

ANNUAL MEETING - JUNE 1965Danish Research Report, 1964

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SUBAREA 1

A. Status of the FisheriesI. Cod

1. The fisheries. The Greenlanders' cod fishery has been limited chiefly to the inshore waters.

After having increased gradually from 1942-60, the landings rose abruptly to 35,164 metric tons and 36,666 tons in 1961 and 1962 respectively. In 1963, landings dropped to 23,650 tons and, in 1964, dropped further to ~~17,178~~ 22,000 tons which is almost the same as the total catch in 1946.

The decline in the last two years may be due partly to a scarcity of cod in inshore waters, which is probably a consequence of abnormal meteorological conditions and a strong winter cooling of the upper water layers.

The pound net fishery which is a very important branch of the Greenlanders' cod fishery failed, especially in Div. 1B, 1C and 1D. The pound net catches consisted merely of small cod belonging to the rich 1960 and 1961 year-classes with mean lengths about 36-45 cm and 50 cm respectively. Another fact which may have had an influence on the output of the cod fishery is the Greenland fishermen's failing interest in cod fishing and their changeover to more profitable fisheries for prawns and salmon. These two fisheries had their highest results in 1964. In the autumn good occurrences of cod were reported from different places along the coast in Div. 1C but, at that time, the fishermen were only interested in the salmon fishery.

2. Forecast for the cod fisheries. The year-classes older than 1956 will not be important in the commercial catches. The 1956 year-class will probably decrease further in 1965. In Div. 1F, however, it will still be of importance. In Div. 1D and 1E the two year-classes 1957 and 1958 are still important but the year-class 1960 will predominate in most of the catches in Div. 1B, 1C, 1D and possibly in 1E. The mean length of this year-class will be about 60 cm and the mean weight about 2 kg. The other rich, young 1961 year-class will be abundant in many catches especially in Div. 1B and 1C and possibly in 1D. The mean length of cod belonging to the 1961 year-class will be about 45-55 cm and the mean weight about 0.8 to 1.5 kg.

The cod fishery in 1965 will be characterized by a high percentage of rather small cod.

II. Other commercial species

A few species, other than cod, are of commercial value in the Greenlanders' fishery. The most important are Greenland halibut, wolffish and salmon. Among crustaceans the only species fished for is Pandalus borealis. Redfish which is important in the German and Icelandic fisheries is merely used by the Greenlanders for home consumption. Only small quantities of redfish fillets are produced. The catch of redfish in 1964 was 182 tons. The catches of Greenland halibut and wolffish were 2,704 tons and 2,064 tons respectively.

The output of the salmon fishery increased from 420 tons in 1963 to 1,540 tons in 1964. Salmon seemed to occur in larger numbers than in previous years. The higher prices for salmon gave reason for a more intensified fishery and a larger number of fishermen participated in this fishery.

The prawn fishery showed the highest output hitherto obtained, 3,770 tons, mainly because a larger number of prawn trawlers participated in the fishery in 1964 than in 1963, especially in Disko Bay.

B. Special Research Studies

I. Environmental Studies

1. Hydrography. Hydrographic investigations were carried out in the coastal waters off West Greenland throughout the year from M/C ADOLF JENSEN and M/C TORNAQ. In addition observations were made from R/V DANA in Davis Strait in July (Fig. 1-6).

The winter cooling seems to have been relatively strong. Thus negative temperatures were found from surface to bottom (300 m) at the entrance to Godthaab Fjord in February. In May, when the ADOLF JENSEN worked a section over Fylla Bank, conditions there were about normal, possibly a little above normal over the western slope of the bank. The most outstanding feature in the sections is the high temperatures found in the core of the Irminger Current in the deeper layers off the western slope of the banks. Temperatures over 5°C were found in the core of this current as far north as 65°N. Such high temperatures at this locality are very rare in July. Over the shallow parts of the banks the temperatures were, however, only about normal.

2. Plankton. Collection of plankton with 2-m stramin net and with hensen net were made on nearly all stations where hydrographic observations were made.

3. Other environmental studies. Measurements of the primary production by means of carbon 14 were made regularly on a fixed station near Godthaab.

II. Biological Studies of Fish by Species

1. Cod

a. Eggs and larvae (Fig. 7). In Godthaab district and in the Godthaab Fjord hauls with the 1-m stramin net gave better catches of cod eggs and larvae than in previous years. In Davis Strait it was quite different. Very few cod larvae were taken in the 2-m stramin net by R/V DANA in July. The biggest catch was 13 cod larvae caught in the middle of Fylla Bank. A few larvae were caught far east of Fylla Bank between 58° and 60°W. The scarcity of cod fry in 1964 must have been caused by the late warming of the water masses in the Greenland area. Judging from the occurrence of cod larvae in Davis Strait, the 1964 year-class may be expected to be a poor year-class.

b. Occurrence of small cod (age-groups I, II and III). Length distributions of small cod belonging to age-groups I, II and III are given in Fig. 8. Samples a, b, c and d are from prawn trawl catches while e is from pound net. These samples are from Div. 1D. Samples f, g, h and i are all from hand seine catches in Div. 1F. The three age-groups (I, II and III) are readily distinguished in the graphs by their lengths. Age-group III (1961 year-class) is strong in Div. 1D. In Div. 1F, it is only strong in one sample (h). The distributions of the different age-groups are very different in the different catches in Div. 1F.

c. Age and size of cod in commercial stock. Length measurements and otoliths for age readings have been collected on the banks by the R/V DANA, the M/C ADOLF JENSEN and the Faroese trawler SKALABERG. Material from

inshore waters has been collected by the ADOLF JENSEN and the M/B TORNAQ. Also samples have been taken from Greenland fishermen's catches. The distribution of samples is as follows:

Division	Offshore banks		Inshore waters	
	No. of samples	No. of specimens	No. of samples	No. of specimens
1B	2	279	1	214
1C	2	284	1	133
1D	5	809	4	742
1E	2	741	-	-
1F	-	-	7	1241
Total	11	2113	13	2330

The age- and length-compositions in samples from the banks are given in Fig. 9 and 10. The age compositions in samples from inshore waters are given in Fig. 11. Figure 12 gives a summary of the age compositions of all samples from the banks and from inshore waters.

On the northern banks, the 1960 year-class predominates occupying more than 40% of the samples. Also prominent is the 1957 year-class at more than 20%. On the southern banks, the 1957 year-class is the one best represented. In the northern inshore waters, the 1960 year-class is very strong at nearly 60%. In the southern inshore waters, the 1956 year-class predominates at more than 35% while the 1958 year-class is at more than 20%.

It is obvious that small cod belonging to the 1960 year-class (age-group IV) are very common in the northern divisions while bigger cod belonging to the 1956, 1957 and 1958 year-classes are found in the southern divisions. It is not uncommon to find age-group IV predominant in the catches from offshore banks. The 1960 year-class must, therefore, be a very rich year-class.

The old, rich 1953 year-class has almost disappeared from the catches and is of no commercial importance. The same is true for the older and previous rich year-classes. Only in a single sample from Div. 1F was the 1947 year-class (age-group XVII) predominant.

d. Tagging experiments. Cod tagging has been carried out in all divisions except 1A. Taggings by divisions on the offshore banks and inshore waters are given below (numbers in brackets are cod less than 50 cm when tagged).

Division	Offshore banks	Inshore waters
1B	160 (161)	- -
1C	88 (23)	- -
1D	258 -	248 (1410)
1E	- -	- (53)
1F	- -	195 (195)
Total	506 (184)	443 (1976)

A total of 917 recaptures of cod tagged in West and East Greenland waters were reported in 1964. Of this total, 7 cod tagged off East Greenland and 63 tagged off West Greenland were recaptured in Iceland waters. Of the 847 recaptures from Greenland waters, 77 were tagged in 1964 and 770 in previous years.

2. Redfish

Research on the occurrence and growth of small redfish from prawn trawl catches in the inner part of the Godthaab Fjord has been carried out. A total of 5,053 redfish were caught and measured.

A number of redfish (293) caught in pound nets were tagged in May in the Qorqut branch of Godthaab Fjord. Recaptures of 92 redfish from tagging experiments in previous years were reported. Recaptures, by location and tagging year, are shown below:

Tagging year	1960	1962	1963	1964	Total
Recaptured at Qorqut	11	35	37	3	86
" elsewhere					
in Godthaab Fjord	-	4	-	-	4
Recaptured on offshore banks	-	1	1	-	2
Total	11	40	38	3	92

The 4 recoveries from other places in the Godthaab Fjord were made from 15 to 30 nautical miles from the tagging place.

The 2 recaptures from the offshore banks were both made by Icelandic trawlers. The redfish tagged in 1963 was caught on Fiskenaes Bank on 20 May, 12 months after the tagging, while the redfish tagged in 1962 was caught on Frederikshaab Bank on 27 August, 27 months after tagging.

Redfish tagging in the open sea was carried out off Southeast Greenland on the 100 m depth contour. A total of 57 redfish, taken with hand line, were tagged.

3. Other fish

Tagging experiments have also been carried out with Greenland halibut (82 specimens tagged), spotted wolffish (43 specimens tagged), haddock (12 specimens tagged) and herring (222 specimens tagged).

4. Prawn (Pandalus borealis)

Searches for prawn grounds were carried out with success from the DANA and ADOLF JENSEN. Experiments with different mesh sizes in the trawl fishery for prawn were carried out in Disko Bay. In the same region 3,579 prawns were tagged.

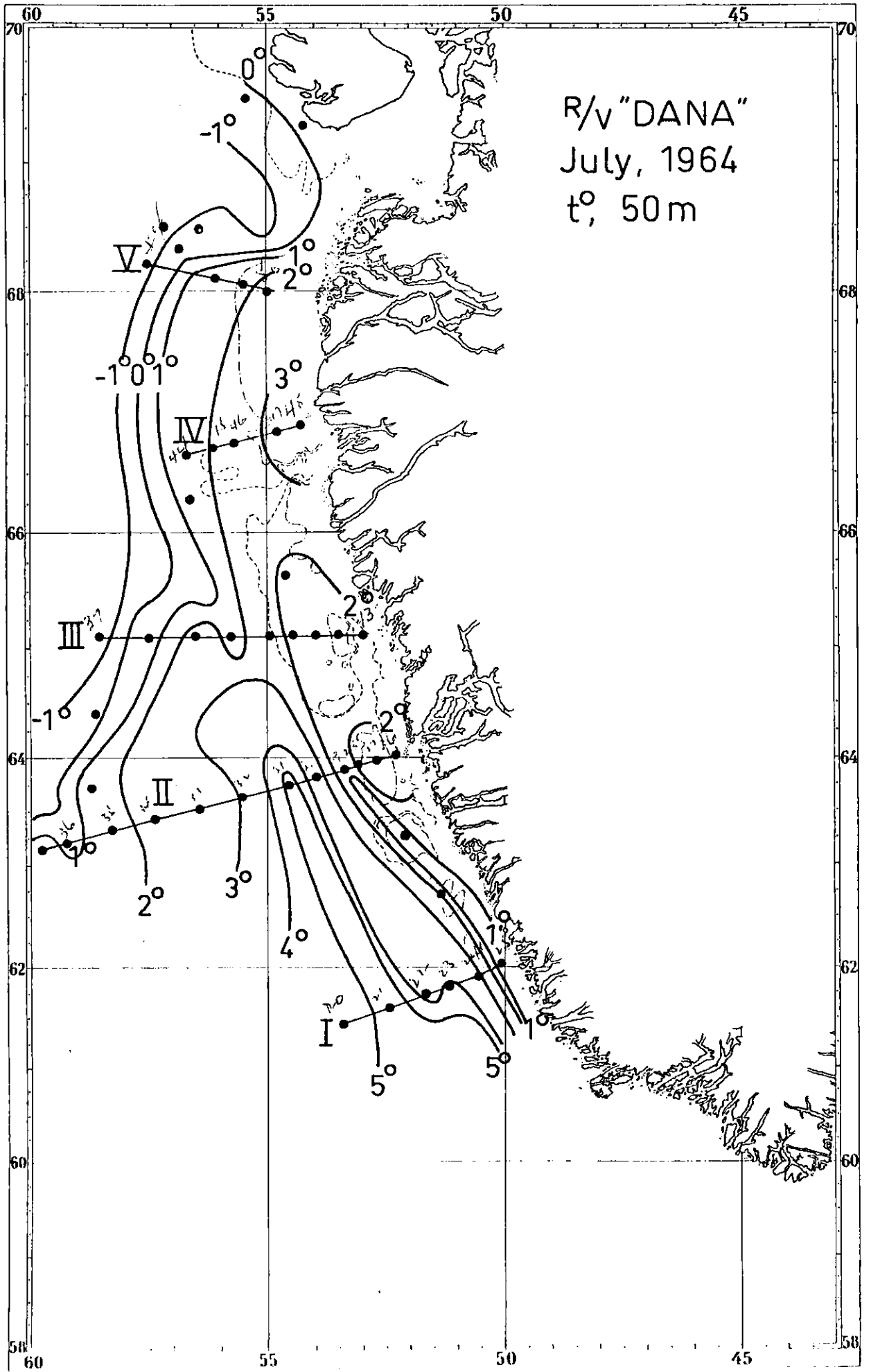


Fig. 1. Temperatures at 50 m off West Greenland

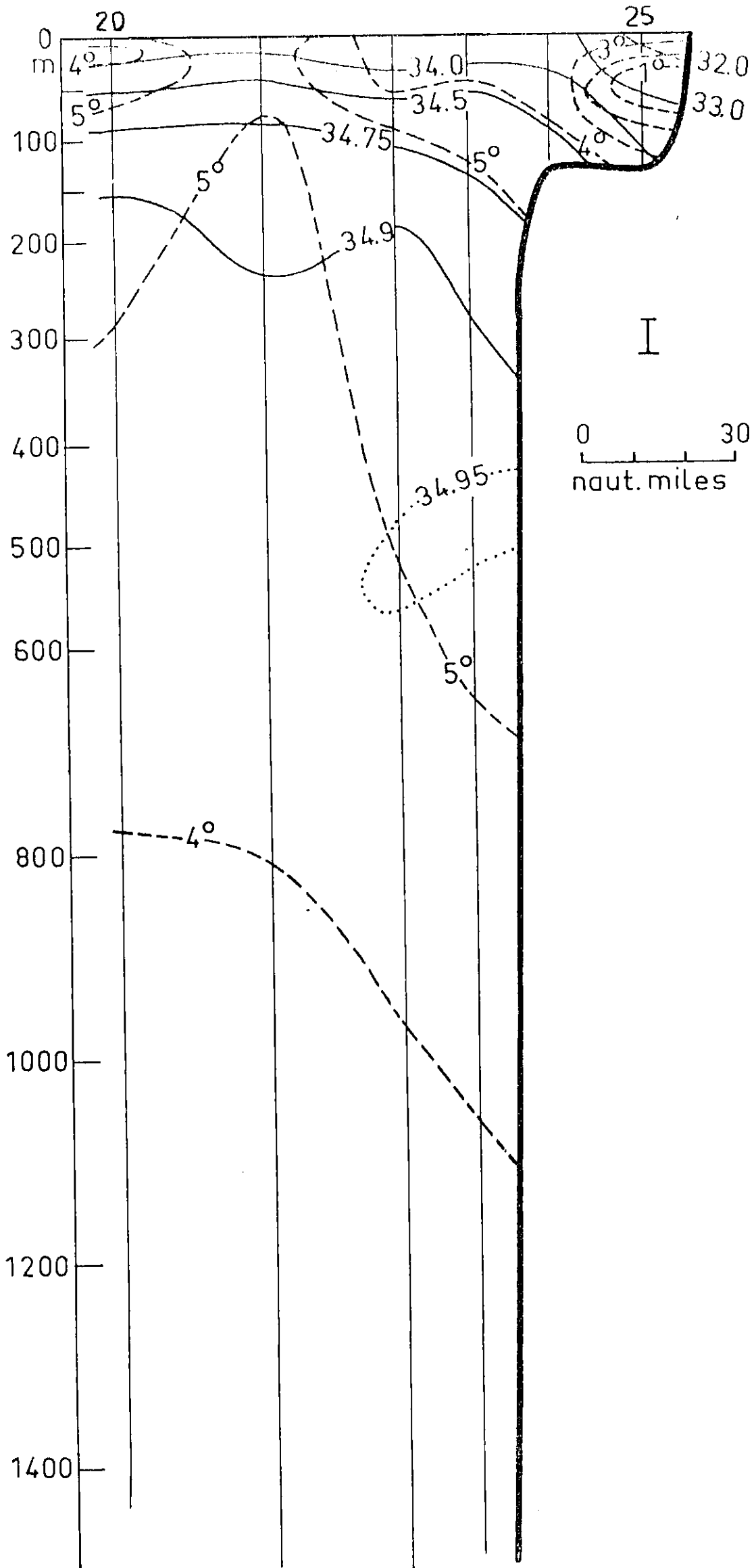


Fig. 2. Temperature and salinity off Frederikshaab (Section I), 8 July 1964

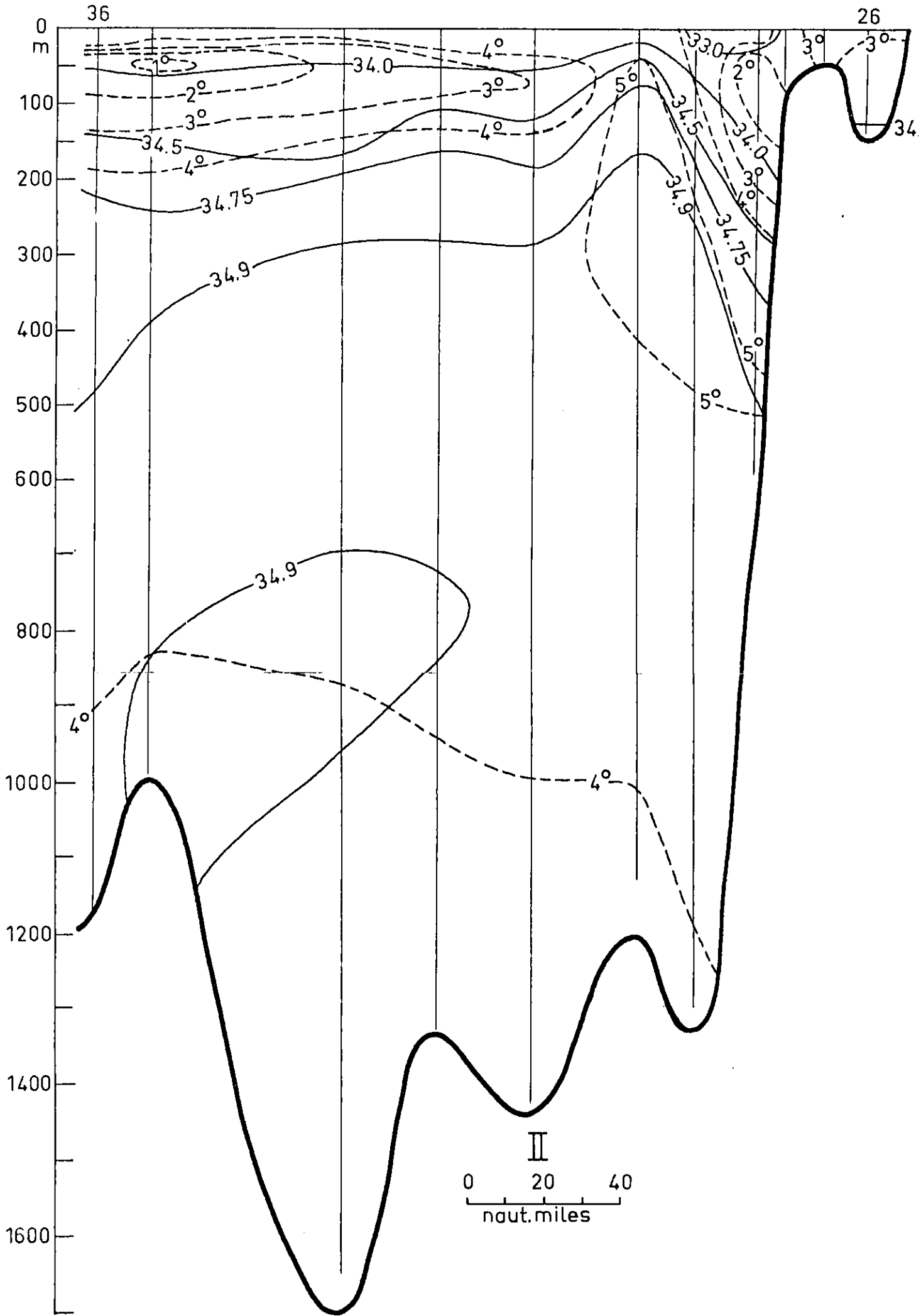


Fig. 3. Temperature and salinity across Fylla Bank (Section II), 13-15 July 1964

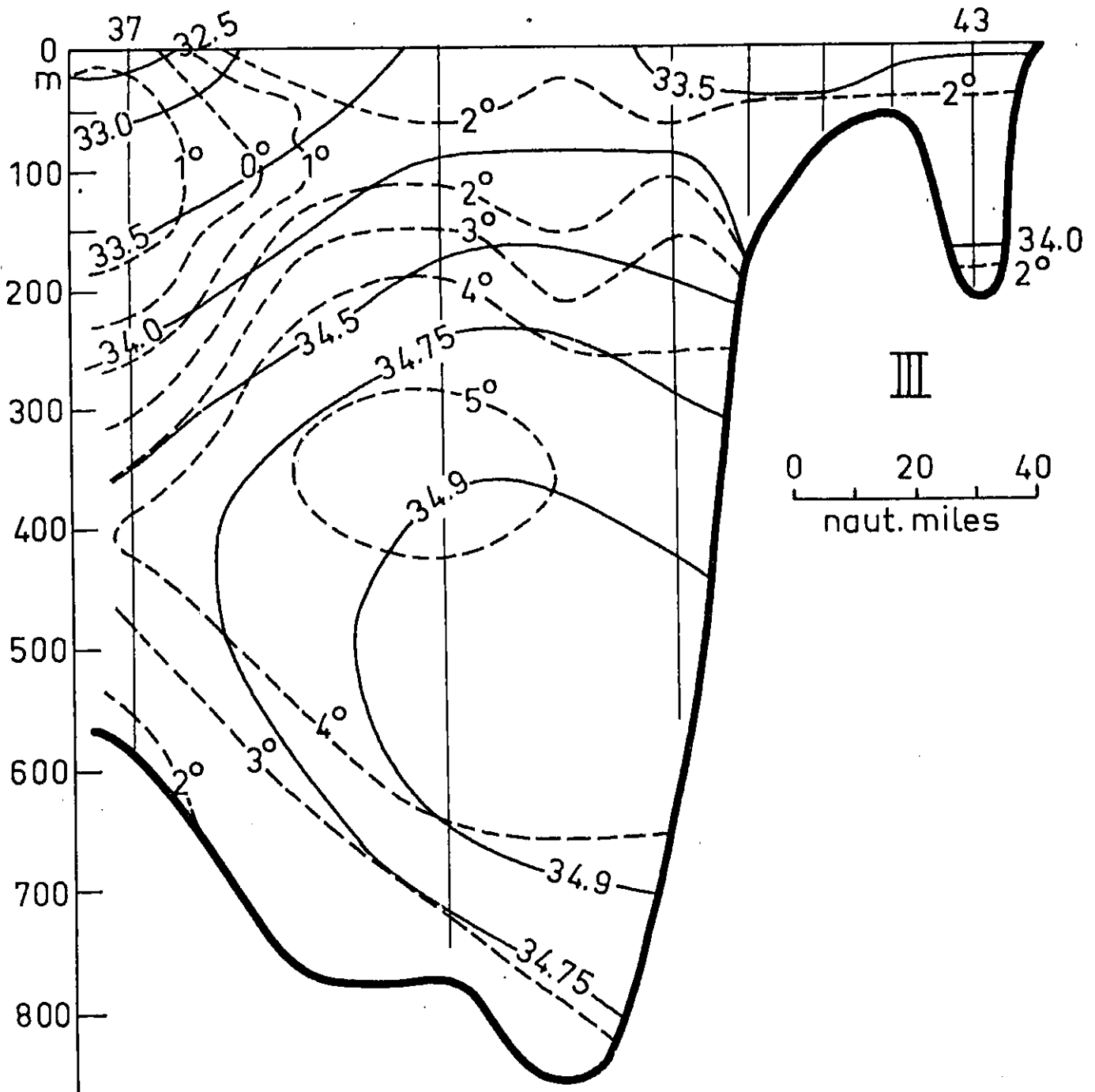


Fig. 4. Temperature and salinity across Lille Hellefiske Bank (Section III) 16-17 July 1964

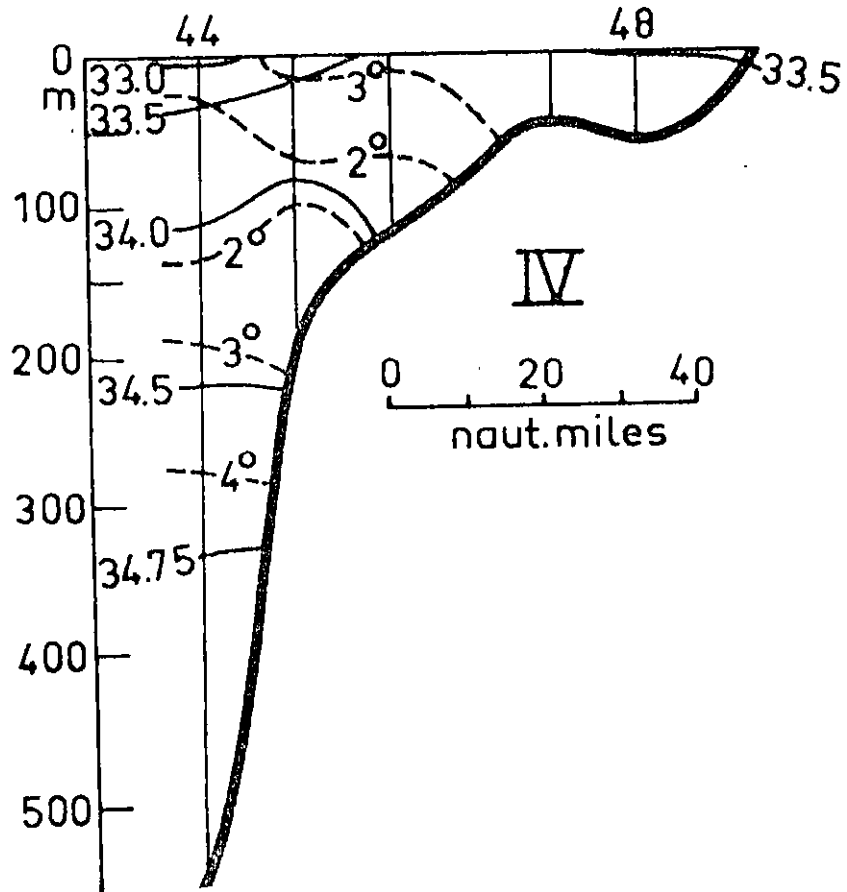


Fig. 5. Temperature and salinity off Holsteinsborg (Section IV), 18 July 1964

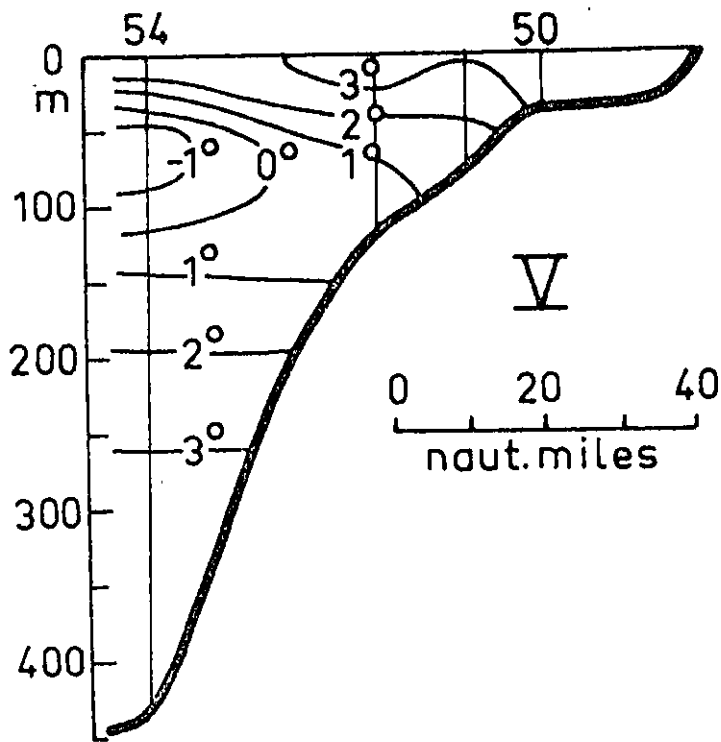


Fig. 6. Temperature and salinity off Egedesminde (Section V), 19-21 July 1964

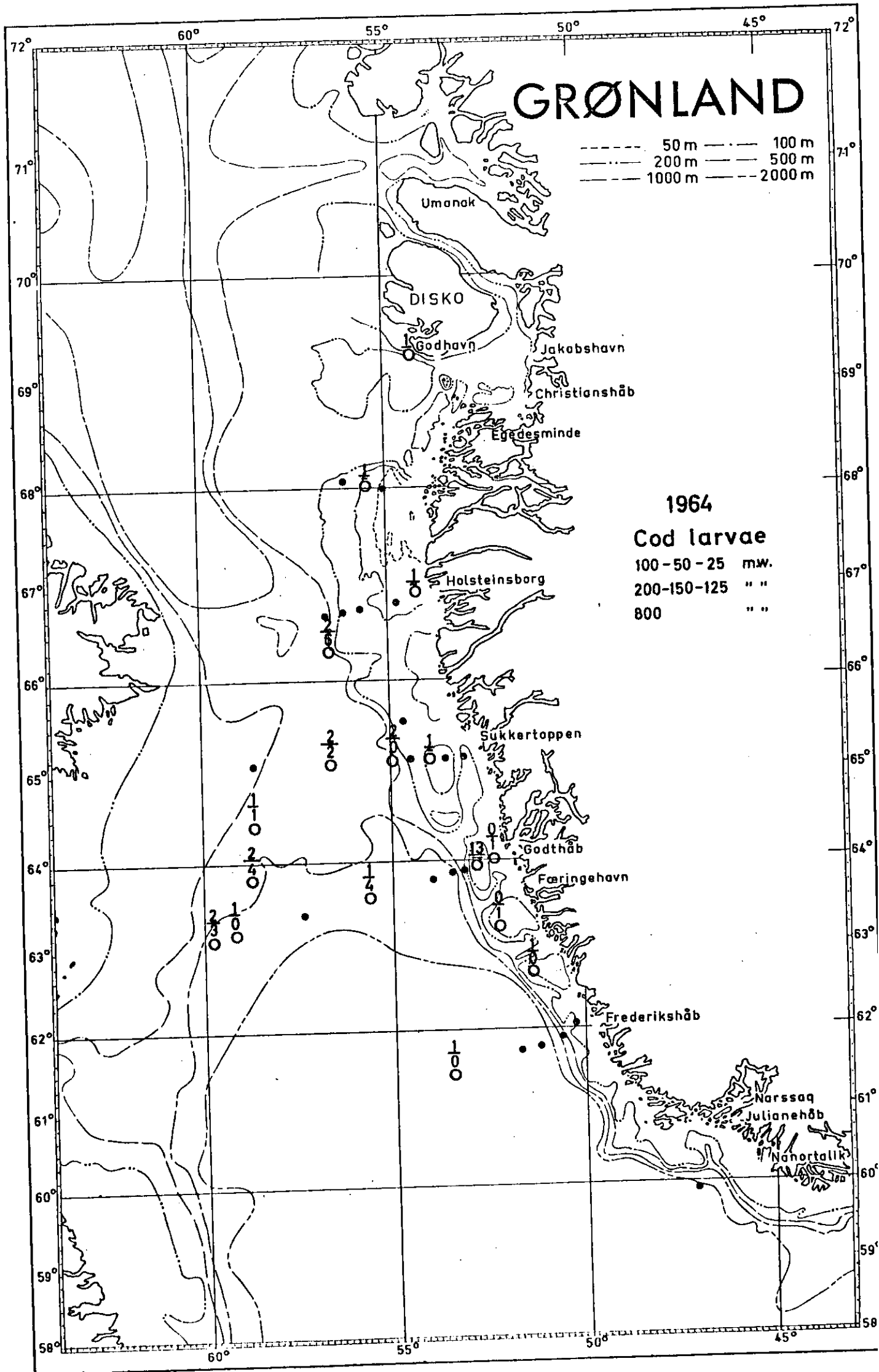


Fig. 7. Cod. West Greenland. Larval distribution, 1964

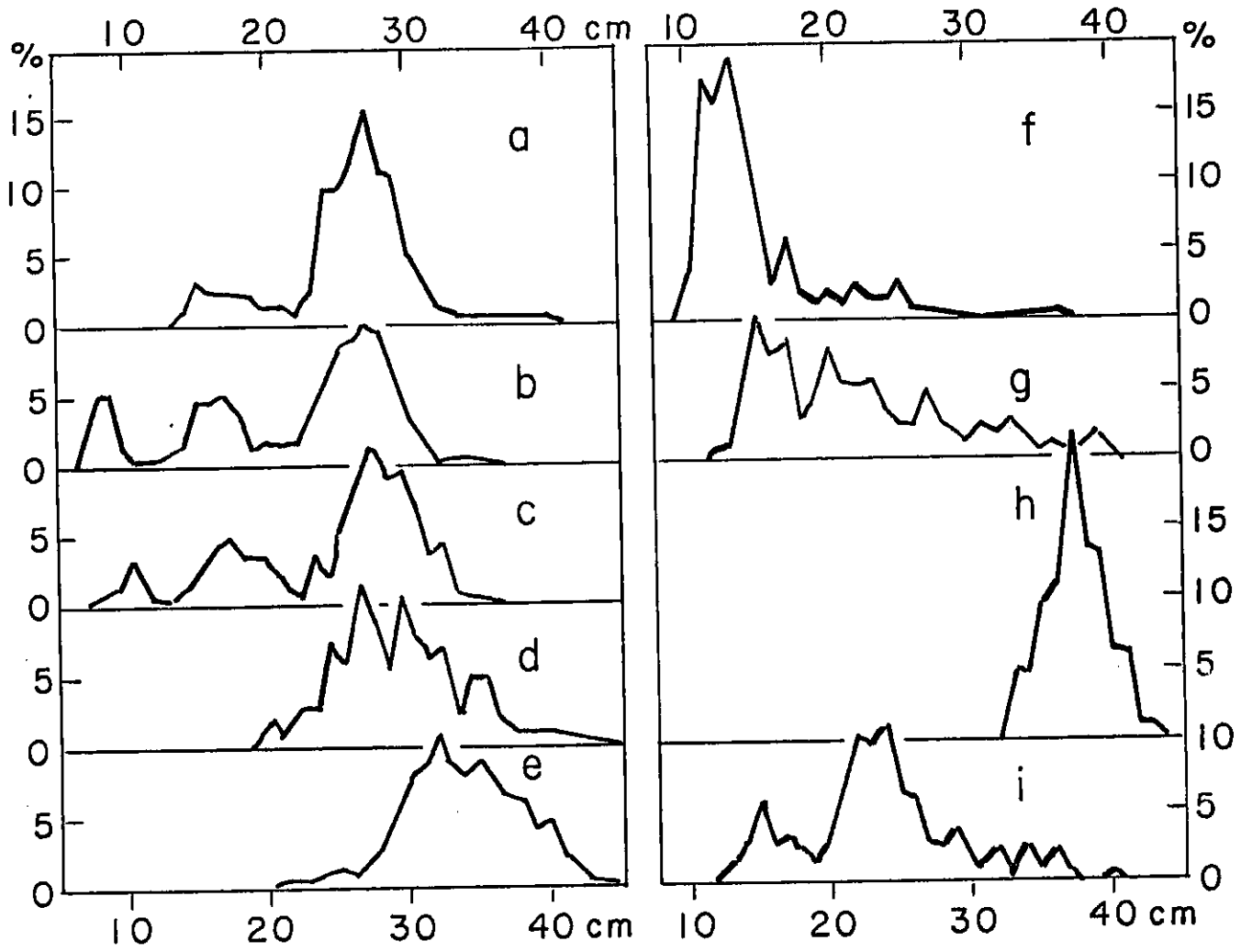


Fig. 8. Cod. West Greenland. Length distribution of age-group I, II and III in inshore waters of Div. 1D and 1F, 1964.

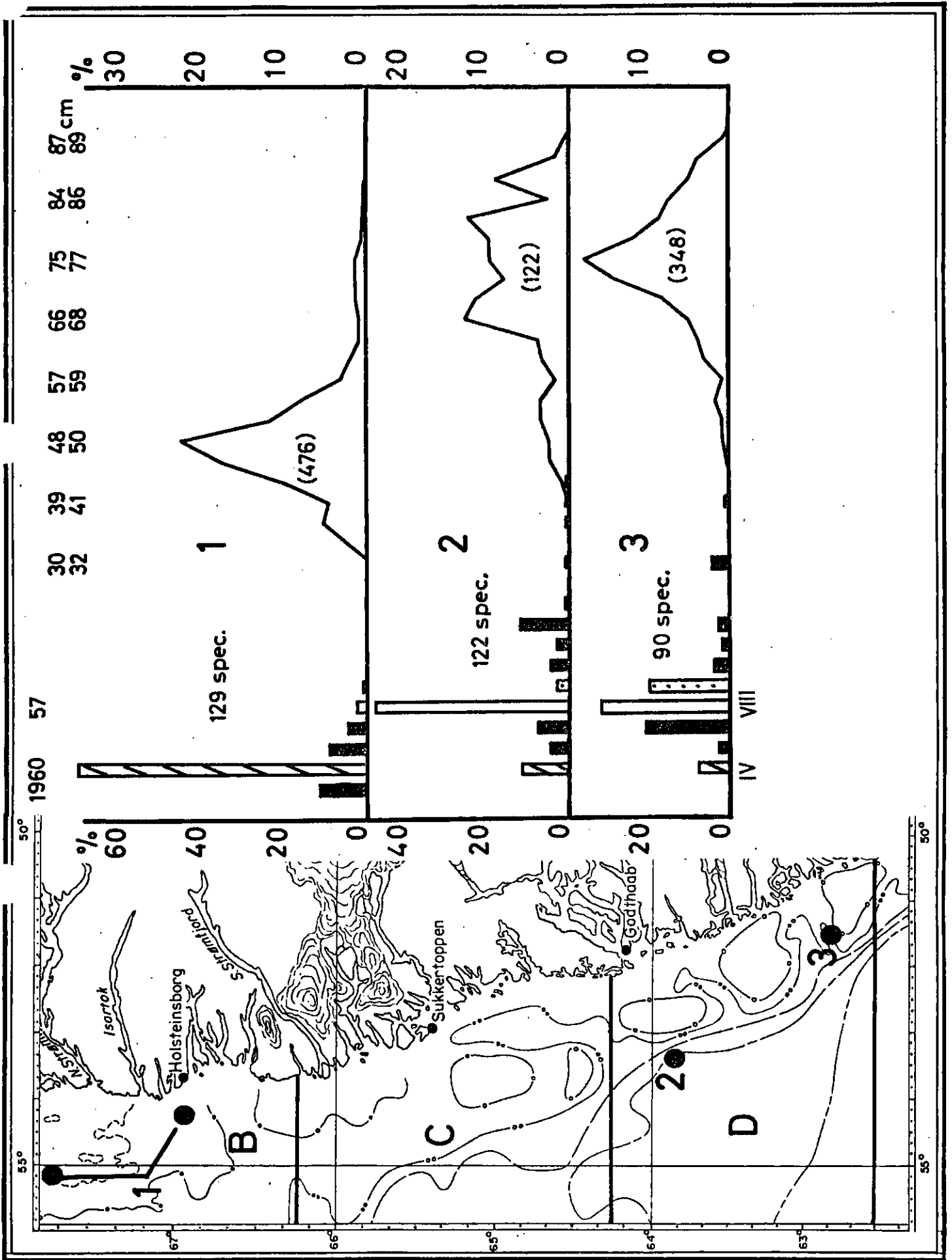


Fig. 9. Cod. West Greenland. Length and age composition in offshore banks in Div. 1B and 1D, 1964.

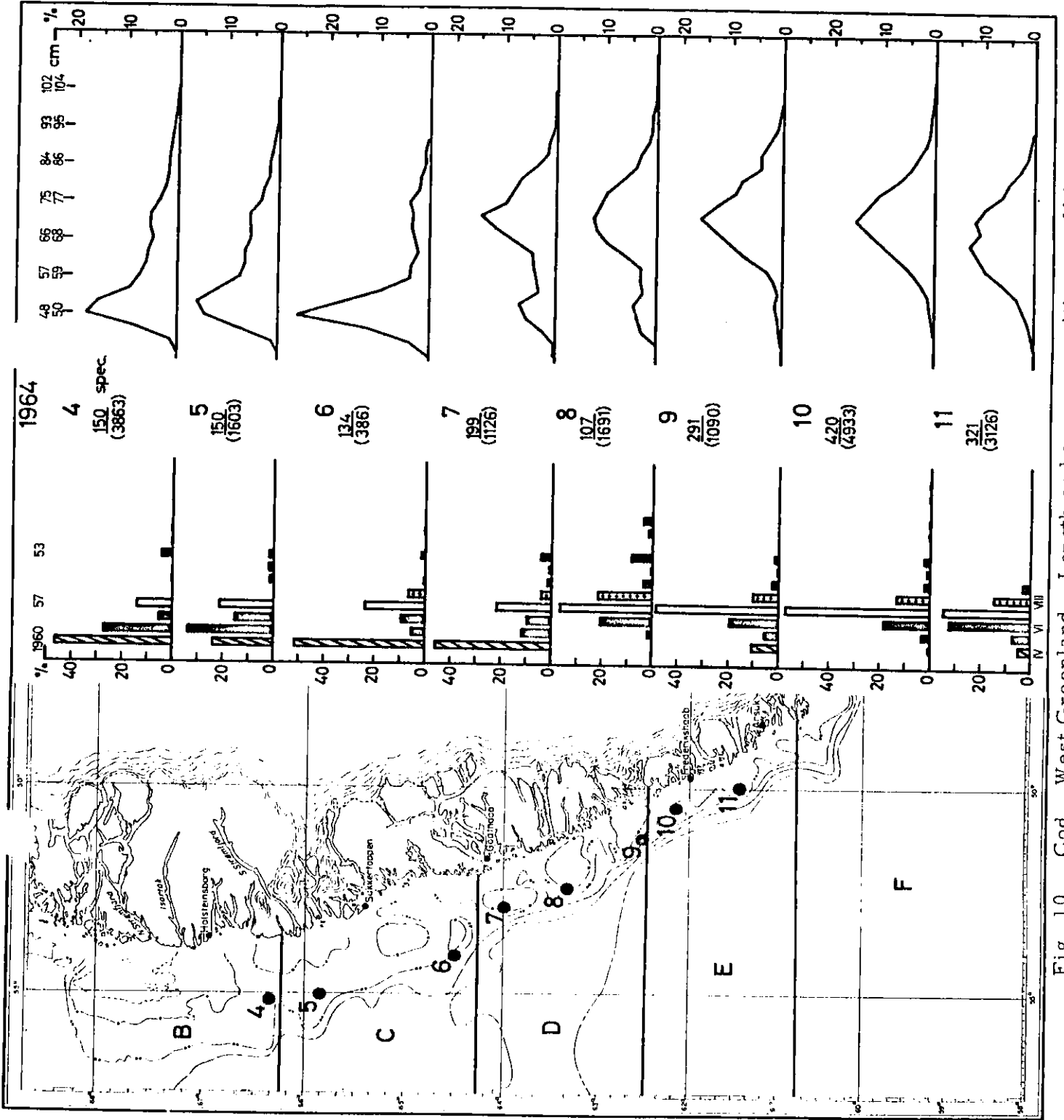


Fig. 10. Cod. West Greenland. Length and age composition on offshore banks in Div. 1B, 1C, 1D and 1E, 1964

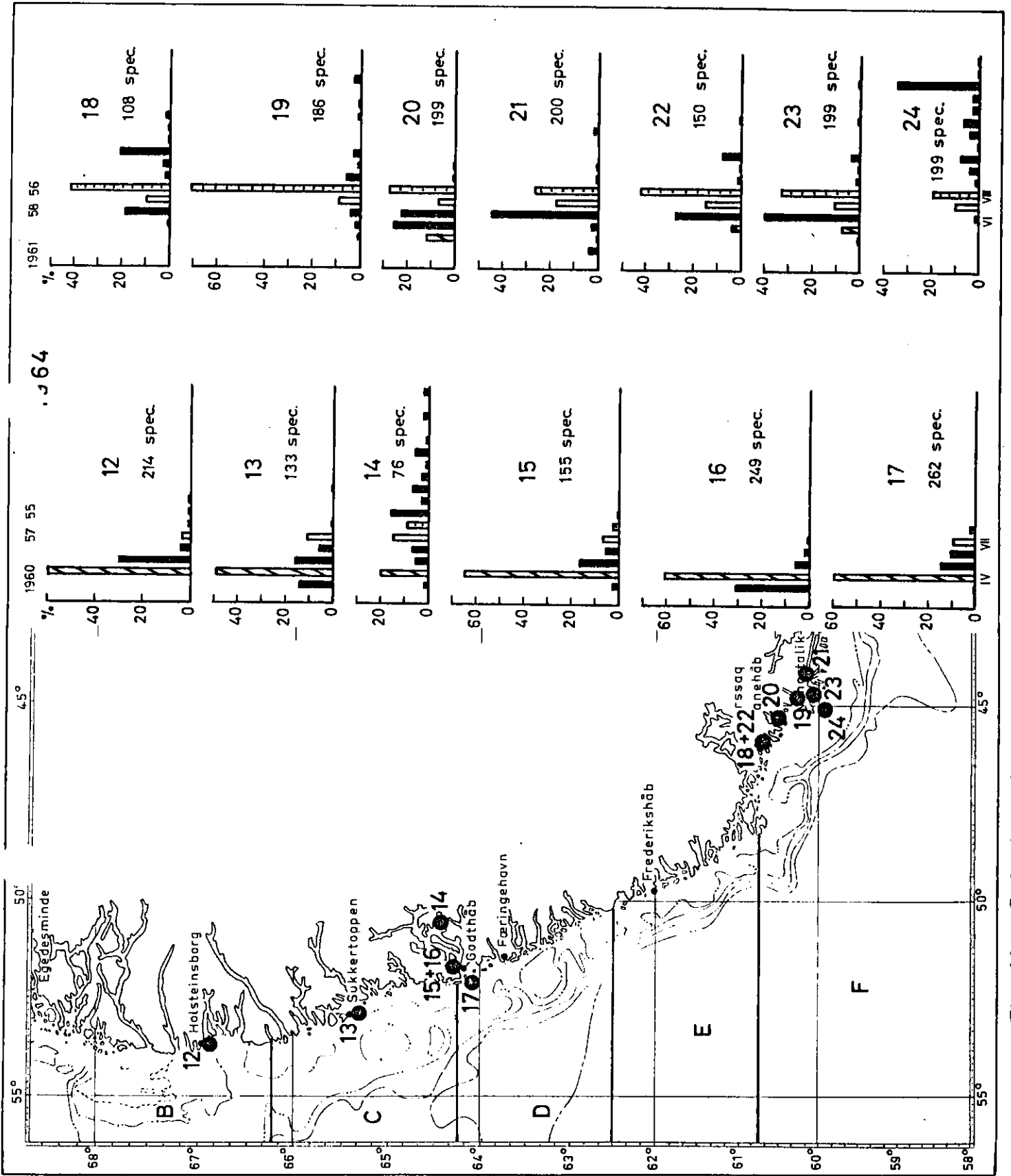


Fig. 11. Cod, West Greenland. Age composition in inshore waters in Div. 1B, IC, 1D and 1F, 1964

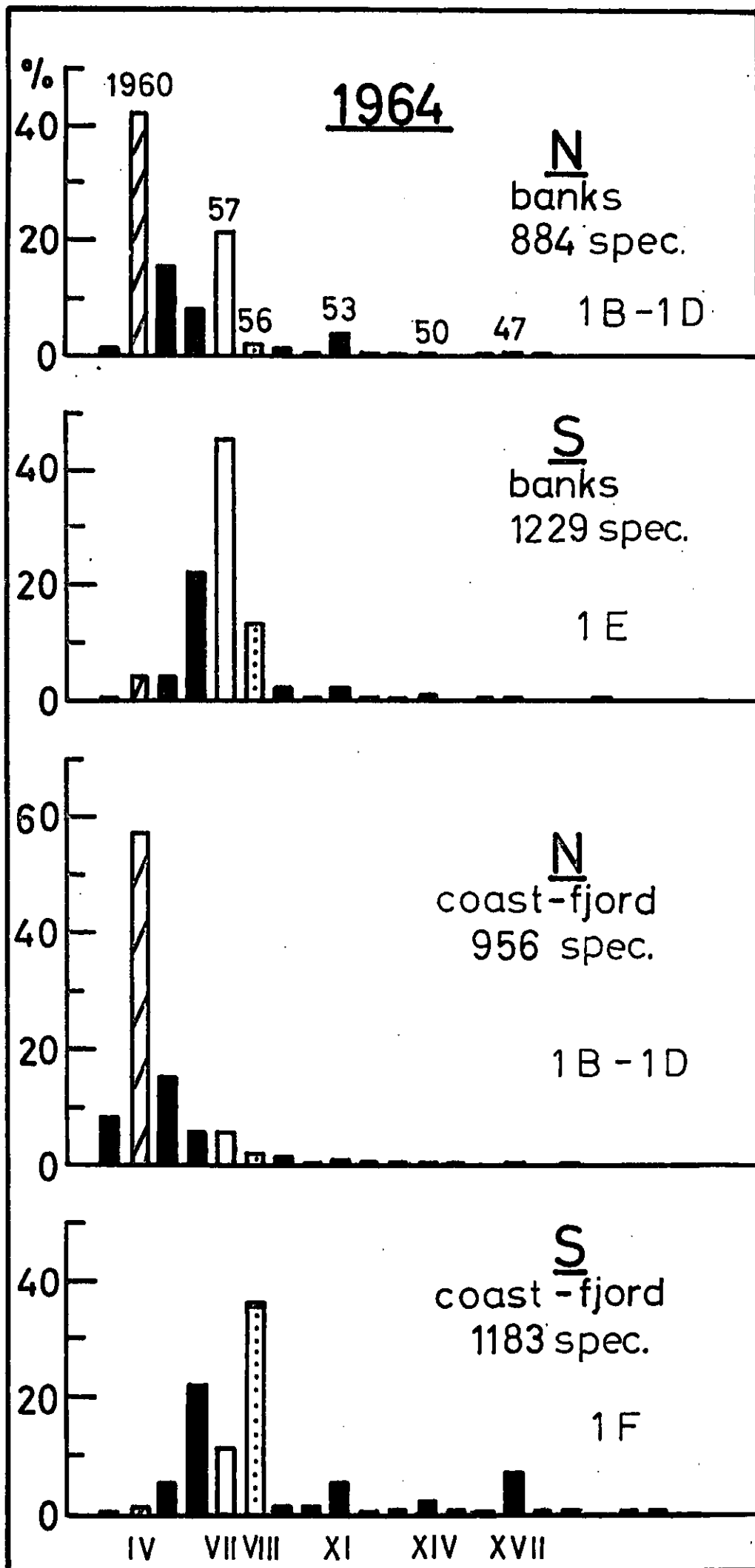


Fig. 12. Cod. West Greenland. Age composition in northern (N) and southern (S) bank and coastal waters, 1964