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Icelandic Research Report, 1957

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1. Introduction

This report deals with material collected by mag. scient. Aðalsteinn Sigurðsson from Atvinnudeild Háskólans - Fiskideild on board the Icelandic trawler "Hallveig Fróðadóttir" on a trip to the West Greenland banks from 17th April to 9th May, 1957. This was an ordinary fishing trip with the purpose to fish in these waters at an earlier date than Icelandic trawlers have been doing before.

The following material was collected on cod:

<u>Area</u>	<u>Otoliths</u>	<u>Measured</u>	<u>Tagged</u>
Fylla's bank	298	575	
Fiskenaes bank	302	781	
Dana's bank	295	620	
Frederikshaab bank	150	508	
Nameless bank	300	1325	124
Total	1345	3809	124

Although no hydrographical sections could be worked out, numerous measurements of the bottom temperature were taken on the various banks.

2. Length distribution

Fig. 1 shows the length distribution of the fish on the various fishing banks and from Fig. 2, where the total length distribution on Fylla's bank and Nameless bank has been broken down to the length distribution of the various age groups, we can distinguish between the year-classes which made up the main bulk of the catches.

On Fylla's bank the curve shows two well-defined peaks of about 45 cm. and 65 cm. respectively. These peaks represent the 1953 and 1950 year-classes. These two year-classes were found in rather varying quantities from one day to another, as is evident from the figure.

On Fiskenaes bank the 1950 year-class is more prominent, with a little admixture of the 1953 year-class in some of the hauls. The peak of the curve is at 60 cm. and indicates thus a certain amount of five and six year old fish also.

The length distribution of the fish from Dana's bank indicates a strong dominance of the 1950 year-class and this year-class was also very numerous on Nameless bank, except in the last sample, which is from the shallow part of that bank.

The right-hand corner below in Fig. 1 shows the total length distribution from each bank, and it appears from the figure that the 1950 year-class has made up the main part of the catches, except on Fylla's bank.

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3. Age distribution and sexual maturity

Tables 1 and 2 show the age distribution on Fylla's bank and Nameless bank respectively. The age groups of the mature fish have been divided according to age of spawning for the first time and the number of immature fish in each age group is also shown. In both samples all the fish under 5 years are immature. As mentioned before, there is a strong dominance of the 1953 year-class on Fylla's bank, but the 1950 year-class is predominating on Nameless bank. In both samples the recruit spawners make up more than 80% of the mature fish. The 1950 year-class constitutes the greatest part of the recruits, about 59% on Fylla's bank and 51% on Nameless bank.

The stage of maturity was the following in these two samples:

	<u>Immature</u>	<u>Maturing</u>	<u>Spawning</u>	<u>Spawned</u>
Fylla's bank	171	14	55	43
Nameless bank	131	3	6	157

It is clear that we are not dealing with a pure spawning population, as there are 40-60% immature fish in the samples.

The spawning seems to be far more advanced on Nameless bank than on Fylla's bank. This difference may be caused by the difference in temperature, as the bottom temperature on Fylla's bank was only 1.49° C (120 m), as compared to 3.28° C (175 m) on Nameless bank.

The average lengths of the various age groups are listed in Table 3.

Table 1. Age Distribution of the Greenland Stock of Cod, Fylla's Bank 23rd-25th September, 1957

<u>Age groups</u>	<u>Age at first spawning</u>												Total
	5	6	7	8	9	10	11	12	Mature	Immature			
3												4	4
4												113	113
5	16									16		34	50
6		15								15		12	27
7			2	61						63		6	69
8			1	1	4					6		1	7
9				1	4	4				9			9
10			1	1	3	2	3			10			10
11					1					1			1
12									1	1			1
17									1	1			1
Total	16	19	64	12	6	3	1	1	122		170		292
Spawning classes:													
	1	2	3	4	5	6	7						
No.	104	9	5	2	1		1						122

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Table 2. Age Distribution of the Greenland Stock of Cod  
Nameless bank 1st-2nd May, 1957

Age groups	<u>Age at first spawning</u>						Mature	Immature	Total
	5	6	7	8	9	10			
4								4	4
5	1						1	14	15
6		16					16	13	29
7		1	67				68	73	141
8			3	41			44	22	66
9			3	3	2		8		8
10			4	7	2	5	18	1	19
11			1	2			3		3
12				1	2	2	5		5
<b>Total</b>	<b>1</b>	<b>17</b>	<b>78</b>	<b>54</b>	<b>6</b>	<b>7</b>	<b>163</b>	<b>127</b>	<b>290</b>

Spawning classes:

	1	2	3	4	5	
No.	132	9	12	8	2	163

Table 3. Average lengths of the various age groups of cod in 1957

Area	FYLLA'S BANK				NAMELESS BANK							
	Position				Date							
	64°00'N -53°00'W				61°47'N-50°37'W							
	Depth				Date							
	150 - 250 m.				23rd-25th April							
	150 - 200 m.				1st-2nd May							
Age groups	No.	♀	Cm	No.	♂	Cm	No.	♀	Cm	No.	♂	Cm
3	2		34.5	2		37.5						
4	56		45.6	57		45.1	3		46.0	1		50.1
5	21		52.3	29		56.4	9		56.9	6		56.3
6	11		59.5	16		62.4	11		58.6	18		62.9
7	34		68.6	35		65.9	83		67.4	58		66.0
8	5		78.4	2		78.5	40		73.5	27		70.5
9	5		74.2	5		75.4	9		76.4	1		75.0
10	7		76.6	3		77.3	15		77.9	5		76.2
11	1		83.0	1		71.0	2		77.5	2		76.0
12	1		93.0	1		78.0	4		77.7	4		80.7
16							1		100.0			
17	1		91.0									

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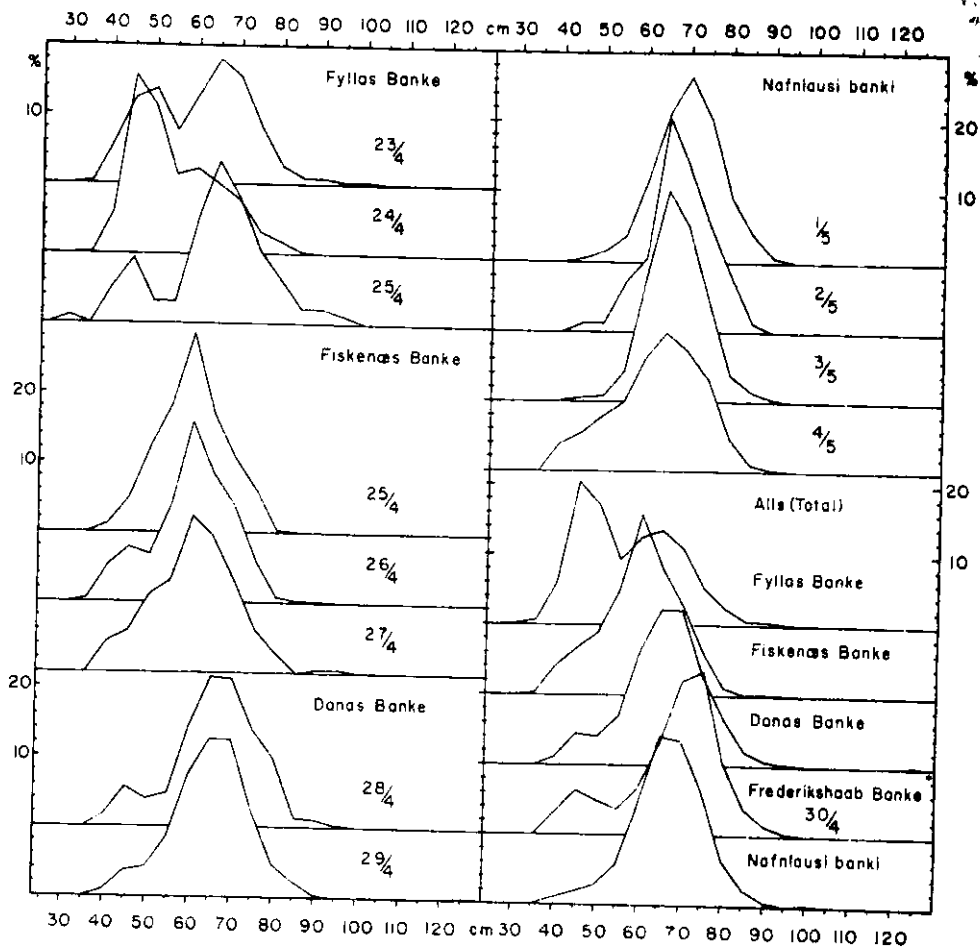


Fig. 1 Daily variations in the length distribution of cod on the various fishing banks.

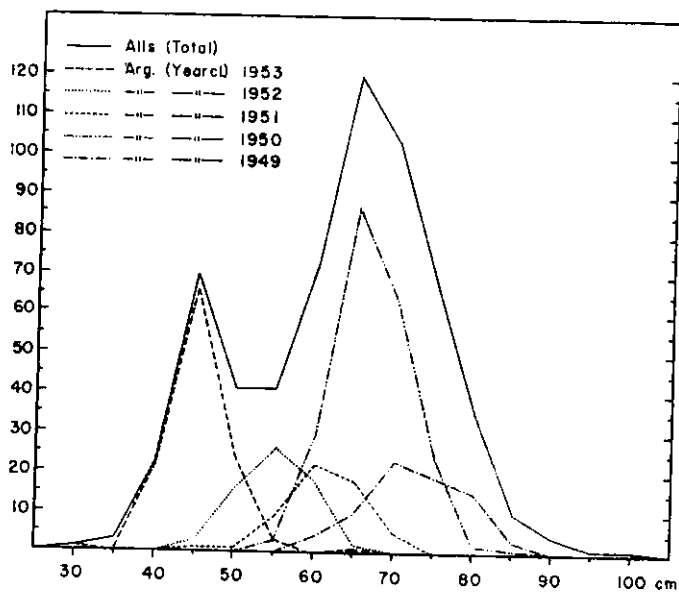


Fig. 2 Length distribution of the various age groups on Fylla's bank and Nameless bank together.



4. The fishery and the bottom temperature

The following table gives the bottom temperatures and catches per hour trawling on the various fishing localities:-

<u>Locality</u>	<u>Depth fished</u>	<u>Temp./depth</u>	<u>Hours fished</u>	<u>Catch in tons per hour</u>
Fylla's bank	150-250	1.49/120-1.89/205	21	1.33
Fiskenaes bank	75-100	1.30/145-1.78/165	25½	2.23
Dana's bank	150-230	1.60/215	14	2.39
Frederikshaab bank	135-245	1.25/165-0.29/100	3	1.50
Nameless bank	150-200	3.28/175-3.56/175	36½	3.02

The catches were highest on Nameless bank where the bottom temperature was about 3.5° C, but the material is too limited to allow general conclusions.