

ANNUAL MEETING - JUNE 1964Changes in Yield and Composition of Catches in relation to Fishing Depths
in ICNAF Divisions 3K and 3L during the autumn of 1963

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This paper is based on materials collected on board the Polish factory trawler "DALMOR" on the Newfoundland Bank from 21 September to 29 November 1963. This trawler of 2670 BRT with a 2400 HP engine fished with steelon bottom trawl at depths from 90 to 660 m.

I. Catch Composition by Depth Zones

From 4 October to 15 November (43 fishing days) "DALMOR" fished a total of 547 hours at the following depths:

<u>Depths in m</u>	<u>Hours trawling</u>
90-130	151
200-400	80
400-500	125
500-600	191

The grounds fished are shown in Fig. 1. The trawler fished 151 hours in Division 3L, and 396 hours in Division 3K, principally on Ritu Bank.

Observed changes in the species composition and the yield of catches in relation to depths, time and location are shown in Table 1.

From the data presented in this table the following may be deduced:

1) In shallow waters from 90 to 130 m there were large quantities of American plaice (Hippoglossoides platessoides), but at 200 m quantities decreased and from 400 m only occasional individuals were caught. At depths from 200 to 400 m witch (Glyptocephalus cynoglossus) was found in relatively large quantities (about 30% of the catches of flatfish).

2) During the autumn feeding period cod occurs in large quantities on Ritu Bank at 200 to 400 m. Catches decreased to the southward of Ritu Bank in more shallow water and also to the northward in deeper water.

3) Catches of redfish of the mentella type were made in depths greater than 200 m and increased greatly in waters deeper than 400 m and situated north of Ritu Bank. Sebastes marinus, on the other hand, occurred in large numbers (up to 40% of catches) on the slopes of Ritu Bank, from 200 to 400 m. In the deeper parts of the slopes of this bank only single individuals of redfish of the marinus type was found.

4) Greenland halibut (Reinhardtius hippoglossoides) was caught in greatest quantities in the deep waters of Ritu Bank (from 500 to 600 m) whereas, in the shallow waters and in the deep waters north of Ritu Bank, the catch decreased.

Table 1. Yield and composition of trawl catches made on the Newfoundland shelf from 4 October to 15 November, 1963.

ICNAF Statistical Division	Depths in m	Positions		Date	Hours Trawling	Average catches (kilograms per hour trawling)				Total
		Lat. N	Long. W			Cod (mentella)	Redfish, plaice	American halibut	Greenland Macru- ridae	
3L	90-130	45°59'	51°45'	5-15 Nov.	151	154	1430	-	-	1584
	200-400	50°08'	52°28'	28-30 Oct.	43	112	1084	118 ²⁾	18	70
	200-400	51°20'	51°16'	14-16 Oct.	37	346	1088 ¹⁾	118 ²⁾	-	-
3K	400-500	51°20'	50°17'	31 Oct. - 4 Nov.	59	115	1016	2	92	750
	500-600	51°10'	50°10'	4-13 Oct.	121	113	916	2	146	504
	500-600	52°08'	50°55'	17-27 Oct.	70	37	1379	-	51	489
	400-500	52°32'	51°35'	17-27 Oct.	66	19	1646	-	46	375
										2062

1) Includes 35% by number of the marinus-type redfish (45% by weight)

2) Includes about 30% by weight of witch (Glyptocephalus cynoglossus)

5) At 400 m, fish of the Macruridae family occurred in large quantities. The best catches were obtained on the slopes of Ritu Bank, northward of Ritu Bank and in deeper parts of its slope the quantity of fish decreased.

II. Size Composition of American plaice (*Hippoglossoides platessoides*)

Length measurements were made in the northern part of the Grand Bank at Lat. 46°59' - Long. 51°45' (Fig. 2). Most of the catch was composed of fishes which had a length of 37 to 45 cm. The modal length was 40 cm and the mean length 38.3 cm.

III. Size Composition and Yields of Male and Female Redfish by Depth Zones

Length measurements were made of both females and males and are presented in relation to depth zones for both the mentella (Fig. 3) and marinus (Fig. 4) types.

For redfish of the mentella type, which dominated the catches in all the exploited regions and depths, changes in length and sex composition in relation to trawling depth are shown below and in Fig. 3.

Depths in m	Position		Percent of females	<u>Average lengths (cm)</u>		Catches in kg/hour
				females	males	
200-400	50°13'	52°28'	75.7	39.6	37.5	ca. 600
400-500	52°32'	51°35'	60.8	39.4	39.4	1646
500-600	51°10'	50°10'	51.6	39.3	39.0	916

These data show that females were predominant at all depths except the 500-600 m zone where the ratio of males to females was approximately 1:1. Average length of females at all depths was similar. Modal length changed from 41 cm at 200-400 m to 40 cm at 400-500 m and 39 cm at 500-600 m. On the other hand, average lengths of males increased from 200-400 m to 400-500 and 500-600 m. In the latter depths the average and the modal lengths of fish were almost identical.

For redfish of the marinus type, length measurements were made on 134 individuals which consisted of 63.1% females and 36.9% males taken at 280-300 m (Fig. 4). The females had a mean length of 47 cm; the males, 43.8 cm. Lengths ranged from 36 to 60 cm for females and 32 to 52 cm for males.

IV. Yields of mentella-type redfish on Ritu Bank, in summer and autumn of 1963

During the summer (July-August) the factory trawler "DALMOR" caught redfish on the slopes of Ritu Bank at depths from 200 to 780 m. Catches by depth zones for the two months were as follows:

Depths in m	July			August		
	Hours trawling	Average catch all species (kg/hour)	Including ^x redfish	Hours trawling	Average catch in kg/hour	Including ^x redfish
200-400	-	-	1	54	2765	ca. 2400
500-600	273	3135	ca. 3000	211	2210	ca. 2100
600-700	101	2816	ca. 2750	119	2168	ca. 2100
700-780	14	1403	ca. 1350	32	2083	ca. 2000

Comparing the above results with those obtained in October, we find that, in 1963 on the slopes of Ritu Bank, the depth zone for good catches of redfish (mentella type) changed as follows:

^x estimated

Months	Depths in m	Yield in kgs per hour trawling
July	500 - 700	2750 - 3000
August	200 - 780	2000 - 2400
October	400 - 500	1000

In October the best results (1646 kilograms per hour) were obtained in the region north of Ritu Bank from 400 to 500 m. The concentrations of redfish may have moved into this region after providing successful catches on the bank in July and August.

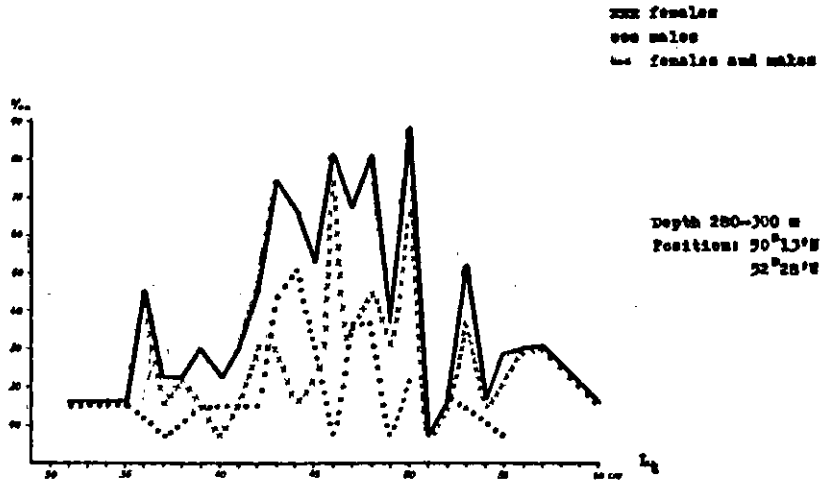
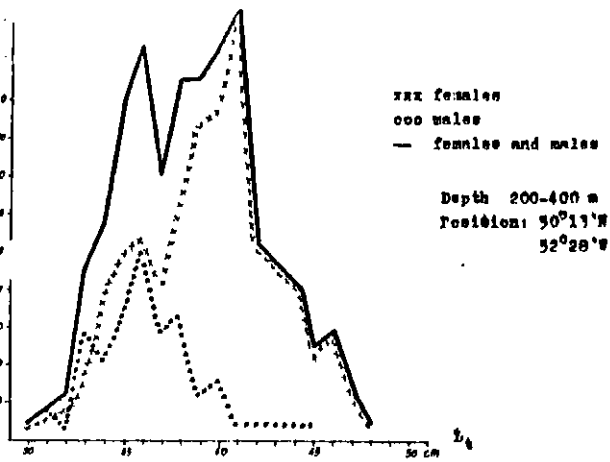


Fig. 4. Length composition of redfish (*marinus* type) catches

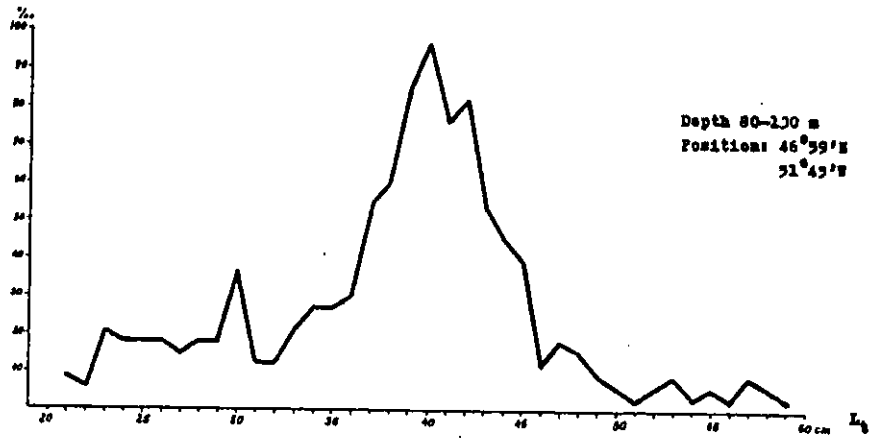
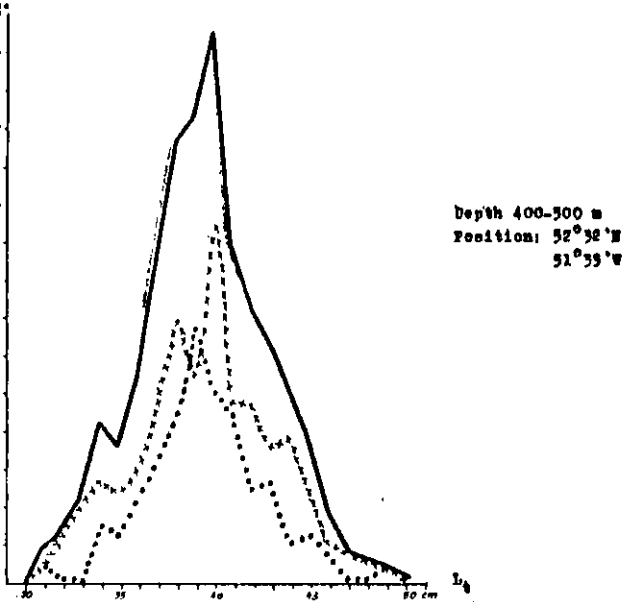


Fig. 2. Length composition of the American plaice catches.

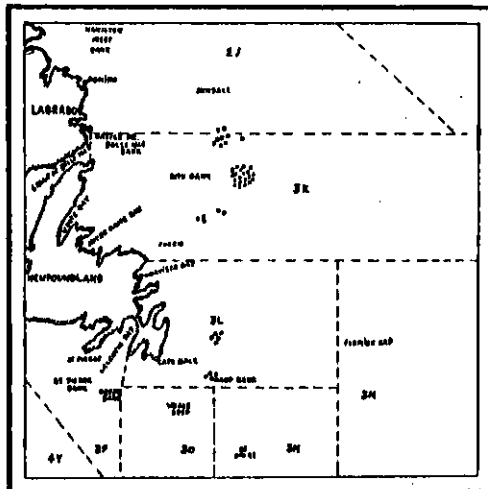
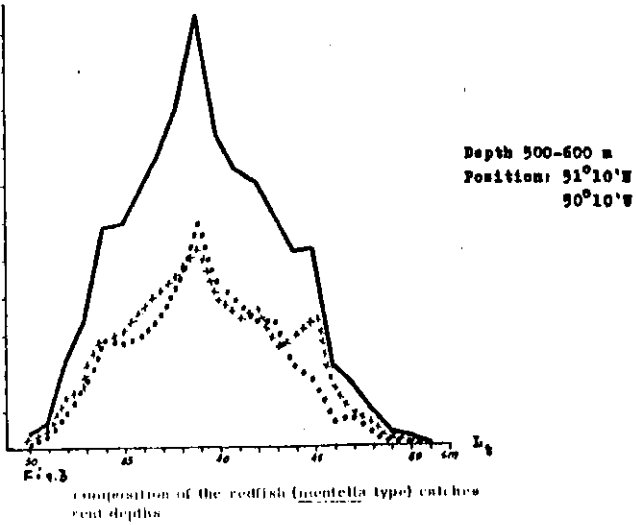


Fig. 1. Areas fished by the trawler "Daimor" in October-November 1963