



## SCIENTIFIC COUNCIL MEETING – JUNE 2007

## Russian Research Report for 2006

by

**A.A. Vaskov, K.V. Gorchinsky, S.F. Lisovsky, M.V. Pochtar**

Polar Research Institute of Marine Fisheries and Oceanography (PINRO)  
6 Knipovich Street, Murmansk, 183038 Russia, e- mail: [inter@pinro.ru](mailto:inter@pinro.ru)

**I.K. Sigaev and V.A. Rikhter**

Atlantic Research Institute of Marine Fisheries and Oceanography (AtlantNIRO)  
5, Dm. Donskoy Str., Kaliningrad, 236000, Russia, e- mail: [west@atlant.baltnet.ru](mailto:west@atlant.baltnet.ru)

## SUBAREAS 1+2

**A. Status of the fisheries***Greenland halibut*

The directed trawl fishing for Greenland halibut took place in July-November. In accordance with quota allocation to 2 areas, the fishery off the West Greenland was executed to the north (Div.1A) and to the south (Divs. 1CD) of 68°N.

In the area to the north of 68°N, three trawlers carried out fishery during 89 fishing days. The fishery was executed in a relatively small area between 68°48'N – 69°49'N and 58°49'W - 60°24'W at the depth of 900- 1300 m. According to the preliminary data, 565 t of halibut and 2 t of skates were caught. Mean daily fishing efficiency varied from 4.5 to 10.2 per months and in general amounted to 6.4 t; this figure was maximal in June.

In the area to the south of 68° N, three trawlers took part in fishery during 151 fishing days. The fishery took place from July to November in the area between 63°27'N – 64°30'N and 54°54'W - 57°59'W at the depth of 950-1600 m. According to the preliminary data the catch was estimated at 1222 t of Greenland halibut and 3 t of roughhead grenadier. Mean daily fishing efficiency varied from 5.7 to 11.0 per months and in general amounted to 8.1 t. The most efficient fishery was in September-October.

According to the preliminary data, in the area off the West Greenland, 1792 t were caught by Russian fleet including 1787 t of the Greenland halibut, 3 t of roughhead grenadier and 2 t of skates (Table 1).

*Pelagic deep-water redfish*

Russian pelagic fishing of deep- water redfish in Divs.1F, 2HJ was executed at 210-380m depths in August. Participating were 1-15 vessels of STM, RTMS, BMRTPT, BMRTIB- types with the mean fishing efficiency of 13.9 t per a fishing day.

According to the preliminary data the total catch of the pelagic redfish equaled to 4770 t. About 82 % of the total redfish catch were taken in Div. 1F.

*Other fish species*

There was no direct fishery of other fish species. The by-catch of grenadier, skate and other species amounted to about 0.2%.

**B. Special research studies**

Biological data on Greenland halibut in Div.1AD and pelagic deep-water redfish in Divs. 1F, 2HJ were collected during the fishery by scientists from PINRO staying aboard research vessels as NAFO observers.

*Greenland halibut*

In Div.1A halibut 25-91 cm in length was recorded. Immature individuals with a modal length of 41-45 cm prevailed in catches. The mean length of males was 44.6 cm, of females- 47.2 cm. Males prevailed with sex ratio 1.5:1. The intensity of feeding was moderate, the mean index of stomach fullness equaled to 1.0. The main food item was shrimp.

In Div.1D halibut 30-108 cm in length was recorded, fish as long as 48-54 cm prevailed (Table 2). The average length of males was 51,4 cm, of females- 58,8 cm. Sex ratio was approximately 2:1.

Most studied fish were sexually mature by early October; about 12% of fish were prespawning and spawning. 16 items were recorded in halibut feeding. Main food items were squid, shrimp and roughhead grenadier. Feeding was weak. The mean index of stomach fullness equaled to 0.5.

In Div. 1D halibut age varied from 2 to 15 years, predominating were fish aged 5-8 (Table 3).

*Deep-water redfish*

11060 fish were measured.

In Div.1F the length of deep-water redfish in catches ranged from 23 to 44 cm, the mean length was 35.1 cm (Table 4). Fish 35-37 cm in length made up the bulk of catches. Males-females ratio was 1.2:1.

In Div. 2J deep-water redfish 25-42 cm in length was recorded, the mean length was 34.3 cm. Fish 35 cm long made up the bulk of catches. Males prevailed over females in the ratio 1.5:1.

**SUBAREA 3****A. Status of the fisheries***Greenland halibut*

Directed fishing of the Greenland halibut was conducted by 4 trawlers during the year. The most important fishing area was the North-Eastern slope and the adjacent area of the Flemish Cap bank (Divs.3LM) between 46° - 49°N and 43° - 49°W at 660-1970 m depth .

The fishing efficiency varied from 1.1 to 19.4 and in the mean amounted to 5.8 t per day. The mean by- catch was not large, it amounted to 5% including grenadiers - 2%, redfish species - 1%, skates - 1%, other fish species (Atlantic halibut, witch flounder, American plaice, wolffishes, sharks) - 1%.

According to the preliminary data the catch was equal to 1531 t.

### *Redfish*

In 2006 2 vessels of SRTMK-type (1000- 2000 kW) conducted directed fishery of redfish on the Flemish Cap. In July-September, the vessels operated at 250 – 450 m depths. On the whole in the period of fishing the efficiency of these vessels equaled to 18.6 t. Greenland halibut and skates made up the bulk of catches. According to the preliminary data the total catch amounted to 854 t.

In Div. 3O redfish was fished in August-October. One vessel of STM-type (2040 kW) operated at 120- 600 m depth. Witch flounder, hakes, American plaice and halibut made up the bulk of by-catches in redfish fishery. As a whole, in the period of fishing the efficiency of vessels of STM-type was 15,7 t. according to the preliminary data the total catch amounted to 981 t.

### *Other species*

No directed fishery for other fish species was carried out. The by-catch of other fish species in the directed fisheries accounted to 1- 10%.

## **B. Special research studies**

### *Greenland halibut (Reinhardtius hippoglossoides)*

There were no special surveys to estimate the stock of Greenland halibut. Aboard fishing vessels biological data was collected by observers.

Halibut 20-98 cm in length occurred in the catches of fishing vessels (Table 5). The mean length of fish was 43.5 cm. The age of fish determined by scale varied from 3 to 13 years (Table 6). Immature fish aged 5 and 36- 42 cm in length made up the bulk of catches (34%).

### *Roughhead grenadier (Macrourus berglax)*

It is one of the most abundant by-catch species in the fishery of Greenland halibut in Div. 3L. The total length of roughhead grenadier in this Division varied from 24 to 101 cm, the mean length was 49.8 cm (Table 7). Fish as long as 45-50 cm prevailed.

In Div. 3M the fish length distribution varied from 24 to 93 cm, the mean length was 51.5 cm; the modal length was 42-48 cm.

In Div. 3N the fish length varied from 36 to 57 cm. The bulk of catches was made up by individuals 45- 48 cm in length.

In Div. 3O the length of roughhead grenadier varied from 21 to 69 cm, the mean length was 44.3 cm.

On the whole, in Divs.3LMNO roughhead grenadier with 21-101 cm length occurred, the mean length was 49.2 cm.

### *Acadian redfish (Sebastes fasciatus)*

In Div. 3M the length of Acadian redfish varied from 13 to 39 cm, the mean length was 22.8 cm. Fish as long as 19 and 23 cm prevailed (Table 8).

In Div. 3O the length of Acadian redfish was from 13 to 42 cm, the mean length was 24.5 cm. Fish as long as 22- 25 cm prevailed.

### *Deep-water redfish (Sebastes mentella)*

In Div. 3L the length of deep-water redfish in by-catches during the Greenland halibut fishery ranged from 20 to 47 cm, the mean length was 30.8 cm (Table 9). Prevalent were fish of 28- 30 cm in length.

In Div. 3M the deep-water redfish length distribution fluctuated from 14 to 42 cm, the mean length was 25.7 cm. The bulk of catches was made up by fish 26-27 cm in length.

In Div.3O the length of deep-water redfish was defined by fish 15- 44 cm in length, the mean length was 25.4 cm. In the catches fish 23- 25 cm were predominating.

*Golden redfish (Sebastes marinus)*

In Div. 3M the length of golden redfish males was 17- 52 cm, the mean length amounted to 28.3 cm (Table 10). Females as long as 15- 52 cm occurred in catches.

In length group, fish as long as 23- 26 cm predominated, the mean length amounted to 29.7 cm.

*American plaice (Hippoglossoides platessoides)*

In Div. 3L the length distribution of American plaice in by-catches in the Greenland halibut fishery was characterized by 18- 54 cm fish. Mean length was 35.4 cm. (Table 11).

In Div. 3M the length distribution of American plaice in by-catches in the redfish fishery varied from 28 to 68 cm, the mean length amounted to 40.0 cm. The bulk of catches was made up by fish 34- 38 cm in length.

The length of fish in Div. 3O varied from 14 to 56 cm. Fish 42- 44 cm made up the bulk of catches.

*Witch flounder (Glyptocephalus cynoglossus)*

In Div. 3L the length distribution of witch flounder in by-catches in the fishery of Greenland halibut was characterized by fish as long as 12-54 cm with the average length of 38.8 cm (Table 12).

On the Flemish Cap witch flounder occurred in small portions.

In Div. 3N minor amounts of fish were found in by catches. The length varied from 28 to 48 cm, the mean one was 37.5 cm.

In Div. 3O the length distribution of witch flounder in by-catches in the fishery of redfish varied from 14 to 54 cm, the mean length was 35.0 cm. Fish 30 –34 cm in length, made up the bulk of catches.

*Cod (Gadus morhua)*

On the Flemish Cap the length of cod was 42-111 cm, the mean length was 68.9 cm (Table 13). The bulk of catches was made up by fish 66-69 cm in length.

In Div. 3O the length distribution of fish varied from 30 to 87 cm, the mean length was 44.7 cm.

*Threebeard rockling (Gaidropsarus ensis)*

In Div. 3L the length of studied fish varied from 24 to 54 cm with the average one of 41.0 cm (Table 14). Fish with the size of 39 42 cm made up the bulk of catches.

In Div. 3M the length of fish was from 33 to 48 cm, the average one equaled to 42.3 cm.

*White hake (Urophycis tenuis)*

In Div. 3O the length of males was 21-69 cm, the mean length was 50.2 cm (Table 15). Females occurred in the catches 21-90 cm in length, the mean length was 40.8 cm.

In the general length distribution fish 27-32 cm in length prevailed.

*Thorny skate (Amblyraja radiata)*

In Div. 3L in the fishery of Greenland halibut the length of this species was from 12 to 69 cm (Table 16).

In Div. 3M the length of thorny skate varied from 36 to 78 cm, the mean one amounted to 55.0 cm.

In Div. 3O the length of fish varied from 12 to 120 cm.

*Black dogfish (Centroscyllium fabricii)*

This species was mainly recorded in by catches in the halibut fishery. In Div. 3L the length of fish varied from 42 to 81 cm, the mean length was 64.1 cm (Table 17). The bulk of catches was made up by fish 63- 66 cm in length.

The distribution length of this species in Div. 3M ranged from 51 to 81 cm, the mean length was 65.2 cm

*Northern wolffish (Anarhichas denticulatus)*

In Div. 3L the length of northern wolffish varied from 30 to 123 cm, the mean length amounted to 59.7cm (Table 18). The bulk of catches was made up by fish 54- 57 cm in length.

In Div. 3M the length distribution of this species varied from 39 to 102 cm.

*Blue hake (Antimora rostrata)*

In Divs. 3LMO the length distribution of blue hake varied from 18 to 63 cm, the average length was 39.3 cm (Table 19). Fish 36-39 cm in length made up the bulk of catches.

*Atlantic halibut (Hippoglossus hippoglossus)*

In Divs. 3LMNO this species occurred as single individuals. The length distribution of Atlantic halibut was from 62 to 162 cm (Table 20).

*Common grenadier (Nezumia bairdii)*

In Divs. 3LMO the total length of common grenadier varied from 12 to 42 cm, the mean length was 29.0 cm (Table 21).

*Other fish species*

In the fishery period occurring as by-catch were Atlantic and spotted wolffishes, roundnose grenadier, chimeras, longfinned hake, Notacanthidae and other fish species.

*Special selectivity research*

In Div. 3O study of selectivity of bottom trawl bags with a standard mesh size of 90, 120 and 130 mm in relation to redfishes *S. fasciatus* and *S. mentella* was conducted in August-October. The results are presented in the separate paper.

## SUBAREA 4

### **A. Status of the fisheries**

In 2006 no fishing activities were carried out in the Scotia shelf area by Russian vessels.

### **B. Special research studies**

#### 1. Environmental researches

##### a) Hydrographic studies

In 2006 the monitoring of sea surface temperature (SST) in the Labrador and Gulf Stream Currents system was continued while mean monthly SST anomalies at conventional points located on the shelf and in adjacent open sea waters were used (Fig. 1). The analysis of monthly mean sea surface temperature at these points showed continuing SST increase. For the most part the 2006 SST values were significantly warmer than annually and monthly normal and than corresponding values in 2005.

In the Labrador Current (points 1, 4, 6) positive anomalies of SST were observed during all months with the maximum values (2.0°C-2.8°C) in spring-summer and minimum ones (0.1°C-0.8°C) in December-March. In the Labrador Sea (point 2) SST anomalies were positive and ranged from 0.8°C to 1.8°C throughout the year. In the North Atlantic Current branch (points 3, 5, 7) SST was 1.0°C-2.8°C warmer than normal. In the Grand Bank area (points 8, 9) SST was 2.6°C-3.4°C warmer than normal in summer months and 0.8°C-1.6°C warmer in the winter period. On the Shelf of Nova Scotia (point 10) the monthly SST values were either above or near to normal. The highest anomalies were recorded here in June (1.9°C) and in July (1.6°C), the lowest in September (-0.3°C) and in October (0.2°C). On this basis one can assume that temperature conditions in the 2006 spawning season were favorable for the silver hake spawning. On the Scotian shelf (point 11) and in Slope waters (point 12) the SST fluctuations principally depend on the advection of Slope waters to the shelf, i.e. on latitudinal fluctuations of the north boundary of the water mass. It seems likely that SST in January and February at these locations was 1.0°C – 1.4°C warmer normal owing mentioned processes. In other months SST values were near normal on the Shelf slope and ranged from -1.2°C to 1.2°C in the Slope waters. At the north edge of the Gulf Stream front (point 13) SST differed little from normal during the year.

### **C. Miscellaneous Studies**

Analyzed were dynamics and SSB-recruitment relationship for cod in Divisions 2J+3KL and 3NO and for American plaice in Divisions 3LNO and 3M, whose stocks have been in state of deep depression for more than 15 years. Probable causes for this were discussed. It was assumed that for some stock units including those mentioned above there should be a limit of SSB below which the stock is driven to collapse. The investigation carried out enabled to suggest that there is little chance that cod stocks in Divisions 2J+3KL (offshore component) could be recovered only through natural processes even if no fishery is conducted. Conditions and potential measures that could increase chances of stock recovering were considered.

The detailed description of research fulfilled is submitted to this meeting of the Scientific Council.

TABLE 1. Preliminary catches taken by Russian trawlers in NAFO SA 1-3 in 2006.

| Species             | Division     | Catch, t    |
|---------------------|--------------|-------------|
| Greenland halibut   | 1A           | 555         |
|                     | 1B           | 10          |
|                     | 1C           | 343         |
|                     | 1D           | 879         |
|                     | <b>1ABCD</b> | <b>1787</b> |
| Greenland halibut   | 3L           | 1384        |
|                     | 3M           | 118         |
|                     | 3N           | 25          |
|                     | 3O           | 4           |
|                     | <b>3LMNO</b> | <b>1531</b> |
| Atlantic halibut    | <b>3M</b>    | <b>1</b>    |
| American plaice     | 3L           | 11          |
|                     | 3M           | 2           |
|                     | 3N           | 3           |
|                     | <b>3LMN</b>  | <b>16</b>   |
| Yellowtail flounder | <b>3L</b>    | <b>1</b>    |
| Witch flounder      | 3L           | 3           |
|                     | 3M           | 4           |
|                     | 3N           | 1           |
|                     | <b>3LMNO</b> | <b>8</b>    |
| Roughhead grenadier | <b>1D</b>    | <b>3</b>    |
|                     | 3L           | 11          |
|                     | 3M           | 22          |
|                     | 3N           | 3           |
|                     | <b>3LMN</b>  | <b>36</b>   |
| Deep-sea redfish    | 1F           | 3926        |
|                     | 2H           | 256         |
|                     | 2J           | 588         |
|                     | <b>1F2HJ</b> | <b>4770</b> |
| Redfish spp.        | 3L           | 8           |
|                     | 3M           | 848         |
|                     | 3N           | 1           |
|                     | 3O           | 977         |
|                     | <b>3LMNO</b> | <b>1834</b> |
| Skate               | <b>1A</b>    | <b>2</b>    |
|                     | 3L           | 12          |
|                     | 3M           | 5           |
|                     | 3N           | 2           |
|                     | <b>3LMN</b>  | <b>19</b>   |
| Atlantic cod        | 3M           | 1           |
| White hake          | 3O           | 1           |
| Wolffish spp.       | 3L           | 1           |

TABLE 2. Greenland halibut length composition (ind.) of the Russian trawl catches in NAFO Divs. 1AD in 2006.

| Length,<br>cm          | 1A          |             |             | 1D          |             |             | Total 1AD   |             |             |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
|                        | Males       | Females     | Total       | Males       | Females     | Total       | Males       | Females     | Total       |
| 24                     | 2           |             | 2           |             |             |             | 2           |             | 2           |
| 26                     |             | 1           | 1           |             |             |             |             | 1           | 1           |
| 28                     |             |             |             |             |             |             |             |             |             |
| 30                     | 3           | 1           | 4           | 3           |             | 3           | 6           | 1           | 7           |
| 32                     | 5           | 1           | 6           | 5           |             | 5           | 10          | 1           | 11          |
| 34                     | 14          | 12          | 26          | 5           |             | 5           | 19          | 12          | 31          |
| 36                     | 24          | 11          | 35          | 13          | 2           | 15          | 37          | 13          | 50          |
| 38                     | 51          | 25          | 76          | 21          | 9           | 30          | 72          | 34          | 106         |
| 40                     | 68          | 36          | 104         | 66          | 27          | 93          | 134         | 63          | 197         |
| 42                     | 96          | 40          | 136         | 126         | 25          | 151         | 222         | 65          | 287         |
| 44                     | 66          | 56          | 122         | 283         | 57          | 340         | 349         | 113         | 462         |
| 46                     | 47          | 36          | 83          | 488         | 116         | 604         | 535         | 152         | 687         |
| 48                     | 37          | 28          | 65          | 787         | 185         | 972         | 824         | 213         | 1037        |
| 50                     | 22          | 16          | 38          | 1030        | 259         | 1289        | 1052        | 275         | 1327        |
| 52                     | 10          | 16          | 26          | 1040        | 328         | 1368        | 1050        | 344         | 1394        |
| 54                     | 13          | 15          | 28          | 847         | 362         | 1209        | 860         | 377         | 1237        |
| 56                     | 3           | 9           | 12          | 422         | 309         | 731         | 425         | 318         | 743         |
| 58                     | 4           | 6           | 10          | 218         | 275         | 493         | 222         | 281         | 503         |
| 60                     | 3           | 6           | 9           | 94          | 193         | 287         | 97          | 199         | 296         |
| 62                     | 2           | 2           | 4           | 51          | 181         | 232         | 53          | 183         | 236         |
| 64                     | 8           | 1           | 9           | 28          | 142         | 170         | 36          | 143         | 179         |
| 66                     | 8           | 2           | 10          | 15          | 94          | 109         | 23          | 96          | 119         |
| 68                     | 3           | 1           | 4           | 11          | 89          | 100         | 14          | 90          | 104         |
| 70                     | 4           | 1           | 5           | 7           | 64          | 71          | 11          | 65          | 76          |
| 72                     |             | 4           | 4           | 5           | 47          | 52          | 5           | 51          | 56          |
| 74                     |             | 5           | 5           |             | 43          | 43          |             | 48          | 48          |
| 76                     |             | 1           | 1           | 1           | 58          | 59          | 1           | 59          | 60          |
| 78                     |             |             |             |             | 39          | 39          |             | 39          | 39          |
| 80                     |             | 2           | 2           |             | 34          | 34          |             | 36          | 36          |
| 82                     |             | 2           | 2           |             | 28          | 28          |             | 30          | 30          |
| 84                     |             |             |             |             | 10          | 10          |             | 10          | 10          |
| 86                     |             |             |             |             | 21          | 21          |             | 21          | 21          |
| 88                     |             |             |             |             | 18          | 18          |             | 18          | 18          |
| 90                     |             | 2           | 2           |             | 11          | 11          |             | 13          | 13          |
| 92                     |             |             |             |             | 9           | 9           |             | 9           | 9           |
| 94                     |             |             |             |             | 11          | 11          |             | 11          | 11          |
| 96                     |             |             |             |             | 5           | 5           |             | 5           | 5           |
| 98                     |             |             |             |             | 2           | 2           |             | 2           | 2           |
| 100                    |             |             |             |             | 1           | 1           |             | 1           | 1           |
| 102                    |             |             |             |             | 4           | 4           |             | 4           | 4           |
| 104                    |             |             |             |             | 1           | 1           |             | 1           | 1           |
| 106                    |             |             |             |             | 1           | 1           |             | 1           | 1           |
| 108                    |             |             |             |             | 1           | 1           |             | 1           | 1           |
| <b>Total</b>           | <b>493</b>  | <b>338</b>  | <b>831</b>  | <b>5566</b> | <b>3061</b> | <b>8627</b> | <b>6059</b> | <b>3399</b> | <b>9458</b> |
| <b>Mean length, cm</b> | <b>44.6</b> | <b>47.2</b> | <b>45.6</b> | <b>51.4</b> | <b>58.8</b> | <b>54.0</b> | <b>50.8</b> | <b>57.6</b> | <b>53.3</b> |

TABLE 3. Greenland halibut age composition of the Russian trawl catches (ind.) in the NAFO Div. 1D in 2006.

| Length,<br>cm | Age, years |    |     |     |     |     |      |    |    |    |    |    |    |    |  | Total | Weight,<br>g |
|---------------|------------|----|-----|-----|-----|-----|------|----|----|----|----|----|----|----|--|-------|--------------|
|               | 2          | 3  | 4   | 5   | 6   | 7   | 8    | 9  | 10 | 11 | 12 | 13 | 14 | 15 |  |       |              |
| 27            | 1          |    |     |     |     |     |      |    |    |    |    |    |    |    |  | 1     | 135.0        |
| 28            |            |    |     |     |     |     |      |    |    |    |    |    |    |    |  |       |              |
| 29            |            |    |     |     |     |     |      |    |    |    |    |    |    |    |  |       |              |
| 30            |            |    |     |     |     |     |      |    |    |    |    |    |    |    |  |       |              |
| 31            |            | 3  | 1   |     |     |     |      |    |    |    |    |    |    |    |  | 4     | 211.7        |
| 32            |            | 4  |     |     |     |     |      |    |    |    |    |    |    |    |  | 4     | 265.0        |
| 33            |            |    |     |     |     |     |      |    |    |    |    |    |    |    |  |       |              |
| 34            |            | 8  | 4   |     |     |     |      |    |    |    |    |    |    |    |  | 12    | 295.0        |
| 35            |            | 10 | 10  |     |     |     |      |    |    |    |    |    |    |    |  | 20    | 350.0        |
| 36            |            | 9  | 9   |     |     |     |      |    |    |    |    |    |    |    |  | 18    | 368.8        |
| 37            |            | 5  | 27  |     |     |     |      |    |    |    |    |    |    |    |  | 32    | 385.0        |
| 38            |            | 50 |     |     |     |     |      |    |    |    |    |    |    |    |  | 50    | 435.0        |
| 39            |            | 19 | 37  |     |     |     |      |    |    |    |    |    |    |    |  | 56    | 440.8        |
| 40            |            | 29 | 49  | 10  |     |     |      |    |    |    |    |    |    |    |  | 88    | 520.0        |
| 41            |            | 22 | 76  | 11  |     |     |      |    |    |    |    |    |    |    |  | 109   | 543.5        |
| 42            |            | 15 | 62  | 31  |     |     |      |    |    |    |    |    |    |    |  | 108   | 599.3        |
| 43            |            |    | 119 | 60  |     |     |      |    |    |    |    |    |    |    |  | 179   | 645.6        |
| 44            |            |    | 81  | 101 |     |     |      |    |    |    |    |    |    |    |  | 182   | 690.6        |
| 45            |            |    | 105 | 140 | 35  |     |      |    |    |    |    |    |    |    |  | 280   | 699.9        |
| 46            |            |    | 30  | 177 | 59  |     |      |    |    |    |    |    |    |    |  | 266   | 783.9        |
| 47            |            |    |     | 301 | 120 |     |      |    |    |    |    |    |    |    |  | 421   | 833.6        |
| 48            |            |    |     | 195 | 292 |     |      |    |    |    |    |    |    |    |  | 487   | 925.5        |
| 49            |            |    |     | 330 | 220 |     |      |    |    |    |    |    |    |    |  | 550   | 925.5        |
| 50            |            |    |     | 444 | 254 |     |      |    |    |    |    |    |    |    |  | 698   | 990.0        |
| 51            |            |    |     | 315 | 315 |     |      |    |    |    |    |    |    |    |  | 629   | 1041.5       |
| 52            |            |    |     | 346 | 288 | 58  |      |    |    |    |    |    |    |    |  | 692   | 1163.3       |
| 53            |            |    |     | 176 | 351 | 176 |      |    |    |    |    |    |    |    |  | 702   | 1271.9       |
| 54            |            |    |     |     | 238 | 416 |      |    |    |    |    |    |    |    |  | 654   | 1261.8       |
| 55            |            |    |     |     | 167 | 333 | 83   |    |    |    |    |    |    |    |  | 583   | 1360.7       |
| 56            |            |    |     |     | 131 | 66  | 197  |    |    |    |    |    |    |    |  | 394   | 1402.5       |
| 57            |            |    |     |     |     | 291 | 58   |    |    |    |    |    |    |    |  | 349   | 1597.5       |
| 58            |            |    |     |     | 103 | 52  | 1032 |    |    |    |    |    |    |    |  | 258   | 1573.0       |
| 59            |            |    |     |     | 54  | 82  | 109  |    |    |    |    |    |    |    |  | 245   | 1742.2       |
| 60            |            |    |     |     |     | 135 | 22   |    |    |    |    |    |    |    |  | 157   | 1888.6       |
| 61            |            |    |     |     | 14  | 28  | 83   | 14 |    |    |    |    |    |    |  | 139   | 1818.0       |
| 62            |            |    |     |     |     | 57  | 77   |    |    |    |    |    |    |    |  | 134   | 1970.0       |
| 63            |            |    |     |     |     |     | 65   | 37 |    |    |    |    |    |    |  | 102   | 2103.6       |
| 64            |            |    |     |     |     |     | 19   | 28 | 28 |    |    |    |    |    |  | 75    | 2117.5       |
| 65            |            |    |     |     |     |     |      | 52 | 52 |    |    |    |    |    |  | 104   | 2365.0       |
| 66            |            |    |     |     |     |     |      | 21 | 28 |    |    |    |    |    |  | 49    | 2553.0       |
| 67            |            |    |     |     |     | 18  |      | 35 | 18 |    |    |    |    |    |  | 70    | 2705.0       |
| 68            |            |    |     |     |     |     |      | 17 | 42 |    |    |    |    |    |  | 59    | 2785.0       |
| 69            |            |    |     |     |     |     |      |    | 23 | 23 |    |    |    |    |  | 45    | 2947.5       |
| 70            |            |    |     |     |     |     |      |    | 43 | 9  |    |    |    |    |  | 52    | 3278.3       |
| 71            |            |    |     |     |     |     |      |    | 19 | 5  |    |    |    |    |  | 24    | 3699.0       |
| 72            |            |    |     |     |     |     |      |    | 13 | 13 |    |    |    |    |  | 26    | 3225.0       |
| 73            |            |    |     |     |     |     | 4    | 22 |    | 4  |    |    |    |    |  | 31    | 3535.7       |
| 74            |            |    |     |     |     |     |      |    |    | 18 |    |    |    |    |  | 18    | 3765.0       |
| 75            |            |    |     |     |     |     |      |    |    | 10 | 20 |    |    |    |  | 30    | 3953.3       |
| 76            |            |    |     |     |     |     |      |    |    |    | 29 |    |    |    |  | 29    | 4225.0       |
| 77            |            |    |     |     |     |     |      |    |    | 16 | 8  | 8  |    |    |  | 31    | 4590.0       |
| 78            |            |    |     |     |     |     |      |    |    |    |    | 15 |    |    |  | 15    | 5000.0       |
| 79            |            |    |     |     |     |     |      |    |    | 10 | 10 | 5  |    |    |  | 25    | 4498.0       |
| 80            |            |    |     |     |     |     |      |    |    |    | 18 |    |    |    |  | 18    | 4415.0       |
| 81            |            |    |     |     |     |     |      |    |    | 9  |    | 9  |    |    |  | 18    | 4847.5       |
| 82            |            |    |     |     |     |     |      |    |    |    | 16 |    | 5  |    |  | 21    | 5247.5       |
| 83            |            |    |     |     |     |     |      |    |    |    |    | 9  |    |    |  | 9     | 6730.0       |
| 84            |            |    |     |     |     |     |      |    |    |    |    |    |    |    |  |       |              |
| 85            |            |    |     |     |     |     |      |    |    | 4  | 4  |    |    |    |  | 8     | 6372.5       |
| 86            |            |    |     |     |     |     |      |    |    | 6  |    | 6  |    |    |  | 12    | 6682.5       |
| 87            |            |    |     |     |     |     |      |    |    | 9  |    |    |    |    |  | 9     | 7335.0       |

|                        |              |              |              |              |               |               |               |               |               |               |               |               |                |                |             |         |
|------------------------|--------------|--------------|--------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|-------------|---------|
| 88                     |              |              |              |              |               |               |               |               |               | 5             |               | 9             |                |                | 14          | 7211.7  |
| 89                     |              |              |              |              |               |               |               |               |               |               | 4             |               |                |                | 4           | 7792.5  |
| 90                     |              |              |              |              |               |               |               |               |               |               | 4             | 4             |                |                | 8           | 7912.5  |
| 91                     |              |              |              |              |               |               |               |               |               |               |               | 5             |                |                | 5           | 8925.0  |
| 92                     |              |              |              |              |               |               |               |               |               |               |               | 3             |                |                | 3           | 8835.0  |
| 93                     |              |              |              |              |               |               |               |               |               |               | 6             |               |                |                | 6           | 9272.0  |
| 94                     |              |              |              |              |               |               |               |               |               | 2             | 2             | 2             |                |                | 6           | 8603.3  |
| 95                     |              |              |              |              |               |               |               |               |               |               |               |               |                |                |             |         |
| 96                     |              |              |              |              |               |               |               |               |               |               |               |               |                | 2              | 2           | 10190.0 |
| 97                     |              |              |              |              |               |               |               |               |               |               | 3             |               |                |                | 3           | 10350.0 |
| 98                     |              |              |              |              |               |               |               |               |               |               |               |               |                |                |             |         |
| 99                     |              |              |              |              |               |               |               |               |               |               |               |               |                |                |             |         |
| 100                    |              |              |              |              |               |               |               |               |               |               |               |               |                |                |             |         |
| 101                    |              |              |              |              |               |               |               |               |               |               |               |               |                |                |             |         |
| 102                    |              |              |              |              |               |               |               |               |               |               |               |               |                | 3              | 3           | 12285.0 |
| 103                    |              |              |              |              |               |               |               |               |               |               |               |               |                | 1              | 1           | 11865.0 |
| 104                    |              |              |              |              |               |               |               |               |               |               |               |               |                |                |             |         |
| 105                    |              |              |              |              |               |               |               |               |               |               |               |               |                |                |             |         |
| 106                    |              |              |              |              |               |               |               |               |               |               |               |               |                | 1              | 1           | 12100.0 |
| <b>Total</b>           | <b>1</b>     | <b>174</b>   | <b>610</b>   | <b>2637</b>  | <b>2641</b>   | <b>1731</b>   | <b>1848</b>   | <b>356</b>    | <b>135</b>    | <b>127</b>    | <b>69</b>     | <b>34</b>     | <b>6</b>       | <b>1</b>       | <b>9437</b> |         |
| <b>Mean length, cm</b> | <b>27.0</b>  | <b>38.4</b>  | <b>42.2</b>  | <b>48.9</b>  | <b>51.7</b>   | <b>56.1</b>   | <b>58.7</b>   | <b>67.1</b>   | <b>72.9</b>   | <b>79.8</b>   | <b>83.3</b>   | <b>88.1</b>   | <b>100.2</b>   | <b>106.0</b>   |             |         |
| <b>Mean weight, g</b>  | <b>135.0</b> | <b>453.7</b> | <b>604.3</b> | <b>950.2</b> | <b>1135.3</b> | <b>1478.1</b> | <b>1663.1</b> | <b>2717.5</b> | <b>3628.9</b> | <b>4973.1</b> | <b>6240.7</b> | <b>7389.0</b> | <b>11516.7</b> | <b>12100.0</b> |             |         |

TABLE 4. Redfish length composition (ind.) of the Russian trawl catches in NAFO Div. 1F, 2J in 2006.

| Length. cm             | Division 1F |             |             | Division 2J |             |             | Total       |             |              |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
|                        | Males       | Females     | Total       | Males       | Females     | Total       | Males       | Females     | Total        |
| 23                     |             | 1           | 1           |             |             |             |             | 1           | 1            |
| 24                     |             |             |             |             |             |             |             |             |              |
| 25                     | 1           | 2           | 3           |             |             |             | 1           | 2           | 3            |
| 26                     | 4           | 3           | 7           |             | 1           | 1           | 4           | 4           | 8            |
| 27                     | 21          | 21          | 42          | 4           | 6           | 10          | 25          | 27          | 52           |
| 28                     | 40          | 44          | 84          | 6           | 3           | 9           | 46          | 47          | 93           |
| 29                     | 71          | 85          | 156         | 7           | 7           | 14          | 78          | 92          | 170          |
| 30                     | 206         | 165         | 371         | 51          | 25          | 76          | 257         | 190         | 447          |
| 31                     | 246         | 175         | 421         | 51          | 20          | 71          | 297         | 195         | 492          |
| 32                     | 343         | 208         | 551         | 64          | 35          | 99          | 407         | 243         | 650          |
| 33                     | 575         | 288         | 863         | 108         | 58          | 166         | 683         | 346         | 1029         |
| 34                     | 708         | 339         | 1047        | 132         | 60          | 192         | 840         | 399         | 1239         |
| 35                     | 984         | 555         | 1539        | 166         | 78          | 244         | 1150        | 633         | 1783         |
| 36                     | 810         | 544         | 1354        | 96          | 61          | 157         | 906         | 605         | 1511         |
| 37                     | 792         | 757         | 1549        | 68          | 77          | 145         | 860         | 834         | 1694         |
| 38                     | 321         | 572         | 893         | 17          | 37          | 54          | 338         | 609         | 947          |
| 39                     | 221         | 407         | 628         | 5           | 19          | 24          | 226         | 426         | 652          |
| 40                     | 55          | 136         | 191         | 3           | 12          | 15          | 58          | 148         | 206          |
| 41                     | 22          | 38          | 60          |             |             |             | 22          | 38          | 60           |
| 42                     | 2           | 16          | 18          |             | 1           | 1           | 2           | 17          | 19           |
| 43                     |             | 2           | 2           |             |             |             |             | 2           | 2            |
| 44                     |             | 2           | 2           |             |             |             |             | 2           | 2            |
| <b>Total</b>           | <b>5422</b> | <b>4360</b> | <b>9782</b> | <b>778</b>  | <b>500</b>  | <b>1278</b> | <b>6200</b> | <b>4860</b> | <b>11060</b> |
| <b>Mean length, cm</b> | <b>34.8</b> | <b>35.5</b> | <b>35.1</b> | <b>34.0</b> | <b>34.7</b> | <b>34.3</b> | <b>34.7</b> | <b>35.5</b> | <b>35.0</b>  |

TABLE 5. Greenland halibut length composition (ind.) of the Russian commercial trawler catches by month in NAFO Div. 3LMO in 2006.

| Length,<br>cm           | Division 3L |             |              |             |             |             |             |             |             | Total        |
|-------------------------|-------------|-------------|--------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
|                         | II          | III         | IV           | V           | VII         | VIII        | IX          | X           | XI          |              |
| 20                      |             | 2           |              |             |             |             |             |             |             | 2            |
| 22                      |             | 18          |              |             |             |             |             |             |             | 18           |
| 24                      | 4           | 104         |              | 1           |             |             |             |             |             | 109          |
| 26                      | 2           | 49          | 1            | 2           |             |             |             |             |             | 54           |
| 28                      | 1           | 2           | 5            | 6           | 2           | 1           |             |             |             | 17           |
| 30                      |             | 12          | 39           | 64          | 1           | 4           |             |             |             | 120          |
| 32                      |             | 62          | 206          | 339         | 1           | 7           |             | 4           |             | 615          |
| 34                      |             | 181         | 486          | 915         | 4           | 25          | 2           | 4           |             | 1617         |
| 36                      |             | 480         | 760          | 1110        | 8           | 64          | 13          | 15          | 1           | 2451         |
| 38                      |             | 1012        | 1356         | 1007        | 35          | 136         | 40          | 54          | 9           | 3649         |
| 40                      |             | 1455        | 1932         | 817         | 38          | 191         | 113         | 150         | 45          | 4741         |
| 42                      |             | 1358        | 2095         | 659         | 76          | 321         | 219         | 339         | 67          | 5134         |
| 44                      |             | 1150        | 1802         | 448         | 58          | 291         | 417         | 631         | 179         | 4976         |
| 46                      |             | 836         | 1171         | 314         | 79          | 340         | 448         | 695         | 223         | 4106         |
| 48                      |             | 520         | 710          | 239         | 52          | 347         | 406         | 742         | 201         | 3217         |
| 50                      |             | 365         | 375          | 171         | 32          | 128         | 393         | 490         | 78          | 2032         |
| 52                      |             | 254         | 249          | 88          | 20          | 85          | 252         | 359         | 82          | 1389         |
| 54                      |             | 177         | 183          | 55          | 13          | 55          | 215         | 261         | 51          | 1010         |
| 56                      |             | 94          | 94           | 27          | 8           | 25          | 127         | 147         | 32          | 554          |
| 58                      |             | 61          | 55           | 17          | 5           | 20          | 67          | 90          | 10          | 325          |
| 60                      |             | 38          | 27           | 18          | 1           | 12          | 58          | 52          | 5           | 211          |
| 62                      |             | 28          | 20           | 7           | 2           | 4           | 32          | 41          | 2           | 136          |
| 64                      |             | 15          | 16           | 6           |             | 2           | 20          | 20          | 5           | 84           |
| 66                      |             | 9           | 10           | 5           |             | 1           | 10          | 13          | 1           | 49           |
| 68                      |             | 10          | 7            | 2           |             | 2           | 5           | 10          | 3           | 39           |
| 70                      |             | 5           | 7            | 3           |             | 2           | 5           | 5           |             | 27           |
| 72                      |             | 3           | 3            | 1           |             | 1           | 1           | 8           | 2           | 19           |
| 74                      |             | 6           | 3            | 3           | 1           |             | 8           | 6           | 1           | 28           |
| 76                      |             | 5           | 3            |             |             |             | 3           | 3           | 1           | 15           |
| 78                      |             | 1           | 2            | 1           |             |             | 1           | 5           | 1           | 11           |
| 80                      |             |             |              |             |             |             | 4           | 4           | 1           | 9            |
| 82                      |             | 1           | 5            | 1           |             |             | 5           | 4           | 1           | 17           |
| 84                      |             |             |              |             |             | 1           | 2           | 3           |             | 6            |
| 86                      |             | 1           |              | 1           |             |             |             |             |             | 2            |
| 88                      |             | 1           | 1            |             |             |             |             |             |             | 2            |
| 90                      |             | 1           |              |             |             |             |             |             |             | 1            |
| 92                      |             |             |              |             |             |             |             |             |             |              |
| 94                      |             |             |              |             |             |             | 1           |             |             | 1            |
| 96                      |             |             |              |             |             |             |             |             |             |              |
| 98                      |             |             |              |             |             | 1           |             |             |             | 1            |
| <b>Total</b>            | <b>7</b>    | <b>8316</b> | <b>11623</b> | <b>6327</b> | <b>436</b>  | <b>2066</b> | <b>2867</b> | <b>4155</b> | <b>1001</b> | <b>36794</b> |
| <b>Mean length, cm.</b> | <b>25.6</b> | <b>43.3</b> | <b>42.9</b>  | <b>40.0</b> | <b>45.5</b> | <b>45.5</b> | <b>49.2</b> | <b>48.8</b> | <b>48.1</b> | <b>43.5</b>  |

TABLE 5. CONTINUED.

| Division 3M |             |             |             |             |             |             |
|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| IV          | V           | XII         | VIII        | IX          | X           | Total       |
| 1           | 1           |             |             |             |             | 2           |
| 2           |             |             |             |             |             | 2           |
| 11          | 1           |             |             |             |             | 12          |
| 60          | 25          |             | 2           |             | 1           | 88          |
| 149         | 66          | 1           |             | 4           |             | 220         |
| 286         | 113         | 1           | 5           | 4           | 2           | 411         |
| 566         | 163         | 1           | 6           | 8           | 1           | 745         |
| 989         | 208         | 3           | 20          | 13          | 9           | 1242        |
| 1294        | 287         | 2           | 26          | 17          | 11          | 1637        |
| 1177        | 351         | 9           | 30          | 13          | 22          | 1602        |
| 964         | 341         | 6           | 48          | 14          | 35          | 1408        |
| 620         | 247         | 8           | 36          | 11          | 49          | 971         |
| 344         | 136         | 5           | 25          | 13          | 42          | 565         |
| 200         | 75          | 2           | 28          | 10          | 27          | 342         |
| 123         | 46          | 4           | 15          | 6           | 45          | 239         |
| 55          | 30          | 3           | 18          | 2           | 16          | 124         |
| 40          | 17          | 2           | 5           | 5           | 30          | 99          |
| 14          | 13          | 2           | 3           |             | 8           | 40          |
| 11          | 5           |             | 3           | 4           | 5           | 28          |
| 3           | 6           | 3           | 1           | 2           | 5           | 20          |
| 6           | 4           | 1           | 2           |             | 3           | 16          |
| 3           | 1           |             | 1           | 1           | 3           | 9           |
| 3           |             |             |             |             | 3           | 6           |
| 2           |             |             |             |             | 2           | 4           |
| 1           |             |             |             | 1           |             | 2           |
|             |             |             |             |             | 1           | 1           |
|             |             |             |             |             | 1           | 1           |
| 1           |             |             |             |             | 1           | 2           |
| <b>6925</b> | <b>2136</b> | <b>53</b>   | <b>274</b>  | <b>128</b>  | <b>322</b>  | <b>9838</b> |
| <b>44.0</b> | <b>44.7</b> | <b>49.6</b> | <b>48.2</b> | <b>47.2</b> | <b>51.9</b> | <b>44.1</b> |

TABLE 5. CONTINUED

| <b>Division 30</b> |             |             |              |
|--------------------|-------------|-------------|--------------|
| <b>VIII</b>        | <b>IX</b>   | <b>X</b>    | <b>Total</b> |
|                    |             | 3           | 3            |
|                    |             | 2           | 2            |
|                    |             | 4           | 4            |
| 5                  | 9           | 25          | 39           |
| 5                  | 13          | 27          | 45           |
| 5                  | 15          | 19          | 39           |
| 15                 | 31          | 74          | 120          |
| 35                 | 41          | 80          | 156          |
| 28                 | 51          | 129         | 208          |
| 38                 | 26          | 100         | 164          |
| 16                 | 30          | 76          | 122          |
| 27                 | 30          | 87          | 144          |
| 19                 | 23          | 73          | 115          |
| 20                 | 22          | 79          | 121          |
| 20                 | 13          | 72          | 105          |
| 12                 | 12          | 50          | 84           |
| 12                 | 7           | 43          | 62           |
| 13                 | 8           | 26          | 47           |
| 11                 | 12          | 17          | 40           |
| 9                  | 4           | 18          | 31           |
| 7                  | 9           | 10          | 26           |
| 8                  | 7           | 5           | 20           |
| 2                  | 3           | 4           | 9            |
| 7                  | 2           | 5           | 14           |
| 1                  | 1           | 2           | 4            |
|                    | 1           | 1           | 2            |
| 1                  | 1           | 4           | 6            |
| 1                  | 1           | 1           | 3            |
| 1                  | 2           | 1           | 4            |
| 4                  | 1           | 1           | 6            |
|                    |             | 1           | 1            |
|                    | 1           |             | 1            |
| <b>322</b>         | <b>376</b>  | <b>1039</b> | <b>1747</b>  |
| <b>44.6</b>        | <b>41.9</b> | <b>42.0</b> | <b>42.0</b>  |

TABLE 6. Greenland halibut age composition of the Russian commercial trawler catches in NAFO Divs.3LM in 2006.

| Age, years   | 3 L          |            | 3 M         |            | 3 LM         |            |
|--------------|--------------|------------|-------------|------------|--------------|------------|
|              | n            | %          | n           | %          | n            | %          |
| 3            | 311          | 0.8        | 21          | 0.2        | 332          | 0.71       |
| 4            | 3190         | 8.7        | 435         | 4.4        | 3625         | 7.78       |
| 5            | 15071        | 41.0       | 3845        | 39.1       | 18916        | 40.6       |
| 6            | 12296        | 33.5       | 3948        | 40.1       | 16244        | 34.86      |
| 7            | 4528         | 12.3       | 1221        | 12.4       | 5749         | 12.33      |
| 8            | 1044         | 2.8        | 303         | 3.1        | 1347         | 2.89       |
| 9            | 137          | 0.4        | 39          | 0.4        | 176          | 0.37       |
| 10           | 72           | 0.2        | 14          | 0.1        | 86           | 0.18       |
| 11           | 61           | 0.2        | 8           | 0.1        | 69           | 0.14       |
| 12           | 32           | 0.1        | 3           | 0.0        | 35           | 0.07       |
| 13           | 11           | 0.0        | 1           | 0.0        | 12           | 0.02       |
| <b>Total</b> | <b>36753</b> | <b>100</b> | <b>9838</b> | <b>100</b> | <b>46591</b> | <b>100</b> |

TABLE 7. Length composition (ind.) of Roughhead grenadier in Russian trawler catches in NAFO Div. 3LMNO in 2006.

| Length, cm             | 3L          | 3M          | 3N          | 3O          | 3LMNO       |
|------------------------|-------------|-------------|-------------|-------------|-------------|
| 21                     |             |             |             | 2           | 2           |
| 24                     | 2           | 1           |             | 1           | 4           |
| 27                     | 10          | 1           |             | 4           | 15          |
| 30                     | 27          | 5           |             | 11          | 43          |
| 33                     | 108         | 8           |             | 26          | 142         |
| 36                     | 152         | 19          | 54          | 34          | 259         |
| 39                     | 222         | 37          | 59          | 25          | 343         |
| 42                     | 332         | 55          | 43          | 22          | 452         |
| 45                     | 486         | 72          | 55          | 36          | 649         |
| 48                     | 559         | 50          | 36          | 35          | 680         |
| 51                     | 295         | 38          | 23          | 14          | 370         |
| 54                     | 108         | 40          | 13          | 15          | 176         |
| 57                     | 87          | 36          | 3           | 15          | 141         |
| 60                     | 67          | 18          |             | 6           | 91          |
| 63                     | 78          | 13          |             | 2           | 93          |
| 66                     | 70          | 15          |             | 2           | 87          |
| 69                     | 52          | 9           |             | 2           | 63          |
| 72                     | 56          | 12          |             |             | 68          |
| 75                     | 48          | 9           |             |             | 57          |
| 78                     | 30          | 2           |             |             | 32          |
| 81                     | 20          | 4           |             |             | 24          |
| 84                     | 16          | 1           |             |             | 17          |
| 87                     | 5           | 3           |             |             | 8           |
| 90                     | 3           |             |             |             | 3           |
| 93                     | 2           | 1           |             |             | 3           |
| 96                     | 1           |             |             |             | 1           |
| 102                    | 1           |             |             |             | 1           |
| <b>Total</b>           | <b>2837</b> | <b>449</b>  | <b>286</b>  | <b>252</b>  | <b>3824</b> |
| <b>Mean length, cm</b> | <b>49.8</b> | <b>51.5</b> | <b>44.0</b> | <b>44.3</b> | <b>49.2</b> |

TABLE 8. Length composition (ind.) of Acadian redfish (*S. fasciatus*) in Russian trawler catches in NAFO Div. 3MO in 2006.

| <b>Length, cm</b>      | <b>3M</b>   | <b>3O</b>    | <b>3MO</b>   |
|------------------------|-------------|--------------|--------------|
| <b>13</b>              | 1           | 1            | <b>2</b>     |
| <b>14</b>              | 3           | 1            | <b>4</b>     |
| <b>15</b>              | 9           | 19           | <b>28</b>    |
| <b>16</b>              | 31          | 150          | <b>181</b>   |
| <b>17</b>              | 94          | 157          | <b>251</b>   |
| <b>18</b>              | 201         | 78           | <b>279</b>   |
| <b>19</b>              | 449         | 124          | <b>573</b>   |
| <b>20</b>              | 415         | 381          | <b>796</b>   |
| <b>21</b>              | 394         | 1660         | <b>2054</b>  |
| <b>22</b>              | 410         | 4247         | <b>4657</b>  |
| <b>23</b>              | 449         | 5879         | <b>6328</b>  |
| <b>24</b>              | 431         | 4674         | <b>5105</b>  |
| <b>25</b>              | 360         | 4241         | <b>4601</b>  |
| <b>26</b>              | 308         | 2880         | <b>3188</b>  |
| <b>27</b>              | 254         | 1940         | <b>2194</b>  |
| <b>28</b>              | 150         | 1414         | <b>1564</b>  |
| <b>29</b>              | 90          | 928          | <b>1018</b>  |
| <b>30</b>              | 44          | 629          | <b>673</b>   |
| <b>31</b>              | 36          | 437          | <b>473</b>   |
| <b>32</b>              | 23          | 258          | <b>281</b>   |
| <b>33</b>              | 9           | 179          | <b>188</b>   |
| <b>34</b>              | 4           | 91           | <b>95</b>    |
| <b>35</b>              | 7           | 52           | <b>59</b>    |
| <b>36</b>              | 1           | 18           | <b>19</b>    |
| <b>37</b>              | 1           | 8            | <b>9</b>     |
| <b>38</b>              | 1           | 3            | <b>4</b>     |
| <b>39</b>              | 2           | 1            | <b>3</b>     |
| <b>40</b>              |             |              |              |
| <b>41</b>              |             | 1            | <b>1</b>     |
| <b>42</b>              |             | 1            | <b>1</b>     |
| <b>Total</b>           | <b>4177</b> | <b>30452</b> | <b>34629</b> |
| <b>Mean length, cm</b> | <b>22.8</b> | <b>24.5</b>  | <b>24.3</b>  |

TABLE 9. Length composition (ind.) of deep-sea redfish (*S. mentella*) in Russian trawler catches in NAFO Div.3LMO in 2006.

| Length, cm             | 3L          | 3M          | 3O           | 3LMO         |
|------------------------|-------------|-------------|--------------|--------------|
| 14                     |             | 1           |              | 1            |
| 15                     |             |             | 1            | 1            |
| 16                     |             | 11          | 7            | 18           |
| 17                     |             | 46          | 4            | 50           |
| 18                     |             | 122         | 13           | 135          |
| 19                     |             | 278         | 43           | 321          |
| 20                     | 1           | 357         | 187          | 545          |
| 21                     |             | 354         | 705          | 1059         |
| 22                     | 1           | 416         | 1755         | 2172         |
| 23                     | 2           | 548         | 3056         | 3606         |
| 24                     | 9           | 726         | 2910         | 3645         |
| 25                     | 14          | 911         | 3190         | 4115         |
| 26                     | 19          | 1068        | 2497         | 3584         |
| 27                     | 41          | 1183        | 1805         | 3029         |
| 28                     | 70          | 963         | 1360         | 2393         |
| 29                     | 79          | 686         | 807          | 1572         |
| 30                     | 68          | 449         | 569          | 1086         |
| 31                     | 59          | 236         | 401          | 696          |
| 32                     | 57          | 137         | 262          | 456          |
| 33                     | 55          | 81          | 210          | 346          |
| 34                     | 47          | 45          | 120          | 212          |
| 35                     | 23          | 38          | 105          | 166          |
| 36                     | 17          | 15          | 69           | 101          |
| 37                     | 16          | 12          | 36           | 64           |
| 38                     | 13          | 9           | 61           | 83           |
| 39                     | 3           | 4           | 26           | 33           |
| 40                     | 1           | 1           | 13           | 15           |
| 41                     | 4           | 1           | 6            | 11           |
| 42                     |             | 1           | 7            | 8            |
| 43                     |             |             | 2            | 2            |
| 44                     |             |             | 1            | 1            |
| 45                     |             |             |              |              |
| 46                     | 1           |             |              | 1            |
| 47                     | 1           |             |              | 1            |
| <b>Total</b>           | <b>601</b>  | <b>8699</b> | <b>20228</b> | <b>29528</b> |
| <b>Mean length, cm</b> | <b>30.8</b> | <b>25.7</b> | <b>25.4</b>  | <b>25.6</b>  |

TABLE 10. Golden redfish (*S. marinus*) length composition (ind.) of the Russian trawler catches in NAFO Div. 3M in 2006.

| <b>Length, cm</b>      | <b>Males</b> | <b>Females</b> | <b>Total</b> |
|------------------------|--------------|----------------|--------------|
| 15                     |              | 1              | 1            |
| 16                     |              | 1              | 1            |
| 17                     | 1            |                | 1            |
| 18                     | 1            | 3              | 4            |
| 19                     | 10           | 4              | 14           |
| 20                     | 7            | 6              | 13           |
| 21                     | 17           | 11             | 28           |
| 22                     | 17           | 26             | 43           |
| 23                     | 26           | 22             | 48           |
| 24                     | 37           | 49             | 86           |
| 25                     | 61           | 64             | 125          |
| 26                     | 71           | 62             | 133          |
| 27                     | 88           | 99             | 187          |
| 28                     | 107          | 120            | 227          |
| 29                     | 113          | 125            | 238          |
| 30                     | 62           | 96             | 158          |
| 31                     | 22           | 50             | 72           |
| 32                     | 19           | 27             | 46           |
| 33                     | 11           | 33             | 44           |
| 34                     | 10           | 22             | 32           |
| 35                     | 10           | 20             | 30           |
| 36                     | 15           | 13             | 28           |
| 37                     | 13           | 15             | 28           |
| 38                     | 12           | 16             | 28           |
| 39                     | 9            | 20             | 29           |
| 40                     | 5            | 23             | 28           |
| 41                     | 6            | 22             | 28           |
| 42                     | 3            | 24             | 27           |
| 43                     | 1            | 16             | 17           |
| 44                     |              | 16             | 16           |
| 45                     |              | 15             | 15           |
| 46                     |              | 10             | 10           |
| 47                     |              | 7              | 7            |
| 48                     |              | 5              | 5            |
| 49                     | 2            | 2              | 4            |
| 50                     |              | 2              | 2            |
| 51                     |              | 6              | 6            |
| 52                     | 1            | 3              | 4            |
| <b>Total</b>           | <b>757</b>   | <b>1056</b>    | <b>1813</b>  |
| <b>Mean length, cm</b> | <b>28.3</b>  | <b>30.7</b>    | <b>29.7</b>  |

TABLE 11. Length composition (ind.) of American plaice in Russian trawler catches in NAFO Div. 3LMO in 2006.

| Length, cm             | 3L          | 3M          | 3O          | 3LMO        |
|------------------------|-------------|-------------|-------------|-------------|
| 14                     |             |             | 1           | 1           |
| 16                     |             |             | 1           | 1           |
| 18                     | 4           |             | 3           | 7           |
| 20                     | 12          |             | 5           | 17          |
| 22                     | 39          |             | 7           | 46          |
| 24                     | 50          |             | 4           | 54          |
| 26                     | 56          |             |             | 56          |
| 28                     | 75          | 2           | 1           | 78          |
| 30                     | 96          | 5           |             | 101         |
| 32                     | 158         | 17          | 2           | 177         |
| 34                     | 165         | 27          |             | 192         |
| 36                     | 156         | 22          | 4           | 182         |
| 38                     | 132         | 25          | 4           | 161         |
| 40                     | 82          | 17          | 14          | 113         |
| 42                     | 69          | 9           | 19          | 97          |
| 44                     | 57          | 11          | 21          | 89          |
| 46                     | 45          | 6           | 15          | 66          |
| 48                     | 28          | 4           | 8           | 40          |
| 50                     | 13          | 6           | 6           | 25          |
| 52                     | 13          | 3           | 2           | 18          |
| 54                     | 5           | 9           | 1           | 15          |
| 56                     |             | 2           | 2           | 4           |
| 58                     |             |             |             |             |
| 60                     |             | 1           |             | 1           |
| 62                     |             |             |             |             |
| 64                     |             |             |             |             |
| 66                     |             |             |             |             |
| 68                     |             | 1           |             | 1           |
| <b>Total</b>           | <b>1255</b> | <b>167</b>  | <b>120</b>  | <b>1542</b> |
| <b>Mean length, cm</b> | <b>35.4</b> | <b>40.0</b> | <b>40.1</b> | <b>36.3</b> |

TABLE 12. Length composition (ind.) of Witch flounder in Russian trawler catches in NAFO Div. 3LMNO in 2006.

| <b>Length, cm</b>      | <b>3L</b>   | <b>3M</b>   | <b>3N</b>   | <b>3O</b>   | <b>3LMNO</b> |
|------------------------|-------------|-------------|-------------|-------------|--------------|
| 12                     | 3           |             |             |             | 3            |
| 14                     | 1           |             |             | 8           | 9            |
| 16                     | 2           |             |             | 26          | 28           |
| 18                     | 3           |             |             | 9           | 12           |
| 20                     | 7           |             |             | 15          | 22           |
| 22                     | 3           |             |             | 12          | 15           |
| 24                     |             |             |             | 22          | 22           |
| 26                     | 1           |             |             | 65          | 66           |
| 28                     | 2           |             | 2           | 175         | 179          |
| 30                     | 5           |             | 3           | 207         | 215          |
| 32                     | 10          |             | 8           | 294         | 312          |
| 34                     | 35          | 1           | 15          | 202         | 253          |
| 36                     | 47          |             | 39          | 131         | 217          |
| 38                     | 45          | 3           | 25          | 194         | 267          |
| 40                     | 40          | 4           | 12          | 149         | 205          |
| 42                     | 41          | 3           | 9           | 131         | 184          |
| 44                     | 43          | 3           | 2           | 97          | 145          |
| 46                     | 19          |             | 3           | 50          | 72           |
| 48                     | 6           |             | 1           | 35          | 42           |
| 50                     | 3           |             |             | 11          | 14           |
| 52                     | 4           |             |             | 4           | 8            |
| 54                     | 3           |             |             | 1           | 4            |
| <b>Total</b>           | <b>323</b>  | <b>14</b>   | <b>119</b>  | <b>1838</b> | <b>2294</b>  |
| <b>Mean length, cm</b> | <b>38.8</b> | <b>40.9</b> | <b>37.5</b> | <b>35.0</b> | <b>35.2</b>  |

TABLE 13. Length composition (ind.) of Atlantic cod in Russian trawler catches in NAFO Div. 3MO in 2006.

| Length, cm             | 3M          | 3O          | 3MO         |
|------------------------|-------------|-------------|-------------|
| 30                     |             | 6           | 6           |
| 33                     |             | 7           | 7           |
| 36                     |             | 26          | 26          |
| 39                     |             | 13          | 13          |
| 42                     | 4           | 15          | 19          |
| 45                     | 31          | 18          | 49          |
| 48                     | 29          | 18          | 47          |
| 51                     | 16          | 6           | 22          |
| 54                     | 4           | 3           | 7           |
| 57                     | 3           | 4           | 7           |
| 60                     | 18          | 2           | 20          |
| 63                     | 31          | 3           | 34          |
| 66                     | 40          | 1           | 41          |
| 69                     | 42          |             | 42          |
| 72                     | 34          | 2           | 36          |
| 75                     | 19          |             | 19          |
| 78                     | 21          |             | 21          |
| 81                     | 31          |             | 31          |
| 84                     | 23          |             | 23          |
| 87                     | 18          | 1           | 19          |
| 90                     | 10          |             | 10          |
| 93                     | 4           |             | 4           |
| 96                     | 1           |             | 1           |
| 99                     | 3           |             | 3           |
| 102                    |             |             |             |
| 105                    |             |             |             |
| 108                    |             |             |             |
| 111                    | 1           |             | 1           |
| <b>Total</b>           | <b>383</b>  | <b>125</b>  | <b>508</b>  |
| <b>Mean length, cm</b> | <b>68.9</b> | <b>44.7</b> | <b>62.9</b> |

TABLE 14. Length composition (ind.) of Threebeard rockling in Russian trawler catches in NAFO Div. 3LM in 2006.

| Length, cm             | 3L          | 3M          | 3LM         |
|------------------------|-------------|-------------|-------------|
| 24                     | 1           |             | 1           |
| 27                     | 4           |             | 4           |
| 30                     | 22          |             | 22          |
| 33                     | 65          | 6           | 71          |
| 36                     | 140         | 18          | 158         |
| 39                     | 241         | 27          | 268         |
| 42                     | 214         | 30          | 244         |
| 45                     | 141         | 23          | 164         |
| 48                     | 42          | 13          | 55          |
| 51                     | 7           | 1           | 8           |
| 54                     | 2           |             | 2           |
| <b>Total</b>           | <b>879</b>  | <b>118</b>  | <b>997</b>  |
| <b>Mean length, cm</b> | <b>41.0</b> | <b>42.3</b> | <b>41.1</b> |

TABLE 15. Length composition (ind.) of White hake in Russian trawler catches in NAFO Div. 3O in 2006.

| Length, cm             | Males       | Females     | Total       |
|------------------------|-------------|-------------|-------------|
| 21                     | 5           | 6           | 11          |
| 24                     | 3           | 16          | 19          |
| 27                     | 1           | 62          | 63          |
| 30                     | 2           | 59          | 61          |
| 33                     | 1           | 47          | 48          |
| 36                     | 1           | 39          | 40          |
| 39                     | 2           | 8           | 10          |
| 42                     |             | 10          | 10          |
| 45                     | 3           |             | 3           |
| 48                     | 3           | 2           | 5           |
| 51                     | 3           | 6           | 9           |
| 54                     | 1           | 2           | 3           |
| 57                     | 2           | 5           | 7           |
| 60                     | 11          | 1           | 12          |
| 63                     | 9           | 4           | 13          |
| 66                     | 2           | 5           | 7           |
| 69                     | 2           | 9           | 11          |
| 72                     |             | 8           | 8           |
| 75                     |             | 8           | 8           |
| 78                     |             | 11          | 11          |
| 81                     |             | 6           | 6           |
| 84                     |             | 3           | 3           |
| 87                     |             | 2           | 2           |
| 90                     |             | 1           | 1           |
| <b>Total</b>           | <b>51</b>   | <b>320</b>  | <b>371</b>  |
| <b>Mean length, cm</b> | <b>50.2</b> | <b>40.8</b> | <b>42.1</b> |

TABLE 16. Length composition (ind.) of Thorny skate in Russian trawler catches in NAFO Div. 3LMO in 2006.

| Length, cm             | 3L          | 3M          | 3O          | 3LMO        |
|------------------------|-------------|-------------|-------------|-------------|
| 12                     | 8           |             | 1           | 8           |
| 15                     | 8           |             | 2           | 10          |
| 36                     |             | 1           |             | 1           |
| 39                     | 1           | 2           |             | 3           |
| 42                     | 1           | 1           |             | 2           |
| 45                     | 2           | 6           |             | 8           |
| 48                     | 5           | 9           |             | 14          |
| 51                     | 4           | 12          | 1           | 17          |
| 54                     | 10          | 14          | 2           | 26          |
| 57                     | 8           | 13          | 1           | 22          |
| 60                     | 11          | 10          | 5           | 26          |
| 63                     | 3           | 5           | 1           | 9           |
| 66                     | 1           | 2           | 5           | 8           |
| 69                     | 1           | 1           | 5           | 7           |
| 72                     |             |             | 3           | 3           |
| 75                     |             |             | 8           | 8           |
| 78                     |             | 1           | 4           | 5           |
| 81                     |             |             | 1           | 1           |
| 84                     |             |             | 1           | 1           |
| 87                     |             |             | 2           | 2           |
| 90                     |             |             | 2           | 2           |
| 96                     |             |             | 1           | 1           |
| 120                    |             |             | 1           | 1           |
| <b>Total</b>           | <b>63</b>   | <b>77</b>   | <b>46</b>   | <b>186</b>  |
| <b>Mean length, cm</b> | <b>45.6</b> | <b>55.0</b> | <b>69.7</b> | <b>55.4</b> |

TABLE 17. Length composition (ind.) of Black dogfish in Russian trawler catches in NAFO Div. 3LM in 2006.

| Length, cm             | 3L          | 3M          | 3LM         |
|------------------------|-------------|-------------|-------------|
| 42                     | 3           |             | 3           |
| 45                     | 1           |             | 1           |
| 48                     | 8           |             | 8           |
| 51                     | 14          | 2           | 16          |
| 54                     | 25          | 3           | 28          |
| 57                     | 30          | 15          | 45          |
| 60                     | 44          | 12          | 56          |
| 63                     | 83          | 21          | 104         |
| 66                     | 61          | 16          | 77          |
| 69                     | 29          | 12          | 41          |
| 72                     | 27          | 8           | 35          |
| 75                     | 13          | 3           | 16          |
| 78                     | 8           | 3           | 11          |
| 81                     | 3           | 1           | 4           |
| <b>Total</b>           | <b>349</b>  | <b>96</b>   | <b>445</b>  |
| <b>Mean length, cm</b> | <b>64.1</b> | <b>65.2</b> | <b>64.3</b> |

TABLE 18. Length composition (ind) of Northern wolffish (*Anarchichas denticulatus*) in Russian trawler catches in NAFO Div. 3LM in 2006

| Length, cm             | 3L          | 3M          | 3LM         |
|------------------------|-------------|-------------|-------------|
| 30                     | 1           |             | 1           |
| 33                     | 3           |             | 3           |
| 36                     | 6           |             | 6           |
| 39                     | 12          | 2           | 14          |
| 42                     | 11          |             | 11          |
| 45                     | 22          | 3           | 25          |
| 48                     | 18          | 3           | 21          |
| 51                     | 15          | 2           | 17          |
| 54                     | 25          | 5           | 30          |
| 57                     | 22          | 5           | 27          |
| 60                     | 16          | 5           | 21          |
| 63                     | 15          | 4           | 19          |
| 66                     | 7           | 2           | 9           |
| 69                     | 6           | 3           | 9           |
| 72                     | 9           | 5           | 14          |
| 75                     | 1           | 1           | 2           |
| 78                     | 6           | 2           | 8           |
| 81                     | 2           | 1           | 3           |
| 84                     | 1           |             | 1           |
| 87                     | 1           | 1           | 2           |
| 90                     |             | 2           | 2           |
| 93                     |             |             |             |
| 96                     |             |             |             |
| 99                     |             |             |             |
| 102                    |             | 1           | 1           |
| 105                    | 1           |             | 1           |
| 108                    |             |             |             |
| 111                    | 2           |             | 2           |
| 114                    | 1           |             | 1           |
| 117                    |             |             |             |
| 120                    |             |             |             |
| 123                    | 1           |             | 1           |
| <b>Total</b>           | <b>204</b>  | <b>47</b>   | <b>251</b>  |
| <b>Mean length, cm</b> | <b>59.7</b> | <b>63.7</b> | <b>60.4</b> |

TABLE 19. Length composition (ind.) of Blue hake (*Antimora rostrata*) in Russian trawler catches in NAFO Div. 3LMO in 2006.

| Length, cm             | 3L          | 3M          | 3O          | 3LMO        |
|------------------------|-------------|-------------|-------------|-------------|
| 18                     | 1           |             | 1           | 2           |
| 21                     |             |             | 1           | 1           |
| 24                     | 2           |             | 1           | 3           |
| 27                     | 9           |             | 7           | 16          |
| 30                     | 34          |             | 7           | 41          |
| 33                     | 58          | 5           | 11          | 74          |
| 36                     | 66          | 24          | 14          | 104         |
| 39                     | 63          | 20          | 7           | 90          |
| 42                     | 32          | 8           | 1           | 41          |
| 45                     | 34          | 1           |             | 35          |
| 48                     | 20          | 1           |             | 21          |
| 51                     | 17          |             |             | 17          |
| 54                     | 12          |             |             | 12          |
| 57                     | 8           |             |             | 8           |
| 60                     | 1           |             |             | 1           |
| 63                     | 1           |             |             | 1           |
| <b>Total</b>           | <b>358</b>  | <b>59</b>   | <b>50</b>   | <b>467</b>  |
| <b>Mean length, cm</b> | <b>40.1</b> | <b>38.9</b> | <b>33.9</b> | <b>39.3</b> |

TABLE 20. Length composition (ind.) of Atlantic halibut (*Hippoglossus hippoglossus*) in Russian trawler catches in NAFO Div. 3LMNO in 2006.

| Length, cm             | 3L           | 3M           | 3N          | 3O          | LMNO         |
|------------------------|--------------|--------------|-------------|-------------|--------------|
| 62                     |              | 1            |             |             | 1            |
| 64                     |              |              |             | 1           | 1            |
| 66                     |              | 1            |             | 1           | 2            |
| 74                     |              | 1            |             |             | 1            |
| 76                     |              |              |             | 1           | 1            |
| 78                     |              |              |             | 1           | 1            |
| 82                     |              |              | 1           | 2           | 3            |
| 86                     |              |              |             | 2           | 2            |
| 92                     |              | 1            |             | 1           | 2            |
| 94                     |              |              |             | 1           | 1            |
| 102                    |              |              |             | 1           | 1            |
| 104                    |              |              |             | 1           | 1            |
| 106                    |              |              |             | 3           | 3            |
| 112                    |              |              |             | 2           | 2            |
| 116                    |              |              |             | 1           | 1            |
| 118                    |              | 2            |             |             | 2            |
| 120                    |              | 1            |             |             | 1            |
| 122                    |              | 1            |             | 2           | 3            |
| 134                    |              | 1            |             |             | 1            |
| 136                    |              | 1            |             |             | 1            |
| 138                    | 1            |              |             |             | 1            |
| 144                    | 1            |              |             |             | 1            |
| 146                    | 1            |              |             |             | 1            |
| 150                    |              | 1            |             |             | 1            |
| 154                    |              | 1            |             |             | 1            |
| 162                    |              |              |             | 1           | 1            |
| <b>Total</b>           | <b>3</b>     | <b>12</b>    | <b>1</b>    | <b>21</b>   | <b>37</b>    |
| <b>Mean length, cm</b> | <b>143.2</b> | <b>112.7</b> | <b>82.5</b> | <b>99.4</b> | <b>107.4</b> |

TABLE 21.Length composition (ind.) of Common grenadier (*Nezumia bairdii*) in Russian trawler catches in NAFO Div. 3LMO in 2006.

| <b>Length, cm</b>      | <b>3L</b>   | <b>3M</b>   | <b>3O</b>   | <b>3LMO</b> |
|------------------------|-------------|-------------|-------------|-------------|
| 12                     |             | 1           |             | 1           |
| 15                     |             | 5           |             | 5           |
| 18                     |             | 13          | 1           | 14          |
| 21                     |             | 12          | 9           | 21          |
| 24                     | 1           | 8           | 17          | 26          |
| 27                     | 14          | 1           | 19          | 34          |
| 30                     | 37          |             | 7           | 44          |
| 33                     | 37          | 1           | 11          | 49          |
| 36                     | 13          |             |             | 13          |
| 39                     | 5           |             |             | 5           |
| 42                     | 1           |             |             | 1           |
| <b>Total</b>           | <b>108</b>  | <b>41</b>   | <b>64</b>   | <b>213</b>  |
| <b>Mean length, cm</b> | <b>32.8</b> | <b>21.1</b> | <b>27.6</b> | <b>29.0</b> |

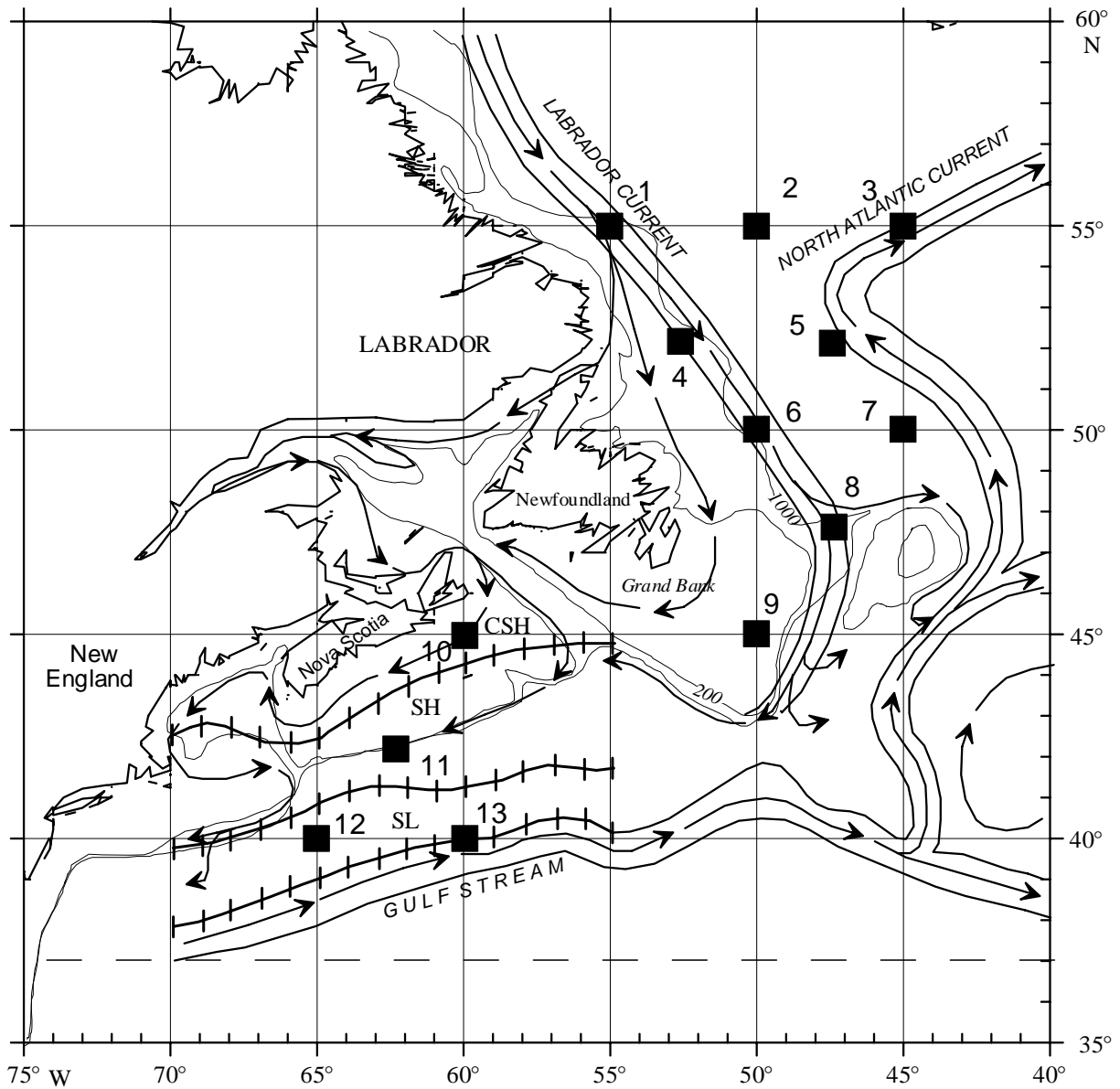


Fig. 1. SST monitoring scheme in the Labrador and Gulf Stream currents zones and water masses boundaries dynamics at the surface between 55°W and 70°W.