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by

P. Ernst

Institut für Hochseefischerei und Fischverarbeitung Rostock
An der Jägerbäk 2, Rostock-Marienehe 2500, German Democratic Republic

INTRODUCTION

G.D.R. overall nominal catch in the convention area amounted to 18 153.8 tons in 1985 (Table 1). Therefore, the result of overall nominal catch of G.D.R. fleet in 1985 was about 4500 tons higher than in 1984. This is an increase of about 33 per cent in opposite to 1984 (13 694 tons) of about 116 per cent in opposite to 1983 (8392 tons) respectively an increase up to the threefold in opposite to 1982 (5093 tons) and to 1981 (4786 tons).

The basis of this raising was the further increase of the mackerel-yield taken by G.D.R. fleet in Subarea 6 from 5450 tons in 1984 up to 11 024 tons in 1985.

The portion of mackerel in Subarea 6 in the total yield of the G.D.R. in the NAFO-area amounted to about 40 per cent in 1984 and 60 per cent in 1985 (Table 1). In 1985 the G.D.R. overall nominal catch in the NAFO-area were determined from roundnose grenadier (its portion is 21 per cent of nominal catch), from Greenland halibut (its portion is 12 per cent of nominal catch), and from redfish (its portion is 4 per cent of nominal catch) besides of the dominating of mackerel (Tables 1 and 2).

The fishery was concentrated in the NAFO-Subareas 2, 3 and 6. Since 1977 a fishery was carried out in Subarea 0, Division 0 B, again.

Subarea 0

A Status of the Fisheries

A Greenland halibut directed fishery was carried out in this area for the first time. It was worked by stern trawlers of the type "Zubringer Trawler" (FAO-Code 900-999.9 BRT) between the Latitudes 61°N and 63°N (Division 0 B) in fishing depths from 600 m up to 1050 m. The bottom trawl-fishery was carried out only. Mainly the

area between 61°50'N and 62°20'N was fished in fishing depths from 700 m up to 950 m. The best results (1.5-3 tons per trawlstations of 4-5 hours) were reached in the area between 62°05'N and 62°20'N in fishing depths from 800 m up to 950 m.

The results of this fishery were below the expectations. The fishery was characterized by a small spatial distribution of the concentrations.

B Special Research Studies

1. Environmental Studies

No data

2. Biological Studies

Greenland halibut (Reinhardtius hippoglossoides WALB.)

During catch period biological data were collected on board of commercial vessels (length-, weight-data, and material for ageing), and all trawl-stations were analyzed (time, positions, depth of fishery, c.p.u.e. portion of each species). The age of Greenland halibut was determined by scales. The results of biological analyses are represented in Table 6 (mean length per age), 7 (mean weight per age), and 8 (status of maturity and sex ration). The length-age-distributions were made on the base of the NAFO-demands, they were overhanded to the NAFO-secretariate.

Subarea 2, and 3

A Status of the Fisheries

The bottom trawl-fishery was carried out only in whole area in 1985.

1. Greenland halibut directed fishery in the Divisions 2 H, 2 J, and 3 K

In the period from July, 21st to August, 23rd a Greenland halibut directed fishery was carried out by a factory stern-trawler (FAO-code 2000-2999,9 BRT) in the Divisions 2 J, and 3 K.

The fishery was started in the area of Funk-Island, and on the outside egde of the continental slope (52°N, 50°50'W). The c.p.u.e. amounted to 380 - 500 kg per trawling houl. From July, 26th it was worked in the area of Belle-Isle-Trough. The result of fishery ranged from 500 to 1800 kg per trawling hour. The time of trawling varied from 3 to 5.5 hours, moreover the yield amounted to 1.5 to 7.5 tons per trawlstation. It was fished in a range of depths from 480 to 580 m respectively from 500 to 580 m during the more succesful fishery in the area of Belle-Isle-Trough.

The following c.p.u.e. (catch per hour in tons) were achieved

by the factory trawlers operating in Subareas 2 J and 3 K.

	Roundnose grenadier	Greenland halibut
July	0.01	1.31
August	0.02	1.21

Due to the good catches during halibut fishing and the unexpectedly higher catches of halibut in Roundnose grenadier fishing started at the same time, the directed halibut fishery in Subareas 2 J and 3 K had to be stopped because the continuation of grenadier fishing was endangered by the advanced fishing of the halibut quota according to the licence conditions.

In Subarea 2 H exclusively two stern trawlers of the type "Zubringer trawler" were fishing in the period from November 11th to December 9th. They operated in a depth range from 850-1200 m in the area of a general position from 55°50'N-56°50'N.

The results were lower than those in 1984 and below the average of the period from 1981 to 1984 and consequently below the expected ones (see Tabl. 3). The fishing operations were heavily affected by a high storm frequency compared with previous years.

A violent improvement of fishing results in the last decade of November, like in previous years didn't take place. On the 9th of December fishing had to be finished due to licence conditions (limitation of effort).

By this reason the December rise in catches caused by biological circumstances (progressive immigration of individual under maturation in deep water layers and formation of prespawning concentrations; see SCS-Doc. 84/IX/24 and SCR-Doc. 84/IX/96) could not be used nor proved. The spatial distribution of Greenland halibut c.p.u.e. during the investigation period is shown in Tabl. 9.

2. Roundnose grenadier directed fishery in Subarea 2 and 3

Grenadier fishing was started by stern trawlers of the type "Zubringer trawlers" around the general position of 51°N,50°W (Div. 3 K) on the 5th of August and by a factory trawler (after the stop in halibut fishing) on the 24th of August. The fishing depths were between 900-1500 m. Test fishing up to 1800 m was unsuccessful. Positions fished north of 51°20'N and south of 49°N didn't bring any success, too.

Even in the course of the fishing season of 1985 fishing positions had to be changed permanently. Opposite to 1984 the reason for this necessity was not the high percentage of small, juvenile grenadier in the catches, but the high percentage of halibut (see directed halibut fishing in Subareas 3K, 2J).

This resulted in keeping away from halibut in order to respect licence conditions and to use by catch quota optimum i.e. to use the operation period according to the effort conditions, however this was only possible by getting an additional quota for 300 t of Greenland halibut from mid-October where fishing was carried out generally with a mesh size of > 130 mm due to a halibut by-catch of < 10 %.

In this way a directed grenadier fishing could not be carried out efficiently due to the licence conditions, so that the quota could not be used optimum (quota 5000 t, catch 3737.9 t). Besides of the licence conditioned reasons mentioned above the following differences in the fishing period were characteristic compared to those in 1984 and in previous years:

- the north-south extension of catchable concentrations was only 20 n.m. in 1985 (60 n.m. in 1984)
- the fishing depths of catchable concentrations were 1000-1500 m for dispersed shoals in 1985 compared to less dispersed shoals in water depths of 1200-1500 m in 1984
- the percentage of Greenland halibut in fishing depths with the highest density of grenadier (1000-1200 m) was of 30 % on the average per day in 1985 and thus higher than in 1984 (< 10 %).

In the last decade of October the heavy decrease of the c.p.u.e. was accompanied by a distinct increase of the portion of Greenland halibut as analyzed and reported in previous years (SCS-Doc. 84/24, SCS-Doc. 85/29, SCR-Doc. 84/96).

In this way the fishing situation grew worse further. One could suppose that a uniform and strongly limited water body which extended over a wide range of water depths and having too low temperatures influenced the distribution limits of the grenadier and determined the fishing season.

The c.p.u.e. (catch per hour in t) of sterntrawlers type "Zubringer Trawler" of the roundnose grenadier directed fishery are given in Table 3. The c.p.u.e. of the factory trawlers are as follows:

	Grenadier fish	Greenland halibut
August	0.64	0.02
September	0.75	0.01

The spatial distribution of c.p.u.e. in the directed grenadier fishery during the period of investigations is shown in Table 10.

3. Cod directed fishery

As in the years before the cod directed fishery remained without results. Also in December prespawning concentrations were still not developed in the divisions 2 G, H. Therewith the basis of a fishery was not given. At a quota of 500 t only 68.8 t cod could be realized including the by-catchrate.

4. Redfish directed fishery

The redfish quota in Subarea 2 and Division 3 K recommended as by-catch has been fished by Sterntrawlerstype "Zubringer Trawler" in the Divisions 3 K, L since the middle of December. Contrary to the results of the years before the redfish by-catch of other fisheries was without importance.

Within the fishing areas no stable concentrations could be fished. The catches remained below the expectations because of additional storm handicap.

Following c.p.u.e. were obtained in December:

	Total	Redfish
Division 3 K	0.87	0.59
3 L	1.45	1.17

In January c.p.u.e. of 1.89 t with 89 % redfish was caught by stern trawlers type "Zubringer Trawler" in the Division 3 L.

B Special research Studies

1. Environment

Without data

2. Biological Studies

Greenland halibut (Reinhardtius hippoglossoides WALB.)

Aboard a commercial vessel the fishing data (quantitative and qualitative analysis of hauls, positions, depths) and biological data (length, age, weight, maturity stages) were collected from 11 to 30 November. Age determination was done by scales. The results of biological analysis are given in Tables 11 (mean length per age group), 12 (mean weight per length group) and 13 (maturity stage and sex ratio).

The already described increase of maturity stages (Table 13), being in touch with the density of concentrations and catch results dependent on the depth (Table 9) are already documented during a relative short time of observation (NAFO SCR-Doc. 84/96).

Length and age compositions are acquired according to the NAFO directions and are available in the NAFO secretariate.

Roundnose grenadier (Coryphaenoides rupestris GUNN.)

From 11 to 28 October in the Division 3 K biological analysis was carried out aboard a commercial vessel just as collection and interpretation of fishing data (Table 10). Age determination of Grenadier fish was done by scales. The results of biological analysis are presented in Tables 14 (mean length per age group) and 15 (mean weight per age group).

Length and age composition are acquired according to the NAFO directions and are available in the NAFO secretariate.

Subares 6

A Status of the Fishery

From January to May factory trawlers (FAO-Code: 101 and 102) carried out a fishery directed towards mackerel in Divisions 6 A, 6 B and 6 C. The fishing area was between 36°N and 40°30'N outside of the 20 n.m.-zone. Opposite to the years before in this area there were fishing possibilities nearly during the whole time mentioned. The fishery was very effective and had its peak from the middle of February to the end of March. During this time the trawlers achieved a catch of about 100 tons per day.

Early in January the fishery was started between 38° and 39°N (Div. 6 B) near the 20 n.m.-zone. There the echo traces were sporadic and only sometimes fishing was successful. For search an increased effort was neccessary. From the end of January the situation basically improved and enabled a continous fishery. But far from the coast fishing trials were without success.

In March the fishery was carried out between 36°10'N and 37° 10'N (Div. 6 C) in a distance to the coast of 50 n.m.

In April the fishing area was off the Delaware Bay at 39°10'N (Div. 6 B) and shifted slowly to the north. The fish concentrations became more instable, and for search the effort increased. The fishing depth was in the range of 70 to 75 m.

In May the fishery was concentrated in the region of the shipping line between Nantucket and New York in depths of about 80 m. Afterwards the fish concentrations became more and more instable at fishing depths of about 100 m and mackerel was more flying. For this reason the fishery was stopped in the third decade of May.

During the whole season (Jan. to May) the concentrations and consequently the fishery shifted to the north continously. The factory trawlers achieved following c.p.u.e.

	Jan	Feb	March	Apr	May	Dec
catch per hour (tons)	11.8	22.9	19.3	8.9	4.3	24.9

were
The catches of December taken during the third decade at the beginning of the fishing season 1985/1986. The c.p.u.e. value only results from few hours fished and therefore does not reflect the fishing possibilities in December. It was fished on the general position 40°10'N 73°25'W from 29 to 35 m.

The mean portion of mackerel amounted to 99 % where there were only small deviations during the months.

B. Special Research Studies

1. Environmental Studies

Aboard the fishing vessels water temperatures were measured in connection with the fishery. After that the mackerel schools preferred temperatures of +7 °C to 9 °C from January to March and of +10 °C in April.

It was observed that the tidal currents caused the change of the position of the mackerel schools because the optimum temperature range and thus the limits of the habitat were displaced. The dependence of the mackerel concentrations on the direction of the wind and the influence on the success of fishing were also analysed. This must be seen in a close connection with the distribution limits caused by the temperature. After that moderate west winds shift the cold water body from the onshore to the offshore region so that the mackerel schools migrate to the warm water component of the offshore area. If there were west winds of longer duration, in the fishing area on the surface a drift arised that in the lower part brought warm water to the coast, and consequently warm coastal water was drifted southward.

That caused that the mackerel schools migrated into the 20 n.m.-zone and up to the limit of this zone respectively.

It could be observed that with north winds the mackerel concentrations were always located north of the mouth of the bays because of the southward drift of cold coastal water, and that on the other hand with south winds they are off the month of the bays.

During the fishing season the meteorologic situation permanently changed and the echo traces were very dynamical and seldom stationary.

2. Biological Studies

Mackerel

Biological samplings for analysis ashore were collected on board of commercial vessels during the 1st quarter of the year. The results of these analyses are represented in Tables 16 (length distribution and mean weight per length), and 17 (age composition). The length-age key was made at

the basis of the NAFO-demands, they were overhanded to the NAFO-secretariate.

References

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Table 1: G.D.R. nominal catches (tons) of species in the NAFO-area for 1984 and 1985

Species	1984	1985
Cod	77.3	68.8
Redfish	1431.5	773.5
Roundnose grenadier	3649.6	3752.3
Greenland halibut	2498.3	2184.5
American plaice	-	1.7
NW-atlantic eelpouts	0.5	-
Northern wolffish	1.7	-
Skates	354.8	133.5
Greenland shark	19.5	18.3+
Red and white hakes	0.7	-
Catfish	-	0.8
Baird's smoothead	58.9	111.8
Atlantic mackerel	5450.3	11023.9
Alewife	7.5	21.0
Spiny dogfish	2.4	5.3
Witch	27.7	34.0
Squid	0.1	-
Silver hake	18.7	15.5
Blue antimora	18.7	6.4
Haddock	0.6	-
Pollock	1.0	-
Tusk	0.2	-
Scup	0.2	-
Atl. butterfish	-	1.5
Common dab	-	1.0
Total	13694.5	18153.8

+ Greenland shark (18,0 tons) and other sharks

Table 2: G.D.R. nominal catches (tons) of species by Divisions of subarea 0, 2, 3 and 6 for 1985

	0B	2H	2J	2	3K	3L	3	6A	6B	6C	6
Cod	-	25.2	0.8	26.0	20.7	22.1	42.8	-	-	-	-
Redfish	1.4	-	0.4	0.4	100.7	671.0	771.7	-	-	-	-
Roundnose grenadier	14.4	77.6	7.6	85.2	3630.6	22.1	3652.7	-	-	-	-
Greenland halibut	335.1	567.7	525.2	1092.9	721.8	34.7	756.5	-	-	-	-
American plaice	-	-	0.7	0.7	1.0	-	1.0	-	-	-	-
Skates	16.1	41.7	5.8	47.5	39.7	30.2	69.9	-	-	-	-
Greenland shark	2.0	12.8	-	12.8	2.0	1.2	3.2	-	-	-	-
Other sharks	-	-	-	-	0.1	0.2	0.3	-	-	-	-
Catfish	-	-	-	-	-	0.8	0.8	-	-	-	-
Baird's smoothead	-	1.4	-	1.4	110.4	-	110.4	-	-	-	-
Atlantic mackerel	-	-	-	-	-	-	-	2870.5	5574.9	2578.5	11023.9
Alewife	-	-	-	-	-	-	-	8.5	3.3	9.2	21.0
Spiny dogfish	-	-	-	-	-	-	-	0.6	4.1	0.6	5.3
Witch	-	-	9.2	9.2	4.2	20.6	24.8	-	-	-	-
Silver hake	-	-	-	-	-	-	-	15.5	-	-	15.5
Blue antimora	-	-	-	-	6.4	-	6.4	-	-	-	-
Atl. butterfish	-	-	-	-	-	-	-	1.2	0.3	-	1.5
Common dab	-	-	-	-	-	1.0	1.0	-	-	-	-
Total	369.0	726.4	549.7	1276.1	4637.6	803.9	5441.5	2896.3	5582.6	2588.3	11067.2

Table 3: Development of c.p.u.e. (catches per hour in tons) of Roundnose grenadier (RNG) and Greenland halibut (GHL) for "Zubringer Trawler" (900 - 999,9 BRT) during the period 1981 - 1985

	August		September		October		November		December	
	RNG	GHL	RNG	GHL	RNG	GHL	RNG	GHL	RNG	GHL
Div. 0B										
1981-84	without any activities									
1985	-	-	-	-	-	-	0.01	0.33	-	-
Div. 2G										
1981	-	-	-	-	0.31	0.35	-	-	-	-
1982	-	-	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	0.05	0.09	-	-
1985	-	-	-	-	-	-	-	-	-	-
Div. 2H										
1981	-	-	0.35	0.18	0.11	0.23	0.38	0.56	0.16	0.91
1982	-	-	-	-	0.29	0.32	0.12	0.51	0.10	0.69
1983	-	-	-	-	0.43	0.15	0.21	0.22	0.11	0.61
1984	-	-	-	-	0.17	0.31	0.08	0.47	0.03	0.72
1985	-	-	-	-	-	-	0.05	0.38	0.03	0.36
Div. 2J										
1981	-	-	-	0.08	0.17	0.19	0.61	0.14	0.33	0.21
1982	-	-	-	-	0.09	0.16	0.21	0.09	-	-
1983	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	0.03	0.02	-	0.01	-	0.03
1985			-	-	-	-	-	-	-	-
Div. 3K										
1981	-	-	-	-	0.24	0.25	0.49	0.12	-	-
1982	-	-	0.39	0.09	-	-	-	-	0.10	0.09
1983	-	-	0.45	0.18	0.29	0.25	-	-	-	-
1984	-	-	1.10	0.14	1.39	0.07	0.03	-	0.29	0.04
1985	0.66	0.08	0.60	0.10	0.44	0.12	-	-	0.04	0.08

Table 4: Development of proportion (%) of Greenland halibut (GHL) and Roundnose grenadier (RNG) by Divisions and Month during the period 1981 - 1985

	June		July		August		September		October		November		December	
	RNG	GHL	RNG	GHL	RNG	GHL	RNG	GHL	RNG	GHL	RNG	GHL	RNG	GHL
Div.0B														
1981-1984							without any activities							
1985	-	-	-	-	-	-	-	-	-	-	4	91	-	-
Div.2G														
1981	-	-	-	-	-	-	-	-	48	49	-	-	-	-
1982	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1983	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	-	-	33	55	-	-
1985	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Div.2H														
1981	-	-	-	-	-	-	57	27	25	55	33	46	7	43
1982	-	-	-	-	-	-	-	-	48	51	15	68	10	68
1983	-	-	-	-	-	-	-	-	65	23	38	40	14	79
1984	-	-	-	-	-	-	-	-	31	57	4	81	4	89
1985	-	-	-	-	-	-	-	-	-	-	11	81	7	64
Div.2J														
1981	-	-	-	-	-	-	19	25	39	41	62	12	28	15
1982	-	-	-	-	-	-	-	-	24	21	42	12	-	-
1983	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1984	-	-	-	-	-	-	-	-	11	8	-	-	-	-
1985	-	-	1	97	2	95	-	-	-	-	-	-	-	-
Div.3K														
1981	-	-	-	-	-	-	-	-	45	36	62	15	5	4
1982	-	-	-	-	-	-	53	12	-	-	79	14	65	9
1983	-	-	-	-	-	-	54	22	43	38	-	-	-	-
1984	-	-	-	-	-	-	73	10	88	4	-	-	64	9
1985	-	-	0	71	83	11	83	13	77	21	-	-	3	6

Table 5: Spatial distribution of c.p.u.e. (catch in kg per hour) of Greenland halibut directed fishery, Division 0B
Number of trawlstations in brackets

Depth(m)	Latitude degree	61		62					Average
	minute	40	50	00	10	20	30	40	c.p.u.e.
550									
600				+					
650		++							
700			+	+					
			598	571			286	188	442
		+	(2)+	(2)			(2)	(1)	(7)
750			652	450	431	337			453
			(3)+	(26)+	(7)	(3)			(39)
800			477	555	482		376		526
			(6)	(38)+	(12)+		(2)		(58)
850		833		550	506	393			537
		(1)	+	(25)++	(7)	(3)			(36)
900				400	125				263
				(1)	(1)				(2)
950				120					120
				(1)					(1)
1000									
1050					115				115
					(1)				(1)
Average		833	587	518	449	365	331	188	495
c.p.u.e.		(1)	(11)	(93)	(28)	(6)	(4)	(1)	(144)

+ trawl stations without results

Table 6: Mean length per age of Greenland halibut in catches taken by commercial bottom trawls (mesh-size> 130 mm) NAFO Div. 0B, November 1985

Age	♂♂		♀♀	
	Ø L_t(cm)	n	Ø L_t(cm)	n
3			33.00	1
4	35.00	3	42.94	14
5	42.86	73	44.37	40
6	47.85	207	49.24	46
7	50.82	91	51.83	71
8	53.71	306	55.98	59
9	56.59	248	60.34	50
10	60.73	161	63.00	18
11	62.35	101	65.97	44
12	64.61	101	68.55	60
13	67.44	37	70.85	51
14	71.00	4	76.98	67
15	76.30	3	82.10	22
16			83.83	12
17			93.70	3
18			88.54	9
19			99.00	5
20			97.00	3
Total	55.33	1335	63.05	575

Table 7: Mean weight per age of Greenland halibut in catches taken by commercial bottom trawls (mesh-size> 130 mm) NAFO Div. 0B November 1985

Age	♂♂		♀♀	
	$\bar{W}$(g)	n	$\bar{W}$(g)	n
3			280.0	1
4	339.8	3	645.3	14
5	581.1	73	679.6	40
6	865.6	207	977.3	46
7	1066.1	91	1148.5	71
8	1294.6	306	1547.4	59
9	1500.8	248	1889.7	50
10	1789.9	161	2184.3	18
11	1898.4	101	2697.0	44
12	2106.1	101	2920.4	60
13	2428.3	37	3186.9	51
14	2651.7	4	4260.5	67
15	3328.0	3	5246.0	22
16			4814.9	12
17			7945.0	3
18			6562.2	9
19			9510.0	5
20			9209.6	3
Total	1417.7	1335	2540.1	575

Table 8: Status of maturity+ and sex ratio of Greenland halibut, Division 0B, period November 3rd - 9th, 1985

	Date	Status of maturity+(n) 2	3	4	5	Sex ratio (%)	Average Status of maturity
Males	3.11.	23	21	51	6	78	3.37
	4.11.	26	11	58	5	72	3.31
	5.11.	27	12	53	9	71	3.42
	6.11.	38	5	53	4	66	2.92
	7.11.	34	7	53	5	68	3.11
	8.11.	33	6	58	3	68	3.16
	9.11.	35	5	54	5	66	3.16
Females	3.11.	34	28	34	4	22	3.08
	4.11.	32	47	21	-	28	2.85
	5.11.	37	52	11	-	29	2.72
	6.11.	24	57	20	-	34	2.96
	7.11.	32	54	12	-	32	2.76
	8.11.	19	65	15	-	32	2.93
	9.11.	23	60	16	-	34	2.89

+ SOROKIN and GRIGORYEV 1968

Table 9: Spatial distribution of c.p.u.e. (catch in kg per hour) of Greenland halibut directed fishery, Division 2H (mesh-size≥ 130 mm), Number of trawl-stations in brackets

A period November 14th - 20th

Depth (m)	Latitude degree minute	55 50	56 00	10	20	30	40	50	60	Average c.p.u.e. 50 m range	100 m+ range
550					90 (1)					90 (1)	90 (1)
700				1381 (2)						1381 (2)	
750											1381 (2)
800							183 (3)			183 (3)	
850			638 (2)							638 (2)	365 (5)
900			444 (1)	613 (1)	250 (1)		402 (5)			415 (8)	
950		984 (2)	538 (14)		1106 (4)		363 (3)			653 (23)	591 (31)
1000		625 (1)	645 (9)	819 (2)	596 (16)		446 (6)	320 (1)		588 (35)	
1050			643 (3)		464 (16)	980 (2)	279 (3)			507 (24)	555 (59)
1100			673 (6)		484 (9)	300 (1)	162 (1)			521 (17)	
1150		490 (1)	375 (1)		550 (5)	563 (1)				522 (8)	521 (25)
1200					531 (5)					531 (5)	
1250					551 (8)	172 (1)				509 (9)	517 (14)
1300					118 (1)					118 (1)	118 (1)
Average c.p.u.e.		771 (4)	595 (36)	1002 (5)	545 (66)	599 (5)	349 (21)	320 (1)		552 (138)	

+ in comparison with 1984 (see NAFO SCS Doc. 85/29)

Continued of table 9

B Period November 20st - 27th

Depth (m)	Latitude degree minute	55 50	56 00	10	20	30	40	50	Average c.p.u.e. 50 range	Average c.p.u.e. 100+ range
850		429 (1)	450 (1)						440 (2)	440 (2)
900		936 (1)	524 (2)				537 (3)		599 (6)	
950			491 (4)		375 (1)		372 (8)		409 (13)	469 (19)
1000			568 (6)				568 (12)	292 (2)	540 (20)	
1050			402 (2)		642 (4)		321 (4)	429 (1)	462 (11)	513 (31)
1100					456 (3)		320 (2)		402 (5)	
1150			1033 (1)		974 (4)	900 (1)			986 (5)	694 (10)
1200									652 (3)	
1250										652 (3)
Average c.p.u.e.		683 (2)	544 (16)		662 (14)	900 (1)	495 (29)	338 (3)	532 (65)	

Table 10: Spatial distribution of c.p.u.e. (catch in kg per hour) of roundnose grenadier directed fishery (mesh-size < 130 mm), Division 3K November of trawlstations in brackets

A Period October 11th - 18th

Depth (m)	Latitude degree minute	50 50	51 00	Average c.p.u.e.
950			167 (1)	167 (1)
1000		1200 (2)		1200 (2)
1050		635 (4)		635 (4)
1100		1457 (9)		1457 (9)
1150		1196 (13)		1196 (13)
1200		1185 (29)		1185 (29)
1250		1203 (16)		1203 (16)
1300		913 (10)	500 (1)	875 (11)
1350		777 (10)		777 (10)
1400		674 (6)	667 (1)	673 (7)
1450		914 (7)		914 (7)
1500		985 (9)		985 (9)
1550		841 (4)		841 (4)
Average c.p.u.e.		1065 (119)	445 (3)	1050 (122)

B Period October 19th - 25th

900							295 (2)					295 (2)
1050						157 (2)			873 (1)			396 (3)
1100						259 (4)						259 (4)
1150						377 (4)	538 (1)					409 (5)
1200						363 (2)			500 (2)	600 (1)		465 (5)
1250						376 (4)	475 (5)		686 (3)	571 (1)		501 (13)
1300		174 (2)	64 (1)	256 (2)	333 (1)	518 (2)	741 (3)		429 (4)			415 (15)
1350	77 (1)	135 (1)			456 (6)	585 (2)	455 (1)	837 (1)				451 (12)

Continued of table 10

Depth (m)	Latitude degree / minute	49 50	50 00	10	20	30	40	50	51 00	10	20	30	Average c.p.u.e.
1400				300 (1)	447 (2)	627 (4)			686 (2)			1250 (1)	632 (10)
1450						550 (2)		182 (1)	633 (3)				530 (6)
1500								692 (1)	737 (2)				722 (3)
1550						615 (1)			538 (8)				546 (9)
1600								1056 (1)	615 (5)				689 (6)
1650									329 (4)				329 (4)
Average c.p.u.e.		77 (1)	161 (3)	182 (2)	351 (4)	521 (14)	585 (2)	387 (22)	556 (36)	-	565 (10)	807 (3)	488 (97)

C Period October 26th - 28th

900								432 (1)	432 (1)				
1000						552 (1)			552 (1)				
1050						472 (3)			472 (3)				
1100					759 (1)	566 (11)		668 (2)	594 (14)				
1150					718 (4)	682 (6)			697 (10)				
1200					370 (1)	548 (5)		537 (2)	523 (8)				
1250						417 (1)		476 (1)	442 (2)				
1300						384 (2)		556 (3)	487 (5)				
1350									=				
1400				1368 (1)				517 (2)	801 (3)				
1450								74 (1)	74 (1)				
1500									=				
1550									=				
1600								109 (1)	109 (1)				
Average c.p.u.e.				1368 (1)	667 (6)	559 (29)		476 (13)	567 (49)				

Table 11: Mean length per age of Greenland halibut in catches taken by commercial bottom trawls (mesh-size > 130 mm), NAFO-Div. 2H, November 1985

Age	♂♂		♀♀	
	Ø L_t(cm)	n	Ø L_t(cm)	n
3	46.73	9		
4	41.00	4	39.83	7
5	43.36	27	46.28	26
6	46.49	66	47.69	37
7	49.36	122	52.27	89
8	52.81	210	55.91	35
9	55.69	128	58.52	54
10	58.22	82	62.66	32
11	60.56	42	64.24	15
12	63.54	32	67.74	37
13	66.80	28	73.23	56
14	71.74	8	78.59	36
15			80.07	12
16			84.05	29
17	77.00	1	86.33	32
18			90.14	38
19			92.24	8
20			98.28	13
21			95.00	2
22			102.63	6
Total	53.93	759	67.15	564

Table 12: Mean weight per age of Greenland halibut in catches taken by commercial bottom trawls (mesh-size > 130 mm), NAFO-Div. 2H, November 1985

Age	♂♂		♀♀	
	$\bar{W}$ (g)	n	$\bar{W}$ (g)	n
3	838.0	9		
4	534.8	4	506.0	7
5	634.4	27	789.0	26
6	788.9	66	878.4	37
7	977.1	122	1148.2	89
8	1201.3	210	1442.1	35
9	1451.2	128	1582.6	54
10	1626.7	82	2043.3	32
11	1811.9	42	2166.5	15
12	2107.8	32	2567.4	37
13	2349.0	28	3374.3	56
14	3110.6	8	4463.2	36
15			4892.9	12
16			5755.2	29
17	3793.0	1	6326.7	32
18			7268.1	38
19			7889.9	8
20			9927.4	13
21			8345.5	2
22			11482.9	6
Total	1327.6	759	3236.5	564

Table 13: Status of maturity[+] and sex ratio of Greenland halibut, Division 2H, period November 15th - 26th, 1985

	Date	Status of maturity[+](n) 2	3	4	5	Sex ratio (%)	Average status of maturity
Males	15.11.	70	19	12	-	64	2.13
	16.11.	76	11	13	-	67	1.97
	17.11.	71	8	16	5	52	2.15
	19.11.	69	2	22	7	59	2.28
	20.11.	77	2	12	10	50	2.18
	26.11.	40	6	43	11	51	2.68
Females	15.11.	26	50	24	-	36	2.98
	16.11.	59	28	10	3	33	2.57
	17.11	38	45	17	1	48	2.83
	19.11.	35	45	20	1	41	2.89
	20.11.	24	45	31	-	50	3.07
	26.11.	13	61	26	-	50	3.13

+ SOROKIN and GRIGORYEV 1968

Table 14: Mean length[+] per age of roundnose grenadier in catches taken by commercial bottom trawls (mesh-size 80 mm), NAFO-Div. 3K, October 1985

Age	♂♂		♀♀	
	Ø L_a[+] (cm)	n	Ø L_a (cm)	n
3	4.75	5		
4			5.08	5
5	6.65	46	6.87	19
6	7.65	46	7.11	37
7	8.21	60	8.79	70
8	9.30	135	9.37	79
9	10.17	278	10.49	186
10	11.15	478	11.72	353
11	11.89	450	12.66	237
12	12.87	482	13.47	279
13	13.78	343	14.51	214
14	14.49	250	15.36	112
15	15.29	139	16.00	84
16	15.94	70	16.87	56
17	15.75	32	17.63	33
18	16.44	5	17.78	9
19	17.25	5	18.55	9
20			20.27	9
21	19.58	5		
22	19.75	5	21.50	4
Total	12.18	2834	12.71	1795

+ analfin-length

Table 15: Mean weight per age of roundnose grenadier in catches taken by commercial bottom trawls, (mesh-size 80 mm), NAFO-Div. 3K, October 1985

Age	♂♂		♀♀	
	$\bar{W}$ (g)	n	$\bar{W}$ (g)	n
3	50	5		
4			19	5
5	45	46	57	19
6	72	46	61	37
7	94	60	130	70
8	149	135	161	79
9	197	278	213	186
10	259	478	300	353
11	312	450	378	237
12	397	482	449	279
13	488	343	561	214
14	566	250	665	112
15	661	139	727	84
16	761	70	865	56
17	705	32	982	33
18	792	5	974	9
19	890	5	1141	9
20			1461	9
21	1384	5		
22	1399	5	1713	4
Total	364	2834	420	1795

Table 16: Length distribution (fork length) and mean weight per length of Atlantic mackerel in catches taken by commercial pelagic trawls (mesh-size > 60 mm), NAFO-Div. 6B, Januar - March 1985

length group (cm)	length L_f (%o)	mean weight (g)
23	+	
24	2	
25	5	
26	18	181
27	59	191
28	127	212
29	152	232
30	179	264
31	142	290
32	90	330
33	61	359
34	50	403
35	35	442
36	15	-
37	10	-
38	12	590
39	6	
40	11	
41	7	
42	9	
43	6	
44	2	
45	2	
46	1	
47	+	

Table 17: Age composition of Atlantic mackerel in catches taken by commercial pelagic trawls (mesh-size >60 mm), NAFO-Div. 6B, Januar - March 1985

Age	2	3	4	5	6	7	8	9	10	11	12	13+
%o	48	756	45	76	11	9	8	7	3	10	13	15