



Serial No. N6562

NAFO SCS Doc. 16/10

**SCIENTIFIC COUNCIL MEETING - JUNE 2016****Russian Research Report for 2015**

by

**K. Fomin and M.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)**SUBAREAS 1+2****A. Status of Fisheries***Greenland halibut*

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

In the area to the north of 68°N five trawlers were engaged in fishery from August to October. The trawlers fished within an area between 69°05'N–70°11'N and 60°56'W–58°56'W at the depths of 820–1,125 m. According to the preliminary data, the catch of Greenland halibut was 547.8 t (Table 1). There was a by-catch of 0.04 t of northern wolffish *Anarhichas denticulatus* (Table 2). The catch rate varied by months from 5.5 t to 14.3 t and averaged 9.9 t per fishing vessel day.

In the area south of 68°N, as many as six Russian trawlers participated in the fishery. The trawlers operated from August to December in the area between 63°43'N– 64°29'N and 57°57'W– 54°58'W, at depths of 915–1,280 m. The catch rate per fishing vessel day ranged from 8.8 t to 20.9 t and averaged 18.1 t. According to the preliminary data, the catch of Greenland halibut was 1,214.8 t (Table 1). The by-catch was comprised of 0.3 t of northern wolffish and 1.5 t of roundnose grenadier *Coryphaenoides rupestris* (Table 2).

Since 2011, in the Greenland halibut fishery, the catch per unit of effort (CPUE) has been exceeding the average level both in Divs. 1 AB and 1 CD (Fig.1). At the same time, in 2014-2015, the CPUE continued to increase and reached the maximum level for the observation period (2001-2015) to the south of 68°N (Divs. 1CD). This tendency may be considered as showing the stock growth.

In general, the annual catch of Greenland halibut taken by the Russian fleet off West Greenland amounted to 1,762.6 t (Table 1).

*Other fish species*

There was no directed fishery for other fish species.

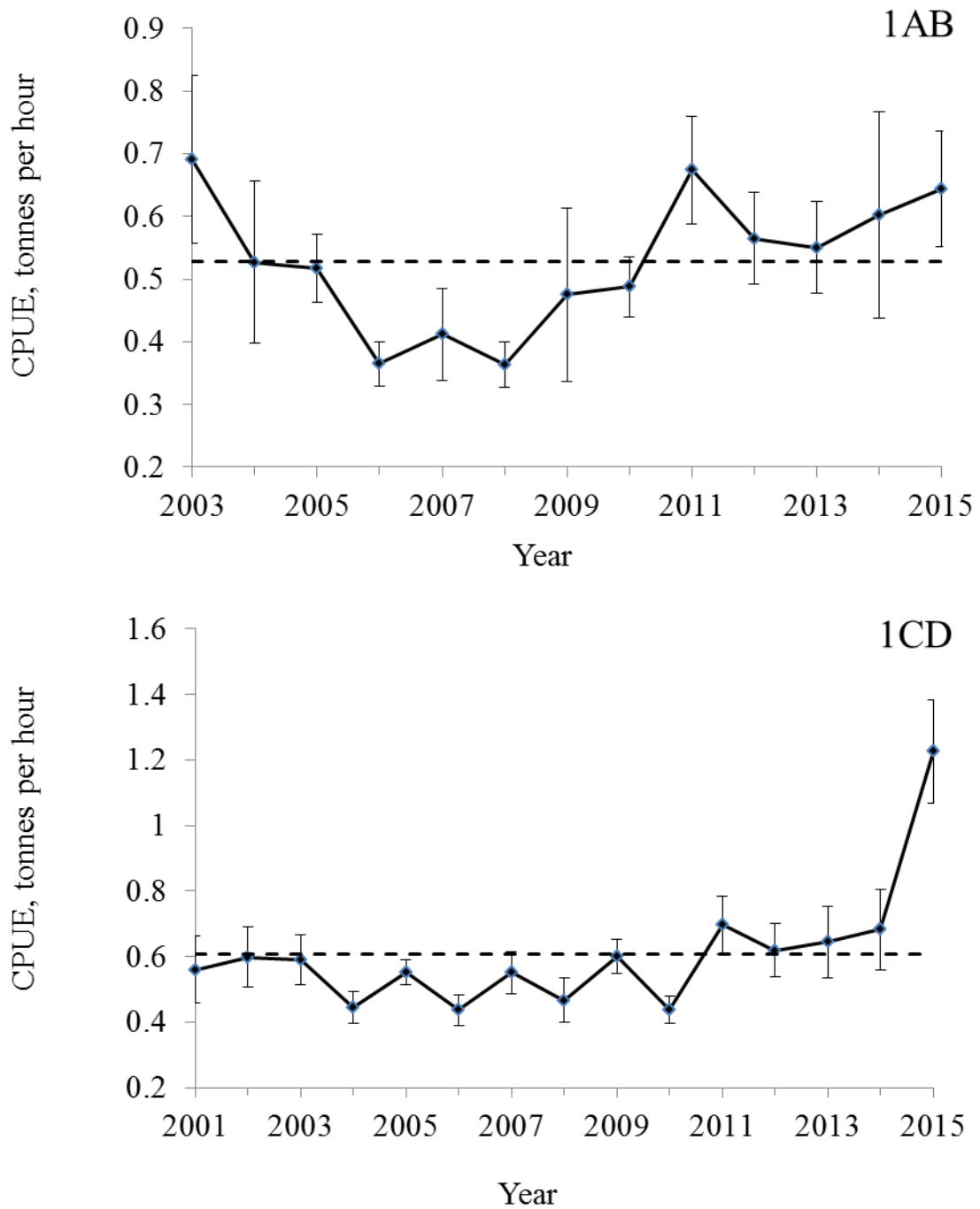


Fig. 1. CPUE dynamics in Greenland halibut fishery by vessels of Class 6 tonnage according to NAFO classification off the West Greenland in September-October 2003-2015 (Divs.1AB) and August-October 2001-2015 (Divs. 1CD)

### **B. Dedicated Research Studies**

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

### *Greenland halibut*

In Divs. 1ACD, the length of Greenland halibut in catches ranged from 37 cm to 107 cm, specimens as long as 51 – 57 cm prevailed (Table 3).

## **SUBAREA 3**

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

#### *Greenland halibut*

Four trawlers were engaged in the directed fishery for Greenland halibut from February 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°16'N at 670 – 1,630 m depths. Occasionally, the trawlers also fished in Divs. 3M and 3N at 770 – 1,220 m depths. In general, the catch rate per fishing vessel day in the area ranged from 1.9 t to 23.9 t and averaged 14.7 t per fishing vessel day and 0.88 t per hour of hauling.

In general, the annual catch of Greenland halibut taken in the directed fishery amounted to 1,467.4 t. In addition, 4.6 t of Greenland halibut were taken as by-catch in the multispecies fishery. According to the preliminary data, the total catch of Greenland halibut was 1,472.0 t under the Russian quota of 1,473.0 t (Table 1). The by-catch was comprised of Atlantic halibut, roughhead and roundnose grenadiers, redfishes, American plaice, witch flounder, as well as skates (Table 4).

#### *Cod*

On the Flemish Cap Bank, the directed fishery for cod was conducted between 46°21' N – 47°55'N and 46°25'W – 44°11'W at the depths of 140 – 730 m, where the average daily catch rate was 21.8 t, in February–December. The annual catch of cod taken by Russian fishing vessels in the directed fishery was 829.0 t, with a by-catch of 10.9 t of redfishes, 12.7 t of witch flounder, 10.9 t of American plaice, 2.0 t of skates, 1.6 t of Greenland halibut and 4.0 t of Atlantic halibut. Furthermore, 63.4 t of cod were taken as a by-catch in the redfish fishery and 0.2 t – in the witch flounder fishery. The total Russian catch of cod on the Flemish Cap was 892.6 t (Table 1).

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

The redfish fishery was conducted between 46°26'N - 48°23'N and 46°26'W - 43°53'W at the depths of 130 – 1,090 m in January–February and July. The vessels fished with bottom trawls and the catch rate varied from 27.2 to 33.4 t and averaged 29.8 t per a fishing vessel day.

In total, the annual catch taken by Russian fishing vessels in the directed redfish fishery, according to the preliminary data, was 1,317.3 t. Greenland and Atlantic halibut, cod, witch flounder, American plaice, and skates occurred in the by-catch (Table 5).

In the cod fishery, 10.9 t of redfish species were taken as a by-catch. In the Greenland halibut fishery, the redfish by-catch was 2.4 t and in the mixed catches – 3.5 t. In the area, the total Russian catch of redfishes was 1334.1 t (Table 1).

In Div. 30, Russian trawlers sporadically fished in the south-western Grand Bank of Newfoundland from February to December. Bottom trawls were used in the fishery, which was conducted in the area between 43°00'N – 43°24'N and 51°40'W – 51°01'W at the depths of 115–610 m.

The highest catch rates in bottom trawling were recorded in August, when the catch rate was 3.0 t per hour of hauling.

In total, in 2015, Russian fishing vessels caught 1,084.2 t of redfishes in the directed fisheries (Table 2). Cod, American plaice, witch flounder, white hake, skates, yellowtail flounder, haddock, hake, as well as Atlantic halibut and anglerfish occurred in the by-catch (Table 5). The redfish by-catch was not recorded in the other fisheries.

In Div. 3LN, the fishery was conducted from January to December between 42°47'N – 48°05'N and 50°57'W – 47°02'W at depths of 125 – 780 m. The catch rates in bottom trawling ranged from 1.8 t to 39.3 t and averaged 17.1 t per fishing vessel day. In total, during 2015, 2959.0 t of redfishes were taken in the directed fishery by Russian vessels. Cod, witch flounder, American plaice, Greenland and Atlantic halibut, skates, roughhead grenadier, Atlantic and spotted wolffish were found in the by-catch (Table 5). Redfish species, 2.2 t and 10.6 t,

were also taken as a by-catch in the Greenland halibut and multispecies fisheries, respectively.

In Div.3LN, the total Russian catch of redfishes amounted to 2971.8 t (Table 1).

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

The Russian directed fishery for yellowtail flounder was conducted during a short period of time in February-March in Div.3N between 43°02'N – 44°45'N and 50°24'W – 49°02'W, where one hauling was conducted in November. The average daily catch rate was 11.6 t. In 2015, Russian fishing vessels caught 79.6 t of yellowtail flounder in the directed fishery (Table 1). The by-catch consisted of 3.9 t of American place, 2.2 t of cod, 3.9 t of skates and 0.4 t of Atlantic halibut. Besides, 1.9 t were taken in each of the redfish and multispecies fisheries.

#### *Other fish species*

There was no directed fishery for other species. The by-catch of other fish species in the directed fisheries amounted to 73.7 t of skates, 71.7 t of witch flounder, 30.5 t of white hake and 140.3 t of American place (Table 1).

### **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 30 cm to 102 cm in length occurred, with a mean length of 51.8 cm. Individuals as long as 48 – 54 cm prevailed (Table 6).

In Div. 3M, the length of Greenland halibut varied from 30 cm to 102 cm, predominately it was 50-56 cm. The average length was 53.4 cm.

In Div. 3N, Greenland halibut length was equal to 42-94 cm with a mean length of 60.1 cm.

In general, the length of Greenland halibut in Div. 3LMNO was 30-102 cm, with a mean length of males and females of 49.9 cm and 54.2 cm, respectively. In the catches sex ratio was 1:2. The halibut age varied within 4-19 years. The majority of fish caught were 7-9 years old (Table 7).

#### *Acadian redfish (Sebastes fasciatus)*

In Div. 3L, the catches consisted of fish as long as 26-41 cm with the average length of females and males being equal to 32.0 cm and 32.5 cm, respectively. Individuals having a length of 28-30 cm and 32-35 cm made up the bulk of the catches (Table 8).

In Div.30, redfish as long as 19-32 cm, mainly 21-24 cm, predominated. The average length of males and females was 22.9 cm.

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

In Div. 3L, the length of deep-sea redfish varied from 19 to 47 cm, being mainly 23-26 cm and 29-32 cm. The mean length was 28.0 cm (Table 9).

In Div. 3M, small deep-sea redfish numbers were found in by-catch and they were represented by fish 25-46 cm in length averaging 32.1 cm.

In Div. 3N, redfish as long as 18-36 cm were caught. Individuals from 20 cm to 24 cm in length made up the bulk of the catch. The average length of males was 22.2 cm, of females – 24.5 cm.

In Div.3LN, deep-sea redfish age samples were collected. The data obtained showed that the age of the fish varied within 5-19 years old with the prevalence of 8-9 year individuals (Table 10).

#### *Golden redfish (Sebastes marinus)*

In Divs. 3LM, single fish were caught.

In Div. 3L, the fish length varied from 32 to 56 cm averaging 41.2 cm (Table 11).

In Div. 3N, the redfish was represented by individuals 42-58 cm in length, with the mean length of 50.3 cm.

*Roughhead grenadier (Macrourus berglax)*

In Div. 3L, the total length of roughhead grenadier in the catches varied from 31 cm to 82 cm, being mainly 46-55 cm. The mean length was 53.4 cm (Table 10).

In Div. 3M, the length varied from 33 cm to 94 cm and, primarily, from 48 to 54 cm, with a mean one of 53.7 cm.

In Div.3N, the roughhead grenadier as long as 27-70 cm and 53.2 cm, on the average, were occurring (Table 12).

*Roundnose grenadier (Coryphaenoides rupestris)*

In Div. 3L, the total length ranged from 22 cm to 70 cm with the mean one of 47.7 cm (Table 13).

In Div. 3M, fish length varied from 28 cm to 70 cm under the average one of 55.7 cm.

*American plaice (Hippoglossoides platessoides)*

In Div. 3L, American plaice as long as 29-51 cm were caught. The mean length was 37.0 cm (Table 14).

*Witch flounder (Glyptocephalus cynoglossus)*

In Divs. 3LMN, there were only single specimen caught.

In Div. 3L, witch flounder ranging from 33 cm to 55 cm in length were taken as a by-catch in the redfish fishery. The mean length of witch flounder was 46.8 cm (Table 15).

In Div. 3M, only three fish as long as 46.8 cm were caught.

In Div. 3N, the fish length ranged within 33-51 cm with the average of 45.3 cm.

*Cod (Gadus morhua)*

In Div.3L, the length was 35-108 cm. The average one equaled to 61.1 cm (Table 16).

On the Flemish Cap Bank, in Div. 3M, the length of cod varied from 43 cm to 122 cm and the mean length was 65.8 cm. Cod as long as 55-61 cm made up the bulk of the catches.

In Div. 3N, 16 fish were caught. Their length varied from 45 cm to 75 cm with the average length of 62.3 cm.

In Div. 3O, fish length was 51-82 cm with the prevalence of 64-68 cm, the mean length was 67.1 cm.

*Thorny skate (Amblyraja radiata)*

In Div. 3L, single thorny skates ranging from 35 cm to 85 cm in length occurred in the catches of redfishes (Table 17). The mean length was 60.8 cm.

In Divs. 3M and 3N, there were occasional catches of the skates. Their length was within 44-61 cm and 58-89 cm under the average one of 56.6 cm and 68.0 cm, respectively.

*Arctic skate (Amblyraja hyperborea)*

In Div.3M, the fish were caught as single specimens.

The fish length varied from 50 to 72 cm, being equal to 59.3 cm, on the average (Table 18).

*Spinytail skate (Bathyrja spinicauda)*

In Divs. 3L and 3M, there were occasional catches of the fish. The fish length varied within 44-61 cm and 58-89 cm with the means of 44-61 cm and 58-89 cm, respectively (Table 19).

*White hake (Urophycis tenuis)*

Small numbers of white hake were found in by-catches. In Divs. 3N and 3O, the fish length varied from 46 cm to 83 cm and from 31 cm to 74 cm with the means of 65.7 cm and 49.8 cm, respectively (Table 20).

*Red hake (Urophycis chuss)*

In Div. 3L, the fish were 33-50 cm in length with the average one of 43.5 cm (Table 21).

In Div. 3M, the fish length varied from 35 cm to 49 cm under the mean one of 42.0 cm.

In Div. 3N, 7 fish as long as 24-38 cm and 32.0 cm, on the average, were caught.

*Northern wolffish (Anarhichas denticulatus)*

In Div. 3L, single fish were found in the by-catch. Their length varied from 40 cm to 93 cm, the mean length was 74.6 cm (Table 22).

In Div. 3M, northern wolffish as long as 49-91 cm, being 68.7 cm, on the average, were taken.

*Atlantic wolffish (Anarhichas lupus)*

In Div. 3LMN, Atlantic wolffish were captured as single fish. The length varied from 40 cm to 109 cm, being 68.3 cm, on the average (Table 23).

*Spotted wolffish (Anarhichas minor)*

Single spotted wolffish were captured in Div. 3L. The length ranged from 52 cm to 115 cm, being 88.3 cm, on the average (Table 24).

In Div. 3M, only 3 individuals were taken. They had the length of 46-103 cm and 72.0 cm, on the average.

*Blue antimora (Antimora rostrata)*

In Div. 3L, blue antimoras were as long as 28-58 cm, being 47.7, on the average (Table 25). Individuals as long as 46-55 cm made up the bulk of the catches.

In Div. 3M, fish size ranged from 28 cm to 64 cm with the prevalence of fish 37-42 cm and 46-52 cm in length, when the mean one was 44.4 cm.

*Marlin-spike grenadier (Nezumia bairdii)*

In Div. 3L, the total length of marlin-spine grenadier varied from 25 to 39 cm being 30.7 cm, on the average. In the catches fish with length of 28-33 cm predominated (Table 26).

*Atlantic halibut (Hippoglossus hippoglossus)*

In Divs. 3LMN, Atlantic halibut were captured as single individuals. The length ranged from 63 cm to 140 cm. The mean length was 83.6 cm (Table 27).

*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 2016 (Kanishchev, Zavoloka, 2016).

*Marine mammals*

By the observations aboard fishing vessels, both whales *Cetacea* including bottlenose dolphins (*Hyperoodon ampullatus*), pilot whales (*Globicephala melaena*), fin whales (*Balaenoptera physalus*), sperm whales (*Physeter microcephalus*), white-beaked dolphins (*Lagenorhynchus albirostris*), short-beaked common dolphins (*Delphinus delphis*), and pinnipeds *Pinnipedia* including harp seals (*Phoca groenlandica*) and ringed seals (*Phoca hispida*) were observed in Divs. 3LMN in March-August (Table 28). In all, there were 38 cases of observations (Table 29).

No discards during fisheries for main fish species were reported.

*References*

Kanishchev, Zavoloka, 2016. Russian catches of cold-water corals and sponges in the North Atlantic based on the data of observations by fishing vessels in 2015. Working Document for ICES/NAFO WGDEC 2016. 9 pp.

TABLE 1. Preliminary catches taken by Russian trawlers in NAFO SA 1-3 in 2015.

<b>Species</b>	<b>Division</b>	<b>Catch, t</b>
<b>Greenland halibut</b>	1A	547.8
	1B	-
	1C	377.8
	1D	837.0
	<b>1ABCD</b>	<b>1762.6</b>
<b>Greenland halibut</b>	3L	808.2
	3M	655.0
	3N	8.8
	<b>3LMN</b>	<b>1472.0</b>
<b>American plaice</b>	3L	46.4
	3M	22.5
	3N	15.2
	3O	56.2
	<b>3LMNO</b>	<b>140.3</b>
<b>Yellowtail flounder</b>	3L	1.9
	3N	79.6
	3O	1.9
	<b>3NO</b>	<b>83.4</b>
<b>Witch flounder</b>	3L	17.3
	3M	17.7
	3N	2.3
	3O	34.4
	<b>3LMNO</b>	<b>71.7</b>
<b>Roughhead grenadier</b>	3L	13.8
	3M	5.1
	3N	1.4
	<b>3LMN</b>	<b>20.3</b>
<b>Roughnose grenadier</b>	<b>3L</b>	1.6
	<b>3M</b>	0.3
	<b>3LM</b>	<b>1.9</b>
<b>Redfish spp.</b>	3L	2341.9
	3M	1334.1
	3N	629.9
	3O	1084.2

Species	Division	Catch, t
<b>3LMNO</b>		<b>5390.1</b>
<b>Skate</b>	3L	26.1
	3M	6.8
	3N	28.5
	3O	12.3
	<b>3LMNO</b>	<b>73.7</b>
<b>White hake</b>	<b>3O</b>	<b>30.5</b>
<b>Atlantic cod</b>	3L	71.4
	3M	892.6
	3N	9.5
	3O	45.5
	<b>3MNO</b>	<b>1019.0</b>
<b>Wolffish spp.</b>	3L	0.705
	<b>3L</b>	<b>0.705</b>
<b>Atlantic Halibut</b>	<b>3L</b>	<b>38.2</b>
	<b>3M</b>	<b>11.0</b>
	<b>3N</b>	<b>25.9</b>
	<b>3O</b>	<b>13.9</b>
	<b>3MNO</b>	<b>89.0</b>

TABLE 2. Bycatch at directed Greenland halibut fishery by Russian bottom trawlers from NAFO Divs. 1ACD in 2015.

Species	Weight, t
Div. 1A	
Northern wolffish	0.039
Div. 1C	
Roundnose grenadier	0.070
Northern wolffish	0.256
Div. 1D	
Roundnose grenadier	1.408
Total	
Roundnose grenadier	1.478
Northern wolffish	0.295



TABLE 3. Greenland halibut (*Reinhardtius hippoglossoides*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 1ACD in 2015.

Length, cm	1A	1C	1D	1ACD
37	1			1
39	1			1
41	4		5	9
43	10		9	19
45	13	5	49	67
47	26	22	130	178
49	34	20	250	304
51	50	52	397	499
53	45	53	452	550
55	39	74	397	510
57	39	59	347	445
59	38	31	205	274
61	22	14	140	176
63	22	13	113	148
65	17	15	90	122
67	15	8	62	85
69	7	5	44	56
71	8	3	48	59
73	5	3	27	35
75	6	5	45	56
77	6	2	32	40
79	4	2	29	35
81	3	2	22	27
83	1	4	24	29
85	1	2	28	31
87	2	1	17	20
89	1		21	22
91		1	13	14
93	2	1	7	10
95		3	11	14
97			9	9
99		1	6	7

<b>101</b>	1	2	8	11
<b>103</b>			2	2
<b>105</b>			2	2
<b>107</b>			1	1
<b>Total</b>	423	403	3042	3868
<b>Mean length, cm</b>	57.5	57.9	58.5	58.3

TABLE 4. Bycatch at directed Greenland halibut fishery by Russian bottom trawlers from NAFO Divs. 3LMNO in 2015.

Species	Weight, t
Witch flounder	8.775
Redfish spp.	4.524
Skate spp.	3.312
Roundnose grenadier	1.872
Roughhead grenadier	14.855
American plaice	8.008
Atlantic halibut	4.763

TABLE 5. Bycatch at directed redfish fishery by Russian bottom trawlers from NAFO Divs. 3LMNO in 2015.

Species	Weight, t
Divs. 3LN	
Witch flounder	12.987
Skate spp.	28.442
Roughhead grenadier	5.414
American plaice	45.173
Cod	68.330
Atlantic halibut	51.861
Greenland halibut	0.306
Spotted wolffish	0.640
Atlantic wolffish	0.065
Div. 3M	
Greenland halibut	1.325
Witch flounder	0.407
Skate spp.	2.700
American plaice	9.579
Cod	59.902
Atlantic halibut	2.464
Div. 3O	
Yellowtail flounder	1.868
Witch flounder	34.387
Skate spp.	11.312
Angler	0.420
White hake	30.483
Haddock	4.030
Hake	27.689
American plaice	45.686
Cod	44.315
Atlantic halibut	11.436
Total	
Yellowtail flounder	1.868
Witch flounder	47.781
Skate spp.	42.454
Roughhead grenadier	5.414
White hake	30.483
Haddock	4.030
Hake	27.689

American plaice	100.438
Cod	172.547
Atlantic halibut	65.761
Greenland halibut	1.631
Angler	0,420
Atlantic wolffish	0.640
Spotted wolffish	0.065

TABLE 6. Greenland halibut (*Reinhardtius hippoglossoides*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 3LMN in 2015.

Length, cm	3L			3M			3N			3LMN		
	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total
30	3	2	5	1		1				4	2	6
32	2	6	8							2	6	8
34	2	5	7							2	5	7
36	6	2	8							6	2	8
38	14	20	34	1	2	3				15	22	37
40	51	51	102	1	9	10				52	60	112
42	89	76	165	5	31	36		1	1	94	108	202
44	190	130	320	29	98	127	2		2	221	228	449
46	400	269	669	146	306	452	5		5	551	575	1126
48	665	345	1010	425	727	1152	8		8	1098	1072	2170
50	956	392	1348	756	1505	2261	4	1	5	1716	1898	3614
52	984	277	1261	1165	1212	2377	8	1	9	2157	1490	3647
54	906	203	1109	1580	689	2269	14	1	15	2500	893	3393
56	838	99	937	1789	355	2144	4		4	2631	454	3085
58	418	55	473	1133	75	1208	9		9	1560	130	1690
60	303	24	327	507	12	519	12		12	822	36	858
62	149	8	157	241	2	243	2		2	392	10	402
64	98	1	99	148	1	149	2		2	248	2	250
66	84	1	85	103		103	4		4	191	1	192
68	47		47	76		76				123		123
70	45		45	86		86	8		8	139		139
72	25		25	43		43				68		68
74	16		16	46		46	4		4	66		66

						14						
76	22	1	23	40		40				62	1	63
78	7		7	27		27	4		4	38		38
80	5		5	16		16	1		1	22		22
82	10		10	14		14	1		1	25		25
84	8		8	14		14	4		4	26		26
86	13		13	7		7	3		3	23		23
88	2		2	3		3	1		1	6		6
90	1		1	3		3				4		4
92				2		2				2		2
94				1		1	1		1	2		2
96				2		2				2		2
98	1		1	1		1				2		2
100												
102	1		1	1		1			2			2
<b>Total</b>	6361	1967	8328	8412	5024	13436	101	4	105	14874	6995	21869
<b>Mean length, cm</b>	52.8	48.8	51.8	55.16	50.38	53.4	60.51	49.00	60.1	54.17	49.94	52.81

---

TABLE 7. Age-length composition of Greenland halibut (*Reinhardtius hippoglossoides*) from the Russian trawl catches in NAFO Divs. 3LMN in 2015.

[illegible]

[illegible]



84													2	1			3	6660
85													1	1			2	6745
86																1	1	15550
87																	0	0
88															1		1	6700
89																	0	0
90																1	1	8600

Total	5	14	70	91	143	114	57	43	46	33	27	14	9	3	1	2	672	
Mean weight, g	320	462	587	804	1092	1473	1765	2295	2713	3404	4773	6767	5780	6506	6700	12075		1799
Mean length, cm	339.2	381.7	412.7	455.1	498.2	546.3	581.2	608.5	654.8	687.7	728.7	770.9	811.9	830.0	880.0	880.0		544.5

TABLE 8. Length composition (ind.) of *S. fasciatus* in Russian trawl catches in NAFO Divs.3LO in 2015.

Length, cm	3L			3O			3LO		
	Females	Males	Total	Females	Males	Total	Females	Males	Total
19				32	24	56	32	24	56
20				56	54	110	56	54	110
21				191	176	367	191	176	367
22				225	253	478	225	253	478
23				268	230	498	268	230	498
24				215	122	337	215	122	337
25				78	131	209	78	131	209
26	1		1	39	32	71	40	32	72
27	1	1	2	26	20	46	27	21	48
28	20	36	56	15	15	30	35	51	86
29	27	17	44	5	10	15	32	27	59
30	46	16	62	2	2	4	48	18	66
31	29	24	53	3	2	5	32	26	58
32	65	34	99	4		4	69	34	103
33	24	40	64				24	40	64
34	41	10	51				41	10	51
35	22	47	69				22	47	69
36	15	26	41				15	26	41
37	4	10	14				4	10	14
38		1	1					1	1
39	1		1				1		1
40		2	2					2	2
41	2	1	3				2	1	3
Total	298	265	563	1159	1071	2230	1457	1336	2793
Mean length, cm	31.95	32.49	32.2	22.89	22.87	22.8	24.74	24.78	24.76

TABLE 9. Length composition (ind.) of *S. mentella* in Russian trawl catches in NAFO Divs. 3LMN in 2015.

Length, cm	3L			3M			3N			Total		
	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Females
<b>18</b>							2	2	4	2	2	4
<b>19</b>	4	1	5				18	64	82	22	65	87
<b>20</b>	15	28	43				113	318	431	128	346	474
<b>21</b>	54	118	172				190	406	596	244	524	768
<b>22</b>	129	316	445				286	341	627	415	657	1072
<b>23</b>	321	460	781				324	252	576	645	712	1357
<b>24</b>	607	313	920				256	146	402	863	459	1322
<b>25</b>	752	269	1021	1		1	267	146	413	1020	415	1435
<b>26</b>	541	209	750	18	11	29	207	51	258	766	271	1037
<b>27</b>	367	129	496	12	12	24	128	28	156	507	169	676
<b>28</b>	370	119	489	43	44	87	84	14	98	497	177	674
<b>29</b>	397	128	525	34	58	92	62	4	66	493	190	683
<b>30</b>	520	128	648	78	54	132	63	4	67	661	186	847
<b>31</b>	439	144	583	98	68	166	44	2	46	581	214	795
<b>32</b>	478	89	567	52	61	113	33	1	34	563	151	714
<b>33</b>	252	200	452	51	53	104	22		22	325	253	578
<b>34</b>	249	137	386	73	65	138	7	1	8	329	203	532
<b>35</b>	249	113	362	27	38	65	3		3	279	151	430
<b>36</b>	113	111	224	33	26	59	2	1	3	148	138	286
<b>37</b>	60	44	104	7		7				67	44	111
<b>38</b>	35	12	47	11	4	15				46	16	62
<b>39</b>	17	5	22	5	19	24				22	24	46

						20						
<b>40</b>	5	7	12		1	1				5	8	13
<b>41</b>	4	1	5	2		2				6	1	7
<b>42</b>	2	2	4		17	17				2	19	21
<b>43</b>												
<b>44</b>	1	3	4	2		2				3	3	6
<b>45</b>												
<b>46</b>	1		1	9		9				10		10
<b>47</b>	1		1							1		1
<b>Total</b>	5983	3086	9069	556	531	1087	2111	1781	3892	8650	5398	14048
<b>Mean length, cm</b>	28.38	27.21	28.0	32.02	32.16	32.1	24.46	22.16	23.3	27.66	26.7	27.6

TABLE 10. Age-length composition of *S. mentella* from the Russian trawl catches in NAFO Divs. 3LN in 2015.

Length, cm	Age															Total	Mean weight, g
	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
18	2	1														3	85
19	1	2														3	97
20	2	13	1													16	115
21	2	6	22													30	132
22		4	19	12	1											36	151
23		1	24	32	1											58	178
24			6	49	12	1										69	207
25			2	35	32	3										72	220
26				12	43	17										72	253
27					31	24	4									59	286
28					4	30	13									47	331
29					1	10	31	6								48	349
30						5	32	17	2							56	400
31							13	17	13	1						44	457
32								13	35	5						53	511
33								3	22	11	2					38	560
34									9	24	4	1				38	620
35										14	15	3				32	695
36										1	12	8	3			24	766
37											3	6	5	1		15	811
38												2	8	1		11	910
39													1	3		4	1003

40														1	2	3	1140
Total	7	27	74	140	125	90	93	56	81	57	36	20	17	6	2	831	
Mean weight, g	106	121	157	196	249	307	371	441	530	625	708	790	864	1038	1110		366
Mean length, cm	196.0	206.4	223.8	241.6	259.7	276.4	295.3	309.5	323.8	338.3	354.6	363.3	376.0	388.3	400.0		282.2

TABLE 11. Length composition (ind.) of *S. marinus* in Russian trawl catches in NAFO Divs. 3LN in 2015.

Length, cm	3L			3N			3LN		
	Females	Males	Total	Females	Males	Total	Females	Males	Total
32		1	1					1	1
33	1		1				1		1
34	3	1	4				3	1	4
35	1	2	3				1	2	3
36	3		3				3		3
37	5	2	7				5	2	7
38	3	3	6				3	3	6
39	1	6	7				1	6	7
40	1	8	9				1	8	9
41	1	3	4				1	3	4
42		5	5		2	2		7	7
43	2	1	3				2	1	3
44	1	4	5				1	4	5
45	2	3	5				2	3	5
46				1	4	5	1	4	5
47	1		1				1		1
48	4		4				4		4
49	1	1	2	2		2	3	1	4
50	1		1	1		1	2		2
51	2		2		1	1	2	1	3
52	1		1	2		2	3		3
53	1		1				1		1
54				3		3	3		3
55				1		1	1		1
56	1		1				1		1
57				1	1	2	1	1	2
58				1		1	1		1
<b>Total</b>	36	40	76	12	8	20	48	48	96
<b>Mean length, cm</b>	42.17	40.35	41.2	52.50	47.00	50.3	44.75	41.46	43.10

TABLE 12. Roughhead grenadier (*Macrourus berglax*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 3LM in 2015.

Length, cm	3L	3M	3N	3LMN
25			3	3
28			9	9
31	1	5	8	14
34	7	6	6	19
37	15	8	1	24
40	24	24		48
43	41	33	5	79
46	66	115	10	191
49	69	150	10	229
52	60	146	9	215
55	63	25	9	97
58	42	59	19	120
61	46	34	10	90
64	30	14	16	60
67	10	13	9	32
70	6	31	11	48
73	5	10		15
76	6	9		15
79	3	3		6
82	1	5		6
85		2		2
88		1		1
91		1		1
94		2		2
<b>Total</b>	495	696	135	1326
<b>Mean length, cm</b>	53.4	53.7	53.2	53.54



TABLE 13. Roundnose grenadier (*Coryphaenoides rupestris*) length composition (ind.) of the Russian trawl catches in NAFO Div. 3L in 2015.

Length, cm	3L	3M	3LM
22	1		1
25	3		3
28	1	1	2
31	5	1	6
34	11		11
37	21	1	22
40	35	5	40
43	42	12	54
46	39	16	55
49	46	41	87
52	41	34	75
55	25	61	86
58	15	20	35
61	6	32	38
64	6	29	35
67	1	10	11
70	2	4	6
<b>Total</b>	300	267	567
<b>Mean length, cm</b>	47.7	55.7	51.47

TABLE 14. Length composition (ind.) of American plaice (*Hippoglossoides platessoides*) in Russian trawl catches in NAFO Divs. 3LO in 2015.

Length, cm	3L	3O	3LO
30		2	2
32	20	10	30
34	49	36	85
36	140	36	176
38	113	38	151
40	47	29	76
42	17	22	39
44	3	17	20
46	4	7	11
48	1	2	3
50	2	1	3
52	1		1
<b>Total</b>	397	200	597
<b>Mean length, cm</b>	36.7	37.72	37.01

TABLE 15. Length composition (ind.) of Witch flounder (*Glyptocephalus cynoglossus*) in Russian trawl catches in NAFO Divs. 3LMN in 2015.

Length, cm	3L	3M	3N	3LMN
34	1		2	3
36			1	1
38	1			1
40	1			1
42	3		2	5
44	3		8	11
46	2	1	16	18
48	2	2	9	11
50	3		6	9
52			1	1
54	6			6
56	1			1
<b>Total</b>	23	3	45	68
<b>Mean length, cm</b>	46.8	46.83	45.3	45.79

TABLE 16. Length composition (ind.) of Atlantic cod (*Gadus morhua*) in Russian trawl catches in NAFO Divs. 3LMNO in 2015.

Length, cm	3L	3M	3N	3O	3LMNO
36	3				3
38					
40	6				6
42	5				5
44	10	3			13
46	33	18	1		52
48	47	23			70
50	43	51			94
52	40	88	1	3	132
54	37	83	2	5	127
56	52	162		7	221
58	58	106	1	11	176
60	38	115	2	16	171
62	28	106		14	148
64	29	99	3	25	156
66	32	64	1	32	129
68	32	67	1	31	131
70	39	71		23	133
72	23	53	2	20	98
74	12	43		19	74
76	28	63	2	8	101
78	9	38		17	64
80	17	22		6	45
82	13	25		2	40
84	8	28			36
86	7	23			30
88	5	11			16
90	4	21			25
92	1	9			10
94	4	9			13
96	1	11			12
98	1	5			6
100	2	9			11
102		9			9
104	2	7			9
106		9			9
108	2	6			8
110		5			5

<b>112</b>		8			8
<b>114</b>		1			1
<b>116</b>		3			3
<b>118</b>		1			1
<b>120</b>		2			2
<b>122</b>		1			1
<b>Total</b>	671	1478	16	239	2404
<b>Mean length, cm</b>	61.1	65.8	62.4	67.0	64.57

---

TABLE 17. Length composition (ind.) of Thorny skate (*Amblyraja radiata*) in Russian trawl catches in NAFO Divs. 3LMO in 2015.

<b>Length, cm</b>	<b>3L</b>	<b>3M</b>	<b>3O</b>	<b>3LMO</b>
<b>35</b>	1			1
<b>36</b>				
<b>37</b>				
<b>38</b>				
<b>39</b>				
<b>40</b>				
<b>41</b>	1			1
<b>42</b>				
<b>43</b>	2			2
<b>44</b>	1	1		2
<b>45</b>				
<b>46</b>	1			1
<b>47</b>	3			3
<b>48</b>				
<b>49</b>	1			1
<b>50</b>	3			3
<b>51</b>	2			2
<b>52</b>	5	1		6
<b>53</b>	6	1		7
<b>54</b>	4	1		5
<b>55</b>	3			3
<b>56</b>	6			6
<b>57</b>		1		1
<b>58</b>	2	3	1	6
<b>59</b>	2			2
<b>60</b>	6	3	4	13
<b>61</b>	6	2		8

<b>62</b>	2		1	3
<b>63</b>	3			3
<b>64</b>	2			2
<b>65</b>	7		2	9
<b>66</b>	7		2	9
<b>67</b>	3			3
<b>68</b>	4		3	7
<b>69</b>	1		1	2
<b>70</b>	5		6	11
<b>71</b>	2		1	3
<b>72</b>				
<b>73</b>	4			4
<b>74</b>	2			2
<b>75</b>	1			1
<b>76</b>	1		1	2
<b>77</b>				
<b>78</b>				
<b>79</b>	1			1
<b>80</b>	1		1	2
<b>85</b>	2			2
<b>89</b>			1	
<b>Total</b>	103	13	24	140
<b>Mean length, cm</b>	60.8	56.6	68.0	61.6

TABLE 18. Length composition (ind.) of Arctic skate (*Amblyraja hyperborea*) in Russian trawl catches in NAFO Div. 3L in 2015.

<b>Length, cm</b>	<b>3L</b>
<b>50</b>	1
<b>51</b>	1
<b>52</b>	7
<b>53</b>	1
<b>54</b>	8
<b>55</b>	1
<b>56</b>	
<b>57</b>	
<b>58</b>	7
<b>59</b>	1
<b>60</b>	10
<b>61</b>	

<b>62</b>	3
<b>63</b>	8
<b>64</b>	1
<b>65</b>	1
<b>66</b>	
<b>67</b>	
<b>68</b>	1
<b>69</b>	1
<b>70</b>	4
<b>71</b>	
<b>72</b>	1
<hr/>	
<b>Total</b>	57
<b>Mean length, cm</b>	59.3
<hr/>	

TABLE 19. Length composition (ind.) of Spinytail skate (*Bathyraja spinicauda*) in Russian trawl catches in NAFO Divs. 3LM in 2015.

<b>Length, cm</b>	<b>3L</b>	<b>3M</b>	<b>3LM</b>
<b>58</b>		1	1
<b>63</b>		1	1
<b>68</b>	1		1
<b>69</b>		1	1
<b>83</b>	1		1
<b>87</b>	1		1
<b>92</b>	1		1
<b>98</b>		1	1
<b>102</b>	1		1
<b>103</b>		1	1
<b>108</b>		1	1
<b>115</b>		1	1
<b>117</b>		1	1
<b>130</b>		1	1
<b>140</b>	1		1
<b>142</b>	1	1	2
<hr/>			
<b>Total</b>	7	10	17
<b>Mean length, cm</b>	102.0	100.3	101.00
<hr/>			

TABLE 20. Length composition (ind.) of White hake (*Urophycis tenuis*) in Russian trawl catches in NAFO Divs. 3NO in 2015.

Length, cm	3N	3O	3NO
32		2	2
34			
36		1	1
38		3	3
40			
42		2	2
44		4	4
46	1	4	5
48		2	2
50		1	1
52		1	1
54	2	2	4
56	1	1	2
58	3	2	5
60	2	2	4
62		1	1
64	3		3
66		1	1
68	4		4
70	2	1	3
72	4		4
74	1	2	3
76	2		2
78			
80			
82	1		1
84	1		1
<b>Total</b>	27	32	59
<b>Mean length, cm</b>	65.7	49.6	57.0

TABLE 21. Length composition (ind.) of Red hake (*Urophycis chuss*) in Russian trawl catches in NAFO Divs. 3NO in 2015.

Length, cm	3L	3M	3N	3LMN
24			1	1
25				
26				
27				
28			1	1
29				
30			1	1
31				
32				
33	1			1
34			1	1
35		2	2	4
36	2	2		4
37	2			2
38	3	1	1	5
39	3	2		5
40	13	3		16
41	12	5		17
42	13	3		16
43	15	8		23
44	21	8		29
45	27	3		30
46	29	2		31
47	4			4
48	4			4
49		1		1
50	2			2
<b>Total</b>	151	40	7	198
<b>Mean length, cm</b>	43.5	42.0	32.0	42.8



TABLE 22. Length composition (ind.) of Northern wolffish (*Anarhichas denticulatus*) in Russian trawl catches in NAFO Divs. 3LM in 2015.

Length, cm	3L	3M	3LM
40	1		
43			
46			
49		2	2
52	2	7	9
55	2		2
58	2	16	18
61	2	5	7
64	4		4
67	1	5	6
70	3	8	11
73	1	4	5
76	1	10	11
79	1	2	3
82	1	4	5
85	1	2	3
88	1	4	5
91		1	1
94	1		1
<b>Total</b>	24	70	94
<b>Mean length, cm</b>	99.6	68.7	76.6

TABLE 23. Length composition (ind.) of Atlantic wolffish (*Anarhichas lupus*) in Russian trawl catches in NAFO Divs. 3LM in 2015.

Length, cm	3L	3M	3N	3LMN
40			2	2
43			2	2
46			1	1
49			3	3
52			3	3
55			3	3
58				
61				
64				
67			1	1
70				
73				

<b>76</b>		1		1
<b>79</b>	1			1
<b>82</b>				
<b>85</b>	1			1
<b>88</b>				
<b>91</b>				
<b>94</b>		1		1
<b>97</b>				
<b>100</b>				
<b>103</b>		1		1
<b>106</b>	2			2
<b>109</b>	1	1		2
<b>Total</b>	5	4	15	24
<b>Mean length, cm</b>	98.0	96.5	50.8	68.3

TABLE 24. Length composition (ind.) of Spotted wolffish (*Anarhichas minor*) in Russian trawl catches in NAFO Divs. 3LM in 2015.

Length, cm	3L	3M	3LM
<b>46</b>		1	1
<b>49</b>			
<b>52</b>	1		1
<b>55</b>	1		1
<b>58</b>	2		2
<b>61</b>			
<b>64</b>	2	1	3
<b>67</b>			
<b>70</b>			
<b>73</b>	1		1
<b>76</b>			
<b>79</b>			
<b>82</b>	2		2
<b>85</b>	1		1
<b>88</b>			
<b>91</b>	2		2
<b>94</b>	1		1
<b>97</b>	1		1
<b>100</b>	2		2
<b>103</b>	1	1	2
<b>106</b>	1		1
<b>109</b>	3		3

<b>112</b>	1		1
<b>115</b>	1		1
<b>Total</b>	23	3	26
<b>Mean length, cm</b>	88.3	72.0	86.5

TABLE 25. Length composition (ind.) of Blue antimora (*Antimora rostrata*) in Russian trawl catches in NAFO Divs. 3LM in 2015.

Length, cm	3L	3M	3LM
<b>28</b>	1	3	4
<b>31</b>	3	36	39
<b>34</b>	9	18	27
<b>37</b>	6	42	48
<b>40</b>	10	84	94
<b>43</b>	6	23	29
<b>46</b>	17	38	55
<b>49</b>	11	49	60
<b>52</b>	28	49	77
<b>55</b>	16	21	37
<b>59</b>	3	9	12
<b>61</b>		2	2
<b>64</b>		1	1
<b>Total</b>	110	375	485
<b>Mean length, cm</b>	47.7	44.4	45.2

TABLE 26. Length composition (ind.) of *Nezumia* (*Nezumia bairdii*) in Russian trawl catches in NAFO Div. 3M in 2015.

Length, cm	3M
<b>25</b>	49
<b>28</b>	159
<b>31</b>	100
<b>34</b>	69
<b>37</b>	11
<b>Total</b>	388
<b>Mean length, cm</b>	30.7

TABLE 27. Atlantic Halibut (*Hippoglossus hippoglossus*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 3LMO in 2015.

Length, cm	3L	3M	3O	3LMO
63	1			1
65			2	2
67	2		3	5
69	2		2	4
71				
73	2			2
75	3	1	1	5
77	3			3
79	2			2
81	3		2	5
83	4			4
85	5		3	8
87	2			2
89	7			7
91	2			2
93	3			3
95	3	1		4
97	3			3
99	1			1
101				
103				
105				
107		1		
109	1			
123	1			
139	1			
<b>Total</b>	51	3	13	67
<b>Mean length, cm</b>	86.8	92.8	74.4	84.6

TABLE 28. Marine mammals recording in the NAFO Regulatory Area in 2015.

Date	Positions (N/W)	Species	Number	Notes
30.03-02.04	48°01'-48°35' N / 46°43'-45°52' W	<b>sperm whale</b>	1-5	trawling and trawl catch
04.04-11.04	48°23'-48°52' N/ 46°19'-44°57' W	<b>sperm whale</b>	1-6	trawling and trawl catch
07.04-08.04	48°36'-48°42' N/ 45°06'-45°44' W	<b>harp seal</b>	1	trawl catch
01.04-11.05	48°07'- 48°32' N/ 47°57'-45°52' W	<b>sperm whale</b>	2	trawling and trawl catch
14.05-23.05	48°08'- 48°10' N/ 47°40'-46°36' W	<b>sperm whale</b>	1-3	trawling and trawl catch
15.07-16.08	55°38'– 55°44' N/ 43°57'– 43°08' W	<b>fin whale</b>	1	trawling
01.06	46°16'N/ 47°24'W	<b>sperm whale</b>	2	body, fin, 700 m
05.06	46°34'N/ 47°18'W	<b>sperm whale</b>	1	body, fin, water couolumn, 1000 m
15.06	43°08'N/ 51°02'W	<b>sperm whale</b>	3	body, fin, 800 m
26.06	47°44'N/ 47°28'W	<b>sperm whale</b>	1	body, fin, 500-700 m
02.07	47°53'N/ 45°37'W	<b>sperm whale</b>	3	body, fin, water couolumn, 800 m
17.08	55°09'N/ 43°19' W	<b>pilot whale</b>	15	
22.03-29.03	48°18'-48°37' N/ 45°30'-46°29' W	<b>fin whale</b>	2	trawling
30.03-31.03	48°29'-48°39' N/ 45°33'-46°04' W	<b>sperm whale</b>	4-6	trawling
30.03-31.03	48°29'-48°39' N/ 45°33'-46°04' W	<b>harp seal</b>	7	trawling
31.03	48°26'-48°31' N/ 45°56'-46°11' W	<b>harp seal</b>	8	on ice
01.04-13.04	48°16'-48°31' N/ 45°59'-45°29' W	<b>sperm whale</b>	4-6	trawl catch
01.04-13.04	48°16'-48°31' N/ 45°59'-45°29' W	<b>harp seal</b>	3-5	trawl catch
01.04-13.04	48°16'-48°31' N/ 45°59'-45°29' W	<b>white-beaked dolphin</b>	4-5	trawl catch
08.04	48°52' N/ 45°03' W	<b>sperm whale</b>	6	trawling
12.04	48°40' N/ 45°49' W	<b>sperm whale</b>	5	trawling
16.06	42°57'N/ 49°50'W	<b>short-beaked common dolphin</b>	7	after vessel
22.06	46°36'N/ 47°19'W	<b>sperm whale</b>	1	trawling

Date	Positions (N/W)	Species	Number	Notes
22.06	46°34'N/ 47°18'W	<b>pilot whale</b>	1	trawling
23.06	46°22'N/ 47°23'W	<b>bottlenose dolphin</b>	5	after vessel
24.06	46°28'N/ 47°22'W	<b>sperm whale</b>	1	after vessel
25.06	46°17'N/ 47°24'W	<b>pilot whale</b>	5	after vessel
17.07	46°12'N/ 47°30'W	<b>pilot whale</b>	8	sternside
26.07	45°14'N/ 48°38'W	<b>short-beaked common dolphin</b>	7	transit to the south
26.07	45°14'N/ 48°36'W	<b>short-beaked common dolphin</b>	40-45	playing, after vessel
26.07	43°53'N/ 49°19'W	<b>short-beaked common dolphin</b>	19-17	transit 250°
08.08	47°50'N/ 52°45'W	<b>short-beaked common dolphin</b>	6-7	transit 220°
17.08	46°30'N/ 46°57'W	<b>pilot whale</b>	6-7	driving capelin school
21.09	64°00'N/52°52'W	<b>ringed seal</b>	2	transit 160°
30.09	63°57'N/57°11'W	<b>bottlenose dolphin</b>	1	trawling
06.10	63°51'N/57°04'W	<b>sperm whale</b>	3	trawling
10.10	63°49'N/56°53'W	<b>bottlenose dolphin</b>	4	trawling
11.10	63°57'N/57°48'W	<b>bottlenose dolphin</b>	2	trawling

TABLE 29. Marine mammals total numbers in the NAFO Regulatory Area in 2015.

Species	Number *	Occurrence number	% from total number
<b>white-beaked dolphin</b>	4	1	2,1
<b>bottlenose dolphin</b>	12	4	6,3
<b>harp seal</b>	20	4	10,5
<b>pilot whale</b>	23	5	12,0
<b>short-beaked common dolphin</b>	81	5	42,4
<b>sperm whale</b>	46	16	24,1
<b>fin whale</b>	3	2	1,6
<b>ringed seal</b>	2	1	1,0
<b>Total</b>	191	38	100

Note: Estimated with regard for the mean by the range when there is no exact number in Table 28.