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THE SIZE COMPOSITION AND GROWTH RATE OF SALMON LANDED IN
WEST GREENLAND DURING THE AUTUMN, 1970.By J. Møller Jensen
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The material used for this paper is based on information from the Royal Greenland Trade Department and Godthåb Fiskeindustri Ltd.

All measurements apply to round, fresh fish, and the conversion factor for converting gutted fish with head on is 1.11. The lengths are fork lengths.

The material consists of 317 651 salmon with a total weight of 970 031 kg.

The area off West Greenland is here divided in six subdivisions.

Table 1.

Subdivision	Border	Compared with ICNAF Divisions	
I	South of 60°45'N.	equal to	1F
II	between 60°45'N. and 62°30'N.	"	1E
III	" 62°30'N. " 64°15'N.	"	1D
IV	" 64°15'N. " 66°15'N.	"	1C
V	" 66°15'N. " 68°00'N.	smaller than	1B
VI	" 68°00'N.	bigger than	1A

Size composition.

The original material was given in numbers of salmon and corresponding weights in three different size-groups (1.1 - 3.3, 3.3 - 5.6 and more than 5.6 kg.) for each landing. The whole material is presented in Table 2 for each subdivision.

Table 2. Number, weight and average weight of salmon in the six subdivisions.

Subdivision	No. of salmon	weight of salmon, kg.	mean weight, kg.
I	58 372	186 130.4	3.19
II	153 071	447 075.5	2.92
III	16 052	47 982.1	2.99
IV	20 993	62 761.8	2.99
V	45 281	146 257.8	3.23
VI	23 882	79 795.5	3.34
Total	317 651	970 003.1	3.05

The best catches (447 metric tons) were landed in subdivision II, which is the area around Frederikshåb and Arsuk (1E), but the biggest salmon were caught in subdivision VI (the northernmost subdivision).

Figs. 1 and 2 show the changes of the relation between the three size-groups during the autumn in the different subdivisions, and Fig. 3 shows the same for all subdivisions I-VI.

There were relatively many bigger salmon (size-group 3) in the catches in the two northern subdivisions (V and VI), especially in the beginning and in the end of the fishing season, and the same tendency but weaker is found in the other subdivisions (I-IV).

Salmon of size-group 3 belong to sea-age-group .2+ and older, and it looks like .2+ and older salmon have a pattern of migration different from that of .1+ salmon.

Growth.

It is obvious that salmon from size-groups 1 and 3 belong to sea-age-groups .1+ and .2+ (and older) respectively. In size-group 2 (3.3 - 5.6 kg.) both .1+ and .2+ salmon are represented.

By use of a length-weight key, estimated of material collected during the season 1970 on the fishing industries (461 salmon), it is possible to set up the lower and upper limits of lengths of the size-groups.

Equation for length-weight:

$$w = a \times l^b$$

l = fork length
w = weight, kg.
a = 0.000024729
b = 2.806

Table 3. Size-groups (kg.) and the corresponding limits of fork lengths (cm).

Size-group	1	2	3
Kg.	1.1 - 3.3	3.3 - 5.6	5.6 and more
Lower limit, cm	46	68	81
Upper " "	67	80	

From Table 1 and 2 in ICES/ICNAF Salmon Doc. 71/4, it is possible to split size-group 2 into age-length distribution.

The material in the paper mentioned above was sampled stratified for age determination and at random for length distribution.

Table 4 (page 3) shows the numbers of .1+ salmon and the corresponding average weights per week in the catches.

On the assumption that the .1+ salmon is normally distributed in the whole West Greenland area, and that we have the same stock from the beginning to the end of the fishing season, it is possible to estimate the growth by use of a linear regression analysis of the material in Table 4. It has been done on material from weeks Nos. 32 - 44, which period cover exactly 3 months (August - October). 99% of .1+ salmon were caught in that period.

Table 4. Catches of .1+ salmon at West Greenland, 1970.

Week No.	Number	Weight, kg.	Mean weight, kg.
28	68	213.3	3.14
29	4	11.8	2.95
30	53	150.5	2.84
31	241	775.6	3.22
32	1 030	2 971.1	2.88
33	21 022	58 618.1	2.79
34	23 715	64 676.1	2.73
35	29 778	79 355.2	2.66
36	38 841	111 551.3	2.87
37	36 227	105 617.8	2.92
38	28 321	83 524.0	2.95
39	31 976	96 322.8	3.01
40	26 309	82 814.4	3.15
41	24 150	74 320.6	3.08
42	18 099	55 961.8	3.09
43	15 965	49 413.2	3.10
44	6 134	19 901.0	3.24
45	978	3 284.2	3.36
46	589	1 791.6	3.38
47	176	596.8	3.39
48	31	128.1	4.13
49	8	35.9	4.49
50	23	91.3	3.97
303 738	892 326.2	2.94	

Fig. 4 shows the growth of .1+ salmon estimated from the catches during August-October, in which period the average weight increased from 2.7 to 3.2 kg. (18%), and the corresponding length increased from 62.4 to 66.3 cm.

E 3

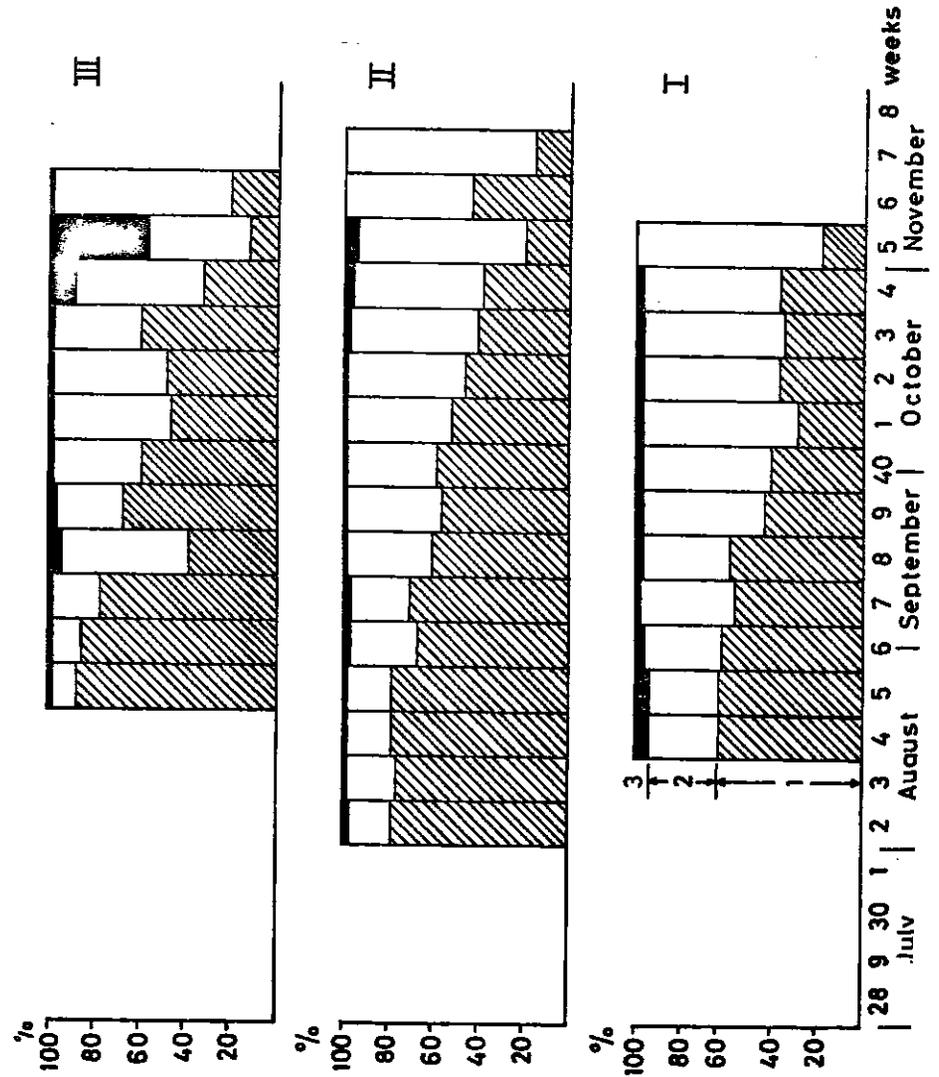


Fig. 1. The changes of the relation between size-groups during the autumn 1970, for subdivisions I-III.

Size-group 1: 1.1 - 3.3 kg.
 " 2: 3.3 - 5.6 kg.
 " 3: 5.6 kg.

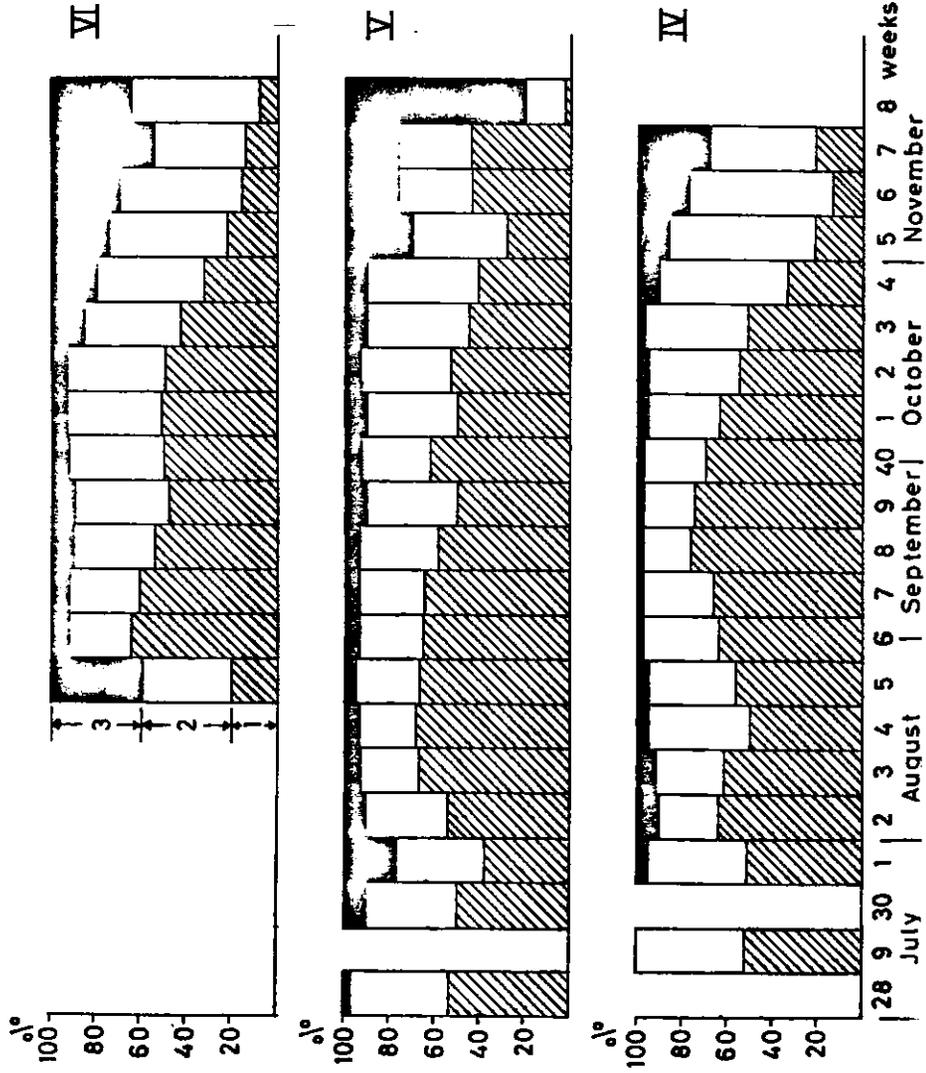


Fig. 2. The changes of the relation between size-groups during the autumn 1970, for subdivisions IV-VI.

Size-group 1: 1.1 - 3.3 kg.
 " 2: 3.3 - 5.6 kg.
 " 3: 5.6 kg.

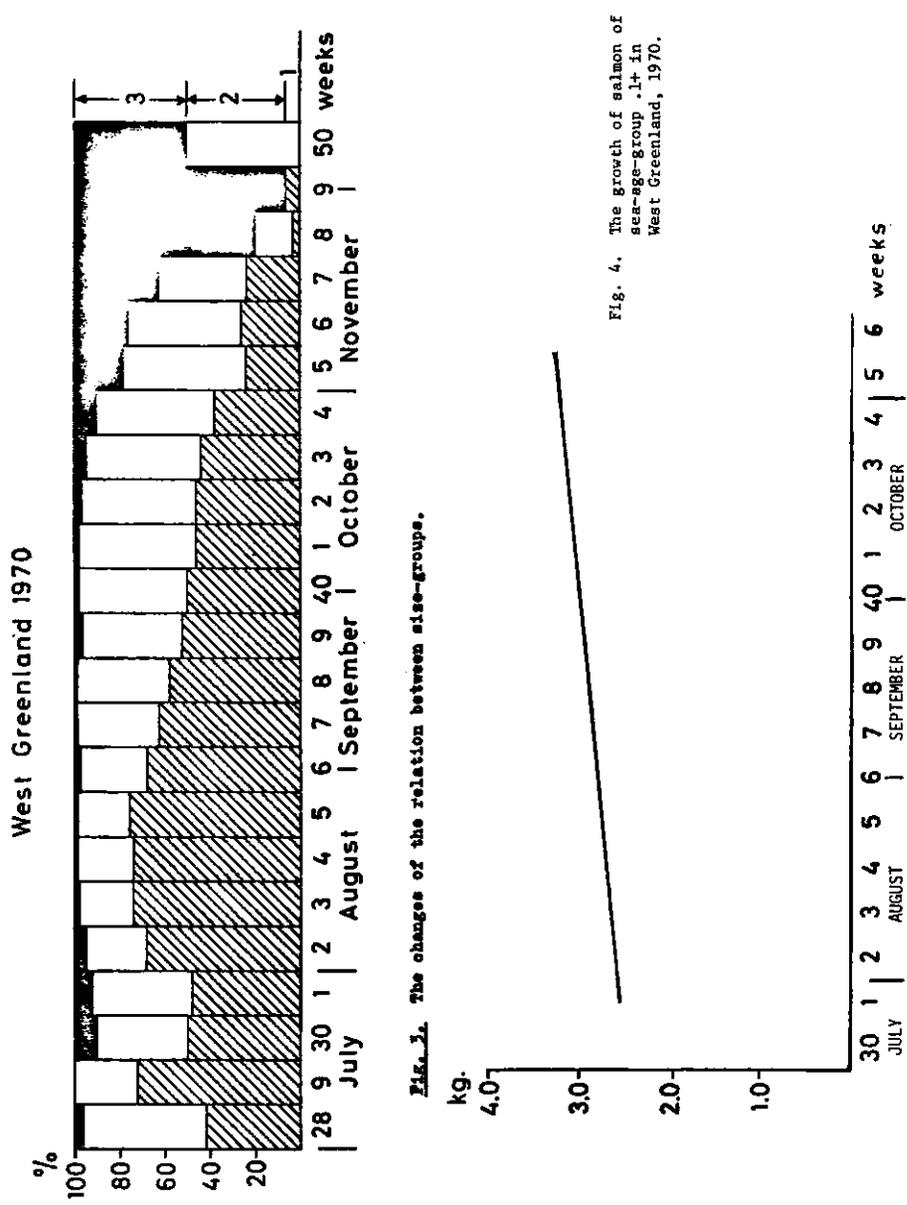


Fig. 3. The changes of the relation between size-groups.

Fig. 4. The growth of salmon of sea-age-group .1+ in West Greenland, 1970.