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SCIENTIFIC COUNCIL MEETING - JUNE 2018**Russian Research Report for 2017****by K. Fomin and M.Pochtar*****Polar Research Institute of Marine Fisheries and Oceanography (PINRO)
6 Akademika Knipovicha Street, Murmansk, 183038, Russia*****SUBAREAS 1+2****A. Status of Fisheries***Greenland halibut (Reinhardtius hippoglossoides)*

In 2017, the directed trawl fishery for Greenland halibut was conducted off West Greenland in August-October. 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 August-November, five trawlers were engaged in the fishery in the area to the north of 68°N. The trawlers fished within an area between 69°02'N–70°06'N and 60°56'W–58°55'W at depths of 787–1,200 m. As of the provisional data, the yield of Greenland halibut was 549.0 t (Table 1). There were by-catches of skates (1.9 t) and roughhead grenadier (*Macrourus berglax*) (0.3 t) (Table 2). The catch rate varied by months from 9.6 t to 24.6 t and averaged 16.5 t per fishing vessel day.

In the area south of 68°N as many as five Russian trawlers participated in the fishery. The trawlers operated in August-December in the area between 63°44'N– 64°29'N and 57°57'W– 54°57'W at depths of 890–1,380 m. The catch rate ranged from 8.3 t to 25.1 t per fishing vessel day and averaged 18.3 t. As of the provisional data, the yield of Greenland halibut was 1,219.0 t (Table 1). The by-catch was comprised of 1.2 t of roughhead grenadier (*Macrourus berglax*) and 2.6 t of roundnose grenadier (*Coryphaenoides rupestris*) (Table 2).

The total annual yield of Greenland halibut taken by the Russian fleet off the West Greenland amounted to 1,768.0 t (Table 1).

Other fish species

There was no directed fishery for other fish species.



B. Dedicated Research

Biological data on Greenland halibut from Divs. 1ACD was collected by the crew onboard fishing vessels.

Greenland halibut

In Divs. 1ACD Greenland halibut specimens in the catches were 34-106 cm long (predominantly, 50-56 cm) (Table 3).

SUBAREA 3

A. Status of Fisheries

Greenland halibut

Four trawlers were engaged in the directed fishery for Greenland halibut in January-October. The trawlers were fishing in the areas on the continental slope adjacent to the deep-water Flemish Pass (Div. 3L) between 46°15'N – 48°19'N at depths of 830–1,250 m. Occasionally the trawlers also fished in Divs. 3M and 3N at depths of 395–1,400 m. In general, the catch rate ranged from 5.2 t to 33.9 t and averaged 18.2 t per fishing vessel day.

The total annual yield of Greenland halibut taken in the directed fishery amounted to 1,392.4 t. Additional 1.9 t of Greenland halibut were taken as a by-catch in the multispecies fishery. As of the preliminary data, the total yield of Greenland halibut was 1,394.3 t (Table 1). The by-catch was comprised of Atlantic halibut (*Hippoglossus hippoglossus*), roughheaded and roundnosed grenadiers, redfishes, American plaice (*Hippoglossoides platessoides*), witch flounder (*Glyptocephalus cynoglossus*) and Greenland shark (Table 4).

Atlantic cod

On the Flemish Cap Bank the directed fishery for Atlantic cod was only conducted in January between 46°27' N – 47°42'N and 46°16'W – 44°27'W at depths of 130 – 611 m where the average daily catch rate was 50.4 t. The annual yield of cod taken by Russian fishing vessels in the directed fishery was 859.3 t, with by-catches of redfishes (9.96 t). Additional 41.0 t of cod were taken as a by-catch in the redfish fishery. The total Russian yield of cod on the Flemish Cap Bank was 900.3 t (Table 1).

Atlantic redfish on the Flemish Cap Bank

The redfish fishery was conducted occasionally in January, February and July in the area between 46°21'N - 48°39'N and 46°29'W - 43°53'W at depths of 280 – 655 m. The vessels fished with bottom trawls and the catch rate varied from 6.6 to 31.2 t and averaged 23.2 t per fishing vessel day. The best catch rate was recorded in February and amounted to 31.2 t per fishing vessel day.

As of the provisional data, the total annual yield taken by Russian fishing vessels in the directed redfish fishery was 555.5 t. Atlantic cod (*Gadus morhua*), Greenland halibut, Atlantic halibut, American plaice, witch flounder, and skates (*Rajidae* spp.) occurred in the by-catches (Table 5). Additional 10.8 t of redfishes were taken in the cod and halibut fishery. As of the data provided by the observer on board fishing vessels, in 2016, the fraction of redfish in the catches increased compared to that in previous years.

The total Russian yield of redfishes was 566.3 t (Table 1).

In Div. 30 in the south-western part of the Grand Bank of Newfoundland Russian trawlers fished sporadically in February-July at depths of 140-530 m. The average daily catch rate was 29.7 t per fishing vessel day. In April, there was a period of an unusually high catch rate – 98.4 t of redfishes were caught over 2 days. Rest of the time the catch rate varied from 7.2 t to 32.5 t per fishing vessel day. 785.6 t of redfishes were taken by Russian vessels in the directed fishery. Atlantic cod (*Gadus morhua*), Atlantic halibut, American plaice, witch flounder, skates, white hake (*Urophycis tenuis*), New England hake (*Merluccius bilinearis*) occurred in the by-catches (Table 5).

0.2 t of redfish were also taken in multispecies fisheries.

The total Russian yield of redfishes was 785.8 t (Table 1).

In recent years, American perch has been making up a substantial part of the catches.

Redfishes did not occur in the by-catches in multispecies fisheries in the relevant area.

In Divs. 3LN the fishery was conducted in January-December. The catch rate of the bottom trawl varied from 10.6 t to 37.7 t, with a daily average of 19.5 per fishing vessel day. 3,711.9 t of redfishes were taken by Russian vessels in the directed fishery. Atlantic cod (*Gadus morhua*), Atlantic halibut, American plaice, skates, witch flounder, Greenland halibut (*Reinhardtius hippoglossoides*), yellowtail flounder (*Limanda ferruginea*), roughhead grenadier occurred in by-catches (Table 5).

Additional 0.4 t of redfishes were taken in multispecies fisheries.

The total Russian yield of redfishes in Divs.3LN amounted to 3,712.3 (Table 1).

Skates

The directed fishery was conducted occasionally in January, April and August between 42°49'N-43°36'N and 51°02'W-49°28'W (Div. 3N). The average daily catch rate varied from 3.1 t to 23.3 t and averaged 18.4 t per fishing vessel day. The total annual yield of skates in the directed fishery amounted to 27.9 t. 1.3 t of American plaice, 1.05 t of cod and 0.13 t of yellowtail flounder were taken as by-catches. Skates were also taken as a by-catch in yellowtail flounder (3.9 t), Greenland halibut (1.8 t), redfishes (29.8) and multispecies (0.3 t) fisheries. The total Russian yield in the Divs. 3LMNO for the whole period amounted to 63.7 t (Table 1).

Yellowtail flounder

The Russian directed fishery for yellowtail flounder was conducted briefly in January in Div. 3N between 43°04'N – 43°57'N and 50°19'W – 49°16'W at depths of 52-81 m. The average daily catch rate was 15.9 t. Over the year, Russian fishing vessels caught 84.0 t of the species in the directed fishery in total. 10.7 t of American plaice, 3.9 t of skates, 3.45 t of cod, 1.9 t of Atlantic halibut and 0.4 t of redfishes were taken as by-catches. Yellowtail flounder also occurred as a by-catch in redfishes (0.8 t) and multispecies (0.2 t) fisheries. The total Russian yield of yellowtail flounder amounted to 85.0 t (Table 1).

Other species

There was no directed fishery for other species. 15.2 t of witch flounder, 6.7 t of white hake, 58.9 t of Atlantic halibut and 120.4 t of American plaice were in total taken as by-catches in the directed fishery.

B. Dedicated Research

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

Greenland halibut

In Div. 3L Greenland halibut of 22-84 cm occurred, with an average of 52.3 cm. Specimens of 51-56 cm prevailed (Table 6).

In Div. 3M the length of Greenland halibut varied from 33 cm to 68 cm (predominately, 50-58 cm), with an average of 53.7 cm.

In Div. 3N some specimens taken were 12-23 cm long, with an average of 14.0 cm.

In general, the length of Greenland halibut in Divs. 3LMN was 12-86 cm, with an average of 50.2 cm for males and of 53.5 cm for females. The sex ratio (males and females) in the catches was 1:3 (Table 6). The halibut age varied from 4 to 19 years. Most of the specimens taken were 7-9 years old (Table 7).

*Acadian redfish (*Sebastes fasciatus*)*

In Div. 3L the catches consisted of specimens as long as 20-37 cm, with an average of 27.4 cm for females and of 24.5 cm for males. Most specimens were 23-27 cm long (Table 8).

In Div. 3N redfish of 19-38 cm prevailed. The average length for males was 24.2 cm and 26.7 cm for females (Table 8).

In Div. 3M redfish was taken in minor amounts and was as long as 26-33 cm, with an average of 28.8 cm. Specimens of 27-30 cm prevailed (Table 8).

Redfish age varied from 5 to 17 years, with 8-11 year old fish prevailing (Table 9).

In Div. 3O redfish of 16-27 cm mainly occurred. The average length for males was 20.6 cm and 22.2 cm for females (Table 8).

*Deep-water redfish (*S. mentella*)*

In Div. 3L deep-water redfish was taken in minor amounts and was as long as 32-39 cm, with an average of 35.4 cm (Table 10).

The age of specimens varied from 6 to 17 years (predominantly, 9-11 years) (Table 11).

In Div. 3M specimens were 26-43 cm long (predominantly, 32-36 cm), with an average of 33.4 cm (Table 10).

In Div. 3O deep-water redfish specimens taken were as long as 19-30 cm. The average length for males was 23.5 cm and 25.8 cm for females (Table 10).

Golden redfish (S. norvegicus)

In Div. 3M golden redfish was taken by specimens and the length varied from 26 cm to 55 cm, with an average of 37.7 cm (Table 12).

Roughhead grenadier

Roughhead grenadier occurred specimens in the catches. The total length in Div. 3L varied from 34 cm to 76 cm, with an average of 55.3 for females and 43.0 for males (Table 13).

Roundnose grenadier

In Div. 3L 16 specimens of the total length of 31-70 cm were caught, with an average of 55.1 cm (Table 14).

American plaice

In Div. 3L 2 specimens of 32 cm and 46 cm were taken, with an average of 39.0 cm.

In Div. 3M specimens were 31-55 cm long, with an average of 44.6 cm (Table 15). Females were 36.3 cm long and males were 46.5 cm long.

In Div. 3N the size composition was made up by fish of 19-51 cm, with an average of 35.4 cm (Table 15).

In Div. 3O the size composition was made up by fish of 31-51 cm, with an average of 36.3 cm for males and 41.5 cm for females (Table 15).

Witch flounder

The species occurred individually in the catches.

In Div. 3O the size composition in the by-catches in the redfish fishery was made up by fish of 36-42 cm, with an average of 38.8 cm (Table 16).

Atlantic cod

On the Flemish Cap Bank (Div. 3M) the specimen length varied from 41 cm to 107 cm, with an average of 67.7 cm. Specimens of 60-70 cm made up the bulk of the catches (Table 17).

In Div. 3N the size composition was made up by fish of 35-96 cm, with an average of 59.6 cm (Table 17).

In Div. 3O 25 cod specimens of 39-93 cm were caught, with an average of 63.6 cm (Table 17).

Thorny skate

In Div. 3L 2 thorny skates of 63 cm and 67 cm were taken in the redfish fishery, with an average of 65.0 cm (Table 18).

In Div. 3M the size composition was made up by fish of 20-77 cm, with an average of 54.4 cm (Table 18).

In Div. 3O 3 thorny skates of 56-65 cm were taken, with an average of 60.3 cm (Table 18).

Arctic skate

In Div. 3M a single specimen of 60 cm was taken.

White hake

In Div. 3O 3 hake samples of 54-59 cm were taken, with an average of 57.0 cm.

Northern wolffish

In Div. 3L the specimen length varied from 50 cm to 96 cm, with an average of 65.7 cm (Table 19).

In Divs. 3M northern wolffish specimens were 58-105 cm long, with an average of 75.2 cm (Table 19).

In Divs. 3O 1 sample of 90 cm was taken.

Spotted wolffish

In Divs. 3LMO spotted wolffish was taken in single specimens. The size composition was made up by fish of 49-94 cm, with an average of 68.7 cm (Table 20).

Atlantic wolffish

In Divs. 3LN, single samples of Atlantic wolffish were taken. The length varied from 34 cm to 55 cm, with an average of 44.5 cm (Table 21).

Blue antimora

In Div. 3L blue antimoras were as long as 21-55 cm, with an average of 36.7 cm (Table 22).

In Div. 3M 5 blue antimoras of 28-43 cm were taken, with an average of 37.0 cm (Table 22).

Marlin-spike grenadier

In Div. 3L 1 specimen of 40 cm was taken.

Atlantic halibut

In Divs. 30 4 Atlantic halibuts of 69 cm, 73 cm, 98 cm and 106 cm were taken, with an average of 86.5 cm.

New England hake

The species was taken in minor amounts. The length of specimens in Div. 30 varied from 30 cm to 40 cm, with an average of 34.8 (Table 23).

Dogfish shark

2 samples of 60 cm and 73 cm were taken.

Rockling

In Divs. 3LN the species were taken in single specimens.

In Div. 3L the size composition was made up by fish of 40-51 cm, with an average of 44.3 cm (Table 24).

In Div. 3N one sample of 43 cm was taken.

VME indicator species

There were several catches of sponges and corals recorded during the observers' activities onboard fishing vessels. In none of those catches the VME mass exceeded the established threshold value (Table 25).

Marine mammals

As of the observations from aboard fishing vessels, in March-August there were several species of marine mammals observed in the Divs. 3LMN, namely: whales (*Cetacea*) including bottlenose dolphins (*Hyperoodon ampullatus*), pilot whales (*Globicephala melaena*), fin whales (*Balaenoptera physalus*), sperm whales (*Physeter microcephalus*), white-beaked dolphins (*Lagenorhynchus albirostris*), common dolphins (*Delphinus delphis*), and pinnipeds (*Pinnipedia*), including harp seals (*Phoca groenlandica*) and ringed seals (*Phoca hispida*) (Table 26). The total number of such records (occurrences) is 38 (Table 27).

No discards were observed in the main species fisheries.

Table 1. Preliminary catches taken by Russian trawlers in NAFO SA 1-3 in 2017.

Species	Division	Catch, t
Greenland halibut (<i>Reinhardtius</i> <i>hippoglossoides</i>)	1A	549,0
	1B	-
	1C	98.6
	1D	1120.5
	1ABCD	1768,0
Greenland halibut (<i>Reinhardtius</i> <i>hippoglossoides</i>)	3L	1114.2
	3M	277.6
	3N	2.6
	3LMN	1394,3
American plaice (<i>Hippoglossoides</i> <i>platessoides</i>)	3L	16.3
	3M	13.4
	3N	54.4
	3O	36.3
	3LMNO	120.4
Yellowtail flounder (<i>Limanda ferruginea</i>)	3N	85.0
Witch flounder (<i>Glyptocephalus</i> <i>cynoglossus</i>)	3L	0.5
	3M	14.3
	3N	0,1
	3O	0.3
	3LMNO	15.2
Roughhead grenadier (<i>Macrourus berglax</i>)	3L	6,9
	3M	6,8
	3N	-
	3LMN	13,7
Roughnose grenadier (<i>Coryphaenoides rupestris</i>)	3L	0,3
	3N	0,1
	3LN	0,4
Redfish (<i>Sebastes spp.</i>)	3L	1501.44
	3M	566.3
	3N	2210.9
	3O	785.8
	3LMNO	5064.3
Skate (<i>Rajidae spp.</i>)	3L	9.2
	3M	3.3
	3N	37.9
	3O	13.3
	3LMNO	63.7
White hake (<i>Urophycis tenuis</i>)	3O	6,7
Atlantic cod (<i>Gadus morhua</i>)	3L	21,7
	3M	900,3
	3N	45,3
	3O	28,7
	3MNO	995,9
Atlantic Halibut (<i>Hippoglossus hippoglossus</i>)	3L	16,8
	3M	0,8
	3N	34,4
	3O	6,9
	3MNO	58,9

Table 2. Bycatch at directed Greenland halibut fishery by Russian bottom trawlers from NAFO Divs. 1ACD in 2017.

Species	Mass, t
Div. 1A	
Skates	1,900
Roughhead grenadier	0,256
Div. 1C	
Roughnose grenadier	0,221
Div. 1D	
Roughnose grenadier	2,380
Roughhead grenadier	1,232
Total	
Roughnose grenadier	2,601
Roughhead grenadier	1,488
Skates	1,900

Table 3. Greenland halibut (*Reinhardtius hippoglossoides*) length composition (ind.) of the Russian trawl catches in NAFO Div. 1CD in 2017.

Length, cm	1A	1C	1D	1ACD
34	1	0	0	1
36	2	0	0	2
38	3	0	2	5
40	18	0	5	23
42	64	0	19	83
44	177	8	78	263
46	281	24	250	555
48	445	56	508	1009
50	474	84	762	1320
52	425	117	1057	1599
54	305	127	1113	1545
56	162	95	787	1044
58	100	53	553	706
60	83	29	347	459
62	47	16	200	263
64	27	12	122	161
66	21	5	70	96
68	14	8	53	75
70	9	5	35	49
72	3	1	28	32
74	1	1	22	24
76	0	1	18	19
78	1	2	13	16
80	1	1	6	8
82	0	0	3	3
84	0	0	3	3
86	2	0	0	2
88		0	2	2
90				
92				
94			2	2
96				
98				
100				
102				
104				
106			<u>1</u>	<u>2</u>
Total	2666	645	6059	9370
Mean length, cm	50.5	53.5	53.8	52.84

Table 4. Bycatch at directed Greenland halibut fishery by Russian bottom trawlers from NAFO Divs. 3LMNO in 2017.

Species	Mass, t
Witch flounder	4,611
Redfishes	0,480
Skates	1,624
Roughnose grenadier	0,200
Roughhead grenadier	13,680
American plaice	0,065
Atlantic halibut	0,137
Greenland shark	4,800
Other	0,134

Table 5. Bycatch at directed redfish fishery by Russian bottom trawlers from NAFO Divs. 3LMNO in 2017.

Species	Mass, t
Divs. 3LN	
Witch flounder	0,528
Skates	20,852
Roughnose grenadier	0,180
American plaice	59,090
Cod	62,594
Atlantic halibut	48,671
Greenland halibut	0,475
Yellowtail flounder	0,846
Other	0,060
Div. 3M	
Witch flounder	9,319
Skates	1,400
American plaice	13,015
Cod	40,383
Atlantic halibut	0,303
Greenland halibut	1,435
Northern wolffish	0,144
Div. 3O	
Witch flounder	0,294
Skates	7,496
White hake	6,700
Hake	0,144
American plaice	35,528
Cod	28,437
Atlantic halibut	6,908
Spotted wolffish	0,048
Total	
Yellowtail flounder	0,846
Witch flounder	10,141
Skates	29,748
White hake	6,700
Hake	0,144
American plaice	107,633
Cod	131,414
Atlantic halibut	55,882
Greenland halibut	1,910
Spotted wolffish	0,048
Northern wolffish	0,144
Roughnose grenadier	0,180
Other	0,060

Table 6. Greenland halibut (*Reinhardtius hippoglossoides*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 3LMN in 2017.

Length, cm	3L			3M			3N				3LMN			
	Females	Males	Total	Females	Males	Total	Females	Males	Juv	Total	Females	Males	Juv	Total
12									5	5			5	5
14									7	7			7	7
16									3	3			3	3
18								1		1		1		1
20														
22		1	1									1		1
24		1	1				1			1	1	1		1
26		2	2									2		2
28														
30	2	4	6								2	4		6
32	3	8	11								3	8		11
34	7	11	18	1	1	2					8	12		20
36	9	24	33	3	1	4					12	25		37
38	28	56	84	1	4	5					29	60		89
40	94	97	191	9	13	22					103	110		213
42	210	180	390	18	24	42					228	204		432
44	383	264	647	41	38	79					424	302		726
46	577	346	923	86	50	136					663	396		1059
48	726	464	1190	100	67	167					826	531		1357
50	923	513	1436	137	85	222					1060	598		1658
52	1153	661	1814	202	86	288					1355	747		2102
54	1354	564	1918	256	98	354					1610	662		2272
56	1415	387	1802	236	78	314					1651	465		2116
58	1108	222	1330	200	57	257					1308	279		1587
60	750	100	850	127	23	150					877	123		1000
62	462	39	501	79	12	91					541	51		592
64	255	10	265	60	12	72					315	22		337
66	117	3	120	36	10	46					153	13		166
68	65	1	66	20	4	24					85	5		90
70	43		43	16	4	20					59	4		63
72	27		27	10	2	12					37	2		39
74	9		9	8	2	10					17	2		19
76	9		9	4		4					13			13
78	2		2	2		2					4			4
80	1		1			0					1			1
82	1		1	1	1	2					2	1		3
84	1		1			0					1			1
86			0	1		1					1			1
Total	9734	3958	13692	1654	672	2326	1	1	15	17	11389	4631	15	16035
Mean length, cm	53.35	49.89	52.3	54.52	51.74	53.7	23.5	17.5	13.2	14.1	53.51	50.15	13.2	52.5

Table 7. Age-length composition of Greenland halibut (*Reinhardtius hippoglossoides*) from the Russian trawl catches in NAFO Divs. 3LMN in 2017.

Length, cm	Age																Total	Mean weight, g
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
32	1																1	260
33	1	1															2	310
34	2																2	325
35		1															1	330
36	1	1	4														6	401
37		2	2														4	390
38		3	6														9	468
39		1	3	1													5	480
40		3	7	3													13	523
41		2	15	4													21	562
42			12	5													17	608
43			8	9	1												18	660
44			8	14	4												26	737
45			4	7	6												17	781
46			1	9	8												18	806
47				19	5	1											25	882
48				9	21	2											32	953
49				8	18	1											27	1050
50				2	21	5											28	1091
51				1	22	4	1										28	1196
52					17	9	2										28	1257
53					13	15	1										29	1319
54					4	19	2										25	1424
55					3	14	6										23	1441
56						18	5	1									24	1699
57						13	3	3									19	1607
58						9	6	9									24	1776
59						3	10	1									14	1808
60							11	8	1								20	2186
61						1	6	5	3								15	2342
62							3	2	3								8	2138
63							1	6	8	1							16	2325
64								3	4	1							8	2645
65								4	4	4							12	2811
66									1	7	2	1					11	2692
67										2	2						4	2845
68										7	7	2					16	3061
69										3	2						5	3290
70										4	5	5					14	3862
71											3	1					4	6200
72											3	5	1				9	4747
73											1	4					5	3798
74											2						2	3775

75																		3	1																4	5702
76																			1	4															5	7296
77																			2	2															4	6232
78																			2	3		2													7	5962
79																			1			1													2	5135
80																																			6	5521
81																																		0	0	
82																																		1	5815	
83																																		0	0	
84																																		3	6660	
85																																		2	6745	
86																																	1	1	15550	
87																																		0	0	
88																																		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 Div. 3LMNO in 2017.

Length, cm	3L			3M			3N			3O			3LMO		
	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total
16						0			0	5	6	11	5	6	11
17						0			0	7	10	17	7	10	17
18						0			0	10	10	20	10	10	20
19						0		7	7	12	11	23	12	18	30
20	4	3	7			0	6	40	46	11	16	27	21	59	80
21	11	26	37			0	47	199	246	14	13	27	72	238	310
22	43	77	120			0	162	448	610	13	15	28	218	540	758
23	45	190	235			0	268	910	1178	22	10	32	335	1110	1445
24	70	221	291			0	418	961	1379	25	6	31	513	1188	1701
25	118	230	348			0	562	866	1428	16	5	21	696	1101	1797
26	199	193	392	4	1	5	654	545	1199	11	3	14	868	742	1610
27	151	153	304	7	3	10	510	275	785	8	1	9	676	432	1108
28	85	62	147	5	5	10	366	111	477			0	456	178	634
29	82	20	102	8	5	13	253	44	297			0	343	69	412
30	76	7	83	5	4	9	217	10	227			0	298	21	319
31	64		64	5	1	6	206		206			0	275	1	276
32	53		53	2		2	160		160			0	215		215
33	30		30	1		1	81		81			0	112		112
34	19		19			0	44		44			0	63		63
35	15		15			0	16		16			0	31		31
36	6		6			0	3		3			0	9		9
37	5		5			0			0			0	5		5
38			0			0	1		1			0	1		1
Total	1076	1182	2258	37	19	56	3974	4416	8390	154	106	260	5241	5723	10964
Mean length, cm	27.37	24.87	26.1	28.84	28.58	28.8	26.72	24.21	25.4	22.18	20.58	21.5	26.73	24.29	25.46

Table 9. Age-length composition of *S. fasciatus* from the Russian trawl catches in NAFO Divs. 3LN in 2017

Length, cm	Age													Total
	5	6	7	8	9	10	11	12	13	14	15	16	17	
19	2													2
20	1													1
21		2	5											7
22		1	9	2										12
23			6	9	3									18
24			4	6	10	3								23
25				6	12	5								23
26				3	11	9	6							29
27					6	3	3	1						13
28					1	6	6	1						14
29						3	4	2						9
30							4	2	4					10
31							2	3	4	2				11
32								6	13	3	1			23
33								1	2	2	2			7
34									3	4	3	3		13
35											1	1		2
36												2	1	3
37													2	2
Total	3	3	24	26	43	29	25	16	26	11	7	6	3	222
Mean length, cm	19.3	21.3	22.4	24	25.2	26.4	28.1	30.7	31.8	32.7	33.6	34.8	36.7	27.3
Mean weight, g	101.7	145	166.5	205.8	242.7	292.9	341.4	449.7	495.8	546.4	587.9	667.5	801.7	334.1

Table 10. Length composition (ind.) of *S. mentella* in Russian trawl catches in NAFO Divs. 3LMO in 2017.

Length, cm	3L			3M			3O			Total		
	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Females
19						0		3	3		3	3
20						0	1	9	10	1	9	10
21						0	1	8	9	1	8	9
22						0	5	6	11	5	6	11
23						0	5	4	9	5	4	9
24						0	8	6	14	8	6	14
25						0	10	6	16	10	6	16
26				4	1	5	10	8	18	14	9	23
27				5	2	7	10	6	16	15	8	23
28				8	4	12	8	3	11	16	7	23
29				12	7	19	5	1	6	17	8	25
30				13	7	20	5	1	6	18	8	26
31				13	6	19			0	13	6	19
32	1	1	2	13	11	24			0	14	12	26
33				16	11	27			0	16	11	27
34				15	15	30			0	15	15	30
35				16	12	28			0	16	12	28
36	1		1	18	13	31			0	19	13	32
37				10	9	19			0	10	9	19
38		1	1	5	5	10			0	5	6	11
39		1	1	5	4	9			0	5	5	10
40				5	1	6			0	5	1	6
41				3	1	4			0	3	1	4
42				1		1			0	1		1
43				1		1			0	1		1
Total	2	3	5	163	109	272	68	61	129	233	173	406
Mean length, cm	34.0	36.3	35.4	33.31	33.61	33.4	25.84	23.54	24.8	31.13	30.11	30.7

Table 11. Age-length composition of *S. mentella* from the Russian trawl catches in NAFO Divs. 3LN in 2017

Length, cm	Age												Total
	6	7	8	9	10	11	12	13	14	15	16	17	
22	3	7	7										17
23		5	12	5									22
24		3	11	14	4								32
25		2	5	13	13								33
26			2	12	11	5							30
27			2	8	14	11	4						39
28				6	13	10	3						32
29					4	14	8	5					31
30					1	9	7	5					22
31					1	3	5	7	1				17
32						1	7	6	2	1			17
33							1	6	5	2			14
34								3	3	3	3		12
35								2	7	4	2	1	16
36									4	5	4	2	15
Total	3	17	39	58	61	53	35	34	22	15	9	3	349
Mean length, cm	22	23	23.7	25.4	26.7	28.5	29.9	31.6	34.1	34.7	35.1	35.7	28.1
Mean weight, g	126.7	145.9	162.8	199.1	229.2	279.6	324.9	384.7	485	509.3	534.4	566.7	283.2

Table 12. Length composition (ind.) of *S. marinus* in Russian trawl catches in NAFO Divs. 3M in 2017.

Length, cm	3M		
	Females	Males	Total
26		2	2
27		3	3
28	3	7	10
29	1	1	2
30	3	6	9
31	3	1	4
32	5	4	9
33	3	1	4
34	2	2	4
35	7	2	9
36	8	3	11
37	5	1	6
38	4	1	5
39	4	1	5
40	2	4	6
41	3		3
42	2	2	4
43		1	1
44	2		2
45	4	2	6
46	6	1	7
47	2		2
48	4		4
49			
50	4		4
51	2		2
52	2		2
53			
54	2		2
55	2		2
Total	85	45	130
Mean length, cm	39.88	33.62	37.7

Table 13. Roughhead grenadier (*Macrourus berglax*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 3M in 2017.

Length, cm	3L
34	1
37	2
40	3
43	2
43	7
49	11
52	7
55	6
58	3
61	4
64	8
67	1
70	1
73	1
76	1
Total	58
Mean length, cm	54.19

Table 14. Roundnose grenadier (*Coryphaenoides rupestris*) length composition (ind.) of the Russian trawl catches in NAFO Div. 3L in 2017.

Length, cm	3L
31	1
34	
37	
40	
43	2
46	2
49	1
52	1
55	2
58	1
61	1
64	4
67	
70	1
Total	16
Mean length, cm	55.1

Table 15. Length composition (ind.) of American plaice (*Hippoglossoides platessoides*) in Russian trawl catches in NAFO Divs. 3LMNO in 2017.

Length, cm	3L	3M	3N	3O	3LMNO
19		0	1	0	1
21		0	3	0	3
23		0	5	0	5
25		0	4	0	4
27		0	3	0	3
29		0	8	0	8
31	1	1	8	1	10
33		0	15	7	22
35		3	14	16	33
37		2	9	20	31
39		2	16	19	37
41		2	9	11	22
43		4	6	7	17
45	1	4	4	11	19
47		4	3	5	12
49		4	1	3	8
51		0	1	1	2
53		2	0	0	2
55		2	0	0	2
Total	2	30	110	101	241
Mean length, cm	38.5	44.6	35.5	39.9	38.48

Table 16. Length composition (ind.) of Witch flounder (*Glyptocephalus cynoglossus*) in Russian trawl catches in NAFO Divs. 3LO in 2017.

Length, cm	3O
36	1
37	3
38	4
39	3
40	3
41	2
42	1
Total	17
Mean length, cm	38.8

Table 17. Length composition (ind.) of Atlantic cod (*Gadus morhua*) in Russian trawl catches in NAFO Div. 3MNO in 2017.

Length, cm	3M	3N	3O	3MNO
35		1		1
37		3		3
39		8	1	9
41	1	13		14
43		9		9
45	4	7	5	16
47	10	9	1	20
49	20	7		27
51	32	10	4	46
53	52	5		57
55	59	10		69
57	82	8	1	91
59	100	5		105
61	103	5	2	110
63	102	5	1	108
65	101	3		104
67	96	5	1	102
69	98	5		103
71	81	6	1	88
73	69	9		78
75	74	7		81
77	50	7	2	59
79	48	2		50
81	30	2	1	33
83	24	4	1	29
85	23	6		29
87	15	2	1	18
89	14	2		16
91	9		2	11
93	7	1	1	9
95	5	1		6
97	10			10
99	7			7
101	2			2
103				
105	2			2
107	1			1
Total	1331	167	25	1523
Mean length, cm	67.65	59.66	63.50	66.71

Table 18. Length composition (ind.) of Thorny skate (*Amblyraja radiata*) in Russian trawl catches in NAFO Div. 3LMO in 2017.

Length, cm	3L	3M	3O	3LMO
20		1		1
38		1		1
39		1		1
40		1		1
41				
42		1		1
43				
44				
45				
46		1		1
47				
48		1		1
49				
50		2		2
51				
52				
53				
54				
55		1		1
56		2	1	3
57		1		1
58				
59				
60			1	1
61				
62				
63	1			1
64				
65		1	1	2
66				
67	1			1
68		1		1
69				
70		4		4
71				
72				
73				
74				
75				
76				
77		1		1
Total	2	20	3	25
Mean length, cm	65.0	54.4	60.3	55.9

Table 19. Length composition (ind.) of Blue wolffish (*Anarhichas latifrons*) in Russian trawl catches in NAFO Div. 3LMO in 2017.

Length, cm	3L	3M	3O	3LMO
49	2			2
52	2			2
55	4			4
58	2	4		6
61		1		1
64	2	2		4
67	2	2		4
70	0	1		1
73	1	2		3
76	0	3		3
79	1	3		4
82		2		2
85				
88	1	1	1	3
91				
94	2	2		4
97				
100				
103		1		1
Total	19	24	1	44
Mean length, cm	65.6	75.1	89.0	71.3

Table 20. Length composition (ind.) of Spotted wolffish (*Anarhichas minor*) in Russian trawl catches in NAFO Div. 3LMO in 2017.

Length, cm	3L	3M	3O	3LMO
49	2	0	1	3
52	1	0	0	1
55	0	2	0	2
58	1	2	0	3
61	1	1	0	2
64	0	2	0	2
67				
70	2	0	0	2
73	2	0	0	2
76	1	1	0	2
79	2	1	0	3
82	0	0	2	2
85				
88		1		1
91				
94	1			1
Total	13	10	3	26
Mean length, cm	68.9	66.8	72.0	68.5

Table 21. Length composition (ind.) of Atlantic wolffish (*Anarhichas lupus*) in Russian trawl catches in NAFO Div. 3LN in 2017.

Length, cm	3L	3N	3LN
34	1		1
37			
40	1		1
43	2		2
46	1		1
49		1	1
52			
55	1		1
Total	6	1	7
Mean length, cm	44.5	50.0	45.3

Table 22. Length composition (ind.) of Blue antimora (*Antimora rostrata*) in Russian trawl catches in NAFO Div. 3LM in 2017.

Length, cm	3L	3M	3LM
21	1		1
22	1		1
23	1		1
24			
25			
26	1		1
27	1		1
28	1	1	2
29			
30	4		4
31	3		3
32	3	1	4
33			
34	3		3
35	2		2
36	4		4
37	2		2
38			
39	1		1
40	1		1
41	2	2	4
42			
43	1	1	2
44	1		1
45	1		1
46	2		2
47	2		2
48	1		1
49	1		1
50	1		1
51			
52	1		1
53			
54			
55	1		1
Total	43	5	48
Mean length, cm	36.7	37.0	36.8

Table 23. Silver hake (*Merluccius bilinearis*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 30 in 2017.

Length, cm	30
30	4
31	
32	
33	10
34	12
35	10
36	8
37	8
38	2
39	1
40	1
Total	56
Mean length, cm	34.8

Table 24. Length composition (ind.) of *Gaidropsarus ensis* in Russian trawl catches in NAFO Div. 3LO in 2016.

Length, cm	3L	3N	3LN
40	1		1
41	1		1
42	1		1
43	4	1	5
44	4		4
45	3		3
46	1		1
47	1		1
48	1		1
49			
50			
51	1		1
Total	18	1	19
Mean length, cm	44.33	43.0	44.3

Table 25. Occurrences of VME indicator species in the NAFO Regulatory Area in 2017.

Date	Trawling coordinates		Depth of trawling, m	Latin name	Quantity, ind-s	Length, cm	Catch, kg
	shooting N/W	hauling N/W					
13.01	4634/4548	4628/4536	380-390	<i>Nephtheidae</i>	3	3-5	<1
				<i>Duva florida</i>	8	10-15	<1
				<i>Anthoptilum spp</i>	3	30	<1
14.01	4630/4544	4638/4554	370-390	<i>Geodia spp.</i>	2	6	<1
				<i>Duva florida</i>	7	8-10	<1
				<i>Anthoptilum spp</i>	3	30	<1
				<i>Actinia callosa</i>	12	5-7	<1
15.01	4635/4552	4628/4540	370-390	<i>Nephtheidae</i>	3	5-10	<1
				<i>Duva florida</i>	8	10-15	<1
				<i>Anthoptilum</i>	3	30	<1
16.01	4628/4538	4636/4551	350-360	<i>Geodia spp</i>	6	6-10	<1
				<i>Eupectella spp</i>	1	13	<1
				<i>Duva florida</i>	10	10-15	<1
				<i>Anthoptilum</i>	3	30	<1
				<i>Actinia callosa</i>	10	5-7	<1
18.01	4812/4526	4805/4535	490-510	<i>Actinia callosa</i>	5	5-7	<1
				<i>Aleclona millar</i>	3	5-10	<1
				<i>Funiculinaquadrangularis</i>	2	40	<1
20.01	4637/4553	4628/4543	350-360	<i>Acanella arbuscula</i>	3	12-21	<1
				<i>Duva florida</i>	3	10-15	<1
				<i>Anthoptilum spp</i>	5	30-35	<1
				<i>Nephtheidae</i>	3	3-5	<1
				<i>Actinia callosa</i>	10	5-7	<1
04.02	4323/5140	4315/5125	290-310	<i>Actinaria</i>	10-15	6-8	<1
05.02	4322/5138	4316/5124	290-310	<i>Actinaria</i>	12-16	6-8	<1
12.02	5644/1501	5655/1501	260-270	<i>Hippasteria phrygiana</i>	2	10-15	<1
				<i>Flustra sp.</i>	1	6	<1
				<i>Thyonidium</i>	4	5-10	<1
				<i>Actinaria</i>	12-16	6-8	<1
13/19.02	5643/1504	5632/1517	250	<i>Pontaster tenuispinus</i>	1	6	<1
				<i>Polymastia thielei</i>	5	6-10	<1
				<i>Flustra sp.</i>	1	6	<1
				<i>Thyonidium</i>	4	5-10	<1
				<i>Hydrozoa</i>	5-10	2-3	<1
				<i>Actinaria</i>	12-16	6-8	<1
03/05.03	5655/1502	5642/1505	240-300	<i>Actinaria</i>	10-14	6-8	<1
				<i>Hydrozoa</i>	5-10	2-3	<1
				<i>Thyonidium</i>	4	5-10	<1
28.06	-	4529/ 4830	275	<i>Hippasteria phrygiana</i>	1		39
03.07	-	4300/ 4942	315	<i>Anthoptilum spp.</i>	3		84
05/09.10	7454/1745	7456/1753	90-200	<i>Geodia spp.</i>	6	6-10	70
				<i>Eupectella spp.</i>	1	13	40
				<i>Duva florida</i>	10	10-15	110
				<i>Anthoptilum</i>	3	30	80
				<i>Actinia callosa</i>	10	5-7	90
10.10	7357/1807	7400/1746	120-170	<i>Actinia callosa</i>	5	5-7	50
				<i>Aleclona millar</i>	3	5-10	60
				<i>Funiculinaquadrangularis</i>	2	40	40

12.10	7449/1546	7447/1549	280-320	<i>Acanella arbuscula</i>	3	12-21	60
				<i>Duva florida</i>	3	10-15	30
				<i>Anthoptilum</i> spp.	5	30-35	90
				Nephtheidae	3	3-5	100
				<i>Actinia callosa</i>	10	5-7	90
14.10	7410/1744	7357/1803	210-240	<i>Actinaria</i>	10-15	6-8	100
16.10	7401/1819	7400/1802	200-210	<i>Actinaria</i>	12-16	6-8	110

Table 26. Marine mammals recording in the NAFO Regulatory Area in 2017.

Date	Time	Latitude (N)	Longitude (W)	Species	Quantity	Notes
13-18.01	During the day	46°27'- 46°38'	45°34'- 45°52'	Sperm whale	2-3	When hauling
18.01	12:00	48°05'	45°35'	White-beaked dolphin	7-10	After hauling
18.01	14:00	48°13'	45°25'	Fin whale	1	Through the field glasses
28.01	16:00	45°01'	54°33'	Pilot whale	5-7	When transiting
01.02	15:00	47°18'	53°59'	Common seal	1	на переходе near the islands
04.02	14:00	43°09'	51°15'	Sperm whale	2	When hauling
17.02	18:00	56°33'	15°10'	Common dolphin	9-12	When hauling
18.02	10:45	56°39'	15°06'	Common dolphin	7-10	When hauling
10.03	13:30	66°04'	05°02'E	Killer whale	2	When transiting
04.04	In the afternoon	48°09.4'	47°38.4'- 47°06.3'	Harp seal	5-6	Hauling
06.04	In the afternoon	48°10.4'- 48°19.1'	47°03.2'- 46°29.4'	Harp seal	3-4	Hauling
06.04	In the afternoon	48°10.4'- 48°19.1'	47°03.2'- 46°29.4'	Harp seal	6-7	Hauling
06.04	In the afternoon	48°10.4'- 48°19.1'	47°03.2'- 46°29.4'	Sperm whale	1	
06.04	In the afternoon	48°10.4'- 48°19.1'	47°03.2'- 46°29.4'	White-beaked dolphin	3-4	Hauling

Date	Time	Latitude (N)	Longitude (W)	Species	Quantity	Notes
07.04	In the afternoon	48°18.1'- 48°10.3'	46°31.9'- 46°59.7'	Sperm whale	3	Hauling
08.04	In the afternoon	48°07.7'- 48°09.8'	46°59.0'- 47°07.7'	Sperm whale	1	Escorted the vessel at a shipboard
08.04	In the afternoon	48°09.6'	47°39.2'- 47°41.7'	Harp seal	2-3	Shooting/hauling
09.04	In the afternoon	48°16.2'- 48°09.0'	46°37.4'- 47°01.1	Harp seal	2-3	Shooting/hauling
10.04	In the afternoon	48°09.4'	47°11.1'- 47°41.7'	Pilot whale	7-10	Hauling
10.04	In the afternoon	48°09.6'	47°40.1'- 47°07.3'	Sperm whale	2	At a shipboard when shooting
10.04	In the afternoon	48°09.6'	47°40.1'- 47°07.3'	Sperm whale	2	Astern when trawling and hauling
10.04	In the afternoon	48°09.6'	47°40.1'- 47°07.3'	Harp seal	3-4	Astern when trawling and hauling
11.04	In the afternoon	48°10.2'- 48°18.4'	47°03.7'- 46°33.2'	Harp seal	2-3	Astern when trawling
11.04	In the afternoon	48°17.7'- 48°09.2'	46°32.2'- 47°02.1'	Sperm whale	1	Hauling
12.04	In the afternoon	48°10.8'- 48°19.6	47°03.6'- 46°30.5'	Sperm whale	1	At a distance during haulage
12.04	In the afternoon	48°10.8'- 48°19.6	47°03.6'- 46°30.5'	Harp seal	2-3	Astern when hauling
12.04	In the afternoon	48°10.8'- 48°19.6	47°03.6'- 46°30.5'	White-beaked dolphin	20	Astern when hauling
08.05-12.06	During the day	48°15'	47°00'	Sperm whale	2-5	Near the vessel when hauling
21.08	20:30	46°32'	47°17'	Sperm whale	2-3	When hauling
15.09	18:30	46°33'	48°10'	White-beaked dolphin	7-10	Through the field glasses when transiting

Table 27. Marine mammals total numbers in the NAFO Regulatory Area in 2017.

Species	Quantity *	Occurrences	Part of the total amount, %
Common dolphin	22	2	15,3
Harp seal	27	7	18,7
Sperm whale	24	11	16,7
Pilot whale	17	2	11,8
Common seal	1	1	0,7
White-beaked dolphin	50	5	34,7
Fin whale	1	1	0,7
Killer whale	2	1	1,4
Total	144	30	100

Note: it is determined considering the average range value when there is no specific quantity stated in Table 26