



ANNUAL MEETING - JUNE 1955

Compilation of Research Reports by Subareas, 1954

by the Executive Secretary

Summaries of researches in 1954 were reported by the following countries: Canada, Denmark, France, Iceland, Norway, Spain, United Kingdom and United States. The table below shows the distribution of researches by subareas and countries.

(xx indicates researches from special research vessels.)

Subarea	1	2	3	4	5
Canada		xx	xx	xx	
Denmark	xx	xx			
France	x			xx	
Iceland	x				
Italy					
Norway	x				
Portugal					
Spain			x		
United Kingdom	x				
United States			x	x	xx

The Subareas 1 and 3 are those in which extensive research work has been carried out by more than one country and therefore those mainly to be considered in this compilation.

Subarea 1

Research vessel "Dana" (Denmark), July-August
 " boat "Adolf Jensen" (Denmark), over the year
 Trawler "Thorkel Mani" (Iceland), August
 Long-liner "Polhavet" (Norway), June-August
 Measurements of commercial samples (U.K.)

A. Hydrography

7 sections from the coast of W. Greenland between Frederikshåb and Hare Island (Denmark), July, one of them also in April and June
 1 section Kap Farvel-Hamilton Inlet Bank (Denmark), July
 1 section The Faroes - E. Greenland (Denmark), June-July
 1 section Kap Farvel-English Channel (Denmark), August
 3 sections across Lille Hellefiske Bk. and Fylla Bk. (Norway), July
 2 sections off Kap Farvel and off Sermersok (United Kingdom), Sept.

Compared to 1953, 1954 was a rather cold year; the temperatures over the banks being generally 1-2°C. lower in 1954. Fig. 1 shows the temperatures (°C.) in 50 m. depth observed in the period end of June - beginning of September 1954 over the Convention Area, from sections taken by Canada, Denmark, Norway and the United Kingdom. When comparing for W. Greenland, this figure with the figure showing the conditions in 1953 (Ann. Proc. Vol. 4, p. 33), it is seen that in 1953 an off coastal tongue of >6° water penetrated as far north as to off Frederikshåb (62°N); in 1954 water of this temperature only reached to Kap Farvel (60°N). In 1953 temperatures of abt. +3°C. was found right up to off Egedesminde (68°N); in 1954 only to N. of Godthåb (64°N). In 1953 the +1° isotherm was found as far west as along the 57°L; in 1954 it was right along the edge of the banks along 55°L.

B. Cod, Gadus callarias L.

The distribution of larvae was more scattered in 1954 than in 1953. The largest numbers of larvae were taken between 66 and 67° N. Contrary to 1953, some larvae were taken south of 64°N. The search for larvae was carried farther westwards than in 1953, and a few larvae were found as far west as midway between Greenland and Labrador. These finds raise the question of an interchange of larvae or young between Greenland and Labrador.

Researches on size and age of cod caught in commercial gears were reported by Denmark, Iceland, Norway and United Kingdom. Denmark and Norway report age as well as size, Iceland age and United Kingdom sizes.

The rich 1947 year class is dominant from N. of Kap Farvel and N. to Egedesminde. In the northernmost area around Disko, the 1942 year class is still the most abundant. Just around Kap Farvel the 1945 year class is dominating.

The 1950 year class is appearing in considerable numbers in the Danish catches; on Store Hellefiske Bk. it constitutes up to 20-30% of the catches; farther south (61-62° N. Lat.) it also is fairly well represented, in places with 15-20%.

The Danish report as well as the Icelandic mention the sudden strong decrease in the abundance of the 1945 year class:

Percentage of the 1945 year class in samples

	<u>1953</u>	<u>1954</u>	
Iceland	36% (Fylla Bk.)	5%	(St. Hellefiske Bk.)
Denmark (Fylla Bk.)	30%	13%	
" (Fiskenes)	39%	12%	

A comparison of Fylla Bk. with St. Hellefiske Bk. can hardly be considered adequate as the year class 1945 never was found abundant on St. Hellefiske Bk. However, the two other sets of figures clearly show a decrease in percentage of the 1945 year class from 1953 to 1954. How much of this decrease is due to a decrease in actual number of individuals or just to a strong increase in the numbers of individuals of other year classes, f.i. the rich incoming 1947 year class is an open question.

Subarea 2

- Research vessel "Investigator II" (Canada), September
- Another vessel (Canada), July - Hydrography only
- Research vessel "Dana" (Denmark) - Hydrography only

A. Hydrography

- 1 section across and off Hamilton Inlet Bk. (Canada), 30-31 July
- 1 section Hamilton Inlet Bk.-Kap Farvel (Denmark), 6-9 July

Both sections show temperatures of minus 1 to minus 1.5°C. and below in the Hamilton Bank area in depths between 50 and 150 m., and negative temperatures right up to 30 m. Between 30 m. and the surface a rapid increase is found on the 6-9 July up to +4°C. and on 30-31 July up to 7-9°C. The main part of the basin between Hamilton Inlet Bk. and Greenland is occupied by water of 3-3.5°C. The water along the bottom of the basin has temperature around and below +2°, the surface temperatures between 6.5° and 8.5°.

The water of the Labrador current off the Hamilton Inlet Bk. was considerably colder in 1954 than in 1953.

B. Redfish, *Sebastes marinus* L.

The exploratory fishing for redfish from "Investigator II" in deeper waters off the Hamilton Inlet Bk. showed greater concentrations of redfish between 300 to 400m. depth, with decreasing quantities down to ca. 700 m. where only few redfish were caught. Individual size was found to increase with depth.

Subarea 3

Research vessel "Investigator II" (Canada), over the year
Research vessel "Marinus" (Canada), over the year
Research vessel "President Theodore Tissier" (France), April-May
Commercial trawler "Mistral" (Spain), June-July

A. Hydrography

5 sections across the Grand Bank from off Bonavista to off the south edge of the Grand Bank (Canada), July-August, data from the section St. John's - Flemish Cap reported to ICNAF
Hydrographic survey of Grand Bank and St. Pierre Bank (Canada), Apr. 1 section (A) St. Pierre Bk.-Grand Bank (France), April-May
1 section (C,D,E) Banquereau-St. Pierre-Grand Bank (France), Apr.-May
Hydrographic observations on the S. part of the Grand Bank (Spain) July-August

Temperatures were found to be considerably lower than in the same seasons in 1953.

B. Haddock, *Melanogrammus aeglefinus* (L.)

The rich year class 1949 dominated completely in the catches (Canada, Spain). Both the Canadian and the Spanish researches indicate that the 1952 year class is a fairly rich one.

C. Cod, *Gadus callarias* L.

The Spanish researches show a considerable increase in average size of commercially caught cod from 1953 to 1954. This is attributed to the growth of the rich year class 1949, which in both years constituted a great part of the Spanish catches. A comparison of length frequency in the Spanish samples of cod from 1953 and 1954 is shown in Fig.2. It is thus obvious that the low average size of the Newfoundland cod in 1953, which was of some concern to the fishing industry was due just to the incoming rich year class 1949.

However, the average size of the Newfoundland cod as fished by the European countries is considerably below that of the Greenland cod, as it appears from the attached figure 3 showing length distribution of Danish, Norwegian, U.K. cod samples from Greenland and Spanish cod samples from the Grand Bank.

It is of interest to note the observation in the French Report indicating for the Bank area just east of the Avalon peninsula shoals of cod feeding more or less pelagically on herring and capelin. This leaves open the possibility that we in this area may have - as it is the case off West Greenland - considerable stocks of cod temporarily living in midwater. A statement indicating the same is found in W. Templeman's paper: Groundfish stocks in the Western North Atlantic (Document No.15).

D. Other Fish

Researches on redfish were continued by Canada. Rich year classes only rarely occur with hardly any settling of young in intervening years. Fishing for redfish showed migrations away from the bottom during the night hours.

500 American plaice (*Hippoglossoides platessoides*) were tagged in St. Mary's Bay (south coast of Newfoundland) and 1,000 on the northern slope of the Grand Bank.

Subarea 4

Various research vessels (Canada) over the year
Research vessel "President Theodore Tissier" (France), April-May
Various vessels (U.S.A.), over the year.

A. Hydrography

Several sections in various places and in various seasons (Canada), data from the section Halifax-Continental Slope, Feb., May, Aug., and Oct. reported to ICNAF

Various hydrographic surveys (Canada), over the year.
1 section, Nova Scotia-across Banquereau (France), April-May
1 section, Banquereau-Gulf of St. Lawrence (France), April.

The observations from 1954 show a certain decrease in temperature compared to 1953.

There is a good agreement between the western part of the French Nova Scotia section (April-May) and the rather closely corresponding Canadian section (May), with low temperatures 1-2°C. in depths between 30 and 100 m., and higher temperatures at the surface 4-5°C and at the bottom 8-9°C. (cfr. Fig.1 Can. Res. Rep. and Fig.4 French Res. Rep.). The edge of the Gulf Stream is clearly defined in the Canadian Section 1 to the SE of Emerald Bk. (Fig.1), and it is indicated also on the French Section D (SW edge of Grand Bk. Fig.5).

B. Cod and Haddock

The Canadian research work was centered on the investigations for the assessment of the need for mesh regulations of the trawl fishery in Subarea 4. The more detailed reports on this work are not given in the Canadian Research Report but are found in the appendices to the reports from the Group of Advisers to Panel 4 (Document Nos. 5 and 8).

During 1954 1,284 cod were tagged in Nova Scotian waters, and 2,000 in the Gulf of St. Lawrence (Canada). Cod recoveries from earlier taggings showed only few longer migrations. Haddock recoveries showed seasonal movements to offshore grounds.

The Canadian Research Report gives the results of experimental fishing for cod and haddock with hooks of different sizes, which shows very clearly that larger hooks catch larger fish and vice versa. Hook fishing may be regulated as well as trawl fishing.

U.S.A. researches on haddock in southern Nova Scotian waters (Brown's Bank) gave no evidence of a depletion of the stock.

C. Redfish

The extensive study - especially in the Gulf of

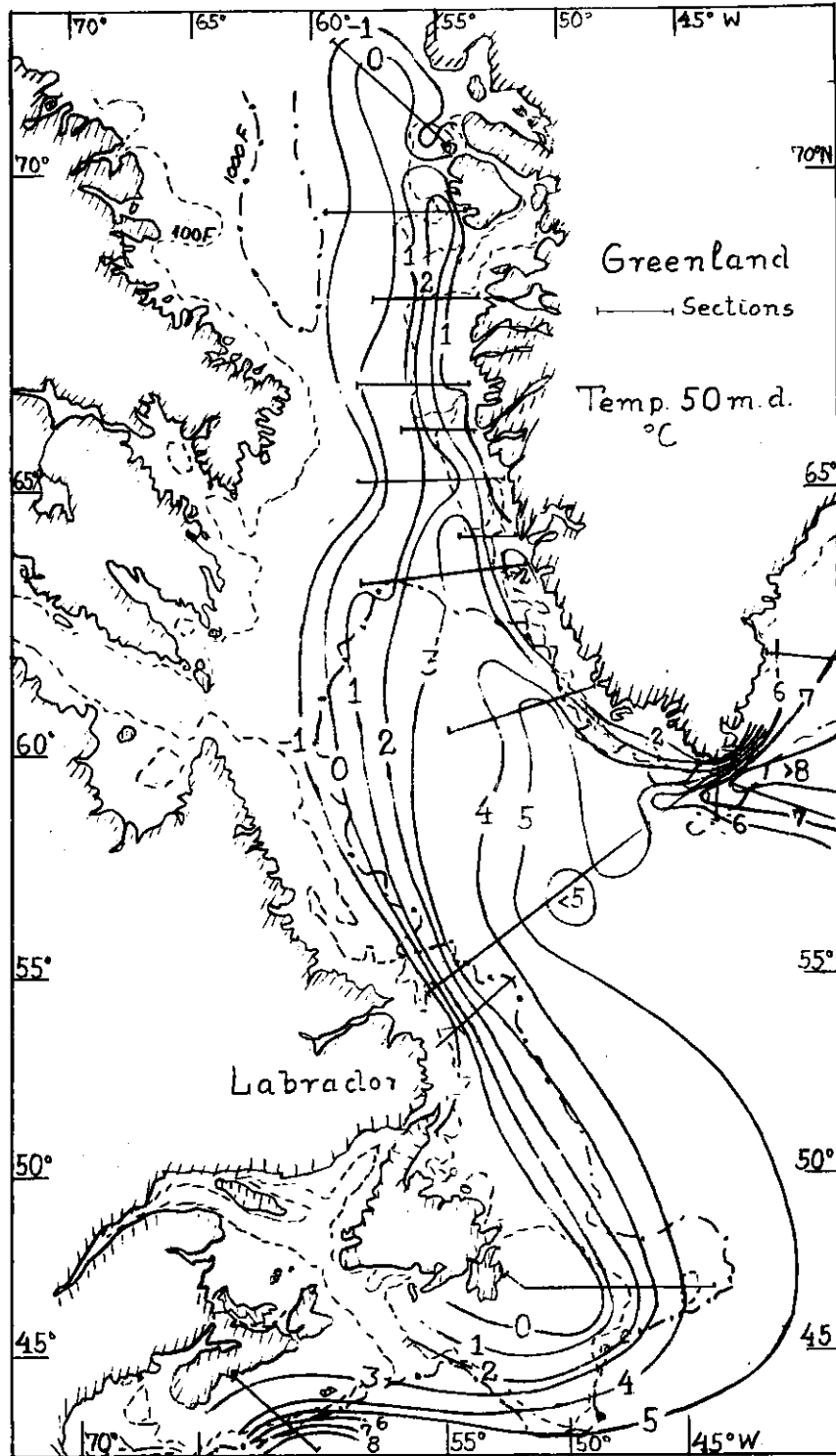


Fig.1 - Temperature °C. in 50 m. depth, end of June to beginning of September 1954. Combined from sections taken by Canada, Denmark, Norway and United Kingdom.

St. Lawrence of the seasonal and the diurnal movements and of the growth of redfish were continued (Canada). Investigations on year-class strength confirmed the earlier observations of only few rich year-classes with series of intervening poor years. The picture is thus the same as that found in Subarea 3.

D. Fish Eggs and Larvae

Seasonal and annual samplings were started in 1954 (August-September). They showed concentrations of cod larvae on Magdalen Shallows, of haddock larvae off SW Nova Scotia, and of redfish off SW Nova Scotia, on Quero Bank, and in the southern part of the Gulf of St. Lawrence.

Subarea 5

Researches in this subarea were carried out only by U.S.A. They were centered on haddock and redfish. The study of fish eggs and larvae started in 1953 was continued. A study program of silver hake, *Merluccius bilinearis* (Mitchill) and of Yellowtail, *Limanda ferruginea* (Storer), was started. U.S.A. being the only country reporting researches from this Subarea, no compilation has to be made.

Attention is drawn to Figs.9, 10 and 11 of the Danish Research Report, giving data from two transatlantic sections. In Fig.11b between St.9300 and 9301 along 30°W. Long. the squeezing together of the isotherms and isohalines, indicating the westward boundary of the Gulf Stream. At depth between 200 and 1000 metres another deeper, but less pronounced, boundary area is situated around the 18° W. Long. at depths from about 400 to 2000 metres.

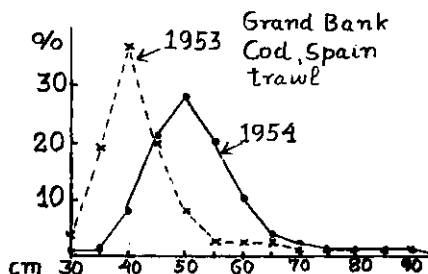
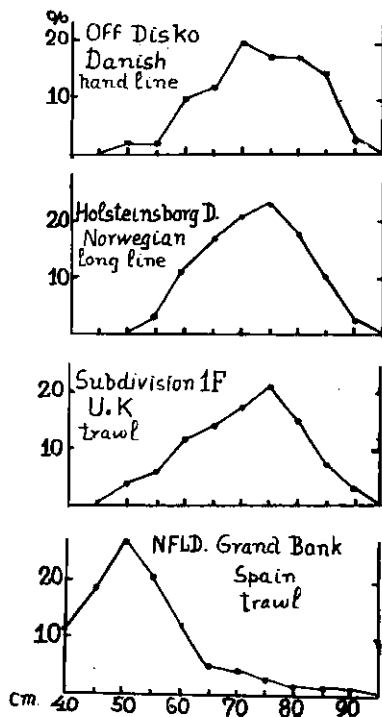


Fig.2 - % Length Distribution in Cod Samples by Spain in Subarea 3, 1953 and 1954.

← Fig.3 - % Length Distribution in Cod Samples from Subareas 1 and 3.