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Polish Research Report, 1980

by

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Introduction

The total Polish catch in NAFO Subareas 2 to 6 in 1980 decreased to merely 4,618 tons from 20,621 tons in 1979 (Table 1). The decline was mainly due to reduced allocations in the Canadian fishing zone by approximately 18,000 tons, of which squid-*Illex* allocations were decreased by 9,500 tons, Greenland halibut, roundnose grenadier and capelin by about 2,000 tons for each, and cod by about 3,000 tons. On the other hand, allocations in Subareas 5 and 6 were increased by around 5,000 tons for silver hake. Overall utilization of allocated quotas was low, however, only slightly exceeding 50%. The only fully utilized quota was that for cod in Div. 2J+3KL (Table 2). The under-utilization of other stock quotas resulted from such factors as by-catch limitations (squid in subareas 5+6), limited availability because of the influence of environmental factors (cod in Div. 2GH), decrease or lack of directed fishing effort (witch in Div. 2J+3KL, silver hake in Subareas 5+6), and declining profitability along with the gradual decrease in overall allocations available for the fishing fleet.

The bulk of the catches in 1980 comprised witch flounder (27%), redfish (25%), cod (22%) and squid-*Illex* (17%) (Table 1). Catches by region were 3,787 tons (82%) in Subareas 2 and 3, 489 tons (11%) in Subarea 4, and 342 tons (7%) in Subareas 5 and 6.

Subarea 2

Status of Fisheries and Research

The total catch by Polish fishing vessels was only 1,028 tons (Table 3) compared with 4,697 tons in 1979. Most of the catch was taken in Div. 2J (705 tons), consisting of cod (509 tons) and by-catches of redfish (10.2%), Greenland halibut (5.7%), American plaice (3.4%) and smaller quantities of other flatfish and wolffish.

The Polish allocation for cod in 1980 for the Div. 2GH cod stock was 3,150 tons (850 tons lower than in 1979), of which only 224 tons were caught (in December) (Table 4). Under-utilization of the quota was due not only to environmental conditions (ice coverage) but also to a general decrease in fishing activity in the NAFO Area by the Polish fleet following reduced allocations. Most of the cod taken in Div. 2J (559 tons) occurred in February (Table 4).

No biological samples were collected in Div. 2GH, but 5,835 cod were measured from Div. 2J during the first half of February (Table 5) and otoliths were taken from 600 specimens for age determination. Almost 93% of the catches consisted of three year-classes of which the 1975 year-class was most abundant (36.6%), followed by the 1974 year-class (34%) and the 1973 year-class (22%) (Table 6).

Subarea 3

Status of Fisheries and Research

The declining trend in Polish catches in this subarea has continued from 11,116 tons in 1978 to 5,356 tons in 1979 and to 2,759 tons in 1980 (Table 7). The bulk of catches originated in Div. 3K. Witch flounder constituted 44.8% of the total catch, followed by redfish (38.4%). Other species, like cod (7.5%), Greenland halibut (5.2%), flatfishes and other finfish (4.1%), were taken as by-catch.

Witch flounder. The Polish allocation for this stock (Div. 2J+3KL) in 1980 was 3,200 tons, being 300 tons lower than in 1979. The directed fishery was conducted exclusively in Div. 3K during March and April (Table 8). Despite the decline in fishing effort (hours fished) by about 44% compared with 1979 effort, the catch declined by about 33%. Thus, there was an increase in CPUE from 0.65 tons/hour in 1979 to 0.85 tons/hour in 1980. However, the overall decline in Polish allocations discouraged the Polish fleet from more intensive exploitation, thus resulting in under-utilization of the quota.

Length measurements of witch flounder on board of the commercial stern trawler *General Rachimow* (B-15 type) were taken for 5,565 males and 6,101 females (20 samples) in March and for 2,646 males and 4,812 females (16 samples) in April (Table 9). Scales for ageing were also collected.

Redfish. The quota for this species in Div. 2+3K (1,813 tons) was not fully utilized (Table 2), only 48% of the allocation being taken. The directed fishery was conducted in Div. 3K in July and October-November when 85% of the total redfish catch was taken (Table 10). A fishery for redfish from the "others" quota was carried out in Div. 3M during August when scouting for cod aggregations. No biological samples of redfish were collected.

Greenland halibut. The Polish allocation for this species decreased from 1,850 tons in 1979 to zero in 1980. The entire catch of 203 tons (Table 1) was taken as by-catch in the directed fisheries for cod, witch and redfish. No biological samples were collected.

Subarea 4

Status of Fisheries and Research

The only directed fishery in this subarea was for squid-*Illex*. The total amount available for the Polish fleet in 1980 was decreased by 9,500 tons compared with 1979 and amounted to only 1,000 tons. The squid catch in 1980 was 489 tons. The considerable decrease in allocation from 1979 to 1980 discouraged the Polish fleet from commencing the fishery at the beginning of the season. In fact, only one Polish vessel *Admiral Arciszewski* (B-89 type¹) was operating in September and early October (Table 11) and this short period of fishing was the main reason for quota under-utilization by more than 50% (Table 2).

The biological data collected for squid-*Illex* from August 22 to September 19 consisted of 5,722 length measurements (0.5 cm length intervals to 0.5 cm below) (Table 12).

Subareas 5 and 6

Status of Fisheries and Research

Polish allocations for 1980 increased to 8,950 tons compared with 4,471 tons in 1979. The increase was mainly due to additional silver hake quota (5,000 tons), squid-*Loligo* (800 tons) and red hake (500 tons). However, quota utilization in both years was at a low level (Table 2). In 1979, the total catch

¹ The same as B-418 type in terms of main characteristics and engine power, except that the vessel is adapted to provide facilities and space for training of students.

(squid-*Illex* only) amounted to 167 tons while in 1980 the total catch was 342 tons, most of which (282 tons) consisted again of squid-*Illex* (Table 13). By-catches comprised Atlantic butterfish (34 tons), Atlantic mackerel (13 tons), spiny dogfish (7 tons) and small quantities of other finfish and squid-*Loligo*. The main fishing activity occurred from September to November.

Squid (*Illex illecebrosus*). The Polish allocation was decreased from 2,757 tons in 1979 to 600 tons in 1980. Since pelagic trawling was not permitted because of possible by-catches of species like butterfish and mackerel, an experimental squid fishery was conducted with jiggers only, and the squid-*Illex* catch amounted to 282 tons (Tables 2, 11 and 13).

Special Research Studies

The Polish research vessel *Wieczno* conducted one survey cruise during 21 January-14 April 1980 in cooperation with the Northeast Atlantic Fisheries Center, Woods Hole, USA. The first part of the cruise (11-16 February) was devoted to yellowtail abundance and distribution within the 37-73 m depth range in the Nantucket Shoal area. Yellowtail biological samples on length, age and feeding were collected together with water temperature observations (XBT). The stratified-random survey consisted of 22 tows with a bottom trawl.

The second part of the cruise (18 February-3 March) was aimed at ichthyoplankton, zooplankton and phytoplankton abundance and distribution with Bongo (80 sets), Neuston (60 sets) and Headrich (16 sets) nets within the MARMAP program. Hydrological observations on temperature, salinity and oxygen were made and chlorophyll samples collected. The survey covered the Gulf of Maine, Georges Bank, Nantucket Shoals and New England areas.

During the third part of the cruise (13-30 March), the program of apex-predator studies on feeding, migrations and bioenergetics of physiological processes was continued in the area 30-135 nautical miles off Daytona Beach, Florida. Sharks and swordfish were caught with longlines at pre-selected stations in waters of 18-25.5°C temperatures.

Table 1. Polish catches in NAFO Subareas 1-5 and Statistical Area 6 in 1979 and 1980 (metric tons).

Species	1979		1980	
	Tons	%	Tons	%
Cod	5,633	27.3	1,020	22.1
Redfish	319	1.5	1,164	25.2
American plaice	33	0.2	44	1.0
Witch flounder	1,856	9.0	1,235	26.8
Greenland halibut	1,813	8.8	203	4.4
Atlantic halibut	7	+	-	-
Other flatfish	-	-	11	0.2
Roundnose grenadier	96	0.5	36	0.8
Woffishes	19	0.1	41	0.9
Atlantic mackerel	-	-	13	0.3
Atlantic herring	-	-	1	+
Alewife	-	-	1	+
Atlantic butterfish	-	-	34	0.7
Swordfish	-	-	1	+
Spiny dogfish	-	-	7	0.1
Skates	18	0.1	6	0.1
Squid- <i>Illex</i>	10654	51.7	771	16.7
Squid- <i>Loligo</i>	-	-	3	0.1
Other finfish	173	0.8	27	0.6
Totals	20,621	100.0	4,618	100.0

Table 2. Polish allocations versus catches in NAFO area in 1980 (metric tons)

Species	stock division	catch quotas	Catches	catch quota (%)
Cod	2GH	3,150	254	8.1
	2J + 3KL	700	733	104.7
	3M	500	33	6.6
Redfish	2 + 3K	1,813	870	48.0
Witch flounder	2J + 3KL	3,200	1,235	38.6
Silver hake	5 + 6	5,000	-	0.0
Red hake	5 + 6	500	-	0.0
Alewife	5 + 6	50	1	2.0
Squid - <i>Illex</i>	3 + 4	1,000	489	48.9
	5 + 6	600	282	47.5
Squid - <i>Loligo</i>	5 + 6	800	3	0.4
Other finfish	5 + 6	2,000	-	0.0

Table 3. Polish catches in SA 2, 1980 (metric tons).

Species	Subarea 2			Total
	2G	2H	2J	
Cod	-	254	559	813
Redfish	-	1	104	105
Greenland halibut	4	52	3	59
American plaice	-	10	25	35
Other flatfish	-	-	10	10
Wolffishes	-	2	2	4
Other finfish	-	-	2	2
Total	4	319	705	1,028

Table 4. Polish cod catches in SA 2 and 3, 1980 (metric tons)

Div.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2H	-	-	-	-	-	-	30	-	-	-	-	224	254
2J	5	554	-	-	-	-	-	-	-	-	-	-	559
3K	2	91	26	4	1	-	12	-	-	10	19	9	174
3M	-	-	-	-	-	-	-	30	3	-	-	-	33
TOTAL	7	645	26	4	1	-	42	30	3	10	19	233	1020

Table 5. Length-frequencies of cod catches in February 1980, per mille (Div. 2J)

Length (cm)	Sampling Date/depth (m)						Total
	6/370	6/315	8/385	9/345	10/211	11/300	
30						2	+
33	3	4	2	1	2	-	2
36	4	5	-	4	3	3	3
39	14	23	12	14	13	37	19
42	88	108	25	46	46	106	73
45	223	230	85	117	146	200	172
48	252	253	91	146	190	243	203
51	149	134	155	152	169	105	143
54	101	100	120	117	150	98	114
57	57	63	161	135	120	61	95
60	48	36	113	113	70	55	71
63	28	18	89	70	34	32	43
66	15	10	76	39	47	27	32
69	11	10	35	21	6	7	14
72	4	2	8	6	2	9	5
75	2	1	6	5	-	4	3
78	-	-	4	4	1	6	3
81	1	1	-	3	-	2	1
84		1	2	2	-	2	1
87		1	6	2	-	-	1
90			6	1	1	1	1
93			2	2			1
96			-				
99			2				+
Total	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Number measured	1,168	826	485	1,293	948	1,115	5,835
Average length (cm)	50.8	50.2	57.1	54.9	53.0	51.3	52.6

Table 6. Age composition of cod catches in February 1980, per mille (Div. 2J)

Div.	Age and Year-class											Total
	3 77	4 76	5 75	6 74	7 73	8 72	9 71	10 70	11 69	12 68	13 67	
2J	1	15	366	340	220	46	7	2	1	1	1	1000

Table 7. Polish catches in SA 3, 1980 (metric tons).

Species	Subarea 3			Total
	3K	3L	3M	
Cod	174	-	33	207
Redfish	765	2	292	1,059
Witch flounder	1,235	-	-	1,235
Greenland halibut	143	1	-	144
American plaice	4	-	5	9
Other flatfish	1	-	-	1
Roundnose grenadier	36	-	-	36
Wolffishes	37	-	-	37
Skates	6	-	-	6
Other finfish	18	-	7	25
	2,419	3	337	2,759

Table 8. Polish witch flounder catches in Div. 3K, 1980 (metric tons).

Div.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
3K	-	53	752	393	14	1	-	-	-	1	6	15	1235

Table 9. Length-frequencies of witch flounder catches in 1980, per mille (Div. 3K)

Length (2 cm)	SAMPLING DATE															
	March 2		March 14		March 18		March 25		April 4		April 10		April 14		April 18	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
30																
32												2				2
34	6	4		3	3	2		1	5	5	3	6	10		17	-
36	8	4	5	5	20	20	9	4	41	25	3	12	48	10	29	7
38	14	4	24	16	75	28	61	21	68	34	14	4	38	17	69	24
40	44	8	60	36	82	61	96	39	87	48	68	8	38	24	98	31
42	99	50	138	39	207	98	248	70	242	75	171	36	164	3	113	22
44	108	106	145	83	242	95	174	115	201	119	179	71	139	51	139	46
46	210	123	167	124	71	134	148	151	114	155	196	135	158	55	45	71
48	254	101	150	101	116	121	117	153	128	116	182	158	105	103	107	46
50	152	131	145	101	78	79	91	100	59	77	122	130	105	62	101	53
52	77	113	121	94	68	61	35	100	41	75	43	126	100	82	127	60
54	25	118	31	104	24	62	13	77	9	88	19	138	62	96	64	60
56	-	113	14	91	14	85	4	64	5	66		77	33	113	38	148
58	3	50		94		80	4	47		52		43		120	-	140
60		29		55		41		37		34		32		127	3	147
62		34		39		20		14		14		14		79		95
64		8		10		8		5		13		6		45		33
66		4		5		3		1		2		2		10		11
68						2		1		2				3		4
70																
72																
Number Measured	362	238	420	385	294	610	230	847	219	558	368	494	209	292	346	549

Table 10. Polish redfish catches in SA 2 and 3, 1980 (metric tons).

Div.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2H	-	-	-	-	-	-	1	-	-	-	-	-	1
2J	-	104	-	-	-	-	-	-	-	-	-	-	104
3K	-	75	19	-	1	20	162	-	-	127	158	203	765
3L	-	-	-	-	-	2	-	-	-	-	-	-	2
3M	-	-	-	-	-	-	-	265	27	-	-	-	292
Total		179	19	-	1	22	163	265	27	127	158	203	1164

Table 11. Polish squid-*Illex* catches in SA 4-6, 1980 (metric tons).

Div.	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
4W								-	464	25	-		489
5Zw								-	-	1	-		1
5Ze								5	50	50	8		113
6A								-	-	1	1		2
6B								-	-	119	47		166
Total								5	514	196	56		771

Table 12. *Illex illecebrosus* length frequencies from Polish catches in Div. 4W, 1980 (per mille)

Mantle Length (cm)	SAMPLING DATE															
	August 26		August 29		August 31		September 4		September 8		September 10		September 14		September 19	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
14.0																
.5							5									
15.0					4		5									
.5	10	4			-		-									
16.0	15	36	10	6	8		5	6	4						4	
.5	72	40	15	-	4		10	19	-						-	
17.0	123	81	45	-	17	19	26	31	-						-	
.5	113	108	40	39	33	43	21	31	-						-	
18.0	164	160	40	133	88	77	63	13	22	38	4				9	6
.5	113	210	40	66	63	58	47	44	18	25	-	6		5	13	-
19.0	103	126	79	110	75	130	84	38	36	25	4	6		-	9	11
.5	72	85	64	55	88	68	73	44	13	44	-	-	10	-	4	-
20.0	82	40	134	72	153	140	158	119	58	38	17	-	15	-	48	6
.5	77	40	84	83	75	77	84	82	54	25	30	12	26	-	61	34
21.0	26	18	149	116	162	97	221	146	182	93	122	43	103	51	228	125
.5	15	18	89	66	71	58	89	94	116	56	165	19	118	41	163	102
22.0	15	18	144	105	113	107	73	107	202	199	291	160	318	189	264	232
.5		4	35	44	21	14	16	69	93	81	93	111	149	112	88	165
23.0		4	25	55	21	39	10	63	76	143	169	272	164	158	70	119
.5		4	-	22	-	24	10	38	4	88	63	117	46	97	26	80
24.0			-	17	-	19		31	9	88	34	105	51	143	9	57
.5			-	11	4	10		13	-	38	4	31		87	4	40
25.0			10			10		6	4	13	-	80		56		11
.5						5		-	-	-	-	19		31		6
26.0						5		6	-	6	4	19		20		6
.5									-					5		
27.0									-					-		
.5									4					5		
28.0																
.5																
Number Measured	195	223	202	181	240	207	191	159	224	160	237	162	195	196	228	176

Table 13. Polish catches in SA 5 + 6, 1980 (metric tons)

Species	Subarea 5		Stat. Area 6		Total
	5Zw	5Ze	6A	6B	
Squid- <i>Illex</i>	1	113	2	166	282
Squid- <i>Loligo</i>	3	-	-	-	3
Atlantic mackerel	2	-	7	4	13
Atlantic herring	1	-	-	-	1
Alewife	-	-	1	-	1
Atlantic butterfish	2	-	-	32	34
Swordfish	-	-	-	1	1
Spiny dogfish	-	7	-	-	7
Totals	9	120	10	203	342