			
		nom. catch	catch p.day	% ind.	nom. catch	catch p.day	% ind.	nom. catch	catch p.day	% ind.	nom. catch	catch p.day	% ind.	
1 C	Jan	23	193	8.4	-	156	6.8	0.6	127	5.5	61.4	476	20.7	16.6
	Mar	4	99	24.8	-	4	1.0	-	33	8.3	100.0	136	34.0	24.3
	Total	27	292	10.8	-	160	5.9	0.6	160	5.9	69.4	612	22.7	18.3
1 D	Jan	46	212	4.6	-	288	6.3	16.3	287	6.2	41.1	787	17.1	21.0
	Mar	9	68	7.6	-	62	6.9	-	30	3.3	86.7	160	17.8	16.3
	Apr	12	336	28.0	-	20	1.7	-	166	13.8	74.1	522	43.5	23.6
	May	3	58	19.3	-	3	1.0	-	38	12.7	63.2	99	33.0	24.2
	Dec	29	1019	35.1	-	477	16.4	-	576	19.9	72.9	2072	71.4	20.3
Total	99	1693	17.1	-	850	8.6	5.5	1097	11.1	64.8	3640	36.8	20.8	
1 E	Jan	28	278	9.9	-	101	3.6	0	120	4.3	45.0	499	17.8	10.8
	Mar	17	76	4.5	-	217	12.8	-	122	7.2	64.8	415	24.4	19.0
	Apr	6	98	16.3	-	62	10.3	-	56	9.3	78.6	216	36.0	20.4
	May	6	124	20.7	-	18	3.0	-	49	8.2	77.6	191	31.8	19.9
	Oct	3	10	3.3	-	48	16.0	-	1	0.3	-	59	19.7	-
	Nov	5	7	1.4	-	111	22.2	-	8	1.6	-	126	25.2	-
	Dec	54	1303	24.1	-	1280	23.7	-	1022	18.9	71.5	3605	66.8	20.3
Total	119	1896	15.9	-	1837	15.4	0	1378	11.6	68.7	5111	42.9	18.5	
1 F	Jan	30	507	16.9	-	124	4.1	4.0	157	5.2	58.0	788	26.3	12.2
	Mar	14	306	21.9	-	122	8.7	-	142	10.1	85.9	570	40.7	21.4
	Apr	16	304	19.0	-	117	7.3	-	79	4.9	88.6	500	31.3	14.0
	May	1	16	16.0	-	-	-	-	2	2.0	100.0	18	18.0	11.1
	Sep	15	79	5.3	-	351	23.4	-	16	1.1	-	446	29.7	-
	Oct	28	83	3.0	-	425	15.2	-	16	0.6	-	524	18.7	-
	Nov	25	165	6.6	-	321	12.8	-	22	0.9	-	508	20.3	-
	Dec	41	501	12.2	-	765	18.7	-	382	9.3	89.5	1648	40.2	20.8
	Total	170	1961	11.5	-	2225	13.1	0.2	816	4.8	76.8	5002	29.4	12.6
SA 1 Total	415	5842	14.1	-	5072	12.2	1.0	3451	8.3	69.4	14365	34.6	17.0	
E-Grld.Total	532	7074	13.3	0	4401	8.3	0.7	2175	4.1	67.0	13650	25.7	10.9	

*) Species breakdown, see Table 2

Table 2: Nominal catches (tons) of "OTHER FINFISH" (Table 1) by species in SA 1 per Division and Month and from East Greenland (Total) in 1976

Div./Month	Atl. Halib.	Grld. Halib.	Wolf-fish	Am. Plaice	Witch	Grena-dier	Sharks (NS)	NS	Total
1 C	Jan	7	15	23	4	-	-	78	127
	Mar	+	-	-	-	-	-	33	33
	Total	7	15	23	4	-	-	111	160
1 D	Jan	5	21	138	4	-	-	119	287
	Mar	+	-	4	-	-	-	26	30
	Apr	1	2	40	-	-	-	123	160
	May	1	-	13	-	-	-	24	38
	Dec	19	19	95	-	-	-	443	576
Total	26	42	290	4	-	-	735	1097	
1 E	Jan	4	-	62	-	-	-	54	120
	Mar	5	3	33	-	-	2	79	122
	Apr	-	1	11	-	-	-	44	56
	May	1	+	10	-	-	-	38	49
	Oct	-	-	1	-	-	-	+	1
	Nov	+	-	8	-	-	-	+	8
	Dec	12	13	110	23	-	147	1	1022
Total	22	17	235	23	-	147	3	1378	
1 F	Jan	20	16	26	3	-	-	92	157
	Mar	3	2	9	-	4	-	122	142
	Apr	+	-	8	-	-	-	71	79
	May	-	-	-	-	-	-	2	2
	Sep	3	-	12	-	-	-	1	16
	Oct	+	-	11	-	-	4	1	16
	Nov	1	+	20	-	-	-	1	22
	Dec	4	-	25	72	-	-	3	382
	Total	31	18	111	75	4	9	278	816
SA 1 Total	86	92	659	106	4	147	12	3451	
E-Grld.Total	47	191	258	7	65	2	51	2175	

Table 3 : Subarea 1 and East Greenland, nominal catches and catch per day fished (tons), 1963 and 1968 - 1976

	Year	Days fishing	COD		REDFISH		TOTAL FINFISH	
			Catch	Catch per day	Catch	Catch per day	Catch	Catch per day
Subarea 1	1963	7,175	152,934	21.3	44,355	6.2	202,923	28.3
	1968	5,819	132,498	22.8	11,858	2.0	146,432	25.2
	1969	3,234	67,431	20.9	6,964	2.2	75,293	23.3
	1970	1,722	38,551	22.4	4,501	2.6	44,283	25.7
	1971	1,545	37,950	24.6	3,335	2.2	42,482	27.5
	1972	1,312	16,963	12.9	2,650	2.0	20,732	15.8
	1973	672	6,048	9.0	2,209	3.3	9,735	14.5
	1974	114	1,681	14.7	568	5.0	2,476	21.7
	1975	571	10,842	19.0	3,120	5.5	15,903	27.9
	1976	415	5,842	14.1	5,072	12.2	14,365	34.6
E. Green-land	1963	2,182	13,677	6.3	31,368	14.4	47,700	21.9
	1968	1,361	9,825	7.2	15,432	11.3	26,417	19.4
	1969	2,164	14,292	6.6	24,587	11.4	40,505	18.7
	1970	1,532	14,388	9.4	15,672	10.2	31,104	20.3
	1971	1,737	28,735	16.5	14,037	8.1	44,062	25.4
	1972	1,732	21,664	12.5	7,153	4.1	29,742	17.2
	1973	931	9,286	10.0	4,480	4.8	14,309	15.4
	1974	312	2,310	7.4	2,650	8.5	5,235	16.8
	1975	526	1,565	3.0	4,988	9.5	7,245	13.8
	1976	532	7,074	13.3	4,401	8.3	13,650	25.7
Total	1963	9,357	166,611	17.8	75,723	8.1	250,623	26.8
	1968	7,180	142,323	19.8	27,290	3.8	172,849	24.1
	1969	5,398	81,723	15.1	31,551	5.8	115,798	21.5
	1970	3,254	52,939	16.3	20,173	6.2	75,387	23.2
	1971	3,282	66,685	20.3	17,372	5.3	86,544	26.4
	1972	3,044	38,627	12.7	9,803	3.2	50,474	16.6
	1973	1,603	15,334	9.6	6,689	4.2	24,044	15.0
	1974	426	3,991	9.4	3,218	7.6	7,711	18.1
	1975	1,097	12,407	11.3	8,108	7.4	23,148	21.1
	1976	947	12,916	13.6	9,473	10.0	28,015	29.6

Table 4: Age composition (°/oo) and mean length at age (cm) of commercial catches in Divisions 1 E+F in 1976

year-class	1973	1972	1971	1970	1969	1968	1967	1966
age	3	4	5	6	7	8	9	10
MAY 1976	579	163	225	26	-	7	-	-
	41.2	49.1	55.4	56.1	-	60.5	-	-
OCT 1976	881	70	18	13	2	12	3	1
	48.8	55.2	60.7	71.4	-	83.0	-	-

Table 5. Nominal catches (metric tons) in Subareas 2 and 3 in 1976 (including industrial fish = converted to fish meal on board).

Area	Month	Days fished	COD			REDFISH			OTHER FINFISH ^a			TOTAL FINFISH		
			Nom. catch	Catch/day	% ind.	Nom. catch	Catch/day	% ind.	Nom. catch	Catch/day	% ind.	Nom. catch	Catch/day	% ind.
2C	Mar	5	208	41.6	-	-	-	-	311	62.2	18.6	519	103.8	11.2
2H	Jan	13	430	33.1	-	-	-	-	41	3.2	100.0	471	36.2	8.7
	Feb	10	314	31.4	-	6	0.6	-	130	13.0	72.3	450	45.0	20.9
	Mar	59	1,313	22.3	-	94	1.6	-	1,041	17.6	42.3	2,448	41.5	18.0
	Apr	1	13	13.0	-	3	3.0	-	5	5.0	100.0	21	21.0	23.8
Total		83	2,070	24.9	-	103	1.2	-	1,217	14.7	47.7	3,390	40.8	17.1
2G+H		88	2,278	25.9	-	103	1.2	-	1,528	17.4	41.8	3,909	44.4	16.3
2J	Jan	112	2,401	21.4	-	137	1.2	-	916	8.2	55.3	3,454	30.8	14.7
	Feb	85	1,834	21.6	-	130	1.5	0.8	614	7.2	57.0	2,578	30.3	13.6
	Mar	19	902	47.5	-	0	0.0	-	175	9.2	80.0	1,077	56.7	13.0
Total		216	5,137	23.8	-	267	1.2	0.4	1,705	7.9	58.5	7,109	32.9	14.0
3K	Jan	7	134	19.1	-	23	3.3	-	53	7.6	41.5	210	30.0	10.5
	Feb	315	9,293	29.5	-	215	0.7	3.3	2,489	7.9	67.3	11,997	38.1	14.0
	Mar	82	2,147	26.2	-	37	0.5	10.8	589	7.2	63.5	2,773	33.8	13.6
Total		404	11,574	28.6	-	275	0.7	4.0	3,131	7.8	66.1	14,980	37.1	13.9
3L	Mar	13	254	19.5	-	8	0.6	87.5	92	7.1	41.3	354	27.2	12.7
	Sep	3	249	83.0	-	-	-	-	-	-	-	249	83.0	-
	Oct	3	14	4.7	-	20	6.7	-	9	3.0	88.9	43	14.3	18.6
Total		19	517	27.2	-	28	1.5	25.0	101	5.3	45.5	646	34.0	8.2
2J+3KL		639	17,228	27.0	-	570	0.9	3.3	4,937	7.7	63.0	22,735	35.6	13.7
3M	Jan	3	88	29.3	-	-	-	-	20	6.7	60.0	108	36.0	11.1
	Mar	3	118	39.3	-	24	8.0	83.3	22	7.3	95.5	164	54.7	25.0
	Oct	2	19	9.5	-	20	10.0	-	10	5.0	90.0	49	24.5	18.4
Total		8	225	28.1	-	44	5.5	45.5	52	6.5	80.8	321	40.1	19.3
30	Mar	2	84	42.0	-	-	-	-	11	5.5	100.0	95	47.5	11.6
	Sep	1	153	153.0	-	-	-	-	-	-	-	153	153.0	-
Total		3	237	79.0	-	-	-	-	11	3.7	100.0	248	82.7	4.4
SA 2 Total		304	7,415	24.4	-	370	1.2	0.3	3,233	10.6	50.6	11,018	36.2	14.8
SA 3 Total		434	12,553	28.9	-	347	0.8	11.3	3,295	7.6	65.8	16,195	37.3	13.6

^a Species breakdown see Table .

Table 6. Nominal catches (metric tons) of "Other Finfish" (Table) by species in Subareas 2 and 3 in 1976.

Area	Month	Am. plaice	Witch	Grid. halibut	Atl. halibut	Wolf- fish	Rn. grenadier	NS	Total
2G	Mar	-	235	-	-	-	-	58	311
2H	Jan	-	-	-	-	-	-	41	41
	Feb	2	4	26	-	4	-	94	130
	Mar	4	459	63	2	72	-	441	1,041
	Apr	-	-	-	-	-	-	5	5
Total		6	463	89	2	76	-	581	1,217
2G+H		6	716	89	2	76	-	639	1,528
2J	Jan	2	99	208	23	76	-	508	916
	Feb	6	157	47	4	48	-	352	614
	Mar	-	+	35	+	-	-	140	175
Total		8	256	290	27	124	-	1,000	1,705
3K	Jan	-	7	20	-	4	-	22	53
	Feb	14	295	344	47	110	-	1,679	2,489
	Mar	+	3	162	10	38	1	375	589
Total		14	305	526	57	152	1	2,076	3,131
3L	Mar	1	44	9	+	+	-	38	92
	Sep	-	-	-	-	-	-	-	-
	Oct	-	-	-	-	1	-	8	9
Total		1	44	9	+	1	-	46	101
2J+3KL		23	605	825	84	277	1	3,122	4,937
3M	Jan	-	-	-	8	-	-	12	20
	Mar	-	-	-	-	1	-	21	22
	Oct	-	-	-	-	1	-	9	10
Total		-	-	-	8	2	-	42	52
3O	Mar	-	-	-	-	-	-	11	11
	Sep	-	-	-	-	-	-	-	-
Total		-	-	-	-	-	-	11	11
SA 2 Total		14	972	379	29	200	-	1,639	3,233
SA 3 Total		15	349	535	65	155	1	2,175	3,295

Table 7 : COD - 2 GH, nominal catches and catch per day fished (tons)
1965 - 76

Year	2 G			2 H			2 G+H		
	days fished	nom. catch	catch per day	days fished	nom. catch	catch per day	days fished	nom. catch	catch per day
1965	113	3289	29.1	219	4895	22.4	332	8184	24.7
66	177	4660	26.3	767	22350	29.1	944	27010	28.6
67	11	239	21.7	447	11069	24.8	458	11308	24.7
68	15	157	10.5	163	6092	37.4	178	6249	35.1
69	-	-	-	298	11389	38.2	298	11389	38.2
70	-	-	-	189	4957	26.2	189	4957	26.2
71	11	277	25.2	79	1283	16.2	90	1560	17.3
72	-	-	-	6	113	18.8	6	113	18.8
73	-	-	-	7	120	17.1	7	120	17.1
74	-	-	-	24	678	28.3	24	678	28.3
75	29	869	30.0	67	2466	36.8	96	3335	34.7
76	5	208	41.6	83	2070	24.9	88	2278	25.9

Table 8 : COD - 2 J + 3 KL, nominal catches and catch per day fished(Tons) 1975 - 76

Year	2 J			3 K			3 L			2 J + 3 KL		
	days fished	nom. catch	catch per day	days fished	nom. catch	catch per day	days fished	nom. catch	catch per day	days fished	nom. catch	catch per day
1965	990	31274	31.6	31	629	20.3	504	4921	9.8	1525	36824	24.1
66	1191	36395	30.6	132	2394	18.1	436	6303	14.5	1759	45092	25.6
67	776	21047	27.1	24	247	10.3	60	906	15.1	860	22200	25.8
68	1312	47868	36.5	-	-	-	-	-	-	1312	47868	36.5
69	1749	60391	34.5	6	229	38.2	-	-	-	1755	60620	34.5
70	1391	45050	32.4	414	11856	28.6	-	-	-	1805	56906	31.5
71	646	18120	28.0	341	10355	30.4	10	171	17.1	997	28646	28.7
72*	339	10052	29.7	514	19465	37.9	6	12	2.0	859	29529	34.4
73*	383	6678	17.4	943	27654	29.3	70	1316	18.8	1396	35648	25.5
74*	1087	28174	25.9	232	5776	24.9	-	-	-	1319	33950	25.7
75	542	16891	31.2	333	10174	30.6	-	-	-	875	27065	30.9
76	216	5137	23.8	404	11574	28.6	19	517	27.2	639	17228	27.0

*) days fished and cod by-catches in the fishery directed on redfish excluded!

Table 9. Nominal catch (tons), effort (days fished, and discards (tons) of FRG freezer trawlers in Subareas 4 and 5, 1976

Div.	Month	Her	Mac	Nominal catch			Silv hake	Redf	Squid	Other finfish*	Total	D.F.	Effort Discards			Others (NK)	Total
				Cod	Had	Pol							Her	Mac	Silv hake		
4 Vn	Oct	65	-	-	-	-	-	-	1	66	2	-	-	-	-	-	
4 Vs	Jul	245	-	-	-	-	-	-	19	264	4	-	-	-	-	-	
	Aug	112	-	-	-	-	-	-	9	121	1	-	-	-	-	-	
	Oct	42	-	-	-	-	-	-	9	51	1	-	-	-	-	-	
4W	Oct						No Fishery, only SEARCHING				3						
4X	Jul	4	0	-	-	5	1	-	1	11	1	0	-	-	-	0	
	Aug	50	33	-	-	20	28	0	38	188	2	-	-	-	-	-	
	Sep	140	207	0	0	69	62	1	72	559	8	1	-	-	-	1	
	Oct	86	38	-	-	5	7	-	24	160	7	1	-	-	-	1	
SA 4 Total		744	278	0	0	99	98	1	173	1420	29	2	-	-	-	2	
5Ze	Jul	77	3	-	-	0	4	-	2	86	25	0	-	-	-	0	
	Aug	4673	750	-	-	134	51	-	1099	7193	119	2	-	-	1	1	
	Sep	3532	190	4	0	452	26	-	1017	5831	121	-	3	5	0	1	
	Oct	473	22	6	-	308	1	-	225	1062	40	1	-	-	-	1	
5Zw	Oct	50	-	-	-	-	-	-	4	54	1	-	-	-	-	-	
SA 5 Total		8805	965	10	0	894	82	-	2347	14226	306	3	3	6	1	2	
Stat. Area																	
6A	Jul								No Fishery, only SEARCHING		2						
SA 6 Total									No Fishery, only SEARCHING		2						

Average gross registered tonnage of FRG trawlers fishing with pelagic trawls, Subarea 4 and 5: 3132 GRT (2025-3577 GRT)

* probably mostly Atlantic saury and Shad

Table 10. Age composition (%) in 1976.

Year-class	Age	Div. 5Z			
		Mar	Jul	Aug	Sep
1975	1	-	-	-	-
74	2	-	-	-	-
73	3	232	-	44	43
72	4	98	22	33	59
71	5	85	89	117	143
70	6	471	845	754	682
69	7	90	22	28	28
68	8	24	-	11	25
67	9	-	22	5	10
<67	>9	-	-	8	10
	Total n	1000 376	1000 90	1000 615	1000 747
	Mean length mm n	285 1587	310 90	308 890	307 753

Table 11. Stages of maturity (%) in 1976.

Stages	Div. 5Z			
	Mar	Jul	Aug	Sep
1	-	-	-	-
2	259	-	15	9
3	5	22	10	1
4	-	856	196	20
5	-	122	771	464
6	-	-	-	394
7	-	-	8	112
8	736	-	-	-
Total n	1000 378	1000 90	1000 620	1000 753

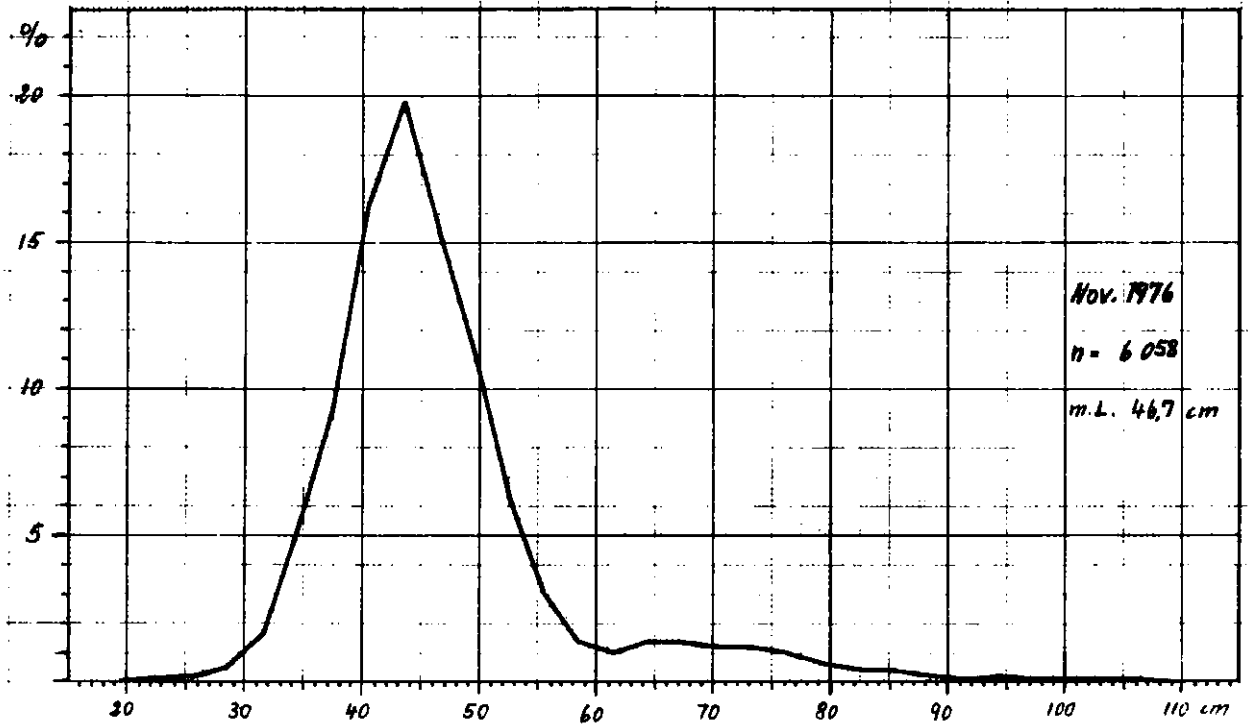


Fig. 1. Cod length frequency in Div. 1D-1F after groundfish survey data obtained in autumn 1976.

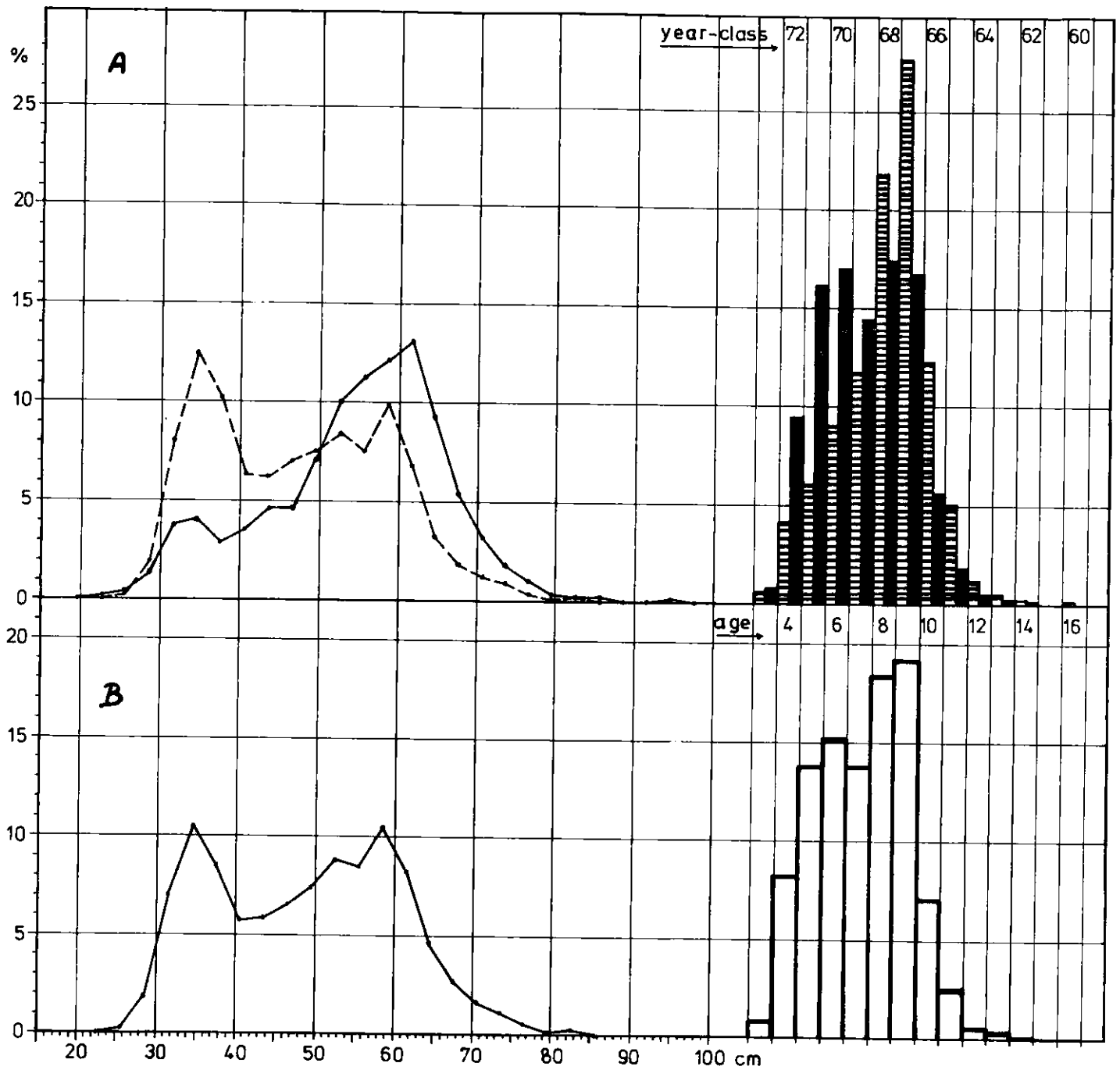


Fig. 2. Cod length frequencies and age compositions of commercial catches (FRG) in Div. 2J and 3K in February 1976.

A) Div. 2J: n = 3,432; mean length 54.42 cm; mean weight 1,574 g (solid line and hatched columns).
Div. 3K: n = 2,814; mean length 47.23 cm; mean weight 1,046 g (dashed line and solid columns).

B) Div. 2J+3K combined, according to total FRG catch in 1st quarter 1976.

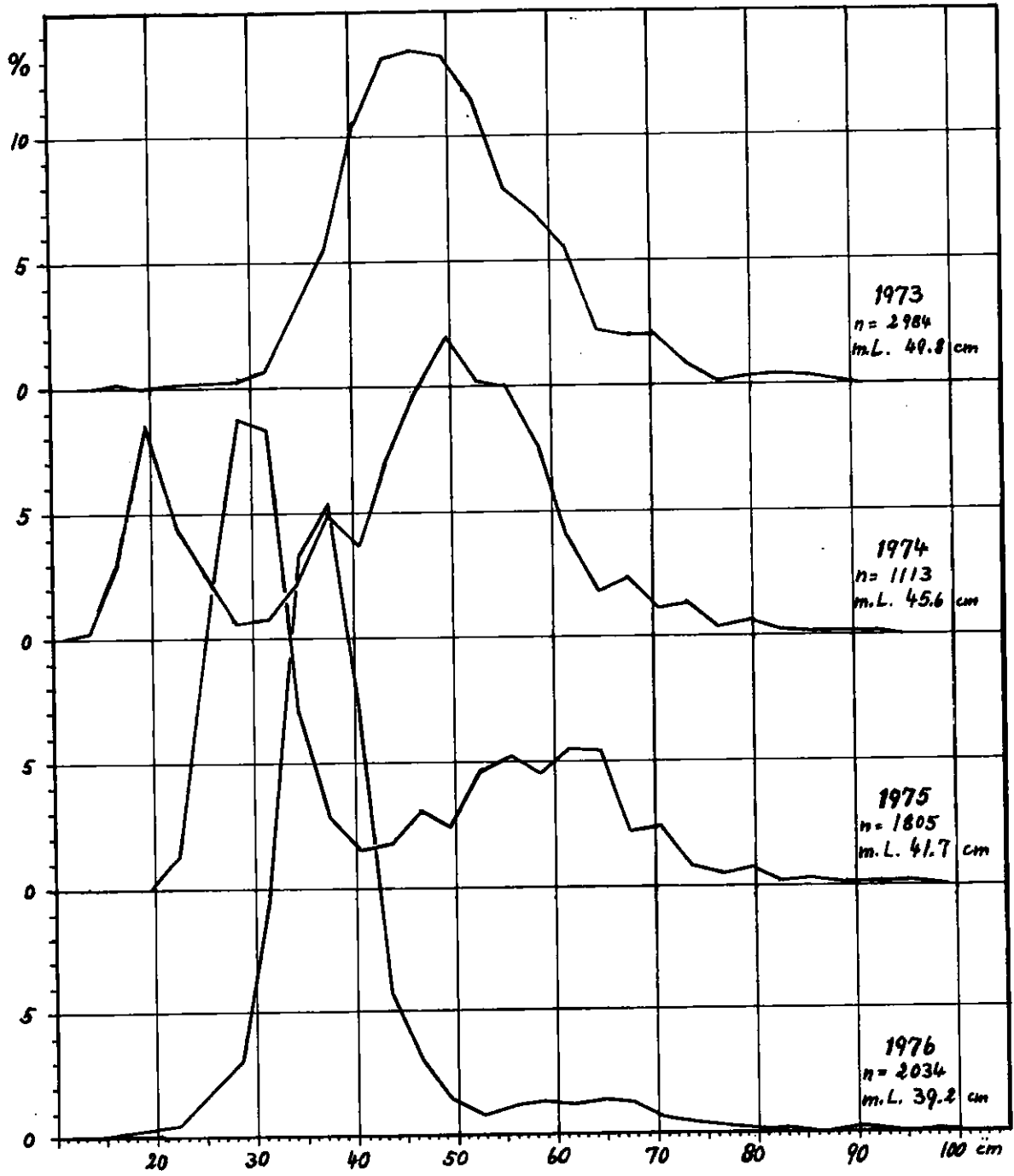


Fig. 3. Cod length frequencies in Div. 2J after groundfish survey data obtained in autumn 1973-1976.