

International Commission for



the Northwest Atlantic Fisheries

Serial No. 5274

ICNAF Sum. Doc. 78/VI/31

ANNUAL MEETING - JUNE 1978

Federal Republic of Germany Research Report, 1977

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

Although the traditional cod fishery by the Federal Republic of Germany in Subarea 1 was not continued in 1977, since regulation measures did not allow for allocation of national quotas except for the coastal state, the total nominal catch taken by trawlers of the Federal Republic of Germany increased 3.4 times as compared to 1976. The fishing effort increased by the same factor and was entirely directed towards the catch of redfish which amounted to 61% of the total catch. The by-catch of cod made up only 5%. The major portions of the total catch were taken in Div. 1D (40%) and Div. 1F (43%). Fishing took place throughout the year but the higher fishing activity during the first and fourth quarters of the year accounted for 72% of the total catch. There was no fishery in Div. 1A, and in Div. 1B only 30 tons of shrimp have been taken.

Off East Greenland the total nominal catch as well as the fishing effort by trawlers of the Federal Republic of Germany also increased in 1977, as compared to the previous year resulting in a three times larger catch of redfish which accounted for 61% of the total nominal catch. Cod catches decreased by 50% against 1976 and made up only 16% of the total nominal catch.

The nominal catches as well as the catches per day fished in 1977 are given in detail in Table 1. A species breakdown of by-catches (summarized under "Other Finfish" in Table 1) is given in Table 2.

In view of the apparent shift to a directed redfish fishery in 1977, the historical catch statistics for Subarea 1 for the Federal Republic of Germany since 1954 have been arranged separately according to directed

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fisheries for cod and redfish, respectively, or mixed fisheries in Table 3. According to the total redfish catches reported by the Federal Republic of Germany since 1954, the 1977 catch was the largest next to the considerable larger catches taken in 1961-63. For directed redfish fisheries, however, the 1977 catch was by far the largest. In spite of that, the catch per day fished was considerably higher in 1977 than in most recent years and of about the magnitude as in earlier years (1955-62 and 1966). Catch rates were rather high throughout 1977 (Table 1) indicating that redfish were highly abundant in Subarea 1. Length compositions of commercial redfish catches are shown for some previous years since 1961 in Fig. 2.

The still critical condition of the cod stock in Subarea 1 is reflected by the age composition of cod by-catches in the commercial fishery (12% of the total nominal catch) in Div. 1F during the first quarter of 1977. The newly-recruited year-classes of 1972 and especially 1973 (62%) amounted to 95% of the total catch of cod during this period (Table 4).

B. Special Research Studies

1. Environmental studies

Only very few hydrographic observations could be obtained in connection with a much restricted groundfish survey by R/V ANTON DOHRN in Div. 1D-F in December 1977. Results of more comprehensive oceanographic observations of late 1976 are presented in Res. Doc. 78/VI/65.

2. Biological studies

Although the groundfish survey conducted by R/V ANTON DOHRN in December 1977 had to be restricted to only five sets in Div. 1D-F, analyses of the cod catches confirmed the results obtained from commercial sampling data (see Section A.1). The predominant 1973 year-class made up over 80% of the research catches. In addition, younger year-classes, namely those of 1974 and 1976, were already represented by small amounts (Table 4). The length frequency curves derived from research catches in 1976 and 1977 show almost the same shape, however, indicate a considerable growth of the predominant 1973 (and 1972) year-classes by about 7 cm (Fig. 1B).

Subareas 2 and 3

A. Status of the Fisheries

1. General trends

The report is given for Subareas 2 and 3 combined, as 86% of the total nominal catch was taken in the management area comprising Div. 2J+3KL.

In 1977, as in previous years, the fishing activity of freezer trawlers of the Federal Republic of Germany was mainly concentrated during the first four months, especially during the first quarter of the year. Later in the year, insignificant catches (2% of the total catch) were taken in August-September in Div. 2GH and 2J+3K, and in October in Div. 3M.

The nominal catches as well as the catches per day fished in 1977 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 increased somewhat as compared to previous years, but due to reduced catch rates the total nominal catch decreased by 10%. The catch of cod, however, increased slightly due to a higher catch ratio of 68% (58% in 1976) but only 66% of the 1977 quota allocation of 3,600 tons could be obtained. The success of the fishery off central and northern Labrador continues to remain strongly dependent on weather and ice conditions.

In Div. 2J+3K the total nominal catch decreased only slightly as compared to 1976, but much lower catch rates for cod led to an increase in the number of days fished. Cod amounted to 68% of the total catch in 1977 (76% in 1976) and by-catches of redfish and "Other Finfish" increased not only by ratio but even in absolute amounts.

Cod age compositions of commercial catches taken during the first quarter of 1977 in Div. 2J and 3K are given in Table 9. The relative strong year-classes of 1973 and 1972 have largely recruited to the fishery and, although still immature, made up over 80% of the cod catches.

2. Forecast for 1978

In view of the unchanged TAC for cod in Div. 2GH, catches are expected to remain at about the same level. A further reduction of the TAC for cod in Div. 2J+3KL will reduce the total catch of cod, but due to continued recruitment of the good year-classes of 1973 and 1972 catch rates may increase again.

B. Special Research Studies

1. Environmental studies

During the groundfish survey conducted by R/V ANTON DOHRN in November-December 1977 in Div. 2J, the ICNAF standard section across Hamilton Inlet Bank (off Seal Island) was performed. In addition, hydrographic observations have been obtained at almost all fishing stations. Results are presented in Res. Doc. 78/VI/81. Sediment samples have been taken during bottom trawl sets by a newly-developed sediment sampler attached to the trawl gear.

2. Biological studies

The time-series of late autumn random-stratified groundfish surveys was continued in Div. 2J by R/V ANTON DOHRN in November-December 1977. Due to lack of vessel time, the number of standard bottom trawl sets had to be reduced to 46 sets against 89 sets conducted in the previous year. The coverage of Div. 2J, however, remained almost the same since Div. 3K was not included in 1977. The cooperation and participation of Canadian scientists of the Newfoundland Biological Station, St. John's, in planning and execution is again greatly acknowledged.

Preliminary results indicate that the previously observed decline in the cod stock has ceased, with a stabilization of the biomass in numbers and an actual increase in weight, the latter being due to increased growth rates of the relatively strong recruiting year-classes of 1973 and 1972.

Section II. Subareas 4 and 5

by

H. Dornheim

A. Status of the Fisheries

1. General trends

Table 10 shows the nominal catch (in tons) of the fleet of freezer trawlers. Fishing took place only in Subarea 4. Most of the catch in this area consisted of squid (Illex). From the total nominal catch of Illex of almost 8000 tons taken by trawlers of the Federal Republic of Germany, 3000 tons were caught according to the provision that member countries without a national allocation may catch up to 3000 tons in 1977. Catches reported in excess of 3000 tons were taken by vessels contracted to fish from quantities reserved for Canada. Comparatively, only 27 tons of squid were caught in 1976. All other catches are considered to be incidental.

Although there was a quota for squid (Loligo), mackerel, herring, and other finfish in SA 5 and 6, no fishing took place due to the low abundance of these species.

2. Forecast for 1978

In 1978, due to the status of the stocks, no directed herring fishery will take place in SA 4 and 5. Catches of squid (Illex) will be taken according to the quota; catches of other species incidentally.

B. Special Research Studies

1. Environmental Studies

In 1977 three surveys covering parts of SA 4, 5 and 6 were carried out by R.V. Anton Dohn.

1. An ICNAF juvenile herring survey was planned originally but had to be cancelled due to technical problems with the ship; instead a herring larvae program was performed from March 15-21 using a 6l-cm Bongo sampler. Results showed that 1976 larval herring production was lowest on record for the ICNAF larval herring time series -- only very few larvae were obtained in the Nantucket Shoals area.

2. From October 10-30 a survey, with special emphasis on spawning Atlantic herring, was carried out on Georges Bank, in portions of the Gulf of Maine and in southern New England waters (SA 4, 5 and 6). Results from this cruise are published by H. Dornheim and T. Azarovitz (ICNAF Res.Doc. 78/VI/69).

3. From November 1-18 a larval Atlantic herring survey was conducted in the Georges Bank-Nantucket Shoals-Gulf of Maine area (SA 4, 5, and 6) using a 61-cm and a 20-cm Bongo sampler, a neuston net and a Multiple Opening/Closing Net and Environmental Sensing System (MOCNESS). High numbers of herring larvae, several hundred per haul, were collected in the Nantucket Shoals area but only a few at stations across the northern Georges Bank and the Gulf of Maine.

During all cruises hydrographic data (Nansen bottles, XBTs) were collected and will be analyzed along with data from other sources.

2. Biological Studies

Due to the lack of herring samples from both commercial trawlers and research vessels no investigations were carried out in 1977. Other species occurring in the research vessel catches were at least sampled for length-frequencies; otoliths of cod and haddock were also collected for age determination studies.

3. Gear and Selectivity Studies

No activities reported for 1977 in SA 4, 5 and 6.

Table 1: Nominal catches (tons) in SA 1 per Division and Month and from East Greenland (Total) in 1977 (including industrial fish = converted to fish meal on board).

Div./Month	days fished	COD			REDFISH			OTHER FINFISH*			TOTAL FINFISH		
		nom. catch	catch %	ind.	nom. catch	catch %	ind.	nom. catch	catch %	ind.	nom. catch	catch %	ind.
1 B Jun	7	-	-	-	-	-	-	22	3.1	4.5	22	3.1	4.5
Aug	3	3	1.0	-	-	-	-	16	5.3	37.5	19	6.3	31.6
Total	10	3	0.3	-	-	-	-	38	3.8	18.4	41	4.1	17.1
1 C Jan	44	273	6.2	-	957	21.7	-	535	12.2	64.3	1765	40.1	19.5
Feb	13	17	1.3	-	265	20.4	-	256	19.7	50.4	538	41.4	24.0
Apr	5	-	-	-	-	-	-	89	17.8	20.2	89	17.8	20.2
May	2	6	3.0	-	29	14.5	0	5	4.5	33.3	44	22.0	6.8
Jun	4	-	-	-	150	37.5	-	16	4.0	100.0	166	41.5	9.6
Aug	2	-	-	-	18	9.0	-	29	14.5	62.1	47	23.5	38.3
Dec	7	21	3.0	-	136	19.4	1.5	122	17.4	30.3	279	39.9	14.0
Total	77	317	4.1	-	1555	20.2	0.1	1056	13.7	53.5	2928	38.0	19.4
1 D Jan	123	849	6.9	-	2447	19.9	-	2075	16.9	57.6	5371	43.7	22.2
Feb	21	15	0.7	-	267	12.7	-	259	12.3	45.6	541	25.8	21.8
Mar	4	-	-	-	36	9.0	-	49	12.2	42.9	85	21.2	24.7
May	18	27	1.5	-	296	16.4	2.4	95	5.3	72.6	418	23.2	18.2
Aug	8	-	-	-	65	8.1	-	328	41.0	46.6	393	49.1	38.9
Sep	2	-	-	-	39	19.5	-	57	28.5	64.9	96	48.0	38.5
Oct	30	23	0.8	-	735	24.5	-	266	8.9	39.8	1024	34.1	10.4
Nov	50	50	1.0	-	889	17.8	-	393	7.9	43.8	1332	26.6	12.9
Dec	192	123	0.6	-	5785	30.1	-	4070	21.2	60.7	9978	52.0	24.7
Total	448	1087	2.4	-	10559	23.6	0.1	7592	16.9	57.2	19238	42.9	22.6
1 E Jan	52	360	6.9	-	726	14.0	-	397	7.6	62.0	1483	28.5	11.6
Feb	31	11	0.4	-	344	11.1	-	147	4.7	48.3	502	16.2	14.1
Mar	18	-	-	-	230	12.8	-	208	11.6	80.8	438	24.3	38.4
Apr	3	-	-	-	-	-	-	13	4.3	23.1	13	4.3	23.1
May	6	12	2.0	-	107	17.8	-	43	7.2	34.9	162	27.0	9.3
Jun	13	-	-	-	403	31.0	-	103	7.9	74.8	506	38.9	15.2
Jul	9	-	-	-	229	25.4	-	132	14.7	42.4	361	40.1	15.5
Sep	1	-	-	-	13	13.0	-	8	8.0	100.0	21	21.0	38.1
Oct	2	1	0.5	-	12	6.0	-	3	1.5	66.7	16	8.0	12.5
Dec	47	26	0.6	-	1160	24.7	-	588	12.5	68.9	1774	37.7	22.8
Total	182	410	2.3	-	3224	17.7	-	1642	9.0	64.0	5276	30.0	19.9
1 F Jan	69	475	6.9	-	1521	22.0	-	629	9.1	84.7	2625	38.0	20.3
Feb	20	8	0.4	-	246	12.3	-	61	3.1	45.9	315	15.8	8.9
Mar	58	65	1.1	-	971	16.7	-	679	11.7	69.4	1715	29.6	27.5
Apr	42	20	0.5	-	1778	42.3	-	613	14.6	92.0	2411	57.4	23.4
May	23	11	0.5	-	707	30.7	-	97	4.2	94.8	815	35.4	11.3
Jun	88	54	0.6	-	2462	28.0	-	632	7.2	64.2	3148	35.8	12.9
Jul	76	42	0.6	-	2168	28.5	-	693	9.1	22.0	2903	36.2	12.8
Aug	29	11	0.4	-	722	24.9	-	340	11.7	42.6	1073	27.0	11.4
Sep	40	11	0.3	-	450	11.3	-	365	1.1	56.4	726	20.7	24.9
Oct	82	27	0.3	-	974	11.9	-	790	9.6	51.4	1791	21.8	22.7
Nov	63	41	0.7	-	822	13.0	-	426	6.8	51.6	1289	20.5	17.1
Dec	84	24	0.3	-	1410	16.8	-	663	7.9	72.2	2097	25.0	2.8
Total	674	789	1.2	-	14231	21.1	-	5988	8.9	65.7	21008	31.2	18.7
SA 1 Total	1391	2606	1.9	-	29569	21.3	0.03	16316	11.7	60.6	48491	34.9	20.4
E-Grld. Total	1101	3549	3.2	-	13350	12.1	0.1	4975	4.5	53.5	21874	19.9	12.2

*) including SHRIMPS (Northern deepwater prawn), Species breakdown see Table 2

Table 2: Nominal catches (tons) of "OTHER FISH and SHRIMPS" (Table 1) by species in SA 1 per Division and Month and from East Greenland (Total) in 1977

Div./Month	Blue HAD	Whiting	POK	Ling	ling	Blue- USK	CAT	PLA	HAL	GHL	SHA	RNG	Argentine	NS	SHR*	TOTAL	
1B Jun	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	21	22
Aug	-	-	-	-	-	-	1	-	-	-	-	-	-	-	6	9	16
Total	-	-	-	-	-	-	1	-	-	-	-	-	-	-	7	30	38
1C Jan	-	-	-	-	-	-	129	39	25	22	1	7	-	-	312	-	535
Feb	-	-	-	-	-	-	16	42	5	8	-	56	-	-	129	-	256
Apr	-	-	-	-	-	-	-	-	-	71	-	-	-	-	18	-	89
May	-	-	-	-	-	-	6	1	0	-	-	-	-	-	2	-	9
Jun	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	16
Aug	-	-	-	-	-	-	3	-	-	-	-	7	-	-	18	1	29
Dec	-	-	-	-	-	-	36	28	1	13	1	8	-	-	35	-	122
Total	-	-	-	-	-	-	190	110	31	114	2	78	-	-	530	1	1056
1D Jan	-	-	-	-	-	-	598	64	66	68	1	106	-	-	1172	-	2075
Feb	-	-	-	-	-	-	57	64	2	5	-	13	-	-	118	-	219
Mar	-	-	-	-	-	-	2	16	2	3	-	5	-	-	21	-	49
May	-	-	-	-	-	-	23	26	3	-	0	2	-	-	41	-	95
Aug	-	-	-	-	-	-	28	17	-	-	-	130	-	-	153	-	328
Sep	-	-	-	-	-	-	-	20	-	-	-	-	-	-	37	-	57
Oct	-	-	-	-	-	-	146	5	8	-	-	-	-	-	107	-	266
Nov	-	-	-	-	-	-	118	105	13	-	3	-	-	-	154	-	333
Dec	-	-	-	-	-	-	552	997	71	173	17	11	-	-	2249	-	4070
Total	-	-	-	-	-	-	1524	1314	165	249	21	267	-	-	4052	-	7592
1E Jan	-	-	-	-	-	-	1	115	14	18	4	1	7	-	237	-	397
Feb	-	-	-	-	-	-	-	34	18	1	1	-	22	-	71	-	147
Mar	-	-	-	-	-	-	-	15	75	8	2	-	3	-	105	-	208
Apr	-	-	-	-	-	-	-	3	-	-	4	-	-	-	6	-	13
May	-	-	-	-	-	-	-	28	2	-	-	-	-	-	13	-	43
Jun	-	-	-	-	-	-	-	24	14	2	-	-	-	-	63	-	103
Jul	-	-	-	-	-	-	-	13	-	28	35	-	-	-	56	-	132
Sep	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8	-	8
Oct	-	-	-	-	-	-	-	1	-	0	-	-	-	-	2	-	3
Dec	-	-	-	-	-	-	-	67	115	7	0	-	12	-	387	-	588
Total	-	-	-	-	-	-	1	300	238	64	46	1	44	-	948	-	1642
1F Jan	-	-	-	-	-	-	-	82	59	12	-	2	-	-	474	-	629
Feb	-	-	-	-	-	-	-	29	-	1	0	-	3	-	28	-	61
Mar	-	-	-	-	-	-	-	56	122	20	110	1	9	-	361	-	679
Apr	-	-	-	-	-	-	-	30	33	0	-	1	11	-	538	-	613
May	-	-	-	-	-	-	-	5	-	-	-	0	-	-	92	-	97
Jan	-	-	-	-	-	-	-	201	61	20	-	0	4	-	346	-	632
Jul	-	-	-	-	-	-	-	194	25	56	69	0	-	-	349	0	693
Aug	-	-	1	0	-	-	-	74	10	29	-	-	71	-	155	-	340
Sep	-	-	-	-	-	-	-	85	39	3	0	-	22	-	206	-	365
Oct	-	-	-	-	-	-	-	176	196	12	-	-	-	-	406	-	790
Nov	-	-	-	-	-	-	-	120	48	31	0	1	-	-	218	-	426
Dec	-	-	-	-	0	0	-	89	88	8	2	-	-	-	476	-	663
Total	-	-	1	0	0	0	1	1149	681	192	181	5	130	-	3649	-	5988
SA1 Total	-	-	1	0	0	1	3164	2343	452	590	29	519	-	-	9186	31	16316
E-Grld Total	4	327	13	5	492	15	515	46	184	224	1	269	352	2528	-	-	4975

*) Northern deepwater prawn (Pandalus borealis)

Table 3 : Subarea 1, nominal catches and catch per day fished of cod and redfish divided into directed fisheries for cod and redfish respectively and mixed fisheries 1954 - 77*

Year	COD Fishery			REDFISH Fishery			MIXED Fishery			TOTAL	
	Days fished	catch p.day	By-catch Redf. p.day	Days fished	catch Redf. p.day	By-catch Cod p.day	Days fish.	Cod	Redf. p.day	nominal Cod	Redfish
1954	55	1475	174	427	13035	1338	-	-	-	1475	174
55	183	5910	1126	49	876	198	-	-	-	7248	14161
56	924	28884	5763	523	14563	1307	29	276	9.5	29082	6639
57	491	8954	101	385	9457	1277	199	2386	12.0	10537	14874
58	1337	26247	1754	690	15683	2705	169	2372	14.0	29910	13180
59	645	12336	1087	891	19122	3568	172	1893	11.0	17413	18832
60	914	18330	855	710	12012	4698	1625	18335	11.3	23791	21709
61	3579	60519	16772	931	18600	6231	1307	16033	12.3	83552	45739
62	4349	102636	21467	268	4792	1662	1248	16679	13.4	124900	54972
63	5631	118453	23059	417	4808	1329	689	6330	9.2	136794	42804
64	4523	86880	13293	48	749	238	524	5678	10.8	94539	24346
65	5297	98815	10624	72	1431	419	572	4785	8.4	104731	15821
66	4064	77020	10607	25	389	143	444	4081	9.2	82224	14450
67	5838	134278	8305	91	1243	422	318	1509	4.7	138502	11288
68	5591	131286	6516	61	1008	214	30	276	9.2	133217	8782
69	3153	78070	2765	33	544	155	-	-	-	78560	3962
70	1677	40512	3048	-	-	-	103	780	7.6	40667	3592
71	1428	40136	2023	65	701	93	-	-	-	40916	2023
72	1218	16740	1913	100	939	336	-	-	-	16833	2614
73	560	5608	1139	46	443	34	5	22	4.4	5944	2078
74	61	1625	107	91	1224	155	118	1059	9.0	1681	568
75	362	9628	792	87	1642	356	255	3989	15.6	10842	3120
76	73	1497	287	1392	29569	2606	-	-	-	5842	5074
77	-	-	-	-	-	-	-	-	-	2606	29569

*) from ICNAF Statistical Bulletin: Ottertrawl catches of the Federal Republic of Germany (all vessel categories summarised). Directed Fisheries = catch of Cod or Redfish at least 60% of total Finfish catch. "Main species" entries in Stat. Bull. disregarded if not in concurrence.

Table 4: Cod age compositions (0/00) and mean lengths (cm) in subarea 1, 1976 - 1977

Year	Quarter	Sampling type	ICNAF Div	Year - classes												66 +older	mean length(cm)
				76	75	74	73	72	71	70	69	68	67	66			
1976	IV	Research	IC	-	-	101	476	192	168	21	23	14	-	4	54.7		
			ID	-	-	28	899	67	1	2	-	+	-	2	45.5		
			IE	-	-	61	881	54	2	+	+	+	+	1	42.6		
			IF	-	-	32	822	131	5	3	5	1	+	+	43.9		
1977	I	Commercial	IF	-	-	+	619	329	17	12	11	8	2	2	51.1		
			ID	-	-	11	837	135	8	4	1	-	2	2	56.7		
	IV	Research	IE	70	-	29	840	50	-	4	4	-	3	-	50.3		
			IF	-	-	24	885	86	1	1	2	-	-	-	53.7		

Table 5 : Nominal catches (tons) in Subareas 2 and 3 in 1977
(including industrial fish = converted to fish meal on board)

Area Month	days fished	COD			REDFISH			OTHER FINFISH ^a			TOTAL FINFISH		
		nom. catch	catch %	ind.	nom. catch	catch %	ind.	nom. catch	catch %	ind.	nom. catch	catch %	ind.
2 G Aug	1	-	-	-	2	2.0	-	22	22.0	40.9	24	24.0	37.5
2 G Sep	4	16	4.0	-	5	1.3	-	32	8.0	-	53	13.3	-
Total	5	16	3.2	-	7	1.4	-	54	10.8	16.7	77	15.4	11.7
2 H Jan	68	1533	22.5	-	48	0.7	-	567	8.3	92.1	2148	31.6	24.3
2 H Feb	19	400	21.1	-	3	0.2	-	163	8.6	92.6	566	29.8	26.7
2 H Mar	12	389	32.4	-	12	1.0	-	131	10.9	82.4	532	44.3	20.3
2 H Aug	1	-	-	-	15	15.0	-	13	13.0	30.8	28	28.0	14.3
2 H Sep	10	37	3.7	-	33	3.3	15.2	97	9.7	11.3	167	16.7	9.6
Total	110	2359	21.4	-	111	1.0	4.5	971	8.8	82.0	3441	31.3	23.3
2 G+H	115	2375	20.7	-	118	1.0	4.2	1025	8.9	78.5	3518	30.6	23.0
2 Jb Jan	129	2286	17.7	-	81	0.6	-	852	6.6	85.1	3219	25.0	22.5
2 Jb Feb	210	2640	12.6	-	102	0.5	-	1103	5.3	75.2	3845	18.3	21.6
2 Jb Mar	122	2485	20.4	-	120	1.0	-	891	7.3	77.9	3496	28.7	19.9
2 Jb Apr	39	647	16.6	-	44	1.1	-	337	8.6	80.1	1028	26.4	26.3
2 Jb Aug	6	-	-	-	8	1.3	-	38	6.3	71.1	46	7.7	58.7
2 Jb Sep	10	6	0.6	-	10	1.0	-	91	9.1	-	107	10.7	-
Total	516	8064	15.6	-	365	0.7	-	3312	6.4	76.8	11741	22.8	21.7
3 Kb Feb	162	2180	13.5	-	110	0.7	-	913	5.6	74.9	3203	19.8	21.3
3 Kb Mar	185	3760	20.3	-	151	0.8	-	1613	8.7	76.0	5524	29.9	22.2
3 Kb Apr	40	751	18.8	-	49	1.2	-	405	10.1	66.2	1205	30.1	22.2
3 Kb Aug	2	-	-	-	5	2.5	-	1	0.5	-	6	3.0	-
Total	389	6691	17.2	-	315	0.8	-	2932	7.5	74.3	9938	25.5	21.9
2 J+3 K ^b	905	14755	16.3	-	680	0.8	-	6244	6.9	75.6	21679	24.0	21.8
3 M Oct	5	45	9.0	-	10	2.0	-	15	3.0	86.7	70	14.0	18.6
3 Ps May	1	-	-	-	-	-	-	2	2.0	50.0	2	2.0	50.0
SA 2 Total ^b	631	10439	16.5	-	483	0.8	1.0	4337	6.9	77.2	15259	24.2	22.0
SA.3 Total ^b	395	6736	17.1	-	325	0.8	-	2949	7.5	74.3	10010	25.3	21.9

^a Species breakdown shown in Table 6.

^b Includes catches taken by vessels contracted to fish for cod from quantities reserved for Canada.

Table 6 : Nominal catches (metric tons) of "Other Finfish" (Table 5) by species in Subareas 2 and 3 in 1977^a.

Area	Month	Am. plaice	Witch halibut	Greeld. halibut	Atl. halibut	Wolf-Rn. Hake	fishes	grenadier	Sharks	NS	Total
2 G	Aug	-	-	13	-	-	-	-	-	9	22
	Sep	-	-	7	-	2	23	-	-	-	32
	Total	-	-	20	-	2	23	-	-	-	54
2 H	Jan	-	16	8	4	-	15	1	-	522	567
	Feb	-	-	7	0	-	2	-	-	152	163
	Mar	-	4	10	0	-	8	1	-	108	131
	Aug	-	-	9	-	-	-	-	-	4	13
	Sep	-	-	28	-	4	54	-	-	11	97
	Total	-	20	62	4	-	29	2	-	797	971
2 G+H		-	20	82	4	-	31	2	-	806	1025
2 J ^a	Jan	4	6	53	4	-	43	1	2	739	852
	Feb	1	32	120	13	-	75	4	4	854	1103
	Mar	1	23	115	4	-	36	1	5	706	891
	Apr	1	19	26	0	-	17	-	1	273	337
	Aug	-	-	11	-	-	-	-	-	27	38
	Sep	-	-	17	-	-	3	71	-	-	91
	Total	7	80	342	21	-	174	77	12	2599	3312
3K ^a	Feb	-	40	106	6	-	48	4	5	704	913
	Mar	1	139	165	4	-	51	2	4	1247	1613
	Apr	1	41	59	0	-	21	12	2	269	405
	Aug	-	-	1	-	-	-	-	-	-	1
	Total	2	220	331	10	-	120	18	11	2220	2932
2J+3K ^a		9	300	673	31	-	294	95	23	4819	6244
3 M	Oct	1	-	-	-	-	1	-	-	13	15
3 Ps	May	-	-	-	-	1	-	-	-	-	2
SA2 Total ^a		7	100	424	25	-	205	157	14	3405	4337
SA3 Total ^a		3	220	331	10	1	121	18	11	2234	2949

^a Catches from Div. 2J and 3K include by-catches taken by vessels contracted to fish for cod from quantities reserved for Canada.

Table 7 : COD - 2 GH, nominal catches and catch per day fished (tons)
1965 - 77

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
77	5	16	3.2	110	2359	21.4	115	2375	20.7

Table 8 : COD - 2 J + 3 KL, nominal catches and catch per day fished (tons) 1975 - 77

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 ^a	339	10052	29.7	514	19465	37.9	6	12	2.0	859	29529	34.4
73 ^a	383	6678	17.4	943	27654	29.3	70	1316	18.8	1396	35648	25.5
74 ^a	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	405	11700	28.9	19	516	27.2	640	17353	27.1
77 ^b	516	8064	15.6	389	6691	17.2	-	-	-	905	14755	16.3

^a Days fished and cod by-catches in the fishery directed on redfish excluded.

^b Includes catches taken by vessels contracted to fish for cod from quantities reserved for Canada.

Table 9: Cod age compositions (0/00), mean lengths (cm) and mean weights (g) in Divisions 2GH, 2J and 1976 - 1977

Year	Quarter	Sampling type	ICNAF Div.	Depth zone(m)	year - classes												65 +older	Mean length	Mean weight
					75	74	73	72	71	70	69	68	67	66					
1976	IV		2GH	155-300		29	826	80	-	12	19	27	3	4	-	39.5	847		
					3	20	228	509	169	30	13	12	8	6	2	37.7	661		
					3	17	154	476	217	49	27	27	17	11	1	40.5	846		
					-	27	167	262	150	147	90	83	30	23	21	47.7	1241		
					-	21	159	277	127	118	101	104	51	26	16	48.8	1284		
1977	I	Commercial	2J	jan. >300	+	9	605	254	35	16	18	28	27	6	2	43.6	766		
					-	1	539	340	66	14	11	9	13	4	3	44.5	879		
					-	-	438	326	98	40	27	29	28	8	6	47.3	1060		
					219	359	308	98	2	6	3	3	+older 2			39.0	660		
					34	163	421	332	13	16	13	4	4			48.2	1156		

Table 10. Nominal catch (tons), effort (days fished), and discards (tons) of FRG freezer trawlers in Subareas 4 and 5, and Statistical Area 6, 1977.

Div.	Month	Mac.	Cod	Had.	Pol.	Silv. hake	Nominal catch				Total	DF	Discards			Total
							Argent.	Redf. halib.	Atl. halib.	Squid (Illex)			Other finf.	Sharks	Squids	
4W	Mar.	59	-	1	164	29	1	8	1	36	11	9	-	1	1	2
	Jun.	4	8	4	0	188	-	-	1	286	9	12	10	-	-	10
	Jul.	-	-	-	-	237	57	-	-	1163	-	23	-	-	-	-
	Aug.	-	-	-	-	100	48	-	-	2006	123	57	-	12	-	12
	Sep.	-	-	-	-	-	-	-	-	2588	272	83	-	-	-	-
Oct.	-	-	-	-	-	43	-	-	-	1521	99	47	-	-	-	
4X	May	6	-	7	110	19	7	-	0	44	9	5	-	1	-	1
	Jun.	121	-	5	94	26	4	-	0	46	8	10	16	-	-	16
	Jul.	-	-	-	-	2	2	-	-	43	-	1	-	-	-	-
	Oct.	-	-	-	-	10	-	-	-	199	-	5	-	-	-	-
SA4	Total	190	8	17	368	654	119	8	2	7932	531	252	26	14	1	41
SA5	Aug.	No fishery, only SEARCHING														3
SA6	No fishery.															

Average gross registered tonnage of FRG trawlers fishing with pelagic trawls, Subarea 4 (and 5): 3129GRT (2025-3577 GRT)

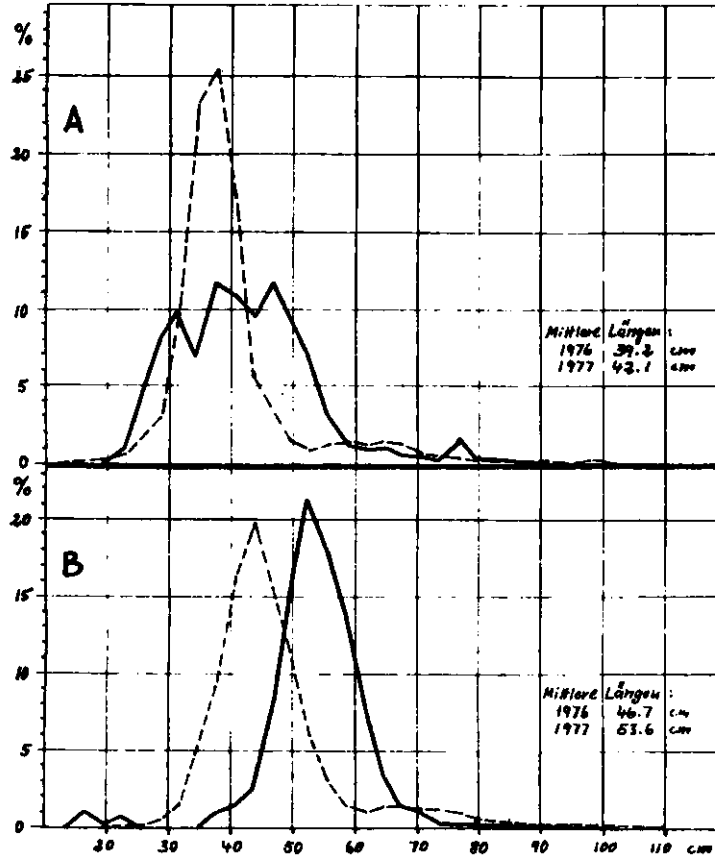


Fig.: 1 COD length frequencies from research catches in autumn 1976 (broken lines) and autumn 1977 (solid lines),
A = Division 2J
B = Division 1C-F

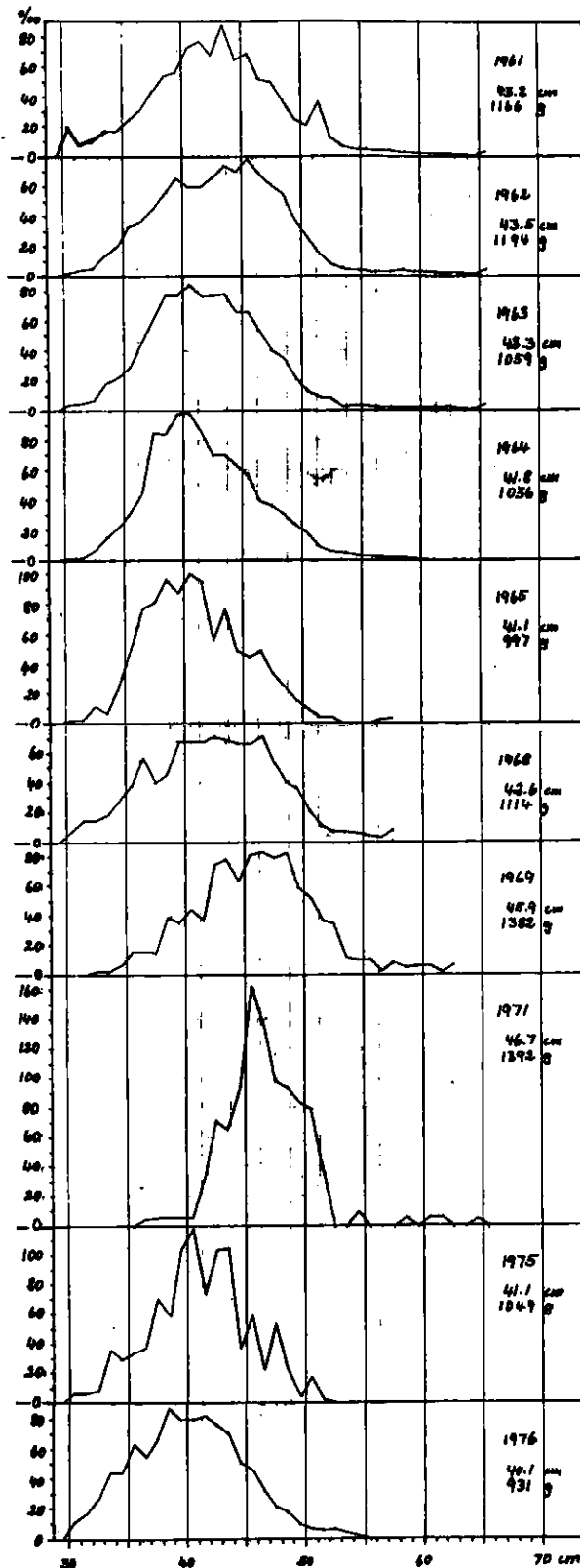


Fig.: 2 Length composition (per mille) of commercial redfish catches from Subarea 1, 1961-76 (Fed. Rep. of Germany, OTB).