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Russian Research Report for 2008

by

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SUBAREAS 1+2

A. Status of the fisheries

Greenland halibut

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

In the area north of 68° N two medium-tonnage trawlers were engaged in the fishery. The fishery covered a relatively small area between 68°47' N – 70°00' N and 58°55' W – 60°46' W at the depth of 920 – 1250 meters. According to the preliminary data, 570.5 t of Greenland halibut were caught. The by-catch included skate. The catch rate varied from month to month between 3,7 t and 6,1 t and on the average amounted to 5,3 tons per fishing day.

In the area south of 68° N up to three medium-tonnage trawlers performed fishing operations. The fishery took place from July to December in the area between 63°22' N – 64°35' N and 55°21' W – 57°56' W at 955 – 1545 m depth. Daily fishing efficiency varied from 5.0 t to 9.1 t and on the average amounted to 6.7 tons. According to the preliminary data the catch of Greenland halibut was estimated at 763.1 t. The by-catch included skates, roughhead and roundnose grenadiers.

On the whole 1333.6 t of Greenland halibut were caught in the area off the West Greenland by Russian vessels (Table 1).

Pelagic deep-water redfish

Russian fishery on deep-water redfish in Div. 1F was carried out at 250 – 450 m depth in late July – August. Participating vessels were 5 – 8 large-tonnage and medium-tonnage trawlers with daily fishing efficiency of 12.3 t and 9.1 t correspondingly. According to the preliminary data the catch of the pelagic redfish in Div. 1F was 1580.0 tons.

Other fish species

There was no directed fishery for other fish species.

B. Special research studies

Biological data on Greenland halibut in Div. 1AD and pelagic deep-water redfish in Div. 1F were collected by observers aboard Russian fishing vessels.

Greenland halibut

In Div. 1A the halibut length in catches ranged from 28 to 82 cm, fish specimens as long as 46 – 50 cm prevailed. The average length of males was 48.5 cm, of females 51.1 cm (Table 2). Sex ratio was approximately equal.

In Div. 1D Greenland halibut 26 – 98 cm in length were recorded, fish as long as 50 – 52 cm were prevailed. The mean length of males was 51.5 cm, of females 55.8 cm. Sex ratio was 1.8: 1.

In Div. 1AD the age of halibut varied from 3 to 21 years, predominating were fish aged 5 – 6 (Table 3).

Deep-water redfish

In Div. 1F the length of deep-water redfish in catches ranged from 26 to 43 cm. Fish 34 – 37 cm in length made up the bulk of catches. The mean length was 35.1 cm (Table 4). The age of redfish varied from 7 to 20 years, fish aged 13 – 15 were predominating (Table 5). Males-females ratio was 1.6 : 1.0. In the first ten days of August, 15 – 20 days earlier than the long-term mean period, redfish specimens began to mate.

Marine mammals

According to results of observations in October 2009 bottle-nosed whales, sperm whales and other whales and seals occasionally occurred in Div. 1AD (Table 6).

Vulnerable marine ecosystems

According to the results of investigations carried out by observers occasional catches of cold-water corals *Pennatularia sp.* with the total weight of about 0.5 kg were registered on the depth 1090-1420m.

SUBAREA 3

A. Status of the fisheries

Greenland halibut

Directed fishing on the Greenland halibut was conducted by 5 medium-tonnage trawlers from January to September. The main fishing areas were some sites on the continental slope adjacent to the Flemish Pass (Div. 3L and 3M) between 45°00' – 48°40' N at 600 – 1250 m depth. The vessels occasionally operated in Div. 3N at depth of 850 – 1100 m as well. Catch rates in the area varied from 4.0 to 13.9 t and on the average amounted to 8.9 t per fishing day and 0.57 t per hour trawling.

In the whole 1518.3 t of Greenland halibut were taken in the course of directed fishing in 2008. Besides, 24.5 t were caught in redfish fishery. According to the preliminary data the total catch of Greenland halibut amounted to 1542.8 tons (the Russian quota was 1512.0 tons). The by-catch included roughhead grenadier (108.4 t), roundnose grenadier (3.8 t), skates (26.3 t), red hake (13.4 t), deep-water redfish (17.3 t), American plaice (17.5 t), witch flounder (13.7 t), northern wolffish (6.0 t) and Atlantic halibut (1.5 t).

Redfish

In February – March one medium-tonnage trawler occasionally conducted directed fishery for redfish on the northern Flemish Cap between 47°20' – 48°22' N and 45°20' – 46°04' W at 360 – 800 m depth. Daily fishing efficiency amounted to 6.0 t and 5.8 t per fishing day, correspondingly.

In August–September three medium-tonnage trawlers performed fishing operations between 46°24' – 47°02' N and 44°11' – 46°21' W at depth of 240 – 480 m. The fishing efficiency was equal to 14.2 t per a fishing day.

In the year 2009, 1209.3 t of redfishes were caught in the course of directed fishing. Besides, these species were harvested in small quantities (5.3 t) in Greenland halibut fishery. Thus, the total catch of redfish in Div. 3M amounted to 1214.6 tons (Table 1).

In February, April and September Russian trawlers operated occasionally in Div. 3O. The fishery was carried out in the site between 43°07' – 43°26' N and 51°01' – 51°43' W at depth of 100 – 550 m. The mean daily fishing

efficiency was 8.6 tons. According to the preliminary data, the catch of redfish in Div. 3O totaled 82.3 tons. The by-catch included 14.9 t of red hake, 14.7 t of American plaice, 8.5 t of cod, 2.7 t of skate, 2.0 t of white hake, 1.7 t of yellowtail flounder and single individuals of Greenland halibut and Atlantic wolffish. In addition 33.9 t were taken as by-catch in skate fishery, 15.1 t in other fishes. In Div 3O 1.7 t were taken as by-catches in redfish fishery. Total catches of yellowtail flounder estimated as 143.0 t.

Thorny skate

In 2008 three medium-tonnage vessels participated occasionally in directed trawl fishery on skates on the southern Grand Newfoundland Bank (Div. 3NO) between 43°05' – 44°05' N and 50°31' – 49°07' W at depth of 40 – 130 m. In April, May and September the mean daily catch did not exceed 6.0 tons. The highest fishing efficiency was recorded in November, when it amounted 32.6 tons. In December the catch rate decreased to 15.4 t per fishing day. American plaice (28.4 t), yellowtail flounder (33.9 t), cod (11.4 t). Single specimens of American angler and witch flounder were occurred in skate catches as well.

According to the preliminary data, in 2008 the total Russian catch of skates in NAFO Regulatory Area came to 542.0 tons.

Yellowtail flounder

The directed trawl fishery on yellowtail flounder was occasionally carried out in Div. 3N in early March – late April between 42°56' – 43°40' N and 50°27' – 49°44' W. Two medium-tonnage trawlers were engaged in the fishery at 55 – 330 m depth. The mean catch rate was 13.8 t per fishing day. In the course of target fishery were taken: 92.3 t of yellowtail flounder, 10.9 t of skates, 6.8 t of American plaice. Wolffish and Greenland halibut occasionally occurred in the catches.

Shrimp

In Div. 3L shrimp fishing took place in January – March between 47°42' – 47°54' N and 47°18' – 47°38' W at depth of 250 – 400 m. The fishery was performed by 2-3 medium-tonnage trawlers. Daily fishing efficiency varied from 7.7 – 11.4 tons, the total catch amounted to 278.1 tons (Table 1).

In Div. 3M two medium-tonnage vessels occasionally conducted the fishery in March (4 fishing days) between 46°35' – 48°07' N and 45°17' – 46°11' W at depth of 250 – 400 m. The mean daily fishing efficiency was 5.4 tons, the shrimp catch made up 20.6 tons.

Other fish species

There was no directed fishery for other fish species. In the course of directed fisheries the by-catch of other fish species amounted to 1 – 23 %.

B. <u>Special research studies</u>

There were no special surveys to assess the stocks of target species. Biological data were collected by observers aboard fishing vessels.

Greenland halibut (Reinhardtius hippoglossoides)

In Div. 3L Greenland halibut 16 – 96 cm in length occurred with the average length of 49,4 cm. Fish as long as 46 – 50 cm predominated (Table 7).

The length of fish in Div. 3M varied from 34 to 82 cm. The bulk of catches was made up by individuals 47 – 50 cm in length, which is similar to Div. 3L.

In Div. 3N the halibut length varied from 28 to 96 cm. Fishes 44 – 50 cm in length were predominating. The average length of fish was 48.6 cm.

As a whole, in Div. 3LMNO Greenland halibut 18 – 96 cm in length occurred with the mean length of 49.4 cm. The age of fish determined by scale varied from 3 to 19 years (Table 8). Specimens aged 6 – 7 made up the bulk of catches.

Roughhead grenadier (Macrourus berglax)

The total length of roughhead grenadier in catches in Div. 3L ranged from 27 to 90 cm, the mean length was 48.8 cm (Table 9). Fish 42 – 45 cm in length made up the bulk of catches.

In Div. 3M the fish length distribution varied from 33 to 78 cm, the mean length was 47.1 cm. The modal length was 42 – 45 cm.

In Div. 3N the length of roughhead grenadier varied from 27 to 90 cm. The bulk of catches was made up by individuals 57 – 60 cm in length.

On the whole, in Div. 3LMN roughhead grenadier with 27 – 90 cm length occurred, the mean length was 51.0 cm.

Acadian redfish (Sebastes fasciatus)

In Div. 3M the length of Acadian redfish varied from 15 to 37 cm. The mean length of females and males was 24.1 cm and 22.6 cm, correspondingly Specimens as long as 21 – 23 cm prevailed (Table 10). Fish aged 6 – 7 predominated (Table 11).

Deep-water redfish (Sebastes mentella)

In Div. 3L the length of deep-water redfish ranged from 9 to 44 cm, the mean length was 31.7 cm. Fishes 32 – 35 cm in length were predominating (Table 12).

In Div. 3M the length distribution fluctuated between 14 and 57 cm, the mean length was 24,5 cm. The bulk of catches was made up by fishes 21 – 25 cm in length (Table 12), aged 6 – 7 (Table 13).

In Div. 3N the length of fish varied from 22 to 43 cm. The bulk of catches was made up by specimens 33 – 35 cm in length. The mean length was 34.7 cm.

In Div. 3O the redfish length was 15 – 37 cm, the mean length was 22,9 cm. Fish 24 – 25 cm predominated in catches.

Golden redfish (Sebastes marinus)

In Div. 3M the length of Golden redfish was 15 – 59 cm, the mean length was 29.0 cm (Table 14). Specimens 29 – 30 cm in length, aged 8 – 10 made up the bulk of catches (Table 15).

American plaice (Hippoglossoides platessoides)

In Div. 3L the length distribution of American plaice in by-catches taken in the Greenland halibut fishery was determined by 14 – 64 cm fish. The mean length was 39.4 cm (Table 16).

In Div. 3M the length distribution of American plaice in by-catches in the redfish fishery varied from 28 to 60 cm, the mean length was 45.6 cm.

In Div. 3N the length of American plaice in by-catches in the skate fishery ranged from 22 to 70 cm. The bulk of catches was made up by individuals 40 – 42 cm in length.

In Div. 3O the length of fish varied from 20 to 58 cm.

Witch flounder (Glyptocephalus cynoglossus)

In Div. 3L the length distribution of witch flounder from by-catches in the Greenland halibut fishery was presented by fish 26 – 56 cm in length, the mean length was 41.5 cm (Table 17).

On the Flemish Cap the length of witch flounder ranged from 30 to 52 cm, the mean length was 41.4 cm.

In Div. 3N the length of fish varied from 28 to 62 cm, the mean length was 42.9 cm. Fishes 40 – 42 cm in length made up the bulk of catches.

In Div. 3O the length distribution of witch flounder ranged from 26 to 42 cm, the mean length was 34.6 cm.

Yellowtail flounder (Limanda ferruginea)

In Div. 3N the length of yellowtail flounder varied from 22 to 52 cm, the mean length was 36.4 cm (Table 18). The bulk of catches was made up by fish 34 – 36 cm in length.

In Div. 3O single specimens of yellowtail flounder 30 – 40 cm in length were found in by-catches. The mean length was 35.4 cm.

Cod (Gadus morhua)

On the Flemish Cap the length of cod was 33 – 105 cm, the mean length was 66.5 cm (Table 19). The bulk of catches was made up by fish 66 – 69 cm in length.

The length distribution of cod in Div. 3N varied from 39 to 135 cm, the mean length was 90.8 cm.

In Div. 3O the length distribution of fish ranged from 30 to 96 cm, the mean length was 57.5 cm. Fishes as long as 48 – 51 cm predominated in catches.

In Div. 3L single cod specimens with the mean length of 31.0 cm were recorded in catches.

Threebeard rockling (Gaidropsarus ensis)

In Div. 3L the length of threebeard rockling varied from 24 to 51 cm, the mean length was 39.7 cm (Table 20). Individuals 36 – 39 cm in length made up the bulk of catches.

On the Flemish Cap single specimens of threebeard rockling 30 – 45 cm in length were caught, the mean length was 37.7 cm.

In Div. 3N fish as long as 30 – 45 cm occurred with the mean length of 39.0 cm.

White hake (Urophycis tenuis)

In Div. 3N the only caught specimen was 61 cm long (Table 21).

In Div. 3O fish as long as 30 – 81 cm occurred, the mean length was 54.4 cm.

Thorny skate (Amblyraja radiata)

In Div. 3L during the Greenland halibut fishery thorny skate specimens 12 – 90 cm in length were occurred (Table 22). Skates as long as 57 – 60 cm prevailed.

In Div. 3M the length of thorny skate ranged from 36 to 81 cm, the mean length was 55.9 cm.

In Div. 3N the length distribution of skates varied from 36 to 93 cm. The mean length was 64.6 cm. The bulk of catches was made up by fish 63 – 69 cm in length.

Three specimens with the mean length of 61.0 cm were caught in Div. 3O.

Black dogfish (Centroscyllium fabricii)

This species was mainly recorded in by-catches in the halibut fishery. In Div. 3LMNO the length of males varied from 39 to 78 cm, the mean length was 61.2 cm (Table 23). Females 36 – 81 cm long occurred with the mean length of 61.7 cm. Specimens 60 – 63 cm in length made up the bulk of catches.

Northern wolffish (Anarhichas denticulatus)

In Div. 3L the length of Northern wolffish ranged from 21 to 120 cm, the mean length was 68.9 cm (Table 24).

In Div. 3M specimens as long as 48 – 105 cm were caught, the mean length was 74.2 cm.

In Div. 3N the length distribution of the species varied from 39 to 105 cm. The bulk of catches was made up by fish 48 – 54 cm in length.

Three Northern wolffish specimens with the mean length of 80.0 cm were caught in Div. 3O.

Blue hake (Antimora rostrata)

In Div. 3 LMN the length distribution of blue hake varied from 21 to 66 cm, the mean length was 40.3 cm (Table 25). The bulk of catches was made up by fish 33 – 36 cm in length.

Common grenadier (Nezumia bairdii)

In Div. 3LMNO the total length of common grenadier ranged from 21 to 45 cm, the mean length was 35.0 cm (Table 26).

Atlantic halibut (Hippoglossus hippoglossus)

Single specimens of Atlantic halibut were caught in Div. 3LMN. The length distribution of the species varied from 58 to 174 cm, the mean length was 99.0 cm (Table 27).

Other fish species

In the course of the fishery Atlantic and spotted wolffishes, roundnose grenadier, chimeras, longfinned hake, Notacanthidae and other fish species in small quantity were occurred in by-catch.

Shrimp

In March in Div. 3L the length of shrimp carapace varied from 9.6 mm to 28.0 mm, the mean length was 21.5 mm. The average weight was 6,5 g.

Marine mammals

According to results of observations aboard the fishing vessels dolphins, bottle-nosed whales, sperm whales and seals were registered in Div. 3LM in March, April and August (Table 28).

Vulnerable marine ecosystems

According to the results of investigations carried out by observers occasional catches of cold-water corals *Pennatularia sp.* on the Flemish Cap (the depth 304-355m with the total weight of about 0.1 kg were registered. In other areas indicator species for vulnerable marine ecosystems (cold-water corals, sponges) were not recorded in catches of fishing vessels.

SUBAREA 4

A. Status of the fisheries

In 2008 no fishery was carried out in NAFO Subarea 4.

B. Special research studies

Environmental researches

a) Hydrographic studies

In 2008 the monitoring of sea-surface temperature (SST) was continued on the shelf of the Northwest Atlantic and adjacent part of the open ocean. As previously for this purpose the base of average monthly values of SST anomalies was used “http://ingridldgo.columbia.edu/SOURCES/.IGOSS/.nmc”. The monitoring covered 19 points located in

typical parts of the Northwest Atlantic shelf and in offshore areas between 40˚-55˚ N and 45˚–70˚ W (Fig. 1). Analysis of SST seasonal trend in 2008 showed low thermal background in the surface layer to have been kept since 2007 in the whole area compared with abnormally warm 2006 (Vaskov et al., 2008). In eastern subareas SST anomalies remained positive, but they were lower than in 2006, and for some months they were lower than in cold 2007. Thus, in the northern part of the Labrador Current in winter and spring SST dropped by 1,5 – 2˚ C compared with 2006 and was 0,7 – 1,8˚C lower than in 2007. In summer SST drastically increased and reached the 2006 level and even exceeded it. In autumn SST decreased again and was lower than in 2006 (Fig. 2, p. 15). In the southern part of the current (p. 6) these differences kept only in winter-spring period of the year. During 2008 the mean month SST values in the Labrador Sea were lower than in 2006 but higher or similar to the 2007 level (Fig. 2, p.7). On the Grand Bank and in the Laurentian Channel positive SST anomalies kept for the most of the year, but they were considerably lower than in 2006 (Fig. 2, pp. 8, 9, 14). In southwestern subareas, on the Nova Scotian shelf and Georges Bank negative SST anomalies occurred, a transition to which took place in 2007 (Fig. 2, pp. 10, 11, 16, 18). SST values in July became an exception, they were excess and reached the 2006 level. In the warm Slope Water and at the Gulf Stream front SST anomalies varied from 1˚C to -1˚C, but were on average lower than in 2006 (Fig. 2, pp. 12, 13). Like in 2007 SST in the mentioned subareas for the most of 2008 was below the mean values of abnormally warm 2006.

In 2008 the monitoring of latitudinal shifts in hydrological fronts on the ocean surface taken as advection indices of warm and cold waters was continued. The monitoring covered regions adjoined to the New England (66˚ – 70˚ W), the Nova Scotia (59˚ – 65˚ W) and the Laurentian Channel (55˚ – 58˚ W). Figure 3 shows the long-term course of mean annual anomalies of indices for front location in 1962 – 2008. It was previously mentioned that in year-to-year fluctuations in fronts in 1979 – 1983 there occurred a transition from negative SST anomalies to positive ones (Sigaev, 2000). After shifting in phase positive trend for each front in different areas lasts differently. Thus, in 2002 – 2003 this period completed for the Cold Shelf Water front in all sites and the Slope Water front in the New England and Nova Scotia. At the same time the Slope Water front in the Laurentian Channel and the Gulf Stream front in the Nova Scotia and the Laurentian Channel still remain further north than the long-term mean, but markedly shifted to the south after 1994 – 1995. More sustainable in magnitude of front shifting keep within 14 – 20 years. Further research is supposed to be aimed at investigation on cyclicity in long-term fronts dynamics.

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TABLE 1. Preliminary catches taken by Russian trawlers in NAFO SA 1-3 in 2008

Species	Division	Catch, t
Greenland halibut	1A	548
	1B	22
	1C	163
	1D	600
	1ABCD	**1333**
Greenland halibut	3L	1176
	3M	154
	3N	213
	3LMN	**1543**
Atlantic halibut	3L	1
	3M	1
	3LM	**2**
American plaice	3L	25
	3M	1
	3N	52
	3O	9
	3LMNO	**87**
Yellowtail flounder	3N	141
	3O	2
	3NO	**143**
Witch flounder	3L	9
	3M	3
	3N	11
	3O	6
	3LMNO	**29**
Roughhead grenadier	3L	49
	3M	38
	3N	39
	3LMN	**126**
Deep-sea redfish	**1F**	**1580**
Redfish spp.	3L	13
	3M	1215
	3N	5
	3O	82
	3LMNO	**1315**
Skate	3L	12
	3M	4
	3N	523
	3O	3
	3LMN	**542**
Atlantic cod	3M	74
	3N	14
	3O	9
	3MNO	**97**
Wolffish spp.	3L	3
	3M	8
	3N	1
	3O	2
	3LMNO	**14**
Shrimp	3L	278
	3M	21
	3LM	**299**

TABLE 2. Greenland halibut length composition (ind.) of the Russian trawl catches in NAFO Div. 1AD in 2008.

Length, cm	1A			1D			Total 1AD		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
26					1	**1**		1	**1**
28	3	1	**4**				3	1	**4**
30	5	1	**6**				5	1	**6**
32	11	2	**13**				11	2	**13**
34	8	6	**14**	3		**3**	11	6	**17**
36	31	15	**46**	3		**3**	34	15	**49**
38	52	25	**77**	7	2	**9**	59	27	**86**
40	92	47	**139**	44	14	**58**	136	61	**197**
42	182	100	**282**	102	27	**129**	284	127	**411**
44	344	212	**556**	283	102	**385**	627	314	**941**
46	359	268	**627**	574	196	**770**	933	464	**1397**
48	408	291	**699**	934	342	**1276**	1342	633	**1975**
50	451	332	**783**	1200	437	**1637**	1651	769	**2420**
52	288	303	**591**	1041	450	**1491**	1329	753	**2082**
54	187	209	**396**	886	487	**1373**	1073	696	**1769**
56	82	138	**220**	499	322	**821**	581	460	**1041**
58	41	108	**149**	252	240	**492**	293	348	**641**
60	24	66	**90**	135	177	**312**	159	243	**402**
62	14	36	**50**	59	140	**199**	73	176	**249**
64	12	27	**39**	28	120	**148**	40	147	**187**
66	7	21	**28**	7	70	**77**	14	91	**105**
68	4	17	**21**	6	56	**62**	10	73	**83**
70	3	5	**8**	5	50	**55**	8	55	**63**
72	3	11	**14**	4	41	**45**	7	52	**59**
74		8	**8**	1	36	**37**	1	44	**45**
76		7	**7**		40	**40**		47	**47**
78		2	**2**		29	**29**		31	**31**
80		6	**6**		22	**22**		28	**28**
82		5	**5**		17	**17**		22	**22**
84		7			20	**20**		20	**20**
86					5	**5**		5	**5**
88									
90					4	**4**		4	**4**
92					3	**3**		3	**3**
94									
96					1	**1**		1	**1**
98					1	**1**		1	**1**
Total	**2611**	**2269**	**4880**	**6073**	**3452**	**9525**	**8684**	**5721**	**14405**
Mean length, cm	**48.5**	**51.2**	**49.8**	**51.5**	**55.9**	**53.1**	**50.0**	**53.5**	**51.5**

TABLE 3. Greenland halibut age-length composition of the Russian trawl catches (ind.) in the NAFO Div. 1AD in 2008.

Length, cm	Age, years																			Total	Weight, g
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21		
26	1																			**1**	**110.0**
28	**2**	**2**																		**4**	**176.3**
30		1																		**1**	**195.0**
32		6	4																	**10**	**280.0**
34		6	5	1																**12**	**323.8**
36		4	12	2																**18**	**407.2**
38			15	6	1															**22**	**464.8**
40			9	11	1															**21**	**514.5**
42			4	15	2															**21**	**611.0**
44			2	14	3	1														**20**	**736.8**
46				9	10	1														**20**	**813.3**
48				1	14	5														**20**	**951.8**
50				1	7	14														**22**	**1087.0**
52					3	16														**19**	**1245.5**
54					3	14	3													**20**	**1430.5**
56					1	7	10													**18**	**1603.6**
58						1	11	5	1											**18**	**1701.7**
60						1	13	5	3											**22**	**2050.9**
62							5	8	3	3										**19**	**2144.2**
64							2	7	7	4										**20**	**2398.3**
66								6	4	5	1									**16**	**2602.2**
68								1	10	6	1									**18**	**3015.3**
70									4	8	4									**16**	**3329.7**
72									1	8	4	3								**16**	**3637.2**
74										1	7	1	1							**10**	**4090.5**
76										1	3	5	2							**11**	**4570.0**
78											2	4	4							**10**	**4951.0**
80											1	2	2	2						**7**	**5638.6**
82												2	1	3						**6**	**6538.3**
84													3	4	2	1				**10**	**6281.5**
86															2					**2**	**6585.0**
88																					
90																	1			**1**	**8165.0**
92																1		1		**2**	**9447.5**
94																					
96																		**1**		**1**	**9985.0**
98																			**1**	**1**	**10770.0**
Total	**3**	**19**	**51**	**60**	**45**	**60**	**44**	**32**	**33**	**36**	**23**	**17**	**13**	**9**	**4**	**2**	**1**	**2**	**1**	**455**	
Mean weight, g	**135.0**	**292.6**	**459.4**	**634.5**	**959.4**	**1272.0**	**1854.1**	**2209.4**	**2665.8**	**3129.2**	**3975.9**	**4806.5**	**5340.0**	**6236.1**	**6406.3**	**8415.0**	**8165.0**	**9522.5**	**10770.0**	**455**	**2019.8**
Mean length, cm	**27.7**	**33.3**	**38.2**	**42.7**	**48.1**	**52.7**	**59.0**	**63.0**	**66.2**	**69.0**	**73.6**	**77.3**	**79.7**	**83.1**	**86.0**	**89.0**	**90.0**	**94.5**	**99.0**	**455**	**56.1**

TABLE 4. Redfish length composition (ind.) of the Russian trawl catches in NAFO Div. 1F, in 2008.

Length, cm	Males	Females	Total
26	4	1	5
27	5	6	11
28	7	5	12
29	17	12	29
30	26	20	46
31	74	38	112
32	118	81	199
33	216	134	350
34	328	185	513
35	327	143	470
36	452	189	641
37	305	207	512
38	144	168	312
39	40	52	92
40	8	22	30
41	2	8	10
42	1		1
43		2	2
Total	**2074**	**1273**	**3347**
Mean length, cm	**35.0**	**35.3**	**35.1**

TABLE 5. Redfish age composition in catches by Russian trawlers in NAFO Division 1F in 2008, %

Age, years	NAFO Div. 1F		
	Males	Females	Total
7	0.1	0.1	0.1
8	0.4	0.6	0.4
9	0.8	0.8	0.8
10	1.5	1.3	1.4
11	5.4	6.8	6.1
12	8.6	12.8	10.5
13	22.4	16	19.5
14	20.6	16.1	19.1
15	23	19.1	21.2
16	14.2	13.8	13.6
17	2.2	10.6	6.1
18	0.7	1.7	1.1
19	0.1	0.1	0.1
20		0.1	0.1
Total	**2074**	**1273**	**3347**
Average age, years	**13.9**	**14.0**	**13.9**

TABLE 6. Occurrence of marine mammals off West Greenland in 2008
(according to observer's data)

Date	Position	Marine mammals	Number	Notes
03.10	64°34'N 55°40'W	Whale	1	Observed during vessel passage
10.10	69°08'N 59°08'W	Bottle-nosed whale Seal	2 1 - 2	Observed during hauling of trawl
15.10	69°17'N 59°05'W	Bottle-nosed whale Seal	6 2	Observed during hauling of trawl
18.10	63°48' 57°39'W	Bottle-nosed whale Sperm whale	1 6	Observed during hauling of trawl
19.10	63°44'N 57°40'W	Sperm whale	1	Caught by trawl and released
19.10	69°20'N 58°58'W	Seal	Seal stock (number of animals was not quantified)	Observed during vessel passage
20.10 - 31.10	63°53'N 57°48'W	Sperm whale Bottle-nosed whale	1 - 2 6 - 8	Observed during hauling of trawl

Table 7. Greenland halibut length composition (ind.) of the Russian commercial trawl catches by month in NAFO Div. 3LMNO in 2008.

Length,	Division 3L					Division 3M						Division 3N				Division 3O		Total
cm	I	III	IV	V	Total	I	III	IV	V	VIII	Total	IV	V	VI	Total	V	Total	3LMNO
16		1			1													1
18		3			3													3
20		13			13													13
22		20			20													20
24		9			9													9
26		4	1		5													5
28		2			2							1			1			3
30			3		3							1			1			4
32		4	8		12							1	2		3			15
34		19	30		49	2	1	4		1	8	6	6	1	13			70
36	2	21	57		80	1		15	1		17	18	18		36			133
38	20	94	141	5	260	1		22		2	25	51	58		109			394
40	91	297	473	14	875	4	2	49	9	6	70	146	122	21	289			1234
42	203	832	891	38	1964	43	14	88	18	17	180	206	245	37	488			2632
44	347	1608	1293	71	3319	86	20	82	27	48	263	286	323	46	655	2	2	4239
46	556	2435	1667	72	4730	150	30	106	44	77	407	334	340	62	736		0	5873
48	534	3235	1892	98	5759	130	68	71	57	100	426	288	374	69	731	2	2	6918
50	421	2823	1467	89	4800	133	72	39	58	115	417	254	300	56	610	4	4	5831
52	381	1740	1029	83	3233	112	32	25	77	101	347	146	183	32	361	7	7	3948
54	299	1094	811	38	2242	81	19	18	46	70	234	126	105	32	263	4	4	2743
56	176	561	443	26	1206	43	12	10	70	75	210	80	81	20	181	3	3	1600
58	100	326	316	11	753	23	10	1	41	46	121	39	42	18	99	1	1	974
60	55	166	194	6	421	14	6	3	23	40	86	36	23	6	65			572
62	30	91	142	5	268	7		3	19	24	53	18	15	3	36			357
64	17	49	85	4	155	8	4		8	24	44	20	13	5	38			237
66	18	36	61	2	117	4		1	9	12	26	13	9	3	25			168
68	13	20	49	3	85	4	1		5	7	17	19	9	4	32			134
70	8	11	33	1	53	2	1	1	5	5	14	13	3	2	18			85
72	4	9	16	2	31	1			3	4	8	7	4	2	13			52
74	3	9	12	1	25	1			2	1	4	9	1		10			39
76	2	8	16		26		1		1		2	2	1		3			31
78		7	18		25	3			1		4	7	1		8			37
80	3	5	7	1	16				3		3	2	1		3			22
82	1	3	7		11	2			1		3	1	4		5			19
84	1	4	4		9								2		2			11
86			2		2													2
88		1	3		4							2			2			6
90		1	1		2													2
92		1			1								1		1			2
94												1			1			1
96			1		1								1		1			2
Total	**3285**	**15562**	**11173**	**570**	**30590**	**855**	**293**	**538**	**528**	**775**	**2989**	**2133**	**2287**	**419**	**4839**	**23**	**23**	**38441**
Mean length, cm	**49.8**	**49.3**	**49.3**	**49.7**	**49.5**	**50.4**	**50.3**	**45.9**	**53.5**	**52.9**	**50.6**	**48.8**	**48.2**	**49.6**	**48.9**	**52.2**	**52.2**	**50,3**

TABLE 8. Greenland halibut age-length composition of the Russian commercial trawl catches in NAFO Div.3LMNO in 2008.

Length cm	Age, years																	Total	Weight, g
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
26	1																	1	140.0
28		1																1	185.0
30	2		1															3	235.0
32		10	1															11	281.8
34		16	8															24	332.9
36		6	23	4														33	397.1
38		1	34	11	2													48	474.7
40			33	33	5													71	553.5
42			22	34	14													70	645.6
44			14	39	11													64	743.9
46			1	31	25	3												60	857.5
48				22	41	8												71	961.8
50				3	33	18												54	1145.
52					16	26	3											45	1275.
54					12	40	2											54	1452.
56					2	33	21											56	1556.
58						12	19	9	1									41	1770.
60							17	14	8									39	2003.
62							10	14	11	1								36	2183.
64							2	7	8	3								20	2516.
66							1	7	8	5								21	2767.
68								1	9	11	4							25	3190.
70									3	9	3							15	3478.
72									1	6	4							11	3801.
74										3	7		1					11	4502.
76										1	5	2	1					9	5078.
78											3	7	1					11	5328.
80												2	2					4	5815.
82											1	3	1					5	6139.
84													2	1	1			4	7561.
86														1	1			2	8970.
88													1	1				2	8070.
90															1	1		2	9100.
92														2				2	9130.
94																			
96																	1	1	11770
Total	3	34	137	177	161	140	75	52	49	39	27	14	9	5	3	1	1	927	
Mean weight, g	213.3	328.8	523.6	720.7	997.8	1389.4	1820.9	2233.0	2540.3	3383.1	4307.0	5602.5	6358.9	8441.0	8980.0	8380.0	11770.0	927	1528.2
Mean length, cm	29.0	34.2	39.6	43.8	48.3	54.0	58.9	62.2	64.9	69.5	73.9	79.3	81.3	88.8	87.7	90.0	97.0	927	51.8

TABLE 9. Length composition (ind.) of Roughhead grenadier in Russian trawl catches in NAFO Div. 3LMNO in 2008.

Length, cm	3L	3M	3N	3LMNO
27	1		1	**2**
30	9		3	**12**
33	34	5	10	**49**
36	66	9	19	**94**
39	166	9	32	**207**
42	272	10	41	**323**
45	259	19	49	**327**
48	184	10	64	**258**
51	108	8	67	**183**
54	69	6	103	**178**
57	70	0	162	**232**
60	50	2	155	**207**
63	39	2	94	**135**
66	40	2	87	**129**
69	28	2	46	**76**
72	13		15	**28**
75	9		5	**14**
78	6	1	3	**10**
81	5		2	**7**
84	5			**5**
87	1			**1**
90	3		1	**4**
Total	**1437**	**85**	**959**	**2481**
Mean length, cm	**48.8**	**47.1**	**57.0**	**51.0**

TABLE 10. Length composition (ind.) of Acadian redfish (*S. fasciatus)* in Russian trawl catches in NAFO Div. 3M in 2008.

Length, cm	Division 3M		
	Males	Females	Total
15	3		**3**
16	8	4	**12**
17	12	14	**26**
18	95	61	**156**
19	259	162	**421**
20	621	359	**980**
21	1047	572	**1619**
22	1098	793	**1891**
23	719	863	**1582**
24	544	874	**1418**
25	366	708	**1074**
26	229	524	**753**
27	195	375	**570**
28	122	308	**430**
29	81	246	**327**
30	46	169	**215**
31	11	79	**90**
32	1	54	**55**
33	1	16	**17**
34		5	**5**
35		1	**1**
36		2	**2**
37		1	**1**
Total	**5458**	**6190**	**11648**
Mean length, cm	**22.6**	**24.1**	**23.4**

Table 11. Age-length composition of Acadian redfish (*S. fasciatus)* in Russian trawl catches in NAFO Div. 3M in 2008.

Length, cm	Age, years												Total	Weight, g
	5	6	7	8	9	10	11	12	13	14	15	16		
16	**4**												**4**	**51.3**
17	**6**												**6**	**55.8**
18	6	5											**11**	**81.4**
19	9	13											**22**	**88.6**
20	7	11	3										**21**	**104.0**
21		15	4										**19**	**123.9**
22		13	10										**23**	**139.3**
23		4	15	2									**21**	**155.7**
24		1	12	9									**22**	**183.0**
25		1	9	7	1								**18**	**208.6**
26			4	8	2								**14**	**234.6**
27			2	4	6	5							**17**	**272.1**
28					8	4	1						**13**	**295.0**
29					2	4	2						**8**	**335.0**
30						6	1	1					**8**	**371.9**
31							4	1					**5**	**427.0**
32								1	2	1			**4**	**505.0**
33								3	1	1			**5**	**484.0**
34										2			**2**	**522.5**
35										1			**1**	**590.0**
36												1	**1**	**690.0**
Total	32	63	59	30	19	19	8	6	3	5		1	**245**	
Mean weight, g	80.5	116.9	171.5	209.5	280.0	326.3	379.4	468.3	483.3	526.0		690.0	**245**	**197.9**
Mean length, cm	18.3	20.6	23.4	25.1	27.4	28.6	30.0	32.0	32.3	33.6		36.0	**245**	**23.7**

Table 12. Length composition (ind.) of deep-sea redfish (*S. mentella*) in Russian trawl catches in NAFO Div. 3LMNO in 2008.

Length, cm	3L	3M	3N	3O	3LMNO
9	1				**1**
10	4				**4**
11	9				**9**
12	10				**10**
13	4				**4**
14	4	1			**5**
15	8	21		8	**37**
16	11	44		36	**91**
17	8	49		108	**165**
18	7	183		176	**366**
19	3	559		219	**781**
20		1064		216	**1280**
21		1599		205	**1804**
22	2	1742	1	234	**1979**
23	3	1692	1	297	**1993**
24	2	1599	1	360	**1962**
25	2	1447	1	383	**1833**
26	8	1183		246	**1437**
27	31	967	2	146	**1146**
28	70	803	2	86	**961**
29	70	689	6	64	**829**
30	81	543	7	22	**653**
31	76	393	3	10	**482**
32	108	257	11	8	**384**
33	109	149	22	8	**288**
34	142	105	17	2	**266**
35	114	58	18	3	**193**
36	82	23	15		**120**
37	51	18	13	1	**83**
38	38	23	9		**70**
39	18	14	9		**41**
40	8	8	8		**24**
41	6	8	6		**20**
42	2	5	1		**8**
43	3	6	2		**11**
44	2	10			**12**
45		6			**6**
46		4			**4**
47		7			**7**
48		2			**2**
49		4			**4**
50					
51					
52					
53		1			**1**
54					
55					
56					
57		1			**1**
Total	**1097**	**15287**	**155**	**2838**	**19377**
Mean length, cm	**31.7**	**24.5**	**34.7**	**22.9**	**24.8**

Table 13. Age-length composition of deep-sea redfish (*S. mentella*) in Russian trawl catches in NAFO Div. 3M in 2008.

Length, cm	Age, years																				Total	Weight, g
	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22		
15	**1**																				**1**	**40.0**
16		**1**																			**1**	**55.0**
17		1	1																		**2**	**67.5**
18		3	6	1																	**10**	**69.5**
19		1	6	4																	**11**	**91.4**
20			7	10																	**17**	**102.6**
21			1	18	4																**23**	**124.6**
22				8	11	1															**20**	**144.8**
23				5	14	2															**21**	**162.4**
24					17	7															**24**	**181.0**
25					8	9	3														**21**	**210.5**
26					5	13	5	1													**24**	**234.2**
27						7	9	4													**20**	**267.0**
28						1	8	11	1												**21**	**287.1**
29							2	16	8	1											**27**	**314.6**
30								5	11	5											**21**	**346.9**
31								1	11	9	7										**28**	**386.6**
32									4	8	9	3									**24**	**438.8**
33										3	4	8	2								**17**	**467.1**
34										2	7	8	5	4							**26**	**506.7**
35											3	10	5	3							**21**	**585.0**
36												1	1	7	6						**15**	**628.0**
37												1	2	4	4	2					**13**	**682.7**
38														1	5	5	3				**14**	**757.9**
39															2	2	3	2			**9**	**791.1**
40																1	1	1			**3**	**906.7**
41																			1		**1**	**1090.0**
42																						
43																				1	**1**	**910.0**
44																				1	**1**	**1140.0**
Total	**1**	**6**	**21**	**47**	**59**	**40**	**27**	**38**	**35**	**28**	**30**	**31**	**15**	**19**	**17**	**10**	**7**	**3**	**1**	**2**	**437**	
Mean weight, g	**40.0**	**75.8**	**89.3**	**124.0**	**175.3**	**215.9**	**271.3**	**306.3**	**353.6**	**415.4**	**445.8**	**522.6**	**572.7**	**628.9**	**693.5**	**767.0**	**818.6**	**810.0**	**1090.0**	**1025.0**	**437**	**345.6**
Mean length, cm	**15.0**	**17.7**	**19.1**	**21.0**	**23.5**	**25.4**	**27.0**	**28.6**	**30.3**	**31.5**	**32.7**	**34.0**	**34.7**	**35.7**	**37.2**	**38.2**	**38.7**	**39.3**	**41.0**	**43.5**	**437**	**28.5**

TABLE 14. Golden redfish (*S. marinus*) length composition (ind.) of the Russian trawl catches in NAFO Div. 3M in 2008.

Length, cm	Division 3M		
	Males	Females	Total
15	6	3	**9**
16	11	15	**26**
17	17	9	**26**
18	33	29	**62**
19	98	66	**164**
20	141	116	**257**
21	132	115	**247**
22	163	139	**302**
23	231	196	**427**
24	342	337	**679**
25	440	419	**859**
26	486	426	**912**
27	504	461	**965**
28	759	600	**1359**
29	764	650	**1414**
30	850	699	**1549**
31	539	553	**1092**
32	465	683	**1148**
33	299	559	**858**
34	171	497	**668**
35	97	370	**467**
36	68	207	**275**
37	54	114	**168**
38	35	76	**111**
39	21	26	**47**
40	15	34	**49**
41	5	21	**26**
42	3	15	**18**
43	4	5	**9**
44		14	**14**
45		13	**13**
46		7	**7**
47		15	**15**
48		10	**10**
49		14	**14**
50		14	**14**
51		11	**11**
52		9	**9**
53		4	**4**
54		2	**2**
55			
56		1	**1**
57			
58			
59		1	**1**
Total	**6753**	**7555**	**14298**
Mean length, cm	**28.2**	**29.7**	**29**

Table 15. Age-length composition of golden redfish (*S. marinus*) in Russian trawl catches in NAFO Div. 3M in 2008.

Length, cm	Age, years																							Total	Mean weight, g
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	
16	4	8																							**12**	**49,2**
17	3	5	1																						**9**	**59,4**
18		4	5																						**9**	**73,9**
19		3	5	2																					**10**	**90**
20			5	5																					**10**	**104**
21			2	6	3																				**11**	**118,2**
22				5	5																				**10**	**142**
23				5	6																				**11**	**159,1**
24					5	4																			**9**	**176,7**
25				1	4	3																			**8**	**225**
26					3	7																			**10**	**264**
27					2	6	1																		**10**	**272,5**
28							7	2																	**9**	**320,6**
29						1	7	5																	**13**	**347,7**
30							1	6	1																**8**	**375,6**
31							3	3	2	2															**10**	**401,5**
32							1	3	6	2															**12**	**447,9**
33								2	3	5	1														**11**	**532,7**
34									2	4	1	2													**9**	**560**
35										1	3	5													**9**	**611,7**
36											1	5	1												**7**	**685,7**
37										1	2	4	1	1											**9**	**667,2**
38												3	3	2	1										**9**	**798,3**
39												2	3	4	2										**11**	**855**
40													3	5	2										**10**	**873**
41														2	3	2	1	1							**9**	**1048,9**
42															1	2	1	1							**5**	**1141**
43															1	1	2	1	1						**6**	**1123,3**
44																	1	2		1					**4**	**1243,8**
45																1		2	1						**4**	**1450**
46																	1		1	1					**3**	**1391,7**
47																		2	1	2	1				**6**	**1648,3**
48																		1	1	4					**6**	**1550,8**
49																			1	3	1				**5**	**1843**
50																				2	2	1			**5**	**1956**
51																				1	1	1	1		**4**	**2038,8**
52																						3	1	1	**5**	**2380**
53																					2	1	1		**4**	**2330**
54																							1	1	**2**	**2512,5**
55																									**0**	**0**
56																								1	**1**	**2690**
Total	**7**	**20**	**18**	**24**	**28**	**21**	**20**	**21**	**14**	**15**	**8**	**21**	**11**	**14**	**10**	**6**	**7**	**10**	**6**	**14**	**7**	**6**	**4**	**3**	**315**	
Mean weight, g	**48,6**	**63,8**	**90,8**	**130,4**	**181,1**	**252,1**	**342,3**	**396,2**	**462,1**	**528,0**	**578,1**	**706,4**	**812,7**	**866,1**	**1001,0**	**1171,7**	**1050**	**1310**	**1400,8**	**1735,7**	**2010,7**	**2155,8**	**2372,5**	**2626,7**	**315**	**639,4**
Mean length, cm	**16,4**	**17,1**	**19,1**	**21,4**	**23,7**	**25,9**	**29,1**	**30,3**	**32,2**	**33,3**	**35,3**	**36,3**	**38,5**	**39,4**	**40,4**	**42,3**	**40,9**	**44,6**	**46,3**	**48,1**	**50,4**	**51,7**	**52,5**	**54,0**	**315**	**32,0**

TABLE 16. Length composition (ind.) of American plaice in Russian trawl catches in NAFO Div. 3LMNO in 2008.

Length, cm	3L	3M	3N	3O	3LMNO
14	1				1
16	5				5
18	6				6
20	9			1	10
22	16		2	2	20
24	21		8	3	32
26	7		11	4	22
28	8	2	13	9	32
30	29	3	21	8	61
32	64	2	52	10	128
34	145	6	70	10	231
36	236	11	112	9	368
38	275	11	106	10	402
40	206	10	139	4	359
42	143	10	153	7	313
44	105	4	109	3	221
46	86	8	77	8	179
48	66	8	47	5	126
50	43	10	31	3	87
52	21	12	27	2	62
54	12	12	18	3	45
56	6	4	27	2	39
58	2	5	18	3	28
60		4	21		25
62			21		21
64	1		7		8
66			4		4
68			2		2
70			1		1
Total	**1513**	**122**	**1097**	**106**	**2838**
Mean length, cm	**39.4**	**45.6**	**42.6**	**38.2**	**40.8**

TABLE 17. Length composition (ind.) of Witch flounder in Russian trawl catches in NAFO Div. 3LMNO in 2008.

Length, cm	3L	3M	3N	3O	3LMNO
26	1			1	2
28	9		2	1	12
30	9	1		4	14
32	26	4	2	2	34
34	24	7	8	3	42
36	45	12	42	1	100
38	87	13	63	1	164
40	87	7	106	1	201
42	137	9	104	3	253
44	97	18	65		180
46	70	8	78		156
48	40	7	40		87
50	7	2	18		27
52	4	2	9		15
54	3		5		8
56	1		1		2
58			2		2
60					
62			1		1
Total	**647**	**90**	**546**	**17**	**1300**
Mean length, cm	**41.5**	**41.4**	**42.9**	**34.6**	**42**

TABLE 18. Length composition (ind.) of Yellowtail flounder in Russian trawler catches in NAFO Div. 3NO in 2008.

Length, cm	1. 3N	2. 3O	3NO
22	11		11
24	37		37
26	42		42
28	104		104
30	247	1	248
32	334	1	335
34	370	3	373
36	360	5	365
38	333		333
40	243	1	244
42	166		166
44	114		114
46	81		81
48	42		42
50	12		12
52	4		4
Total	**2500**	**11**	**2511**
Mean length, cm	**36.4**	**35.4**	**36.4**

TABLE 19. Length composition (ind.) of Atlantic cod in Russian trawl catches in NAFO Div. 3LMNO in 2008.

Length, cm	3L	3M	3N	3O	3LMNO
18	1				1
21	1				1
24					
27					
30				2	2
33		4		2	6
36		4			4
39		8	1	2	11
42		11		6	17
45		12		19	31
48		37	2	48	87
51	1	73	2	41	117
54		168	4	23	195
57		191	7	30	228
60		172	11	21	204
63		191	17	18	226
66		242	8	12	262
69		224	4	1	229
72		171	7	3	181
75		115	8	2	125
78		71	13	4	88
81		50	5	5	60
84		49	16		65
87		26	11	9	46
90		18	12	4	34
93		13	19	8	40
96		7	16	2	25
99		1	12		13
102		4	13		17
105		2	10		12
108			8		8
111			10		10
114			12		12
117			5		5
120			8		8
123			7		7
126			2		2
129			1		1
132			2		2
135		1	4		5
Total	**3**	**1865**	**257**	**262**	**2387**
Mean length, cm	**31.0**	**66.5**	**90.8**	**58.5**	**68.2**

TABLE 20. Length composition (ind.) of Threebeard rockling in Russian trawl catches in NAFO Div. 3LMN in 2008.

Length, cm	3L	3M	3N	3LMN
24	1			**1**
27	3			**3**
30	29	3	2	**34**
33	78	2	8	**88**
36	162	2	12	**176**
39	148	2	8	**158**
42	121	3	6	**130**
45	82	1	7	**90**
48	21			**21**
51	4			**4**
Total	**649**	**13**	**43**	**705**
Mean length, cm	**39.7**	**37.7**	**39.0**	**39.7**

TABLE 21. Length composition (ind.) of White hake in Russian trawl catches in NAFO Div. 3NO in 2008.

Length, cm	3N	3O	3NO
30		4	4
33		7	7
36			
39		3	3
42		5	5
45		8	8
48		5	5
51		2	2
54		14	14
57		28	28
60	1	12	13
63		8	8
66		8	8
69		1	1
72		1	1
75			
78			
81		1	1
Total	**1**	**107**	**108**
Mean length, cm	**61.0**	**54.4**	**54.4**

TABLE 22. Length composition (ind.) of Thorny skate in Russian trawl catches in NAFO Div. 3LMO in 2008.

Length, cm	3L	3M	3N	3O	3LMNO
12	1				1
15	5				5
18	2				2
21	1				1
24					
27					
30					
33	1				1
36	1	1	4		6
39	2	9	25		36
42	3	16	64	1	84
45	5	32	115		152
48	10	37	172		219
51	11	16	226		253
54	13	41	278		332
57	22	45	313		380
60	23	39	350		412
63	21	34	368		423
66	21	12	418	1	452
69	18	7	386		411
72	10	7	279	1	297
75	4	4	249		257
78	2	1	239		242
81		1	135		136
84	1		58		59
87			15		15
90	1		7		8
93			1		1
Total	**178**	**302**	**3702**	**3**	**4185**
Mean length, cm.	**59.0**	**55.9**	**64.6**	**61.0**	**63.7**

TABLE 23. Length composition (ind.) of Black dogfish in Russian trawl catches in NAFO Div. 3LMNO in 2008.

Length, cm	Males	Females	Total
36		2	2
39	2	5	7
42		9	9
45	3	11	14
48	11	16	27
51	16	13	29
54	38	29	67
57	85	34	119
60	133	51	184
63	121	49	170
66	59	31	90
69	17	29	46
72	5	23	28
75	1	19	20
78	1	6	7
81		2	2
Total	**492**	**329**	**821**
Mean length, cm	**61.2**	**61.7**	**61.4**

TABLE 24. Length composition (ind) of Northern wolffish (*Anarchichas denticulatus*) in Russian trawl catches in NAFO Div. 3LMNO in 2008

Length, cm	3L	3M	3N	3O	3LMNO
21	1				1
24					
27	1				1
30					
33					
36					
39			1		1
42	1		2		3
45	7		4		11
48	11	1	9		21
51	17	4	6		27
54	23	8	9		40
57	26	6	5		37
60	14	6	6	1	27
63	16	7	7		30
66	21	2	3		26
69	15	4	2		21
72	13	6	1		20
75	25	2	3		30
78	9	7	1		17
81	7	4	3		14
84	4	2			6
87	9	4	2	1	16
90	8	5	2	1	16
93	5	6	1		12
96	5	3	1		9
99	3	2	1		6
102		2			2
105	3	1	1		5
108	3				3
111	1				1
114	2				2
117					
120	1				1
Total	**251**	**82**	**70**	**3**	**406**
Mean length, cm	**68.9**	**74.2**	**62.6**	**80**	**69**

TABLE 25. Length composition (ind.) of Blue hake (*Antimora rostrata*) in Russian trawl catches in NAFO Div. 3LMN in 2008.

Length, cm	3L	3M	3N	3LMN
21	1			1
24	10			10
27	10	1	2	13
30	17		5	22
33	28	2	10	40
36	47	2	7	56
39	34	2	2	38
42	33			33
45	17			17
48	17			17
51	17			17
54	10			10
57	10			10
60	3			3
63	1			1
66		1		1
Total	**255**	**8**	**26**	**289**
Mean length, cm	**40.9**	**39.6**	**34.2**	**40.25**

TABLE 26. Length composition (ind.) of Common grenadier (*Nezumia bairdii*) in Russian trawl catches in NAFO Div. 3LMNO in 2008.

Length, cm	3L	3M	3N	3O	3LMNO
21	2		1		3
24	3	2	2		7
27	13	2	10	1	26
30	61	2	22	3	88
33	119	2	37	2	160
36	117		33		150
39	58		9		67
42	13		4		17
45	1				1
Total	**387**	**8**	**118**	**6**	**519**
Mean length, cm	**35.3**	**29.5**	**34.3**	**31.5**	**35.0**

TABLE 27. Length composition (ind.) of Atlantic halibut (*Hippoglossus hippoglossus*) in Russian trawler catches in NAFO Div. 3LMNO in 2008.

Length, cm	3L	3M	3N	3O	LMNO
58	1		1		2
60				1	1
62			3		3
64			2		2
66				1	1
68			2	1	3
70					
72		1		1	2
74	1	1			2
76		1			1
78		3			3
80		2			2
82	1	2		1	4
84		1			1
86	2	1	1		4
88		1			1
90	1				1
92		1	1		2
94	1	1			2
96					
98					
100		1	1		2
102		1			1
104					
106			1		1
108					
110			1		1
112					
114					
116					
118					
120			2		2
122					
124					
126					
128			1		1
130					
132					
134					
136					
138	1				1
140					
142	1				1
144					
146					
148					
150			1		1
152			1		1
154		1			1
156		1			1
158					
160					
162					
164					
166					
168	2		1		3
170					
172	1		1		2
174	1				1
Total	**13**	**19**	**20**	**5**	**57**
Mean length, cm	**118.3**	**91.9**	**101.1**	**70.1**	**99.2**

Table 28. Occurrence of marine mammals in NAFO Regulatory Area (Div. 3LM) in 2008

Date	Position	Marine mammals	Number	Notes
03.03 - 22.03	48°08'N-48°18'N 46°31'W-47°40'W	Sperm whale	1 - 6	Observed during heaving of trawl
23.03	49°09'N-47°05'W	Sperm whale Dolphin	2 1 - 2	Observed during hauling of trawl
24.03 - 25.03	48°09'N-48°19'N 46°30'W-47°00'W	Sperm whale Dolphin	6 - 7 10	Observed during hauling of trawl
26.03 - 31.03	48°20'N, 47°40'W	Sperm whale Dolphin	4 - 8 3 - 10	Observed during hauling of trawl
	47°35'N, 48°03'W	Seal	1	
	47°31'N, 48°02'W	Seal	1	
	47°28'N, 48°02'W	Seal	1	
01.04	47°23'N, 48°09'W	Seal	2	Observed on an ice floe
	47°23'N, 48°11'W	Seal	5	
	47°17'N, 48°48'W	Seal	7	
02.04	47°06'N, 52°04'W	Seal	1	On an ice floe
	46°03'N, 47°09'W	Seal	1	On an ice floe
	46°32'N, 47°06'W	Blow of whale	1	
05.04	47°47'N, 46°40'W	Seal	4	In open waters
06.04	47°53'N, 46°35'W	Seal	2	On an ice floe
07.04 - 12.04	48°07'N-48°20'N	Sperm whale Dolphin	2 - 6 3 – 5	Observed during hauling of trawls
	46°31'W-47°41'W	Seal	1 - 2	
21.08	46°56'N, 46°01'W	Bottle-nosed whale	4 - 5	Observed during vessel passage

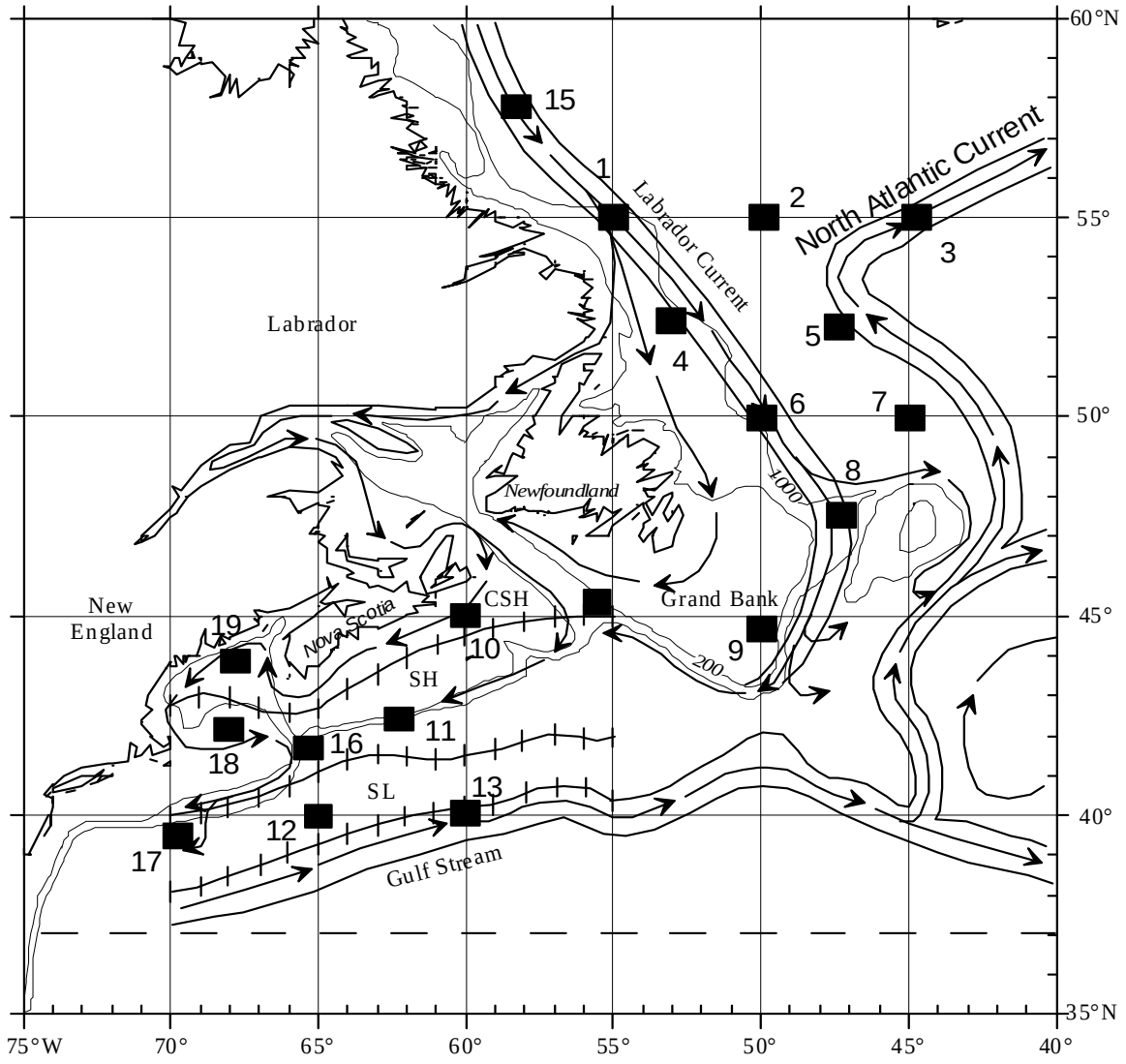

Fig. 1 . Diagram of SST monitoring in the Northwest Atlantic

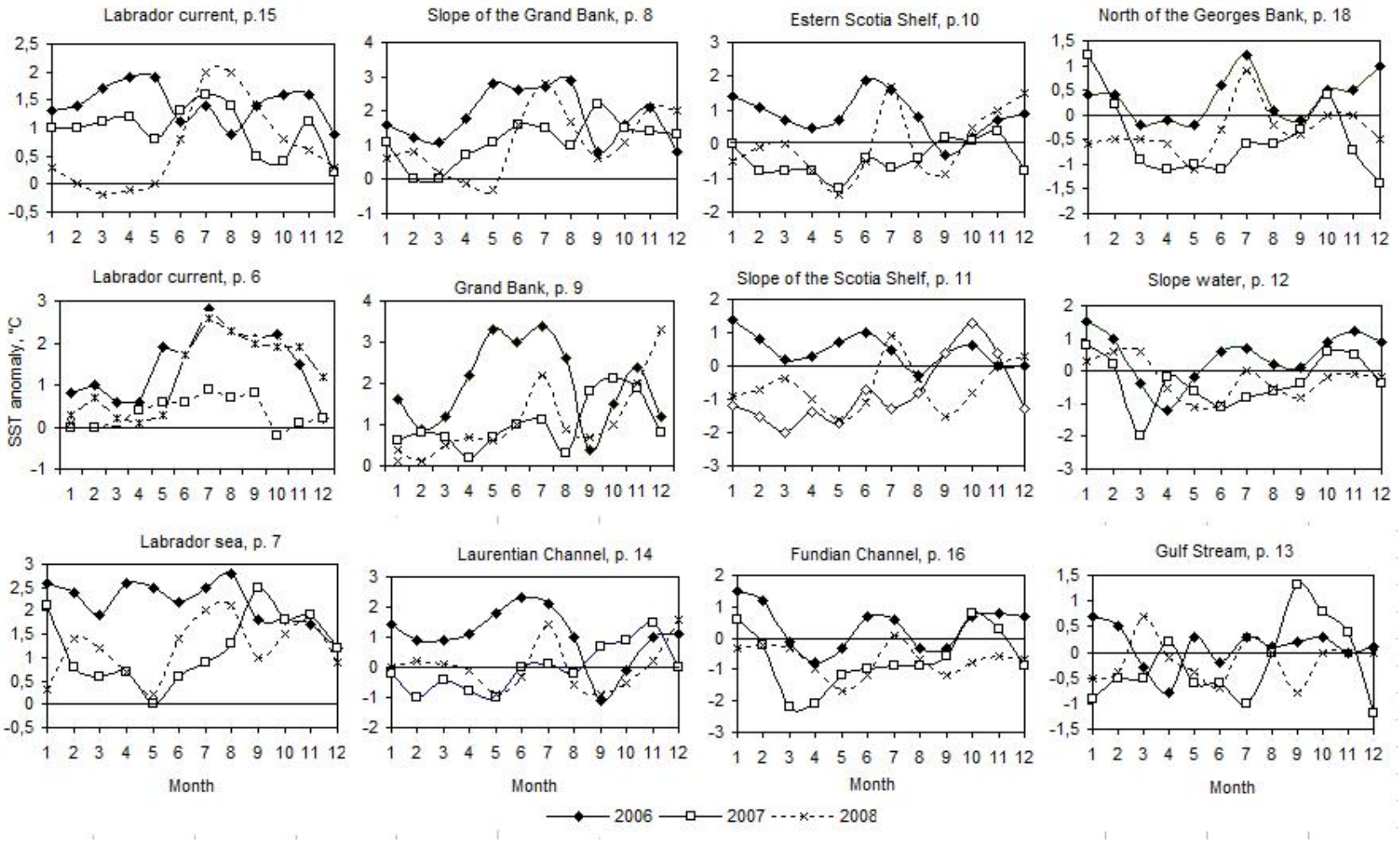

Fig. 2. SST anomalies in the areas of the Northwest Atlantic in 2006 – 2008.

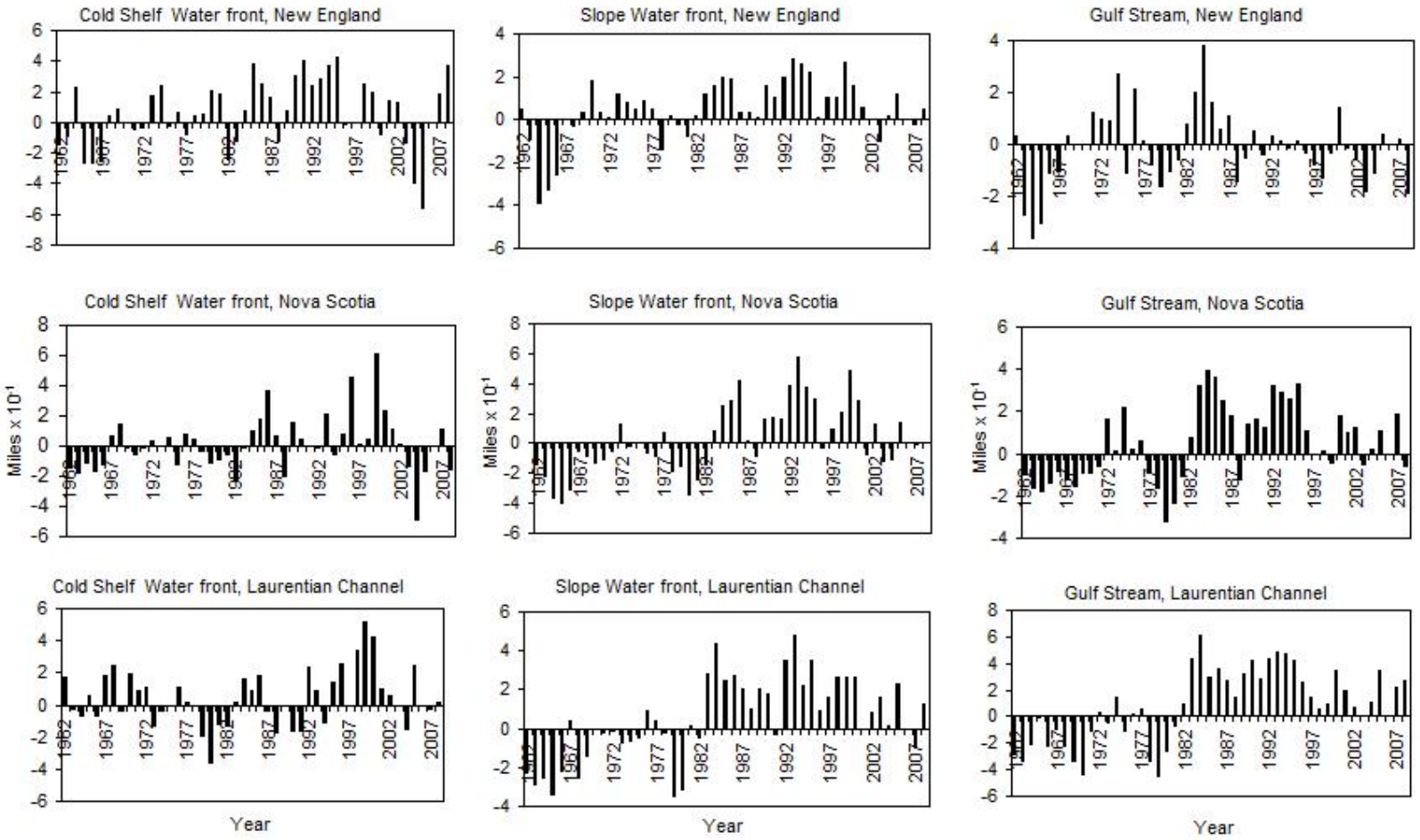

Fig. 3. Anomalies of indices for hydrological fronts location in the Northwest Atlantic, 1962 – 2008 (in tens of miles)