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Observations on the stock of cod in the fishing grounds of
Labrador (Div. 2J) and Newfoundland (Div. 3K) in the years
1963-1968

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Introduction

Polish fishing operations in the Northwest Atlantic began in 1960 when factory trawlers (over 2784 GRT) were introduced. The number of this type of vessel in operation increased steadily as well as their fishing effort and the quantity of cod landed (Tables 1 and 2). The catches of this species increased from 1,222 m tons in 1961 to 91,008 tons in 1968.

Table 1 Fishing effort (hours fished) in Polish operations in the Northwest Atlantic and in Div. 2J and 3K in 1961-1968

	1961	1962	1963	1964	1965	1966	1967	1968
NW Atlantic	2,488	5,245	10,733	20,331	26,838	28,843	42,367	47,424
2J	290	363	934	4,123	7,553	7,715	13,733	15,643
3K	-	1,119	6,917	13,839	8,797	9,797	7,027	21,844

Until 1964 inclusive the main object of Polish fisheries was redfish. Cod was of minor importance. More attention was paid to cod first in 1965 when it became the main component of Polish catches (Table 3.)

Of the total catch of cod landed from the whole ICNAF area since 1966 48.9 - 56.3% were from southern Labrador (Div.2J) and 9.2 - 18.3% from the northern part of Newfoundland (Div.3K). The remainder up to 100%, was landed from other ICNAF Divisions. Thus Div. 2J and 3K are the main fishing grounds for Polish catches of cod in the Northwest Atlantic. According to Templeman (1962) the cod in these Divisions belong to the same stock.

Catches and fishing yield of cod

Div. 2J

Here, in 1961-1968, the number of hours of trawling increased from 290 to 15,643 and the landings of cod increased from 458 tons to 51,301 tons. Detailed data are given in Tables 1 and 2. Particularly high yield was obtained in 1968. Yield in the winter of 1968 (4,663 kg per 1 hour) was double that in the same season in 1967 (2,330 kg per 1 hour trawling).

As a rule the period January-March was the season of the highest catch and the best fishing yield of cod in Polish fishing operations in Div. 2J. Sometimes this season extended to include April (Table 3). The decrease in yield in April was the result of migration of fish northward to the spawning grounds where ice conditions hampered operations. More intensive exploitation of spawning concentrations of cod commenced in 1967 and good fishing yields were still being obtained in May. Fishing yield began to decrease in June and the fishing fleet shifted towards southern Divisions.

Div. 3K

Here the catch of cod and the fishing yield increased as follows: from 1,119 hours and 1,004 tons in 1962 to 21,844 hours and 16,682 tons in 1968 (Tables 1 and 2).

The mean annual fishing yield of cod in the years 1962-1968 fluctuated from 160 kg (1965) to 898 kg per 1 hour trawling (1962).

The low fishing yields in 1965 were probably related to warming of the Labrador Current, which commenced in that year and continued until the middle of 1967 (Postolaky, 1967; Konstantinov, 1968). In these circumstances cod left Div. 3K in greater than usual numbers, migrating northward to higher latitudes off Labrador, thus causing the decrease of yield in 3K.

Fairly good results were obtained in autumn 1967 (389 - 714 kg per 1 hour trawling) and in winter 1968 (2,032 kg), whereas exceptional yields of 10,200 kg per 1 hour trawling was obtained in February of this year. The yields obtained in the whole winter season of 1968 (2,672 kg per 1 hour trawling) were almost three times higher than those obtained in the same season of the previous year (894 kg per 1 hour).

Length and age composition of cod

Observations on length and age composition of cod in Div. 2J and 3K have been carried out since 1963 (except for 1965 for which the data are lacking). These observations were made in various seasons generally aboard factory trawlers. Only in 1964 were they carried out aboard research vessels. The length and age composition of the commercial stock is shown in Fig. 1 and 2.

Length and age composition in 2J

In the commercial stock cod were generally 29 cm to 71 cm in length and 3 to 9 years old (Fig. 1). In particular years differences in age and length composition of cod were noted depending on the abundance of year-classes.

In 1963 and 1967 the samples were comprised mainly of fish 42 to 65 cm in length (mean length 53.6 cm, and 51.6 cm) and of 5 to 7 years of age.

In 1964 and 1966 a considerable number of smaller and younger fish were noted. Their length ranged from 30 to 62 cm (mean lengths 45.8 cm and 49.5 cm); their age from 3 to 8 or 7 years.

In 1968 fish were mostly 41 to 68 cm in length (mean length 53.9 cm) and 4 to 8 years old.

In the samples taken in July 1964 there were a large number of 5 year old cod, belonging to abundant 1959 year-class. These fish occurred also in 1966 in large numbers as 7 year olds. The 6 year old cod (1961 year-class) were particularly abundant in 1967. The 1962 and 1964 year-classes caught as 4 years old fish in the years 1966 and 1968 also seemed to be abundant.

Length and age composition in 3K

Cod caught in Div. 3K was somewhat larger than cod from Div. 2J. In Div. 3K most of the fish were 36 to 71 cm and ranged from 4 to 8 years (Fig. 2), although in particular years some differences in length and age were noted. Results of investigations, carried out in the year 1964, are not comparable with the results from other years, since in this year trawls with 50 mm mesh in the codend were used in research fishing.

In 1963 and 1968 most of the cod measured were 36 to 68 cm (mean length 51.7 and 47.5 cm) and 4 to 8 years old.

In 1966, as in Div. 2J there were rather large numbers of smaller fish. Most of the fish were from 33 to 65 cm and from 3 to 8 years of age.

In 1967 rather large individuals were noted. Most of them were from 33 to 77 cm (mean length 59.6 cm), although the range of the length from 51 to 71 cm and the age from 5 to 8 years comprised the largest number of fish.

From the data presented in Fig. 2 it appears that in 1966 - 1968 the 1961 and 1962 year-classes were of a great importance in the catches. Also the 1963 and 1964 year-classes seemed to be abundant.

References

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Redbook, Part III, Dartmouth
 Rostolaky, A.J. 1967 On the Growth of the Labrador Cod, ICNAF Ann. Meet.
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 Templeman, W. 1962 Divisions of Cod Stocks of the Northwest Atlantic
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Table 2 Polish catches of cod (in metric tons) in the fishing grounds of northwest Atlantic in the years 1961-1968

Divisions	Years							
	1961	1962	1963	1964	1965	1966	1967	1968
Subarea 1								
Total	-	484	274	92	38	799	625	861
Subarea 2								
2G	-	-	-	-	-	-	1,039	925
2M	-	30	-	-	2,585	11,884	8,504	17,519
2J	358	921	703	2,058	8,614	17,866	28,592	51,301
Total	358	951	703	2,058	11,199	29,750	38,135	69,745
Subarea 3								
3K	-	1,004	4,363	7,710	1,718	4,454	4,286	16,682
3L	528	680	428	240	910	305	5,849	1,004
3M	336	888	1,875	717	5,079	93	4,152	71
3N	-	12	-	-	77	613	3,255	6
3O	-	-	41	-	-	152	290	-
3P	-	-	32	-	-	9	-	-
Total	864	2,584	6,739	8,667	7,784	5,626	17,832	17,763
<u>Northwest Atlantic area*</u>								
Total	1,222	4,019	7,737	10,866	21,719	36,448	57,663	91,008

* Including some small catches of cod in the Subareas 4 and 5

Table 3 Yield of cod (kg/hr) of Polish factory trawlers in Div. 2J, 1961-1968

Years	Months												Total		
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.-June	July-Dec.	Jan.-Dec.
1961	-	4,800	-	1,050	760	100	140	310	-	80	-	-	1,233	-	1,233
1962	1,820	2,110	3,190	2,230	40	250	-	310	90	50	-	-	3,724	1,034	2,538
1963	4,060	3,230	20	160	1,090	350	120	60	10	-	1,810	-	1,006	141	750
1964	3,935	3,960	2,112	1,617	1,691	1,096	-	-	-	-	-	-	1,362	116	500
1965	2,460	2,473	1,189	1,531	3,007	1,109	-	-	-	764	792	1,283	2,595	75	1,140
1966	5,234	4,915	4,350	2,756	2,296	1,793	818	-	900	769	-	-	2,813	1,043	2,316
1967	-	-	-	-	-	-	-	-	-	-	-	-	2,301	1,054	2,082
1968	-	-	-	-	-	-	-	-	-	-	-	-	3,502	972	3,279

Table 4 Yield of cod (kg/hr) of Polish factory trawlers in Div. 3K, 1961-1968

Years	Months												Total		
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.-June	July-Dec.	Jan.-Dec.
1961	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1962	2,110	1,590	-	1,020	600	730	180	620	460	60	310	290	1,075	280	898
1963	1,270	1,140	1,330	590	150	420	470	320	650	70	210	280	935	389	650
1964	630	350	200	120	350	70	60	380	170	1,270	-	710	783	305	560
1965	-	868	732	148	1,076	66	118	422	62	396	346	811	211	131	190
1966	1,708	1,419	452	205	400	136	288	83	461	675	714	389	543	319	459
1967	2,250	10,200	2,032	1,001	206	1,453	546	952	437	465	686	396	491	644	610
1968	-	-	-	-	-	-	-	-	-	-	-	-	1,163	634	764

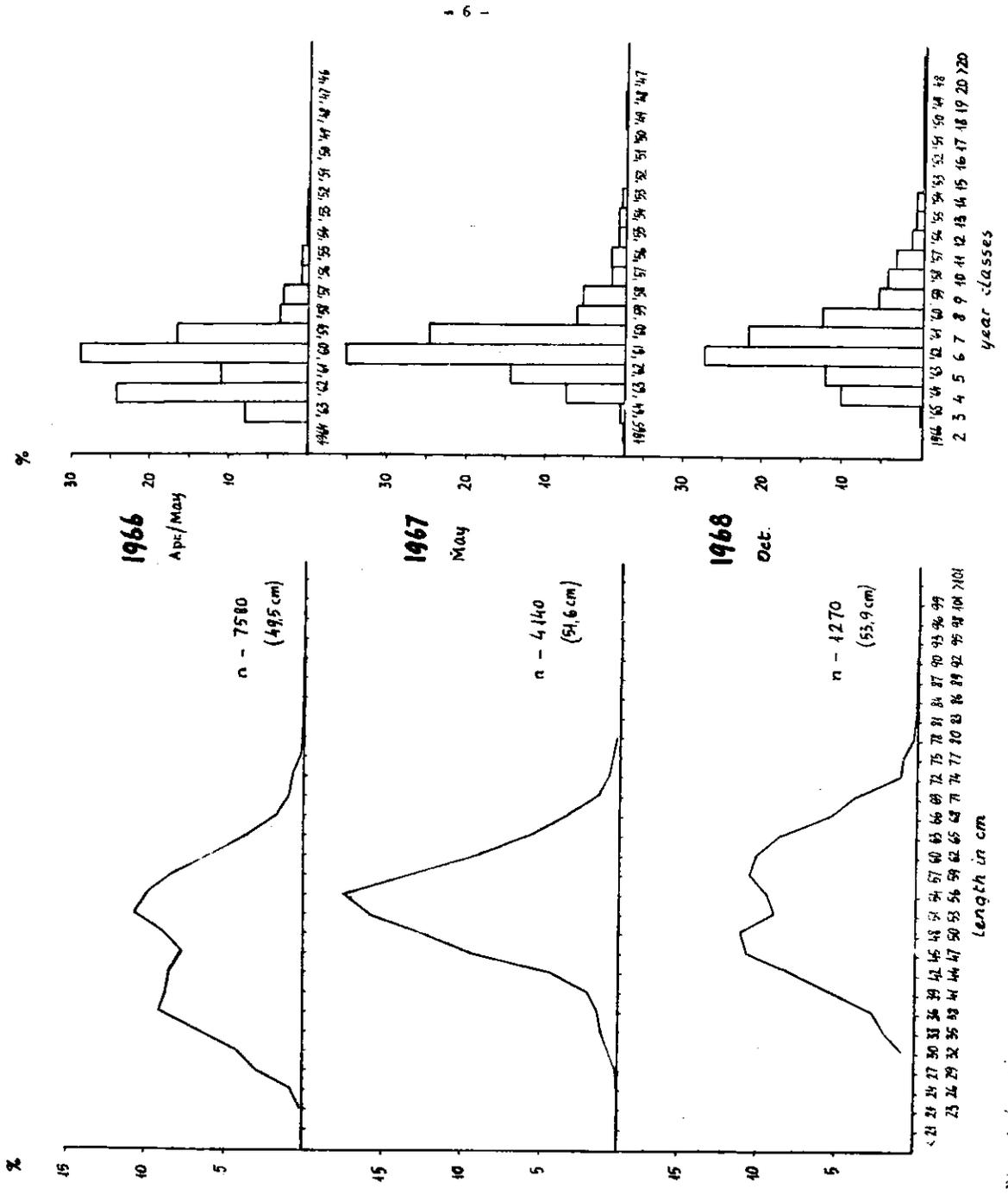


FIG. 1 /cont.

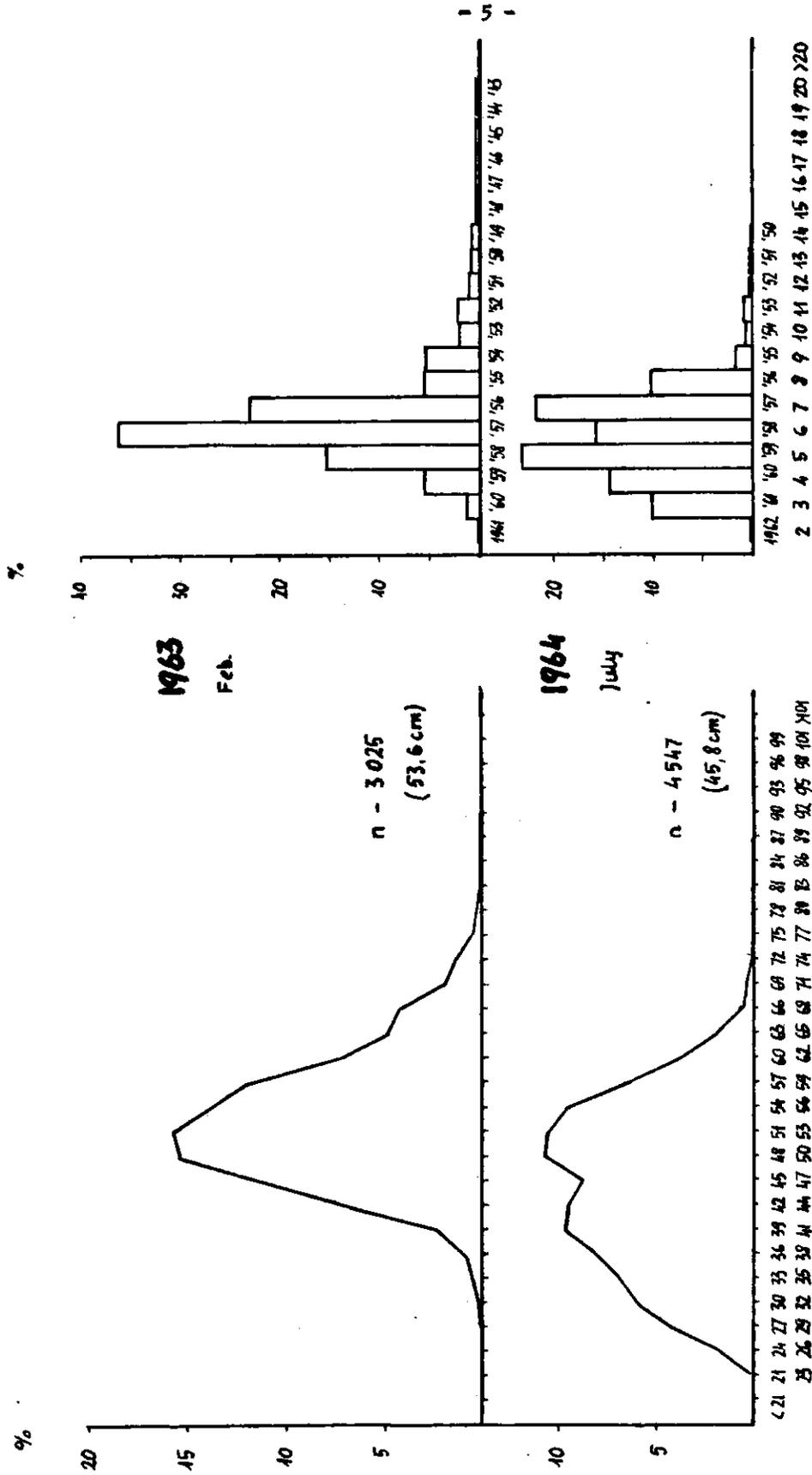


FIG. 1. DIV.2J

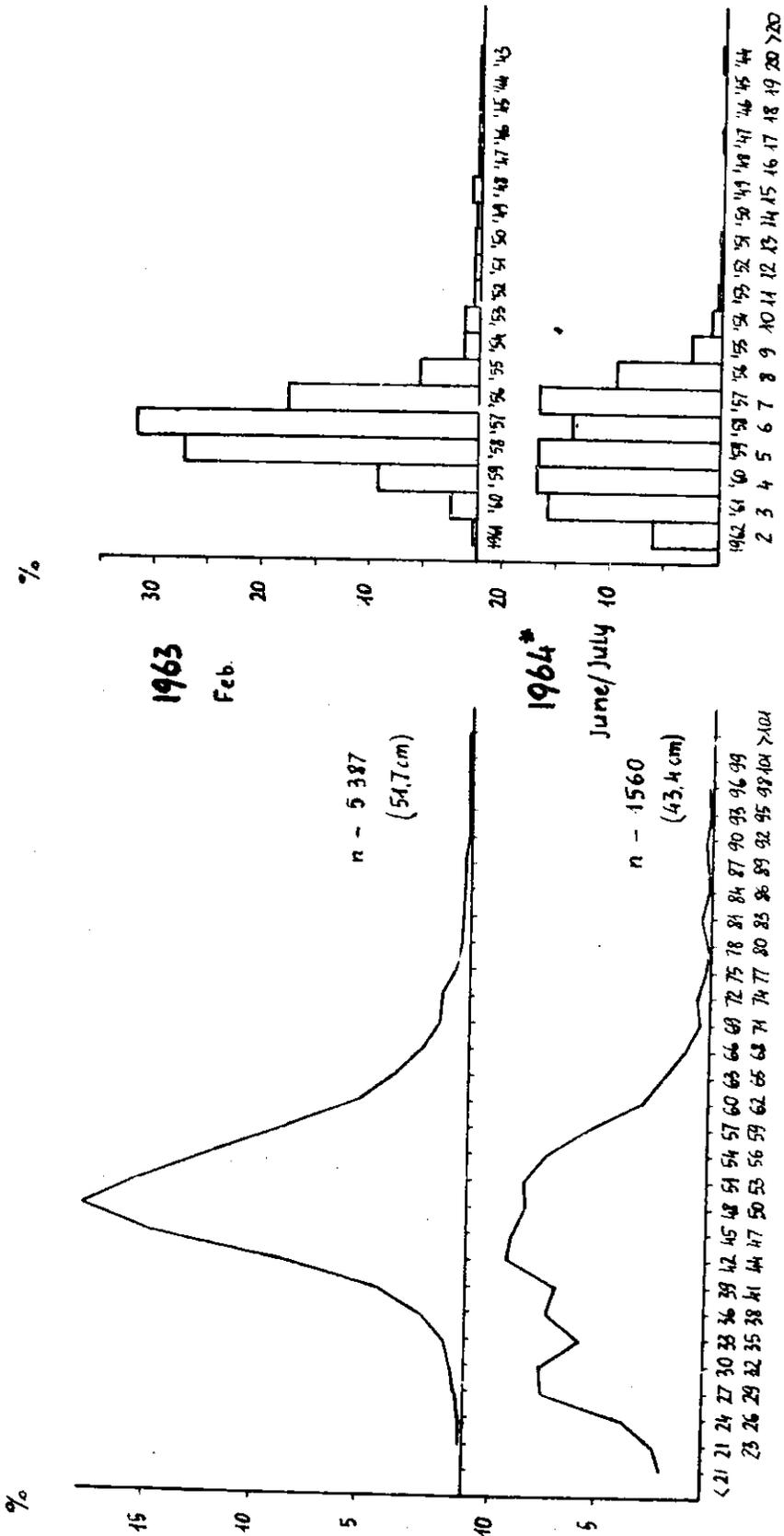


FIG. 2. DIV. 3E

