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GDR Research Report, 1974

by

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The overall catch by the GDR in the North-West Atlantic Ocean (Subarea 0-6) in 1974 ran into 131 281 tons, which is by 53 961 tons less than in 1973.

Table 1 Species composition of GDR catches in Northwest Atlantic Ocean in 1973 and 1974

	<u>Subarea 0 - 6</u>	
	<u>1973</u>	<u>1974</u>
	185 242	131 281
Capelin	2	-
Atl. Argentines	-	6
Alewife	1630	2659
Greenland	2435	3302
Witch	2352	272
Am. plaice	319	34
Flatfishes n.e.i.	36	-
Cod	23946	25181
Silver hake	194	38
Haddock	1	-
Pollock	948	2
Roundnose grenadier	2519	4568
Gadoids n.e.i.	1	-
Scup	-	13
Wolffishes	20	39
Redfish	2791	2492
Sea Robin	1	-
Bluefish	18	16
Butterfish	196	-
Herring	58612	32538
Yellowfine tuna	43	-
Albacore tuna	8	-
Tuns	-	42
Mackerel	76758	59977
Picked dogfish	619	100
Skates	85	-
Scabbardfish	-	2
Misc. marine fishes	11395	-
Squids	313	-

Subarea 0

A. Status of Fisheries

Commercial fisheries were not carried out in 1974

B. Special Research Studies

1. Environmental Studies

No environmental studies were carried out in 1974

2. Biological Studies

Roundnose Grenadier

In SA 0 2647 Roundnose Grenadier were measured in September. During the length-investigations were taken otoliths for age determination, the main-lengths ranged from 46-51 cm with a part of 80 %. Mean lengths were measured from 48.1 - 61.5 cm in several catches during the time of investigations.

Subarea 1

A. Status of Fisheries

In 1974 the GDR catch was 3348 tons in this Subarea. The result of catches amounted to Roundnose Grenadier *Coryphaenoides rupestris* (2750 ton) and Greenland halibut caught (594 tons) in waters of Greenland - Canadian Ridge (Div. 1 B, 1 C) in the end of November and in December.

2. Special Research Studies

1. Environmental Studies

No environmental studies were carried out in 1974

2. Biological studies

Roundnose Grenadier

In September 6408 specimens were measured and 7008 otoliths were taken for a especially age determination in Div. 1 B and 1 C. The biological characteristic is the same as in subarea 0, because during the fishery in these Subareas was worked in subarea 0 as well as subarea 1 together on a small territory.

Greenland Halibut

In September 800 specimens were measured and 150 scales were taken for age reading in Div. 1 C. The length-frequency ranged from 30-85 cm on a main-lengths from 50-75 cm (80 %).

Subarea 2

A. Status of Fisheries

In 1974 the nominal catches of the GDR in SA 2 amounted to 24.5 ~~00~~ t., including 19.2 ~~00~~ t. of cod, 2.1 ~~00~~ t. of Greenland halibut, 1.4 ~~00~~ t. of Redfish, 1.7 ~~00~~ t. of Roundnose Grenadier, and a small quantity of other bottom species.

The ^{catch} increased considerably as against with 1973 (4.3 ~~00~~ t. nominal catch), the increase of total catches it is to be seen in connexion with the decrease of total catches in SA 3.

However, as in previous years the cod was by far the most important species in 1974. The cod fishery took place in January and February in Div. 2 H and 2 J, in which the ice conditions were more favourable than in 1973. So the total catch of cod in 1974 increased and the catch-per-day for stern-trawler (Type Zubringer-Trawler, a representative type for the fishery in this Subarea) from 26.5 tons (1973) to 35.0 tons (1974) during January respectively 38.4 tons during February.

In 1974 contrary to 1973 existed favourable possibilities of fishery because of good ice conditions. This fact should show the important availability of the concentrated cod during the several month of the season of fishery and in dependence on the ice conditions.

In the middle of March the trawl fleet had to leave SA 2, because the cod fishery was hampered by an extremely hard ice condition.

A smaller special fishery was carried out by a factory ship for deep-sea-fishery (500-700 m) in October and November in the region between 56°20'N and 57°40'N (Div. 2 H). The main species

in the catches was Roundnose Grenadier with by-catches of Greenland Halibut (10-15 %) and little bit redfish in October (5 %).

B. Special Research Studies

1. Environmental studies

No environmental studies were carried out in 1974

2. Biological studies

a) Cod

Data on size and age Cod composition in 2 J are given in Tables 2 and 3. Cod of 42-56 cm related to 1965, 1966 and 1967 year classes are dominating in number in commercial catches taken with bottom trawl.

b) Roundnose Grenadier

In October 7608 fishes were measured in Div. 2 H and 2 G and 900 otoliths were taken for age determination in these Divisions. The main-lengths of Roundnose Grenadier ranged from 52-67 cm with a part of 80 % and their ages from 9 to 14 years. Mean lengths were measured from 52,6 to 65.8 cm in several catches during the time of investigations. Of this case the year classes 1960-1965 are dominating in number in commercial catches taken with bottom trawl. The 1960-1962 year classes seem also to be numerous (see GDR-Report, 1973).

c) Greenland Halibut

In October 776 Greenland Halibut were measured in Div. 2 H and 2 G and 234 otoliths and scales were taken for age reading. The lengths of Greenland Halibut ranged from 58-94 cm.

d) Redfish

In Div. 2 G and 2 H 326 Redfishes were measured and 194 otoliths and scales were taken for age reading. The lengths ranged from 26-40 cm.

Subarea 3

A. Status of Fisheries

In 1974 the nominal catches of the GDR in SA 3, only in Div. 3 K, amounted to 7.9 ~~00~~t., including 5.9 ~~00~~t. of cod, 1.1 ~~00~~t. Redfish, and 0.9 ~~00~~t. of flatfishes and a small amount of other bottom species.

The cod was by far the most important species as in previous years, although the nominal catch decreased from 27.5 ~~00~~t. (1973) to 7.9 ~~00~~t. (1974). ~~Reasons for this decrease are the following: 1. A 2 ha office building was built in the fishing area in 1974. 2. The fishing effort in 1974 was smaller than in 1973.~~

~~When was possible the fishing effort was reduced. The fishing effort in 1974 was smaller than in 1973.~~ The fishing effort in 1974 was smaller than in 1973.

The cod fishery took place in Div. 3 K in the end of January, mainly in February (5.9 ~~00~~t.), and a smaller part in March (0.9 ~~00~~t.)

The total catch of redfish and flatfish also decreased, and the catch-per-day 1974 (especially in January) for stern-trawler (Type Zubringer-Trawler) was important in difference to 1973 (January 1973 = 32.8; 1974 = 8.7, February 1973 = 29.1; 1974 = 37.4, March 1973 = 21.6; 1974 = 19.0).

B. Special Research Studies

No sampling or other studies were carried out in this subarea during 1974

Subarea 4

A. Status of the Fisheries

There was no GDR commercial fishery in this Subarea

B. Special Research Studies

No sampling or other studies were carried out in this Subarea during 1974.

Table 2 Size composition (O/OO) of Cod in Div. 2 J, 1974

<u>Length (cm)</u>	<u>January</u>	<u>February</u>	<u>March</u>
30 - 32	-	-	-
33 - 35	10	3	-
36 - 38	10	7	-
39 - 41	100	28	30
42 - 44	136	87	65
45 - 47	157	134	120
48 - 50	134	167	140
51 - 53	130	171	150
54 - 56	90	118	130
57 - 59	60	104	120
60 - 62	43	59	45
63 - 65	73	53	65
66 - 68	13	26	55
69 - 71	7	17	35
72 - 74	13	9	20
75 - 77	7	2	20
78 - 80	-	3	-
81 - 83	7	4	-
84 - 86	-	2	5
87 - 89	-	-	-
90 - 92	3	1	-
93 - 95	3	1	-
96 - 98	-	-	-
99 - 101	-	-	-
102 - 104	-	1	-
105 - 107	-	1	-
108 - 110	-	1	-
111 - 113	-	-	-
114 - 116	-	1	-
130 - 132	3	-	-
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Number of specimens measured	300	1705	200
Mean length (cm)	51,79	53,44	55,23

Table 3: Age composition and mean length of cod in Div. 2 J, 1974

Year- class	Age	January		February		March	
		Number of specimens o/oo	Mean length (cm)	Number of specimens o/oo	Mean length (cm)	Number of specimens o/oo	Mean length (cm)
1970	4	-	-	-	-	-	-
1969	5	7	42,0	4	39,0	-	-
1968	6	114	43,2	35	43,3	25	41,7
1967	7	304	47,4	233	46,9	250	46,9
1966	8	357	50,9	378	52,1	365	53,7
1965	9	130	58,3	193	56,2	170	59,7
1964	10	40	65,0	74	62,4	100	64,5
1963	11	20	69,0	42	62,4	30	67,5
1962	12	13	79,5	17	65,4	45	68,8
1961	13	8	79,6	8	72,7	15	77,5
1960	14	3	82,5	5	66,3	-	-
1959	15	3	73,5	1	82,5	-	-
1958	16	-	-	4	95,0	-	-
1957	17	-	-	-	-	-	-
1956	18	-	-	6	91,0	-	-
Number of specimens studied		300	51,79	1705	53,44	200	55,23

Subareas 5 and 6

A. Status of the Fisheries

In 1974 the nominal catches of the GDR in SA 5 and 6 amounted to 95.5 ~~00~~t. They decreased as against with 1973 by 36.7 %.

The declining of the catches concerned particularly herring (45 %) and mackerel (22 %), whereas alewife shows an increasing (38 %).

Table 4 nominal catches (1000 tons)

	5 y	5 z	6	total 1974	total 1973
Total	1.4	42.5	51.6	95.5	150.8
Herring	1.0	31.1	0.4	32.5	58.6
Mackerel	0.4	10.0	49.5	59.9	76.8
Alewife	-	1.0	1.6	2.6	1.6
Others and unidentified	-	0.4	0.1	0.5	12.8

1. Herring

First fishing in 1974 season was in the last decade of July, and the fishery ended in the mid of November.

According to the quote 1974 nominal catch decreased about nearly the half of the catch in 1973.

Fishing days sharply decreased in the stern-trawler type "Zubringertrawler" and for the sidetrawlers.

Fishing days of factory trawlers differed not significantly from those in 1973. C.p.u.e. of factory-trawlers and sidetrawlers was lower than in 1973. C.p.u.e. of "Zubringertrawler" which is not to be seen as a measure of fish availability lies somewhat higher.

Catch per day of factory trawlers of Type I b (metric tons)

	<u>July</u>	<u>Aug.</u>	<u>Sept.</u>	<u>Oct.</u>	<u>Nov.</u>
1973	27.5	57.0	61.9	57.8	
1974	11.6	22.8	44.7	47.3	31.2

Low unit-catches in comparison to 1973 up to the first half of September are supposed to be explicable by decrease in stock size only partly. Some reasons seemed to be changes in fish behaviour and environment conditions. Possibly the environmental influence effected the observed delay of maturing (spawning peak shifted from second half of September to first half of October).

2. Mackerel

Compared with 1973 fishing days of factory-trawlers increased by 12 % and those of sidetrawlers decreased by 54 %. The catch per fishing day of factory-trawlers decreased by 25 % in the period January to May. ~~_____~~
~~_____~~

In the weighed average factory-trawlers yielded per fishing day

January - May	1973	75.6 tons
January - May	1974	56.9 tons

~~_____~~
~~_____~~

3. Alewife¹⁾

The increase of nominal catch is due to higher c.p.u.e. which amounted to the threefold in comparison to 1973:

Catch per fishing day of sidetrawlers (tons)

	<u>1973</u>	<u>1974</u>
Total	4.4	4.4
Alewife	1.0	3.1
Mackerel	1.4	0.3
Herring	1.7	1.0

1) May include several species of Alosa

B. Special research studies

1. Environmental studies

No environmental studies were carried out in 1974

2. Biological studies

a) Herring

All samples were taken from commercial catches at sea and the greatest part comes from one factory trawler.

Number and origin of age and length samples are shown in the following table:

		<u>measured</u>	<u>aged</u>
5 Ze	August	5036(21)	630 (9)
	September	6043(24)	2000 (24)
	October	421(2)	200 (2)
	<u>total</u>	<u>11500(47)</u>	<u>2830 (35)</u>
5 Y	August	536(3)	200 (2)

The number of samples in brackets

Moreover, mean weights per length group in August/September for full and herring without gonads were determined.

Four random samples were measured and weighed.

The sex, maturity and filling of stomach were noted down for all herring taken otoliths from.

Age - length - weight relationship

(August - September 1974)

AG	3	4	5	6	7	8	9	9+
∅ Lt (cm)	27.56	29.67	32.25	33.42	34.57	34.91	35.35	36.50
∅ W (g)	160,2	211.5	274.6	306.0	335.9	346.1	357.8	397.6

b) Mackerel

Samples were taken from commercial catches in January, March, April, November and December 1974 in Subareas 5 Z and 6. They included length composition, determination of age, sex ratio, maturity and stomach contents.

	Month	No. of samples	No of length measurements	No. of age determinations
Mackerel	I, III, IV XI, XII,	96	22.128	1.650

As the age determination shows, in the first quarter the older year-classes 1967-1969 were still predominant, followed by the year class 1972. The year-class 1973 was scarcely observed (0-9 %).

However, in the fourth quarter 1974 the year class 1973 appeared in the commercial catches in large quantity. The share of this year-class amounted to more than 53 % in December, whereas the formerly predominant older year-classes (older than 4 years) dropped from about 69 % to 15 %:

	1974	73	72	71	70	69	68	67	66	65	64+
Jan	-	-	144	97	70	179	210	247	48m	5	-
March	-	-	106	116	99	137	148	254	56	53	4
April	-	9	196	200	96	80	97	169	93	30	31
Nov.	11	240	195	115	169	108	105	52	2	3	-
Dec.	31	537	129	68	95	59	53	25	1	2	-