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GDR Research Report, 1975

by

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In 1975 in the ICNAF-Subareas 0-6 the overall nominal catches of the GDR amounted to 113 186 tons which is by 18 000 tons less than in 1974. The decrease of the catches relates to all main species: mackerel, cod, roundnose grenadier, herring, Greenland halibut and alewife.

Table 1: Species composition of GDR catches in the Subareas 0 - 6

	1975	1974
Capelin	7	-
Atl. Argentines	-	6
Alewife	2121	2659
Greenland halibut	2081	3302
Witch	374	272
Am. plaice	20	34
Flatfishes n.e.i.	23	-
Cod	22540	25181
Silver hake	37	38
Haddock	-	-
Pollock	279	2
Roundnose grenadier	2891	4568
Scup	-	13
Wolffishes	5	39
Redfish	2452	2492
Bluefish	62	16
Butterfish	1	-
Herring	30901	32538
Mackerel	48343	59977
Horse mackerels, n.e.i.	1	-
Picked dogfish	62	100
Squid (Loligo)	620	-
Squid (Illex)	295	-
Total	113186	131281

Subarea 0

A. Status of Fisheries

Commercial fisheries were not carried out.

B. Special Research Studies

No sampling or other studies were carried out in this Subarea during 1975.

Subarea 1

A. Status of the Fisheries

Only a total of 242 tons, 186 tons roundnose grenadier and 56 tons Greenland halibut, were taken by commercial ships. 80 % of the catches originated from the Subarea 1 C, the remainder from SA 1 D. In this region fishing was done in January and by Zubringer-trawler, in SA 1 C the fishery was carried out by factory-trawlers in December.
The decrease of the nominal catch (1974 = 3348 tons) was mainly attributed to reduced effort and decreased c.p.u.e. In December the catch per hour amounted to 2,7 tons and has declined by 75 % compared to 1974. This decrease seems to be mainly caused by more unfavourable environmental conditions.

B. Special Research Studies

No sampling or other studies were carried out in this Subarea during 1975.

Subarea 2 and 3

A. Status of the Fisheries

The nominal catches in the Subareas 2 and 3 K amounted to 30290 tons (1974 = 32389 tons). The decline of the nominal catch relates to cod and Greenland halibut (Table 2).

Table 2: Nominal catches(in 1000tons) in SA 2 and 3 K

	2 H	2 J	3 K	Total 1975	Total 1974
Cod	0.2	11.6	10.6	22.5	25.1
Roundnose gr.	2.3	0.4	+	2.7	1.8
Greenland h.	0.7	0.8	0.6	2.0	2.7
Redfish	+	1.8	0.6	2.5	2.5
Flatfishes	-	0.1	0.3	0.4	0.3
Others	-	+	-	o.2	+
Total	3.3	14.8	12.2	30.3	32.4

1. Cod

Fishing for cod was mainly carried out from January to March in SA 2 J and from February to March/April in SA 3 K. The total effort was the same as in 1974. An effort in the Subareas 2 and 3 K was some/what different in both years. In 1975 35 % and in 1974 28 % of the total effort was recorded in SA 3 K.

The decrease of the nominal catch of cod was attributed to lower catch per effort. The catch per hour of the "Zubringer-trawler" declined by 14 %.

Table 3: Catch per hour of the "Zubringer-trawler" in SA 2J/3K (tons)

Year	Total	Cod	Redfish	Grld. halibut
1974	3.20	2.74	0.22	0.20
1975	2.84	2.37	0.24	0.14

The decline of c.p.e. was mainly caused by variations in the stock size. The full exploitation of the year classes before 1970 and the absence of strong year-classes after 1970 resulted in a reduction of the catches per unit effort. The year-classes of 1968 dominated with length-groups of 51 to 57 cm.

2. Redfish

Redfish was mainly taken as by-catch in the cod fishery. The percentage amounted to 12 % in SA 2 and 5 % in SA 3 K. There was no change in nominal catch and in catch-per-effort compared to 1974 (tables 2 and 3).

3. Greenland halibut

Greenland halibut was mainly fished as by-catch in the fishery of cod (1326 tons) and in the fishing for roundnose grenadier (699 tons). The portion of Greenland halibut in these fischeries amounted to 5 % resp. 21 %.

The nominal catch in Subareas 2/3K declined by 26 % due to a decrease of the catch-per-effort in the cod fishery (table 3). In the fishery of roundnose grenadier the catch-per hour increased on the average more than twofold the amount of the year 1974 (table 4).

No sufficient data on stock composition are available, but the changes in the level of catch-per-effort seem to be caused by different environmental conditions.

4. Roundnose grenadier

Directed fishing for roundnose grenadier was mainly carried out from August to October in 2 H. In 1974 this fishery took place in October/November in 2 H and G.

The increase of the nominal catch from 1764 tons in 1974 to 2705 tons in 1975 was caused by an enlarged effort in the directed grenadier fishing (from 39 to 53 fishing days) and by a catch of 403 tons resulting from the period of cod fishing. In the year before during the cod season no roundnose grenadier has been fished.
The catch-per-hour in the directed grenadier fishery remained stable (table 4).

Table 4: Catch-per-hour in the directed roundnose grenadier fishery in SA 2

Year	Total	R.grenadier	G. halibut
1974	6.54	5.56	0.76
1975	8.08	5.67	1.72

B. Special Research Studies

1. Environmental studies

In Subarea 2 J and 3 K (fishing area) measurements of bottom and surface temperature and salinity on 17 fishing stations were carried out.

2. Biological studies

a) Cod

During the planned groundfish survey only a small area was investigated because of an engine-trouble of the RV "Ernst Haeckel".
Therfore only 24 trawling stations within the fishing area of our fleet were carried out in February 1975 (27 in 300 - 500 m and 7 in 201 - 300 m).

Research-vessel-samples and commercial samples are summarized in table 5:

Table 5: Cod samples (specimens) 1975, ICNAF 2 J and 3 K

Area	Month	Measured	Aged	Weighted	Research/ commercial
2 J	January	792	299	-	commercial
3 K	February	19204	2279	2275	research

In January as well as in February and in area 2 J as well as in area 3 K cod of 50 - 60 cm predominated, related to year-classes 1968 and 1967. Moreover year-classes younger than 1969 showed a very low abundance.

b) Redfish

391 measured specimens (Subarea 3 K) [a/] showed length range of 21 - 49 cm. (Mean length 28,65 cm). The female-male-relation was 58 % : 42 %. Mean length of females was 29,87 cm and of males 28,65 cm.

c) Greenland halibut

In February 200 Greenland halibut were measured in Subarea 3 K. Scales and otoliths were taken for age reading. The lengths of Greenland halibut ranged from 24 - 82 cm which is related with the year-classes from 1956-1972.

Subarea 4

A. Status of the Fisheries

In this Subarea only 1 day fished was recorded. 17 tons squid were fished by a factory trawler in June in SA 4 X.

B. Special Research Studies

1. Environmental Studies

No investigations were carried out.

2. Biological Studies

In the course of the ICNAF-Herring-Survey in March in SA 4 X (region Browns Bank). One herring sample was investigated on board RV "Ernst Haeckel". 1226 fishes were measured. All herringe belonged to the year-class 1973. The length range was 9 - 15 cm.

Subarea 5 and 6

A. Status of the Fisheries

In 1975 the nominal catches of the GDR amounted to 82636 t. They decreased by 13.5 % compared to 1974. The decline of the catches concerned all main species, but particularly mackerel. The mackerel catch decreased by 19.4 %.

Table 6: Nominal catches (1000 tons) in SA 5 and Area 6

	5 Z	6	total 1975	total 1974
Mackerel	25.6	22.8	48.4	59.9
Herring	30.1	0.8	30.9	32.5
Alewife	1.3	0.8	2.1	2.6
Squids	0.9	+	0.9	-
Saithe	0.1	-	0.1	+
Others	0.1	0.1	0.2	0.5
Total	58.1	24.5	82.6	95.5

1. Mackerel

In 1975 and in 1974 98 % of the mackerel catch in SA 5 and 6 were taken by factory trawlers.
In 1975 three quarter of that catch originated from the spring fishery; in 1974 this portion amounted to 82 %.

In the spring fishery (January - May) the nominal catch of factory trawlers declined from 48322 tons to 35637 tons. The effort (days fished) decreased by 1 % and the catch per day fished (weighted average) by 25 %.
In the autumn fishery (November - December) the nominal catch increased from 10431 tons to 11872 tons. The effort decreased by 6 % and the catch per day fished (weighted average) increased by 21 %.

As a measure of mackerel abundance the unweighted average of the catch per day fished for the seasons was calculated (Table 7).

Table 7: Mackerel catch per day fished of factory trawlers in 1974 and 1975 (tons)

	weighted average	unweighted average
January - May 1974	59.0	53.4
1975	44.2	49.3
November-December 1974	22.1	24.1
1975	29.5	29.8

According to the unweighted average in the spring fishery the abundance diminished by 8 % compared to 1974. The decrease of the catch per effort is attributed to minor availability of the stock of 4 - year old and older fishes in the first quarter, when the 2-year olds (yearclass 1973) dominated in the catches. In April and May the share of older age groups up to 8 years olds increased to 68 % and 61 % respectively, and the catch per effort of these month was higher compared to 1974. In January only 50 % of the c.p.e. of the foregoing year was achieved, but in the course of the season catches increased from month to month. Therefore it seems that unfavourable environmental conditions have strongly influenced the availability of the mackerel stock.
In the autumn fishery the abundance increased by 24 %. In October and November the recruiting yearclass 1974 (1-year-olds) was recorded with a portion of 42% and 56% in the catches. The size of the yearclass 1974 seems to be above the average.

2. Herring

Herring fishery was mainly carried out from June to October. In November a considerable amount of herring was fished, too.
Factory trawlers brought 64 % of the total herring catch, 33 % the "Zubringer trawlers". Minor nominal catch-according to quota - was caused by lower catch per effort. In the period from June to December catch per day fished of "factory trawlers decreased by 15 %.
In the main fishing season - adequate to the moon phases - the catch per day fished of factory trawlers decreased only slightly (table 8).

Table 8: Catch per day fished of factory trawlers of typ I b

Year	Period	Catch per day (tons)
1973	14. Aug.-18.Oct.	61
1974	1.Sept. - 5.Nov.	38
1975	21. Aug. - 27. Oct.	36

The size of the herring stock further decreased because the recruiting yearclasse 1972 appeared as a weak one and the yearclass 1971 increased its share only by some per-

cent. In the GDR - catches. the yearclass 1972 accounted to 2 % and the yearclass 1971 to 14%. The main basis of the fishery was represented by the yearclass 1970 (76%) further on.

3. Alewife [1)]

The decline of the nominal catch was caused by a large effort reduction of side-trawlers. Only 9 % of the catch were fished by that type of vessel. 90 % of the alewife catches originated from fishing of factory trawlers. In November in SA 5 and 6 nearly 50 % of the total amount were achieved.
In the spring fishery in SA 6 and 5 the remainder was mainly fished.

4. Squids

The nominal catch amounted to 915 tons (620 tons Loligo, 295 tons Illex). Squids were mainly fished in the course of the herring season between June and August. The main fishing grounds were situated south of Nautucket (June) and on Franklin Swell (August).

B. Special Research Studies

1. Environmental studies
During the ICNAF-herring survey, March 1975, temperature and salinity observations were carried out on board "Ernst Haeckel" in SA 5 Z and 5 Y. 70 hydrographic stations were accomplished.

2. Biological studies

a) Mackerel
Sampling was carried out on board factory trawlers in nearly all months in which mackerel fishing has been carried out (Table 9).

Table 9: Volume of sampling of commercial mackerel catches

Month	Samples	Measure-ments	Age determinations
I	3	807)	
II	12	3479)	397
III	23	7838)	
IV	22	3392)	81
V	5	860)	
X	3	603)	185
XI	12	4550)	
Total	80	21529	663

In March on board research vessel 20 samples of mackerel were taken. 3806 specimens were measured and 235 ones were aged. From 598 fishes weight and sex/maturity were recorded. The yearclasses 1973 and 1974 predominated.
Investigations were carried out for identification of the two mackerel stocks present in SA 5 and 6 during the winter/spring season. Preliminary results showed the presence of two distinct different otolith types in the SA 5 and 6.

b) Herring
Sampling was accomplished on board factory trawlers from August to November in SA 5 Ze (table 10)

Table 10: Volume of sampling of commercial herring catches

Month	Samples	Measure-ments	Age determination
VIII	4	1011	202
IX	32	10275	2262
X	12	3878	596
XI	2	465	-
Total	50	15629	3060

In March in SA 5 Z/5E a young herring survey was carried out by RV "Ernst Haeckel" as part of the corresponding ICNAF-programme.
30 samples were taken, 4737 herrings were measured and 698 aged.

The yearclass 1970 contributed 64 % to the catches, 8 % belonged to the yearclass 1971 and 4 % to the yearclass 1972. In these Subareas almost no herrings of the yearclass 1973 were caught.

c) Other species

During the herring survey of RV "E.Haeckel" in March sampling of by - catch of numerous other species was accomplished (table 11)

Table 11: Volume of sampling of other species

Species	Samples	Measurements
Silver hake	27	3415
Red hake	23	608
Haddock	10	307
Alwife	25	769
Allis shad	15	143
Ocean pout	19	138
Longhorn sculpin	25	672
Atlantic silveside	6	61
Round scad	28	244
Yeller tail flounder	20	383
Winter flounder	10	36
Cod	23	262
Picked dogfish	28	1340
Sea raven	11	37
Winter skate	9	19
Saith	9	31
Longfinned squid (Loligo spec)	11	181
Fourspot flounder	9	225
Atl butterfish	3	69
Scophthalmus aquosus	26	767
Northern lobster	4	12
Northern sea robin	2	5
Eelpouts	1	4
Crabs	2	3
American plaice	5	6
American sand lance	1	2
Witch	2	4
Tilefish	1	1
Northern pipefish	1	1
Gaidropsarus ensio	1	1
Sea lamprey	1	1
Pleuronectes spec	8	58
Angler fish	4	5