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by

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Introduction

The total catch within the NAFO convention area amounted to 23034.0 t in 1989 (Table 1). Therefore, the result of the overall nominal catch of G.D.R. fleet in 1989 was about 4614 tons lower than in 1988. This is a decrease of about 17 per cent in opposite to 1988 (27648 t) and 1987 (27735 t), more or less.

A further decreasing of catches of the species roundnose grenadier (30 %), Greenland halibut (23 %), and Atlantic mackerel (14 %) was a characteristic sign of the G.D.R. fishery in 1989 to 1988 (Tables 1 and 2).

As in 1988 the decreasing catches of redfish, Greenland halibut, and especially roundnose grenadier were caused by the conditions of concentration (level of bottom temperature during the directed roundnose grenadier fishery) and by the bad weather conditions during the directed Greenland halibut fishery (Nov., Dec. in Subarea 2H), respectively. On the other hand decisions and conditions of the fishery policy were the basis of the decrease of the Atlantic mackerel nominal catch in the Divisions 5Zw, 6A and 6B (Tables 1 and 2).

Consequently the decrease of catches of roundnose grenadier, Greenland halibut, and Atlantic mackerel are not conditioned by the fish stocks.

* Introduction and Subareas 2+3 by P. Ernst
Subarea 5+6 by R. Eggers

As in the years before the fisheries were carried out within the Subareas 2, 3, 5, and 6. The Subarea 6 dominated with a nominal catch of 17925 tons of Atlantic mackerel, these are 78 % (1987 58 %, 1988 69 %) of total G.D.R. catch within the NAFO area, followed by Subarea 3 (16 %, 1988 19 %, 1987 23 %), Subarea 2 (5 %, 1988 5 %, 1987 10 %), and Subarea 5 (0,4 %, 1988 7 %, 1987 9 %) (Table 2).

Subarea 2, and 3

A. Status of fishery

The bottom trawl-fishery was only carried out in whole area in 1989. The basis of fishery activities were the licence conditions and overlapping fisheries on the target fish species roundnose grenadier and Greenland halibut. Therefore it is necessary to analyse together the status of fishery of these both Subareas.

In dependence on licence conditions the timing of the fisheries had been performed (Table 3).

1. Redfish directed fishery (Division 3L, 1.8 - 23.8.89)

The fishery was carried out at the general position 48°N; 48°W and in the fishing depths from 320 metres to 390 metres (at the daytime) and from 390 metres to 450 metres (in the nighttime), respectively. During the season the catch per unit effort was stable, more or less (Table 4).

2. Roundnose grenadier directed fishery (Subareas 2 and 3, 24.8. - 18.11.89)

The directed roundnose grenadier fishery started within the Division 3K at the general position 50°N; 50°W. During the whole season the fishery was carried out at the "grenadier plateau" (local name) in fishing depths from 900 to 1200 m at the outer slope of that fishing ground in fishing depths from 1250 to 1600 m, respectively. Up to the beginning of November the c.p.u.e. amounted to 0,4 - 0,5 mt/h, only. From November up to the end of the licence the c.p.u.e. amounted to 0,9 - 1,5 mt/h, but nevertheless the results of directed roundnose grenadier fishery were unsatisfactory. Additionally the fishery was restricted by the problematic nature of the by-catch level and the conditions of concentrations of grenadier by temperature-anomalies. Therefore, the c.p.u.e. was unstable. The catch per hour of the trawler type FVS IV amounted to 0.6 t in average, only (Table 5).

3. Greenland halibut (Division 2H, 20.11. - 27.12.89)

The directed Greenland halibut fishery was carried out around the general position 56°00'N; 57°20'W and 56°30'N; 57°50'W in a fishing depth from 1100 to 1330 metres.

As in the years before (1987, 1988) it has to be considered that it was only possible to trawl mostly in one direction because of long-lasting periods of bad weather conditions and extreme currents. By this the efficient time of fishing was considerably reduced, like in 1987 and 1988. Fishing was stopped on the 30.12. because the ice situation became stronger in the last days of December. The c.p.u.e. amounted to 0.7 mt/h on average for the trawler type FVS IV (Table 6).

B. Special Research Studies

1. Environment

G.D.R. specialists took part in the research trip of the USSR FRV "Kapitan Shaytanov" in the Northwest Atlantic during the fourth quarter of 1989 (groundfish-survey in the NAFO Subareas 0, 2, and 3 with emphasis on Greenland halibut). Therefore, all data are published in the USSR papers.

2. Biological studies

Redfish (*Sebastes mentella* TRAV.)

Biological data are available from commercial samplings (August 1989, NAFO 3L). The range of total lengths amounted to 26 - 42 cm (L_t) and the range of main lengths 30 - 34 cm (L_t), respectively.

Roundnose grenadier (*Coryphaenoides rupestris* GUNN.)

Biological data were collected on board the USSR FRV "Kapitan Shaytanov" (see point Environment).

In the commercial samplings (October, November in NAFO Divisions 3K, 2J) the range of total lengths amounted to 15 - 89 cm (L_t) and the range of main lengths 33 - 59 cm (L_t), respectively. The sex-ratio fluctuated, but amounted to 60:40 (♂♂ : ♀♀) per cent in average.

Greenland halibut (*Reinhardtius hippoglossoides* WALB.)

Biological data were collected on board the USSR FRV "Kapitan Shaytanov" (see point Environment).

In the commercial samplings (end of November, December in NAFO Division 2H) the range of total lengths amounted to 30 - 90 cm (L_t) and the range of main lengths 42 - 60 cm (L_t), respectively.

Subareas 5 and 6

A. Status of fishery

Mackerel (*Scomber scombrus* L.)

From the beginning of the operations in December fishing possibilities were quite well south of long Island, but in the first time fishing was negatively affected by the bad weather conditions. The pelagic fishery was carried out only.

Concerning the 20 n.m. zone during this season there were nearly no difficulties, as the concentrations mostly occurred both inside and outside the zone in this season. A permanent search for lucrative concentrations was necessary. In this way sometimes 2 - 3 areas were crossed in search. Fishery political decisions obstructed the fishery.

B. Special Research Studies

1. Environment

No data

2. Biological Studies

Within the first and second quarter biological sampling material had been collected aboard the processing vessels for further treatment ashore. The results of the analysis were represented on Table 7 (length distribution) and Table 8 (age distribution). The length-age-distribution is available at the NAFO secretariate according to the guiding rule. In Table 9 is given the G.D.R. catch by number and by Division.

Table 1: G.D.R. nominal catches (tons) of species in the NAFO area for 1988 and 1989

Species	1988	1989
Cod	29.3	32.7
Redfish	660.1	738.3
Roundnose grenadier	3379.6	2351.8
Greenland halibut	2246.4	1726.5
American plaice	5.9	0.3
Roughhead grenadier	48.7	42.3
Skates and rays, n.e.i.	152.1	121.4
Catfish	0.5	0.3
Baird's smoothhead	11.6	7.6
Atlantic mackerel	20909.9	17908.8
Alewife	28.3	22.2
Witch flounder	9.8	3.9
Long-finned squid	1.4	1.6
Silver hake	3.8	7.2
Atl. butterflyfish	0.5	0.9
Red and white hakes	0.4	-
Atl. halibut	-	0.6
Blue antimora	-	0.6
Marine fishes n.e.i.	160.0	67.0
Total	27648.3	23034.0

Table 2: G.D.R. nominal catches (tons) of species by Divisions of the Subareas 2, 3, 5 and 6 for 1989

	2H	2	3K	3L	3	SZW	5	6A	6B	6
Cod	-	-	-	32.7	32.7	-	-	-	-	-
Redfish	-	-	0.3	738.0	738.3	-	-	-	-	-
Roundnose grenadier	54.7	54.7	2297.1	-	2297.1	-	-	-	-	-
Greenland halibut	1129.4	1129.4	550.1	47.0	597.1	-	-	-	-	-
American plaice	0.3	0.3	-	-	-	-	-	-	-	-
Roughhead grenadier	1.7	1.7	2.9	37.7	40.6	-	-	-	-	-
Skates and rays, n.e.i.	8.3	8.3	44.1	69.0	113.1	-	-	-	-	-
Catfish	-	-	-	0.3	0.3	-	-	-	-	-
Baird's smoothhead	-	-	7.6	-	7.6	82.9	82.9	16233.0	1592.9	17825.9
Atlantic mackerel	-	-	-	-	-	-	-	21.4	0.8	22.2
Alewife	-	-	-	3.9	3.9	-	-	-	-	-
Witch flounder	-	-	-	-	-	-	-	1.4	0.2	1.6
Long-finned squid	-	-	-	-	-	-	-	6.9	0.3	7.2
Silver hake	-	-	-	-	-	-	-	0.9	-	0.9
Atl. butterfish	-	-	-	-	-	-	-	-	-	-
Red and white hakes	-	-	-	0.6	0.6	-	-	-	-	-
Atl. halibut	-	-	0.6	-	0.6	-	-	-	-	-
Blue antimora	-	-	-	-	-	-	-	-	-	-
Marine fishes, n.e.i.	-	-	-	-	-	-	-	63.5	3.5	67.0
Total	1194.4	1194.4	2902.7	929.2	3831.9	82.9	82.9	16327.1	1597.7	17924.8

Table 3: Timetable of the G.D.R. fishery in the NAFO Subareas 2 and 3 in 1989

Period	Type of trawler	Regions of NAFO	Species directed fishery	Days on ground
1. 3.-23. 3.	FVS IV ¹⁾	3LN	Redfish	66
24. 3.-19.11.	FVS IV + FVS I ²⁾	2+3	Roundnose grenadier	372
20.11.-31.12.	FVS IV + FVS I	2GH	Greenland halibut	173

- 1) stern-trawler (catch and processing) 1.943 BRT (FAO code 090)
 2) stern-trawler (catch and processing) 2.359 BRT (FAO code 101)

Table 4: Catch per day on ground and catch composition (%) by FVS IV during the directed redfish fishery

Period	catch per day on ground (t)	RED	GHL	Other
1.3.- 6.3.	15.0	77	6	17
7.3.-13.3.	19.4	81	4	15
14.3.-20.3.	17.4	80	5	15
21.3.-23.3.	11.7	75	16	9
Average of season	16.2	80	5	15

Table 5: Catch per day on ground and catch composition (%) by FVS IV during the directed roundnose grenadier fishery

Period	catch per day on ground (t)	RNG	GHL	Other
24. 8.-27. 8.	8.0	79	20	1
28. 8.- 3. 9.	6.9	78	20	2
4. 9.-10. 9.	6.9	71	26	3
11. 9.-17. 9.	5.1	71	28	1
18. 9.-24. 9.	6.3	72	26	3
25. 9.- 1.10.	9.1	78	21	1
2.10.- 8.10.	8.7	83	16	1
9.10.-15.10.	7.5	75	24	1
16.10.-22.10.	7.9	72	25	3
23.10.-29.10.	10.5	83	15	2
30.10.- 5.11.	11.3	78	21	1
6.11.-12.11.	15.9	86	13	1
13.11.-19.11.	9.7	79	19	2
Average of season	9.0	79	19	2

Table 6: Catch per day on ground and catch composition (%) by FVS IV during the directed Greenland halibut fishery

Period	catch per day on ground (t)	GHL	RNG	Other
20.11.-26.11.	8.5	91	7	2
27.11.- 3.12.	8.8	95	4	1
4.12.-10.12.	11.4	96	4	+
11.12.-17.12.	11.1	96	4	+
18.12.-24.12.	7.4	96	4	+
25.12.-31.12.	7.3	96	4	+
Average of season	9.3	95	4	1

Table 7: Length distribution (fork length in %) of Atlantic mackerel in catches taken by commercial pelagic trawls, NAFO Division 6A, 6B, January - December 1989

Lf (cm)	Division month	6 A					6 B				
		Jan.	Jan.*	Feb.	March	April	Dec.	Jan.	Feb.	March	April
19				1							
20											
21											
22				1			1				
23				2			3				
24		2		11			7		1		
25		5		19		1	6				
26		5	10	14	1		7	9	1		
27		10		21	1		7	13	5		4
28		17	10	33	1		10	18	14		11
29		19	10	33	1		17	20	23		20
30		15	10	16	6	3	16	29	15		10
31		20	10	14	8	1	16	23	9		3
32		23	38	29	12	17	21	16	30		27
33		47	29	43	28	40	24	28	49	189	42
34		54	38	70	42	56	42	93	68	162	71
35		107	231	89	113	141	77	120	104	54	133
36		189	288	184	247	255	161	208	204	162	282
37		246	221	195	262	258	221	231	231	189	212
38		147	87	135	144	139	165	123	150	81	125
39		60	10	56	75	40	109	60	50	54	27
40		19		17	30	21	56	3	23	27	17
41		8	10	9	14	13	22	3	10	54	7
42		5		4	9	6	9	3	7		6
43		1		3	4	5	2		6		1
44		1		1	1	1				27	1
45		1				1			1		
total		1001	1002	1000	999	998	999	1000	1001	999	999
No. fish meas.		4053	104	4364	2355	1188	3781	903	1940	37	706
mean length(cm)		36.3	36.1	35.4	37.1	36.9	36.7	36.0	36.4	36.7	36.3

+) catches frozen

Table 8: Age distribution (in %) of Atlantic mackerel in catches taken by commercial pelagic trawls NAFO Division 6A, 6B, January - April 1989

age	Division month	6A					6B
		Jan.	Jan. +	Feb.	March	April	Feb.
1				2			
2		49	19	140	4		46
3		106	58	57	45	13	72
4		54	125	141	46	105	112
5		147	58	109	135	77	41
6		242	288	202	318	254	149
7		329	413	268	393	387	363
8		67	29	56	57	124	162
9		3	10	8		6	12
10		1		10		27	13
11		1		4			31
12		1		2			
13							
14						7	

+) catches frozen

Table 9: G.D.R. Atlantic mackerel catch by numbers in 1989 (number x 10³)

NAFO 6A

Age	January	February	March	April	total
1		20.36			20.36
2	416.41	1425.17	29.01		1870.59
3	900.80	580.24	326.38	92.01	1899.43
4	458.90	1435.35	333.64	743.19	2971.08
5	1249.23	1109.60	979.15	545.00	3882.98
6	2056.55	2056.31	2306.45	1797.81	8217.12
7	2795.88	2728.18	2850.42	2739.18	11113.66
8	569.37	570.07	413.42	877.67	2430.53
9	25.49	81.44		42.47	149.40
10	8.50	101.80		191.11	301.42
11	8.50	40.72			49.22
12	8.50	20.36			28.86
13					
14				49.54	49.54
total	8498.13	10169.60	7238.47	7077.98	32984.18

NAFO 6B

Age	January	March	April	total
2	57.49	4.28		61.77
3	89.99	6.69	18.96	115.64
4	139.98	10.41	153.16	303.55
5	51.24	3.81	112.32	167.37
6	186.22	13.85	370.50	570.57
7	453.69	33.74	564.51	1051.94
8	202.47	15.06	180.88	398.41
9	15.00	1.12	8.75	24.87
10	16.25	1.21	39.38	56.84
11	38.75	2.88		41.63
12				
13				
14			10.21	10.21
total	1251.08	93.05	1458.67	2802.80