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Northwest Atlantic



Fisheries Organization

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Polish Research Report, 1988

by

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Introduction

The total catch by Polish fishing vessels in NAFO Subareas 2 to 6 in 1988 amounted to 11,880 metric tons compared to 7,623 metric tons in 1987 (Table 1). The raise was mainly due to the increased Polish mackerel allocation within the US fishing zone from 5,000 metric tons in 1987 (special research quota) to 10,950 metric tons (commercial fishing quota) in 1988 (Table 2). Accordingly, a slight increase in the amount and number of species taken as by-catch in the directed mackerel fishery in 1988 can be noted. That refers particulary to spiny dogfish, dogfish sharks, alewife, blueback herring and scup (Table 1).

The level of Polish catches in the Canadian fishing zone in 1988 remained approximately unchanged. The only two quotas almost fully utilised there were these of Greenland halibut (500 metric tons) and witch flounder (765 metric tons) in Divisions 2J + 3KL (Table 2). Cod and Greenland halibut quotas both allocated in Divisions 2GH as well as redfish quota in Divisions 2 + 3K and roundnose grenadier quota in Subareas 2 + 3 could not be at all (cod) or fully taken due to scarcity of suitable commercial concentrations formed by these species. Lack of any aggregations of sufficient density prevented utilization of Illex quota in Subareas 3 + 4. The capelin - directed fishery could not be undertaken due to obvious economical losses involved at the allocated quota level (Table 2).

In general, 82.5% of the overall catch by Polish fishing vessels consisted of mackatel followed by Greenland halibut (7.6%) and witch flounder (6.4%). Other species' constituted below 0.6% each (Table 1).

<u>Subarea_2</u>

Status_of_Fisheries_and_Research

The total catch by the only Polish fishing vessel m.t. "Andromeda" (B-15 type) operating in that area in 1988 was 474 metric tons compared to 873 metric tons caught by the same vessel in 1987. The whole catch in 1988 was taken in Division 2H, while in 1987 that Division contributed to less than 20% of the Subarea 2 total and the remaining part was taken in Division 2J. The bulk

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of catches (414 metric tons) consisted of Greenland halibut. Other species taken as by-catch included American plaice, Atlantic redfish, skates, wolffishes and roundnose grenadier (Table 3). The break down of the overall catch by month and species is shown in Table 4.

No biological samples from Subarea 2 catches were collected since the Sea Fisheries Institute could not send a research team for the cruise which lasted about 6 months (October 1987 through March 1988).

<u>Subarea 3</u>

Status of Fisheries and Research

The fishing operations of the Polish trawler in that Subarea were limited to Division 3K. They yielded the major part (66.1%) of the Polish catch in Canadian waters amounting to 1366 metric tons (Table 3). Thus the catch was somewhat greater than that in 1987 when 1208 metric tons were taken. The bulk of the total (55.6%) amounting to 760 metric tons consisted of witch flounder, followed by 490 metric tons of Greenland halibut (35.9%). The by=catch, in addition to a small amount of Atlantic cod and Atlantic halibut (Table 3), comprised the same species as captured in Subarea 2. Monthly catches by species in Subarea 3 by the Polish vessel are shown in Table 4.

Dué tô the reasons already mentioned with reference to sampling in Subarea 2 no biological data were collected.

<u>Subarea 4</u>

Status of Fisheries and Research

A single B-29 type freezer-trawler (m.t. "Kunatka") operated in that Subarea during 22 fishing days (10 days in Division 4X and 12 days in Division 4W) conducting exploratory fishing for mackerel and biological sampling on the basis of a bilateral agreement with Canada. The activity resulted in only 227 metric tons of total catch, of which Atlantic mackerel costituted 158 metric tons and Atlantic herring - 69 metric tons (Table 5). The whole amount of herring was taken in Division 4W.

The biological samples were collected only from mackerel catches. Length of 4455 mackerel specimens was measured. Their fork length ranged from 29 to 45 cm. Bulk of the fish measured was confined to length classes 34 - 40 cm (Table 6). The most abundant were mackerel from the 1983 year-class (up to 47.8%), followed by the 1984 year-class (up to 25.7%) and the 1982 year-class (up to 18.2%), (Table 7). Gonads of more than 60% of mackerel specimens were at maturity stage 5 (gravid) while 36.2% were at stage 4 (developed), (Table 8). More than 50% of the specimens sampled had empty stomachs or filled with traces of food only (Table 9). Stomachs of about 1/3 specimens were filled to less than half of their volume. The remaining part consisted of fish with almost full (13.2%) and full (1.7%) stomachs.

Subarea 5 and Statistical Area 6

Status of Fisheries and Research

Total catch of all species caught by Polish fishing fleet in both Subarea 5 and Statistical Area 6 amounted to 9813 metric tons. More than 12% of it (1218 metric tons) were taken in Subdivision 5Zw (Table 10). Mackerel costituted 98.3% of the total Polish catch in these areas. Among the by-catch species the most abundant was spiny dogfish (0.5%), followed by Atlantic herring (0.3%), dogfis sharks, scup and alewife (0.2% each), (Table 10).Share of other species was 0.1% or less in each case. The distribution of mackerel catches by month, division and GRT-class is shown in Table 11. About 64% of the total mackerel catch was caught by trawlers of GRT-class 6 (B-29 type). The highest share

(43.1%) was taken in March, most of it in Division 6A, followed by the proportion taken in February (27.0%). Shares taken in January and April were almost equal (about 14 % each). The amount taken in Division 6A constituted more than 77% of the total. Contributions from other Divisions were as follows: 5Zw = 12.3%, 6B = 7.4%, 6C = 1.5%, 4X = 1.0% and 4W = 0.7%.

Biological sampling of mackerel catches, like that in Subarea 4, comprised length measurements, collecting of otoliths, maturity of gonads and stomach fulness determination. 7723 mackerel specimens from catches in Division 6A were measured, of which 6016 specimens taken in March and 1707 specimens captured in April (Table 6). Fork length of mackerel sampled in March ranged from 25 to 45 cm while those measured in April was from 29 to 45 cm. The bulk of specimens in March was grouped within length classes 31 - 38 cm while in April the most frequent were 33 - 38cm length classes (Table 6). The mackerel catches age structure in Division 6A like that in Division 4 was dominated by the 1983 year-class (up to 44.2%), followed by the 1984 year-class (up to 38.8%), the 1982 year-class (up to 16.6%) and the 1985 year-class (up to 12.2%), (Table 7).

The majority of mackerel gonads in March (49.7%) reached maturity stage 4 (developed). A considerable proportion (37.8%) of gonads was still at stage 3 (developing) Fish with gonads at stage 5 (gravid) constituted only a small part of the total (3.3%). The share of the latter raised dramatically in April (41.2%) while the proportion of fish having resting and developing gonads sharply declined (Table 8). Both in March and April the bulk of mackerel stomachs was empty or almost empty (65.8% and 62.9% respectively). A slight increase in feeding activity in April was reflected by the increased share of stomachs showing 1 and 2 degree of fulness (Table 9).

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Table 1 Polish catches tu NAFO Subareas 1-5 and Statistical Area 6 in 1987 and 1988 /metric tons/

Species	1987		1988	
	Tons	76	Tons	76
Atlantic cod	1	+	6	0.1
Atlantic redfish	41	0.5	36	0.3
American plaice	38	0.5	41	0.3
Witch flounder	765	10.0	760	6.4
Greenland halibut	1001	13.1	904	7.6
Atlantic halibut	6	0.1	3	+
Roundnose grenadier	1	+	17	0.1
Wolffishes	29	0.4	18	0.2
Atlantic herring	30	0•4	102 ^{1/}	0.9
Atlantic mackerel	5657	74•2	9802 ^{2/}	82.5
Atlantic menhaden	3	+	1	+
Bluefish	2	+	-	
Spiny dogfish	7	0.1	52	0 • 4
Dogfish sharks	-	_	16	0.1
Skates	19	0.2	64	0.5
Blueback herring	22	0.3	13	0.1
American shad	- ·	· _ ·	1	+
Alewife	· •	-	17	0.1
Butterfish	· •••	-	1	+
Scup	· · · · · · · ·	· · · · ·	17	0•1
Porgies	_	-	8	0.1
Other finfish	-	. '	1	+
Squid - Illex	1	+	-	-
Totals	7623	99.8	11880	99.8

Explanatory notes:

1/ 69 tons of the total was taken in Div.4W

2/ 158 tons of the total was taken in SA4

Species	Stock division	Catch quotas	Catches	<u>catch</u> quota /%/
Cod	26H	800		0.0
Greenland halibut	2GH	2000	414	20.7
Greenland halibut	2J+3KL	500	490	98.0
Witch flounder	2J+3KL	765	760	99.3
Redfish	2+3K	380	36	9•5
Roundnose grenadier	2+3	800	17	2.1
Mackerel	5+6	10.950	9644	88.1
Capelin	2+3	450	i	0.0 -
Squid - Illex sp.	3+4	1.000	-	0.0

Table 2. Polish allocations versus catches in NAFO area in 1988 /metric tons/

Table 3 Polish catches in SA2 /Div. 2H/ and SA3 /Div. 3K/, 1988 /metric tons/

Species	Di	vision	Total
···	2H	3K	/SA2+3/
Atlantic cod	-	6	6
Atlantic redfish	19	17	36
American plaice	25	16	41
Witch flounder	· 🗕	760	760
Greenland halibut	414	490	904
Atlantic halibut	_	3	3
Skates	7	48	• 55
Roundnose grenadier	<u>`</u> 4	13	17
Wolffishes	5	13	18
Total	474	1366	1840

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TABLE 4

/metric tons/

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Species			M	u o	t h				Total
	Feb.	Mar	Мау	Jun	Jul	Aug ·	Nov	Dea	
			τ Ω	с Ч Т	u o Ţ				
	ЭК	ЗК	ЗК	3K	2H	2H	2H	2H	
Atlantic cod			1	9	I	1	ſ	1	Q
Atlantic redfishes	1	~	I	16	15	2	۲۶ ۲۶	1	36
American plaice	4	4	ξ	ŝ	I	1	15	10	41
Witch flounder	133	599	جـ	27	1	1	1	1	760
Greenland halibut	27	64	4	395	167	22	129	- 96	904
Atlantic halibut	~	۳.	~	I	1	1	1	Ì	n
Roundnose grenadier	l	ŝ	l	ω	2	2		1	17
Skates	~	4	t	43	2	N	42	~	55
Wolffishes	I	√	1	12	۲	1	l	J	18
Total	166	679	6	512	191	2 8	148	107	1840

Table 5. Polish catches in SA4, 1988 /metric tons/

Species	Div	ision	Total
	4W	4X	
Atlantic mackerel	70	88	158
Atlantic herring	69	-	69
^T otal	139	88	227

Table 6 Length-frequencis of Polish Mackerel catches in 1938 /Div. 6A,4W,4X/

/by number and per m	nille/
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Length		Division /month						
-class /cm/	6A/Ma	rch	6A/AI	pril	4W/Mar	ÿ	4X/May	
, om/	No	. %	No	%	No	%	No ⁻	%
20					•7	3		
21	• • •				6	3		
22	•				. 8 .	4	анан сайтан Алан Сайтан Алан Сайтан	-
23					-			
24								-
25	1	+			•			
26	6	1					· · ·	
. 27	14	2						•
28	35	6						
29	58	10	1	1	. 3	1		
30	52	9	2	1	. 2	1		
31	117	19	7	4	3	1	1	• + •
32	285	47	27	16	9	4	5	2
33	596	99	84	49	20	9	8	-3
34	1341	223	340	199	174	81	44	19
35	1536	255	504	295	432	201	2 <u>5</u> 8	103
36	1074	179	383	224	624	290	44 1	1.91
37	430	71	179	105	393	183	551	239
<u>38</u>	170	- 28	63	37 -	224	104	462	201
39	85	14	40	23	125	58	228	5 99
40	60	10	25	· 15	37	17	<u>91</u>	. : 40
41	47	8	20	12	46	21	104	45
42	49	8	15	9	28	13	86	37
43	42	7	11	б	10	5	35	15
44	· <u>1</u> 2	2	3	2	1	+	6	3
45	6	1	3	2			3	1
· · ·	6016	999	1707	1000	2152	999	2303	998

Table 7 Age composition of Polish mackerel catches in 1988 /per mille/

13/19 14/74 15/73 16+ 2 2 2 3 4 2 2 2 3 1 4 5 5	
13/15 14/74 15/73 2 4 2 4 2 4 2 2 4 1 4 1 4	
13/15 14/74 2 2 4 2 1 4 1 4	
13/11	
	1
12/16 5 17 7	
11/17 1 5 17 6	
10/78 6 6 6	
- clas 9/79 9/79 27 27 12	
/year 8/80 6 6 8 8	
group 7/81 8 8 20 41 41	1
Age 6/82 96 168 182 130	
5/83 442 429 478 416	
4/84 288 308 156 257	
3/85 122 39 48	
2/86 14 8	
1/87	
Month March April May	

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			· .			
Maturity	5Zw	+ 6 ABC	s . • • •		<u>4</u> W	x
stage	Mar	ch	Apr	il	Ma;	У
	No	%	No	2 5 76 50	No	%
II	36	9.2	2	2	4	1.7
III	148	37.8	6	6.2	3	1.3
IV	195	49•7	49	50.5	85	36.2
v	13	3.3	40	41.2	143	60.8
motal	392	100.0	97	100.0	235	100.0

Table 8 Gonad's maturity of mackerel caught in NAFO Subareas 4,5 and 6, March-May 1988

Table 9 Stomack fulness of mackerel caught in NAFO Subareas 4,5 and 6, March-May 1988

Degree of	5Zw	+ 6 ABC		•	4 173	Γ
fulness	Marc	h	Api	cil	Мау	· · · · ·
	No	76	No	%	No	76
0	72	18.4	5	5.2	37	15.7
1	1 8 6	47.4	-56	57.7	86	36.6
2	129	32.9	36	37.1	77	32.8
3	5	1.3	-	-	31	13.2
4	-	-	-	-	4	1.7
Total	392	100.0	-97	100.0	235	100.0

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Species		+otal	01			
ррестер	52w	бA	68	60	locar	70
Atlantic mackerel	1208	7559	729	148	9644	98.3
Atlantic herring	-	33	_		33	0.3
Scup	-	17	-	-	. 17	0.2
Atlantic butterfish	-	-	1	-	1	+
Atlantic menhaden	÷ .	-	-	1	1	+
Alewife	-	17	-	<u> </u>	17	0.2
American shad	-	1	-	-	1	+
Blueback herring		13	-	-	13	0.1
Porgies /sea breams/	•	7	1	-	8	0.1
Spiny dogfish	3	47	2	-	52	0.5
Dogfish sharks		1.10	6	-	16	0.2
Skates	, 6	3	-	-	· 9	0,1
Other finfish	. 1	-	- 1	-	· 1	+
· · ·	<u> </u>	· · · · ·		<u> </u>		
Total	1218	7707	739	149	981 3	100.0

Table 10 Polish catches in SA5 and Statistical Area 6, 1988 /metric tons/

Table 11 Polish mackerel catches in 1988 by GRT class, division and month

/metric tons/

GRT	Division Month							
class		Jan	Feb	Mar	Apr	May	· ·	
. 6	- 4W	-	_		<u> </u>	70	70	
	4X	-	-	-	· _ ·	88	88	
	5Zw		-	. 385	525	-	910	
	ба	374	1643	2162	548	-	4727	
	ങ	114	75	261	-	-	450	
, 	60.	15	-	-	— • • •		15	
Total		503	1718	2808	1073	158	6260	
7	5Zw			155	143	-	298	
•	6A	763	.777	1146	146	-	2832	
	6B	105	54	120	· _	-	279	
	60	35	98		-	– .	138	
Total		903	929	1421	289		3542	
6+7	4₩	-	-,	_	-	, 70	70	
• • •	4X	-	-	-	-	- 88	88	
	5Zw	_	-	540	668	-	1208	
	6A	1137	2420	3308	694	_	7559	
	63	219	129	381	-	-	729	
	60	50	98	-	-	-	_ 148	
Grand total		1406	2647	4229	1362	152	9802	

Explanatory notes:

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GRT-class 6 = 1000 - 1999.9 GRT GRT-class 7 = 2000 - 9999.9 GRT