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The Stock of Cod in Greenland Waters, 1955.
Preliminary Report.
by Paul H. Hansen



1. Occurrence of cod fry.

In Figure 1 are given the catches of cod larvae taken by the "Dana" in July with the 2-m. stramin net. The numbers of cod larvae were small. The largest number was ten in a haul with 100-25 m. wire in half an hour. It seems that the most large occurrence has been on the southern part of Store Hellefiske Bank. The absence of cod larvae in the stramin net hauls on the two southern sections in the Davis Strait (only one larvae was taken on the Frederikshåb section) probably indicate that there has been no transport by the current of cod fry from the Icelandic spawning grounds.

Judging from the poor occurrence of cod fry the year-class 1955 will be a very poor year-class which will be without importance to the output of the fishery in the future.

2. Occurrence of small cod belonging to age-groups I, II and III.

Small cod have been taken in hauls with fine meshed seine on several localities in coastal waters and in the fjords especially in Godthåb, Sukkertoppen and Holsteinsborg districts. Furthermore have small cod been taken in shrimp trawl at a locality in the coastal area (63°53'N, 51°28'W) on 220-240 m's depth where trawling experiments have been carried out regularly during all seasons since July 1953.

The year-class 1953 has predominated in all these catches in 1955, wherefore there is reason to consider it as a good year-class which will be of some importance to the fishery from 1958-59 and further on.

3. The age composition in the stock of cod in commercial catches.

a. Offshore banks. Like in previous years a large number of cod otoliths together with length measurements have been collected from catches taken by hand-line from the "Dana" on the banks and from long-line catches taken by the "Adolf Jensen" and from Greenland fishing boats in coastal waters and in the fjords. Until now in all a number of 3070 otoliths have been used for age determinations. 922 have been collected from the "Dana", 1825 have been collected from the "Adolf Jensen" and 323 have been sent us from the Greenlanders catches. Many more samples are expected to be sent from Greenland this year.

In Figure 2 is given the age compositions of seven catches from the banks (to the left) and the corresponding length measurements in 5-cm groups (to the right). The samples 3 and 6 are from long-line catches from the "Adolf Jensen". The remaining samples are from catches taken by hand-line from the "Dana".

With the exception of 1, the northernmost of the samples, the year-class 1947 dominates in all the catches increasing from north to south.

The second best year-class was the year-class 1950 which was predominating in the catch on the northern part of Store Hellefiske Bank 47.5 %. In 1954 it amounted to between 25 and 30 % in the catches on the same place and date. The higher percentages in the catches in 1955 originate from the growth of the individuals belonging to the year-class 1950 in the interjacent year. The mean totallength of cod belonging to the year-class 1950 was in 1955, 55.8 cm and it is by that length cod generally enter the catches by commercial gears. Also on the southern part of Store Hellefiske Bank the year-class 1950 was taken in rather large numbers 32.3 % (sample No.4). In sample 3 it was only about 12 % owing to the fact that this sample was a catch taken by long-line with big hooks for halibut and it is evident that such a gear is not especially suited for taking small sized cod. In the samples No. 5 and 7 cod belonging to the year-class 1950 occur in very small numbers while it was very strong repres-

ented in sample No. 6, a long-line catch in the early spring from Fylla Bank, 32.1 %. Year-classes older than the year-class 1947, for instance the former rich year-classes 1945 and 1942, were only very slightly represented in the catches on the banks. In the seven samples on the Figure the year-class 1945 only amounts to a little more than 15 % in the southernmost sample No. 7, in all the other samples it lies below 10 %. The year-class 1942 is without importance in all samples with exception of No. 3 which is the sample taken on long-line with halibut hooks and the occurrence of such a relative old year-class in the sample must be ascribed to the big sized hooks which chiefly catch big sized cod.

The graphs showing length measurements of cod in 5-cm groups given in Figure 2 agree with the corresponding age analyses. The two tops on the graphs (55 - 60 cm and 65 - 75 cm) represent the two predominating year-classes 1950 and 1947.

According to our investigations only two year-classes must have been of some importance in the stock of cod on the banks in 1955. The most important year-class to the fishery on the banks has been the year-class 1947 which in 1955 had a mean-length between 68 - 72 cm which corresponds to a meanweight of about 3 - 3.5 kg.. The next year-class which has been important in the stock is the year-class 1950 but the small sizes of the individuals belonging to this year-class (meanlength 54 - 58 cm and meanweight 1.4 - 1.7 kg.) undoubtedly have caused that it has been of very little value to the commercial fishery.

b. Coastal waters and fjords. Figure 3 shows age analyses on catches of cod from coastal waters (to the left in the Figure) and in the fjords (to the right in the Figure). Most of the catches have been taken by long-line. The catches A and B are taken on big halibut hooks, H and J have been taken in pound nets the other catches on small cod hooks. The year-class 1947 predominates only in the catches A and B. The catch C is according to composition of year-classes similar to the catches F and G from the Godthåb fjord with strong predominance of the year-class 1940. Catch D shows a predominance of the young year-classes 1949 and 1950 while in catch E the year-class 1945 is

predominating like in previous years.

Two samples are taken from each of the two fjords in Godthåb district, Godthåb Fjord (F and G) and Ameralik Fjord (H and J). The age compositions in the catches from these fjords are very different. In Godthåb Fjord the samples are from spawning cod and consist of old year-classes chiefly 1942, 1940 and 1938 while the samples from Ameralik Fjord consist of younger year-classes with the year-class 1950 as the predominating. Contrary to the Godthåb Fjord the Ameralik Fjord is a threshold fjord without spawning places for cod. Cod enter the fjord in the early summer chasing the capelin which spawns in the interior part of the fjord.

Of special interest is the occurrence of the young year-classes 1949 and 1950 in sample D. The fishery has increased very much in the Frederikshåb district in 1955 and it is reported that the catches chiefly are composed of small sized cod. The two young year-classes seem to be abundant in the district. There is reason to believe that these year-classes also have been present in great numbers in Julianehåb district even if the sample E does not support such a supposition. Samples taken in 1954 seem to show that. When more samples have been received and examined from Julianehåb district it will be possible to get a better picture of the stock of cod in this very important fishing area.

4. Mean-length of cod of different age groups.

In Table 1 are given the mean-lengths of cod belonging to some of the most important year-classes at different stations from the banks, coastal waters and the fjords. The arabic numbers and the capitals correspond with the numbers and letters on the maps Figures 2 and 3.

It is seen that there are very small differences between the mean-lengths of the same year-classes in the different samples from the banks. The sample 7 (Dana Bank) however shows lower mean-lengths than the other samples.

The mean lengths in the samples from the coastal waters are not very different from those from the banks while the samples

C, G and F from the Godthåb Fjord lies lower according to mean-total length than the samples from the banks.

The samples H and J which are from Ameralik Fjord differ from the samples from the Godthåb Fjord and are much more similar to the samples from the banks. This must be ascribed to the fact that the stock of cod in the Godthåb Fjord is a population consisting of slow growing local fjord cod and cod from the coast and banks while the stock in Ameralik Fjord, as tagging experiments have shown, consists exclusively of cod from the coastal area and the banks not mingled with a local fjord stock.

Compared with the mean-lengths for different age-groups calculated from material collected in West Greenland waters in the period 1931-39 the mean-lengths found in 1955 show much more less values.

In the period 1931-39 the mean-lengths were as follow:

Table 2.

Age-group	Northern districts		Frederikshåb and Julianehåb districts	
V	62.1	cm	59.6	59.7 cm
VIII	77.1	79.7	73.1	74.3
X	83.3	86.7	78.6	80.5

It is evident that the growth of the cod in West Greenland waters has decreased very much since the thirties.

Summary.

Hauls with the stramin net have shown very poor occurrence of cod larvae. The year-class 1955 is therefore considered to be a poor year-class without importance to the fishery in the future.

Catches with fine meshed seine and trawl have shown that the year-class 1953 seems to be rich. The year-class 1947 has been the most important in the stock of cod which has been fished for with commercial gears. The year-classes 1950 and 1949 are expected to be important to the fishery in the future. 1949 will especially be important in the southern districts.

The year-class 1945 and older year-classes have only been important on certain localities and are expected only to contribute to a lesser degree to the output of the fishery in the future.

Table 1.

Year-class	Age-group	1		2		3		4		5		6		7	
		cm	no.	cm	no.	cm	no.	cm	no.	cm	no.	cm	no.	cm	no.
1950	V	54.5	(85)	55.8	(63)	56.0	(35)	56.3	(52)	58.7	(11)	54.4	(100)	53.8	(4)
1947	VIII	68.7	(47)	71.7	(72)	69.6	(106)	71.9	(123)	71.5	(132)	68.0	(116)	67.6	(30)
1945	X	74.8	(4)	81.6	(7)	74.7	(21)	77.3	(13)	78.1	(19)	77.2	(5)	70.9	(9)

		A		B		D		E							
1950	V	59.3	(4)	51.0	(3)	51.8	(48)	45.9	(7)						
1947	VIII	70.7	(38)	71.4	(27)	63.9	(39)	67.8	(23)						
1945	X	77.3	(8)	73.2	(8)	73.2	(7)	79.1	(61)						
1942	XIII	85.9	(7)	79.6	(18)	72.7	(3)	87.1	(12)						

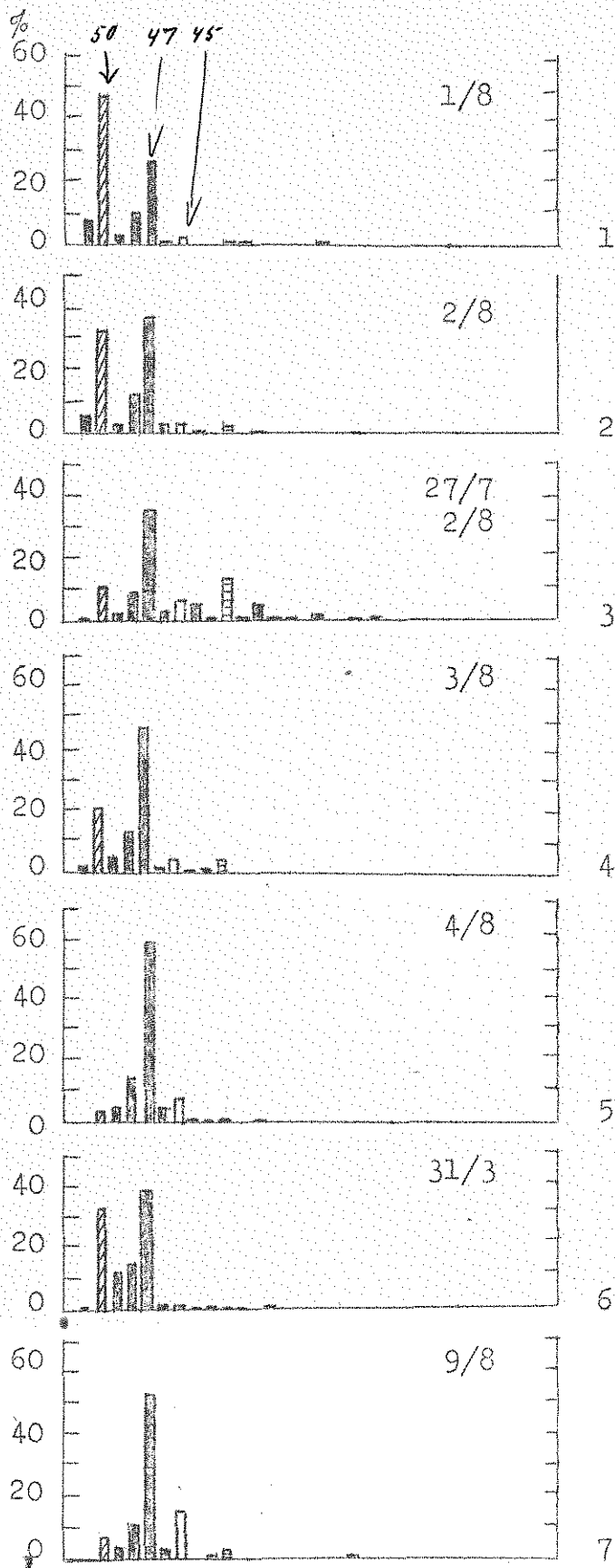
		C		G		F		H		J					
1950	V	54.0	(6)	56.0	(2)	45.4	(10)	44.4	(91)	52.9	(54)				
1947	VIII	65.6	(7)	67.1	(10)	64.0	(13)	68.6	(32)	68.6	(31)				
1945	X	70.5	(6)	70.0	(16)	68.8	(49)	75.8	(24)	75.4	(20)				
1942	XIII	73.4	(15)	74.6	(27)	71.5	(71)	79.1	(12)	77.2	(6)				
1940	XV	74.8	(32)	76.4	(49)	74.4	(79)	83.1	(22)	82.5	(8)				
1938	XVII	78.8	(5)	78.0	(46)	76.4	(35)	82.3	(15)	74.5	(4)				

GRONLAND

1905
S. A. S. L. S. S. S.
100 51 25 W
20 25 50 W



1. 68°04'N, 54°54'W. No. 179.
2. 66°52'N, 54°30'W. No. 195.
3. 66°59'N, 54°08'W. No. 295.
4. 65°01'N, 54°21'W. No. 263.
5. 64°10'N, 52°48'W. No. 228.
6. 63°53'N, 53°22'W. No. 311.
7. 62°45'N, 51°09'W. No. 57.



1
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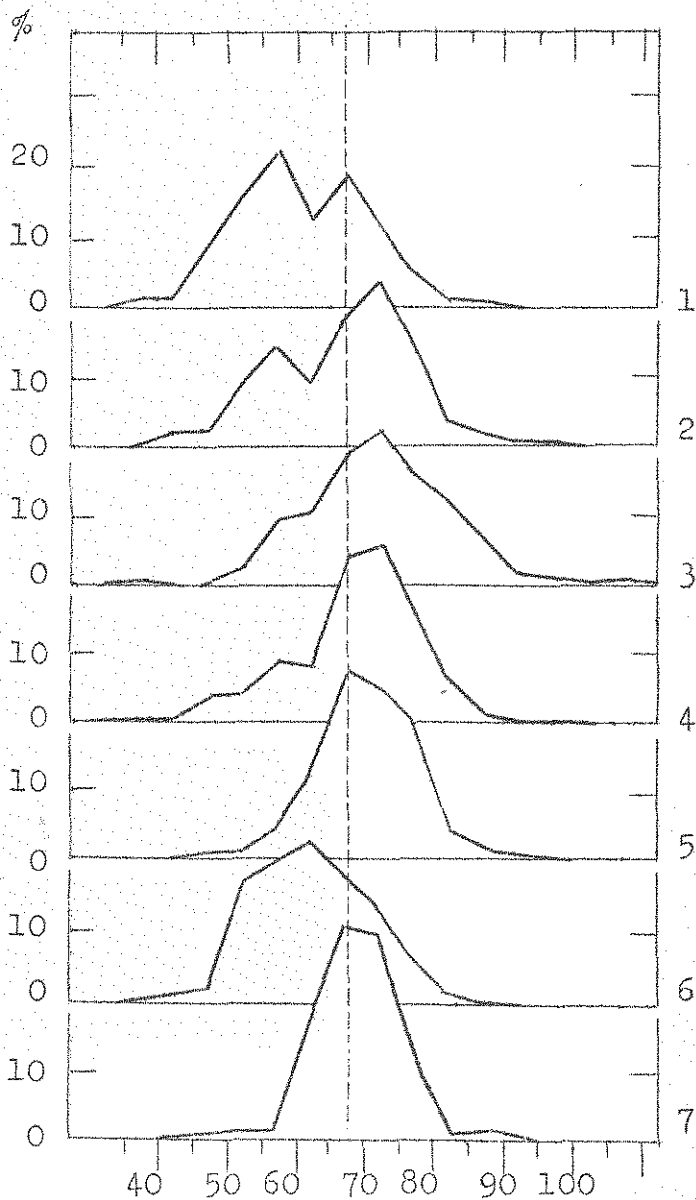
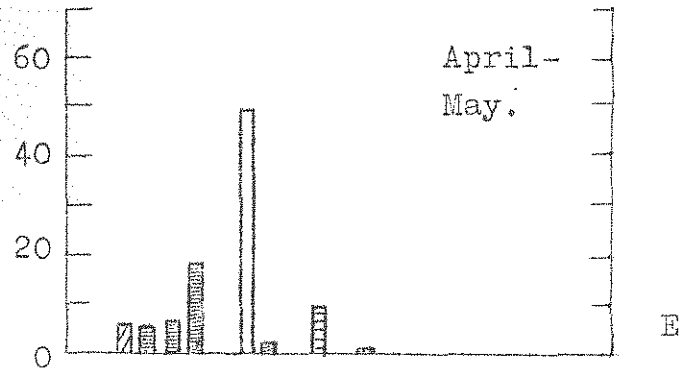
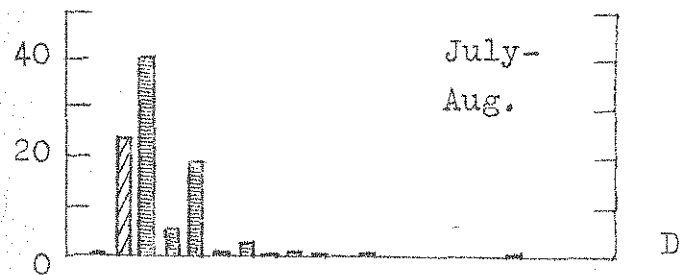
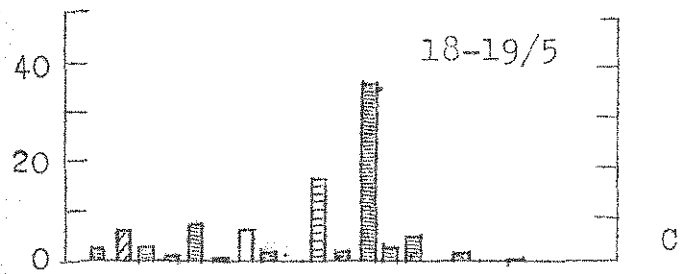
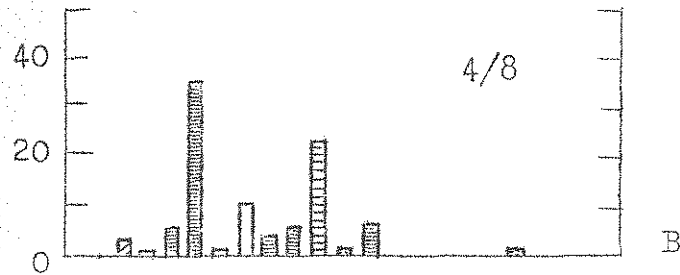
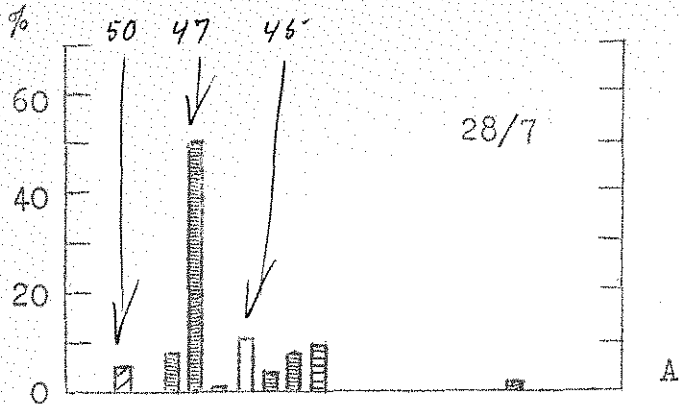
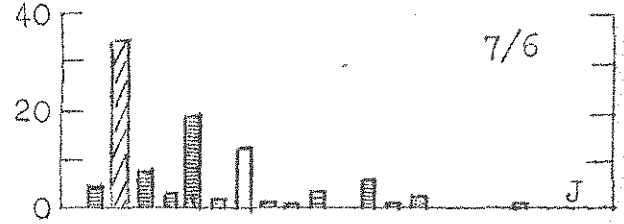
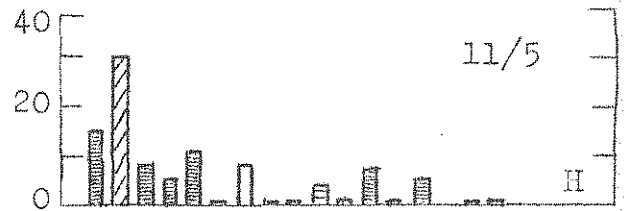
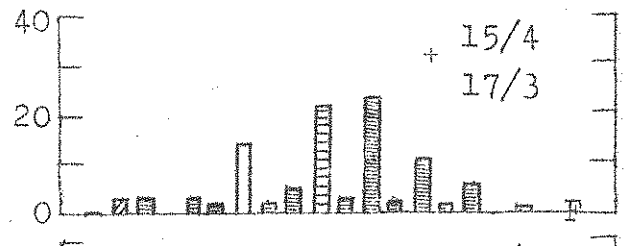


Figure 2.



F. $64^{\circ}25'N, 50^{\circ}28'W$. No. 333.
 G. $64^{\circ}07'N, 51^{\circ}53'W$. No. 190.
 H. $64^{\circ}19'N, 50^{\circ}25'W$. No. 297.
 J. " " No. 158.



A. $67^{\circ}13'N, 54^{\circ}19'W$. No. 75.
 B. $65^{\circ}32'N, 53^{\circ}25'W$. No. 77.
 C. $64^{\circ}10'N, 51^{\circ}42'W$. No. 88.
 D. $62^{\circ}00'N, 49^{\circ}42'W$. No. 200.
 E. $60^{\circ}43'N, 46^{\circ}05'W$. No. 123.

Figure 3.