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The total Soviet catch of fish in the ICNAF Convention Area in 1975 was ~~1097914~~ tons (Table 1), which is by ~~3250~~ tons less than in 1974. The overall catch by the USSR in the North-West Atlantic Ocean in 1975 ran into ~~1150632~~ tons, which is by ~~5401~~ tons less than in 1974. The decrease in the total catch was caused mainly by the distribution of limits and ^{main} quotas on every commercial fish species of the North-west Atlantic Ocean

SUBAREA 0

A. Status of Fisheries

In 1975, the Soviet catch of fish, mainly of the grenadier Macrurus rupestris and of the Greenland halibut was 2150 ton in this Subarea (Table I). As usual, the fishery was conducted in the second half of the year. In June 18 through 23, 1975 the first trawlings were completed by a scouting trawler "Northern lights", they were performed throughout the area at the coordinates between 61°52'N and 62°32'N, 60°30'W and 61°04'W depthwise 600-880 m. Catches per hour trawling fluctuated from 1 up to 4 tons and consisted almost completely of Greenland halibut and an insignificant admixture of ~~grenadier and~~ grenadier and redfish. The commercial fleet began to fish at the same point from the end of June ; the trawlings performed in the depths 600-800 m resulted ⁱⁿ a large volume of Greenland halibut, those in the depths 800-1200 m gave catches

Table 1. Soviet Catches in the North-west Atlantic
in 1974-1975

(preliminary data)

(tons)

	S U B A R E A						ICNAF 1975	ICNAF 1974	AREA 6	AREA 0 + 6	NWA Total 1975	NWA Total 1974
	I	II	III	IV	Y	0						
Total	37016	160609	369212	275842	255235	1097914	1101164	50568	2150	52718	1148632	1150632
Capelin	39	116316	136646	-	14973	253001	211643	-	-	-	253001	211643
Argentine	67	-	-	-	3256	18296	37172	-	-	-	18296	37172
Atlantic halibut	-	-	224	-	-	224	218	-	-	-	224	218
Greenland halibut	20017	6653	2474	-	-	29144	18300	-	853	853	29997	19161
American plaice	2309	608	12603	8678	223	24421	27475	34	-	34	24455	27490
Winter Fl.	-	-	-	1524	74	1598	1599	28	-	28	1626	1631
Witch	-	164	9591	1518	573	11846	13857	88	-	88	11934	13885
Yellowtail Fl.	-	-	3891	141	83	4115	7337	-	-	-	4115	7353
Cod	624	22509	96797	3164	2316	125410	137851	12	-	12	125422	137878
Haddock	-	-	1317	91	8	1416	1505	-	-	-	1416	1507
Follock	-	17	-	1762	288	2067	2316	54	-	54	2121	2363
White hake	-	13	1156	-	-	1169	590	-	-	-	1169	590
Red hake	-	-	-	2791	24858	27649	21582	12938	-	12938	40583	32837
Silver hake	-	-	3494	108398	88458	200350	201564	5895	-	5895	206245	208317
Grenadier	3278	5664	18074	-	57	27073	33118	-	1295	28368	28368	35779
Redfish	4290	1326	60395	4817	1407	72235	95096	30	2	32	72267	95140
Wolfish	102	1501	2921	-	22	4546	2936	-	-	-	4546	2936
Sculpins	-	-	-	271	838	1109	912	143	-	143	1352	1349
Ocean pout	-	-	-	-	423	423	357	134	-	134	557	483
Scup	-	-	-	-	18	18	51	-	-	-	18	388
Angler	-	-	-	18076	421	18497	12132	-	-	-	18497	12454
Searobin	-	-	-	8757	185	8942	10043	-	-	-	8942	10797
Bluefish	-	-	-	-	3	3	12	-	-	-	3	27
Butter Fish	-	-	-	17	700	717	947	312	-	312	1029	1372
Saury	-	-	-	-	1049	1049	1551	-	-	-	1049	1551
Herring	-	-	-	21568	30010	51578	54132	11133	-	11133	62711	64696
Alewife	-	-	-	7123	924	3047	9379	115	-	115	8162	9617
Mackerel	-	-	-	22147	86704	108851	123785	11876	-	11876	120727	136601
Sharks	-	-	104	4207	6545	10856	16569	2212	-	2212	13068	20444
Skates	-	-	2001	17945	487	20433	12475	6	-	6	20439	12475
Other finfish	257	5838	17448	14093	1985	39621	34663	877	-	877	40498	35999
Squid	-	-	76	13781	3320	17177	5677	4681	-	4681	21858	8560
Other shell Fish	6033	-	-	-	-	6033	4320	-	-	-	6033	4320

where Macrurus rupestris prevailed. Some later the commercial trawls left for neighbouring areas and the fishery process appeared to be more productive. Several trawlings were completed late in October as well, and the catches prevailed in Macrurus rupestris.

B. Special scientific investigations

I. Biological investigations

Greenland halibut. The Greenland halibut size and sex compositions are shown in Table 2, the examined fish was taken from catches removed by the bottom trawl from waters along the continental slope of the Baffin Land on 17-23 June, 1975. Of the total number of fish measured, 800 ones were dissected; the individuals at the second and the third stages of maturity prevailed both among males and females (by six point scale). There were found redfish, grenadier and other deep water fish species, and Cephalopoda as well in their stomachs.

Table 2. Size and sex composition (%) of the Greenland halibut near the Baffin Land.

Total length (cm)	Males	Females	Total for males and females
36-37	1	-	1
38-39	2	-	2
40-41	5	3	8
42-43	8	4	12
44-45	14	7	21
46-47	24	7	31
48-49	34	11	45
50-51	48	15	63
52-53	40	16	56
54-55	42	13	55
56-57	38	9	47
58-59	51	12	63
60-61	68	17	85
63-63	68	22	90
64-65	82	20	102
66-67	68	22	90
68-69	40	16	56
70-71	35	14	49
72-73	18	14	32

Table 2. (Continued)

Total length (cm)	Males	Females	Total for males and females
74-75	8	12	20
76-77	4	8	12
78-79	2	7	9
80-81	1	8	9
82-83	-	6	6
84-85	-	8	8
86-87	-	4	4
88-89	-	6	6
90-91	-	6	6
92-93	-	2	2
94-95	-	3	3
96-97	-	3	3
98-99	-	3	3
100-101	-	1	1
Relative number (%)	701	299	1000
Mean length (cm)	59.66	65.95	61.54
Number of specimens measured	2910	121.1	4151

Redfish. While performing the fishery of the roundnose grenadier and the Greenland halibut, there are usually taken small number of redfish Sebastes mentella in the bottom trawl. Thus, in June 1975, the scouting BMRT accomplished a series of trawlings in the southern part of the area. The trawl discarded on board the vessel included by-catch of redfish almost every time. Two trawlings were made by depths 760-780 m each one being about three hours of duration, they resulted in 759 specimens collected, their size and sex compositions are shown in Table 3.

As in the northern part of the area redfish of smaller size are encountered more often than in the southern part, it can be supposed that their larvae and youngs were drifting with the current from the West Greenland (counter-clockwise).

Table 3. Size and sex composition (%) of redfish
Sebastes mentella near the Baffin Land,
June 1975

Total length (cm)	Males	Females	Males and Females together
20	-	3	3
21	3	1	4
22	4	5	9
23	4	-	4
24	14	5	19
25	24	20	44
26	37	25	62
27	53	21	74
28	57	63	120
29	73	81	154
30	96	88	184
31	57	40	97
32	50	41	91
33	29	18	47
34	12	18	30
35	8	7	15
36	3	5	8
37	3	5	8
38	1	12	13
39	-	4	4
40	4	-	4
41	1	-	1
42	3	-	3
43	1	-	1
44	1	-	1
Relative number (%)	538	462	1000
Mean length (cm)	29.47	29.79	29.61
Number of measured specimens	408	351	759

SUBAREA I

A. Status of fisheries

From the end of June, the Soviet fishery fleet began to work on the Greenland-Canadian Ridge (Div.1D), the catches consisted mainly of the roundnose grenadier and Greenland halibut. But, the fleet left the area soon. Late in August, the scouting BMRT "Northern lights" started again to catch grenadier in waters of Greenland-Canadian Ridge in Subdivision 1C.

But, the regular fishery was started some later only at the end of October, and much northerner-between 66° and 67°N, i.e. in Division 1B. In this area trawl catches taken at depths 400-500 m consisted only of Greenland halibut.

In November, the fishery fleet was shifted gradually to Division 1C, where roundfish grenadier appeared also at depths 600-700 m. From late November and in December, the fleet came even southerner, between 64° and 65°, and the catches taken at depths 800-900 m consisted by 50 percent of Greenland halibut and roundnose grenadier correspondingly. In 1975, the total number of fish taken in Subarea 1 was 23295 tons.

B. Special scientific investigations.

I. Environment

In March, water temperature of the Arctic component of the West-Greenland Current (southerner Codthab) was somewhat lower than in the previous years. In July, water temperature at the above mentioned section was 0.1°C lower versus the long-term average for the period 1950 through 1970, and in December it was 1.0°C higher versus the same month in 1965 and 1970, but 0.5°C lower in the layers 0-200 m, 200-500 m, and 0-500 m than in 1971, that one in the layer 200-500 m was 0.7° lower than in 1965.

2. Biological investigations.

Size and sex compositions of the roundnose grenadier taken from waters of the Greenland-Canadian Ridge are shown in Table 4. Trawlings were accomplished by BMRT "Northern lighting" in the

third ten-day period of August by depths 700-800 m, the catches ranged from 2 up to 8 tons per one trawling, the roundnose grenadier made 80-90 percent of the total catch, the rest consisted of the Greenland halibut.

Table 4. Size and sex composition (%) of the roundnose grenadier in the area 64°-65°N, 57°-59°W in August 1975

Total length (cm)	Males	Females	Total for males and females
30-32	4	3	7
33-35	10	9	19
36-38	16	10	26
39-41	18	11	29
42-44	35	22	57
45-47	51	31	82
48-50	60	42	102
51-53	76	51	127
54-56	50	32	82
57-59	69	41	110
60-62	40	30	70
63-65	56	35	91
66-68	45	30	75
69-71	24	16	40
72-74	18	15	33
75-77	12	10	22
78-80	7	7	14
81-83	4	6	10
84-86	1	2	3
87-89	-	1	1
Relative number (%)	596	404	1000
Mean length (cm)	55.67	56.45	55.98
Number of specimens measured	3571	2423	5994

The whole number of fish dissected (1000 specimens) were immature, shrimps prevailed in their stomachs, besides, there were found also Calanus, euphausiids, Cephalopoda, sagitta, luminous anchovy, remains of the digested fish.

There also given the size composition of the roundnose grenadier inhabiting the waters of the Greenland-Canadian Ridge

in Table 4 of the USSR Research Report, 1974 (ICNAF Summ.Doc. 75/30). The area, depths and fishing gears were the same as in time of collection material represented in Table 3 of this report, the number of fish measured was similar and their is only one month non-coincidence in time of materials collection. Thus, data given in the both tables may be compared. It appears, the length range both to males and females remained in 1975 the same as it was observed in 1974, the mean length differs by 1.5 cm. Thus, there are no data allowing to suppose the existence of significant changes in body size of grenadier stock regularly exploited in waters of the Greenland-Canadian Ridge, and the intensity of the modern fishery might grow considerably.

American plaice. In March, the scouting BMRT "Nikolay Kononov" investigated Lille Hellefiske and Banan Banks. Like the previous years, the American plaice pre-spawning and spawning concentrations were keeping at depths 100-200 m. Their size and sex composition are given in Table 5. Comparison to the analogous 1974 data testifies to the existence of almost similar biological characteristics throughout the comparable data. Thus, mature individuals with sex products ready to be laid or the running ones prevailed in the catches. Every stomach of fish examined was empty.

Table 5. Size and sex composition (%) of the American plaice in Div.1C, March 1975

Total length (cm)	Males	Females	Total for males and females
14-15	1	-	1
16-17	2	1	3
18-19	11	5	16
20-21	21	11	32
22-23	52	17	69
24-25	58	27	85
26-27	70	32	102
28-29	51	30	81
30-31	22	32	54
32-33	10	72	82
34-35	6	107	113
36-37	2	142	144
38-39	2	101	103
40-41	-	59	59
42-43	-	34	34
44-45	-	17	17
46-47	-	5	5
48-49	-	1	1
Relative number (%)	308	692	1000
Mean length (cm)	25.73	34.68	31.92
Number of measured specimens	2197	4942	7139

Cod. Early in April, several rich catches of cod were taken by a bottom trawl from board the scouting BMRT in waters of the Northern slope of Lille Hellifiske Bank at depths 120-180 m. Individuals of 45-59 cm in length prevailed in catches (almost 75 percent of the total number of cod measured). Large cod was at the post-spawning stage, those fishes reached more than 60 cm in their length. Their stomachs were filled with euphausiids, sanderling, the young of the redfish, shrimps.

There was no chance to find some other great concentrations of cod in Subarea I throughout the whole year. The fact of the almost complete absence of cod stocks in shelf waters of the West Greenland may be explained not only by a low abundance of the commercial stock, but also ^{by} a low temperature of water mass, which caused some temporary ^{changes} in the limits of the species distribution area.

But, coldwater commercial fish species, namely, Greenland halibut, American plaice enlarged the areas of their habitats and increased in their abundance in Subarea I.

SUBAREA 2

A. Status of fisheries

In 1975, the Soviet catch of fish in Subarea 2 was 160609 tons in total (Table 1) including 116316 tons of capelin, 22509 tons of cod, 1326 tons of redfish, 6653 tons of Greenland halibut, 5664 tons of roundnose macrurus.

The efficiency of the cod fishery on the continental slope of the southern part of Labrador was not high as the abundance of the Labrador cod stock is decreasing continually. This may be explained by natural fluctuations, thus, four year-classes in succession - 1969, 1970, 1971 and 1972 are related to mean or weak ones. Below are given the abundance rates of the Labrador cod of different year-classes according to data of the youngs counting regularly conducted by the ichthyologists in the Newfoundland area beginning from 1962. The average number of three year old cod taken by fish counting trawl in Div.3K characterizes well enough the strength of the year-class.

In 1977, the abundance and the biomass of the Labrador cod will be much lower, as fish of elder year-classes (rich in abundance or of average ones) will almost disappear as result of natural and fishery mortality, and the recruitment of the fishery stock with the young cod will be insignificant. A preliminary assessment of the 1973 and 1974 year-classes showed that the strength of their year-classes is not less than the average one, but, these year-classes will recruit the fishery stock only in 1978-1979.

B. Special scientific investigations

I. Environmental studies

Hydrographic observations were completed at standard hydrographic sections from board the research-fishery vessel "Persey III" in January-March and in August 1975 as well as on some scouting

vessels. The anomaly of water temperature at the section 8-A in the main branch of the Labrador Current made -0.7°C in the layer 0-200 m and 0.0°C in the layer 200-500 m on 17 August, that one was -0.7°C in both layers (0-200 m and 200-500 m) on 31 October.

Water temperature became higher in the layer 0-200 m at the area AB of the same section (between $53^{\circ}46'\text{N}$, $55^{\circ}32'\text{W}$ and $54^{\circ}50'\text{N}$, $53^{\circ}32'\text{W}$) as per 1 November compared to 1 November, 1974.

Thus, water temperature was lower than long-time average (as it was predicted in the USSR Research Report, 1974, ICNAF Summ. Doc. 75/30). But, to the end of the year negative temperature anomalies began to change for positive ones both in Subarea 2 and Subarea 1.

The 1976 year may be temperate - warm from point of view of the hydrology. This assumption can be made as well basing on a counterphase development of hydrological processes first - in the North-West Atlantic, secondly - in the Barents Sea (the tendency to a relative cooling is observed in the Barents Sea in winter 1975/76).

Table 6. Water temperature ($^{\circ}\text{C}$) at the 8-A hydrographic section through Hamilton Bank (as per November 1, 1964-1975).

Part of the hydrographic section	Depth (m)	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	Rate for 1964-1975
AB	0-50	0.98	1.30	2.41	2.00	2.29	0.82	1.29	0.88	0.35	1.00	0.96	1.15	1.31
AB	50-200	-0.18	1.06	1.44	0.89	-0.18	0.36	0.32	0.43	-0.39	0.59	-0.02	0.47	0.48
AB	0-200	0.17	1.13	1.72	1.19	0.50	0.50	0.60	0.57	-0.17	0.72	0.27	0.67	0.71
B	200-500	1.99	2.59	3.97	1.54	1.42	1.51	2.32	1.44	1.26	1.41	1.89	1.40	1.90

2. Biological investigations

Cod. There was mentioned above that trawl catches of cod consisted mainly of large enough individuals of elder age groups. Table 7 shows that the majority of fish taken made cod aged 8 full years (1967 year-class) and 7 full years (1968 year-class).

The both year-classes are high in abundance, as data of counting showed. The average year-class 1969 is less abundant; cod of 5 years being the result of an extremely weak 1970 year-class had no effect on catches (see also Table 12). It should be noted that the Barents Sea cod of 1970 year-class distinguish by an extremely high number. Thus, there is revealed a counterphase of fluctuations in the both comparable areas (this regularity was noted in the USSR Reports, see ICNAF Summ. Doc. 74/26).

In February 1975, a series of trawlings was conducted by a bottom trawl with top-side "Polish - type" cover adopted by the Convention. Trawlings were completed depth-wise 350-450 m by a group of Soviet fishery trawls, cod catches ranged from 0.5 tons up to 4.0 tons as a rule, the participants of the cruise measured the whole number of fish caught. Thus, there were measured more than 16 thousand cod specimens.

Table 7. Age composition, mean weight and length of cod of different age groups near the South Labrador in the first ten-day period, 1975

Year-class	Age (years)	Number of specimens (%)	Mean weight (g)	Mean length (cm)
1971	4	15	684	41.0
1970	5	29	904	45.8
1969	6	172	1215	49.8
1968	7	254	1474	53.2
1967	8	345	1903	58.0
1966	9	90	2516	63.7
1965	10	46	2901	66.2
1964	11	17	3436	69.7
1963	12	14	3641	70.8
1962	13	10	4500	76.5
1961	14	3	5075	77.5
1960	15	3	5175	80.5
1959	16	2	5450	82.0

A relatively low number of small fish was very characteristic to this period of investigations, thus, the individuals with length up to 45 cm made some 13% of the total catch, but in

those with length of 45-59 cm consisted 64.2%. Cod of 45 cm in length is meantime widely represented in large catches taken by trawl of convention type in the period, when cod of young year-classes is rich in abundance in the commercial stock.

At last, the increment of Labrador cod mean sizes occurred during some last years may be clearly surveyed from Table 8.

Table 8. Mean age, mean weight and an average number of cod in the catch per one hour trawling off the South Labrador in the first half of 1971-1975

Year	Mean age (years)	Mean weight (grams)	Average number of specimens in the catch per BMRT hour trawling
1971	6.6	1086	2136
1972	7.3	1295	2115
1973	7.4	1203	2012
1974	7.7	1435	1700
1975	7.7	1579	1108

Roundnose grenadier. In July, the scouting BMRT "Northern lights" accomplished a series of trawlings with the bottom and the mid-water trawls of the North Labrador. The catches taken separately by the both trawls were almost equal by their volume and fluctuated from 5 tons up to 10 tons per one trawling, but, the size composition of the grenadier caught was not quite similar (Table 9), though trawlings were accomplished by both types of trawls at the same area (alternately). As the catches taken were too high in their number, there was performed the selective sampling exclusively.

Table 9. Age and sex composition (%) of the roundnose grenadier taken from catches of the bottom and mid-water trawl near the North Labrador, July 1975

Total length (cm)	Bottom trawl			Pelagic trawl		Males and females together
	Males	Females	Males and females together	Males	Females	
33-35	-	1	1	7	3	10
36-38	3	1	4	8	8	16
39-41	7	5	12	12	8	20
42-44	14	9	23	21	12	33
45-47	20	11	31	33	17	50
48-50	33	22	55	48	25	73
51-53	36	31	67	69	36	105
54-56	49	30	79	67	32	99
57-59	52	39	91	56	39	95
60-62	46	41	87	44	24	68
63-65	67	44	111	59	29	88
66-68	66	42	108	51	25	76
69-71	46	45	91	35	22	57
72-74	51	31	82	45	31	76
75-77	40	29	69	26	20	46
78-80	23	20	43	19	12	31
81-83	14	8	22	14	13	27
84-86	5	9	14	5	13	18
87-89	3	5	8	3	9	12
90-92	-	2	2	-	-	-
Relative number (%)	575	425	1000	622	378	1000
Mean length (cm)	63.06	63.82	63.38	59.88	61.87	60.63
Number of specimens measured	1224	906	2130	1489	906	2395

The Table shows that the size of grenadier keeping in water over the ground and caught by the mid-water trawl is less at some extent than that one of fish remained close to the ground. The catches taken with mid-water trawl are characterized by a relatively higher number of males, and they possess a shorter mean length than females. The stomachs of macrurus taken both by bottom and mid-water trawl were filled mainly by shrimps,

bathypelagic Amphipoda, euphausiids, very seldom - by fish, Cephalopoda, medusa, sagitta.

A series of comparative trawlings with bottom and mid-water trawls were accomplished by the same vessel near the North Labrador in August as well. The results given in Table 10 coincide with those obtained in July.

Tagging of commercial fish species.

There were tagged 2460 specimens of cod and 262 ones of Greenland halibut in Div. 2I (South Labrador). Hydrostatic tags-tubes including a letter inside them and made of plastic were used for tagging, they were attached to fish with help of nylon vein put through the back muscle. The majority of fish were tagged on board the research-fishery vessel "Persey-III".

Table 11 includes data allowing to judge on migration paths of some tagged cod specimens and their mean velocity. But, it should be quite erroneously to conclude that in January the Labrador cod are moving only southwards. Mature cod are migrating in mass to the north, the area of their main spawning grounds. But, in January-February the fishery fleet did not almost conduct their investigations to the north of the point of mass tagging as the sea surface was covered with hard solid ice, therefore, the recovery of tagged cod was practically impossible from Divs. 2H and 2G.

Table 10. Size and sex composition (%) of the roundnose grenadier taken from bottom and mid-water trawl catches near the North Labrador, August, 1975

Total length (cm)	Bottom trawl			Pelagic trawl		
	Males	Females	Males and females together	Males	Females	Males and females together
36-38	2	1	3	-	1	1
39-41	4	2	6	3	4	7
42-44	11	5	16	4	6	10
45-47	20	16	36	16	13	29
48-50	32	21	53	34	21	55
51-53	43	35	78	50	46	96
54-56	51	33	84	66	42	108
57-59	52	37	89	88	59	147
60-62	41	28	69	56	34	90
63-65	75	44	119	80	47	127
66-68	61	44	105	74	37	111
69-71	41	28	69	46	21	67
72-74	57	35	92	38	26	64
75-77	37	29	66	21	17	38
78-80	23	17	40	17	6	23
81-83	17	16	33	8	6	14
84-86	8	16	24	6	3	9
87-89	5	9	14	2	1	3
90-92	1	2	3	1	-	1
93-95	-	1	1	-	-	-
Relative number (%)	581	419	1000	610	390	1000
Mean length (cm)	63.48	64.84	64.05	62.12	60.94	61.66
Number of specimens measured	1663	1199	2862	1228	785	2013

Table 11. Data on migrations of tagged cod released in Div.2I, January 1975

Date of release	Place of release		Fish length (cm)	Number of tag	Country, whose vessel caught a fish tagged	Date of recover	Place of recover	
	Northern latitude	Western longitude					Latitude (northern)	Longitude (western)
3 January	52°55'	53°25'	61	283910	USSR	27 January	52°11'	51°47'
4 January	53°01'	52°17'	65	284047	USSR	28 ^c January	52°15'	51°30'
5 January	53°45'	53°15'	55	284231	FRG	17 February	53°07'	52°05'
6 January	52°55'	52°15'	54	284630	FRG	3 February	51°54'	51°39'
14 January	54°09'	54°08'	55	264946	USSR	26 January	53°29'	52°18'
14 January	54°08'	53°14'	53	264927	Poland	17 January	53°01'	52°07'
14 January	54°08'	53°14'	59	264905	FRG	20 ^o February	52°48'	51°43'
14 January	54°05'	53°15'	55	264971	FRG	27 January	53°06'	52°12'
17 January	53°27'	52°52'	67	246334	USSR	30 January	52°42'	51°43'

SUBAREA 3.

A. Status of Fisheries

In 1975, total Soviet catch taken by commercial fleet in Subarea 3 was 369212 tons including 136646 tons of capelin, 60395 tons of redfish, 96797 tons of cod, 26085 tons of flounder (Table 1). The most significant change in stock condition was a continuing growth of the number and the biomass of redfish Sebastes mentella in Div. 3K.

B. Special Scientific Investigations.

I. Environment

Oceanographic observations at standard hydrographic sections through the eastern part of the Grand Bank and the Flemish Cap Bank were accomplished from board the research vessel "Gemma" in January, throughout every division of Subarea 3 - from board the research-fishing vessel "Persey III" in June-September and one section through the south-eastern slope of the Grand Bank - from board the research vessel "Ayaks" on 7-8 September.

In the first half 1975, water temperature was on the whole lower than the long-time average annual. In August and September, small positive anomalies appeared to the north of the Grand Bank (from 0.0° C up to 0.4°C). In June and July, there was observed the flowing of the Gulfstream meanders to the southern extremity of the Grand Bank, where water temperature level appeared to be 3.0°C-4.5°C higher than the long-time average annual.

2. Biological investigations.

Counting of the juvenile cod and haddock.

In summer, the counting of the juvenile cod and haddock was performed from board the research-fishing vessel throughout every division of Subarea 3. As in the previous years, the bottom trawl with a capron net inserted into the cod-end was used as the fish control gear, its mesh size was equal to 8 mm (i.e. the distance between two next lying knots). The duration of each trawling was equal precisely to an hour, the areas of fish counting were kept the same from year to year. While counting the mean number of young fish caught in each division of Subarea 3, only perfect trawlings were taken into account, i.e. those having no damages (knocks, breaks) in the fish counting trawl.

The results of the counting of young cod for every year of work conducted are shown in Table 12. There are some distinctive features in the Table compared to those published earlier. Thus, in 1970 the research vessel and the type of the bottom trawl used by the Soviet ichthyologists for counting the youngs in the Newfoundland Subarea were changed for other ones. In order to compare data obtained as result of the trip of new and more powerful r/v Parsey III to those ones of the previous years, the Soviet researchers conducted a series of special control trawlings from board the both ships simultaneously keeping strictly parallel direction. With help of the conversion factor, the results of the youngs counting for the 1971-1975 years were calculated and

compared to those of 1962-1970 years.

But, presently, it was concluded ^{to} be reasonable to include into the standard table real results of counting obtained by research-fishing vessel "Persey III", and the results of the previous period of investigations received on board an old, not enough powerful vessel to convert with help of the same factor. Therefore, all data included in the Table distinguish from those of the analogous tables given in the research reports of the USSR in previous years (for example, see Table 10, ICNAF Summ. Doc. 75/30). Each number given in each square of the Table became 1.4 times higher; of course, the correlation between data of different years and divisions remained the same. Simultaneously, there was made correction of some old data by a new age determination.

Table 12 shows an extremely low abundance of the Labrador cod of 1970, 1971 and 1972 year-classes (according to a mean catch of fish aged 3 years in Divs JK). This fact has already been mentioned in a section including the description of cod in Subarea 2. The last year-classes of cod of all other commercial stocks are close to the average ones with the exception an extremely strong 1973 year-class on the Flemish Cap Bank. This conclusion was made in the last year USSR Research Report (ICNAF Summ.Doc.75/30) and confirmed completely by the counting of the youngs in summer 1975. It can be quite surely supposed that in 1977 the commercial stock of cod on the Flemish Cap Bank will grow considerably (that, of course, should be necessary to take into account at the determination of the catch limit).

The results of counting the haddock youngs in the southern part of Subarea 3 are given in Table 13. All data are corrected in accordance with the above mentioned procedure. The counting of the haddock youngs conducted in summer 1975 did not reveal strong and even average year-classes. Apparently, the stock of the Newfoundland haddock will be at a low level during the nearest some years.

Table 12. Mean catch (number of fish) of young cod aged 1, 2, 3 full years per one hour haul by control trawl, the Newfoundland Subarea

Year-class	Yearling						2 years						3 years					
	JK	JL	JM	JN	JO	JP	JK	JL	JM	JN	JO	JP	JK	JL	JM	JN	JO	JP
1959													33	18		12	1	6
1960							9	3		5	0	4	16	11		3	2	8
1961	2	2		2	2	10	5	6		9	4	10	29	42	6	17	2	9
1962	0	1		2	10	69	2	8	7	23	3	11	22	56	29	26	3	19
1963	1	3	0	1	1	5	1	11	6	8	2	20	51	44	14	42	2	24
1964	0	2	0	57	37	47	4	22	1	192	18	31	11	68	14	103	60	81
1965	0	1	3	0	0	7	1	2	2	19	17	30	27	17	9	32	27	35
1966	0	0	0	2	21	10	4	10	0	39	24	45	38	61	13	53	47	39
1967	0	0	0	0	2	1	11	15	13	4	6	28	48	36	20	44	20	17
1968	1	1	10	8	24	56	10	68	106	153	40	112	46	118	58	127	32	89
1969	1	4	0	4	6	25	3	31	2	15	8	70	19	60	2	37	17	35
1970	0	1	0	9	2	8	1	7	1	35	4	12	8	8	1	29	14	4
1971	0	0	22	6	2	7	1	1	87	51	21	9	4	12	3	81	12	10
1972	0	0	3	6	3	6	0	3	29	12	11	65	8	7	22	34	9	6
1973	0	1	303	1	3	15	7	9	350	42	10	4						
1974	0	2	133	2	4	1												

Total trawl survey. While performing the counting of young fish, the participants of the cruise of the research - fishing vessel "Persey-III" measured and weighed as well the whole number of adult bottom fish caught by the trawl, including rare and non-commercial fish-species. Comparison of the results of the total trawl survey for five years allows to survey bottom fish population dynamics; the most valuable results are given in Table 14.

Table 13. Mean catch (number of fish) of young haddock aged 1-3 full years per one hour haul by control trawl in the southern part of the Newfoundland subarea

Year class	Yearlings		2 year-olds		3 year-olds	
	3N0	3P	3N0	3P	3N0	3P
1959					95	
1960			10		4	8
1961	10		7	17	29	41
1962	11	1	20	41	35	6
1963	1	4	1	3	3	24
1964	1	25	6	77	8	214
1965	1	18	1	57	1	6
1966	4	154	11	267	1	28
1967	1	256	1	22	1	3
1968	6	35	11	14	2	5
1969	6	49	5	54	1	9
1970	1	45	1	11	1	1
1971	13	3	3	1	1	1
1972	3	175	1	5	1	4
1973	2	10	1	3		
1974	2	2				

While calculating the average number of individuals of each species taken per one hour haul, there were taken into consideration the whole number of trawlings completed in any division. Therefore, the figures do not characterize the population density at those comparatively small areas, where the density is the highest one. Redfish are keeping, for example, preferably in a narrow area among the isobaths 300-500 m; by the way, the mean catch per hour trawling to redfish was estimated (while composing Table 14) for a large area by each division including the shallows. But, owing to the unique methods applied annually in the process of the total trawl survey, it is possible to compare the results obtained. More detailed characteristic of the abundance of bottom commercial fish and their distribution by separate strata is represented in a special report.

Analysing data given in the Table, one can perfectly notice a sharp decrease in abundance of the Labrador cod (Divisions 3K and 3L). A tendency to decrease in number is also revealed to cod of the Saint Pierre Bank. The abundance of cod decreased slightly in the southern part of the Grand Bank, Divis. 3N and 3O. But, that one of the Flemish Cap Bank (3M)

gave, on the contrary, a very great increment. That phenomena occurred mainly due to an extremely strong 1973 year-class.

The stocks of Sebastes mentella do not excite apprehension in any of divisions, and they are almost gradually increasing in the south-eastern part of the Subarea, Divs. 30 and 3P. This conclusion is also confirmed by data given in ICNAF Redbook 1975, page 30. One can find there that Sebastes mentella catch per standard hour of trawling was 0.71 tons in 1971, 0.83 tons - in 1972, 1.1 ton - in 1973, Division 30.

Table 14. Mean number of some bottom fish specimens (Summary for every size, age group) per hour hauling taken with help of a control trawl throughout a total trawl survey in Subarea 3, 1971-1975

Fish species	80						
	Year of survey	3K	3L	3M	3N	30	3P
Cod	1971	97	184	77	208	44	183
	1972	158	205	66	139	56	145
	1973	41	29	108	134	53	34
	1974	32	40	346	185	30	93
	1975	27	26	550	186	28	16
Sebastes mentella	1971	337	82	66	911	957	1185
	1972	612	37	449	366	498	654
	1973	475	113	484	645	884	884
	1974	796	314	314	733	560	2223
	1975	692	68	516	1278	1834	7366
American plaice	1971	57	703	38	194	145	317
	1972	74	516	41	387	167	213
	1973	142	569	55	277	278	316
	1974	177	671	83	357	158	284
	1975	238	663	93	356	301	327
Yellowtail flounder	1971	-	71	-	282	16	53
	1972	-	126	-	326	128	44
	1973	-	31	-	206	122	52
	1974	-	84	-	395	98	93
	1975	-	18	-	227	100	33

Thus, in 1971-1973 the catch per standard hour hauling was increasing that is in accordance with the assessment of Sebastes mentella abundance in Div.30 based on total trawl survey (Table 14).

The abundance of the American plaice is keeping almost every where stable, and that one of the yellowtail flounder is gradually decreasing.

Capelin. On 7 June 1975, the stocks of mature capelin appeared in the spawning areas at the shallows of the south-eastern slope of the Grand Bank (3N). The beginning of the spawning was registered on the period from 9 to 12 June. The mass spawning was observed throughout 20-25 July. The age composition of the capelin is shown in Table 15.

Table 15. Age composition of capelin in Diva. 30 and 3N in June-July, 1975, %.

Year class	Age (years)	May			June		
		Males	Females	Juvenils	Males	Females	Juvenils
1973	2	--	40	10	5	5	15
1972	3	170	300	-	125	200	-
1971	4	160	210	-	205	215	-
1970	5		50	-	15	115	-
1969	6	10	50	-	-	100	-
1973-1969	2-6	340	650	10	350	635	15

Capelin migrated into the feeding area after their spawning, i.e. to the north. It fed intensively on plankton crustatians in divisions 3K and 2I. The feeding of capelin was registered from August up to October. The fatteness rate of the capelin flesh reached 28 percent to the end of September.

Benthos. In 1975, there was conducted a benthos survey in Subarea 3. 47 stations were completed on the whole at depths 43 through 850 m. To perform a quantitative collection they used a bottom-drawer with an increased weight "Ocean-50", this construction is able to cover 0.25 m². Qualitative collections were realized with help of Sygsby trawl (large model). The material collected is not at the stage of the laboratory treatment.

A high biomass of benthos is observed on the tops of banks and its less concentration - on the slopes of an exterior part of shelf. The results of the preliminary treatment of the material collected allow us to conclude that the effect of cold waters of the Labrador Current in the inshore area of Newfoundland was decreasing throughout the last decade and a half (a previous benthos survey was completed by Soviet scientists 15 years ago in Subarea 3).

SUBAREA 4 (Total catch = 275842 (tons)

A. Status of Fisheries

Silver hake. The stocks of silver hake are in a good condition in the area of New Scotland, that allowed to conduct successfully the fishery during the last three years. In 1975, the main areas of exploitation were the slopes of banks and the shelf, as well as the shallows of the Sable Island.

In 1975, the bulk of catches made individuals with the length body of 28-35 cm and the average length - 31.2 cm.

Fish aged three and four years of 1971-1972 rich generations prevailed in catches (see Table 16). In 1977, the bulk of catches would make 1973 and 1974 year-classes. Those generations appeared to be rich in abundance, according to results of trawl survey conducted in autumn 1975 from board RTM "Belogorsk". Thus, the silver hake stocks increased in their number twice versus those of the last year, according to data of 1975 control trawlings (see Table 17).

Table 16. Age composition of silver hake catches (%%) in the area of Sable Island, Div. 4W

Age	1973	1974	1975
1	2	3	4
0	0.2	-	-
1	4.1	4.3	4.8
2	8.4	11.9	13.6
3	44.6	44.3	39.7
4	31.8	29.3	29.8
5	10.4	7.2	8.7
6.	2.4	1.6	2.1
7	0.8	0.8	1.0
8	0.2	0.5	0.2
9	0.1	0.1	0.1
10	-	-	-
11	-	-	-
Total, %%	100.0	100.0	100.0
Mean age	3.50	3.34	3.36

Table 17. Silver hake catches per 30 min. trawling, Emerald Deep, 1972-1975

Years	1972	1973	1974	1975
Number of specimens	0.97	0.81	1.34	2.63

It can be suggested, therefore, that in 1976 the stocks would grow and in 1977 the 1975 quota might be increased up to 100 thousand tons.

Herring. The herring fishery in the area of Browns Bank was the most successful in May, June and July. There were not performed any special scouting or research trips in this area. Here is the reason, why no information is available to us on 1975 catch composition. Only two samples were taken. Those data showed that the individuals with body length of 30-36 cm made the bulk of catches. Data obtained in 1974 indicated that fish of 1969 and 1970 generations prevailed in number in the catches. If the stock was not recruited with a new year-class rich in abundance, it means, it would reduce in 1976 and 1977.

Argentine. In 1975, the argentine fishery was restricted, as in spring their concentrations inhabiting the Browns Bank waters did not leave the area closed to fishery. The commercial stock was based on individuals aged 5 through 8 years, 26-33 cm long. Owing to complex age structure of the argentine stock and its not intense exploitation, this fish stock was not subjected to sharp fluctuations. Therefore, in 1977 it might be recommended quota equal to 25 thousand tons.

SUBAREA 5 (Total catch = 255235 tons)

Silver hake. Two silver hake stocks inhabit the areas of Georges and Norfolk Banks, i.e. one of them occupies Division 5Ze, another - 5Zw+6.

The stock distributed in Division 5Ze (Georges Bank), is in a good condition. In 1975, the fishery was successful in this area. In 1975, the catches based mainly on individuals aged 2.3 and 4 years, 26-33 cm long (see Table 18). In 1977, the bulk of catches would make 1973 and 1974 year-classes. Data of trawl surveys showed that the abundance of 1973 year-class appeared to be an average one, and that one of 1974 year-class was at a high level (see Table 19). Therefore, in 1977 the stocks of silver hake would be at the last years level that allowed to establish a total quota as high as 50 thousand tons.

Table 18. Age composition of silver hake catches (in %) in the New England area, 1973 through 1975

Age	Georges Bank			Southern New England		
	1973	1974	1975	1973	1974	1975
1	0.3	3.8	2.2		4.2	0.6
2	2.6	7.5	13.3		3.2	12.6
3	44.2	30.4	44.0	1.1	21.4	38.7
4	35.5	35.7	26.4	22.3	32.5	26.6
5	9.8	16.4	8.5	42.9	21.5	13.8
6	3.1	3.7	3.8	17.2	10.2	3.3
7	2.3	1.6	1.4	14.8	3.8	3.1
8	1.5	0.7	0.3	0.9	1.8	0.9
9	0.5	0.2	0.1	0.7	1.2	0.4
10	0.1	+	-	0.1	0.2	-
11	0.1	-	-	-	-	-
Total, %	100.0	100.0	100.0	100.0	100.0	100.0
Mean age	3.82	3.76	3.45	5.28	4.27	3.70

Table 19. Mean catch of silver hake fingerlings per 30 minutes of trawling (in spec.) from board "Albatros IV", 1968 through 1974

Years	1968	1969	1970	1971	1972	1973	1974
5Ze	11.3	6.9	0.3	31.1	9.8	10.2	110.3
5Zw + 6	10.0	25.6	6.7	35.6	42.5	15.3	87.8

In 1975, the catches taken in the southern part of New England (Div. 5Zw + 6) consisted mainly of individuals from 3 through 5 years old with the body length of 26-35 cm (see Table 18). In 1977, their stocks would be recruited by 1974 year-class, rich enough in its number (see Table 19). Therefore, one can suppose that the quota to the fish species would be determined as high as 43 thousand tons, namely, it would be at the level of 1975.

Mackerel. The analysis of the age-size structure of the ^{USSR} research yield showed that in 1975 the commercial stock of mackerel was rejuvenated due to the increase in number of young fish aged 1-2 years, from 16 through 27 cm in length.

In 1977, the bulk of catches would make individuals aged 4-5 years related to 1972 and 1973 year-classes, which were assessed as rich ones, and those aged 3 years related to 1972 year-class. The abundance of the last one than the mean one. In 1977, the size of the mackerel stock would greatly depend on 1974 generation. The stock would not decrease in its number if this generation was a rich one. Preliminary data showed that in 1977 the mackerel stock would be about 1 million tons (without yearlings), and the total available catch would make 280-300 thousand tons.

Red hake. In 1975, red hake were successfully exploited on Georges Bank, and the yield taken in the Southern New England was not so abundant. In 1975, the yields taken on Georges Bank consisted mainly on individuals aged 2 through 5 years, 26-17 cm long (Table 21).

In 1977, the stock of this fish species would be based on 1973 and 1974 generations, their abundance appeared to be high, as data of trawl surveys showed (Table 22).

Table 20. Age composition of mackerel caught in the New England Area in %, 1973 through 1975 (Research catches)

Age	1973	1974	1975
1	3.7	2.8	30.6
2	8.1	19.6	46.4
3	21.5	29.3	7.9
4	25.9	8.7	4.7
5	16.1	10.9	2.1
6	20.4	11.8	1.7
7	3.0	12.4	2.2
8	0.7	3.2	3.4
9	0.3	0.7	0.8
10	0.2	0.2	0.2
11	0.1	0.2	
12		0.2	
%	100.0	100.0	100.0
Mean age	4.2	4.1	2.4

Table 21. Age composition of red hake caught in the New England in %, 1973 through 1975

Age	Georges Bank		
	1973	1974	1975
1	-	-	1.6
2	5.7	11.0	24.0
3	21.3	23.9	21.9
4	44.1	37.0	25.1
5	15.5	15.7	22.4
6	7.4	6.3	3.9
7	4.2	4.9	0.8
8	1.7	0.9	0.2
9	0.1	0.3	0.1
%	100.0	100.0	100.0
Mean age	4.18	4.02	3.6

Table 22. Catches of the red hake yearlings per 30 minutes of trawling (in spec.) taken from board "Albatross IV" in Georges Bank waters, 1968 through 1974

Years	1968	1969	1970	1971	1972	1973	1974
Number of specimens	0.02	0.2	1.8	5.4	1.9	8.9	10.6

Therefore, to the beginning 1976 red hake stocks would be more abundant as they would be recruited by rich 1973 and 1974 generations. The share of 1973 generation appeared to be considerable in the total 1975 catch of this fish species, namely, 24.0 percent. This testifies to the fact that the 1973 year-class is a rich one. Preliminary calculations of the maximum size of the fishery mortality indicated that the allowable catch of red hake may be 24 thousand tons on Georges Bank.

In 1975, the stocks of red hake will reduce in the Southern New England as the 1972 and 1973 recruitments are poor in number, and the allowable catch might be not higher than 15 thousand tons.

Herring. In 1975, the efficiency of the herring fishery became somewhat lower due to the reducing of stock number. The 1970 year-class prevailed in the catch, its specimens aged 5+ made 74.9 percent on the average (Table 23), the 1971 and 1972 year-classes appeared to be poor ones, thus, in 1976 the stocks would decrease even more. If the herring stocks were not significantly recruited by 1973 and 1974 year-classes before 1977, there would be observed a further decrease in their stocks,

Shortfin squid. In 1975, shortfin squid was taken by vessels while exploiting bottom fish species along the shelves of Nova Scotia and Georges Bank. It was exploited successfully from June up to August, as previously. On the whole, the conditions of the fishery became more favourable than in 1974 that was caused by squids dense concentrations in 1975.

Individuals from 10 cm up to 25 cm long could be observed in catches, but the bulk of catches made shortfin squids from 15 cm up to 18 cm long (Table 24).

Table 23. Age composition of herring catches in the New England Area in %, 1973-1975

Age	1973	1974	1975
2	-	0.1	0.5
3	53.7	3.2	3.2
4	53.4	68.8	12.6
5	8.5	24.8	74.9
6	2.2	2.8	8.6
7	2.0	0.2	0.2
8	0.2	0.1	
9	+		
%	100.0	100.0	100.0
Mean age	3.66	4.27	4.9

Table 24. Age composition of shortfin squids catches
in %, 1975

Length, cm	9	10	11	12	13	14	15	16	
%	-	0.3	0.9	2.2	7.0	9.0	13.1	16.2	

Length, cm	17	18	19	20	21	22	23	24	25
%	11.7	11.3	9.4	8.7	5.6	3.1	0.9	0.5	0.1

Investigations conducted in time of the control trawl surveys in 1971-1974 showed that the minimum stock of squids may be assessed now about 100 thousand tons. Therefore, the total quota equal to 30 thousand tons may be considered as an underestimated one, and it would be possible to increase it up to 50 thousand tons.

B. Special investigations

I. Environment.

Oceanography. In 1975, oceanographic investigations were continued, they included the assessment of the thermal background of water and especially of the geostrophic circulation in winter-spring period on Georges Bank.

A comparative analysis of hydrologic conditions for 1975 indicated that the level of the thermal background became lower throughout Georges Bank.

There was observed a slight mixing of bank waters and adjacent oceanic waters in winter and early in spring, that was confirmed indirectly by the formation of a clearly shaped gradient area of temperature and salinity along the 200 m isobath. In August, enormous masses of cold water of an intermediate layer (from 60 m through 200 m depth) upwelled and covered the oceanic slopes of the bank at coordinates 63°30'W - 68°40'W. In 1974, a strong advection of warm oceanic waters was observed at the same time period. A preliminary assessment showed the fall

of the temperature up to 0.5°C - 2.0°C in the near bottom layers of Georges Bank. The results of comparison of data obtained in autumn 1974 and 1975 showed also that in 1975 the level of the temperature background was somewhat lower.

In 1975, data on water temperature were generalized for the period from 1962 through 1972 in order to continue the studies of the interannual variability of the thermal content in shelf waters lying near New England and Nova Scotia. The results of investigations showed that throughout the period from 1962 up to 1972 there was observed the cooling of waters with the maximum temperature in 1964 and then the further warming of water by 0.2°C per year. The results of investigations are given in a special report by V.P.Karaulovsky and I.R.Sigaev submitted to the ICNAF Meeting.

In 1974, investigations of the geostrophic circulation fields were started basing on the materials of the seasonal hydrologic surveys aimed to find out the seasonal types of circulation, and to distinguish the summer-autumn type of circulation proper to the Georges Bank Area. The results of studies were given in short in the National Report to the ICNAF Meeting (see Res.Summ.Doc. 75/30).

In 1975, the scientists continued to concentrate their efforts on the problem of determination the types of the geostrophic circulation fields, data collected throughout 1962-1967 period were used to reveal winter and spring types of circulation fields. Thus preliminary conclusions were as follows: the winter period is characterized by a gradual changing of the summer-autumn type for the winter one on Georges Bank and in the Gulf of Main Area. The center of the anticyclonic gyre is shifting a great deal from the central part of the Bank to its southwestern part, and there is observed the deformation of the general anticyclonic water gyre over the Bank.

The upwelling of waters becomes stronger in the Eastern Channel along north-eastern and northern slopes. The cyclonic gyre is at the destruction stage in the Gulf of Maine.

The end of winter is characterized by a full destruction of the anticyclonic gyre over the Bank, the formation of large upwelling areas over a greater part of the Bank due to a more intense advection of water from part of the ocean. The area of water upwelling is increasing in the Eastern Channel and it is enlarging even into the Gulf of Main. The Gulf is characterized by the formation of the area of sinking water mass in its western part and the area of its upwelling in the eastern one.

Early in spring, the circulation field over the Bank possess a complex structure. There is no a total anticyclonic gyre. Instead of it clearly shaped areas of upwelling and sinking water mass are alternatively surveyed there. Besides, a large area of water upwelling dominates both in the Eastern Channel and the Basin Deep.

In the midst of spring the anticyclonic gyre began over the Bank, and further an intensive creation of the upwelling and sinking areas was observed along southern slopes, that found their expression in the formation of clearly shaped gyres. There is observed the upwelling area in the eastern part of the Gulf of Maine and the sinking one - in its western part.

Hydrochemistry. In 1974-1975, the investigations of the hydrochemical regime were continued on Georges Bank in order to understand the effect of biogens on the formation of the primary production. In August 1974 and in April 1975 water samples were collected from board RTM "Belogorsk" and SRTM-8040 (700 samples) to determine the biogen content. The samples were frozen and treated in laboratory conditions on the shore. The analysis of data obtained showed that in August 1974, low biogen concentrations were observed in the surface layer of Georges Bank, thus the phosphate content made 0.2-0.3 mkg atom per litre, the nitrate content was up to the analytical zero. Their concentration was at the level of previous years in the near-bottom layer. In April 1975, the biogen content was unusually low in the surface layer for this period of year. Thus, the phosphate content was 0.2-0.5 mkg atom per litre, the nitrate content -0.3-1.9 mkg atom

per litre. In the near-bottom layer their content was correspondingly 1.3-2.5 and 1.4-4.0 mg atom per litre.

Zooplankton. The analysis of zooplankton samples collected on Georges Bank in summer and autumn 1973 and 1974 showed that the seston biomass increased on the whole versus 1971. Comparative tests conducted by a plankton-collector Bonge separately with gas N 38 and that one N 68 showed that the number of copepodites and nauplia taken with gas N 68 was ten times higher than that one taken with gas N 38. Thus, nets made of gas N 68 will be applied in future. This fact is important to clear up the degree of the assurance with food of fish larvae.

Ichthyoplankton. Observations for the distribution of silver and red hake eggs and larvae showed that the most intensive spawning was observed on the southern slopes of Georges Bank from the end of June up to the midst of August at depths from 50 through 120 m, water temperature near the bottom being 8^o-12^oC. Eggs number fluctuated insignificantly in July and August of every year throughout the period 1971-1974, and the number of silver hake larvae was 100 times higher in 1974, that one of red hake was 68 times higher than in 1971.

There was not observed throughout the whole period of observations that eggs and larvae be brought beyond the shelf slopes.

In September and October 1975, RTM "Belogorsk" accomplished two surveys of herring larvae on Georges Bank according to ICNAF program. Presently, data of those surveys are treated in laboratory conditions.