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Report of USSR Investigations in Subareas off Newfoundland, Labrador and Baffin Island in 1980

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The total yield taken by the Soviet fleet in Subareas 0, 2 and 3 in 1980 was equal to 55,100 tons (Table 1) or 7,600 tons less than in 1979.

A. Fisheries status

The catch per unit effort (cpue) for the Soviet trawl fleet increased in the most areas explored, particularly, considerably in the redfish fishery on the Flemish Cap Bank and southern slopes of the Grand Bank and in the Greenland halibut fishery in the Baffin Land Subarea. As the trips on fish assessment showed, an increase of cpue had been mainly caused by growth in abundance and biomass of demersal fishes.

C o d

Data on total trawl survey (conducted aboard the RV "N.Kononov" in April-August) indicated that the abundance and biomass of cod in Division 3K in 1980 were higher than those in 1977, 1978 and 1979 (Tables 2 and 3). Thus, the Labrador cod stock continues to grow. It consisted mainly of the specimens at age of 5-8 (Table 4) of 45-60 cm long (Table 5); mean weight of one specimen in the catches taken by a fish-counting trawl with a small meshed net insertion reached approximately 1.4 kg.

The year classes of Labrador cod, appeared in 1976 and 1977

were probably fairly weak. In Division 3K the abundance of three-year-olds of cod belonged to those year classes was not high (Table 6). Among all the year classes, of which the commercial stock of Labrador cod now consists, the most abundant year class undoubtedly appeared in 1973.

On the southern slopes of the Grand Bank (Divisions 3NO) the abundance and biomass of cod, judging by the data on total trawl survey (Tables 2 and 3) in 1980 increased compared to those of 1979. The specimens at age of 5 and 6 belonged to the 1974 and 1975 year classes prevailed by their abundance in the commercial cod stock. These year classes are certainly considered to be very abundant (Tables 4 and 6).

Abundance and biomass of cod on the Flemish Cap Bank during the past year decreased. It is hardly be expected that an essential recruitment to the stock will be observed in the nearest future because the 1978 year class and also, probably, the 1979 one are poor.

Project

From the above mentioned it follows that in 1981 and 1982 the abundance and biomass of the Labrador cod stock will remain at a very high level with predominance of specimens of elder ages (mainly, 6-9 years). Abundance and biomass of cod from the southern slopes of the Grand Bank will increase; the specimens at age of 7-8 will make up the bulk of the trawl catches, but a significant recruitment to the stock with young cod will be expected. Cod stocks on the Flemish Cap Bank will remain in depressive status.

H a d d o c k

Total trawl survey, young fish assessment and analysis of trawl catches showed that the replacement of haddock stock on the Grand Bank has not been taken place yet. However, it sho-

uld be noted that in May 1980 large pre-spawning specimens of haddock distributed over an extensive area, mainly, in the 100-200 m depths on the southwestern slope of the bank (Div.3O). There is a certain hope that the 1980 year class will be slightly stronger than some previous ones.

Redfish

Abundance and biomass of the redfish Sebastes mentella Travin in 1980 were above the long-term mean level almost over the whole area investigated. While assessment of the stocks state on the southern slopes of the Grand Bank total indices by Divs.3N and 3O should be used, because there were no any physical barriers between them; a common stock was observed in both divisions. As it's seen from Tables 2 and 3 the abundance and biomass of Sebastes mentella in Divs.3NO were in 1980 slightly below than those in 1979, but higher, than those in all the rest years of the past decade. As a rule, the specimens at age of 7-9, 20-28 cm long (Tables 7 and 8) dominated by their abundance in the catches taken with fish-counting and conventional trawls. Unusual large redfish was registered only in one age sample collected in Division 3O (Table 8).

In 1979, on the Flemish Cap Bank the abundance of Sebastes mentella was maximum due to the abundance of young specimens; mean weight of one specimen in catches taken with fish-counting trawl was at that time only 148 g (Tables 2 and 3).In 1980 mean weight of one specimen increased up to 333 g and inspite of abundance decline, biomass of stock remained at a previous record high level. As it is shown in Table 7 comparatively small specimens 25-27 cm long still prevailed in the catches taken with fish-counting trawl. This is an evidence of very great recruitment to the stock with the fish of some abundant year classes. The specimens of these sizes were almost not represented in catches taken both with conventional bottom and midwater trawls (Tables 8 and 9).

The redfish Sebastes marinus L. occurred on the Flemish Cap Bank in depths less than 400-450 m; mean weight of one specimen in 1980 was 520 g, total abundance and biomass of stock somewhat increased.

The state of Sebastes mentella stocks in more northern divisions, e.g. 3L and 3K, does not excite apprehension (Tables 2 and 3).

Project

An abundant recruitment to the main stocks of Sebastes mentella with young specimens of strong year classes, and also strict limitation of yield made for essential increase in abundance and biomass. Rather satisfactory state of the stocks making it possible to increase essentially the yield limit will remain and in 1982, on the Flemish Cap, Sebastes mentella will be noticeably larger: the specimens 30-35 cm long will dominate in trawl catches. Abundance and biomass of Sebastes marinus on the bank will also slightly increase. However, they are observed approximately in the same depths as cod. So far as cod fishery on the Flemish Cap Bank in 1981-1982 had to be limited strictly, it's impossible to expect for a substantial bycatch of Sebastes marinus.

Flounders

In accordance with the data on total trawl survey, the abundance and biomass of American plaice in 1980 (Tables 2 and 3) almost in all the divisions were higher than those in 1979. Abundance and biomass in Div.3L, where usually a lot of young specimens were observed (Table 10) especially essentially increased, because a mass spawning of American plaice and their young fattening in the first years of life took place there. The largest specimens (spawners) occurred in the same division.

Abundance and biomass of yellowtail flounder increased markedly from 1977 to 1979 and remained at a fairly high level in 1980

(Tables 2 and 3). Mean weight of one specimen in catches taken with fish-counting trawl in the latest years did not practically vary and was fairly high (400-450 g). As usual, the greatest number of small specimens was registered in Div.3N (Table 11).

Some data on sizes and age of witch (Tables 12 and 13) indicate the conservation of stable structure of their stock.

Project

Abundance and biomass of all three species of flounders remain at a fairly satisfactory level. In some divisions a tendency to further increase in stocks is observed. Probably, cpue for flounder in 1982 will slightly increase at the same size-age composition of catches.

Greenland halibut

In winter 1980/81 in the Northwest Atlantic a trawl survey of Greenland halibut stocks that revealed rather high indices of abundance and biomass had been undertaken. One can reasonably suggest that an increase in halibut abundance in the investigated Divisions (2J, 2H, 2G, 3K) and Subarea 0 was partially caused by cooling of water masses in the 200-500 m layer (see below the section on hydrological conditions). Greenland halibut - an Arctic, cold-water fish; the cooling of the sea favoured the extension of the area in the southern direction. Probably, a mass migration from north to south covered even that part of the area, which was situated northward of the Greenland-Canadian Threshold in the Baffin Sea.

As usual, an essential difference in size compositions of halibut catches in various parts of their area (Table 14) was observed. In Division 3K the young fish, immature specimens were predominantly registered. The largest specimens inhabit on the continental slope of the Baffin Land, off the North

and Central Labrador. Undoubtedly, a rational halibut fishery had to be conducted in the areas mentioned, in every possible way to conserve the younger age groups in the southern part of the area.

Project

The limits and quotas of Greenland halibut yield can be essentially increased without any unfavourable consequences for stock state. In 1982, cpue for halibut will probably increase because the cooling of the sea will continue.

Roundnose grenadier

Productivity of roundnose grenadier trawl fishery in 1980 was not high. Roundnose grenadier is more warm-water fish than Greenland halibut, and the cooling of water masses could force out the roundnose grenadier concentrations from the main commercial areas and depths.

Size-age and sex compositions of catches of roundnose grenadier in 1980 did not practically vary compared to those of the previous years. As usual, in Division 3K the specimens at age of 7-13 dominated by their abundance, the males were more abundant than females (Table 15).

Project

Roundnose grenadier is a very difficult object in fishery investigations. It is possible only supposedly to expect that relatively low productivity of trawl fishery will remain and in 1982 at the same size-age composition of catches.

C a p e l i n

An acoustic survey of capelin stocks in Divisions 3LNO was

undertaken from May 26 to June 14 aboard the RV "Poisk". The area from 44°20' to 48°00'N and from 49°30' to 54°20'W was covered with investigations. An assessment on capelin abundance in Divisions 2J and 3K was carried out from October 29 to November 7.

The concentrations of mature capelin were detected in late May only over a small square in Division 3L.

In Divisions 3LNO the young capelin of the 1979 year class, 5-10 cm long occurred everywhere. The square occupied by the young fish concentrations was equal to about 4 thou.sq.miles. The densest concentrations were registered between 44°30' and 47°00'N, 51°00' and 54°00'W.

Aimed at collection of biological material in September-October a group of three Soviet commercial vessels operated in Division 2J. Capelin concentrations were observed over a small square in the southwestern part of the Hamilton Bank. The catches taken with pelagic trawl per trawling constituted 5-30 tons. In late October the fishery situation sharply impared, the vessels had to transfer to demersal fishes fishery. In total, 4.8 thou.tons of capelin were caught by those vessels.

In Division 3K capelin concentrations were not found. In Division 2J mixed concentrations of capelin and young Polar cod were observed, the percentage of capelin constituted, on an average, 50%. With allowance for this relation, the abundance and biomass of capelin (780 mill.spec. and 20.2 thou.tons, respectively) were evaluated.

The specimens of the 1976 year class made up the bulk of the catches in Division 3L, and the specimens of the 1977 year class - in Division 2J (Table 16). Size and sex compositions are represented in Table 17.

B. Special investigations

Oceanographic observations

In 1980 hydrological observations were carried out on standard oceanological sections 3-A, 4-A, 6-A, 7-A, "triangle" and 8-A during the trips of the RV "Protsion" in May-June and in August-November, and also in trips of the RV "Nikolai Kononov" in March-June and in November-December on trawl stations and sections in the Baffin Land area.

Due to temperature conditions, 1980 can be referred to the temperate cold years. Since May throughout November almost on all the standard sections in the areas off Newfoundland and Labrador small negative anomalies (mainly, from -0.2° to -0.5°C) dominated. In May these were observed in the area of the southeastern slope of the Grand Bank, and in October - in the east and northeast of this bank. Negative anomalies in the 200-500 m layer were registered over a greater area, than those in the 0-200 m layer.

In November 1980 the water temperature in the three branches of the Labrador Current after a warm three-year period of 1977-1979 approached the long-term mean norm. Positive anomalies were registered in the coastal branch of the current, the negative ones - in the main and Atlantic branches. (Table 18).

In May-June 1980 water temperature almost in all the layers and branches of the Labrador Current was below than that of the same months in 1979. The greatest decrease in temperature (up to 0.6-0.8°C) was marked in the 50-200 and 200-500 m layers of the main and Atlantic components of the Labrador Current. The reduction of water temperature in the current core and deeper layers was caused by the intensification of inflow of cold waters of Arctic origin.

In September and November-December the greatest gradients of water temperature in near-bottom layers (up to 0.04° per

metre) were registered on the continental slope of the Baffin Land (300-400 m depths) and on the shelf in Divs.2J and 3K (250-300 m and 200-250 m depths, respectively).

Deep allocation of frontal zones is related to intensification of inflow of the cold Labrador Current waters that continued from May-June to December.

Ichthyoplankton sampling

Collection of data on ichthyoplankton was made on 19-31 March, 2-12 May and 3-11 June on the Flemish Cap Bank from board the RV "Protsion" : vertical sampling was carried out on 167 stations, surface sampling - on 153 stations, sampling in the 25-30 m depth - on 153 stations. Besides, a vertical sampling was conducted in the same area on 42 stations on 3-15 August.

Samples of ichthyoplankton were fixed in a formalin solution and brought to the laboratory ashore, where they were analysed.

Trawl selectivity investigations

The investigations on the studying of selectivity of trawl bags were conducted aboard the RV "Nikolai Koncnov" from April 11 to August 19, 1980 and from October 13, 1980 to February 17, 1981 in relation to the following species of fish: redfish Sebastes mentella, Greenland halibut and roundnose grenadier.

Trawl selectivity investigations in relation to Sebastes mentella were undertaken in late April - early May 1980 in Division 3M (Flemish Cap) by trawls with dimensions of 41.7/39.6 m and 31/27.2 m with bags with internal mesh sizes of 117 and 127 mm.

In April-May 9 trawlings were carried out with trawls with back of 117 mm mesh size, in August 12 trawlings were carried out with trawls with bag of 127 mm mesh size.

Trawl selectivity investigations in relation to roundnose

grenadier were conducted in late June and early July 1980 in Division 3K by trawl (41.7/39.6 m) with bag of 117 mm mesh size (10 control trawlings) and with bag of 127 mm mesh size (19 control trawlings).

Trawl selectivity investigations in relation to Greenland halibut were carried out in June by trawls (41.7/39.6 m) with bag of 117 mm mesh size (6 trawlings) in Div.2J and with bag of 127 mm mesh size (13 trawlings) in Div.3K and (6 trawlings) in Div.2J.

In Subarea "0" 10 trawlings were conducted by trawl (41.7/39.6 m) with bag of 126.9 mm mesh size from 23 to 26 November; 3 trawlings - by trawl (31/27.2 m) with bag of 126.9 mm mesh size, 4 trawlings - by trawl (41.7/39.6 m) with bag of 126.9 mm mesh size from 8 to 12 December; 10 trawlings - by trawl (41.7/39.6 m) with bag of 133.2 mm mesh size from 27 Nov. to 10 Dec.

The data collected are analysed.

Table 1. The USSR catches taken in the Northwest Atlantic in 1980 (in metric tons)

Object of fishery	Subareas II	III	IY	Y	Total II-V	Stat.Subareas 6	0	Total (NWA)
T O T A L	5.9	47.5	53.2				1.7	108.3
Including:								
Capelin	4.8							4.8
Argentine								
Atlantic halibut								
Greenland halibut	0.1	0.1					1.6	1.8
American plaice		1.3						1.3
Witch		2.0						2.0
Yellowtail flounder								
C o d		4.6	0.4					5.0
Haddock			0.2					0.2
Pollock			1.0					1.0
White hake								
Red hake			0.7					0.7
Silver hake			41.0					41.0
Grenadier	0.6	0.5						1.1
Redfish	0.2	37.9	0.0					38.2
Wolffishes								
A n g l e r			0.2					0.2
Sea robin								
Beryx								
Other bottom fish								
Butterfish								
Herring								
A l e w i f e								
Mackerel			0.1					0.1
Other pelagic fish								
Sharks								
Skates			0.4					0.4
Other fish		1.0	0.8					1.8
Illex squid		0.1	0.5					0.6
Loligo squid			7.3					7.3

Table 2. Average number of demersal fishes (spec.per hour trawling) due to data of total trawl surveys in Newfoundland area

Species	Year	3K	3L	3M	3N	3O
Cod	1971	97	184	77	208	44
	1972	158	265	66	139	56
	1973	39	29	108	144	53
	1974	32	40	346	185	30
	1975	27	24	550	186	28
	1976	98	57	693	243	32
	1977	42	135	489	452	70
	1978	15	31	95	181	43
	1979	55	131	122	103	22
	1980	69	63	34	124	34
redfish	1971	337	82	66	911	957
	1972	612	37	449	366	493
Sebastes	1973	475	113	484	645	884
mentella	1974	796	314	314	733	560
	1975	692	73	516	1278	1834
	1976	227	4	103	128	1085
	1977	600	73	660	282	3038
	1978	405	224	816	2555	508
	1979	910	42	4313	4247	668
	1980	622	178	2077	701	3139
American	1971	57	703	38	194	145
plaice	1972	74	516	41	387	167
	1973	142	569	53	267	258
	1974	177	671	83	357	158
	1975	238	663	93	356	301
	1976	175	394	169	223	209
	1977	227	1086	60	567	203
	1978	69	578	46	167	121
	1979	52	487	16	531	151
	1980	78	710	30	266	155
Yellowtail	1971	-	71	-	282	16
flounder	1972	-	126	-	326	128
	1973	-	31	-	206	122
	1974	-	84	-	395	98
	1975	-	16	-	227	100
	1976	-	23	-	439	121
	1977	-	24	-	108	112
	1978	-	8	-	105	124
	1979	-	57	-	327	68
	1980	-	20	-	230	76

Table 3, Average catch (kg) of demersal fishes per hour trawling due to data of total trawl surveys in Newfoundland area

Species	Year	3K	3L	3M	3N	3O
Cod	1971	77	138	69	135	34
	1972	134	163	75	72	67
	1973	33	32	57	74	25
	1974	36	33	51	72	10
	1975	19	20	121	155	16
	1976	123	48	296	121	25
	1977	36	98	448	254	70
	1978	17	36	79	122	23
	1979	77	160	108	83	33
	1980	97	104	35	100	58
redfish Sebastes mentella	1971	144	33	13	221	80
	1972	266	16	194	43	62
	1973	150	38	117	161	114
	1974	308	110	89	145	66
	1975	282	29	163	241	166
	1976	109	1	48	21	107
	1977	205	23	327	56	509
	1978	151	79	166	535	99
	1979	553	15	710	971	106
	1980	250	82	702	213	664
American plaice	1971	16	250	26	142	57
	1972	6	132	22	117	42
	1973	56	111	37	107	77
	1974	43	166	74	186	53
	1975	66	202	53	171	90
	1976	39	112	127	84	86
	1977	64	345	30	197	69
	1978	16	208	29	75	54
	1979	16	153	10	166	54
	1980	22	264	21	106	78
Yellowtail flounder	1971	-	32	-	110	8
	1972	-	57	-	140	46
	1973	-	12	-	76	50
	1974	-	40	-	137	46
	1975	-	7	-	68	41
	1976	-	10	-	171	52
	1977	-	11	-	44	100
	1978	-	3	-	45	57
	1979	-	28	-	148	32
	1980	-	10	-	104	41

Table 4. Age composition and mean length of cod in catches taken by fish-counting bottom trawl with small-meshed net insertion, 1980

Year class	Age	3M, May, 411 spec.		30. May, 646 spec.		3N, Jun., 637 sped		2J, Jul., 286 sp.		3M, Jul., 396 sp.	
		No. of spec. (%o)	Mean lgth (cm)	No. of spec. (%o)	Mean lgth (cm)	No. of spec. (%o)	Mean lgth (cm)	No. of spec. (%o)	Mean lgth (cm)	No. of spec. (%o)	Mean lgth (cm)
1979	I	I0	9,3	-	-	-	-	-	-	-	-
1978	2	27	23,I	I6	22,9	9	23,5	-	-	I5	27,5
1977	3	85	28,9	59	30,9	6	29,5	I4	27,3	246	32,I
1976	4	I29	37,2	I73	41,8	38	40,0	2I	37,5	302	40,3
1975	5	34	5I,I	265	47,9	286	48,0	I40	47,4	56	48,4
1974	6	II4	56,6	200	59,I	360	54,9	382	50,9	I67	57,6
1973	7	310	62,I	I25	63,5	I63	63,1	24I	55,7	I44	63,7
1972	8	200	66,5	7I	70,8	58	72,5	I68	60,6	30	73,0
1971	9	49	74,8	5I	67,8	28	82,3	I7	68,2	8	85,0
1970	I0	27	8I,5	20	90,7	I8	85,9	I4	64,7	2	95,0
1969	II	2	84,0	5	104,0	8	I0I,5	-	-	-	-
1968	I2	2	88,0	5	95,0	I0	I02,5	3	9I,0	-	-
1967	I3	2	I00,0	I	92,0	5	I07,0	-	-	-	-
1966	I4	-	-	-	-	3	II6,5	-	-	-	-
1965	I5	-	-	-	-	-	-	-	-	-	-
1964	I6	-	-	-	-	2	I30,0	-	-	-	-
1963	I7	-	-	-	-	-	-	-	-	-	-
1962	I8	-	-	-	-	3	II9,5	-	-	-	-
Total		I000	55,65	I000	56,9	I000	58,I5	I000	52,8I	I000	46,5

Table 5, Size composition of cod (%o) in catches taken by fish-counting bottom trawl with small-meshed net insertion, 1980

Length, cm	3N (May)	3O (May)	3K (Jun.)	3L (Jun.)	2J (Jul.)	3M (Jul.)
1	2	3	4	5	6	7
9-II	-	I	-	-	-	-
I2-I4	I	2	-	-	-	-
I5-I7	2	4	I	I	I	-
I8-20	22	3I	2	I	I	-
2I-23	II7	54	3	I0	I	I
24-26	I8I	53	5	9	6	3
27-29	I24	57	8	5	8	39
30-32	4I	24	5	3	4	83
33-35	38	I8	II	4	6	5I
36-38	6I	32	I8	7	II	82
39-4I	6I	56	27	I3	I8	II6
42-44	42	44	59	28	4I	78
45-47	38	65	I27	60	II2	70
48-50	37	69	I73	I02	I68	27
5I-53	36	58	I48	I30	I80	24
54-56	39	50	I23	I42	I23	34
57-59	44	68	II2	I5I	I30	60
60-62	38	56	73	III	8I	64
63-65	24	42	43	7I	49	59
66-68	I6	36	27	43	30	48
69-7I	I0	29	I4	30	I2	33
72-74	8	27	6	20	5	20
75-77	4	22	3	I3	3	2I
78-80	3	2I	3	II	3	I7
8I-83	2	I5	2	6	2	3
84-86	2	I5	I	5	2	I8
87-89	2	I3	2	3	-	I4
90-92	2	I2	I	3	I	I4
93-95	I	4	2	3	-	8
96-98	I	6	I	I	I	3
99-I0I	I	7	-	I	I	2
I02-I04	-	I	-	3	-	-
I05-I07	I	I	-	I	-	I
I08-II0	-	I	-	2	-	-
III-II3	-	-	-	I	-	-
II4-II6	-	I	-	2	-	-
II7-II9	-	I	-	I	-	-
I20-I22	I	I	-	I	-	-
I23-I25	-	-	-	I	-	-
I26-I28	-	2	-	I	-	I
I29-I3I	-	I	-	-	-	I
Relative number (%o)	I000	I000	I000	I000	I000	I000
Mean length (cm)	38,32	50,68	52,I9	57,02	53,06	5I,30
No.of spec. measured	5327	I98I	369I	3506	306I	952

Table 6, Number of young cod of the 1959–1979 year classes in average catch per hour trawling on Newfoundland Shelf, spec.

Year class	Age, years														
	I					2					3				
	3K	3L	3N	3O	3M	3K	3L	3N	3O	3 M	3K	3L	3N	3O	3M
I959	-	-	-	-	-	-	-	-	-	-	33	I8	I2	I	-
I960	-	-	-	-	-	9	3	5	0	-	I6	II	3	2	-
I96I	2	2	2	2	-	5	6	9	4	-	29	42	I7	2	6
I962	0	I	2	I0	-	2	8	23	3	7	22	56	26	3	29
I963	I	3	I	I	0	I	II	8	2	6	5I	44	42	2	I4
I964	0	2	57	37	0	4	22	I92	I8	I	II	68	I03	60	I4
I965	0	I	0	0	3	I	2	I9	I7	2	27	I7	32	27	9
I966	0	0	2	2I	0	4	I0	39	24	0	38	6I	53	47	I3
I967	0	0	0	2	0	II	I5	4	6	I3	48	36	44	20	20
I968	I	I	8	24	I0	I0	68	I53	40	I06	46	II8	I27	32	58
I969	I	4	4	6	0	0	3I	I5	8	2	I9	60	37	I7	2
I970	0	I	9	2	0	I	7	35	4	I	8	8	29	I4	I
I97I	0	0	6	2	22	2	I	5I	2I	87	4	I2	8I	I2	3
I972	0	0	6	3	3	0	3	I2	II	29	8	7	34	9	22
I973	0	I	I	3	303	7	9	43	I0	350	4I	24	92	9	568
I974	0	2	2	4	I33	3	4	89	7	50	I0	58	20I	2I	57
I975	0	0	I0	I	5	I	8	92	5	I7	2	6	62	5	I7
I976	0	0	0	0	0	0	0	4	3	2	2	3	24	2	I3
I977	0	0	0	I	8	0	0	8	0	5I	I	2	22	3	8
I978	0	0	2	5	3	0	2	39	5	2	-	-	-	-	-
I979	0	0	0	0	0	-	-	-	-	-	-	-	-	-	-
Mean for 19 years	0	I	6	7	29	3	II	44	I0	43	22	34	55	I5	50

Table 7. Size composition of the redfish Sebastes mentella (%o) in catches taken by fish-counting bottom trawl with small-meshed net insertion, 1980

Length, cm	30 (May)		3K (Jun.)		3L (Jun.)		2J (Jul.)		3M (Jul.)	
	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.
I3	-	-	I	-	2	I	-	-	-	-
I4	-	-	I	I	4	2	-	I	-	-
I5	2	2	3	I	4	2	-	-	-	-
I6	4	5	8	9	4	3	I	I	I	I
I7	6	4	I5	I7	5	3	I	3	I	I
I8	II	9	I5	I8	3	2	3	3	2	3
I9	I7	I2	I2	I2	5	5	4	4	I	I
20	39	37	II	I4	4	5	7	9	I	3
2I	54	54	I5	I6	4	7	I2	I4	4	4
22	58	56	23	24	6	I2	I7	26	5	6
23	66	63	32	37	I4	I7	30	38	I6	I8
24	56	48	23	28	I0	I4	30	40	28	29
25	76	63	28	33	I4	23	44	58	76	78
26	42	47	2I	29	I2	I8	3I	42	64	62
27	27	38	29	32	22	24	37	45	49	56
28	I2	28	26	28	28	30	30	42	I9	2I
29	4	2I	28	24	32	23	25	28	II	9
30	2	I3	24	20	35	30	34	28	I7	7
3I	I	5	22	I5	29	28	20	I6	I3	4
32	-	4	22	II	27	4I	24	2I	22	II
33	-	3	I9	II	22	34	2I	I5	20	I5
34	-	2	I9	II	20	36	I8	9	24	I5
35	-	3	I6	I5	33	43	26	I6	38	25
36	-	3	I2	I3	22	27	I5	8	26	I8
37	-	2	I4	I2	2I	24	I3	9	25	23
38	-	I	I5	II	I6	23	I2	8	I4	2I
39	-	-	I2	I0	I0	20	9	7	I0	I8
40	-	-	7	8	6	I2	6	8	6	2I
4I	-	-	3	5	6	8	3	4	2	9
42	-	-	I	5	3	9	2	4	I	7
43	-	-	I	6	4	I0	-	3	-	5
44	-	-	I	6	I	7	-	3	-	4
45	-	-	-	8	I	I2	-	4	-	4
46	-	-	-	8	I	6	-	2	-	2
47	-	-	-	6	-	3	-	2	-	I
48	-	-	-	7	-	3	-	2	-	I
49	-	-	-	4	-	2	-	I	-	-
50	-	-	-	4	-	-	-	I	-	-
5I	-	-	-	I	-	I	-	-	-	-
52	-	-	-	-	-	-	-	-	-	-
53	-	-	-	I	-	-	-	-	-	-
Relative number, %o	477	523	479	52I	430	570	475	525	496	504
Mean length, cm	23,I6	24,24	27,82	29,04	30,57	32,24	28,90	28,35	29,60	29,22
No.of spec. measured	4759	5209	8480	92I6	3I59	4I92	4497	4962	6626	6727

Table 8. Age composition and mean length of the redfish Sebastes mentella in catches taken by conventional bottom trawl, 1980

Year class	Age	3N, Jan., 296 spec.				30, Feb., 288 spec.				3K, Apr., 280 spec.				3M, Apr., 253 spec.			
		No. of spec. (%o)		Mean lgth (cm)		No. of sp. (%o)		Mean lgth (cm)		No. of sp. (%o)		Mean lgth (cm)		No. of sp. (%o)		Mean lgth (cm)	
		Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.
I975	5	7	3	I9,5	I9,0	-	-	-	-	-	-	-	-	-	-	-	-
I974	6	27	20	20,6	20,8	-	-	-	-	-	-	-	-	-	-	-	-
I973	7	II2	8I	2I,8	22,3	-	-	-	-	-	-	-	-	-	-	-	-
I972	8	240	I55	23,8	23,7	-	-	-	-	-	-	-	-	-	-	-	-
I97I	9	I45	I39	24,8	25,3	-	-	-	-	-	-	-	-	8	-	25,0	-
I970	I0	24	30	26,7	27,I	3	II	28,0	28,0	-	-	-	-	20	I2	27,2	28,7
I969	II	3	I4	27,0	28,2	2I	24	3I,5	29,4	II	-	30,7	-	32	I6	3I,2	3I,7
I968	I2	-	-	-	-	66	I7	33,3	30,4	29	I4	33,I	32,5	55	40	32,4	34,I
I967	I3	-	-	-	-	I39	3I	34,I	33,0	64	25	34,I	34,6	43	I6	34,4	34,7
I966	I4	-	-	-	-	I3I	66	35,6	34,8	57	54	35,6	35,8	50	20	35,3	36,4
I965	I5	-	-	-	-	66	73	36,4	35,9	II	II4	37,0	36,9	36	63	36,5	38,I
I964	I6	-	-	-	-	35	33	37,6	37,3	7	I36	38,0	37,8	59	75	37,7	38,4
I963	I7	-	-	-	-	I7	76	38,4	38,2	I8	I07	38,6	38,3	43	28	38,7	39,7
I962	I8	-	-	-	-	I4	2I	39,2	38,5	7	89	39,5	39,3	32	24	39,6	40,2
I96I	I9	-	-	-	-	II	2I	40,0	40,3	4	36	40,0	40,I	32	47	40,4	4I,2
I960	20	-	-	-	-	7	3I	4I,0	4I,9	-	39	-	40,7	I2	55	40,7	42,9
I959	2I	-	-	-	-	II	II	42,0	43,3	-	II	-	43,0	8	59	4I,5	43,0
I958	22	-	-	-	-	-	7	-	44,5	-	29	-	45,6	I6	47	42,7	43,9
I957	23	-	-	-	-	-	7	-	45,5	-	3I	-	47,2	I6	I6	45,0	46,0
I956	24	-	-	-	-	-	-	-	-	-	2I	-	47,3	-	I2	-	47,7
I955	25	-	-	-	-	-	-	-	-	-	4	-	47,0	-	8	-	50,5
I954	26	-	-	-	-	-	-	-	-	-	7	-	50,0	-	-	-	-
I953	27	-	-	-	-	-	-	-	-	-	I4	-	50,5	-	-	-	-
I952	28	-	-	-	-	-	-	-	-	-	2I	-	5I,5	-	-	-	-
T o t a l		558	442	23,39	24,I6	52I	479	35,4I	36,60	208	792	35,I6	39,46	462	538	36,26	39,90

Table 9. Age composition and mean length of the redfish Sebastes mentella in catches taken by conventional midwater trawl on the Flemish Cap Bank in January-March 1980

Year class	Age	January, 278 spec.				February, 284 spec.				March, 290 spec.			
		No.of spec.(%)		Mean lgth (cm)		No.of spec.(%)		Mean lgth (cm)		No.of spec.(%)		Mean lgth (cm)	
		Males	Females	Males	Females	Males	Females	Males	Females	Males	Females	Males	Females
1973	7	4	7	25,0	24,5	49	49	23,4	24,1	10	31	25,7	27,5
1972	8	18	40	24,2	24,5	159	216	23,9	24,4	31	41	27,2	27,4
1971	9	65	125	25,2	26,0	145	130	24,9	25,5	93	127	27,6	27,8
1970	10	155	200	26,0	26,9	102	53	25,4	25,6	142	99	28,1	28,2
1969	11	119	54	27,1	28,3	32	11	27,2	30,3	38	38	28,8	29,1
1968	12	54	14	31,7	34,0	3	7	30,0	31,7	62	21	32,4	33,7
1967	13	40	18	33,4	33,8	11	11	32,7	33,3	31	14	33,2	34,5
1966	14	18	18	35,0	35,4	3	3	34,0	35,0	24	37	34,4	35,9
1965	15	7	7	36,0	37,0	-	3	-	37,0	3	35	36,0	37,2
1964	16	4	14	38,0	38,5	-	3	-	37,0	10	34	37,3	38,2
1963	17	4	7	39,0	38,5	-	3	-	39,0	3	24	38,0	39,3
1962	18	-	4	-	40,0	-	7	-	40,0	-	21	-	40,7
1961	19	-	4	-	40,0	-	-	-	-	-	7	-	42,0
1960	20	-	-	-	-	-	-	-	-	-	21	-	42,2
1959	21	-	-	-	-	-	-	-	-	-	3	-	44,5
Total		488	512	28,01	28,17	504	496	24,97	25,81	447	553	29,58	31,82

Table 10. Size composition of American plaice (%o) in catches taken by fish-counting bottom trawl with small-meshed net insertion, 1980

Length, cm	3N (May)		3L (June)		2J (July)	
	males	females	males	females	males	females
12 - 13	1	1	-	-	-	-
14 - 15	4	4	1	2	-	-
16 - 17	11	9	10	7	-	-
18 - 19	16	12	17	20	1	1
20 - 21	12	10	33	32	7	4
22 - 23	25	14	33	33	22	9
24 - 25	40	28	35	32	43	25
26 - 27	46	40	40	35	66	32
28 - 29	50	50	55	49	85	45
30 - 31	50	57	47	41	74	69
32 - 33	38	47	38	42	50	76
34 - 35	35	47	40	43	42	73
36 - 37	21	46	32	38	20	54
38 - 39	17	42	27	32	13	42
40 - 41	15	42	23	28	6	37
42 - 43	9	26	15	24	1	20
44 - 45	10	23	9	18	1	22
46 - 47	7	16	5	17	-	22
48 - 49	7	11	3	13	-	15
50 - 51	2	12	1	9	-	12
52 - 53	1	4	-	6	-	5
54 - 55	1	4	-	3	-	3
56 - 57	-	5	-	3	-	2
58 - 59	-	4	-	1	-	1
60 - 61	-	4	-	1	-	-
62 - 63	-	2	-	1	-	-
64 - 65	-	1	-	-	-	-
66 - 67	-	1	-	-	-	-
Relative number, %o	418*/	562*/	464*/	530*/	431	569
Mean length, cm	34,26	34,63	30,31	32,88	29,62	35,16
No.of spec. measured	3741*/	5027*/	5410**/	6178**/	3759	4956

*/ Besides, 175 juvenile specimens (i.e. 20%o of total number of American plaice, taken by fish-counting trawl in this area) were caught and measured; their length varied from 4 to 14 cm.

**/ Besides, 67 juvenile specimens (i.e. 6%o of total number of Americam plaice, taken by fish-counting trawl in this area) were caught and measured; their length varied from 6 to 14 cm.

Table II. Size composition of yellowtail flounder (%o) in catches taken by fish-counting bottom trawl with small-meshed net insertion, 1980

Length, cm	3N (May)		3O (May)		3L (June)	
	males	females	males	females	males	females
16	1	-	1	-	-	-
17	1	2	-	-	-	-
18	3	4	-	-	-	-
19	8	3	-	1	-	-
20	6	7	1	1	-	-
21	6	7	-	1	-	-
22	6	5	1	1	-	-
23	6	6	1	1	-	-
24	5	7	4	1	2	-
25	6	6	3	2	1	1
26	12	10	2	2	2	-
27	11	9	5	2	2	1
28	11	8	5	2	3	-
29	16	12	7	5	7	2
30	16	16	15	7	16	10
31	18	18	17	8	20	13
32	21	19	29	9	42	17
33	33	17	32	9	42	35
34	37	23	41	29	120	40
35	45	24	35	29	79	68
36	32	24	32	43	55	43
37	48	20	39	49	38	30
38	43	33	50	35	21	22
39	37	30	35	28	6	10
40	34	22	6	34	1	4
41	4	26	6	20	1	2
42	6	19	2	15	-	1
43	1	9	1	4	-	-
44	1	5	1	2	-	-
45	-	4	-	1	-	-
46	-	1	1	1	-	-
47	-	-	-	1	-	-
48	-	-	-	-	-	-
49	-	-	-	-	-	-
50	-	-	-	-	-	-
51	-	-	-	-	-	-
52	-	-	-	-	-	-
53	-	-	-	-	-	1
Relative number, %o	540 a/	459 a/	582	418	510	490
Mean length, cm	34,04	33,63	33,71	33,80	33,05	33,70
No. of spec. measured	2831 a/	2407 a/	988	711	547	524

a/ Besides, 5 juvenile specimens (i.e. 1%o of total number of yellowtail flounder, taken by fish-counting trawl in this area) were caught and measured; their length varied from 11 to 14 cm.

Table 12. Size composition of witch (%o) in catches taken by fish-counting bottom trawl with small-meshed net insertion, Division 3K, June 1980

Length, cm	Males	Females
16 - 17	1	1
18 - 19	2	1
20 - 21	6	2
22 - 23	2	2
24 - 25	1	5
26 - 27	3	5
28 - 29	11	10
30 - 31	13	7
32 - 33	17	23
34 - 35	34	50
36 - 37	51	56
38 - 39	48	60
40 - 41	44	43
42 - 43	50	34
44 - 45	36	39
46 - 47	34	48
48 - 49	24	46
50 - 51	21	25
52 - 53	18	19
54 - 55	11	16
56 - 57	2	26
58 - 59	1	21
60 - 61	-	18
62 - 63	-	8
64 - 65	-	3
66 - 67	-	2
Relative number, %o	430	570
Mean length, cm	40,72	43,59
Number of specimens measured	538	714

Table 13. Age composition, mean length and weight of witch in catch taken by conventional trawl in Division 3K, April 1980 (248 specimens in sample)

Year class	Age	No. of spec. (%o)		Mean length, cm		Mean weight (g)	
		males	females	males	females	males	females
1974	6	8	8	41,6	41,6	427	385
1973	7	24	4	43,9	40,6	498	420
1972	8	48	4	44,2	44,6	550	605
1971	9	36	16	44,7	46,2	571	600
1970	10	85	28	46,6	46,7	634	686
1969	11	93	44	48,5	48,2	736	789
1968	12	81	44	50,0	51,3	854	954
1967	13	57	53	51,8	53,3	978	1050
1966	14	12	93	52,6	54,7	988	1175
1965	15	12	89	55,2	57,4	1093	1357
1964	16	4	53	60,6	59,5	1670	1603
1963	17	-	44	-	60,4	-	1557
1962	18	-	44	-	63,3	-	1995
1961	19	-	12	-	62,2	-	2082
1960	20	-	4	-	70,6	-	2640
Total		460	540	48,09	55,08	741	1250

Table 8. Size composition of Greenland halibut (%o) in catches taken by fish-counting bottom trawl with small-meshed net insertion, 1980

Length, cm	3K (June)		2J (July)		0 (Nov.)		2G (Dec.)		2H (Dec.)	
	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.	Mal.	Fem.
12 - 13	5	5	5	9	-	-	-	-	-	-
14 - 15	7	8	2	3	-	-	-	-	-	-
16 - 17	4	1	7	8	-	-	-	-	-	-
18 - 19	8	7	13	18	-	-	-	-	-	-
20 - 21	17	14	9	10	-	-	-	-	-	-
22 - 23	14	14	7	8	-	-	-	-	-	-
24 - 25	9	6	12	9	-	-	-	-	-	-
26 - 27	26	20	13	16	-	-	-	-	-	-
28 - 29	40	29	12	14	-	-	-	-	1	1
30 - 31	35	24	13	12	-	-	-	-	4	4
32 - 33	46	30	10	16	1	1	1	1	7	7
34 - 35	35	26	21	17	3	2	4	1	9	7
36 - 37	42	34	14	14	3	4	7	4	17	12
38 - 39	41	29	15	15	6	4	14	8	27	13
40 - 41	31	27	17	11	6	4	17	7	22	18
42 - 43	34	27	23	18	15	4	18	12	31	19
44 - 45	26	24	20	23	11	10	28	15	27	18
46 - 47	33	31	28	22	16	8	26	21	43	25
48 - 49	29	30	36	27	17	10	38	20	50	24
50 - 51	20	22	35	21	36	10	43	25	58	30
52 - 53	11	17	20	20	24	8	110	27	51	32
54 - 55	6	12	10	18	81	17	53	30	39	29
56 - 57	3	9	17	12	80	15	32	28	37	22
58 - 59	2	4	14	16	116	26	24	35	30	28
60 - 61	1	3	13	16	78	18	20	37	24	25
62 - 63	1	4	6	13	56	23	21	42	18	21
64 - 65	-	2	4	9	43	28	10	46	12	22
66 - 67	-	2	2	9	15	21	10	43	8	19
68 - 69	-	3	2	12	10	33	5	34	5	13
70 - 71	-	1	1	11	1	25	1	31	2	16
72 - 73	-	2	2	12	1	18	1	24	1	12
74 - 75	-	2	-	10	1	18	-	24	-	13
76 - 77	-	1	-	6	-	11	-	18	-	12
78 - 79	-	1	-	7	-	11	-	12	-	7
80 - 81	-	1	-	6	-	8	-	9	-	7
82 - 83	-	1	-	4	-	5	-	5	-	8
84 - 85	-	1	-	3	-	1	-	6	-	6
86 - 87	-	-	-	2	-	1	-	3	-	2
88 - 89	-	-	-	2	-	2	-	3	-	2
90 - 91	-	-	-	8	-	3	-	2	-	3
over 91	524	476	424 a/	495 a/	651	349	422	578	523	477
Relative no., %o	56,37	39,42	42,34	48,10	56,36	63,17	52,80	61,85	50,11	50
Mean length, cm	2829	2568	1715 a/	2003 a/	1692	908	2979	4076	2185	208
No. of spec. measured										

a/ Besides, 330 juvenile specimens (i.e. 81%o of total number of Greenland halibut taken by fish-counting trawl in this area) were caught and measured; their length varied from 8 to 12 cm.

Table 15. Age composition, mean length and weight of roundnose grenadier in catches taken by conventional bottom trawl in Division 3K, July 1980 (371 specimens in sample)

Year class	Age	No. of spec. (%o)		Length (cm)		Weight (g)	
		males	females	males	females	males	females
1977	3	5	13	31,0	30,0	65	67
1976	4	8	3	33,0	34,0	84	100
1975	5	5	5	35,5	40,5	110	165
1974	6	10	15	44,3	46,0	192	227
1973	7	43	41	47,6	48,7	231	255
1972	8	43	69	49,6	54,0	268	341
1971	9	54	64	54,0	58,2	330	420
1970	10	79	66	58,1	61,5	409	505
1969	11	123	46	61,2	65,9	473	631
1968	12	113	28	64,8	69,7	543	705
1967	13	56	15	67,9	73,3	607	820
1966	14	49	5	71,8	76,5	713	925
1965	15	15	8	74,2	84,0	764	1068
1964	16	8	3	79,0	87,0	897	1325
1963	17	8	-	82,0	-	977	-
Total		619	381	60,21	58,52	468	466

Table 16. Age composition of capelin (%o), 1980

Year class	Age	3L, May, 100 spec.		2J, Sep.- Nov., 700 spec.	
		Males	Females	Males	Females
1978	2	-	-	73	51
1977	3	130	150	236	294
1976	4	180	320	90	193
1975	5	130	90	14	45
1974	6	-	-	-	4
Total		440	560	413	587

Table I7. Size composition of capelin, 1980

Length, cm	3L (May)			3N (May)	3O (May)	2J (September-November)	
	males	females	juven.	juven.	juven.	males	females
5,0	-	-	5	I9	-	-	-
5,5	-	-	49	279	5	-	-
6,0	-	-	I67	404	44	-	-
6,5	-	-	I77	I92	I38	-	-
7,0	-	-	220	77	I60	-	-
7,5	-	-	I9I	29	I82	-	-
8,0	-	-	I03	-	I89	-	-
8,5	-	-	69	-	II3	-	-
9,0	-	-	I4	-	78	-	-
9,5	-	-	-	-	53	-	-
I0,0	-	-	5	-	34	-	-
I0,5	-	-	-	-	4	-	-
II,0	-	7	-	-	-	-	I
II,5	3	5	-	-	-	I	3
I2,0	-	43	-	-	-	3	8
I2,5	I2	57	-	-	-	6	I2
I3,0	23	II2	-	-	-	I3	20
I3,5	I3	II4	-	-	-	I9	33
I4,0	47	I09	-	-	-	30	53
I4,5	50	65	-	-	-	38	67
I5,0	97	53	-	-	-	55	82
I5,5	53	I9	-	-	-	64	88
I6,0	50	I0	-	-	-	73	68
I6,5	20	5	-	-	-	58	53
I7,0	I8	2	-	-	-	36	36
I7,5	3	-	-	-	-	22	25
I8,0	5	-	-	-	-	9	II
I8,5	-	-	-	-	-	4	5
I9,0	3	-	-	-	-	I	2
I9,5	2	-	-	-	-	-	I
Relative number,‰	399	60I	I000	I000	I000	432	568
Mean length, cm	I5.02	I3.62	7,01	6,06	7,73	I5,25	I3,24
NO.of spec.	240	359	204	I04	550	4046	5304

Table 18, Water temperature (°C) on hydrological section 8-A (between 53°40'N, 55°44'W and 54°50'N, 53°32'W) by 1 November

Year	Layer, m			
	0-50	50-200	0-200	200-500
1964	1,04	0,04	0,32	1,99
1965	1,49	1,76	1,66	2,59
1966	2,41	1,44	1,72	3,97
1967	2,00	0,89	1,19	1,54
1968	2,29	-0,18	0,50	1,42
1969	0,82	0,36	0,50	1,51
1970	1,29	0,32	0,60	2,32
1971	0,88	0,43	0,57	1,44
1972	0,35	-0,39	-0,17	1,26
1973	1,00	0,59	0,72	1,41
1974	0,96	-0,02	0,27	1,89
1975	1,14	0,51	0,70	1,45
1976	0,74	0,20	0,36	1,51
1977	1,76	2,52	2,32	3,62
1978	0,95	0,79	0,83	2,51
1979	1,42	0,79	0,99	2,34
1980	1,32	0,62	0,82	1,70
Mean	1,28	0,62	0,81	2,03