

THIRD ANNUAL MEETINGICELANDIC RESEARCHES 1952Analysis of Trawler Caught Cod in Greenland Waters in 19521. The Material

In 1951 Icelandic trawlers commenced fishing in Greenland waters and in 1952, 29 trawlers made 72 trips to the banks off the west coast during the months May-November.

On one of these trawlers, "Pétur Halldórsson" RE-207 from Reykjavík, stud. mag. Ingvar Hallgrímsson secured the following material of cod during a trip which lasted from 3 September to 17 October:

		<u>Otoliths</u>	<u>Length measurements</u>
Holsteinsborg	8-9 Sept.	519	354
Store Hellefiskebank	10-20 Sept.	3383	2906
Fyllas Bank	22 Sept. - 12 Oct.	1038	11581
TOTAL:	8 Sept. - 12 Oct.	4940	14841

Thus a total of 19781 cod were examined and of these nearly five thousand otoliths. The actual catch of the trawler was 3398 boxes of splitted cod (the weight of each box 140 kg., average number of fish in box on this trip was 88.6). The number of salted cod thus amounts to 301063. To this we have to add the fish under 48 cm. which were discarded for salting and converted to fish meal. According to the length measurements 6.1% or 20013 belonged to these size categories. Thus the total catch of cod amounts to 321076. The percentage sampled is 6.2% but varies somewhat for the different banks. Therefore the average age- and length-distribution is weighed in accordance with the actual value of the samples.

2. The Age Composition and Length-Distribution

Table 1 shows the age composition for the different banks together with the average lengths of the age-groups. There is also given the average age distribution for all the samples unweighed and weighed. The results of the table are shown graphically on fig. 1. The two yearclasses 1945 and 1947 make 78.2% of the total catch. 50.7% belong to the 1947 yearclass and 27.5% to the 1945 yearclass. If we also include the 1946 yearclass these three make 86.9% of the total catch. The absence of the older yearclasses is very striking. According to Rasmussen (Praktiske fiskeforsøk 1951) the 1942 yearclass

dominated in the Norwegian long-line catches on these banks in 1950 and 1951 (over 30%). In Dr. P. Hansen's material from 1950 this yearclass dominated in all the districts sampled, but he is expecting the 1947 yearclass to be of great importance in the coming years as it has been found in great quantities all along the coast. He considers this to be the biggest yearclass which has occurred in the stock in recent years (Fangst og Fiske no. 7-8, 1951). In our material this yearclass is of no importance (3.1%).

Table 1.

Age Composition on the Different Banks and the Average Lengths of the Age-Groups

Age	Store Hellefiske-bank		Holsteins-borg		Fyllas-bank		Total (unweighed)		Total (weighed)
	%	cm.	%	cm.	%	cm.	%	cm.	%
2	0.2	32.0					0.1	32.0	0.1
3	0.3	35.8					0.2	35.8	0.1
4	6.9	43.5			1.3	47.1	4.2	43.9	3.2
5	63.3	52.6	38.6	55.8	44.5	54.9	54.1	53.5	50.7
6	8.4	60.3	13.0	63.0	8.3	63.3	8.7	61.7	8.7
7	15.4	70.8	26.9	72.1	35.3	71.8	24.0	71.5	27.5
8	2.0	73.0	4.5	77.7	2.9	76.2	2.5	75.0	2.7
9	1.5	74.6	1.3	73.0	2.9	75.9	2.0	75.2	2.2
10	1.5	77.4	5.8	78.8	3.7	79.7	2.7	78.8	3.1
11	0.1	74.0	2.2	83.4	0.5	81.2	0.4	81.6	0.5
12	0.2	79.7	2.2	90.2	0.1	80.0	0.3	85.6	0.3
13	0.1	86.0	1.3	90.3	0.1	106.0	0.2	92.6	0.2
14	0.1	88.0	0.4	91.0	0.1	96.0	0.1	91.7	0.1
15			0.9	87.0	0.1	89.0	0.1	87.7	0.1
16			0.4	87.0	0.3	87.3	0.1	87.3	0.2
17			0.3	95.0	-	-	0.1	95.0	0.1
18			0.9	91.0	0.1	97.0	0.1	93.0	0.1
No.	1506		223		1084		2813		

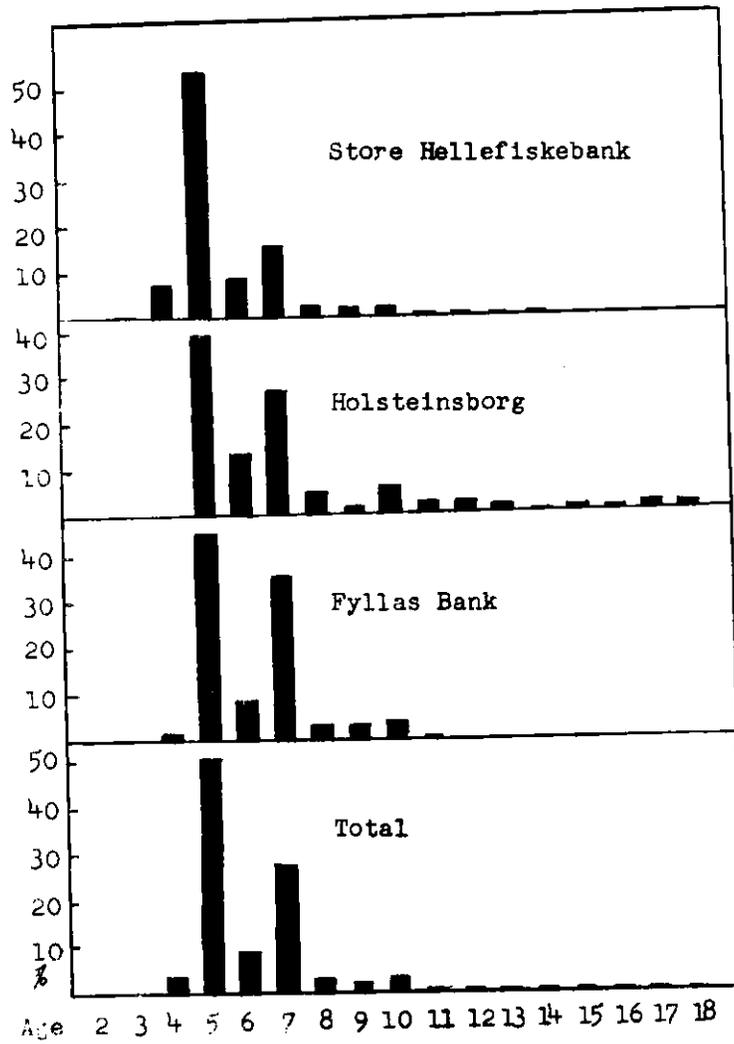


Fig. 1. The age-composition on the different banks.

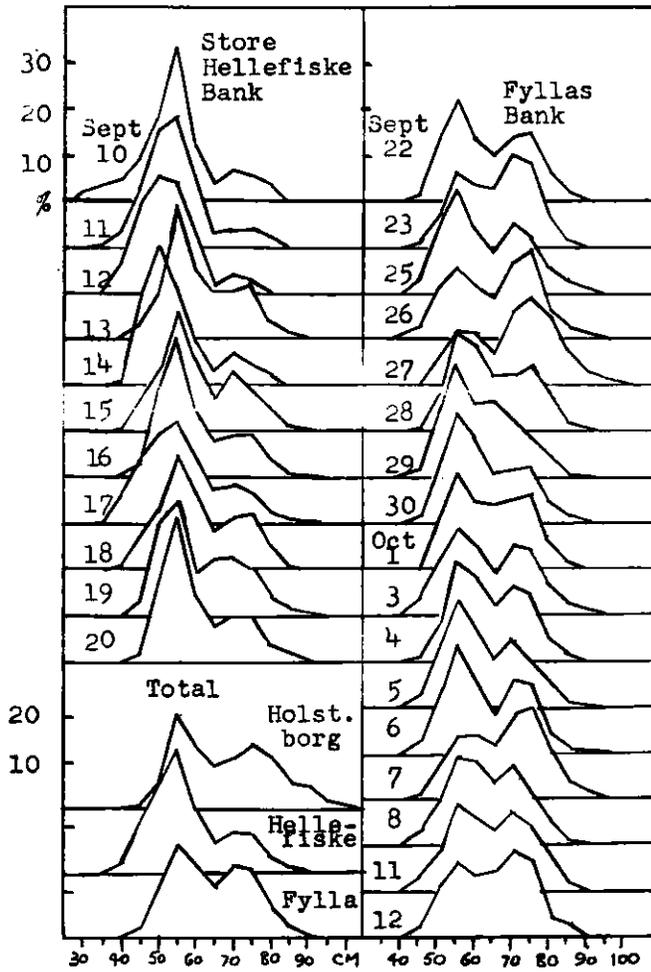


Fig. 2. The daily length-distribution of the catches.

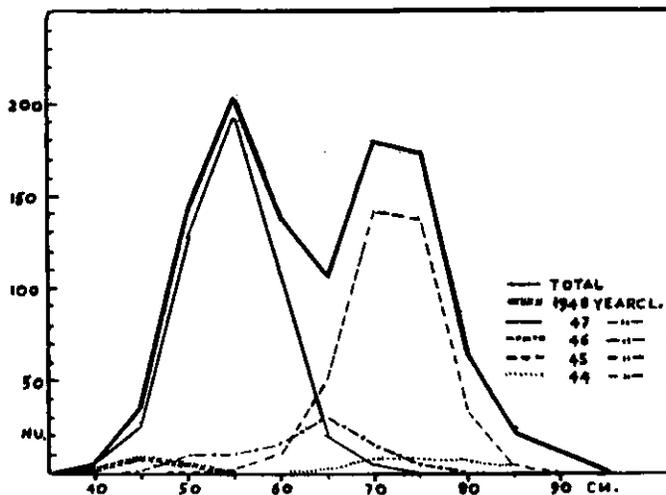


Fig. 3. The length-distribution of the different yearclasses.

The uniformity of the catches from day to day is very clear. There were extensive length measurements made almost each fishing day and the daily length distribution is shown in fig. 2. All the curves have the same two top shapes. That these tops represent the yearclasses 1947 and 1945 is evident from fig. 3, where the curve showing the length distribution of the age determined fish has been splitted into the various age-groups. Closer examination of fig. 2 shows that there are daily fluctuations in the proportion of the two dominating yearclasses. On Store Hellefiskebank the dominance of the 1947 yearclass is more constant, whereas on Fylla's Bank this dominance is not so apparent. The average lengths on Fylla's Bank are for the 1947 yearclass 54.9 cm. and for the 1945 yearclass 71.8 cm. and these lengths coincide with the two maxima in the length distribution. The proportion of the percentages of seven to five year old fish is  $35.3 : 44.5 = 0.79$  and if we in the same way take the proportion of the length groups 70 to 55 cm. we get exactly the same value  $157 : 199 = 0.79$ . Without great error we can therefore compute the proportion of these two yearclasses as the proportion of the 70 to the 55 cm. groups.

For the Fylla's Bank we then see that during September 22nd. - 27th. there is a dominance of the 1945 yearclass in 3 days out of 5, but according to the actual catches the ratio 7/5 is 0.91. From September 28th to October 6th there is a clear dominance of the 1947 yearclass, and the ratio is 0.64. Lastly from October 7th - 12th there is a dominance of the 1945 yearclass in 2 days out of 4, and the ratio is 1.01.

### 3. The Growth.

The growth of the Greenland cod is very slow compared with the growth in Icelandic waters. The following table gives the average length (and weight) of the 1947 yearclass on the Greenland Banks, Skjálfandi Bay (north Iceland) and Faxa Bay (South-west Iceland) in 1952.

<u>Locality</u>	<u>Date</u>	<u>Length</u>	<u>Weight</u>
Greenland	8-26 September	53.5 cm.	1.5 kg.
Skjálfandi Bay	19 May	61.6 cm.	2.1 kg.
Faxa Bay	24 May	81.3 cm.	4.2 kg.

The cod from Faxa Bay is 2.8 times heavier than the Greenland cod. This difference is greater than normal and must largely be due to overcrowding in the Greenland waters.

### 4. The Catch per-Unit-of-Effort.

Table 3 shows the number of fish caught on the different banks and the catch-per-unit-of-effort. The bottom temperatures on these banks are also given.

	<u>Holsteins- borg</u>	<u>St. Helle- fiskebank</u>	<u>Fyllas Bank</u>	<u>Danas Bank</u>	<u>Total</u>
No. of fish caught	25687	125962	156886	12541	321076
Hours fished	22	143	196	9	370
No. of fish pr. hour	1168	881	800	1393	868
1947 yrclass " "	451	558	356	-	440
1945 " " "	314	136	282	-	238
Bottom Temperature	4.1- 4.3°C.	3.65- 4.55°C.	2.00- 2.45°C.	-	-

The trawler spent 36 days (1864 hours) on the fishing grounds. The actual fishing was 370 hours or 42.8%. The richest catches were taken on rough bottom and therefore the figures for actual fishing are somewhat lower than usual (time spent for repair etc.).

The catch of split cod was 475.7 tons and makes 621 tons gutted with head on (which has been found for cod in Icelandic waters). This gives 167.8 tons pr. 100 hours or 17.3 tons pr. "day fishing". In 1950 the catch per "day fishing" of Icelandic trawlers fishing in salt on Icelandic grounds was 17.1 tons for the period January - December.

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