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**Russian Research Report for 2012**

by

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**SUBAREAS 1+2****A. Status of Fisheries***Greenland halibut*

The directed trawl fishery for Greenland halibut was conducted in August-December. In accordance with quota allocation for two subareas, the fishery off West Greenland was carried out north of 68°N (Div. 1A) and south of 68° N (Div. 1CD).

In the area north of 68°N, five trawlers were engaged in the fishery. The trawlers fished within a comparatively small area between 68°04'N–70°08'N and 58°56'W–61°00'W at depths of 820 – 1,155 m. According to the preliminary data, the catch of Greenland halibut was 545.8 t. There was a bycatch of 2.0 t of skates and 0.1 t of northern wolffish (Table 2). The catch rates varied by months from 7.9 t to 12.4 t and averaged 10.1 t per fishing vessel day.

In the area south of 68°N, up to six Russian trawlers participated in the fishery. The trawlers operated from August to December in the area between 63°27'N– 64°29'N and 54°49'W– 58°00'W at depths of 860–1,525 m. The catch rates per fishing vessel day ranged from 7.3 t to 12.5 t and averaged 9.1 t. According to the preliminary data, the catch of Greenland halibut was 1,227.4 t. The bycatch was comprised of 1.0 t of northern wolffish and 4.0 t of roughhead grenadier (Table 2).

In general, the annual catch of Greenland halibut taken by the Russian fleet off West Greenland amounted to 1,773.2 t (Table 1). Skates, northern wolffish and roughhead grenadier occurred in the bycatch (Table 2).

*Other fish species*

There was no directed fishery for other fish species.

**B. Dedicated Research Studies**

Biological data on Greenland halibut from Div. 1D were collected by observers aboard Russian fishing vessels.

### *Greenland halibut*

In Div. 1D, the length of Greenland halibut in catches ranged from 35 cm to 94 cm, specimens as long as 49 – 53 cm prevailed. The mean length of males was 50.8 cm and 52.8 cm of females (Table 3). Sex ratio of males to females was 1.5:1 (Table 3).

No samples to determine the age of Greenland halibut were collected in 2012.

### *Vulnerable Marine Ecosystems*

No VME indicator species were found in catches taken by fishing vessels.

### *Marine mammals*

In Div. 1AD, 68 sightings of marine mammals from fishing vessels were reported from January to May (Table 23). Sperm whales and dolphins (in total, 52 sightings) were observed most frequently (Table 24). However, pilot whales, which were reported to be sighted only once, were observed as a large local concentration consisting of 15-30 individuals. It was unable to determine the precise quantity of pilot whales. All other species of marine mammals sighted formed small local concentrations.

### *Discards in the directed Greenland halibut fishery*

The observer reported about a single fact of discarding 242 kg of skates.

## **SUBAREA 3**

### **A. Status of Fisheries**

#### *Greenland halibut*

Four trawlers were engaged in the directed fishery for Greenland halibut from January to December. The trawlers were fishing in the areas on the continental slope adjacent to the deep-water Flemish Pass (Div. 3L) between 46°17'N – 48°42'N at 700 – 1,500 m depths. Occasionally, the trawlers also fished in Div. 3M and 3N at 700 - 1,400 m depths. In general, the catch rates per fishing vessel day in the area ranged from 1.8 t to 11.6 t and averaged 7.0 t per fishing vessel day and 0.39 t per hour of hauling.

In general, the annual catch of Greenland halibut taken in the directed fishery amounted to 1,535.4 t. In addition, 3.7 t of Greenland halibut were caught in the redfish fisheries, 0.5 t of Greenland halibut were taken in the American plaice fishery and 0.3 t of Greenland halibut were taken in the cod fishery. In March-April, there were several (7) hauls where roughhead grenadier and roundnose grenadier prevailed. The bycatch of Greenland halibut in those hauls made up 2.9 t. According to the preliminary data, the total catch of Greenland halibut was 1,542.8 t, the Russian quota allocation being 1,543.0 t (Table 1). The bycatch was comprised of Atlantic halibut, roughhead and roundnose grenadiers, red hake, redfishes, American plaice, witch flounder as well as northern wolffish and cod (Table 25).

#### *Cod*

The directed fishery for cod on the Flemish Cap Bank was conducted between 46°25' N – 48°12'N and 46°29'W – 43°59'W at depths of 170 – 555 m in January and February. Favourable conditions for fishing operations were reported in February in the area between 46°27' N – 48°12'N and 46°29' W – 45°16'W, where average daily catch rates were 30.5 t. The annual catch of cod taken by Russian fishing vessels in

the directed fishery was 705.7 t, where 70.1 t of redfishes, 2 t of northern, Atlantic and spotted wolffishes, 0.5 t of witch flounder and American plaice, 0.3 t of Greenland halibut and 0.2 t of Atlantic halibut were taken as a bycatch. Furthermore, 39.3 t of cod were taken as a bycatch in the redfish fishery. The total Russian catch of cod on the Flemish Cap was 745.0 t (Table 1).

#### *Atlantic redfishes on the Flemish Cap*

The redfish fishery was sporadically conducted during 54 fishing vessel days from February to August between 46°25'N - 48°19'N and 46°29'W - 43°52'W at depths of 170 – 810 m. The fishing vessels fished with bottom trawls and catch rates varied from 0.9 to 67.5 t and averaged 30.8 t per fishing vessel day.

In total, the annual catch taken by Russian fishing vessels in the directed redfish fishery, according to the preliminary data, is 1,639.1 t. Atlantic and Greenland halibuts, cod, wolffishes, witch flounder and American plaice were taken as a bycatch (Table 26).

70.1 t and 1.8 t of redfishes were taken as a bycatch in the cod and Greenland halibut fisheries. The total Russian catch of redfishes in Div. 3M was 1711.0 t (Table 1).

*In Div. 3O*, Russian trawlers sporadically fished in the south-western Grand bank of Newfoundland from May to December during 25 days in total. Bottom trawls were used in the fishery, which was conducted in the area between 43°04'N – 43°25'N and 51°01'W – 51°48'W at the depths of 125 – 585 m. An attempt to fish with a midwater trawl gear was made in December at depths of 200-400 m but the catch rates were not higher than 10 t per fishing vessel day.

The highest catch rates in bottom trawling were recorded in May and June, when the catch rates were 11.8 t and 10.3 t per hour of hauling respectively.

In total, Russian fishing vessels caught 969.7 t of redfishes in the directed fisheries in 2012. Cod, American plaice, witch flounder, white hake, skates, red hake, squids as well as Greenland and Atlantic halibuts, which occurred sporadically, occurred in the bycatch (Table 26). The total Russia catch of redfishes in Div. 3O amounted to 971.2 t (Table 1).

*In Div. 3LN*, the fishery was conducted from January to December between 42°49'N – 48°34'N and 50°44'W – 46°31'W at depths of 145 – 795 m. The catch rates in bottom trawling ranged from 3.2 t to 23.2 t and averaged 13.9 t per fishing vessel day. In total, 1570.5 t of redfishes were taken in the directed fishery. Cod, witch flounder, American plaice, Atlantic halibut, Greenland halibut, and sporadically skates, roughhead grenadier and wolffishes occurred in the bycatch. 26.5 t of redfishes were also taken as a bycatch in the Greenland halibut fishery.

The total Russian catch of redfishes amounted to 1597.0 t (Table 1).

#### *Yellowtail flounder (Limanda ferruginea)*

The Russian directed fishery for yellowtail flounder was conducted during a short period of time in January between 43°42'N – 44°35'N and 49°28'W – 49°06'W, where the average daily catch rates were 22.1 t. In 2012, Russian fishing vessels caught 84.3 t of yellowtail flounder in the directed fishery (Table 1). 3.9 t of American plaice were taken as a bycatch (4.4%).

#### *Other fish species*

There was no directed fishery for other species. The bycatch of other fish species in the directed fisheries amounted to 1 – 17%.

## **B. Dedicated Research Studies**

No surveys to assess the stocks of target species were carried out. Biological data were collected by NAFO observers on fishing vessels.

### *Greenland halibut (Reinhardtius hippoglossoides)*

In Div. 3L, Greenland halibut from 23 cm to 97 cm in length occurred, with a mean length of 48.9 cm. Individuals as long as 46 – 48 cm prevailed (Table 4).

In Div. 3N, the length of Greenland halibut varied from 35 cm to 79 cm, predominately 44-50 cm. The average length was 50.3 cm.

In Div. 3O, a few specimens of Greenland halibut from 30 to 37 cm in length were measured.

In general, the length of Greenland halibut in Div. 3LMNO was 22-96 cm, with a mean length of 49.0 cm. The fish age determined by scale ranged from 3 years to 16 years (Table 5). Individuals at age 6-7 years prevailed in the catches.

### *Acadian redfish (Sebastes fasciatus)*

In Div. 3L, the catches were comprised of Acadian redfish from 14 cm to 40 cm in length. The mean length of females was 28.3 cm, whereas that of males was 25.4 cm. Individuals from 24 cm to 27 cm prevailed in the catches (Table 6).

In Div. 3O, Acadian redfish as long as 17-36 cm, mainly 21-25 cm, were typical. The mean length of males was 22.8 cm, whereas in females the mean length was 24.2 cm.

In Div. 3N, Acadian redfish from 18 cm to 37 cm in length were found in the catches. Individuals having a length of 23-24 cm made up the bulk of the catches. The mean length of males was 23.1 cm, whereas in females the mean length was 25.2 cm.

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

In Div. 3L, the length of deep-sea redfish varied from 21 to 46 cm, being mainly 29-34 cm. The mean length was 31.6 cm (Table 7).

In Div. 3M, the length in deep-sea redfish varied from 22 cm to 43 cm, the mean length being 30.8 cm. Individuals from 26 to 30 cm in length made up the bulk of the catches (Table 7).

In Div. 3N, deep-sea redfish were taken as a bycatch in small numbers. Individuals from 24 cm to 42 cm in length, being 31.5 cm in average, occurred in the bycatch.

### *Golden redfish (Sebastes marinus)*

In Div. 3M, length of golden redfish ranged from 26 cm to 46 cm and averaged 37.3 cm (Table 8).

In Div. 3L, sporadic catches of golden redfish being from 34 cm to 66 cm in length were reported. The mean length was 43.7 cm.

*Roughhead grenadier (Macrourus berglax)*

In Div. 3L, the total length of roughhead grenadier in the catches varied from 31 cm to 97 cm, being mainly 43-49 cm. The mean length was 52.7 cm (Table 9).

In Div. 3N, roughhead grenadier were sporadically caught. The length of roughhead grenadier ranged from 40 cm to 70 cm, being mainly 55-58 cm. The mean length was 56.4 cm

In general, roughhead grenadier from 31 cm to 97 cm in length occurred in Div. 3LN. The mean length was 52.8 cm.

*Roundnose grenadier (Coryphaenoides rupestris)*

A few individuals were caught. In Div. 3L, the length of roundnose grenadier ranged from 40 cm to 67 cm. The mean length was 51.8 cm (Table 10).

*American plaice (Hippoglossoides platessoides)*

In Div. 3L, American plaice as long as 27-53 cm were taken as a bycatch in the Greenland halibut fishery. The mean length of American plaice was 40.5 cm (Table 11).

In Div. 3N, the length of American plaice taken as a bycatch in the skate fishery ranged from 31 cm to 63 cm, being 43.4 cm on average.

*Witch flounder (Glyptocephalus cynoglossus)*

In Div. 3L, witch flounder ranging from 33 cm to 53 cm in length were taken as a bycatch in the Greenland halibut fishery. The mean length of witch flounder was 41.4 cm (Table 12).

In Div. 3M and Div. 3N, witch flounder were sporadically taken as a bycatch. The length of witch flounder was 45-47 cm and 37-45 cm respectively.

In Div. 3O, the length of witch flounder ranged from 25 cm to 49 cm. The mean length was 38.9 cm. Witch flounder as long as 37-39 cm made up the bulk of the catches.

*Cod (Gadus morhua)*

On the Flemish Cap Bank, the length of cod varied from 31 cm to 125 cm and the mean length was 75.1 cm (Table 13). Cod as long as 65-75 cm made up the bulk of the catches.

In Div. 3O, 108 individuals of cod, being 43.4 cm in the mean length, were captured.

In Div. 3N, cod were taken sporadically as a bycatch. The mean length was 63.5 cm.

In Div. 3L, several individuals, having a mean length of 54.3 cm, were caught.

*Threebeard rockling (Gaidropsarus ensis)*

In Div. 3L, the length of threebeard rockling varied from 31 cm to 49 cm. The mean length was 40.9 cm (Table 14). Individuals as long as 37-40 cm made up the bulk of the catches.

*White hake (Urophycis tenuis)*

White hake were sporadically found in the bycatch. One white hake being as long as 67 cm was measured in Div. 3L and one individual as long as 69 cm was taken in Div. 3N.

*Thorny skate (Amblyraja radiata)*

In Div. 3L, thorny skates ranging from 33 cm to 78 cm in length occurred in the catches of Greenland halibut (Table 15). The mean length was 66.7 cm.

In Div. 3M, thorny skates were taken as a bycatch. The mean length was 57.2 cm.

In Div. 3N, thorny skates being as long as 24-73 cm occurred sporadically in the bycatch. The mean length was 47.9 cm.

*Black dogfish (Centroscyllium fabricii)*

Generally, black dogfish occurred in the bycatch in the Greenland halibut fishery. In Div. 3L, the length of males varied from 55 cm to 67 cm, the mean length being 62.7 cm (Table 16). Among females, individuals as long as 52-79 cm, being 67.5 cm in length, occurred.

*Northern wolffish (Anarhichas denticulatus)*

In Div. 3L, the length of northern wolffish varied from 40 cm to 127 cm, the mean length being 66 cm (Table 17). Northern wolffish as long as 52-55 cm and 61-70 cm made up the bulk of the catches.

In Div. 3M, northern wolffish as long as 61-100 cm, being 80.3 cm on average, were sporadically taken in the bycatch.

In Div. 3N, northern wolffish ranging from 55 cm to 73 cm were sporadically taken. The mean length was 63.6 cm.

*Atlantic wolffish (Anarhichas lupus)*

In Div. 3LN, Atlantic wolffish were captured in small numbers. The length varied from 37 cm to 73 cm, being 53.7 cm on average (Table 18).

*Spotted wolffish (Anarhichas minor)*

Spotted wolffish were sporadically captured in Div. 3MN. The length ranged from 67 cm to 97 cm, being 83.5 cm on average (Table 19).

*Blue hake (Antimora rostrata)*

In Div. 3LN, blue hake were as long as 16-61 cm in length, being 38.2 on average (Table 20). Individuals as long as 31-37 cm made up the bulk of the catches.

*Marlin-spine grenadier (Nezumia bairdii)*

In Div. 3L, the total length of marlin-spine grenadier varied from 25 to 40 cm and was 34.3 cm on average. Marlin-spine grenadier as long as 31-34 cm made up the bulk of the catches (Table 21).

*Atlantic halibut (Hippoglossus hippoglossus)*

In Div. 3LN, Atlantic halibut were sporadically captured. The length ranged from 47 cm to 185 cm. The mean length was 94.9 cm (Table 22).

*Other fish species*

In the course of the fishery, small numbers of blue ling (*Molva dypterygia*), longfin hake (*Urophycis chesteri*), spiny eels (*Notacanthus spp.*) and other fish species were found in the bycatches.

*VME indicator species*

The information on the catches of cold-water corals was presented in a working document for the meeting of ICES/NAFO Joint Working Group on Deep-water Ecology (WGDEC) in February 2013 (Vinnichenko, Kanishchev, 2013).

*Marine mammals*

Dolphins, bottle-nosed dolphins, sperm and pilot whales were sighted in Div. 3LMN during the observations from fishing vessels in April, May, June and September (Table 23).

No discards during fisheries for main fish species were reported.

*References*

Vinnichenko V.I. and Kanishchev A.A. Russian catches of cold-water corals and sponges in the North Atlantic based on the data of observations by fishing vessels in 2012. Working Document for ICES/NAFO WGDEC 2013. 8 pp.

TABLE 1. Preliminary data on catches taken by Russian trawlers in NAFO SA 1-3 in 2012

Species	Division	Catch, t
<b>Greenland halibut</b>	1A	529.7
	1B	16.1
	1C	373.2
	1D	854.2
	<b>1ABCD</b>	<b>1773.2</b>
<b>Greenland halibut</b>	3L	1336.9
	3M	143.0
	3N	62.8
	3O	0.1
	<b>3LMNO</b>	<b>1542.8</b>
<b>American plaice</b>	3L	17.9
	3M	24.3
	3N	34.1
	3O	6.3
	<b>3LMNO</b>	<b>82.6</b>
<b>Yellowtail flounder</b>	3N	84.3
	<b>3N</b>	<b>84.3</b>
<b>Witch flounder</b>	3L	19.1
	3M	10.7
	3N	6.8
	3O	2.9
	<b>3LMNO</b>	<b>39.5</b>
<b>Roughhead grenadier</b>	3L	14.9
	3M	19.6
	3N	3.6
	<b>3LMN</b>	<b>38.1</b>
<b>Roughnose grenadier</b>	<b>3L</b>	14.2
	<b>3M</b>	7.5
	<b>3N</b>	5.0
	<b>3LMN</b>	<b>26.7</b>
<b>Redfish spp.</b>	3L	1041.0
	3M	1711.0
	3N	556.0
	3O	971.2
	<b>3LMNO</b>	<b>4279.2</b>
<b>Skate</b>	3L	0.9
	3M	0.3
	3N	0.7
	3O	0.8
	<b>3LMNO</b>	<b>2.7</b>
<b>Atlantic cod</b>	3L	50.0
	3M	745.0
	3N	20.0
	3O	13.8
	<b>3MNO</b>	<b>828.8</b>
<b>Wolffish spp.</b>	3L	17.6
	3M	2.3
	3N	0.5
	<b>3LMN</b>	<b>20.4</b>



TABLE 2. Bycatch in the directed Greenland halibut fishery by Russian bottom trawlers in NAFO Div. 1AD in 2012

Species	Weight, t
Division 1A	
Skates	2.000
Northern wolffish	0.128
Division 1D	
Northern wolffish	1.000
Roughhead grenadier	4.000
Total	
Skates	2.000
Northern wolffish	1.128
Roughhead grenadier	4.000

TABLE 3. Length composition (ind.) in Greenland halibut (*Reinhardtius hippoglossoides*) in Russian trawl catches in NAFO Div. 1D in 2012

Length, cm	1D
36	1
38	2
40	1
42	12
44	27
46	39
48	57
50	75
52	86
54	88
56	44
58	35
60	22
62	14
64	17
66	9
68	11
70	10
72	6
74	8
76	6
78	10
80	9
82	6
84	3
86	4
88	4
90	2
92	1
94	3
Total	612
Mean length, cm	55,3

TABLE 4. Length composition (ind.) in Greenland halibut (*Reinhardtius hippoglossoides*) in Russian trawl catches in NAFO Div. 3LMN in 2012

Length, cm	3L			3N			3O	3LNO		
	Females	Males	Total	Females	Males	Total	Females	Females	Males	Total
22	1	1	2			0		1	1	2
24	4	2	6			0		4	2	6
26	5	3	8			0		5	3	8
28	12	6	18			0		12	6	18
30	27	27	54			0	1	28	27	55
32	67	45	112			0	1	68	45	113
34	132	106	238	1		1	3	136	106	242
36	267	230	497	3		3	3	273	230	503
38	676	583	1259	10	5	15		686	588	1274
40	1139	1084	2223	79	30	109		1218	1114	2332
42	1816	1500	3316	132	75	207		1948	1575	3523
44	2498	1994	4492	173	85	258		2671	2079	4750
46	3105	2121	5226	189	99	288		3294	2220	5514
48	3311	1845	5156	210	80	290		3521	1925	5446
50	2992	1416	4408	191	62	253		3183	1478	4661
52	2581	1001	3582	168	56	224		2749	1057	3806
54	1996	661	2657	171	40	211		2167	701	2868
56	1516	229	1745	123	24	147		1639	253	1892
58	1152	65	1217	89	5	94		1241	70	1311
60	776	16	792	70	2	72		846	18	864
62	557	4	561	50		50		607	4	611
64	393	2	395	24		24		417	2	419
66	215		215	20		20		235		235
68	160		160	11		11		171		171
70	130		130	9		9		139		139
72	94		94	9		9		103		103
74	65		65	8		8		73		73
76	33		33	3		3		36		36
78	29		29	3		3		32		32
80	15		15			0		15		15
82	10		10			0		10		10
84	1		1			0		1		1
86	2		2			0		2		2
88	4		4			0		4		4
90										
92	1		1			0		1		1
94	1		1			0		1		1
96	2		2			0		2		2
<b>Total</b>	25785	12941	38726	1746	563	2309	8	27539	13504	41043
<b>Mean length, cm</b>	50.14	46.35	48.9	51.14	47.75	50.3	34.5	50.2	46.41	48.95

TABLE 5. Age-length composition (ind.) in Greenland halibut (*Reinhardtius hippoglossoides*) in Russian trawl catches in NAFO Div. LMNO in 2012

Length, cm	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total	Weight, g
24	1														1	110.0
26	1														1	110.0
28	2	2													4	180.0
30	7	9	2												18	225.0
32	1	13	3												17	274.7
34		14	14	2											30	331.0
36		4	18	5											27	398.1
38			16	10											26	457.3
40			15	20	3										38	549.5
42			1	30	3										34	623.8
44			1	20	14										35	742.9
46				5	25										30	836.7
48				4	29	9									42	943.1
50					13	11									24	1103.8
52					7	24	3								34	1263.8
54					5	19	5	1							30	1428.7
56					1	9	20	2							32	1583.8
58					1	6	14	4	2						27	1713.0
60						1	5	8	3						17	2045.9
62							2	7	5	1					15	2208.7
64							1	3	8	3					15	2417.3
66									3	6	1				10	2629.0
68									1	6	6				13	2966.2
70										1					1	2940.0
72											2	2			4	3787.5
74															0	0.0
76												2			2	4485.0
78												3			3	5040.0
80													1		1	5870.0
88													1	1	2	7465.0
<b>Total</b>	12	42	70	96	101	79	50	25	22	17	9	7	2	1	533	
<b>Mean weight, g</b>	205	287.4	430.4	612.9	941.6	1316.5	1716	1972	2351.4	2690.6	3131.1	4590	6700	7400.0	533	1156.2
<b>Mean length, cm</b>	29.5	32.9	37.3	42	48	53.2	57.5	60.6	63.4	66.7	69.1	76.1	84.5	88.0.0	533	48.4

TABLE 6. Length composition (ind.) in *S. fasciatus* in Russian trawl catches in NAFO Div. 3LNO in 2012

Length, cm	3L			3N			3O			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
17							1		1	1		1
18				21	2	23	1	1	2	22	3	25
19	1		1	80	28	108	10	7	17	91	35	126
20	5	1	6	227	101	328	37	18	55	269	120	389
21	10	2	12	344	237	581	117	45	162	471	284	755
22	46	29	75	445	378	823	110	84	194	601	491	1092
23	86	85	171	488	575	1063	67	112	179	641	772	1413
24	201	176	377	376	632	1008	54	70	124	631	878	1509
25	325	207	532	286	464	750	59	44	103	670	715	1385
26	275	181	456	199	283	482	36	36	72	510	500	1010
27	169	171	340	118	205	323	18	33	51	305	409	714
28	79	253	332	55	160	215	8	22	30	142	435	577
29	34	291	325	33	156	189	2	13	15	69	460	529
30	13	260	273	10	134	144	1	18	19	24	412	436
31	3	229	232	1	102	103		7	7	4	338	342
32		136	136		80	80		5	5		221	221
33		79	79		63	63		3	3		145	145
34		38	38		57	57		3	3		98	98
35		29	29		30	30		1	1		60	60
36		17	17		12	12		1	1		30	30
37		7	7		3	3					10	10
38		4	4								4	4
39		4	4								4	4
40		1	1								1	1
<b>Total</b>	1247	2200	3447	2683	3702	6385	521	523	1044	4451	6425	10876
<b>Mean length, cm</b>	25.4	28.3	27.3	23.1	25.2	24.3	22.8	24.2	23.5	23.7	26.2	25.2

TABLE 7. Length composition (ind.) in *S. mentella* in Russian trawl catches in NAFO Div. 3LMN in 2012

Length, cm	3L			3M			3N			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total	Males	Females	Total
21		2	2							2		2
22	4	6	10	4	1	5				8	7	15
23	27	10	37	13	4	17				40	14	54
24	41	11	52	16	3	19	3		3	60	14	74
25	90	24	114	20	7	27	7	3	10	117	34	151
26	183	27	210	32	9	41	9	3	12	224	39	263
27	233	47	280	34	9	43	10	4	14	277	60	337
28	220	70	290	27	15	42	13	5	18	260	90	350
29	220	113	333	23	30	53	12	7	19	255	150	405
30	192	124	316	9	32	41	6	11	17	207	167	374
31	166	141	307	7	32	39	5	12	17	178	185	363
32	124	183	307	2	34	36	6	13	19	132	230	362
33	100	229	329	2	34	36	5	14	19	107	277	384
34	95	218	313	2	38	40	5	16	21	102	272	374
35	58	218	276		27	27	2	13	15	60	258	318
36	40	179	219	1	18	19	1	12	13	42	209	251
37	20	139	159	1	17	18		8	8	21	164	185
38	17	114	131		12	12		8	8	17	134	151
39	9	65	74		14	14		5	5	9	84	93
40	3	43	46		11	11		3	3	3	57	60
41	4	32	36		10	10				4	42	46
42	1	24	25		5	5		1	1	1	30	31
43		18	18		1	1					19	19
44		6	6								6	6
45		4	4								4	4
46		1	1								1	1
<b>Total</b>	1847	2048	3895	193	363	556	84	138	222	2124	2549	4673
<b>Mean length, cm</b>	29.49	33.58	31.6	26.95	32.81	30.8	28.94	33.13	31.5	29.24	33.45	31.53

TABLE 8. Length composition (ind.) in *S. marinus* in Russian trawl catches in NAFO Div. 3LM in 2012

Length, cm	Division 3L			Division 3M			Total		
	Males	Females	Total	Males	Females	Total	Males	Females	Total
26					1	1		1	1
27					1	1		1	1
28				1		1	1		1
29				1		1	1		1
30				1		1	1		1
31				1	1	2	1	1	2
32				4	1	5	4	1	5
33				1	2	3	1	2	3
34	1		1	2	3	5	3	3	6
35	1		1	4	2	6	5	2	7
36		1	1	3	3	6	3	4	7
37	1		1	3	3	6	4	3	7
38	1	1	2	3	2	5	4	3	7
39		1	1		4	4		5	5
40	1		1	1	4	5	2	4	6
41	1		1	1	5	6	2	5	7
42			0	1	5	6	1	5	6
43	1	2	3		2	2	1	4	5
44			0		3	3		3	3
45		1	1		2	2		3	3
46	1	2	3		2	2	1	4	5
47	1		1				1		1
48									
49		1	1					1	1
50		1	1					1	1
56		1	1					1	1
66		1	1					1	1
Total	9	12	21	27	46	73	36	58	94
Mean length, cm	40.11	46.42	43.7	34.93	38.7	37.3	36.22	40.29	38.73

TABLE 9. Length composition (ind.) in roughhead grenadier (*Macrourus berglax*) in Russian trawl catches in NAFO Div. 3LN in 2012

Length, cm	3L	3N	3LN
31	1		1
34	23		23
37	62		62
40	119	2	121
43	227	5	232
46	229	6	235
49	211	4	215
52	117	4	121
55	90	11	101
58	65	8	73
61	61	4	65
64	77	6	83
67	76	6	82
70	66	2	68
73	36		36
76	23		23
79	8		8
82	3		3
85	4		4
88	1		1
91	2		2
97	1		1
Total	1502	58	1560
Mean length, cm	52.7	56.4	52.8

TABLE 10. Length composition (ind.) in roundnose grenadier (*Coryphaenoides rupestris*) in Russian trawl catches in NAFO Div. 3L in 2012

Length, cm	3L
40	1
43	3
46	2
49	1
52	
55	2
58	1
61	
64	1
67	1
Total	12
Mean length, cm	51.8



TABLE 11. Length composition (ind.) in American plaice (*Hippoglossoides platessoides*) in Russian trawl catches in NAFO Div. 3LN in 2012

Length, cm	3L	3N	3LN
27	1		1
29	2		2
31	7	1	8
33	13	4	17
35	13	5	18
37	24	5	29
39	19	4	23
41	18	4	22
43	17	4	21
45	11	1	12
47	21	3	24
49	5	3	8
51	1	3	4
53	1	1	2
55		1	1
57		2	2
59		1	1
61			
63		1	1
<b>Total</b>	153	43	196
<b>Mean length, cm</b>	40.5	43.4	41.11

TABLE 12. Length composition (ind.) in witch flounder (*Glyptocephalus cynoglossus*) in Russian trawl catches in NAFO Div. 3LMN in 2012

Length, cm	3L	3M	3N	3O	3LMNO
25				2	2
27				3	3
29				3	3
31				3	3
33	3			8	11
35	5			21	26
37	3		1	45	49
39	4			49	53
41	10			26	36
43	9		1	21	31
45	3	4	2	8	17
47	2	2		3	7
49	2			1	3
51					
53	1				1
<b>Total</b>	42	6	4	193	245
<b>Mean length, cm</b>	41.4	46.2	43	38.9	39.55

TABLE 13. Length composition (ind.) in Atlantic cod (*Gadus morhua*) in Russian trawl catches in NAFO Div. 3LMN in 2012

Length, cm	3L	3M	3N	3O	3LMNO
30		1		1	2
32		1		2	3
34		10		6	16
36		9	1	11	21
38	2	7		12	21
40	2	6		9	17
42	1	7	1	15	24
44	1	2	2	14	19
46		6	2	19	27
48	1	17	2	7	27
50		28	2	2	32
52		41	3	2	46
54		84	3	4	91
56	1	163	9		173
58	2	173	6	2	183
60	1	242	3	1	247
62		231	3		234
64		249	1	1	251
66	2	256	3		261
68	2	250	1		253
70		223	2		225
72	1	230	1		232
74		263	2		265
76		232	3		235
78		226			226
80		179	2		181
82		142	2		144
84		146	1		147
86		113	3		116
88		146	2		148
90		116			116
92		93	1		94
94		96			96
96		77			77
98		77			77
100		60			60
102		57			57
104		57			57
106		43			43
108		35			35
110		19			19
112		18			18
114		7			7
116		8			8
118		2			2
120		2			2
122		1			1
124		2			2
<b>Total</b>	16	4453	61	108	4638
<b>Mean length, cm</b>	54.38	75.06	63.48	43.33	74.1

TABLE 14. Length composition (ind.) in threebeard rockling (*Gaidropsarus ensis*) in Russian trawl catches in NAFO Div. 3L in 2012

Length, cm	Males	Females	Total
31		1	1
34	2	3	5
37	7	10	17
40	1	16	17
43		9	9
46		5	5
49		3	3
<b>Total</b>	10	47	57
<b>Mean length, cm</b>	37.7	41.57	40.9

TABLE 15. Length composition (ind.) in thorny skates (*Amblyraja radiata*) in Russian trawl catches in NAFO Div. 3L in 2012

Length, cm	3L			3M			3N			3LMN		
	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total
24								1	1		1	1
27								1	1		1	1
30							1		1	1		1
33	1		1				1		1	2		2
36	1	2	3					1	1	1	3	4
39								1	1		1	1
42	2	2	4	1		1	1		1	4	2	6
45		1	1					2	2		3	3
48				1		1		1	1	1	1	2
51	2	1	3					1	1	2	2	4
54	1	1	2		2	2				1	3	4
57	4	5	9		1	1	1	2	3	5	8	13
60	3	4	7							3	4	7
63	3	7	10							3	7	10
66	2	4	6					1	1	2	5	7
69	1	10	11							1	10	11
72		4	4								4	4
75		2	2								2	2
78		1	1								1	1
<b>Total</b>	20	44	64	2	3	5	4	11	15	26	58	84
<b>Mean length, cm</b>	61.6	68.98	66.7	50.5	62	57.4	43.75	49.82	48.2	58	64.98	62.82

TABLE 16. Length composition (ind.) in black dogfish (*Centroscyllium fabricii*) in Russian trawl catches in NAFO Div. 3L in 2012

Length, cm	Males	Females	Total
52		1	1
55	1	1	2
58	7	2	9
61	16	5	21
64	5	1	6
67	6	4	10
70		4	4
73		7	7
76			
79		1	1
Total	35	26	61
Mean length, cm	62.7	67.5	64.8

TABLE 17. Length composition (ind.) in northern wolffish (*Anarhichas denticulatus*) in Russian trawl catches in NAFO Div. 3LMN in 2012

Length, cm	3L	3M	3N	3LMN
40	1			1
43	2			2
46	8			8
49	13			13
52	20			20
55	16		3	19
58	12		2	14
61	16	1	1	18
64	16	1	0	17
67	17	1	2	20
70	14	1	2	17
73	6	1	1	8
76	9	1		10
79	6			6
82	2	1		3
85	1	0		1
88	2	2		4
91	4	2		6
94	4			4
97	4			4
100	1	1		2
103				
106	2			2
109				
112	1			1
127	1			1
Total	178	12	11	201
Mean length, cm	66.0	80.3	63.6	66.7

TABLE 18. Length composition (ind.) in Atlantic wolffish (*Anarhichas minor*) in Russian trawl catches in NAFO Div. 3LMN in 2012

Length, cm	3L	3N	3LN
37	1		1
40			
43	2	1	3
46	1		1
49	1		1
52	0	1	1
55			
58	2		2
61	3		3
64			
67			
70			
73	1		1
<b>Total</b>	11	2	13
<b>Mean length, cm</b>	54.6	48.5	53.7

TABLE 19. Length composition (ind.) in spotted wolffish (*Anarhichas lupus*) in Russian trawl catches in NAFO Div. 3LMN in 2012

Length, cm	3M	3N	3MN
67	1	0	1
70			
73	1	0	1
76	0	1	1
79	3	1	4
82			
85	1	0	1
88	1	0	1
91			
94	2	0	2
97	1	0	1
<b>Total</b>	10	2	12
<b>Mean length, cm</b>	84.5	78.5	83.5

Table 20. Length composition (ind.) in blue hake (*Antimora rostrata*) in Russian trawl catches in NAFO  
Div. 3LN in 2012

Length, cm	3L	3N	3LN
16	1		1
19			
22	1		1
25	4		4
28	11		11
31	21		21
34	34		34
37	24		24
40	8	1	9
43	5	3	8
46	7	1	8
49	7		7
52	6	1	7
55	3		3
58	1		1
61	1		1
<b>Total</b>	134	6	140
<b>Mean length, cm</b>	37.8	45.5	38.2

TABLE 21. Length composition (ind.) in nezumia (*Nezumia bairdii*) in Russian trawl catches in NAFO  
Div. 3L in 2012

Length, cm	Males	Females	Total
25		1	1
28		7	7
31	2	26	28
34	1	35	36
37	1	18	19
40		2	2
<b>Total</b>	4	89	93
<b>Mean length, cm</b>	34.25	34.29	34.3

TABLE 22. Length composition (ind.) in Atlantic halibut (*Hippoglossus hippoglossus*) in Russian trawl catches in NAFO Div. 3LMN in 2012

Length, cm	3L	3N	3LN
47		1	1
49			
51			
53		1	1
55			
57			
59			
61			
63	1	1	2
65			
67		1	1
69			
71			
73			
75			
77			
79	1	2	3
81			
83			
85			
87	1		1
89			
91		1	1
93			
95			
97		1	1
99			
101	1		1
103			
105			
107			
109	1		1
111	1		1
113			
115			
117		1	1
177	1		1
185	1		1
Total	8	9	17
Mean length, cm	114,5	77,5	94,9

TABLE 23. Sightings of marine mammals during fishing operations in the NAFO Regulatory Area in 2012

Date	Coordinates	Species	Quantity	Remarks
10.01	46°36' N - 45°47' W	Whale	1	Hauling
18.01	48°06' N - 47°21' W	Dolphin	20-25	Hauling
18.01	48°06' N - 47°23' W	Northern bottlenose whale Sperm whale	8 2-4	Hauling
21.02	46°26' N - 45°22' W	Dolphin	6-9	Hauling
02.04	48°16' N - 46°35' W	Dolphin	4	Hauling
03.04	48°09' N - 47°41' W	Sperm whale	3	Hauling
04.04	48°08' N - 47°34' W	Sperm whale	5	Hauling
05.04	48°08' N - 47°40' W	Sperm whale	2	Hauling
06.04	48°07' N - 47°00' W	Sperm whale	3	Hauling
06.04	48°17' N - 46°31' W	Sperm whale	3	Hauling
06.04	48°14' N - 46°43' W	Sperm whale	3	Hauling
07.04	48°17' N - 46°32' W	Sperm whale Dolphin	2 5-6	Hauling
07.04	48°10' N - 47°03' W	Sperm whale	3	Hauling
09.04	48°08' N - 47°15' W	Seal	3	Hauling
09.04	48°09' N - 47°40' W	Seal Sperm whale Dolphin	2 3 2	Hauling
10.04	48°08' N - 47°38' W	Sperm whale	4	Hauling
12.04	48°08' N - 47°39' W	Seal	2	Hauling
12.04	48°09' N - 47°11' W	Seal	4	Hauling
12.04	48°09' N - 47°11' W	Seal	2	Hauling
13.04	48°16' N - 46°34' W	Seal Sperm whale	2 3	Hauling
15.04	48°09' N - 47°05' W	Sperm whale	2	Hauling
15.04	48°18' N - 46°32' W	Sperm whale Seal	2 1	Hauling
16.04	48°09' N - 47°04' W	Seal Sperm whale Dolphin	1 5 6-7	Hauling
17.04	48°08' N - 47°02' W	Sperm whale	5	Hauling
19.04	48°10' N - 47°12' W	Sperm whale	4	Hauling
21.04	48°09' N - 47°38' W	Sperm whale	7	Hauling
21.04	48°07' N - 47°12' W	Sperm whale	5	Hauling
22.04	48°10' N - 47°08' W	Sperm whale	5	Hauling
23.04	48°16' N - 46°33' W	Seal Sperm whale Dolphin	1 5 1	Hauling
24.04	48°10' N - 47°11' W	Sperm whale	5	Hauling
25.04	48°10' N - 47°42' W	Sperm whale Seal	3 5-6	Hauling
28.04	48°10' N - 47°02' W	Sperm whale	2	Hauling
29.04	48°09' N - 47°40' W	Sperm whale Dolphin	3 2	Hauling
29.04	48°09' N - 47°04' W	Sperm whale	3	Hauling
30.04	48°18' N - 46°31' W	Sperm whale	6	Hauling
30.04	48°09' N - 47°08' W	Sperm whale	2	Hauling
02.05	48°08' N - 47°35' W	Sperm whale	4	Hauling



Date	Coordinates	Species	Quantity	Remarks
		Seal	1	
05.05	48°09' N - 47°39' W	Sperm whale	5	Выборка трала
		Seal	2	
06.05	48°09' N - 47°12' W	Sperm whale	3	Hauling
07.05	48°11' N - 47°03' W	Sperm whale	4	Hauling
		Seal	2	
07.05	48°19' N - 46°33' W	Sperm whale	5	Hauling
08.05	48°10' N - 47°38' W	Sperm whale	3	Hauling
08.05	48°09' N - 47°13' W	Sperm whale	5	Hauling
09.05	48°09' N - 47°11' W	Sperm whale	5	Hauling
10.05	48°09' N - 47°38' W	Sperm whale	5	Hauling
13.05	48°09' N - 47°11' W	Sperm whale	2	Hauling
14.05	48°10' N - 47°01' W	Sperm whale	3	Hauling
15.05	48°17' N - 46°32' W	Sperm whale	5	При подъеме трала
		Pilot whale	15-30	
16.05	48°10' N - 47°01' W	Sperm whale	5	Hauling
22.05	48°09' N - 47°38' W	Sperm whale	1	Hauling
24.05	48°09' N - 47°38' W	Sperm whale	2	Hauling
27.05	48°10' N - 47°10' W	Sperm whale	1	При подъеме трала

TABLE 24. Total number of marine mammals sighted during fishing operations  
in the NAFO Regulatory Area in 2012

Species	Quantity *	Number of sightings	Percentage of total number
Whale N/S	1	1	0.4
Sperm whale	154	44	59.2
Pilot whale	22	1	8.5
Northern bottlenose whale	8	1	3.1
Dolphin N/S	47	8	18.1
Seal N/S	28	13	10.8

**Total: 260 68**

Note: if the exact number of marine mammals in Table 23 is not specified, the average number was used to calculate the total number of marine mammals

TABLE 25. Bycatch in the directed fishery for Greenland halibut by Russian bottom trawlers in NAFO  
Div. 3LMNO in 2012

<b>Species</b>	<b>Weight, t</b>
Redfishes	26.530
Witch flounder	7.000
American plaice	4.289
Skates	0.640
Northern wolffish	17.967
Roughhead grenadier	26.556
Roundnose grenadier	21.966
Red hake	2.592
Atlantic halibut	2.840
Atlantic cod	0.458

TABLE 26. Bycatch in the directed fishery for redfish by Russian bottom trawlers  
in NAFO Div. 3LMNO in 2012

Species	Weight, t
Division 3LN	
Greenland halibut	1.719
Cod	68.815
Witch flounder	21.792
American plaice	25.972
Atlantic halibut	7.061
Northern wolffish	0.077
Roughhead grenadier	0.046
Roundnose grenadier	0.236
Spotted wolffish	0.038
Skates	0.644
Division 3M	
Cod	39.282
Witch flounder	6.401
American plaice	24.048
Greenland halibut	1.411
Atlantic halibut	4.525
Spotted wolffish	0.039
Northern wolffish	0.154
Division 3O	
Greenland halibut	0.070
Cod	13.820
Witch flounder	2.864
American plaice	6.303
White hake	1.775
Atlantic halibut	1.201
Skates	0.828
Red hake	0.669
Short-finned squid (Illex)	0.408
Total	
Greenland halibut	3.200
Cod	116.326
Witch flounder	31.057
American plaice	56.323
Northern wolffish	0.231
Roughhead grenadier	0.046
White hake	1.775
Atlantic halibut	12.787
Roundnose grenadier	0.236
Spotted wolffish	0.077
Skates	1.472
Red hake	0.669
Short-finned squid (Illex)	0.408