



1950

**International Commission
for the
Northwest Atlantic Fisheries**



1970

RESTRICTED

Serial No. 2402
(D.a.69)

ICNAF Res.Doc.70/16ANNUAL MEETING - JUNE 1970Polish Research Report, 1969

by F. Chrzan
Sea Fisheries Institute, Gdynia

Total Polish catches in the ICNAF Area decreased from 187,042 tons in 1968 to 159,863 tons in 1969. This was due primarily to the decreased yield of cod in Subarea 2 and of herring in Subarea 3.

In Subareas 2 and 3, twenty-three factory trawlers, of 2600 gross tons each, operated mainly for cod in winter season. In other seasons along with cod they caught other species. These vessels made 63 trips to ICNAF Area as compared to 67 trips of 22 factory trawlers in 1968. Moreover, 7 large freezing trawlers of the capacity 3100 gross tons each, 4 freezing trawlers of 1400 gross tons, 10 side motor trawlers and 29 steam trawlers participated in fishing operations in Subareas 4 and 5. These vessels caught mainly herring and in the second place mackerel. In total they made 111 trips compared to 110 trips of freezing vessels and side trawlers made in 1968. Vessels of smaller tonnage, similarly as in 1968, operated along with three mother-ships, reducing in this way the loss of time for voyages across the ocean between fishing grounds and home ports. The comparative data for the years 1969 and 1968, including major species and their ~~relative~~ percent relation in the catches, are given in Table 1.

Table 1.

Species	1969		1968	
	tons	percent	tons	percent
Redfish	14,083	8.8	7,260	3.9
Cod	76,680	48.0	90,941	48.6
Flatfish	2,196	1.4	4,120	2.2
Greenland halibut	5,440	3.4	5,808	3.1
Halibut	91	0.1	90	0.1
Haddock	458	0.3	1,296	0.7
Hake	292	0.2	923	0.5
Mackerel	13,448	8.3	10,300	5.5
Herring	37,223	23.3	64,317	34.4
Other species	9,952	6.2	1,987	1.0
Total	159,863	100.0	187,042	100.0

Above data show rather slight increase of redfish, mackerel and other species in the catches along with simultaneous decrease of landings of cod, haddock, hake and particularly herring.

Subarea 1

A. Status of the Fisheries

In May 1969 one of the factory trawlers made an attempt to fish in the Divisions 1C, 1D and 1E. It did not obtain satisfactory results /only 10.6 tons per day/ and therefore left these fishing grounds, moving over to other ones, in which it could obtain better fishing yield. The catch and fishing effort in Subarea 1 are given in the Table 2.

Table 2.

ICNAF Div.	Catch in metric tons			No hours fishing	No days fished
	Redfish	Cod	Other species		
1C	2	144	-	166	17
1D	2	92	-	87	11
1E	1	118	1	44	6
Total	5	354	1	297	34

No research studies were carried out in Subarea 1.

Subarea 2

A. Status of the Fisheries

At the top of the season 21 factory trawlers operated in Subarea 2. Their activity was the highest in the period from January till March. In the other months fishing intensity was very low, while in August and September Polish fishing fleet did not operate at all in the waters of Labrador. Landings and fishing effort in Subarea 2 are given in the Table 3.

Table 3.

ICNAF Div.	Catch in metric tons						No hours fishing	No days fished
	Redfish	Cod	Greenland halibut	Halibut	Flatfish	Other species		
2G	-	1,149	67	2	4	-	400	30
2H	73	14,704	929	2	197	-	6,142	495
2J	485	46,148	1,265	16	384	12	15,310	1,324
Total	558	62,001	2,261	20	585	12	21,852	1,849

Fishing operations were commenced in January in the fishing grounds of Div. 2G and 2H. There were obtained good results, but ice floes moving from the north compelled the vessels to

shift towards fishing grounds in the Division 2J. Here the abundance of fish, however, was not as good as in those fishing grounds which were covered with ice. The proper season of cod catches ended in the first days of April. Daily fishing yields in Subarea 2 in consecutive months were as follows: January - 35.9 tons; February - 48.8 tons; March - 42.4 tons; April - 14.8 tons; May - 13.0 tons; June - 19.2 tons; July - 12.1 tons; October - 13.5 tons; November - 12.0 tons and December - 25.8 tons.

Polish vessels use bottom trawls in their operations in the fishing grounds of Labrador. By means of this type of ~~gear~~ gear they fish cod in winter and flatfish in other seasons. Since many years there is used the same type of fishing gear and therefore it is interesting to compare mean annual fishing yields per 1 hour trawling. In the recent four years they were as follows: in 1966 - 2.65 tons, in 1967 - 2.45 tons, in 1968 - 3.27 tons and in 1969 - 2.99 tons.

In view of decreased fishing yield obtained in the period from April till November the number of vessels operating here was smaller than in 1968. In general, the fishing effort /number of hours fishing/ in the fishing grounds of Subarea 2 was decreased by 3% in comparison to that in 1968.

B. Special Research Studies

I. Cod

In the Div. 2H aboard MT "Dalmor" 7565 cod were measured and 1132 otoliths read for age. The observations included length and age composition at various depths. On the average the length of cod specimens in the sample ranged from 24 to 86 cm. and their age from 2 to 19 years. Along with increasing depth occurred larger and older fish.

At the depth of 300 - 350 m. the lengths of cod in the catches were 24 - 77 cm. and their age 2 - 18 years. Most fish were 30 - 38 cm. in length, being 4 and 3 years old /year-classes 1965 and 1966 - in total 54.6%/.

Cod caught at the depth of 350 - 400 m. were in the length 24 - 83 cm. They were 2 to 18 years old. The most abundant were individuals of the length 45 - 59 cm., 6 and 7 years old/year-classes 1963 and 1962 - 42.0%/. Mean length of these fish was 50.2 cm.; mean age - 6.8 years.

At the depth of 400 - 450 m. cod in the catches were of the lengths 27 - 86 cm. Their age was determined to be from 3 to 19 years. Mean length of these fish was 51.6 cm. and mean age 7.1 years. Also at this depth was caught cod of the length 45 - 49 cm. and of the age 6 and 7 years /year-classes 1963 and 1962 - 45.9%/, as at the depth 350-400 m.

At the depth below 450 m. cod were 30 - 83 cm. in length and of the age 3 - 19 years; their mean length - 55.4 cm. and mean age - 8.0 years. The most abundant group at this depth made individuals of the length 48 - 62 cm. and age 6 of 6, 7 and 8 years /year-classes 1963, 1962 and 1961 - in total 60.2%/.

In Div. 2J 10,254 cod were measured and 1411 otoliths read for age. As in Div. 2H also here distinctly marked differences were noted as regards length and age of cod caught at various depths.

At the depth of 350 - 400 m. the length of cod occurring in the catches ranged from 24 to 83 cm. and their age from 2 to 18 years; their mean length was 49.8 cm., mean age - 6.4 years /year-classes 1963 and 1962 - both up to 57.0%/

At the depth of 400 - 450 m. the catch consisted of fish 30 - 80 cm. in length and age of 3 to 19 years; their mean length - 54.0 cm., mean age - 7.1 years. In the catches predominated cod of the length 45 - 62 cm., 6 and 7 years old /year-classes 1963 and 1962, which made up 59.0% of the catch/.

Cod captured at the depth below 450 m. were of the length 33 - 95 cm. and of the age 2 to 18 years - their mean length was 59.6 cm. and their mean age - 8.0 years. The most abundant in the catches were fish 51-65 cm. in length, 6, 7 and 8 years old /year-classes 1963, 1962 and 1961 - in total 61.9%/.

During the period of observations, i.e. in January and February, the following fishing yields were obtained from particular depths:

350 - 400 m.	-	5060 kg. per 1 hour fishing
400 - 450 m.	-	4200 kg. per 1 hour fishing
and below 450 m.	-	4990 kg. per 1 hour fishing.

II. Redfish

In Div. 2J 1009 redfish /type mentella/ were measured and 200 of their otoliths read for age. The length of these fish ranged from 20 to 51 cm. - mean length was 33.2 cm. Most often in the catches occurred fish of the length range 30 - 36 cm., of the age from 9 to 14 years.

III. American plaice

In Div. 2J 4279 specimens of this species were measured and 499 otoliths collected. In the sample in February occurred fish 25 - 66 cm. in length with mean length of 44.2 cm. The age of these fish was determined to be within the age groups VI to XX+, while most of fish were of the length ranging between 40 - 52 cm. and belonged to age groups XIV to XVII.

In May and June in the same Division occurred fish of the lengths 23 - 60 cm. /mean length 37.2 cm./ within age groups IV - XX+. Most often occurred here fish in the length -classes 29 - 40 cm., belonging to age groups VII - X.

IV. Greenland halibut

1084 fish were measured in May aboard commercial vessel. Their length ranged 30 - 90 cm.; mean length - 52.9 cm. The most abundant were fish of the lengths from 45 to 65 cm., which made up 76.5% of the catches.

Subarea 3

A. Status of the Fisheries

In this Subarea factory trawlers operated mainly in the period from April till July. In the other months of the year fishing operations were considerably less intensive. Catch and fishing effort in Subarea 2 are given in Table 4.

Table 4

ICNAF Div.	Catch in metric tons				No hours fishing	No days fished	
	Redfish	Cod	Greenland halibut	Halibut			Flatfish
3K	5,194	13,303	3,128	23	1,393	14,092	910
3L	247	78	17	-	31	503	39
3O	345	193	10	5	3	500	37
3Ps	780	6	3	7	-	587	36
Total	6,566	13,580	3,158	35	1,427	15,682	1,022

Above data show that fishing operations were carried out mainly in Div. 3K. Both the effort and fishing yield were subject to considerable fluctuations. Mean daily yields in consecutive months were as follows: April - 28.7 tons, May - 28.0 tons, June - 15.0 tons, July - 19.1 tons, August - 20.6 tons, September - 13.1 tons and October - 11.8 tons. In the other Divisions of Subarea 3 the intensity of fishing operations was low. Reconnaissance for redfish gave rather poor results.

It might be interesting to make comparisons of catch per unit effort for Polish factory trawlers in the recent two years in Subarea 3. According to our data the catch per 1 hour trawling in 1968 amounted to 1.33 tons, while in 1969 it was 1.58 tons. In spite of an increase of catch per unit effort total landing decreased from 31,234 tons in 1968 to 24,766 tons in 1969. This was caused by withdrawal of a considerable number of vessels, which were shifted to fishing grounds in Barents Sea. Thus catch per 1 hour trawling was reduced by 33.4% as compared to 1968.

B. Special Research Studies

I. Cod

Sampling was carried out only in Div. 3K. In June and July total of 3370 cod, caught at the depth 250-300 m. and 300 - 350 m., were measured.

The length of fish from the depth of 250 - 300 m. ranged from 27 to 86 cm.; mean length - 52.4 cm. Most of captured cod were in the length ranging from 42 to 62 cm. These were fish 5, 6 and 7 years old /year-classes 1964, 1963 and 1962/ which made up 64.2% of the catch.

The length of cod caught at the depth of 300 - 350 m. ranged from 21 to 92 cm. with mean length 48.6 cm. Cod of the length 42 - 56 cm. made up 68.4% of the catch. They were 5, and 6 years old fish, i.e. year-classes 1964 and 1963.

II. Redfish

1932 redfish specimens /type mentella/ were measured in Div. 3K. They were 24 - 51 cm. in length /mean length 38.8 cm./. Most of fish were of the length 35 - 40 cm. Age readings from otoliths showed that they were fish of the age ranging from 5 to 32 years. However most of captured fish

were 14 to 21 years old.

Also 1278 specimens of redfish of the type marinus were measured. Their lengths were 31 to 68 cm.; mean length - 49.5 cm. The most abundant were fish 47 - 55 cm. in length. According to otolith readings in the sample occurred fish 11 to 32 years old.

III. American plaice

1690 fish were measured aboard MT "Columba" in May and June in Div. 3K. The lengths of these fish ranged 20 - 62 cm. /mean length - 42.4 cm./. Age groups V to XX+ were determined on the basis of 254 otolith readings. Age groups XIII to XX+ made in total 68.7% of the catches of this species.

IV. Witch

Observations on length and age of witch were carried out in the period from May till July in Div. 3K. 2216 fish were measured and 355 otoliths read. The fish of the lengths 22 - 65 cm. with mean length 46.3 cm. occurred here. Most of the fish in the catches were in the length range 40 - 47 cm. In total age groups III to XX+ were determined. In the catches the most abundant were age groups X to XVII, making 64.8% of the landings of this species.

V. Greenland halibut

In Div. 3K 971 fish were measured. They were 30 - 90 cm. in length; their mean length was 55.3 cm. The length-classes 45 - 65 cm. made up 67.8% of the catches.

VI. Grenadier

During the catches, carried out in the region of Ritu Bank and Sundall in the period from May till July, 3096 specimens of the species *Macrourus berglax* were measured. The length of these fish ranged from 31 to 85 cm., though most of the fish were 46 - 65 cm. in length and made up 71% of the catches of this species.

203 otoliths of this species were collected, but their reading for age was very difficult in spite of application of different methods of preparation. On the basis of those otoliths which could be read it may be assumed that in sample occurred fish 2 to 17 years old. Probably there were also older fish.

Subarea 4

A. Status of the Fisheries

6 Factory trawlers, 3 freezer-trawlers of the capacity 3100 gross tons each and 1 side motor trawler fished mainly redfish and herring in this Subarea. Their fishing operations were carried out in the first quarter of the year for herring and in the period from September till November for redfish. The landings and fishing effort are given in the Table 5.

Table 5.

ICNAF Div.	Catch in metric tons					No hours fishing	No days fished
	Redfish	Cod	Flatfish	Herring	Other spe- cies		
<u>Factory trawlers</u>							
4Vn	4	71	13	-	-	125	12
4Vs	6,894	21	67	-	-	4,892	323
<u>Freezer-trawlers of 3100 gross tons each</u>							
4Vs	-	13	-	4,593	875	1,604	160
4X	-	-	-	140	50	106	6
<u>Side motor trawler</u>							
4X	-	-	-	122	29	148	22
Total	6,898	105	80	4,855	954	6,875	523

Herring catches were carried out by freezer-trawlers mainly in Misaine Bank and Banquereau Bank in Div. 4Vs. Also redfish were caught in the region of Banquereau Bank. Factory trawlers operating for redfish obtained the following daily yields: in September - 17.3 tons, in October - 21.3 tons, in November - 24.3 tons and in December - 8.9 tons. Freezer-trawlers fishing herring obtained much higher yields: in January - 26.4 tons, in February - 33.0 tons, in March - 39.0 tons and in April - 33.9 tons per day

B. Special Research Studies

I. Herring

1230 fish were measured mainly on Misaine Bank, from 10% of which the ~~otoliths~~ otoliths were collected. The length of fish ranged 26 - 38 cm. with mean length 32.3 cm. It was very difficult and partly even impossible to determine the age of fish of the length above 33.5 cm. The presence of age groups III to

XIII was found. Probably there were also older age groups.

II. Argentine

The results of research studies on this species are given in the contribution to XX ICNAF Annual Meeting: Cz. Żukowski - Some biological data on argentine /Argentina silus Ascanius/ from Nova Scotia Area.

Subarea 5

A. Status of the Fisheries

In this Subarea operated 5 factory trawlers, 9 large freezer-trawlers /3100 gross tons/, 4 smaller freezer-trawlers /1400 gross tons/, 10 side motor trawlers and 29 steam trawlers. The side trawlers, both motor and steam ones, operated along with mother-ships. Landings and fishing effort are given in Table 6.

Table 6.

ICNAF Div.	Catch in metric tons						No hours fishing	No days fished
	Cod	Haddock	Hake	Herring	Mackerel	Other species		
<u>Factory trawlers</u>								
5Ze	75	-	-	1,680	-	435	1,705	165
<u>Freezer-trawlers of 3100 gross tons each</u>								
5Ze	69	458	292	4,975	3,085	2,073	4,814	455
5Zw	152	-	-	1,211	1,050	983	990	106
<u>Freezer-trawlers of 1400 gross tons each</u>								
5Ze	107	-	-	2,469	2,125	3,346	4,275	344
<u>Side motor trawlers</u>								
5Ze	113	-	-	6,870	4,307	930	8,789	1,063
5Zw	94	-	-	313	992	203	882	136
<u>Side steam trawlers</u>								
5Ze	21	-	-	14,542	1,787	1,223	27,026	2,742
5Zw	9	-	-	308	75	55	609	64
Total	640	458	292	32,368	13,421	9,248	49,090	5,075

In Georges Bank steam trawlers commenced fishing operations for herring already in February. In successive months they obtained the following total yield /herring and other species together/: February - 5.81; March - 5.55; April - 6.72; May - 8.54; June - 6.99; July - 7.27; August - 5.09; September -

- 6.89; October - 5.17 and November - 5.56 tons per day.

Side motor trawlers commenced their operations first in May. Their catch in tons per day was as follows: May - 11.45, June - 14.38, July - 11.35, August - 11.18, September - 12.60, October - 9.60, November - 9.09 and December - 10.67. In the last two months these trawlers fished also in the Subdivision 5Zw obtaining the yields: in November - 11.50 tons and in December - 12.67 tons per day.

Large freezer-trawlers operated also in the period from May till December. Having larger freezing capacity they caught comparatively more of other species along with herring than side trawlers. Their yields /including all captured species/ were as follows: May - 34.14; June - 26.78; July - 19.56 August - 23.13; September - 23.29; October - 23.77; November - 31.23 and December - 22.25 tons per day. In Subdivision 5Zw these vessels obtained even higher yields: in November - 34.60 and in December - 29.06 tons per day fishing.

Smaller freezer-trawlers caught other species along with herring, particularly mackerel. The yields obtained by these vessels in the period from June till December were subject to considerable fluctuations and were as follows: June - 24.04; July - 28.65; August - 22.51; September - 28.61; October - 19.89; November - 21.50 and December - 21.60 ton per day fished.

Factory trawlers operated for herring in the period from July till October, obtaining, however, rather poor results: July - 11.87 tons; August - 17.61 tons; September - 12.66 tons and October - 12.60 tons per day.

B. Special Research Studies

I. Herring

The observations on herring were carried out both in Georges Bank and in the fishing grounds of the region of Cape Cod. The results of the studies are given in two contributions to XX ICNAF Annual Meetings:

1. F.Chrzan, B.Draganik - Length and age composition of herring in Polish catches (Res.Doc.70/62).
2. B. Draganik, B.Rast - The fecundity of Georges Bank herring, (Res.Doc.70/63).

II. Redfish

Observations on redfish, which was rather a by-catch in the fishing grounds of Georges Bank, were carried out aboard MT "Centaurus". 572 fish were measured and 100 otoliths collected. The lengths of redfish/type mentella/ ranged from 18 to 42 cm. with mean length of 25 cm. In the catches, however, most often occurred fish individuals 21 - 27 cm. in length. From otolith readings the span of age of redfish from Georges Bank was found to be from 5 to 20 years. The most frequent group in the catches were fish 6 to 9 years old.