



SCIENTIFIC COUNCIL MEETING – JUNE 2003

Russian Research Report for 2002

- Part I - Research carried out by AtlantNIRO in NAFO Subarea 4
Part II - Research carried out by PINRO in NAFO Subareas 1, 2, 3 and 4

PART I.

Research carried out by AtlantNIRO in NAFO Subarea 4

By

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A. Status of the Fisheries

In 2002 Russian silver hake fishery was carried out by one mid-tonnage vessel (TSM) southwards of SMGL during March-June inclusive mainly in Div. 4W. The mean catch per fishing day amounted to 30.6, 32.6, 25.6 и 20.9 t in March, April, May and June respectively, while the total catch according to preliminary data was about 2300 t. Judging from the fishery results, the dense hake aggregations at the slope of the Nova Scotia shelf retained actually during the whole period.

Apparently in 2004 a noticeable reduction of fishable hake biomass should be expected as compared to the level of 2002, since according to Canadian survey data (DFO, 2002), and oceanographic researches carried out by AtlantNIRO, the year-classes of 2000, 2001 and 2002 constituting the fishery basis, are assessed as weak or at least average in size.

B. Special Researches

1. Environmental researches

a) Hydrographic studies

In 2002 monitoring of sea surface temperatures at 13 selected points located on the shelf of Labrador, Newfoundland, Nova Scotia and adjacent ocean areas (Fig.1) and of hydrological fronts dynamics from the area southwards of the New England shelf and Nova Scotia shelf between 55° and 70° W was continued.

The analysis of mean monthly SST anomalies evidences that during most part of the year water temperature in the adjacent areas of the Labrador Sea and North-Atlantic current were higher than long-term mean for 1977-1996, but lower than in 2001 (points 2, 3, 5 on Fig. 1). In some locations of the Labrador Current (points 1, 4, 6) the seasonal trend of temperature was of unsustainable sinuosity pattern with fluctuations above and below the norm. During most months SST in these areas was lower than in 2001. Eastwards of the Grand Bank and northwards of Flemish Cape Bank (points 7, 8) mean monthly SST values either exceeded the norm or were close to the long-term

mean. In the shallow area of the Grand Bank (point 9) SST was close to the norm and similar to that of 2001 both in the seasonal trend pattern and in value. During 2002 both positive and negative SST anomalies were observed in the eastern self of the Nova Scotia (point 10). Similar to 2001 SST reduction was observed in this area from January to May with subsequent increase up to August and gradual decrease by December. At the same time mean monthly SST in winter and spring exceeded the level of 2001, while summer and autumn values were significantly lower than in 2001. On the contrary, at the Scotian shelf slope and seawards in the Slope water mass (points 11, 12) SST values were mostly higher than long-term mean and higher than in 2001. In the area near the Gulf Stream front (point 13) mean monthly SST were higher than the norm and close to these in 2001, while in winter period these significantly exceeded the level of 2001. Therefore, sea surface temperature in the most areas selected remains higher than the norm or close to it. At the same time the trend to SST reduction continues on the shelf.

In 2002 the boundaries of 3 water masses (the Cool shelf water mass, the Slope water mass, and the Northern edge of Gulf Stream front) were most often shifted northwards of their mean monthly location, with the exception of the Gulf Stream front in the area of 'New England' (66°-70°W), where its northern boundary was shifted southwards of the mid-line during the year.

The more detailed description of hydrological conditions in 2002 will be presented in a special report.

C. Miscellaneous Studies

The analysis of TAC value correspondence to the status of the following stocks - 2+3KLMNO Greenland halibut, 3M beaked redfish, 3LNO American plaice, 3LNO yellowtail flounder, 2J3KL, 3NO, 3M cod and 4VWX silver hake – was carried out. The series of TACs, abundance indices of trawling surveys and estimates based on the analytical methods for the period 1973 - 2000 inclusive were used as the basic data. Introduction of the stock status categories compared to the actual TACs in respective years became the methodic basis of the retrospective analysis. In most cases the correlation between the values considered was weak. This required searching the ways of TAC accuracy improvement in terms of their better correspondence to the fish population status.

The results allowed to propose a new approach for TAC prediction a year in advance, based on the conservative property of the stock status categories and conventionally named the “Conservative Approach” (CA) The examples were presented of the latter application in practice and the terms of this application were determined. It could be assumed that if appropriate terms are observed, CA application will reduce probability of gross errors in TAC assessment for a year in advance.

A detailed description of the researches performed is presented in SCR Doc., submitted to this Scientific Council meeting.

References

DFO, 2002. Updates on Selected Scotian Shelf Groundfish Stocks in 2002. DFO Sci. Stock Status Report A3-35 (2002).

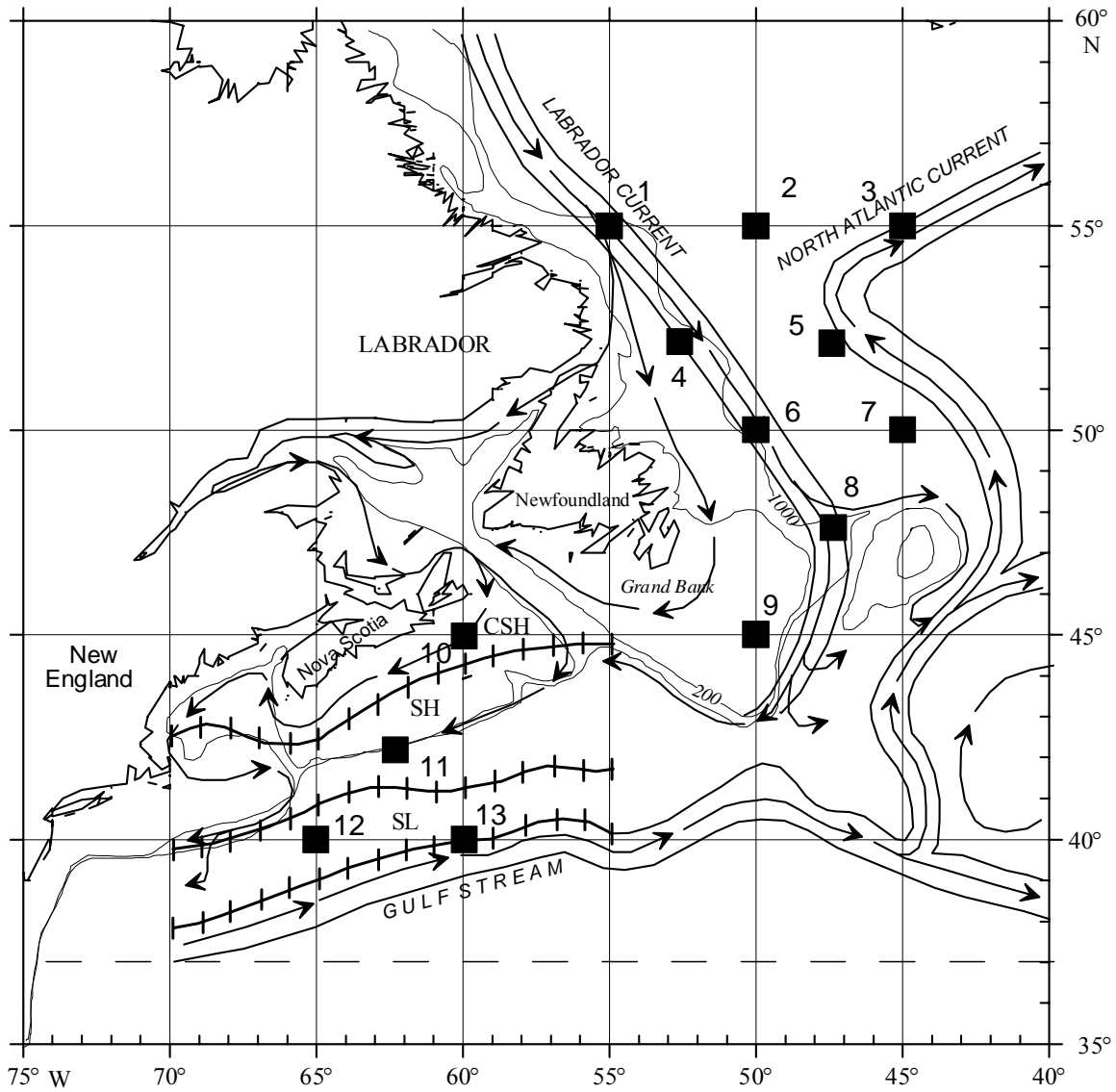


Fig.1. Map of SST monitoring at 13 points and water masses boundaries dynamics in the Labrador Current system and Gulf Stream. CSH – the Cold shelf water mass, SH – the Warm shelf water mass, SL – the Slope water mass.

Part II - Research carried out by PINRO in NAFO Subareas 1, 2, 3 and 4

by

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Subareas 1 and 2

A. Status of fishery

Greenland halibut. In 2002, in the area of the West Greenland, Russian quota for Greenland halibut amounted to 1100 t. The fishery was executed at 700-1500 m depth, from August to December.

Participating in fishery were three trawlers and one long-liner. The mean daily catch rate of the trawlers was about 8 t, of the long-liner – 0.5 t.

According to the preliminary data, in the area, the total catch of halibut equaled to 933 t (Table 1).

Redfish. In Divs. 1F, 2J, Russian fishery of pelagic beaked redfish was carried out in July-October, at the depth of 240-380 m. It was executed by 1-7 vessels of the different types. The vessels operated with the highest catch rate in August-September, when the catch amounted to 20.5-22.0 t per a fishing-day. According to the preliminary data, in the NAFO Regulatory Area, the total catch of pelagic redfish was estimated at 7677 t, of which 2857 t were caught in Div. 2J.

The other fish species. There was no specialized fishery of the other fish species. The by-catch of grenadier, skate and wolffishes in specialized fishery of halibut was equal to 1%.

B. Special Investigations

Greenland halibut. Biological data were collected by one fishing vessel from 13 August to 6 September. In Div. 1A, the halibut length varied from 20 to 100 cm, the mean length of males amounted to 45.4 cm, of females – to 51.2 cm (Table 2). In catches, the modal length of individuals was 38-46 cm, with the sex ratio of 1:1. In Div. 1D, recorded were the larger halibut, as long as 28-105 cm, with 49.2 cm average size of males and 56.8 cm – of females and the modal length of 44-50 cm. The number of males was greater than females in 1.8 times.

In Divs. 1AD, halibut age varied from 2 to 18 years, the individuals aged 5-7 years prevailed (Table 3).

Investigated fish were, mainly, immature.

Redfish. While fishing, the biological data on beaked redfish in Div. 1F, 2J were collected by the specialists from PINRO working as NAFO observers aboard the five fishing vessels.

The length of 56 193 individuals was measured, feeding and maturity of 5 076 fish were analyzed, the age of 890 specimens was determined. In Div. 1F, in the catches, the redfish length varied from 23 to 45 cm, the average one equaled to 34.5 cm (Table 4). The bulk of the catches was made up by the individuals 34-36 cm in length, at the age of 13-15 years (Table 5). The sex ratio was 1.3:1. About 11% of fish were immature. The redfish fed moderately. The mean index of stomach fullness amounted to 1.1. The food ration, primarily, consisted of zooplankton: *Calanus* and *Themisto*.

In Div. 2J, the mean length of the redfish was equal to 34.6 cm. Catches were, mainly, consisted of the individuals as long as 34-36 cm, aged 13-15. The sex ratio was 1.9:1. The portion of immature fish amounted to 18%. The

redfish fed moderately. Mean index of stomach fullness was estimated at 1.1. Predominating in feeding were *Calanus*, euphausiids, *Themisto*.

Subarea 3

A. Status of fishery

Greenland halibut. In 2002, in Div. 3LMNO, the Russian Greenland halibut quota amounted to 4 157 t. During the year, 1-6 vessels performed specialized fishery. Halibut occurred in by-catches while harvesting redfishes, skates and red hake. In 2002, the Russian catch of Greenland halibut amounted to 3 482 t (Table 1).

The fleet operated in the continental shelf areas adjacent to the deep-water Flemish Pass (Div. 3L and the adjacent areas) at the depth of 300-1 800 m. The average catch rate was equaled to 0.3 t of halibut per a fishing hour. In that area, 89% of halibut caught were taken. Occurred in the catches were: grenadiers – 3, redfishes – 3, red hake – 2, American plaice – 1, skates – 1 and other fish species – 1%.

Redfish. In 2002, on the Flemish Cap Bank, the specialized fishery of redfishes took place from May to August. The Russian vessels fished redfish on the south and south-west slopes of the bank, at the depth of 300-550 m. The main catch of redfish was taken in July. On the whole, in the period of fishery, the catch rate of the vessels ranged from 7.8 t to 10.6 t per a fishing day. The by-catches were made up by Greenland halibut, American plaice, cod and wolffishes. According to the preliminary data, the catch of redfish was estimated at 1 155 t.

In Div. 3O, redfish were fished from January to December. Vessels worked at 300-600 m depth. Red hake, American plaice and cod prevailed in by-catches while harvesting redfish. As a whole, in the period of fishery, the catch rate of the vessels ranged from 16.5 t to 21.0 t per a fishing day. In compliance with the preliminary data, the total catch of redfish equaled to 11 182 t.

Skates. In Divs. 3NO, specialized fishery of skates was executed by the two vessels (1 000-2 000 kW). The main catch was taken in Div. 3N at 50-200 m depth. Thorny skate (*Raja radiata*) was a main object to be fished. In Div. 3NO, the total catch of skates was estimated at 3 052 t. As a whole, in a specialized fishery, the catch rate amounted to 22.3 t per a fishing day.

In Div. 3LM, the skates were only registered as by-catches in fishing halibut.

By preliminary data, in Div. 3LMNO, the total catch of skates was estimated at 3 165 t.

White hake. In Div. 3O, specialized fishery for the white hake took place from June to October. The two vessels (1 000-2 000 kW) worked at 140-400 m depth. As a whole, in the period of fishery, the capacity of the amounted to 15.2 t per a fishing day. In Div. 3O, the preliminary catch of the white hake was equal to 1 060 t.

Other fish species. There was no specialized fishery for the other fish species. During the specialized fisheries the by-catch of the other fish species equaled to 1-10%.

B. Special Investigations

Hydrographic observations were made aboard RV “Remøyfjord”. In all, 31 hydrographic stations were made within the depth range of 130-1075 m (Fig. 1).

Vertical distribution of water temperature in the section along 47°N (Fig. 2) shows the variation of temperature within the range from 5°C at the surface to 3.5°C at 100-150 m depth. In the section, the bottom temperature fluctuated from 3.4°C to 3.9°C. The salinity varied from 34.3 in the surface layers to 34.9 near the bottom and at the depth of over 400 m (Fig. 2).

In the surface layer, water temperature gradually increased from the north-west (3.0°C) to the south-east (6.7°C) (Fig. 3). Salinity distribution on the surface was of more complicated character due to the precipitation and winds.

On the surface, the salinity varied within the range of 33.6-34.5. The waters with higher salinity were located in the eastern area (Fig. 3).

At 100 m horizon, as well as on the surface, the temperature increased from the north-west (2.7°C) to the south-east (4.8°C) (Fig. 3). There, the minimal values of salinity were registered in the central area of the bank.

In the bottom layer, the variations of temperature were negligible – from 3.3°C to 3.9°C. At every station with the depth of over 900 m, the bottom temperature was 3.3-3.5°C. The minimal values of salinity – 34.4 – were recorded in the shallow bank, at the depth of under 200 m.

The comparative analysis of water temperature distribution in the Flemish Cap area for 2002 and 2001 showed the following peculiarities:

- in 0-50 m, 0-100 m, 0-200 m layers, to the north of 47°N, the mean temperature was higher by 0.2-0.6°C, than in 2001;
- in the section along 47°N, water temperature and salinity practically remained unchanged in all the layers;
- in the section along 46°30', in 0-50m, 0-100 m, 0-200 m, the water temperature was higher by 1.9-2.2°C, than in 2001, the salinity – lower, than the last year one by 0.3-0.4;
- in the layers under 300 m, the values of temperature and salinity negligibly differed from the last year ones;
- in the bottom layer, over all the bank area, the values of water temperature and salinity, practically, remained unchanged;
- in 2002, found was the lack of the zone with higher horizontal gradients of temperature and salinity, which was recorded from the surface to 300m horizon in the southern part of the bank in 2001.

In the period from 31 May to 10 June 2002, the multispecies trawl research survey was conducted aboard RV “Remøyfjord” in Div. 3M. In Div. 3LMNO, in the fishery, the biological information was collected by the observers from PINRO aboard the fishing vessels.

Length and age composition of bottom fish species mentioned in the present paper relate to measured individuals from the catches.

Greenland halibut. In Div. 3M, the stock status was estimated by the results from the trawl research survey in May-June. The halibut occurred in the catches at 127-1280 m depth. In the strata surveyed with the area of 15.8×10^2 sq.miles, the index of abundance was equal to 10.1×10^6 ind., the biomass – to 9.8×10^3 t.

In April-May and in June-September, aboard one of the fishing vessels, conducted were the investigations to estimate a comparative selectivity of the trawl bags with 130, 136, 145 and 149 mm mesh size in the fishery for Greenland halibut.

In Div. 3LMNO, in the catch of fishing vessels, occurred was the halibut 12-96 cm in length with the average one of 44.4 cm (Tables 6-9). Individuals from 42-44 cm length groups, aged 6-7, from the 1995-1996 year-classes, prevailed (Table 10). Small immature fish made up the bulk of the catch. The by-catch of the undersized halibut (30 cm) was less than 0.9%.

Roughhead grenadier. The species was one of the most abundant by-catch object in the fishery for Greenland halibut. In Div. 3L, in the catch, the total length of the roughhead grenadier varied from 24 to 90 cm, the mean length was equal to 42.8 cm (Table 11).

In Div. 3M, the roughhead grenadier with the length of 27-90 cm occurred. In Div. 3N, the fish length varied from 24 to 84 cm.

As a whole, in Divs. 3LMNO, the bulk of catches was made up by fish 39-45 cm in length.

Redfish. In Div. 3L, while fishing halibut, in by-catch,, the length of redfish varied from 19 to 45 cm, the mean length was 31.1 cm (Table 12). Predominating were the individuals with the length of 31-33 cm.

By the results from the trawl research survey conducted in May-June 2002, on the Flemish Cap Bank, the total abundance of redfishes from genus *Sebastes* amounted to 71.2×10^6 individuals, the biomass – to 7.8×10^3 t. The research was performed in the area of 15 760 miles² to 1280 m depth, according to the area stratification adopted by NAFO.

In Div. 3M, the redfish size distribution combining the data on by-catch and from the special fishery, fluctuated from 8 to 41 cm (Table 13), fish age varied from 2 to 16 (Table 14). The bulk of catch was made up by fish 28-30 cm in length.

The length distribution of redfish from Div. 3N was characterized by fish 17-44 cm in length with the mean size of 30.0 cm (Table 15). Redfish with the length of 33-35 cm predominated in catch.

In Div. 3O, redfish length varied from 11 to 52 cm, the average size was 24.1 cm (Table 16). Fish as long as 23-24 cm, aged 7-8, made up the bulk of catch (Table 17).

American plaice. Table 18 presents the length characteristics of American plaice by divisions.

In Div. 3L, American plaice length distribution was characterized by fish as long as 25-54 cm. The individuals 38-39 cm in size prevailed.

In Div. 3N, fish length fluctuated from 22 to 70 cm, the average one was 42.0 cm.

In Div. 3O, when fishing skate, the length distribution of American plaice varied from 22 to 72 cm, the mean length equaled to 40.3 cm. The individuals 42-43 cm in length were predominating.

In Subarea 3, the American plaice with 30-72 cm length occurred.

Witch flounder. The length of fish caught in Divs. 3LMNO varied from 22 to 58 cm, the mean size was 39.6 cm (Table 19). The bulk of catch was made up by fish 38-39 cm in length.

Yellowtail flounder. Biological data were collected in the period of fishing skates, in Div. 3N. The length of caught fish varied from 24 to 55 cm, the mean length was 36.8 cm (Table 20). Fish 36-39 cm in size were predominating in catches.

Cod. In Div. 3L, in the by-catch to halibut, the length of cod fluctuated from 27 to 87 cm, the mean length was equal to 46.5 cm (Table 21). Mature individuals with 42-49 cm length prevailed in catch.

On the Flemish Cap Bank, a negligible number of cod 42-102 cm in length was taken in the fishery for redfish.

The largest cod were registered in Div. 3N. The length distribution varied from 33 to 123 cm, the average size was 60.5 cm.

In Div. 3O, the cod length varied from 30 to 135 cm, the average length was 56.4 cm. The individuals with 51-55 cm length made up the bulk of catch.

Red hake. This fish occurred in by-catch in special fishery for halibut. The length of fish investigated in Div. 3L fluctuated from 21 to 51 cm, the average one was 36.7 cm (Table 22). Catch was, mainly, represented by individuals with 33-38 cm size.

In Div. 3M, the length of fish was from 15 to 48 cm.

White hake. The main catch of that species was taken in Div. 3O. In the area, fish length fluctuated from 18 to 108 cm, the mean one was equal to 49.9 cm (Table 23). Individuals with the length of 45-50 cm made up the bulk of the catch.

Thorny skate. They occurred in catch in every division and layer. In Div. 3L, the length of skate varied from 30 to 96 cm, the average length equaled to 50.3 cm (Table 24).

In Div. 3N, the length of taken individuals varied from 30 to 102 cm with the mean one of 57.5 cm. In the catch, the individuals 51-59 cm in length were prevailing.

In Div. 3O, the length of thorny skate fluctuated from 36 to 93 cm, the mean one equaled to 61.5 cm.

Spinytail skate. In Div. 3LMNO, the fish length fluctuated from 39 to 177 cm under the average one of 82.7 cm (Table 25).

Other fish species. In the period of fishery, the by-catch was represented by halibut, common grenadier, wolffishes, roundnose grenadier, spiny eels, longfin cods and others.

Subarea 4

A. State of fishery

Silver hake. In March-June, the one trawler fished silver hake on the commercial quota of a Canadian company. The vessel operated in Div. 4W at 100-300 m depth. Mean daily catch rate was 28.7 tons. The portion of hake in catches attained 99-100%. Herrings, spiny dogfish, alewife, red hake and butterfish occurred in by-catch. The catch of silver hake in Div. 4W was preliminarily estimated as 2499 tons (Table 1).

B. Special Investigations

No environmental research or hydrographic observations were conducted.

Biological data in Div. 4W were collected by a PINRO observer working onboard a fishing vessel.

Silver hake. The length of silver hake in Div. 4W ranged from 19 to 39 cm. Mean length was 26.5 cm (Table 26). The fishery was based on aggregations of mature fish, the percentage of which was 78 %.

TABLE 1. Preliminary data on catch taken by Russian trawlers in NAFO SA 1-4 in 2002.

| Species | Division | Catch, t |
|---------------------|--------------|--------------|
| Greenland halibut | 1A | 273 |
| | 1C | 98 |
| | 1D | 562 |
| | 1ACD | 933 |
| | 3L | 2912 |
| | 3M | 188 |
| | 3N | 369 |
| | 3O | 13 |
| | 3LMNO | 3482 |
| Atlantic halibut | 3L | 1 |
| | 3N | 6 |
| | 3O | 6 |
| | 3LMNO | 13 |
| American plaice | 3L | 49 |
| | 3M | 4 |
| | 3N | 159 |
| | 3O | 192 |
| | 3LMNO | 404 |
| Yellowtail flounder | 3N | 101 |
| | 3O | 2 |
| | 3LNO | 103 |
| Witch flounder | 3L | 15 |
| | 3M | 4 |
| | 3N | 36 |
| | 3O | 76 |
| | 3LMNO | 131 |
| Grenadier spp. | 3L | 146 |
| | 3M | 13 |
| | 3N | 68 |
| | 3O | 1 |
| | 3LMNO | 228 |
| Redfish spp. | 1F | 4820 |
| | 2J | 2857 |
| | 1F2J | 7677 |
| | 3L | 94 |
| | 3M | 1155 |
| | 3N | 25 |
| | 3O | 11182 |
| | 3LMNO | 12456 |
| | Skate | 3L |
| 3M | | 8 |
| 3N | | 2731 |
| 3O | | 321 |
| 3LMNO | | 3165 |
| Atlantic cod | 3L | 3 |
| | 3M | 1 |
| | 3N | 112 |
| | 3O | 226 |
| | 3LMNO | 342 |
| Haddock | 3N | 5 |
| | 3O | 25 |
| | 3NO | 30 |
| Wolffish spp. | 3L | 7 |
| | 3MN | 32 |
| | 3O | 13 |
| Red hake | 3LMNO | 52 |
| | 3L | 72 |
| | 3M | 9 |
| | 3N | 93 |
| | 3O | 46 |
| White hake | 3LMNO | 220 |
| | 3O | 1060 |
| Silver hake | 4W | 2499 |

TABLE 2. Length composition of Greenland halibut trawl catch (no. of indivs.) in NAFO Div. 1AD in 2002.

| Length, cm | Div. 1A | | | Div. 1D | | | Divs. 1AD | | |
|-----------------------|-------------|-------------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | Males | Females | Total | Males | Females | Total | Males | Females | Total |
| 20 | 9 | 11 | 20 | | | | 9 | 11 | 20 |
| 22 | | | | | | | | | |
| 24 | | 11 | 11 | | | | | 11 | 11 |
| 26 | 31 | | 31 | | | | 31 | | 31 |
| 28 | 19 | 28 | 47 | 7 | | 7 | 26 | 28 | 54 |
| 30 | 47 | 9 | 56 | | 20 | 20 | 47 | 29 | 76 |
| 32 | 69 | 52 | 121 | 39 | 7 | 46 | 108 | 59 | 167 |
| 34 | 170 | 69 | 239 | 7 | 14 | 21 | 177 | 83 | 260 |
| 36 | 105 | 86 | 191 | 171 | 65 | 236 | 276 | 151 | 427 |
| 38 | 244 | 209 | 453 | 341 | 115 | 456 | 585 | 324 | 909 |
| 40 | 393 | 196 | 589 | 871 | 378 | 1249 | 1264 | 574 | 1838 |
| 42 | 478 | 291 | 769 | 1567 | 563 | 2130 | 2045 | 854 | 2899 |
| 44 | 376 | 252 | 628 | 2469 | 837 | 3306 | 2845 | 1089 | 3934 |
| 46 | 300 | 317 | 617 | 3225 | 1163 | 4388 | 3525 | 1480 | 5005 |
| 48 | 204 | 135 | 339 | 3064 | 1016 | 4080 | 3268 | 1151 | 4419 |
| 50 | 101 | 234 | 335 | 2825 | 1057 | 3882 | 2926 | 1291 | 4217 |
| 52 | 136 | 124 | 260 | 2036 | 827 | 2863 | 2172 | 951 | 3123 |
| 54 | 101 | 128 | 229 | 1795 | 822 | 2617 | 1896 | 950 | 2846 |
| 56 | 41 | 129 | 170 | 812 | 387 | 1199 | 853 | 516 | 1369 |
| 58 | | 72 | 72 | 517 | 333 | 850 | 517 | 405 | 922 |
| 60 | 28 | 129 | 157 | 380 | 449 | 829 | 408 | 578 | 986 |
| 62 | 39 | 93 | 132 | 234 | 363 | 597 | 273 | 456 | 729 |
| 64 | 77 | 77 | 154 | 195 | 360 | 555 | 272 | 437 | 709 |
| 66 | 39 | 9 | 48 | 129 | 307 | 436 | 168 | 316 | 484 |
| 68 | 42 | 20 | 62 | 86 | 230 | 316 | 128 | 250 | 378 |
| 70 | 22 | 86 | 108 | 66 | 262 | 328 | 88 | 348 | 436 |
| 72 | 30 | 53 | 83 | 7 | 268 | 275 | 37 | 321 | 358 |
| 74 | 9 | 33 | 42 | 28 | 196 | 224 | 37 | 229 | 266 |
| 76 | 19 | 22 | 41 | | 130 | 130 | 19 | 152 | 171 |
| 78 | | 33 | 33 | | 217 | 217 | | 250 | 250 |
| 80 | 11 | 30 | 41 | | 144 | 144 | 11 | 174 | 185 |
| 82 | | 51 | 51 | | 141 | 141 | | 192 | 192 |
| 84 | | 18 | 18 | | 96 | 96 | | 114 | 114 |
| 86 | | 33 | 33 | | 147 | 147 | | 180 | 180 |
| 88 | | | | | 54 | 54 | | 54 | 54 |
| 90 | | 19 | 19 | | 109 | 109 | | 128 | 128 |
| 92 | | | | | 75 | 75 | | 75 | 75 |
| 94 | | 9 | 9 | | 84 | 84 | | 93 | 93 |
| 96 | | | | | 34 | 34 | | 34 | 34 |
| 98 | | | | | 45 | 45 | | 45 | 45 |
| 100 | | | | | 21 | 21 | | 21 | 21 |
| 102 | | | | | 22 | 22 | | 22 | 22 |
| 104 | | | | | 6 | 6 | | 6 | 6 |
| Total | 3140 | 3068 | 6208 | 20871 | 11364 | 32235 | 24011 | 14432 | 38443 |
| Av. length, cm | 45.4 | 51.2 | 48.3 | 49.2 | 56.8 | 51.9 | 48.7 | 55.6 | 51.3 |

TABLE 3. Age composition of Greenland halibut trawl catch (no. of indivs.) in NAFO Div. 1AD in 2002.

| Length, cm | Age | | | | | | | | | | | | | | | | | | Weight, g | | |
|---------------|-----|----|----|-----|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|----|-----------|--------|--|
| | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | NN | | | |
| 20 | 2 | | | | | | | | | | | | | | | | | | 2 | 51.5 | |
| 22 | | | | | | | | | | | | | | | | | | | | | |
| 24 | | 2 | | | | | | | | | | | | | | | | | 2 | 92.5 | |
| 26 | | 5 | | | | | | | | | | | | | | | | | 5 | 106.0 | |
| 28 | | 13 | | | | | | | | | | | | | | | | | 13 | 138.3 | |
| 30 | | 10 | 8 | | | | | | | | | | | | | | | | 18 | 173.9 | |
| 32 | | 9 | 14 | | | | | | | | | | | | | | | | 23 | 249.0 | |
| 34 | | | 45 | | | | | | | | | | | | | | | | 45 | 299.5 | |
| 36 | | | 54 | 32 | | | | | | | | | | | | | | | 86 | 324.7 | |
| 38 | | | 51 | 111 | | | | | | | | | | | | | | | 162 | 464.1 | |
| 40 | | | | 277 | 18 | | | | | | | | | | | | | | 295 | 539.1 | |
| 42 | | | | 231 | 231 | | | | | | | | | | | | | | 462 | 637.2 | |
| 44 | | | | 153 | 458 | | | | | | | | | | | | | | 611 | 714.7 | |
| 46 | | | | 48 | 624 | 96 | | | | | | | | | | | | | 768 | 780.6 | |
| 48 | | | | | 333 | 333 | | | | | | | | | | | | | 666 | 999.6 | |
| 50 | | | | | 33 | 597 | | | | | | | | | | | | | 630 | 1144.5 | |
| 52 | | | | | 49 | 394 | 25 | | | | | | | | | | | | 468 | 1240.0 | |
| 54 | | | | | 29 | 257 | 143 | | | | | | | | | | | | 428 | 1349.7 | |
| 56 | | | | | | 66 | 144 | | | | | | | | | | | | 210 | 1563.1 | |
| 58 | | | | | | 22 | 55 | 66 | 11 | | | | | | | | | | 153 | 1798.9 | |
| 60 | | | | | | | 26 | 103 | 17 | | | | | | | | | | 146 | 2077.1 | |
| 62 | | | | | | | 9 | 51 | 60 | | | | | | | | | | 120 | 2287.9 | |
| 64 | | | | | | | 7 | 51 | 59 | | | | | | | | | | 117 | 2425.0 | |
| 66 | | | | | | | 10 | 5 | 60 | 10 | | | | | | | | | 85 | 2820.0 | |
| 68 | | | | | | | | 4 | 36 | 36 | | | | | | | | | 76 | 3029.7 | |
| 70 | | | | | | | | | | 57 | 7 | 4 | | | | | | | 68 | 3453.7 | |
| 72 | | | | | | | | | 5 | 32 | 23 | | | | | | | | 59 | 3984.6 | |
| 74 | | | | | | | | | | 29 | 12 | 3 | | | | | | | 44 | 4132.0 | |

Table 3. continued.

| | | | | | | | | | | | | | | | | | | | | | | |
|--------------|------------|------------|------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|--------------|---|-----------|---------------|----------------|
| 76 | | | | | | | | | | | 10 | 17 | 3 | | | | | | | 30 | 3903.9 | |
| 78 | | | | | | | | | | | 10 | 21 | 5 | | | | | | | | 36 | 4664.3 |
| 80 | | | | | | | | | | | | 16 | 16 | | | | | | | | 31 | 5775.0 |
| 82 | | | | | | | | | | | | 4 | 21 | 7 | | | | | | | 32 | 5695.6 |
| 84 | | | | | | | | | | | | 9 | 14 | 3 | | | | | | | 26 | 6464.4 |
| 86 | | | | | | | | | | | | | 12 | 14 | | | | | | | 26 | 7303.3 |
| 88 | | | | | | | | | | | | 1 | 1 | 7 | 3 | | | | | | 13 | 7967.8 |
| 90 | | | | | | | | | | | | | | 5 | 11 | 3 | | | | | 19 | 8550.0 |
| 92 | | | | | | | | | | | | | | 6 | | 6 | | | | | 11 | 8655.0 |
| 94 | | | | | | | | | | | | | | 3 | 5 | 9 | | | | | 17 | 10949.0 |
| 96 | | | | | | | | | | | | | | | 3 | 1 | 1 | | | | 5 | 10415.0 |
| 98 | | | | | | | | | | | | | | | 3 | 2 | 2 | | | | 6 | 10965.0 |
| 100 | | | | | | | | | | | | | | | 1 | 2 | | | 1 | | 4 | 11720.0 |
| 102 | | | | | | | | | | | | | | | | | | | 1 | 2 | 3 | 12303.3 |
| 104 | | | | | | | | | | | | | | | | | | | 1 | | 1 | 13125.0 |
| Total | 2 | 39 | 171 | 852 | 1776 | 1764 | 418 | 280 | 247 | 185 | 108 | 79 | 46 | 25 | 21 | 5 | 3 | 6022 | | | | |
| % | 0.0 | 0.7 | 2.8 | 14.1 | 29.5 | 29.3 | 6.9 | 4.7 | 4.1 | 3.1 | 1.8 | 1.3 | 0.8 | 0.4 | 0.4 | 0.1 | 0.0 | 100.0 | | | | |

TABLE 4. Length composition of Redfish (indiv.) in catches by Russian travelers in the NAFO Div. 1F, 2J in 2002.

| Length Cm | NAFO Div. | | | | | | Total | | |
|-------------------------------|--------------|--------------|--------------|-------------|-------------|-------------|--------------|--------------|--------------|
| | 1 F | | | 2 J | | | Males | Females | Total |
| | Males | Females | Total | Males | Females | Total | | | |
| 23 | 4 | 3 | 7 | - | - | - | 4 | 3 | 7 |
| 24 | 17 | 12 | 29 | - | - | - | 17 | 12 | 29 |
| 25 | 62 | 69 | 131 | - | - | - | 62 | 69 | 131 |
| 26 | 140 | 122 | 262 | - | 2 | 2 | 140 | 124 | 264 |
| 27 | 322 | 263 | 585 | 3 | 2 | 5 | 325 | 265 | 590 |
| 28 | 497 | 431 | 928 | 6 | 9 | 15 | 503 | 440 | 943 |
| 29 | 706 | 477 | 1183 | 15 | 12 | 27 | 721 | 489 | 1210 |
| 30 | 1111 | 818 | 1929 | 25 | 11 | 36 | 1136 | 829 | 1965 |
| 31 | 1527 | 1015 | 2542 | 32 | 25 | 57 | 1559 | 1040 | 2599 |
| 32 | 2332 | 1311 | 3643 | 35 | 16 | 51 | 2367 | 1327 | 3694 |
| 33 | 4028 | 1529 | 5557 | 85 | 18 | 103 | 4113 | 1547 | 5660 |
| 34 | 5828 | 2047 | 7875 | 100 | 26 | 126 | 5928 | 2073 | 8001 |
| 35 | 6459 | 3211 | 9670 | 110 | 23 | 133 | 6569 | 3234 | 9803 |
| 36 | 3924 | 3705 | 7629 | 78 | 48 | 126 | 4002 | 3753 | 7755 |
| 37 | 2499 | 3863 | 6362 | 49 | 52 | 101 | 2548 | 3915 | 6463 |
| 38 | 1387 | 2718 | 4105 | 27 | 41 | 68 | 1414 | 2759 | 4173 |
| 39 | 604 | 1265 | 1869 | 13 | 14 | 27 | 617 | 1279 | 1896 |
| 40 | 173 | 531 | 704 | 7 | 8 | 15 | 180 | 539 | 719 |
| 41 | 54 | 158 | 212 | 2 | 4 | 6 | 56 | 162 | 218 |
| 42 | 13 | 40 | 53 | 1 | 3 | 4 | 14 | 43 | 57 |
| 43 | 2 | 6 | 8 | - | - | - | 2 | 6 | 8 |
| 44 | 1 | 5 | 6 | - | - | - | 1 | 5 | 6 |
| 45 | 1 | 1 | 2 | - | - | - | 1 | 1 | 2 |
| No | 31691 | 23600 | 55291 | 588 | 314 | 902 | 32279 | 23914 | 56193 |
| Average length, cm | 34,1 | 35,1 | 34,5 | 34,3 | 35,2 | 34,6 | 34,3 | 35,4 | 34,8 |

TABLE 5. Redfish age composition (indiv.) in the NAFO Div. 1F, 2J in 2002.

| Age, Years | NAFO Div. | | | | | | Total | | |
|---------------|--------------|--------------|--------------|------------|------------|------------|--------------|--------------|--------------|
| | 1 F | | | 2 J | | | Males | Females | Total |
| | Males | Females | Total | Males | Females | Total | | | |
| 6 | 8 | 7 | 15 | - | - | - | 8 | 7 | 15 |
| 7 | 231 | 202 | 433 | 1 | 2 | 3 | 232 | 204 | 436 |
| 8 | 469 | 428 | 897 | 4 | 7 | 11 | 473 | 435 | 908 |
| 9 | 591 | 341 | 932 | 9 | 7 | 16 | 600 | 348 | 948 |
| 10 | 1114 | 686 | 1800 | 24 | 15 | 39 | 1138 | 701 | 1839 |
| 11 | 2516 | 1719 | 4235 | 47 | 32 | 79 | 2563 | 1751 | 4314 |
| 12 | 4434 | 2559 | 6993 | 83 | 32 | 115 | 4517 | 2591 | 7108 |
| 13 | 8176 | 2317 | 10493 | 147 | 27 | 174 | 8323 | 2344 | 10667 |
| 14 | 6312 | 4619 | 10931 | 113 | 48 | 161 | 6425 | 4667 | 11092 |
| 15 | 6003 | 6517 | 12520 | 116 | 83 | 199 | 6119 | 6600 | 12719 |
| 16 | 1191 | 2692 | 3883 | 24 | 38 | 62 | 1215 | 2730 | 3945 |
| 17 | 569 | 1364 | 1933 | 15 | 18 | 33 | 584 | 1382 | 1966 |
| 18 | 72 | 130 | 202 | 3 | 5 | 8 | 75 | 135 | 210 |
| 19 | 4 | 12 | 16 | - | - | - | 4 | 12 | 16 |
| 20 | 1 | 4 | 5 | - | - | - | 1 | 4 | 5 |
| 21 | 1 | 1 | 2 | - | - | - | 1 | 1 | 2 |
| Total | 31692 | 23598 | 55290 | 586 | 314 | 900 | 32278 | 23912 | 56190 |

TABLE 6. Greenland halibut length composition (no. of individuals) of the Russian trawlers catch by months in the NAFO Div. 3L in 2002.

| Length, cm | | | | | | | | | | | | | Total 3L | |
|------------------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------|--------------|
| | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | | |
| 20 | | | | | | | 2 | | | | | | | 2 |
| 22 | | | | 1 | | 2 | 10 | | | | | | | 13 |
| 24 | | 3 | | 1 | | 6 | 20 | 5 | | | | | | 35 |
| 26 | | 7 | 3 | 3 | 6 | 15 | 41 | 9 | 2 | | | | | 86 |
| 28 | 14 | 86 | 38 | 5 | 6 | 27 | 57 | 13 | | | 7 | 9 | | 262 |
| 30 | 35 | 228 | 159 | 30 | 50 | 42 | 92 | 28 | | | 35 | 17 | | 716 |
| 32 | 72 | 490 | 358 | 76 | 170 | 124 | 195 | 48 | 19 | 3 | 28 | 24 | | 1607 |
| 34 | 90 | 517 | 407 | 150 | 330 | 211 | 300 | 110 | 40 | 5 | 141 | 41 | | 2342 |
| 36 | 171 | 776 | 554 | 153 | 470 | 310 | 363 | 192 | 78 | 7 | 174 | 110 | | 3358 |
| 38 | 295 | 1286 | 774 | 361 | 748 | 446 | 480 | 258 | 122 | 24 | 223 | 169 | | 5186 |
| 40 | 415 | 1757 | 1109 | 577 | 1115 | 562 | 663 | 332 | 205 | 45 | 324 | 281 | | 7385 |
| 42 | 478 | 1773 | 1026 | 675 | 1410 | 675 | 758 | 330 | 229 | 66 | 253 | 245 | | 7918 |
| 44 | 484 | 1554 | 951 | 696 | 1371 | 676 | 698 | 226 | 251 | 132 | 248 | 235 | | 7522 |
| 46 | 409 | 1240 | 696 | 503 | 1310 | 497 | 446 | 172 | 200 | 142 | 155 | 222 | | 5992 |
| 48 | 280 | 823 | 522 | 340 | 914 | 408 | 341 | 107 | 146 | 122 | 72 | 112 | | 4187 |
| 50 | 218 | 532 | 374 | 261 | 714 | 349 | 237 | 68 | 87 | 95 | 23 | 62 | | 3020 |
| 52 | 104 | 289 | 177 | 138 | 436 | 190 | 130 | 34 | 42 | 81 | 25 | 25 | | 1671 |
| 54 | 63 | 132 | 92 | 73 | 273 | 119 | 96 | 15 | 27 | 44 | 5 | 10 | | 949 |
| 56 | 18 | 54 | 56 | 32 | 167 | 78 | 46 | 8 | 17 | 19 | 2 | 4 | | 501 |
| 58 | 10 | 27 | 27 | 19 | 83 | 33 | 21 | | 8 | 28 | | 1 | | 257 |
| 60 | 8 | 24 | 15 | 12 | 58 | 25 | 16 | 3 | 1 | 10 | | 2 | | 174 |
| 62 | 4 | 11 | 17 | 6 | 50 | 16 | 11 | | 3 | 10 | 1 | 1 | | 130 |
| 64 | 6 | 9 | 6 | 10 | 26 | 10 | 7 | 1 | 1 | 6 | | | | 82 |
| 66 | 3 | 8 | 1 | 5 | 22 | 6 | 3 | | 2 | 3 | | | | 53 |
| 68 | 2 | 4 | 5 | 2 | 23 | 1 | 2 | | 1 | 1 | | | | 41 |
| 70 | 2 | 6 | 6 | 4 | 14 | 5 | 3 | | | | | 1 | | 41 |
| 72 | 4 | 3 | 7 | 2 | 10 | 2 | 1 | | | 2 | | | | 31 |
| 74 | 1 | 4 | 1 | | 5 | 2 | 4 | | | | | | | 17 |
| 76 | | 2 | 2 | 1 | 7 | 3 | 1 | 1 | | | | | | 17 |
| 78 | | 3 | 4 | 1 | 8 | | 1 | | | | | | | 17 |
| 80 | | 4 | 2 | | 6 | 5 | 2 | | | | | | | 19 |
| 82 | 1 | 2 | | 1 | 4 | 1 | 2 | 1 | | | | | | 12 |
| 84 | 1 | | 1 | | 2 | 3 | 1 | | | | | | | 8 |
| 86 | | | | | 3 | 4 | 2 | | | | | | | 9 |
| 88 | | | | 2 | 2 | | 3 | | | | | | | 7 |
| 90 | | 1 | 1 | | | 1 | | | | | | | | 3 |
| 92 | | | | 1 | 1 | | | | | | | | | 2 |
| 94 | | | | | | | 3 | | | | | | | 3 |
| 96 | | | | | 1 | | | | | | | | | 1 |
| Total | 3188 | 11655 | 7391 | 4141 | 9815 | 4854 | 5058 | 1961 | 1481 | 845 | 1716 | 1571 | | 53676 |
| Av. length, cm. | 43.7 | 42.4 | 42.3 | 43.9 | 44.9 | 43.9 | 42.4 | 41.6 | 44.0 | 48.1 | 41.1 | 42.7 | | 43.2 |

TABLE 7. Greenland halibut length composition (no. of individuals) of the Russian trawlers catch by months in the NAFO Div. 3M in 2002.

| Length, cm | Month | | | | | | | | Total 3M |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| | II | III | IV | V | VI | VII | VIII | XII | |
| 28 | 1 | | | | | | | | 1 |
| 30 | 5 | 2 | | 1 | | | | | 8 |
| 32 | 9 | 2 | | 10 | 3 | 1 | | 4 | 29 |
| 34 | 14 | 12 | 10 | 21 | 6 | 7 | | 1 | 71 |
| 36 | 74 | 10 | 16 | 31 | 19 | 7 | 1 | 7 | 165 |
| 38 | 91 | 23 | 62 | 47 | 32 | 19 | 4 | 12 | 290 |
| 40 | 157 | 55 | 107 | 101 | 41 | 64 | 6 | 48 | 579 |
| 42 | 177 | 41 | 168 | 174 | 84 | 141 | 13 | 83 | 881 |
| 44 | 185 | 16 | 265 | 221 | 104 | 223 | 19 | 98 | 1131 |
| 46 | 265 | 27 | 228 | 259 | 111 | 368 | 28 | 134 | 1420 |
| 48 | 247 | 30 | 227 | 251 | 119 | 387 | 35 | 95 | 1391 |
| 50 | 221 | 12 | 212 | 232 | 121 | 447 | 40 | 74 | 1359 |
| 52 | 151 | 4 | 115 | 140 | 119 | 403 | 41 | 46 | 1019 |
| 54 | 103 | 1 | 77 | 94 | 56 | 210 | 37 | 11 | 589 |
| 56 | 70 | 2 | 44 | 62 | 68 | 170 | 32 | 18 | 466 |
| 58 | 52 | 1 | 23 | 32 | 24 | 100 | 25 | 9 | 266 |
| 60 | 25 | | 14 | 15 | 14 | 54 | 11 | 4 | 137 |
| 62 | 17 | 1 | 12 | 12 | 14 | 37 | 5 | 1 | 99 |
| 64 | 13 | 1 | 12 | 5 | 12 | 18 | 6 | | 67 |
| 66 | 10 | 1 | 8 | 2 | 9 | 7 | 1 | | 38 |
| 68 | 4 | | 3 | 4 | 6 | 6 | 1 | | 24 |
| 70 | 3 | | 3 | 5 | 5 | 5 | 4 | 1 | 26 |
| 72 | 5 | | 2 | 1 | 1 | 3 | | | 12 |
| 74 | 3 | | 5 | 1 | 5 | 1 | | | 15 |
| 76 | 1 | | 2 | 3 | 3 | | | | 9 |
| 78 | 2 | | 2 | 2 | 4 | 1 | | | 11 |
| 80 | | | 3 | 3 | 2 | | | | 8 |
| 82 | | 1 | 1 | 1 | 1 | | | | 3 |
| 84 | 1 | | 3 | 1 | 1 | | | | 6 |
| 86 | | | 1 | 2 | 1 | | | | 4 |
| 88 | | | | | 1 | | | | 1 |
| 90 | | 1 | 1 | | 1 | | | | 3 |
| 92 | | | 1 | 1 | | | | | 2 |
| 94 | | | | | | | | | |
| 96 | 1 | | | | 1 | | | | 2 |
| Total | 1907 | 243 | 1627 | 1734 | 987 | 2679 | 309 | 646 | 10132 |
| Av. length, cm. | 47.6 | 43.6 | 47.9 | 47.9 | 49.8 | 50.3 | 52.0 | 46.8 | 48.6 |

TABLE 8. Greenland halibut length composition (no. of individuals) of the Russian trawlers catch by months in the NAFO Div. 3N in 2002.

| Length, cm | Month | | | | | | | | Total 3N |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| | I | II | III | V | VI | VII | VIII | XI | |
| 18 | | | 1 | | | | | | 1 |
| 20 | | | 2 | | | | | | 2 |
| 22 | | 1 | | | | | | | 1 |
| 24 | | | 1 | 1 | | | | | 2 |
| 26 | | | 1 | 3 | | | | | 4 |
| 28 | | 1 | 9 | 3 | 2 | 1 | | 1 | 17 |
| 30 | | 11 | 8 | 16 | 9 | | | 5 | 49 |
| 32 | 5 | 22 | 13 | 87 | 32 | 5 | 2 | 20 | 186 |
| 34 | 5 | 31 | 24 | 145 | 60 | 5 | 4 | 29 | 303 |
| 36 | 17 | 64 | 54 | 174 | 78 | 10 | 8 | 62 | 467 |
| 38 | 45 | 164 | 168 | 194 | 95 | 31 | 19 | 86 | 802 |
| 40 | 65 | 243 | 230 | 294 | 139 | 60 | 55 | 123 | 1209 |
| 42 | 75 | 348 | 331 | 345 | 162 | 104 | 56 | 172 | 1593 |
| 44 | 69 | 296 | 390 | 307 | 141 | 111 | 82 | 209 | 1605 |
| 46 | 68 | 257 | 409 | 213 | 136 | 149 | 93 | 289 | 1614 |
| 48 | 45 | 181 | 379 | 163 | 128 | 137 | 66 | 317 | 1416 |
| 50 | 20 | 118 | 262 | 133 | 74 | 137 | 58 | 263 | 1065 |
| 52 | 13 | 88 | 190 | 73 | 43 | 80 | 26 | 202 | 715 |
| 54 | 11 | 30 | 135 | 35 | 26 | 83 | 12 | 125 | 457 |
| 56 | 7 | 19 | 49 | 18 | 12 | 43 | 14 | 96 | 258 |
| 58 | 2 | 12 | 29 | 16 | 3 | 27 | 6 | 44 | 139 |
| 60 | 2 | 10 | 11 | 7 | 4 | 17 | 3 | 19 | 73 |
| 62 | 4 | 6 | 17 | 6 | 3 | 7 | 5 | 16 | 64 |
| 64 | 2 | | 12 | 4 | 4 | 16 | 5 | 6 | 49 |
| 66 | 1 | 9 | 14 | | | 3 | 4 | 6 | 37 |
| 68 | | 6 | 14 | 3 | | 8 | 2 | 4 | 37 |
| 70 | | 4 | 11 | 2 | 1 | 6 | 5 | 5 | 34 |
| 72 | 1 | 3 | 7 | 1 | | 9 | 4 | 3 | 28 |
| 74 | 1 | 4 | 3 | 2 | 2 | 7 | 3 | | 22 |
| 76 | | 3 | 5 | 2 | | 6 | 5 | 3 | 24 |
| 78 | | | 10 | | 1 | 6 | 1 | 4 | 22 |
| 80 | | 1 | 2 | 1 | | 2 | 1 | 1 | 8 |
| 82 | | 1 | 2 | 2 | | 5 | | 2 | 12 |
| 84 | | 3 | 2 | | | 4 | | 1 | 10 |
| 86 | | 2 | 2 | | | 4 | | | 8 |
| 88 | | | 3 | | | 2 | | | 5 |
| 90 | | | 1 | | | 1 | 1 | | 3 |
| 92 | | | | | | 1 | 1 | | 2 |
| 94 | | | 1 | | | | | | 1 |
| Total | 458 | 1938 | 2802 | 2250 | 1155 | 1087 | 541 | 2113 | 12344 |
| Av. length, cm. | 44.6 | 44.9 | 47.0 | 43.0 | 43.7 | 50.0 | 47.9 | 47.9 | 46.0 |

TABLE 9. Greenland halibut length composition (no. of individuals) of the Russian trawlers catch by months in the NAFO Div. 3O and 3LMNO in 2002.

| Length, Cm | Month | | | | | | | | | | | Total 3O | Total 3LMNO |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|----------------|
| | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | | |
| 12 | | | | 1 | | | | | | | | 1 | 1 |
| 14 | | | | | | | | 1 | 1 | 1 | | 3 | 3 |
| 16 | | | | | | | | | 2 | 3 | | 5 | 5 |
| 18 | | | 1 | 1 | | | | | | 1 | | 3 | 4 |
| 20 | | | 4 | 15 | | | | 1 | 2 | 2 | | 24 | 28 |
| 22 | | | 7 | 27 | | | | | 4 | 3 | | 41 | 55 |
| 24 | 1 | | 2 | 12 | | | | 3 | 12 | 18 | 1 | 49 | 86 |
| 26 | 2 | 1 | 10 | 4 | | | | 6 | 13 | 24 | | 60 | 150 |
| 28 | 4 | | 14 | 3 | | | | 5 | 15 | 18 | 1 | 60 | 340 |
| 30 | 1 | | 13 | 5 | | | | 1 | 7 | 21 | | 48 | 821 |
| 32 | | 1 | 5 | 1 | 1 | | | 4 | 8 | 12 | | 32 | 1854 |
| 34 | 4 | 5 | 4 | 1 | | | | 3 | 6 | 23 | 2 | 48 | 2764 |
| 36 | 4 | | 1 | | | 1 | 1 | 3 | 4 | 15 | 1 | 30 | 4020 |
| 38 | 12 | 1 | 4 | 1 | | | 1 | 5 | 11 | 5 | | 40 | 6318 |
| 40 | 17 | 5 | 2 | | | | 8 | 5 | 4 | 12 | 1 | 54 | 9227 |
| 42 | 25 | 6 | 6 | | | 5 | 18 | 12 | 17 | 10 | | 99 | 10491 |
| 44 | 22 | 3 | 3 | | | 4 | 22 | 25 | 14 | 17 | | 110 | 10368 |
| 46 | 35 | 4 | 1 | | 1 | 6 | 45 | 29 | 20 | 9 | | 150 | 9176 |
| 48 | 25 | 4 | 4 | | 1 | 7 | 35 | 28 | 28 | 10 | | 142 | 7136 |
| 50 | 13 | 9 | 1 | | | 6 | 40 | 20 | 23 | 8 | 1 | 121 | 5565 |
| 52 | 14 | | 3 | | | 8 | 26 | 19 | 21 | 11 | | 102 | 3507 |
| 54 | 7 | 2 | | | | 6 | 49 | 19 | 19 | 5 | | 107 | 2102 |
| 56 | 4 | 2 | 2 | | | 5 | 12 | 12 | 10 | 6 | | 53 | 1278 |
| 58 | 1 | 1 | 1 | | 1 | 1 | 9 | 5 | 10 | 3 | | 32 | 694 |
| 60 | 4 | 1 | 1 | | | 1 | 12 | 2 | 11 | 2 | | 34 | 418 |
| 62 | 1 | 1 | 2 | | | 1 | 4 | 2 | 3 | 1 | | 15 | 308 |
| 64 | 2 | 1 | | | | | 1 | 3 | 7 | 2 | | 16 | 214 |
| 66 | 1 | | 1 | | | 1 | 6 | 4 | 1 | 2 | | 16 | 144 |
| 68 | 1 | | | | | | 4 | 4 | 5 | 1 | | 15 | 117 |
| 70 | | | 1 | | | | 5 | 3 | 2 | | | 11 | 112 |
| 72 | 1 | | | | | | 2 | 3 | 3 | | | 9 | 80 |
| 74 | | | | | | | 1 | 1 | 1 | | | 3 | 57 |
| 76 | | | | | | | | 2 | 5 | | | 7 | 57 |
| 78 | | | | | | | | 1 | 2 | | | 3 | 53 |
| 80 | | | | | | | 3 | | 3 | 1 | | 7 | 42 |
| 82 | | | | | | | 2 | | 2 | | | 4 | 31 |
| 84 | | | | | | | | 1 | 3 | 1 | | 5 | 29 |
| 86 | | | | | | | | | | | | | 21 |
| 88 | | | | | | | | 1 | | | | 1 | 14 |
| 90 | | | | | | | | | | | | | 9 |
| 92 | | | | | | | | | 1 | | | 1 | 7 |
| 94 | | | | | | | | | | | | | 4 |
| 96 | 1 | | | | | | | | | | | 1 | 4 |
| Total | 202 | 47 | 93 | 71 | 4 | 52 | 306 | 233 | 300 | 247 | 7 | 1562 | 77714 |
| Av. length, cm. | 46.2 | 46.0 | 35.2 | 23.8 | 46.5 | 50.5 | 51.9 | 49.0 | 47.3 | 37.9 | 35.6 | 45.1 | 44.4 |

TABLE 10. Age composition of Greenland halibut catches in NAFO Div. 3LMNO in 2002, %.

| Age | Division | | | | | 3 LMNO |
|--------------|--------------|--------------|--------------|--------------|--|--------------|
| | 3 L | 3 M | 3 N | 3 O | | |
| 2 | 0.02 | - | 0.02 | 3.15 | | 0.08 |
| 3 | 0.92 | 0.03 | 0.25 | 12.14 | | 0.92 |
| 4 | 7.28 | 1.05 | 3.73 | 7.06 | | 5.90 |
| 5 | 23.41 | 7.79 | 15.76 | 7.84 | | 19.85 |
| 6 | 34.94 | 24.98 | 31.42 | 16.83 | | 32.72 |
| 7 | 27.05 | 44.25 | 35.47 | 29.61 | | 30.68 |
| 8 | 4.56 | 14.53 | 8.47 | 11.75 | | 6.62 |
| 9 | 0.79 | 3.58 | 1.74 | 3.66 | | 1.37 |
| 10 | 0.42 | 1.78 | 0.95 | 2.50 | | 0.72 |
| 11 | 0.26 | 1.01 | 0.77 | 2.12 | | 0.48 |
| 12 | 0.17 | 0.55 | 0.70 | 1.73 | | 0.33 |
| 13 | 0.08 | 0.22 | 0.34 | 0.77 | | 0.15 |
| 14 | 0.04 | 0.09 | 0.16 | 0.39 | | 0.07 |
| 15 | 0.03 | 0.07 | 0.11 | 0.26 | | 0.05 |
| 16 | 0.02 | 0.06 | 0.06 | 0.06 | | 0.03 |
| 17 | 0.01 | 0.02 | 0.02 | 0.06 | | 0.01 |
| 18 | - | - | - | - | | - |
| 19 | 0.004 | - | 0.01 | - | | 0.004 |
| 20 | - | - | - | - | | - |
| 21 | 0.002 | 0.02 | - | 0.06 | | 0.01 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | | 100.0 |

TABLE 11. Length composition (no. of individuals) of Roughhead grenadier in Russian trawlers catches by NAFO Div. 3LMNO in 2002.

| Length, cm | 3L | 3M | 3N | 3O | 3LMNO |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| 24 | 5 | | | | 5 |
| 27 | 8 | 1 | 3 | 1 | 13 |
| 30 | 37 | 8 | 12 | 3 | 60 |
| 33 | 127 | 21 | 21 | 7 | 176 |
| 36 | 281 | 33 | 57 | 47 | 418 |
| 39 | 576 | 61 | 72 | 78 | 787 |
| 42 | 675 | 83 | 130 | 113 | 1001 |
| 45 | 544 | 84 | 146 | 58 | 832 |
| 48 | 373 | 78 | 197 | 44 | 692 |
| 51 | 191 | 86 | 148 | 20 | 445 |
| 54 | 140 | 74 | 169 | 8 | 391 |
| 57 | 77 | 40 | 121 | 8 | 246 |
| 60 | 68 | 40 | 77 | 8 | 193 |
| 63 | 50 | 27 | 40 | 2 | 119 |
| 66 | 33 | 14 | 29 | 5 | 81 |
| 69 | 32 | 7 | 17 | 1 | 57 |
| 72 | 32 | 11 | 7 | 2 | 52 |
| 75 | 30 | 6 | 8 | | 44 |
| 78 | 21 | 5 | 5 | 1 | 32 |
| 81 | 12 | | 4 | | 16 |
| 84 | 2 | 2 | 1 | | 5 |
| 87 | 2 | | | | 2 |
| 90 | 1 | 1 | | | 2 |
| Total | 3317 | 682 | 1270 | 406 | 5675 |
| Av. length, cm. | 46,2 | 50,3 | 51,0 | 44,6 | 47,6 |

TABLE 12. Length composition of Redfish (indiv.) in catches by Russian trawlers by months. Div. 3L, 2002.

| Length, cm | Month | | | | | | | | Total |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | I | II | IV | V | VI | VII | VIII | IX | |
| 19 | | | | | | 1 | | | 1 |
| 20 | | | | | | | 3 | | 3 |
| 21 | | | | | 1 | 1 | | | 2 |
| 22 | | | | 2 | 1 | 6 | 3 | 1 | 13 |
| 23 | 1 | 2 | 8 | 7 | 5 | 13 | 3 | | 39 |
| 24 | 1 | 4 | 38 | 23 | 8 | 18 | 7 | | 99 |
| 25 | 2 | 6 | 55 | 63 | 3 | 19 | 12 | | 160 |
| 26 | 5 | 8 | 59 | 56 | 13 | 38 | 17 | 2 | 198 |
| 27 | 5 | 35 | 66 | 84 | 19 | 33 | 30 | 4 | 276 |
| 28 | 8 | 36 | 69 | 126 | 13 | 46 | 50 | 8 | 356 |
| 29 | 6 | 49 | 58 | 128 | 23 | 54 | 52 | 7 | 377 |
| 30 | 15 | 57 | 66 | 173 | 40 | 63 | 58 | 5 | 477 |
| 31 | 22 | 56 | 51 | 156 | 31 | 86 | 109 | 2 | 513 |
| 32 | 18 | 56 | 40 | 120 | 47 | 104 | 125 | 8 | 518 |
| 33 | 12 | 52 | 43 | 160 | 38 | 113 | 141 | 5 | 564 |
| 34 | 10 | 47 | 29 | 148 | 37 | 87 | 117 | 10 | 485 |
| 35 | 4 | 47 | 22 | 139 | 31 | 80 | 117 | 6 | 446 |
| 36 | 2 | 23 | 6 | 56 | 16 | 37 | 60 | 3 | 203 |
| 37 | 3 | 22 | 6 | 36 | 7 | 29 | 36 | 3 | 142 |
| 38 | 2 | 13 | 3 | 11 | 5 | 15 | 19 | 1 | 69 |
| 39 | 1 | 3 | 2 | 2 | 1 | 6 | 6 | 1 | 22 |
| 40 | | 5 | 2 | 2 | 1 | 2 | 3 | | 15 |
| 41 | | 2 | 1 | | | 3 | 1 | | 7 |
| 42 | | | | | 1 | 3 | 2 | | 6 |
| 43 | | 1 | | 1 | | 2 | 2 | | 6 |
| 44 | | 1 | | | | 1 | | 1 | 3 |
| 45 | | | | | | 1 | 2 | | 4 |
| Total | 117 | 525 | 624 | 1493 | 341 | 861 | 975 | 67 | 5004 |
| Length, av., cm. | 31.1 | 31.8 | 29.1 | 31.0 | 31.4 | 31.6 | 32.3 | 31.8 | 31.1 |

TABLE 13. Length composition of Redfish (indiv.) in catches by Russian trawlers by months. Div. 3M, 2002.

| Length, cm | Month | | | | | | Total |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| | II | III | V | VI | VII | VIII | |
| 8 | | | | | | 1 | 1 |
| 9 | | | | | | | |
| 10 | | | | | | 1 | 1 |
| 11 | | | 1 | | | | 1 |
| 12 | | | 3 | | | | 3 |
| 13 | | | 5 | | | | 5 |
| 14 | | | 8 | | | | 8 |
| 15 | | | 11 | 2 | 2 | | 15 |
| 16 | | | 24 | 3 | 9 | | 36 |
| 17 | | | 28 | 30 | 28 | | 86 |
| 18 | | | 36 | 64 | 72 | 1 | 173 |
| 19 | | | 75 | 137 | 124 | 5 | 341 |
| 20 | | | 85 | 201 | 257 | 18 | 561 |
| 21 | | | 60 | 151 | 340 | 31 | 582 |
| 22 | | | 52 | 121 | 294 | 53 | 520 |
| 23 | 1 | | 53 | 213 | 311 | 39 | 617 |
| 24 | 3 | 1 | 52 | 224 | 483 | 49 | 812 |
| 25 | 4 | | 51 | 293 | 564 | 65 | 977 |
| 26 | 6 | | 51 | 238 | 676 | 92 | 1063 |
| 27 | 8 | | 53 | 232 | 793 | 123 | 1209 |
| 28 | 18 | | 60 | 297 | 890 | 165 | 1430 |
| 29 | 39 | 1 | 72 | 195 | 858 | 159 | 1324 |
| 30 | 42 | 1 | 83 | 175 | 843 | 166 | 1310 |
| 31 | 40 | | 50 | 104 | 511 | 120 | 825 |
| 32 | 28 | 1 | 53 | 36 | 303 | 83 | 504 |
| 33 | 19 | | 37 | 12 | 134 | 43 | 245 |
| 34 | 15 | | 25 | 4 | 63 | 13 | 120 |
| 35 | 14 | | 17 | 2 | 26 | 11 | 70 |
| 36 | 11 | | 6 | | 22 | | 39 |
| 37 | 10 | | 6 | | 19 | 2 | 37 |
| 38 | 6 | | 1 | | 6 | 1 | 14 |
| 39 | 8 | | | | 9 | | 17 |
| 40 | 3 | | | | 10 | | 13 |
| 41 | 1 | | | | 1 | | 2 |
| Total | 276 | 4 | 1058 | 2734 | 7650 | 1239 | 12961 |
| Length, av., cm. | 31.5 | 28.8 | 25.1 | 25.0 | 26.9 | 28.0 | 26.5 |

TABLE 14. Redfish age composition in the NAFO Div. 3M in 2002.

| Age, Years | Juveniles | | Males | | Females | | Total | |
|---------------|-----------|--------------|-------------|--------------|-------------|--------------|--------------|--------------|
| | n | % | n | % | n | % | n | % |
| 2 | 3 | 27.3 | | | | | 3 | 0.02 |
| 3 | 6 | 54.5 | 4 | 0.1 | 17 | 0.3 | 27 | 0.2 |
| 4 | 2 | 18.2 | 142 | 2.3 | 149 | 2.2 | 293 | 2.3 |
| 5 | | | 477 | 7.6 | 471 | 7.1 | 948 | 7.3 |
| 6 | | | 616 | 9.8 | 837 | 12.6 | 1453 | 11.2 |
| 7 | | | 1128 | 18.0 | 841 | 12.6 | 1969 | 15.2 |
| 8 | | | 1256 | 20.0 | 1031 | 15.5 | 2287 | 17.7 |
| 9 | | | 1377 | 22.0 | 864 | 13.0 | 2241 | 17.3 |
| 10 | | | 778 | 12.4 | 798 | 12.0 | 1576 | 12.2 |
| 11 | | | 285 | 4.5 | 860 | 12.9 | 1145 | 8.9 |
| 12 | | | 92 | 1.5 | 508 | 7.6 | 600 | 4.6 |
| 13 | | | 39 | 0.6 | 137 | 2.1 | 176 | 1.4 |
| 14 | | | 62 | 1.0 | 33 | 0.5 | 95 | 0.7 |
| 15 | | | 13 | 0.2 | 71 | 1.1 | 84 | 0.6 |
| 16 | | | 5 | 0.1 | 36 | 0.5 | 41 | 0.3 |
| Total | 11 | 100.0 | 6274 | 100.0 | 6653 | 100.0 | 12938 | 100.0 |

TABLE 15. Length composition of redfish (indiv.) in catches by Russian trawlers by months. Div. 3N, 2002.

| Length, Cm | Month | | | | | | | | | Total | |
|-----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-----|
| | I | II | III | V | VII | VIII | IX | X | XI | | |
| 17 | | | | | | | | | | 1 | 1 |
| 18 | | | | | | | | 2 | | 7 | 9 |
| 19 | | | | | | | | 3 | 2 | 17 | 22 |
| 20 | | | | | | | | 11 | 7 | 11 | 29 |
| 21 | | | | | | | | 23 | 13 | 14 | 50 |
| 22 | | | | | | | | 21 | 44 | 25 | 90 |
| 23 | | | 2 | | 1 | | | 44 | 53 | 26 | 126 |
| 24 | | | 3 | | | | | 51 | 56 | 28 | 138 |
| 25 | | | 5 | | 1 | | | 30 | 36 | 26 | 98 |
| 26 | 1 | | 5 | | 3 | | | 41 | 29 | 40 | 119 |
| 27 | 3 | | 6 | 1 | 5 | | | 23 | 23 | 32 | 93 |
| 28 | 2 | | 3 | 1 | 10 | 1 | | 27 | 29 | 36 | 109 |
| 29 | 3 | | 11 | 1 | 19 | 9 | | 17 | 21 | 26 | 107 |
| 30 | 4 | | 11 | 1 | 19 | 8 | 2 | 9 | 20 | 24 | 98 |
| 31 | 7 | | 7 | 6 | 27 | 25 | 3 | 5 | 14 | 36 | 130 |
| 32 | 20 | | 10 | 6 | 43 | 44 | 25 | 1 | 18 | 42 | 209 |
| 33 | 19 | | 6 | 9 | 46 | 76 | 21 | 3 | 9 | 36 | 225 |
| 34 | 20 | | 15 | 8 | 48 | 48 | 39 | 1 | 2 | 49 | 230 |
| 35 | 13 | | 4 | 4 | 43 | 60 | 66 | 1 | 3 | 48 | 242 |
| 36 | 7 | | 6 | 4 | 36 | 21 | 44 | | | 39 | 157 |
| 37 | 13 | | 5 | 3 | 10 | 22 | 25 | 1 | | 27 | 106 |
| 38 | 12 | | 3 | 4 | 4 | | 15 | | | 15 | 53 |
| 39 | 7 | | 4 | 1 | | | 2 | | | 6 | 20 |
| 40 | 2 | | 1 | | 1 | | 2 | | | 7 | 13 |
| 41 | 1 | | | | | | | | | 4 | 5 |
| 42 | | | | | | | | | | 2 | 2 |
| 43 | | | | | | | | | | 1 | 1 |
| 44 | 1 | | | | | | | | | | 1 |
| Total | 135 | 107 | 49 | 316 | 314 | 244 | 314 | 379 | 625 | 2483 | |
| Length, av., cm. | 34.2 | 31.4 | 33.6 | 32.9 | 33.5 | 34.9 | 25.0 | 25.7 | 29.8 | 30.3 | |

TABLE 16. Length composition of redfish (indiv.) in catches by Russian trawlers by months. Div. 3O, 2002.

| Length, cm | Month | | | | | | | | | | Total |
|-------------------------|--------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
| | I | II | III | IV | V | VI | VIII | IX | X | XI | |
| 11 | | | 2 | | | | | | | | 2 |
| 12 | | | 2 | | | | | | | | 2 |
| 13 | | | 2 | 1 | | | | | | | 3 |
| 14 | | | 6 | 2 | | | | | | | 8 |
| 15 | 8 | 3 | 14 | 15 | | | | | | | 40 |
| 16 | 16 | 24 | 60 | 16 | | 2 | | | | | 118 |
| 17 | 54 | 54 | 80 | 18 | 2 | 2 | | | | | 210 |
| 18 | 124 | 141 | 274 | 89 | 16 | 6 | | | | | 650 |
| 19 | 237 | 225 | 421 | 145 | 40 | 28 | | | | | 1096 |
| 20 | 458 | 494 | 915 | 364 | 103 | 50 | | | | | 2384 |
| 21 | 848 | 760 | 1214 | 432 | 189 | 99 | 2 | | 5 | | 3549 |
| 22 | 1434 | 1240 | 1627 | 733 | 369 | 206 | 12 | 5 | 4 | 1 | 5631 |
| 23 | 1509 | 947 | 1807 | 587 | 592 | 541 | 24 | 6 | 6 | 2 | 6021 |
| 24 | 1696 | 947 | 1726 | 669 | 532 | 775 | 36 | 10 | 6 | | 6397 |
| 25 | 1739 | 898 | 1330 | 390 | 330 | 521 | 24 | 6 | 7 | | 5245 |
| 26 | 1301 | 632 | 814 | 282 | 272 | 571 | 17 | 8 | 6 | | 3903 |
| 27 | 1270 | 623 | 575 | 212 | 270 | 550 | 22 | 5 | 1 | | 3528 |
| 28 | 700 | 324 | 311 | 124 | 156 | 275 | 17 | 4 | 4 | | 1915 |
| 29 | 450 | 161 | 166 | 51 | 73 | 131 | 10 | 7 | 2 | 1 | 1052 |
| 30 | 301 | 138 | 101 | 27 | 63 | 97 | 11 | 5 | | | 743 |
| 31 | 147 | 94 | 66 | 10 | 33 | 32 | 4 | 2 | 1 | | 389 |
| 32 | 153 | 75 | 47 | 9 | 32 | 15 | 8 | 1 | | | 340 |
| 33 | 109 | 28 | 31 | 6 | 16 | 6 | 12 | 1 | | | 209 |
| 34 | 84 | 36 | 14 | 1 | 7 | 2 | 12 | 2 | | | 158 |
| 35 | 75 | 26 | 14 | 1 | 3 | 4 | 11 | 1 | | | 135 |
| 36 | 29 | 15 | 10 | | 1 | | 12 | | | | 67 |
| 37 | 21 | 11 | 6 | | 3 | | 13 | 1 | 1 | | 56 |
| 38 | 11 | 7 | | 1 | | | 9 | | 1 | | 29 |
| 39 | 8 | 7 | 1 | | 1 | | 3 | 1 | | | 21 |
| 40 | 4 | 3 | 2 | | | | 5 | | | | 14 |
| 41 | | 3 | 1 | | | | 3 | 1 | | | 8 |
| 42 | 1 | 1 | | | | | 2 | | | | 4 |
| 43 | 1 | 1 | | | | | 3 | | | | 5 |
| 44 | | 1 | | | | | 4 | | | | 5 |
| 45 | | | | | | | 1 | | | | 1 |
| 46 | 1 | | | | | | | | | | 1 |
| 52 | | | | | | | | 1 | | | 1 |
| Total | 12789 | 7919 | 11639 | 4185 | 3103 | 3913 | 277 | 67 | 44 | 4 | 43940 |
| Length, av., cm. | 24.8 | 23.9 | 23.3 | 23.1 | 24.4 | 25.1 | 29.4 | 27.5 | 25.2 | 24.3 | 24.1 |

TABLE 17. Redfish age composition in the NAFO Div. 3O in 2002.

| Age, Years | Males | | Females | | Total | |
|---------------|--------------|--------------|--------------|--------------|--------------|--------------|
| | n | % | n | % | n | % |
| 4 | 27 | 0.1 | | | 27 | 0.06 |
| 5 | 880 | 4.2 | 624 | 2.8 | 1504 | 3.4 |
| 6 | 4879 | 23.0 | 2348 | 10.4 | 7227 | 16.5 |
| 7 | 11124 | 52.5 | 8145 | 36.1 | 19269 | 44.0 |
| 8 | 3282 | 15.5 | 5365 | 23.8 | 8647 | 19.7 |
| 9 | 660 | 3.1 | 2503 | 11.1 | 3163 | 7.2 |
| 10 | 189 | 0.9 | 1907 | 8.4 | 2096 | 4.8 |
| 11 | 60 | 0.3 | 660 | 2.9 | 720 | 1.6 |
| 12 | 26 | 0.1 | 346 | 1.5 | 372 | 0.8 |
| 13 | 13 | 0.1 | 396 | 1.8 | 409 | 0.9 |
| 14 | 12 | 0.1 | 122 | 0.5 | 134 | 0.3 |
| 15 | 14 | 0.1 | 120 | 0.5 | 134 | 0.3 |
| 16 | 13 | 0.1 | 10 | 0.04 | 23 | 0.05 |
| 17 | 16 | 0.1 | 28 | 0.1 | 44 | 0.1 |
| 18 | 6 | 0.03 | 5 | 0.02 | 11 | 0.02 |
| 19 | | | 6 | 0.03 | 6 | 0.01 |
| 20 | | | 2 | 0.01 | 2 | + |
| 21 | | | 1 | + | 1 | + |
| 22 | | | | | | |
| 23 | | | | | | |
| 24 | | | | | | |
| 25 | | | | | | |
| 26 | | | | | | |
| 27 | | | | + | 1 | + |
| Total | 21201 | 100.0 | 22589 | 100.0 | 43790 | 100.0 |

TABLE 18. Length composition (no. of individuals) of American plaice in Russian trawlers catches in NAFO Div. 3LMNO in 2002.

| Length, cm | 3L | 3M | 3N | 3O | 3LMNO |
|------------------------|-------------|-------------|-------------|-------------|--------------|
| 22 | | | 9 | 176 | 185 |
| 24 | 5 | | 27 | 348 | 380 |
| 26 | 9 | | 49 | 354 | 412 |
| 28 | 21 | | 100 | 196 | 317 |
| 30 | 56 | | 173 | 196 | 425 |
| 32 | 120 | | 306 | 315 | 741 |
| 34 | 158 | | 390 | 390 | 938 |
| 36 | 286 | | 500 | 460 | 1246 |
| 38 | 336 | 2 | 566 | 504 | 1408 |
| 40 | 209 | | 461 | 618 | 1288 |
| 42 | 173 | 2 | 398 | 708 | 1281 |
| 44 | 97 | 3 | 360 | 632 | 1092 |
| 46 | 76 | 1 | 360 | 464 | 901 |
| 48 | 39 | 1 | 311 | 375 | 726 |
| 50 | 24 | 3 | 239 | 316 | 582 |
| 52 | 7 | 5 | 210 | 230 | 452 |
| 54 | 2 | 2 | 148 | 227 | 379 |
| 56 | | | 128 | 124 | 252 |
| 58 | | | 68 | 86 | 154 |
| 60 | | | 56 | 45 | 101 |
| 62 | | | 22 | 14 | 36 |
| 64 | | | 12 | 12 | 24 |
| 66 | | | 9 | 9 | 18 |
| 68 | | | 4 | 3 | 7 |
| 70 | | | 1 | 1 | 2 |
| 72 | | | | 1 | 1 |
| Total | 1618 | 19 | 4907 | 6804 | 13348 |
| Av. length, cm. | 38,7 | 48,1 | 42,0 | 40,3 | 40,7 |

TABLE 19. Length composition (no. of individuals) of Witch flounder in Russian trawlers catches in NAFO Divs. 3LMNO in 2002.

| Length, cm | 3L | 3M | 3N | 3O | 3LMNO |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| 22 | | | | 1 | 1 |
| 24 | | | 1 | 5 | 6 |
| 26 | | 1 | 1 | 19 | 21 |
| 28 | 1 | | 7 | 16 | 24 |
| 30 | 4 | | 18 | 38 | 60 |
| 32 | 11 | 2 | 32 | 91 | 136 |
| 34 | 13 | 1 | 87 | 115 | 216 |
| 36 | 21 | 5 | 126 | 156 | 308 |
| 38 | 29 | 3 | 115 | 246 | 393 |
| 40 | 17 | 8 | 44 | 245 | 314 |
| 42 | 15 | 9 | 54 | 220 | 298 |
| 44 | 10 | 8 | 26 | 132 | 176 |
| 46 | 3 | 7 | 23 | 87 | 120 |
| 48 | 1 | 7 | 13 | 87 | 108 |
| 50 | | 3 | 6 | 29 | 38 |
| 52 | | 2 | 7 | 10 | 19 |
| 54 | 2 | 1 | 1 | 6 | 10 |
| 56 | | | | 4 | 4 |
| 58 | | 1 | 1 | 1 | 3 |
| Total | 127 | 58 | 562 | 1508 | 2255 |
| Av. length, cm. | 38,6 | 43,5 | 38,4 | 40,0 | 39,6 |

TABLE 20. Length composition (no. of individuals) of Yellowtail flounder in Russian trawlers catches in NAFO Div. 3MN in 2002.

| Length, cm | 3M | 3N | 3MN |
|------------------------|-------------|-------------|-------------|
| 24 | | 15 | 15 |
| 26 | | 59 | 59 |
| 28 | | 122 | 122 |
| 30 | | 175 | 175 |
| 32 | | 286 | 286 |
| 34 | | 400 | 400 |
| 36 | | 464 | 464 |
| 38 | | 502 | 502 |
| 40 | | 291 | 291 |
| 42 | | 202 | 202 |
| 44 | 1 | 108 | 109 |
| 46 | | 48 | 48 |
| 48 | | 33 | 33 |
| 50 | | 13 | 13 |
| 52 | | 4 | 4 |
| 54 | | 5 | 5 |
| Total | 1 | 2727 | 2728 |
| Av. length, cm. | 44,5 | 36,8 | 36,8 |

TABLE 21. Length composition (no. of individuals) of Atlantic cod in Russian trawlers catches in NAFO Div. 3LMNO in 2002.

| Length, cm | 3L | 3M | 3N | 3O | 3LMNO |
|------------------------|-------------|-------------|-------------|-------------|--------------|
| 27 | 1 | | | | 1 |
| 30 | 19 | | | 13 | 32 |
| 33 | 70 | | 6 | 36 | 112 |
| 36 | 113 | | 24 | 82 | 219 |
| 39 | 145 | | 42 | 213 | 400 |
| 42 | 159 | 1 | 100 | 386 | 646 |
| 45 | 163 | 2 | 141 | 613 | 919 |
| 48 | 150 | 9 | 214 | 828 | 1201 |
| 51 | 98 | 11 | 281 | 879 | 1269 |
| 54 | 89 | 2 | 352 | 940 | 1383 |
| 57 | 50 | | 311 | 783 | 1144 |
| 60 | 33 | 1 | 238 | 631 | 903 |
| 63 | 17 | 6 | 198 | 531 | 752 |
| 66 | 9 | 5 | 139 | 344 | 497 |
| 69 | 5 | 6 | 94 | 220 | 325 |
| 72 | 5 | 9 | 58 | 153 | 225 |
| 75 | 4 | 10 | 46 | 97 | 157 |
| 78 | 1 | 6 | 44 | 69 | 120 |
| 81 | 1 | 15 | 34 | 53 | 103 |
| 84 | 2 | 13 | 28 | 46 | 89 |
| 87 | 2 | 11 | 26 | 35 | 74 |
| 90 | | 7 | 20 | 38 | 65 |
| 93 | | 3 | 23 | 27 | 53 |
| 96 | | 5 | 19 | 10 | 34 |
| 99 | | 1 | 17 | 13 | 31 |
| 102 | | 2 | 24 | 9 | 35 |
| 105 | | | 13 | 6 | 19 |
| 108 | | | 10 | | 10 |
| 111 | | | 3 | | 3 |
| 114 | | | 4 | 1 | 5 |
| 117 | | | 5 | | 5 |
| 120 | | | 4 | | 4 |
| 123 | | | 2 | | 2 |
| 135 | | | | 1 | 1 |
| Total | 1136 | 125 | 2520 | 7058 | 10839 |
| Av. length, cm. | 46,5 | 74,9 | 60,5 | 56,4 | 56,5 |

TABLE 22. Length composition (no. of individuals) of Red hake in Russian trawlers catches in NAFO Div. 3LMN in 2002.

| Length, cm | 3L | 3M | 3N | 3LMN |
|------------------------|-------------|-------------|-------------|-------------|
| 15 | | | 1 | 1 |
| 18 | | | | 0 |
| 21 | 2 | 1 | | 3 |
| 24 | 5 | 1 | | 6 |
| 27 | 69 | 6 | | 75 |
| 30 | 400 | 33 | 1 | 434 |
| 33 | 704 | 81 | 3 | 788 |
| 36 | 758 | 104 | 17 | 879 |
| 39 | 561 | 91 | 27 | 679 |
| 42 | 288 | 27 | 15 | 330 |
| 45 | 90 | 9 | 6 | 105 |
| 48 | 15 | 2 | 3 | 20 |
| 51 | 3 | | | 3 |
| Total | 2895 | 356 | 72 | 3323 |
| Av. length, cm. | 36,7 | 37,0 | 40,4 | 36,8 |

TABLE 23. Length composition (no. of individuals) of White hake in Russian trawlers catches in NAFO Div. 3LMNO in 2002.

| Length, cm | 3L | 3M | 3N | 3O | 3LMNO |
|----------------|------|------|------|-------|-------|
| 9 | | 2 | | | 2 |
| 12 | | 8 | | | 8 |
| 15 | | 8 | | | 8 |
| 18 | | 20 | | 2 | 22 |
| 21 | | 7 | | 5 | 12 |
| 24 | | 11 | 1 | 23 | 35 |
| 27 | | 2 | | 34 | 36 |
| 30 | | 2 | | 75 | 77 |
| 33 | | 1 | 1 | 88 | 90 |
| 36 | | | 1 | 131 | 132 |
| 39 | | | 5 | 551 | 556 |
| 42 | | | 34 | 1667 | 1701 |
| 45 | | | 56 | 2706 | 2762 |
| 48 | | | 35 | 2747 | 2782 |
| 51 | | | 36 | 1552 | 1588 |
| 54 | | | 36 | 1007 | 1043 |
| 57 | 1 | | 34 | 661 | 696 |
| 60 | | | 19 | 413 | 432 |
| 63 | 1 | | 9 | 315 | 325 |
| 66 | | | 4 | 188 | 192 |
| 69 | | | 5 | 133 | 138 |
| 72 | | | 4 | 99 | 103 |
| 75 | 1 | | 2 | 68 | 71 |
| 78 | | | 4 | 48 | 52 |
| 81 | | | 1 | 15 | 16 |
| 84 | | | | 12 | 12 |
| 87 | | | | 9 | 9 |
| 90 | | | | 4 | 4 |
| 93 | | | 2 | 1 | 3 |
| 96 | | | 2 | 4 | 6 |
| 99 | | | | 3 | 3 |
| 102 | | | | | |
| 105 | | | | 1 | 1 |
| 108 | | | | 1 | 1 |
| Total | 3 | 61 | 291 | 12563 | 12918 |
| Av. length, cm | 66,0 | 18,9 | 53,1 | 49,9 | 49,8 |

TABLE 24. Length composition (no. of individuals) of Thorny skate in Russian trawlers catches in NAFO Div. 3LMNO in 2002.

| Length, cm | 3L | 3M | 3N | 3O | 3LMNO |
|------------------------|-------------|-------------|--------------|-------------|--------------|
| 30 | 1 | | 5 | | 6 |
| 33 | 9 | 1 | 36 | | 46 |
| 36 | 34 | 3 | 79 | 6 | 122 |
| 39 | 160 | 4 | 188 | 8 | 360 |
| 42 | 202 | 19 | 360 | 40 | 621 |
| 45 | 243 | 22 | 713 | 58 | 1036 |
| 48 | 237 | 20 | 1112 | 80 | 1449 |
| 51 | 180 | 19 | 1322 | 117 | 1638 |
| 54 | 112 | 16 | 1218 | 136 | 1482 |
| 57 | 86 | 15 | 1240 | 136 | 1477 |
| 60 | 56 | 17 | 1096 | 140 | 1309 |
| 63 | 41 | 9 | 930 | 121 | 1101 |
| 66 | 34 | 7 | 754 | 114 | 909 |
| 69 | 30 | 6 | 530 | 93 | 659 |
| 72 | 24 | 6 | 344 | 73 | 447 |
| 75 | 9 | 2 | 219 | 63 | 293 |
| 78 | 7 | | 107 | 62 | 176 |
| 81 | 4 | | 62 | 18 | 84 |
| 84 | 2 | | 32 | 15 | 49 |
| 87 | | | 16 | 6 | 22 |
| 90 | | | 7 | 3 | 10 |
| 93 | 1 | | | 1 | 2 |
| 96 | 1 | | | | 1 |
| 99 | | | | | |
| 102 | | | 1 | | 1 |
| 105 | | | | | |
| 108 | | | | | |
| 111 | | | | | |
| 114 | | 1 | | | 1 |
| Total | 1473 | 168 | 10371 | 1290 | 13302 |
| Av. length, cm. | 50,3 | 54,4 | 57,5 | 61,5 | 57,0 |

TABLE 25. Length composition (no. of individuals) of Spinytail skate in Russian trawlers catches in NAFO Div. 3LMNO in 2002.

| Length, cm | 3L | 3M | 3N | 3O | 3LMNO |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| 39 | 1 | | 1 | | 2 |
| 42 | 3 | 2 | | | 5 |
| 45 | | | | | |
| 48 | | 3 | 1 | | 4 |
| 51 | 3 | | 3 | | 6 |
| 54 | 3 | 1 | | 1 | 5 |
| 57 | 1 | 1 | 1 | 1 | 4 |
| 60 | 2 | 2 | 2 | 4 | 10 |
| 63 | 2 | 2 | 1 | | 5 |
| 66 | 4 | 2 | | | 6 |
| 69 | | | | 1 | 1 |
| 72 | 4 | 5 | | 1 | 10 |
| 75 | | 4 | 3 | 1 | 8 |
| 78 | 3 | 2 | 1 | 1 | 7 |
| 81 | 1 | 3 | 2 | 2 | 8 |
| 84 | 2 | 2 | 2 | | 6 |
| 87 | 1 | 2 | 3 | | 6 |
| 90 | 2 | 3 | 3 | 1 | 9 |
| 93 | 1 | 3 | 1 | | 5 |
| 96 | | 1 | 3 | 1 | 5 |
| 99 | | 7 | 1 | | 8 |
| 102 | | 3 | | | 3 |
| 105 | | 6 | 1 | | 7 |
| 108 | 1 | 4 | | | 5 |
| 111 | | 1 | 2 | | 3 |
| 114 | | 1 | 1 | | 2 |
| 117 | | 1 | | | 1 |
| 120 | 1 | | 1 | | 2 |
| 123 | | 2 | | | 2 |
| 126 | | 2 | | | 2 |
| 129 | | 2 | | | 2 |
| 132 | | 1 | | | 1 |
| 135 | | | | | |
| 138 | | 1 | | | 1 |
| 141 | | 2 | | | 2 |
| 144 | | | | | |
| 146 | | 1 | | | 1 |
| 156 | | | | 1 | 1 |
| 177 | | | 1 | | 1 |
| Total | 35 | 72 | 35 | 8 | 150 |
| Av. length, cm. | 67,1 | 90,0 | 83,6 | 81,6 | 82,7 |

TABLE 26. Silver hake length composition of the Russian trawlers catch in the NAFO Div. 4W (200-mile zone of Canada) in 2002.

| Length, cm | Number of individuals |
|----------------|-----------------------|
| 19 | 1 |
| 20 | 2 |
| 21 | 13 |
| 22 | 35 |
| 23 | 102 |
| 24 | 346 |
| 25 | 837 |
| 26 | 1269 |
| 27 | 1012 |
| 28 | 579 |
| 29 | 378 |
| 30 | 154 |
| 31 | 67 |
| 32 | 35 |
| 33 | 20 |
| 34 | 9 |
| 35 | 2 |
| 36 | 1 |
| 37 | |
| 38 | 1 |
| 39 | 1 |
| Total | 4864 |
| Av. length, cm | 26.5 |

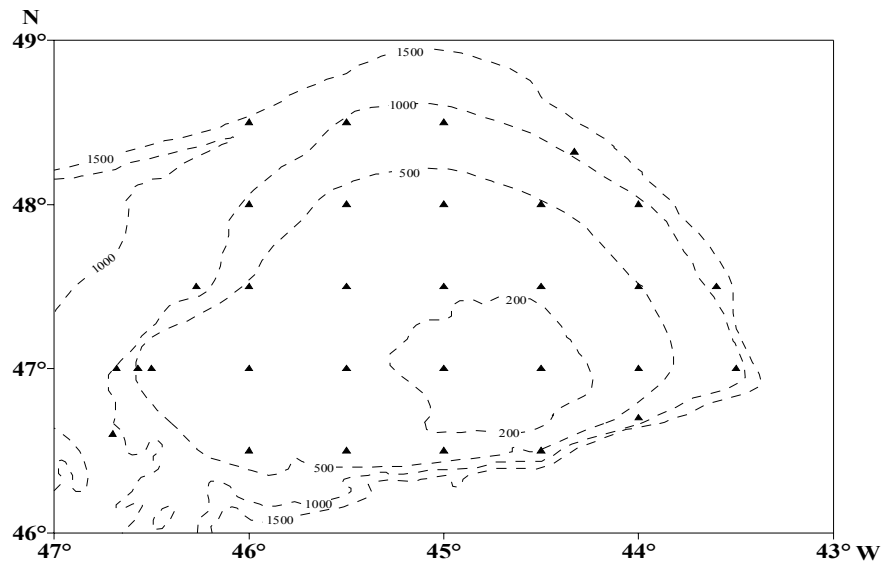


Fig. 1 Location of oceanographic stations, 31.05 -10.06.2002

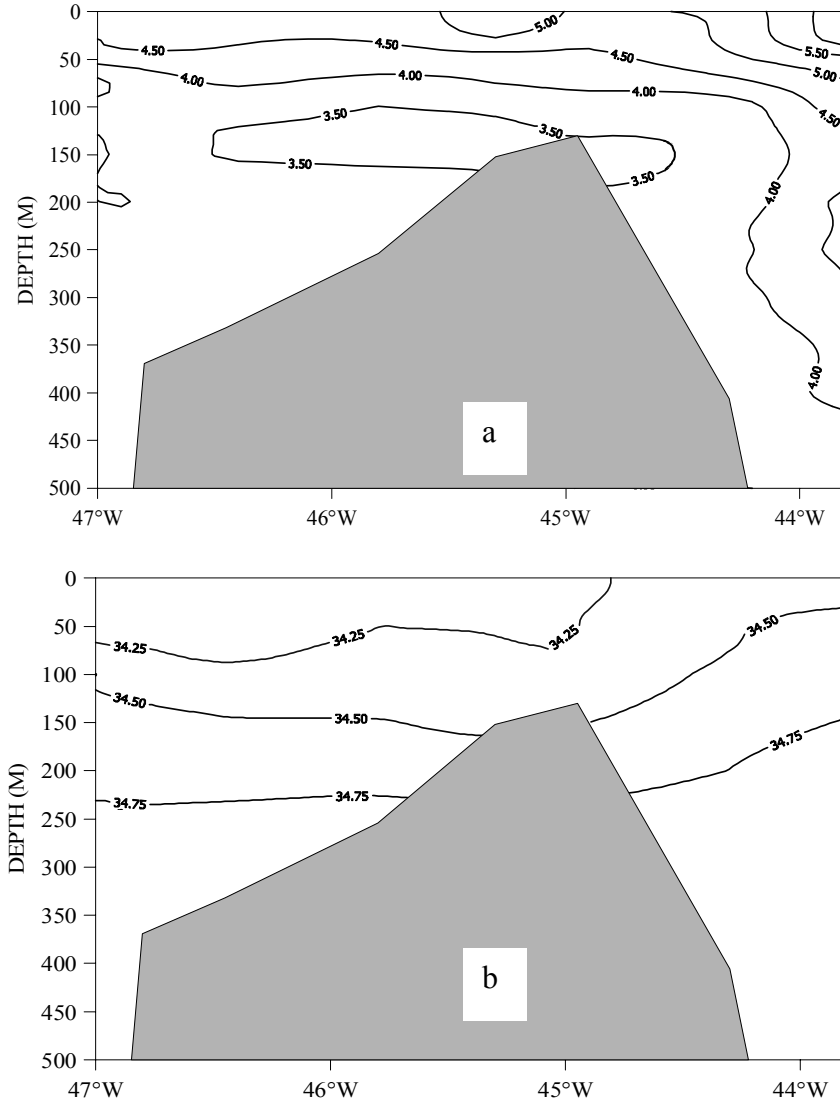


Fig. 2. Vertical distribution of temperature ($^{\circ}\text{C}$) (a) and salinity (b) over the Flemish Cap Bank (along 47°N) in June 2002.

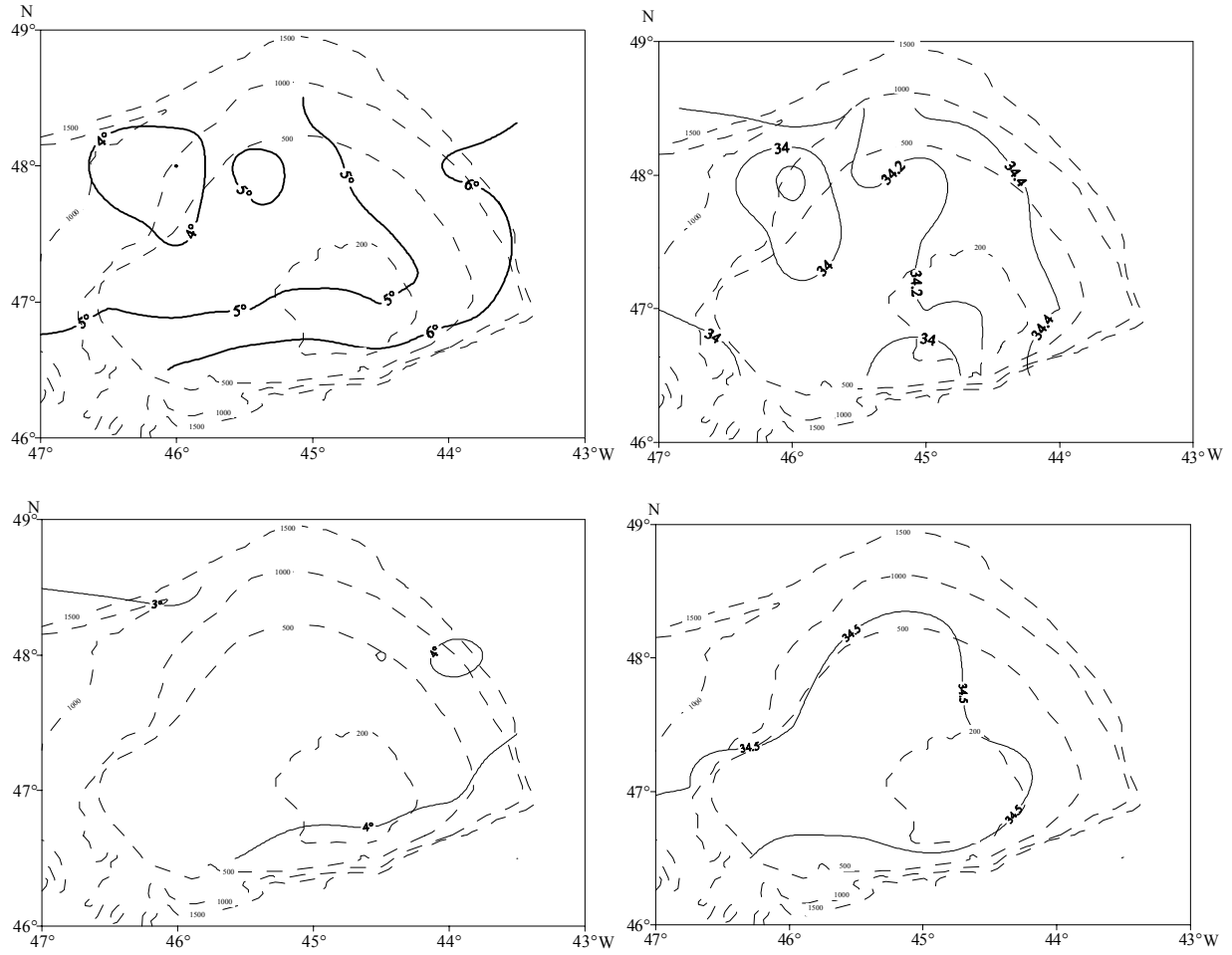


Fig. 3. Temperature ($^{\circ}\text{C}$) and salinity distribution on the surface (a, b) and in 100 m layer (c, d) in the Flemish Cap area in June 2002