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Assessment of Deepwater Redfish Stock in Division 3L by the Results of a Trawl Survey in 1994

by

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Abstract

The paper presents the results of a trawl survey carried out in June - July 1994 and estimates of abundance and biomass of deepwater redfish in NAFO Div. 3L. Data on length composition and distribution of redfish are also presented. Redfish were caught at depths from 250 m to 700 m. Some catches reached 500 kg per 30 minutes hauling. Length of redfish was from 14 cm up to 43 cm, mean length 26.5 cm.

The abundance was 132.8 x 10^6 specimens, the biomass was 36.7 x 10^3 tons.

Introduction

The results presented in this paper are based on data of research cruises carried out annually by the Polar Institute vessels in the NW Atlantic. The principal goal of these investigations - to obtain data usable to assess stock states of the most important commercial fish species one of which is deepwater redfish.

The redfish fishery in the NW Atlantic is based upon 3 species of the *Sebastes genus : S. mentella, S. fasciatus* and *S. marinus*. The first two make up the bulk of the catches though at present it is difficult to separate these species during fishery because of difficulties in their identification. That is why the redfish stock estimates are given for the mixed stock of *S. mentella* and *S. fasciatus*.

The stock size of redfish was calculated using data of a trawl survey carried out from 15 June to 10 July 1994 by RV "Vilnius".

Materials and Methods

The trawl survey was carried out in accordance with the stratified-random technique (Doubleday,1981; Bulatova, Chumakov, 1986). The area of Div. 3L was investigated partially (80%). Because of the main engine breakage the survey was interrupted and not all planned haulings were undertaken. (see positions of trawl stations on Fig.1).

Redfish age composition was obtained by recalculation of age samples into length series.

Results

During the period of investigations in Div. 3L redfish were distributed at depths from 184 m down to 736 m. The main concentrations were distributed along the continental slope at depths 366-547 m (Table 1) in Strata 729, 733. On echograms redfish were registered as scattered near-bottom concentrations with vertical development up to 25 m and dense aggregations directly at the sea-bed. These aggregations had vertical development of 1.0-1.5 m.

Redfish in catches were from 14 to 43 cm long, mean length was 26.5 cm (Fig.2). Length composition of redfish in 1994 and 1993 was very much alike. Compared with 1989 - 1991 number of large redfish in this area has decreased. Average age of fish has also decreased during the most recent years (Fig.3).

In 1994 the maximum catches of about 500 kg per 30 min hauling were registered in the southern and northern parts of Div. 3L at depths 366-547 m. The bulk of fish were immature specimens, intensity of feeding was low. Average stomach fullness was 0.5, main food objects were shrimps and small fishes (*Myctophidae*).

The results of redfish stock assessment are presented in Table 1.

Both abundance (14.4 x10^6 spec.) and biomass (4 x10^3 t) of redfish in 1994 were higher Compared with 1993 (6.8x10^6 spec. and 1.8x10^3 t, respectively) but lower than the long-term mean. A sharp decrease in abundance and biomass took place from 1986 to 1988 and during later years these indices were at a low level (Fig. 4).

References

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Table 1 . Results from the trawl survey for Redfish in Div. 3L, 1994.

Stratum	Depth, m	Area, mile sq.	Nos of tows	Mean catch/ 1 valid tow fish	kg	Abundance, '000	Biomass, tons
366	184-274	1394	3	0,7	0,1	68,8	12,9
386	-"-	983	3	0,3	0,01	24,3	3,2
389	-"-	821	3	2,0	0,2	121,6	9,2
391	-"-	282	3	30,7	9,2	640,6	192,6
346	275-365	865	3	0,7	0,2	42,7	11,3
387	-"-	718	3	6,3	1,6	336,8	83,7
388	-"-	361	3	4,0	0,3	107,0	9,3
392	-"-	145	3	1,7	0,3	17,9	2,8
729	366-547	90	3	478,0	190,7	3186,7	1271,1
731	-"-	117	3	77,0	17,7	667,3	153,2
733	-"-	312	3	253,0	56,9	5847,1	1315,8
735	-"-	160	3	84,7	20,3	1003,5	241,0
730	548-728	93	3	110,7	38,8	762,4	267,3
732	-"-	96	3	17,7	6,8	125,6	48,4
734	-"-	160	3	40,3	12,2	478,0	144,2
736	-"-	114	3	110,0	32,4	928,9	273,8
Total			48			14359,2	4039,8

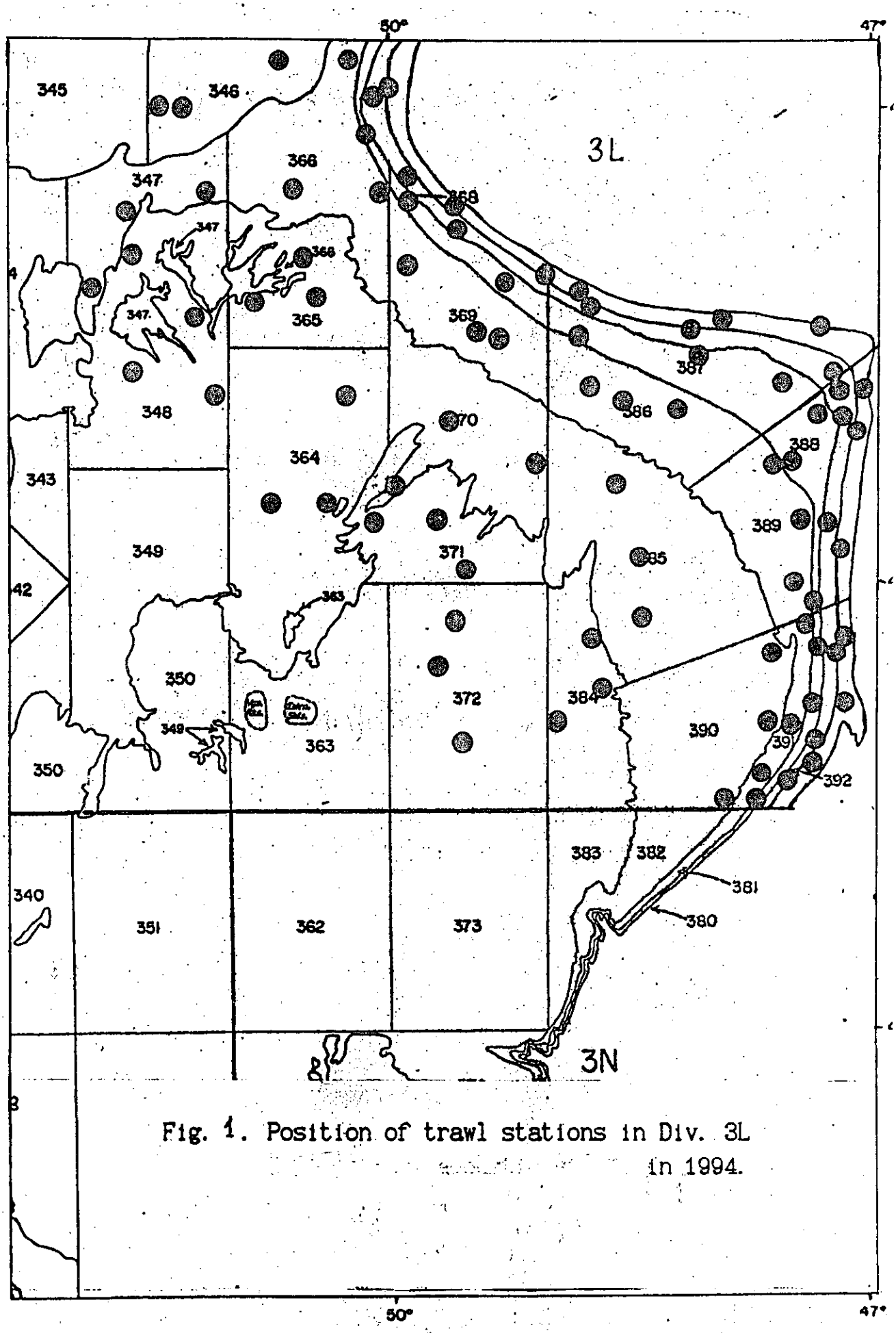

Fig. 1. Position of trawl stations in Div. 3L in 1994.

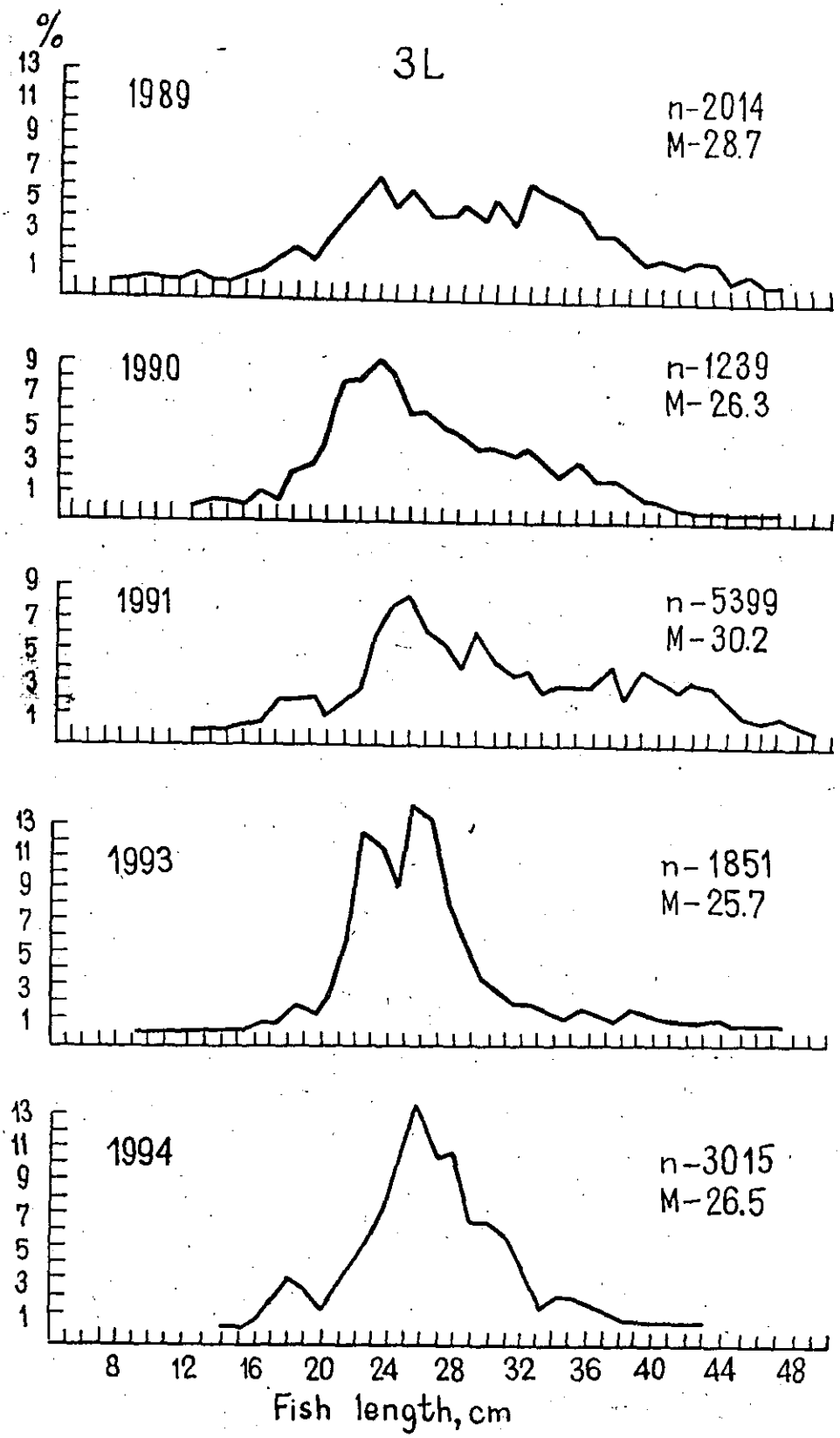

Fig. 2. Size composition of redfish in catches taken with a small-meshed trawl in Div. 3L in 1989-1994.

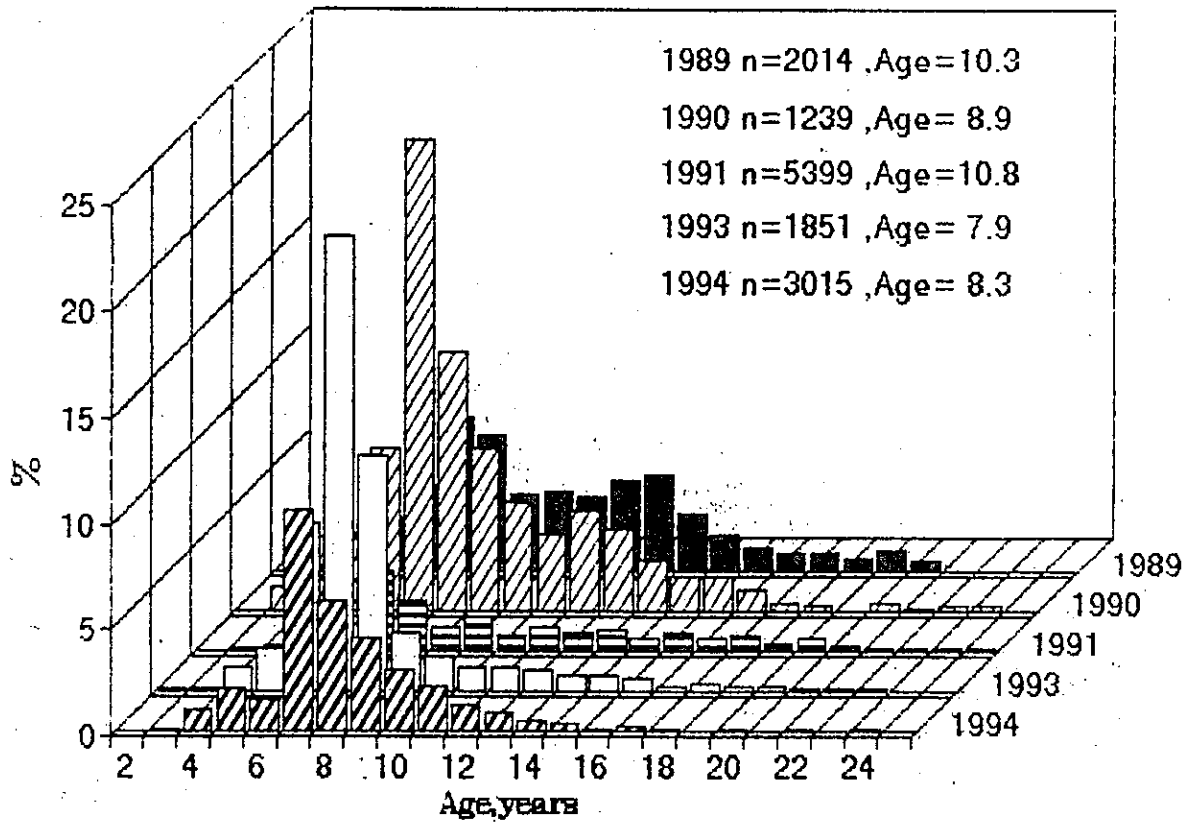

Fig. 3. Age composition of Redfish in NAFO Div. 3L ,1989-1994.

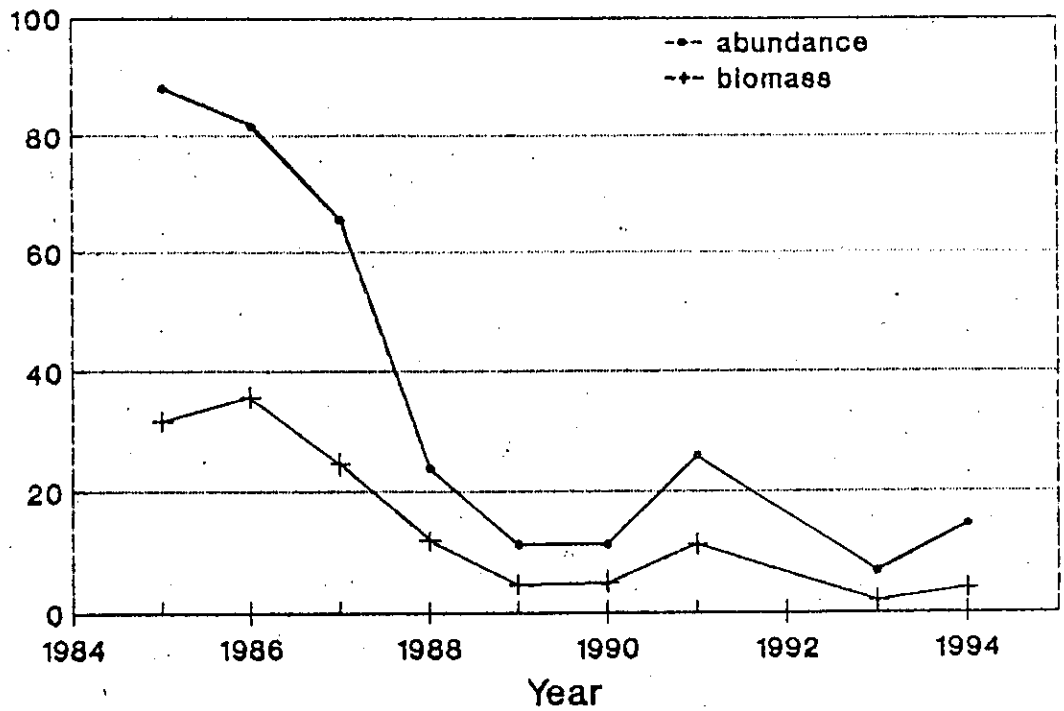

Fig. 4. Abundance (mill. spec.) and biomass (thou. t) of redfish in div. 3L by data of trawl surveys in 1985 - 1994.