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Polish Research Report, 1977

by

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A further substantial decline of overall Polish catches from the ICNAF Convention Area was observed in 1977. The catches dropped by more than 60% (Table 1) from 125,488 tons in 1976 to 49,505 tons in 1977. The major share in the catches constituted mackerel (17,186 tons), cod (9,242 tons), Greenland halibut (6,006 tons), capelin (5,300 tons), squid (*Illex*) (3,595 tons), witch (3,117 tons), and redfish (2,280 tons). The greatest decline occurred in the herring and mackerel fisheries, 99% and 67%, respectively. Catches of other species were insignificant.

The greatest catches were taken in Statistical Area 6 (19,825 tons), Subarea 5 (15,729 tons), and Subarea 3 (10,687 tons). Due to the shift of the squid (*Illex*) fishery from Subarea 5 to Subarea 4, the catches from the latter Subarea increased and totalled 3,008 tons. In the absence of the herring and mackerel fisheries in Subarea 5, the catches there were very low (270 tons).

The drop in Polish catches in the ICNAF Area was mainly due to the lower catch quotas allocated to Poland for 1977 (for all species except Greenland halibut and squid (*Illex*)), and the new fishery regulations in Subarea 5 and Statistical Area 6 (windows, closed fishing seasons) which changed the traditional effort distribution of the Polish fishing fleet. The last factor has mostly contributed to the much lower catches than the quota level in Subarea 5 and Statistical Area 6. The percentage at which the Polish quota was used is given in Table 2.

Subarea 2

Status of the Fisheries

Polish catches from Subarea 2 in 1977 amounted to 7,169 tons, a decrease of 58% from the 17,060 tons taken in 1976.

The main component of Polish catches which were concentrated in Div. 2HJ was cod, followed by Greenland halibut, witch, and redfish (Table 3).

The cod and Greenland halibut fisheries were conducted mainly from January to April. Witch were predominant in May catches and redfish was taken throughout the year, usually as by-catch.

No pelagic fishery for capelin was conducted by Polish vessels, compared to 1976 when 9,381 tons was taken in Div. 2R and 2J.

Cod

Polish cod catches from Subarea 2 increased from 3,401 tons in 1976 to 7,169 tons in 1977, mainly due to the change of distribution of fish concentrations from Subarea 3 to Subarea 2. As in the last few years, no cod fishery was conducted in Div. 2G due to heavy ice conditions.

The major part of Polish cod catches (97.4%) from Div. 2J was taken in January and February (Table 4). During summer and autumn, cod was taken as by-catch only.

In Div. 2J, 9,890 fish were measured in January (mean length = 38.9 cm) and 6,466 fish for biological analysis, however, the resulting age distribution was not available for the preparation of this report.

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The data will be reported before the STACRES meeting in May 1978. It is known, however, that the 1973 year-class comprised 80-90% of Polish commercial cod catches in 1977.

Greenland halibut

In 1977 Greenland halibut catches from Subarea 2 totalled 5,229 tons, 97.6% of which was from Div. 2J (Table 5). In comparison to 2,674 tons taken in 1976, the catches increased significantly, again due to the observed shift of the fishery from Subarea 3 to Subarea 2; the main reasons for this might be a change in water temperature and changes in the distribution of fish concentrations (467 males and 385 females from Div. 2J were measured, mean lengths, 50.3 cm and 55.7 cm, respectively).

Witch

Polish catches of witch from Subarea 2 followed the same pattern as cod and Greenland halibut catches and increased from 402 tons in 1976 to 1,959 tons in 1977. This species was the main object of fishing activity in May when 1,166 tons was taken (Table 6). During the other months, witch was taken as by-catch only.

No biological studies were carried out in 1977.

Redfish

Redfish catches from Subarea 2 maintained almost the same level as in 1976 (1,076 tons) and totalled 996 tons. The majority of catches were taken in July and August in Div. 2J (Table 7).

No samples for biological studies of redfish were collected in 1977.

Subarea 3

Status of the Fisheries

As in previous years, Polish trawlers fished mainly in Div. 3K of Subarea 3. Much lower catches were taken from Div. 3LMN. The total catch from this Subarea decreased by 67.8%, from 33,156 tons in 1976 to 10,687 tons in 1977. The decrease was much greater than that expected from the overall quota decline (for species caught in Subareas 2 and 3 by about 30%) because of the shift of the fishing effort to Subarea 2.

The main component of the bottom-trawl fishery was cod (Table 8). Redfish, witch, and Greenland halibut were of much less importance. The majority of catches were taken in Div. 3K from February to May and in September and October.

Capelin was fished with pelagic gear only. Small amounts of this species were caught in Div. 3LN in June. The most intensive fishery was conducted from October to December in Div. 3K (Table 9).

Cod

Due to the above-mentioned reasons, cod catches in Subarea 3 dropped in 1977 to 2,073 tons from 16,912 tons in 1976. The majority of catches were taken in Div. 3K in February and May and in Div. 3M in November. In Div. 3L a small catch of only 103 tons was taken in May.

Length measurements comprised 1,543 specimens taken from Div. 3K (mean length = 41.2 cm). As in Subarea 2, the 1973 year-class was predominant and constituted more than 80% of catches.

Redfish

Polish redfish catches in Subarea 3 declined from 2,985 tons in 1976 to 1,284 tons in 1977. Throughout the year, the catch was mostly taken in Div. 3K, with much less intensity from April to August and no catch in December (Table 7).

No biological studies were carried out on redfish in Subarea 3 in 1977.

Greenland halibut

The observed shift of the fishery from Subarea 3 to Subarea 2 caused the very sharp decline in catches from 3,268 tons in 1976 to 777 tons in 1977. Catches were concentrated in Div. 3K from January to May (Table 5).

Lengths of 784 males (12 samples) and 501 females (2 samples) from Div. 3K were measured (mean lengths, 48.5 cm and 50.1 cm, respectively).

Witch

Polish catches of witch decreased significantly, from 3,268 tons in 1976 to 1,158 tons in 1977. The bulk of the catches was taken from Div. 3K in May and October (Table 6).

Two length samples of 632 males and 858 females were taken from Div. 3K (mean lengths, 46.3 cm and 41.8 cm, respectively). For age determination, 82 males and 126 females were collected. The resulting age composition is shown in Table 9.

Capelin

Polish capelin catches from Subarea 3 dropped from 5,740 tons in 1976 to 5,300 tons in 1977; 4,282 tons was taken from Div. 3K, 617 tons from Div. 3L, and 401 tons from Div. 3N (Table 10). The catch from Div. 3K was mostly taken from October to December, that from Div. 3L in June and November, and from Div. 3N in June.

No biological studies were carried out in 1977.

Subarea 4

Status of the Fisheries

Subarea 4 Polish catches amounted to 3,008 tons, of which 2,936 tons was squid (*Illex*) (Table 11). The remaining 72 tons consisted of silver hake, mackerel, pollock, and haddock caught partly as by-catch in the squid fishery.

Squid (*Illex*)

The total amount of squid was taken in July and August (Table 12).

For length measurement, 28 samples comprising 6,357 specimens were collected from Div. 4W in July and August. An attempt was made for squid age determination based on statoliths (Res.Doc. 78/II/15).

Subarea 5

Status of the Fisheries

The introduction of open "windows" and closed seasons for mackerel and herring fisheries in 1977 caused a drastic reduction in Polish catches of these species, from 41,060 tons in 1976 to 37 tons in 1977. The total catch dropped from 50,521 tons in 1976 to 270 tons in 1977. The main component (180 tons) of the catches was squid (*Illex*), most of which was caught in Subdiv. 5Ze in September (Table 13).

Squid (*Illex*)

The decline observed in squid (*Illex*) catches in Subarea 5 from 5,050 tons in 1976 to 180 tons in 1977 was connected, on the one hand, with closed seasons imposed on the fishery during the first part of the year and, on the other, with the concentration of fishing effort in July and August in Div. 4W (Table 12).

During the survey cruises of R/V *Wieczno* in Div. 5Z, 47 samples (4,130 specimens) of squid were collected for length measurements in September and 3 samples (377 specimens) in October.

Herring

No herring fishery was feasible within the "window" which was established outside the spawning grounds and opened before the main part of the fishing season.

In February, two samples were collected by R/V *Wieczno*, one sample (1,056 fish) for length measurements and the other (130 fish) for ageing. The 1973 year-class constituted 84.8% of the research catch.

Statistical Area 6

Status of the Fisheries

The overall Polish catches declined from 23,937 tons in 1976 to 19,825 tons in 1977 (Table 14). The basic component of the catches was mackerel, about 87% in both years. A small directed squid fishery for *Loligo* (232 tons) and *Illex* (476 tons) was also conducted. All other species, such as sea robins, herring, butterfish, dogfish and other finfish were taken as an incidental by-catch only.

Mackerel

Most of the mackerel catch (99.9%) was taken in the first part of the open season in January and February (Table 15). The catch quota was not fully utilized by 3,000 tons (14.8%), due to interruptions caused by different fishing seasons for different fisheries. This made it impractical to exert extra effort in the last quarter of the year.

Length measurements were carried out on 6,813 fish (29 samples). Otoliths from 2,115 specimens (24 samples) were collected for age reading. As in 1976, the greatest portion of catches constituted 1973 and 1974 year-classes, 24.5% and 42.1%, respectively.

Special Research Studies

The research vessel *Wiosno* from the Sea Fisheries Institute conducted two surveys cruises in Subarea 5 and Statistical Area 6. During the first cruise from February to April 1977, a groundfish survey combined with a hydrographic and plankton survey (Bongo) was conducted. The second cruise in September and October was devoted to a larval herring and adult herring survey. The range of temperatures on herring spawning grounds was below normal (less than 8°C) which could explain the lack of herring spawning concentrations in the Georges Bank area.

Table 1. Polish catches in ICNAF Subareas 1-5 and Statistical Area 6 in 1976 and 1977.

Species	1976		1977	
	Metric tons	%	Metric tons	%
Mackerel	51,549	41.1	17,186	34.7
Herring	10,539	8.4	119	0.2
Capelin	15,121	12.0	5,300	10.7
Cod	20,403	16.3	9,242	18.7
Greenland halibut	5,942	4.8	6,006	12.1
Atlantic halibut	16	+	5	+
Witch	4,029	3.2	3,117	6.3
Redfish	4,061	3.2	2,280	4.6
Butterfish	1,518	1.2	280	0.6
Roundnose grenadier	101	0.1	-	-
American plaice	138	0.1	34	0.1
Silver hake	215	0.2	33	0.1
Pollock	25	+	17	+
Searobins	1,521	1.2	546	1.1
Wolffishes	29	+	12	+
Bluefish	-	-	-	-
Alewife	14	+	-	-
Dogfish	58	+	70	0.1
Bluefin tuna	3	+	-	-
Squid - <i>Loligo</i>	1,706	1.3	232	0.5
Squid - <i>Illex</i>	5,859	4.7	3,595	7.3
Other finfish in SA 2-4	404	0.3	406	0.8
Other finfish in SA 5-6	2,237	1.8	1,025	2.1
Total	125,488	99.9	49,505	99.9

Table 2. Polish catch quota and catches in 1977 in ICNAF Area (in metric tons).

Species	Stock division	Catch quotas	Catches	Catch Quota (%)
Cod	2GH	4,000	970	24.2
	2J+3KL	7,430	7,429	99.9
	3M	850	843	99.2
Redfish	2+3K	2,275	2,269	99.7
Greenland halibut	2+3KL	6,000	5,998	99.9
Witch	2J+3KL	3,500	3,052	87.2
Capelin	2+3K	10,000	4,282	42.8
Herring	5Z+6	5,100	119	2.3
Mackerel	5+6	20,200	17,167	85.0
Other finfish	5+6	6,200	1,025	16.5
Squid - <i>Illex</i>	3+4	3,000	2,939	98.0
	5+6	4,910	656	13.4
Squid - <i>Loligo</i>	5+6	850	232	27.3

Table 3. Polish catches in SA 2, 1977 (in metric tons)

Species	Subarea 2		Total
	2H	2J	
Cod	970	6,199	7,169
Redfish	153	843	996
American plaice		27	27
Witch	48	1,911	1,959
Greenland halibut	127	5,102	5,229
American halibut	1	4	5
Wolffishes		9	9
B. whiting		8	8
Other finfish		327	327
Total	1,299	14,430	15,729

Table 4. Polish cod catches in SA 2 and 3, 1977 (in metric tons)

Divisions	Months												Total
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
2H						397	199	1	138	110		125	970
2J	3,794	2,246	23		4	12	120						6,199
3K	16	519	21	5	316	5	93	1	11	60	80		1,127
3L					103								103
3M											703	140	843
Total	3,810	2,765	44	5	423	414	412	2	149	170	783	265	9,242

Table 5. Polish Greenland halibut catches in Subareas 2 and 3, 1977 (in metric tons).

Div.	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2H	-	-	-	-	-	11	-	18	95	3	-	-	127
2J	497	1,104	2,165	868	411	18	11	28	-	-	-	-	5,102
3K	77	198	192	120	80	17	25	-	-	14	5	-	728
3L	-	-	-	-	41	-	-	-	-	-	-	-	41
3M	-	-	-	-	-	-	-	-	-	-	-	8	8
Total	574	1,302	2,357	988	532	46	36	46	95	17	5	8	6,006

Table 6. Polish witch catches in Subarea 2 and 3, 1977 (in metric tons).

Div.	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2H	-	-	-	-	-	41	-	-	1	6	-	-	48
2J	15	117	320	218	1,166	65	10	-	-	-	-	-	1,911
3K	2	12	65	31	327	21	9	5	82	342	50	-	946
3L	-	-	-	-	195	-	-	-	-	-	-	-	195
3M	-	-	-	-	-	-	-	-	-	-	7	10	17
Total	17	129	385	249	1,688	127	19	5	83	348	57	10	3,117

Table 7. Polish redfish catches in Subareas 2 and 3, 1977 (in metric tons).

Div.	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
2H	-	-	-	-	-	28	-	122	-	-	-	-	153
2J	27	124	71	-	24	30	321	246	-	3	-	-	843
3K	23	243	57	18	41	34	177	57	346	214	63	-	1,273
3M	-	-	-	-	-	-	-	-	-	-	11	-	11
Total	50	367	128	18	65	92	498	425	346	217	74	-	2,280

Table 8. Polish catches in Subarea 3, 1977 (in metric tons).

Species	Subarea 3				Total
	3K	3L	3M	3N	
Cod	1,127	103	843	-	2,073
Redfish	1,273	-	11	-	1,284
American plaice	-	-	7	-	7
Witch	946	195	17	-	1,158
Greenland halibut	728	41	8	-	777
Wolffishes	1	-	2	-	3
Capelin	4,282	617	-	401	5,300
Squid - <i>Illex</i>	3	-	-	-	3
Silver hake	-	-	3	-	3
Other finfish	61	-	18	-	79
Total	8,421	956	909	401	10,687

Table 9. Age composition of Polish witch catches in Div. 3K in March 1977 (per mille).

Sex	Age groups															Total
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	18+	
♂	-	54	102	145	143	121	124	121	87	33	32	21	17	-	-	1,000
♀	4	16	32	76	145	185	96	84	83	50	51	27	29	56	66	1,000

Table 10. Polish capelin catches in Subarea 3, 1977.

Div.	Months												Total
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
3K	-	-	-	-	-	-	11	-	-	1,658	1,296	1,317	4,282
3L	-	-	-	-	-	131	-	-	-	-	486	-	617
3N	-	-	-	-	-	401	-	-	-	-	-	-	401
Total	-	-	-	-	-	532	11	-	-	1,658	1,782	1,317	5,300

Table 11. Polish catches in Subarea 4, 1977 (in metric tons).

Species	Subarea 4		Total
	4W	4X	
Squid - <i>Illex</i>	2,936	-	2,936
Silver hake	30	-	30
Haddock	6	-	6
Pollock	-	17	17
Mackerel	19	-	19
Total	2,991	17	3,008

Table 12. Polish squids catches in Subareas 3-5 and Statistical Area 6, 1977 (in metric tons).

Species	Subarea	Months												Total
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Squid- <i>Illex</i>	3K	-	-	-	-	-	-	-	-	-	-	-	3	3
	4W	-	-	-	-	-	-	1,191	1,745	-	-	-	-	2,936
	5Ze	-	-	-	-	-	-	-	-	171	8	-	-	179
	5Zw	1	-	-	-	-	-	-	-	-	-	-	-	1
	6A	121	-	-	-	-	-	-	-	-	-	-	-	121
	6B	31	264	-	-	-	-	-	-	-	-	-	-	295
	6C	60	-	-	-	-	-	-	-	-	-	-	60	
Total		213	264	-	-	-	-	1,191	1,745	171	8	-	3	3,595
Squid- <i>Loligo</i>	6A	72	-	-	-	-	-	-	-	-	-	-	-	72
	6B	41	68	-	-	-	-	-	-	-	-	-	-	109
	6C	51	-	-	-	-	-	-	-	-	-	-	-	51
Total		164	68	-	-	-	-	-	-	-	-	-	-	232

Table 13. Polish catches in Subarea 5, 1977
(in metric tons).

Species	Subarea 5		Total
	5Zw	5Ze	
Mackerel	37	-	37
Sea robins	39	-	39
Butterfish	14	-	14
Squid - <i>Illex</i>	1	179	180
Other finfish	-	-	-
Total	91	179	270

Table 14. Polish catches in Statistical Area 6, 1977
(in metric tons)

Species	Statistical Area 6			Total
	6A	6B	6C	
Mackerel	4,695	10,772	1,663	17,130
Herring	65	54		119
Sea robins	155	352		507
Butterfish	68	198		266
Dogfish		70		70
Squid - <i>Loligo</i>	72	109	51	232
Squid - <i>Illex</i>	121	295	60	476
Other finfish	302	536	187	1,025
Total	5,478	12,386	1,961	19,825

Table 15. Polish mackerel catches in SA 4-6, 1977 (in metric tons).

Division	Months												Total	
	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec		
4W	-	-	-	16	-	-	-	-	-	-	-	-	3	19
5Zw	37	-	-	-	-	-	-	-	-	-	-	-	-	37
6A	4,695	-	-	-	-	-	-	-	-	-	-	-	-	4,695
6B	2,840	7,932	-	-	-	-	-	-	-	-	-	-	-	10,772
6C	1,663	-	-	-	-	-	-	-	-	-	-	-	-	1,663
Total	9,235	7,932	-	16	-	-	-	-	-	-	-	-	3	17,186