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by J. Lundbeck

Work at Sea

The fishery research vessel "Anton Dohrn" was engaged in various investigations in the area between Greenland and Iceland 27.3.-26.4.57; 47 trawl catches in depths of 130-500 m dealt with the distribution of the "marinus" and "mentella"-type of redfish, 163 of which were tagged.

The only trip of the vessel within the ICNAF area itself was performed during 1.-30. Aug. '57. Experimental trawl catches were carried out:

- 1-12. Nanortalik Bank (Kap Egede) Subdivision 1F
59°55'N, 45°50'W to 60°8'N, 46° 4'W, 92-130 m
- 13-49. South of Cape Desolation, Subdivision 1F
60°21'N, 47°20'W to 60°23'N, 47°18'W, 94-140 m
- 50-53. SW of Noname Bank, Subdivision 1E
61°38'N, 50°35'W to 61°40'N, 50°52'W, 120-130 m
- 54-58. Fyllas Bank, Subdivision 1D
64°0'N, 52°8'W, 50-60 m
- 59-68. Fiskenaes Bank, Subdivision 1D
63°20'N, 52°15'W to 63°25'N, 52°40'W, 100-240 m

The main purpose were technological investigations such as net selection (see below), and methods of mesh measurement; but the material obtained was additionally also evaluated in a biological sense.

Net selection (Report by Prof. v. Brandt)

The fishery research vessel "Anton Dohrn" carried out selection tests for cod in Panel 1 in August, 1957. A white fish trawl of manila with cod-ends of different materials as usually used in the Federal Republic was applied. Cod-ends of manila, "Perlon", and Trevira were tested according to the covered net method. Trevira is a material with a small extensibility and is approximately equivalent to the English Terylene and the American Dacron. The synthetic fibre material was plaited. In each case the cod-ends were double-braided of materials equivalent as regards strength. The resulting selection factors for manila and Trevira showed smaller differences than between manila and Trevira on the one hand and "Perlon" on the other.

It was interesting to see that the load elongation curves of manila and Trevira did not differ much. This supports the theory that at the fixation of mesh-sizes not the fibre kinds (manila, "Perlon", Trevira etc.) should be referred to, but the properties of the netting twines. At any rate, fibre groups as for instance "synthetic fibres" must be regarded as equivalent at all.

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net material No.	manila 3(Nt 500/3 double)	Perlon I 6	Perlon II 9	Trevira 12
mesh depth mm	127	129	129	122
number of hauls	12	14	9	9
cod selection:				
number of cod in net	3232	2627	2150	2505
in cover net	596	3794	2192	1394
total	3828	6421	4342	3899
50% escapement size, cm	47	52	50	46
selection factor	3,7	4,0	3,9	3,8
redfish selection:				
Number of redfish in net			354	
in cover net			327	
total			681	
50% escapement size, cm			42	
selection factor			3,3	

Market investigations

The routine work was continued. Including those of the fore-mentioned research trips the samples contained the following numbers of fishes:

Subarea 1, Western and southern Greenland (those from eastern Greenland in brackets):

	cod (Institut für See- fischerei, Hamburg: Dr. A. Meyer)	redfish (Biologische Anstalt Bremerhaven: Dr. A. Kotthaus)
length measurements	26017 (9457)	3452 (6820)
age determinations	2201 (3567)	517 (1292)
sex and maturity	839 from 9 samples of ungutted cod	
individual weight	220	

Subarea 3, Newfoundland area:

	cod	haddock
length measurements	450	243
age determinations	206	117

Similar to the preceding years most of the work was done on oatches from eastern Greenland in order to clear the relationships to the west Greenland as well as to the Icelandic stocks.

Cod investigations (Report by Dr. A. Meyer).

Fig. 1 demonstrates the length and age composition of the cod fished commercially on the slopes of Fyllas and Banana Bank (Sub-division 1C and 1D) in May and June. As in the preceeding year again the yearclasses of 1947 (31,9%) and 1950 (30,2%) were dominating. 33% of all cod were immature, 27% just had spawned in spring 1957 for the first time, and 40% had spawned two times or more. The distribution of the maturity and immaturity on the different yearclasses too is shown in figure 1. Of the rich 1950 yearclass 53% were still immature, 45% were first time spawners and 2% had spawned for the 2nd time. Of the 1947 yearclass still 10% were immature, 14% were first time spawners and 76% had spawned 2,3 or 4 times. It is interesting to note that even 14% of the 12 years old cod were still immature.

In 1957 no rich young yearclass joined the marketable stock. Therefore the average age and length rose above normal, namely in the last 3 years from 68,7 cm (1955) and 69,1 cm (1956) to 73.3 cm

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(1957). The 7 years old cod measured 67.1 cm, those 10 years old 72.8 cm.

In Subdivision 1F, South Greenland the age composition resembles more that of East Greenland than that of West Greenland. As in 1956 the 1950 yearclass was by far dominating with 51.7% (1956: 53.1%). Next in strength followed that of 1949 with 18.3% which during all the preceding years was found to be stronger in the South than in the West. The 1947 yearclass is only of small commercial value in Subdivision 1F, and the 1945 yearclass, up to 1955 of great importance in South Greenland, was only present in few specimens. The average length of all cod (66.5 cm) was considerable smaller than in West Greenland. But the quality of the South Greenland cod in winter is far above that of the lean cod of West Greenland in early summer. The average length of the 1950 yearclass in South Greenland was 65.8 cm and the cod born in 1949 measured 70.6 cm at the end of the feeding period.

The experimental fishing of "Anton Dohrn" with covered codend, mostly in the area of Sermersok and in the Bay of Juliane-Haab, 25 miles SE of Cape Thorvaldsen, enables us to calculate the real length and age composition of all cod living in those localities.

In the area 20 miles SW of the southern tip of Sermersok in a depth of 125 m the age and length composition of the total stocks of cod fished with narrow meshes (fig. 2) was rather equal to that of the cod fished by the commercial trawlers using 110 mm meshes in the Cape Farvel-Sermersok-Nanortalik Bank - area. Thus in these fishing places almost all the cod present are of marketable size. When fishing with meshes of 110 mm, only 5% were smaller than 50 cm and were rejected into the sea. In the Bay of Julianehaab (Fig.3), however, the stock of cod was composed of far younger fish. Here the new strong yearclass of 1953, which will enter the fishery in 1958 for the first time, was found in large shoals. These 4 years old cod made up 45.6% and had in August an average length of 41.8 cm. The second strongest yearclass was that of 1950 (20.7%) with an average length of 60.8 cm. Because in this part of Subdivision 1F the stock of cod is composed of smaller fish the trawlers here are only trawling for redfish.

"Anton Dohrn" was fishing with covered codend also on the western edge of Noname Bank in 120-130 m. Fig. 4 shows that also here a lot of younger cod, especially those of the rich 1953 yearclass were present. But as a whole the catch in this locality was poor.

Redfish research.

From the results of observations made by Dr. Kotthaus on the research trip to eastern Greenland in March-April may be mentioned some few points. Whereas in the region of the Dohrnbank the small quantities of redfish captured contained only about 50% of ripening females, and more to the E and NE none at all, a typical spawning concentration was met more southerly on the edge of the shelf off Angmagsalik.

Here both sexes were present in almost equal numbers and among the females, most of which were in the ripening stage VI (a-) c about 40% were still juvenile in contrast to the region SW of Iceland with 90% ripening and no juvenile females. These spawning concentrations were formed of the Marinus-type only, but were located in 420-450 m depths, which after former experiences are inhabited only by the Mentella-type. Therefore it seems, that for spawning purposes the redfish seeks deeper water than that, in which the type lives in other seasons.

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Fishing activity (Report by Dr. A. Meyer).

43 German trawlers, of between 454 and 763 gross tons each, carried out 91 trips to the West- and Southcoast of Greenland (as against 123 in 1956) and 2 trips to Newfoundland. They landed 24169 t (1956: 31996 t) and 386 t gutted weight respectively.

The customary fishery off Western Greenland began in the middle of April with full loads of redfish from West of Fyllas- and West of Banana Bank. The share of the cod here amounted to 4,7% in the average and only exceptionally rose to 20%. Thus in contrast to the preceding year but similar to 1955 the redfish strongly predominated during this season. This fishery came to an end about the middle of July.

9 trawlers began a little later, in the first part of May, and until 10th of August, to fish cod for green salting. In the beginning, these trawlers were acting on the West coast banks (Subdivision 1E 5.-19.5.; 1D 20.5. - 20.6.; 1B until 30.7), but since the end of July mainly in the more southern area off Nanortalik (Subdivision 1F). 13 ships loads of green salted cod, 6 of which were landed in Portugal directly, averaged to between 144 and 303 tons each and totalled to 2861 t, equal to 6694 t fresh gutted weight.

During the second half of the year the fishery continued, for landing of fresh fish only, off both the western and the southern Greenland coast. It was devoted to the redfish as well as to the cod, the average share of the latter being 53%. From November onwards and lasting until the middle of February 1958 in the Farewell-Sermersok-Nanortalik area developed - similar to 1952 - a rather successful cod fishery with a daily output rising to 36,0 tons. Following this real cod fishery in South Greenland waters, which was stopped by advancing ice, the trawlers started a new redfish season beginning as early as in March 1958 in Subdivision 1D, so that for the first time the German Greenland fishery was going forward all the year round without interruption.

In February 2 trawlers fished, for trial only, in the vicinity of St. Pierre Bank and Green Bank (Subdivision 3P). These trips lasted 28 days each, 9 1/2 and 7 1/2 days respectively being devoted to fishing.

The catches amounted to 142 and 244 tons and consisted predominantly of cod (80%) with smaller percentage of haddock (13%), coalfish (pollock), redfish and halibut. The small size of cod and haddock however (average lengths: cod 62,2 cm, haddock 48,0 cm) was hardly acceptable for the German market, and from this reason one of the two ships landed its catch in England, and these enterprises were discontinued.

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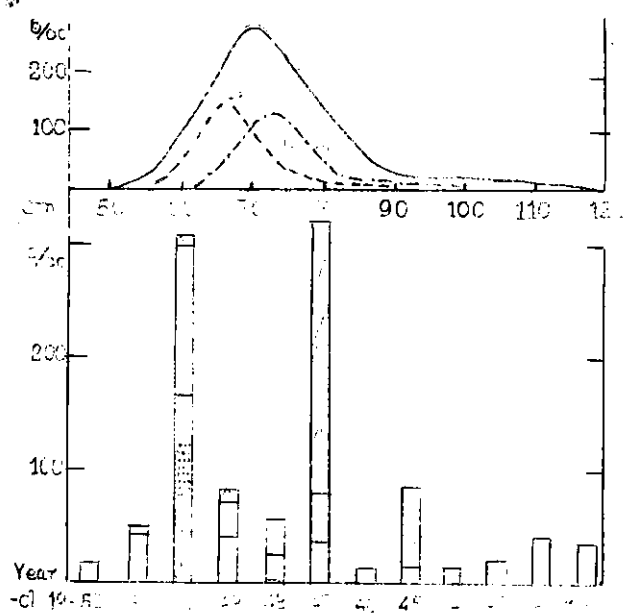


Figure 1. Length and age composition in ‰ of 3 samples of cod, caught by German trawlers in Subdivision 1D/1C in May and June 1957, with length composition of the 1950 and 1947 year-class and distribution of maturity of the different year-classes. Striated - several times spawners; white - first time spawners; dotted - immature.

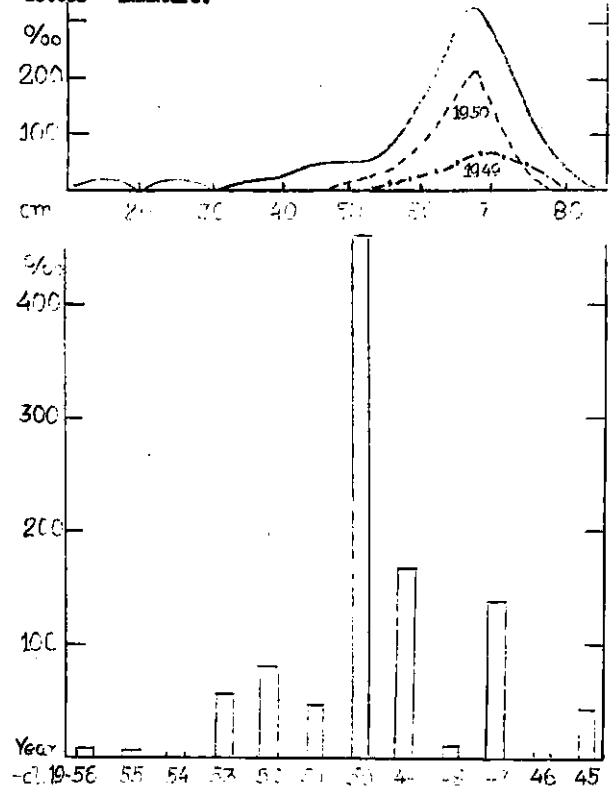


Figure 2. Length and age composition in ‰ of cod, caught by "Anton Dohrn", fishing with covered codend in Subdivision 1F off Sarsnesok, in August 1957.

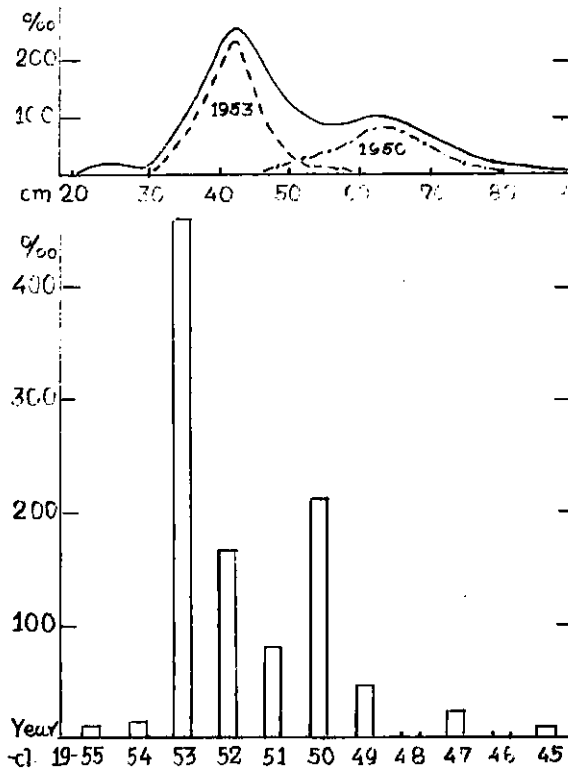


Figure 3. Length and age composition in ‰ of cod, caught by "Anton Dohrn", fishing with covered codend in Subdivision 1F, SE of Cape Thorvaldsen, in August 1957.

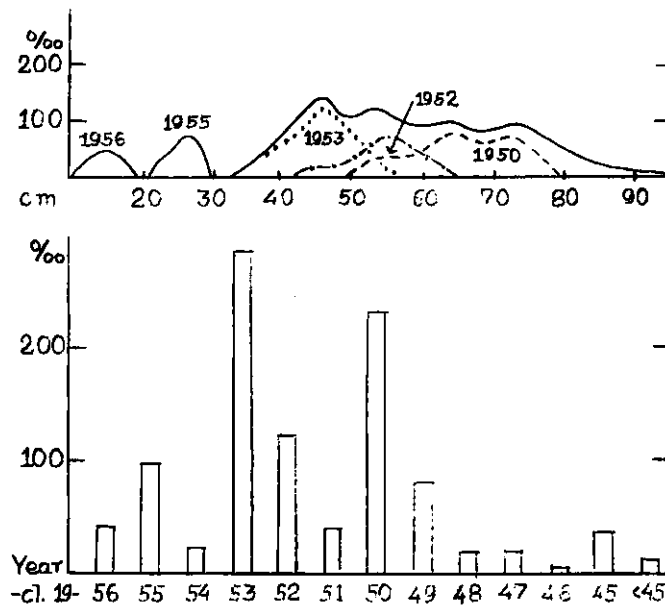


Figure 4. Length and age composition in ‰ of cod, caught by "Anton Dohrn", fishing with covered codend in Subdivision 1E (Wonnas Bank), in August 1957.