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SCIENTIFIC COUNCIL MEETING – JUNE 2021**Russian Research Report for 2020****By K. Fomin and M. Pochtar*****Polar branch of the Federal State Budget Scientific Institution “Russian Federal Research Institute of Fisheries and oceanography”******6 Akademika Knipovicha St., Murmansk, Russia, 183038*****SUBAREAS 1+2****A. Status of Fisheries***Greenland halibut (Reinhardtius hippoglossoides)*

In 2020, the directed trawl fishery for Greenland halibut was conducted off West Greenland from August to November.

In September-October, three trawlers were engaged in the fishery in the area to the north of 68°N. The highest catch rate was recorded in September, amounting to 15.8 tons per day of fishing. In the area to the south of 68°N, the fishery was conducted in August-November. The highest catch rate was recorded in November, amounting to 29.9 tons per day of fishing.

In general, the fishing situation in the area was at a good level. The actual catch rate of vessels of the N/S-1 type was 16.6 tons, N/S-2 type – 15.8 tons per day of fishing, with an expert assessment of 10-12 tons per day of fishing.

According to preliminary data, the catch amounted to 1668.0 tons (implementation of the quota – 99 %), of which in the Divisions 1AB – 550.0 tons, in the Divisions 1CD – 1118.0 tons (Table 1). The bycatch included skates, roughhead grenadier and roundnose grenadier (Table 2).

Beaked redfish (Sebastes mentella)

Preliminary data indicates the total catch of beaked redfish in Div. 1F reaching 3620.0 t. There was not any bycatch species registered.

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 Division 1AD, Greenland halibut was caught with a length of 32-108 cm, an average of 54.9 cm, with a predominance of individuals with a length of 50-56 cm (Table 3).

SUBAREA 3

A. Status of Fisheries

Greenland halibut

Directed fishery for Greenland halibut took place from February to August and in November. Trawl fishery was carried out by 4 Russian vessels. Catch rates for N/S-1, 2 vessels ranged from 4.3 t to 24.3 t, averaging 20.4 t per fishing vessel day. In general, the annual yield of Greenland halibut taken by Russian fishing vessels in the directed fishery was 1592.1 tons. Besides, 0.2 tons of *Greenland halibut* were taken as a bycatch in the redfish fishery (Table 5). The total catch of *Greenland halibut* was 1592.3 tons (Table 1). The bycatch was comprised of roughhead grenadier and roundnose grenadier (Table 4).

Atlantic cod

On the Flemish Cap Bank, the directed fishery for Atlantic cod was conducted from January to March as well as from June to July onboard two vessels of the STM and SRTM types with the average daily catch rate equal to 14.2 and 14.0 tons, respectively. The annual yield of cod taken by Russian fishing vessels in the directed fishery was 537.9 t. Besides, 6.1 t of cod were taken as a bycatch in the redfish fishery and 1.0 t as a bycatch in multispecies fishery. The total Russian yield of cod on the Flemish Cap Bank was 545.0 t (Table 1).

Catch rates were lower than predicted. With an expert assessment of the daily catch of 20-25 tons, including 15-20 tons of cod, the actual catch rates for the entire fishing season were 14.9 tons (including 14.1 tons of cod) per day of fishing. Since the lifting of the moratorium, the Russian cod quota has been implemented almost in full every year.

Atlantic redfish on the Flemish Cap Bank

In 2020, directed fishery for redfish on the Flemish Cap Bank was conducted for a short time. In January-February, for 8 days, the Russian vessel operated in the area between 46°24' – 48°15' N and 46°22' – 45°16' W (depths of 300-650 m). The vessel fished with a bottom trawl with a catch rate of 4.4 tons per day of fishing and 0.79 tons per hour of trawling.

According to preliminary data, the total annual yield taken by Russian fishing vessels in the directed redfish fishery was 36.3 t. Bycatch included cod (6.1 t), blue wolffish (0.4 t), American plaice (0.3 t), spotted wolffish (0.3 t), witch flounder (0.1 t), skates (0.1 t) and Atlantic halibut (0.02 t). In addition, a small catch of redfish (8.99 tons) was obtained in the cod and halibut fishing. According to preliminary data of the Polar Branch, the total Russian yield of redfishes on the Flemish Cap Bank was 45.3 tons (Table 1).

In Division 30

In 2020, in the south-western part of the Grand Bank of Newfoundland, Russian trawlers of the STM type operated sporadically from January to April at depths of 290-650 m. Catch rate of redfish was approximately the same along the entire period. Slightly higher catch rate was noted in April, amounting to 13.8 tons per day of fishing and 1.21 tons per 1 hour of trawling. In directed fishery, Russian vessels caught 414 t of redfish (Table 1). Redfish species were not caught as bycatch in the fishery for other fish species. The total yield taken by Russian fishing vessels in the directed redfish fishery was 414 t with a national quota of 6500 t. The significant deviation of the actual catch from the estimated one is due to the lack of fishing efforts.

In Divisions 3LN

In 2020, Russian directed fishery was conducted from January to October by vessels of the N/S-1, 2 types at depths of 110-630 m. Catch rate of redfish using bottom trawl ranged from 11.5 to 41.7 t and averaged 22.6 t per day of fishing. The highest catch rate of redfish for N/S-1 was observed in May and November – 18.4 and 33.0 t, for N/S-2 – in April, June and August – 40.8, 40.4 and 41.7 t per day of fishing, respectively.

According to preliminary Russian data, Russian vessels caught 5011.504 t of redfish in the directed fishery. In addition, a small catch of redfish (11.5 t) was obtained in the fishing of other fish species.

The total Russian yield of redfish was 5023 tons (Table 1).

Skates

Directed fishery for skates was not conducted in 2020; skates were taken as bycatch in fishing of other fish species. In January, June and July, 10 tons of skates were caught at depths of 180-555 m. The total Russian yield of skates in the Divs. 3LMNO for the whole period amounted to 10 t (Table 1).

Yellowtail flounder

The Russian directed fishery for yellowtail flounder was conducted briefly in February between 43°18'-43°42' N/50°57'-49°48' W at depths of 57-71 m. The average daily catch rate was 9.9 t. Over the year, Russian fishing vessels caught 84.0 t of the species in the directed fishery in total. 2.5 t of cod, 0.9 t of American plaice and 0.6 t of Atlantic halibut were taken as bycatch. Total Russian yield of yellowtail flounder amounted to 84.0 tons (Table 1).

Other species

Directed fishery for witch flounder was conducted briefly, during 5 days of fishing, from February to December at depths of 300-500 m. The average daily catch rate was 5.0 t.

Over the year, Russian fishing vessels caught 23.8 tons of witch flounder in a directed fishery. Another 21.4 t were caught as bycatch in the redfish fishery and 11.4 t were caught in other species fishery. According to preliminary data, the total catch was 56.6 t (Table 1).

Directed fishery for other species was not conducted.

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 22-98 cm occurred, with an average of 50.4 cm. Specimens of 46-52 cm prevailed (Table 6).

In Div. 3M, the length of Greenland halibut varied from 34 cm to 92 cm (predominately, 48-52 and 58-64 cm) with an average of 55.7 cm.

In Divisions 3N and 3O, halibut was caught occasionally. The length of halibut in Div. 3 N varied from 20 to 80 cm, with an average of 43.2 cm and in Div. 3O – 46-76 cm, with an average of 60.3 cm.

In general, the length of Greenland halibut in Divs. 3LMNO was 20-98 cm, with an average of 48.4 cm for males and of 52.5 cm for females. The sex ratio (males and females) in the catches was 1:1.6 (Table 6). The halibut age varied from 3 to 15 years. Most of the specimens taken were 5-8 years old (Table 7).

Acadian redfish (Sebastes fasciatus)

In Div. 3L, the catches consisted of specimens with a length of 18-42 cm, with an average of 30.3 cm for females and of 27.7 cm for males. Most specimens were 27-30 cm long (Table 8).

In addition, 1 individual with a length of 61 cm was caught in Div. 3L.

In Div. 3M, small numbers of redfish with a length of 15-35 cm were found. The average length of males and females was 23.7 and 26.0 cm, respectively.

In Div. 3N, redfish with a length of 15-37 cm was caught; the average length of males and females was 23.8 and 26.0 cm, respectively (Table 8).

In Div. 3O, the size range was represented by individuals with a length of 18-38 cm, with an average length of males and females of 24.9 and 27.2 cm, respectively (Table 8). The age of redfish in Div. 3O ranged from 6-16 years, most of the caught individuals were 8-12 years old (Table 9).

Deep-water redfish (S. mentella)

In Div. 3L, beaked redfish was represented by individuals from 18 to 58 cm in length, averaging 30.7 cm. The average length of males and females was 28.8 and 32.3 cm, respectively (Table 10).

In Div. 3M, redfish with a length of 12-47 cm, with an average of 30.7 cm, was caught. The average length of males was 30.7 cm, females – 33.0 cm (Table 10).

The age of beaked redfish in Div. 3M varied from 4 to 26 years, with the predominance of individuals of 13-16 years old (Table 11).

The size range of beaked redfish in Div. 3N is represented by fish with a length of 16-58 cm. The average length of males and females was 24.9 and 26.5 cm, respectively (Table 10).

In 3O Div., individuals with a length of 21-45 cm, an average of 28.8 cm, with an average length of 27.0 cm for males and 28.8 cm for females, were caught (Table 10).

Redfish (S. marinus)

In 3M Div., the size range varied within 12-68 cm, with an average of 40.7 cm. The average length of males was 38.8 cm, females – 42.0 cm, respectively (Table 12).

In Div. 3N, redfish was found occasionally. The length of the caught specimens varied from 21 to 66 cm. The average length of males and females was 44.8 and 52.2 cm, respectively (Table 12).

Roughhead grenadier

In Div. 3L, individuals with a length of 25-73 cm were caught, with an average of 46.3 cm.

In Div. 3M, the zoological length varied from 28 to 70 cm, the average length was 50.3 cm (Table 13).

In Div. 3N, it was found in catches occasionally. The length of the caught fish varied from 37 to 67 cm, with an average of 52.0 cm (Table 13).

Roundnose grenadier

In Div. 3L, roundnose grenadiers with a length of 25-64 cm were caught. The average length was 42.8 cm (Table 14).

In Div. 3M, roundnose grenadier was caught in small amounts. The length of the caught fish varied from 34 to 64 cm, with an average of 49.2 cm (Table 14).

In Div. 3N, 4 specimens of roundnose grenadier with a length of 28-37 cm, the average length – 32.0 cm, were caught (Table 14).

Yellowtail flounder

In Div. 3L, 12 specimens of yellowtail flounder were caught. The length varied from 28 to 47 cm, with the average length of males and females 33.7 and 36.2 cm, respectively (Table 15).

In Div. 3M, the size range was represented by individuals with a length of 24-66 cm. Besides 1 specimen with a length of 9 cm was caught (Table 15).

Thorny skate

In Div. 3L, the size range of thorny skate was represented by fish with a length of 19-85 cm, with an average length of 59.3 cm (Table 16).

In Div. 3M, in redfish fishery, 28-64 cm long thorny skates, with an average length of 46.9 cm, were caught (Table 16).

In Div. 3N, the fish length varied from 22 to 88 cm, with an average length of 59.3 cm.

In Div. 3O, it was found in catches occasionally. The length of the caught samples was 34-79 cm, with an average of 57.1 cm (Table 16).

Arctic skate

In Div. 3L, arctic skates with a length of 28-91 cm were caught, the average length was 44.2 cm (Table 17).

In Div. 3M, individuals with a length of 52-100 cm, with an average length of 79.3 cm, were caught (Table 17).

Spinytail skate

In Div. 3L, the size range of spinytail skate was represented by fish with a length of 28-136 cm, the average length was 57.9 cm. Besides, 1 specimen with a length of 10 cm was caught (Table 18).

In Div. 3N, the length of spinytail skate varied from 46 to 121 cm, with an average length of 86.5 cm (Table 18).

Blue wolffish

Blue wolffish was caught in small amounts. In Div. 3L, the fish length varied from 43 to 100 cm. The average length was 63.7 cm (Table 19).

In Div. 3M, the size range was represented by individuals with a length of 52-94, with an average of 67.6 cm.

In Divisions 3N and 3O, 5 and 6 specimens of blue wolffish with a length of 63.2 and 59.5 cm, respectively, were caught (Table 19).

Spotted wolffish

In Div. 3L, the length of spotted wolffish varied from 40 to 121 cm, with an average of 74.0 cm (Table 20).

In Div. 3M, individuals with a length of 52-109 cm, with an average length of 78.0 cm, were found.

In Div. 3M, 4 specimens of spotted wolffish, with a length of 58, 73, 88 and 115 cm, were caught (Table 20).

Atlantic wolffish

In Div. 3L, the size range was represented by individuals with a length of 22-70 cm, with an average of 51.8 cm (Table 21).

In Div. 3M, it was found in catches occasionally. The length of the caught samples was 31-70 cm, with an average of 56.4 cm (Table 21).

In Div. 3N, the length of Atlantic wolffish varied from 37 to 100 cm, with an average of 62.4 cm (Table 21).

Blue antimora

In Div. 3L, the size range of blue antimora was represented by individuals with a length of 27 to 60 cm, with an average of 39.9 cm (Table 22).

In Div. 3M, the length of antimora varied from 32 to 64 cm, with an average of 46.5 cm.

In Div. 3N, 3 specimens of blue antimora with a length of 44-48 cm, with an average length of 44.8 cm, were caught (Table 22).

Black dogfish

In Div. 3L, it was found in catches occasionally. The length of the caught specimens varied from 16 to 70 cm, with an average of 52.6 cm (Table 23).

In Divisions 3M and 3N, 3 individuals were caught in each division. The length of the caught individuals was 55-67 cm and 43-58 cm, on average 62.0 and 50.0 cm, respectively (Table 23).

Threebeard rockling

In Div. 3L, the size range of this species was represented by fish with a length of 25-58 cm, the average length was 40.7 cm (Table 24).

In Div. 3M, individuals with a length of 25-46 cm, with an average length of 38.7 cm, were found (Table 24).

Red hake

In Div. 3L, the fish length varied from 31 to 49 cm, with an average of 42.2 cm (Table 25).

In Div. 3M, 4 specimens of this species, with a length of 31, 37, 40 and 43 cm, were caught (Table 25).

White hake

In Div. 3N, the fish length varied from 31 to 94 cm, with an average of 54.0 cm (Table 26).

In Div. 3O, 20 individuals were caught. The length of the fish varied from 40 to 103 cm, the average length was 63.7 cm (Table 26).

Lycodes reticulatus

In Div. 3L, fish length varied from 21 to 57 cm, the average length was 38.0 cm (Table 27).

In Div. 3M, 1 specimen with a length of 35.5 cm was caught.

Besides, in Div. 3N, 10 individuals with a length of 25-47 cm were caught, the average length was 36.3 cm (Table 27).

Greater eelpout

In Divisions 3L, M and O, it was found in catches occasionally (20 individuals). The length varied from 31 to 63 cm, and the average length for all divisions was 46.4 cm (Table 28).

Nezumia

In Divisions 3L, 3M and 3N, nezumia was found in catches occasionally. In Div. 3L, 5 individuals with a length of 31 to 37 cm were caught, the average length was 34.2 cm (Table 29).

In Div. 3M, the length of caught fish (6 specimens) varied from 26 to 30 cm, the average length was 28.5 cm (Table 29).

In Div. 3N, one specimen with a length of 29.0 cm was caught.

In Div. 3O, the size range of nezumia was represented by fish with a length of 27 18-30 cm, with an average of 24.4 cm (Table 29).

Atlantic halibut

In Div. 3L, the length of Atlantic halibut varied from 73 to 193 cm, the average length was 95.5 cm (Table 30). In Div. 3M, 3 specimens were caught with a length of 55, 79 and 91 cm, respectively.

In Div. 3N, the size range was represented by individuals with a length of 55-208 cm with an average length of 89.4 cm (Table 30).

In Div. 3O, Atlantic halibut length varied from 55 to 190 cm with an average length of 83.6 cm (Table 30).

American place

In Div. 3L, it was caught with a length of 27-51 cm, with an average of 36.7 cm (Table 31).

In Div. 3M, the size range was represented by individuals with a length of 29-67 cm, with an average of 43.6 cm (Table 31).

In Div. 3N, individuals with a length of 21-67 cm were caught. The average length was 38.8 cm (Table 31).

In Div. 3O, the size range of American place was represented by fish with a length of 29-31 cm. The average length was 41.6 cm (Table 31).

Witch flounder

In Div. 3L, fish length varied from 27 to 51 cm, the average length was 43.2 cm (Table 32).

In Divisions 3 M and 3N, witch flounder with a length of 25-55 cm was caught. The average length was 42.0 and 41.4 cm, respectively (Table 32).

In Div. 30, the size range was represented by individuals with a length of 21-55 cm. The average length of the fish was 40.2 cm (Table 32).

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 33).

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: cetaceans (*Cetacea*) including bottle-nosed whales (*Hyperoodon ampullatus*), fin whales (*Balaenoptera physalus*), sperm whales (*Physeter microcephalus*), white-beaked dolphins (*Lagenorhynchus albirostris*), common dolphins (*Delphinus delphis*), as well as pinniped (Pinnipedia) – harp seals (*Phoca groenlandica*) (Table 34). The total number of marine mammal records (occurrences) is 70 (Table 35).

No discards were observed in the main species fisheries.

Table 1. Preliminary catches taken by Russian trawlers in NAFO SA 1-3 in 2020.

Species	Division	Catch, t
Greenland halibut	1A	550
	1B	-
	1C	198
	1D	920
	1ABCD	1668
Beaked redfish	1F	3620
Greenland halibut	3L	1297
	3M	279
	3N	16
	3LMN	1592
American plaice	3L	2
	3M	1
	3N	91
	3O	1
	3LMNO	95
Yellowtail flounder	3N	84
Witch flounder	3L	0,3
	3M	0,3
	3N	44
	3O	12
	3LMNO	56,6
Roughhead grenadier	3L	4
	3M	1
	3N	1
	3LMN	6
Roughnose grenadier	3L	1
Redfish spp.	3L	557
	3M	45
	3N	4467
	3O	414
	3LMNO	5483
Skate	3L	-
	3M	10
	3N	-
	3O	-
	3LMNO	10
White hake	3O	0,2
Atlantic cod	3L	10
	3M	545
	3N	102
	3O	0,2
	3MNO	657,2
Wolffish spp.*	3M	7
	3O	3
	3MO	10
Shrimps	3M	0.2
Hake	3O	29
Atlantic Halibut	3L	12
	3M	4
	3N	139
	3O	5
	3MNO	160

*incl. Atlantic wolffish (3M) – 3 t; Spotted wolffish (3M) – 4 t; Blue wolffish (3O) – 3 t

Table 2. Bycatch at directed Greenland halibut fishery by Russian bottom trawlers from NAFO Divs. 1Ad in 2020.

Species	Catch, t
Division 1A	
Skate	0,5
Division 1C	
Roughhead grenadier	0,202
Division 1D	
Roundnose grenadier	0,618
Roughhead grenadier	1,117
Skate	0,3
Total	
Roundnose grenadier	0,618
Roughhead grenadier	1,319
Skate	0,8

Table 3. Greenland halibut (*Reinhardtius hippoglossoides*) length composition (ind.) of the Russian trawl catches in NAFO Div. 1D in 2020.

Length, cm	1D
32	2
34	2
36	5
38	24
40	31
42	97
44	166
46	240
48	515
50	610
52	931
54	942
56	606
58	521
60	243
62	209
64	113
66	88
68	78
70	59
72	49
74	36
76	44
78	32
80	25
82	40
84	35
86	24
88	24
90	14
92	17
94	14
96	9
98	4
100	7
102	
104	3
106	1
108	1
Total	5861
Mean length, cm	54.9

Table 4. Bycatch at directed Greenland halibut fishery by Russian bottom trawlers from NAFO Divs. 3LMNO in 2020.

Species	Catch, t
Roundnose grenadier	1,0
Roughhead grenadier	6,0

Table 5. Bycatch at directed redfish fishery by Russian bottom trawlers from NAFO Divs. 3LMNO in 2020.

Species	Catch, t
Divisions 3LN	
Witch flounder	20,443
American place	90,519
Atlantic cod	108,197
Atlantic halibut	139,551
Division 3M	
Witch flounder	0,137
Skates	0,09
American place	0,291
Atlantic cod	6,099
Atlantic halibut	0,022
Blue wolffish	0,432
Spotted wolffish	0,265
Division 3O	
Witch flounder	0,78
Skate	0,09
White hake	0,21
American place	0,945
Hake	29,327
Greenland halibut	0,21
Atlantic halibut	0,953
Blue wolffish	0,192
Total	
Witch flounder	21,36
Skates	0,18
White hake	0,21
American place	90,519
Atlantic cod	114,296
Atlantic halibut	141,479
Greenland halibut	0,21
Hake	29,327
Blue wolffish	0,432
Spotted wolffish	0,265

Table 6. Greenland halibut (*Reinhardtius hippoglossoides*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 3LMNO in 2020.

Length, cm	3L			3M			3N			3O			3LMNO		
	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total
20								1	1					1	1
22	2	2	4				2	2	4				4	4	8
24	1	3	4					1	1				1	4	5
26	3	2	5						0				3	2	5
28	5	4	9				2	5	7				7	9	16
30	7	17	24				1	2	3				8	19	27
32	21	41	62				3	1	4				24	42	66
34	65	59	124		3	3	2	4	6				67	66	133
36	91	97	188	3	8	11	1	6	7				95	111	206
38	146	148	294	4	20	24	3	3	6				153	171	324
40	299	246	545	12	26	38	5	3	8				316	275	591
42	432	442	874	29	40	69	1		1				462	482	944
44	670	612	1282	40	41	81	4	3	7				714	656	1370
46	798	791	1589	38	54	92		2	2	1		1	837	847	1684
48	843	799	1642	46	78	124	3	3	6	1		1	893	880	1773
50	892	827	1719	41	77	118	2		2	1		1	936	904	1840
52	921	658	1579	45	66	111	2	1	3				968	725	1693
54	802	499	1301	62	35	97	2		2	1		1	867	534	1401
56	819	316	1135	77	36	113	1	2	3				897	354	1251
58	796	210	1006	118	47	165	2	1	3	3		3	919	258	1177
60	694	100	794	109	39	148	1		1	4		4	808	139	947
62	485	96	581	116	43	159	2		2	5		5	608	139	747
64	331	50	381	121	34	155			0	3		3	455	84	539
66	191	34	225	73	28	101	1	2	3	4		4	269	64	333
68	123	16	139	44	9	53	4		4	1	1	2	172	26	198
70	69	8	77	23	10	33	2		2	1		1	95	18	113
72	33	5	38	23	13	36	1		1	1		1	58	18	76
74	21	5	26	7	1	8	1		1				29	6	35
76	17	3	20	11	1	12			0	2		2	30	4	34
78	12		12	7	1	8			0				19	1	20
80	9	2	11	3	1	4	1		1				13	3	16
82	5		5	3		3			0				8		8
84	2		2	4		4			0				6		6
86	4		4	3		3			0				7		7
88	3	1	4	2		2			0				5	1	6
90	1		1			0			0				1		1
92	1		1	1		1			0				2		2
94															
96															
98	1		1			0			0				1		1
Total	9615	6093	15708	1065	711	1776	49	43	92	28	1	29	10757	6847	17604
Mean length, cm	51.91	48.07	50.4	58.06	52.1	55.7	49.16	38.67	43.2	61.64	67.5	60.3	52.53	48.43	50.91

Table 7. Age-length composition of Greenland halibut (*Reinhardtius hippoglossoides*) from the Russian trawl catches in NAFO Divs. 3LMN in 2020.

Length, cm	Age													Total
	3	4	5	6	7	8	9	10	11	12	13	14	15	
28		1												1
30		1												1
31		1												1
32	1	1												2
33	1	2												3
34		2	5											7
35		5		1										6
36		2	5											7
37		3	6	1										10
38		2	6											8
39			8	2										10
40			8	7										15
41			3	9	2									14
42			2	13										15
43		1	1	16	4									22
44				11	8	1								20
45			1	10	7	2								20
46				3	10									13
47				2	8	5								15
48					9	5	1							15
49					8	11	2							21
50						7	2	2						11
51						11	3							14
52						7	3							10
53					1	3	7	1	1					13
54							8	1						9
55						1	2	2						5
56							1	3						4
57							1	7	2					10
58							2	7	1					10
59								2						2
60								1	1	2				4
61								2	3	1				6
62									3	3				6
63									1	1				2
64										3				3
65									1	2	1			4

66											1	1		2
67										1				1
68											1			1
69												1	1	2
70											1			1
71												1		1
74												1		1
77												1		1
Total	2	21	45	75	57	53	32	28	13	13	4	5	1	349
Mean length, cm	32.5	34.9	38.4	42.7	46.2	49.8	53	56.8	60.2	63	67.3	71.4	69	47.5
Mean weighth, g	266.5	333	462.9	623	804.8	1036.3	1287.2	1515.7	1857.7	2245	2950	3718	3315	993.0

Table 8. Length composition (ind.) of *S. fasciatus* in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L			3M			3N			3O			3LMNO		
	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total
15					1	1		3	3			0		4	4
16						0	5	10	15			0	5	10	15
17						0	12	27	39			0	12	27	39
18		1	1			0	32	61	93	2		2	34	62	96
19			0	3	1	4	49	80	129	3	2	5	55	83	138
20		3	3	2	3	5	94	168	262	6	7	13	102	181	283
21	2	5	7		4	4	177	585	762	16	38	54	195	632	827
22	3	6	9	1	5	6	399	2410	2809	49	170	219	452	2591	3043
23	4	14	18	1	1	2	1069	6217	7286	136	454	590	1210	6686	7896
24	27	41	68	4	1	5	1618	6229	7847	360	843	1203	2009	7114	9123
25	41	84	125	2	2	4	2433	3298	5731	1753	1370	3123	4229	4754	8983
26	57	122	179	2	1	3	3015	1397	4412	2015	624	2639	5089	2144	7233
27	83	167	250	3	2	5	2456	679	3135	2101	365	2466	4643	1213	5856
28	99	169	268	1	5	6	1460	229	1689	1404	111	1515	2964	514	3478
29	126	129	255	1	2	3	781	60	841	722	66	788	1630	257	1887
30	169	79	248	1		1	400	19	419	778	10	788	1348	108	1456
31	140	39	179	3		3	262	15	277	338	5	343	743	59	802
32	131	31	162	1		1	168	3	171	253		253	553	34	587
33	89	13	102			0	100	2	102	145		145	334	15	349
34	77	13	90	1		1	43		43	68		68	189	13	202
35	39	4	43	1		1	15		15	19		19	74	4	78
36	23	3	26			0	5		5	4		4	32	3	35
37	15		15			0	5		5	2		2	22		22
38	7		7			0			0	1		1	8		8
39	2		2			0			0			0	2		2
40															
41															
42	1		1			0			0			0	1		1
61	1		1			0			0			0	1		1
Total	1136	923	2059	27	28	55	14598	21492	36090	10175	4065	14240	25936	26508	52444
Mean length, cm	30.3	27.7	29.1	26	23.7	24.8	26.0	23.8	24.7	27.12	24.9	26.5	26.66	24.08	25.35

Table 9. Age-length composition of *S. fasciatus* from the Russian trawl catches in NAFO Divs. 30 in 2020.

Length, cm	Age											Total
	6	7	8	9	10	11	12	13	14	15	16	
23		4	3									7
24	1	1	7									9
25			9	4	2							15
26			4	11	6	1						22
27				7	11	10	1					29
28					3	5	7	1				16
29						2	6	1				9
30					1	2	3	9	1			16
31							3	2	3			8
32							1	2	2	2		7
33								3	2	1	1	7
34										3		3
35										2		2
Total	1	5	23	22	23	20	21	18	8	8	1	150
mean length, cm	24	23.2	24.6	26.1	26.8	27.7	29.1	30.7	31.6	33.6	33	27.8
Mean weight	170	162	204.8	239.8	264	287	334	401.9	444.4	519.4	535	301.8

Table 10. Length composition (ind.) of *S. mentella* in Russian trawl catches in NAFO Divs. 3LMNO in 2020.

Length, cm	3L			3M			3N			3O			3LMNO		
	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total	Females	Males	Total
12			0		1	1			0			0		1	1
13															
14															
15			0	3	2	5			0			0	3	2	5
16			0	5	7	12		1	1			0	5	8	13
17			0	4	6	10	3		3			0	7	6	13
18		1	1	8	3	11	1	7	8			0	9	11	20
19		3	3	4	10	14	4	7	11			0	8	20	28
20	1	10	11	9	11	20	10	30	40			0	20	51	71
21	3	22	25	8	17	25	50	163	213	1	1	2	62	203	265
22	7	31	38	14	13	27	254	538	792		3	3	275	585	860
23	13	41	54	13	17	30	1231	2269	3500	2	4	6	1259	2331	3590
24	23	98	121	31	13	44	1279	2696	3975	5	14	19	1338	2821	4159
25	57	173	230	38	29	67	1547	2167	3714	10	7	17	1652	2376	4028
26	94	239	333	19	33	52	1782	1464	3246	13	12	25	1908	1748	3656
27	136	300	436	13	93	106	1759	1062	2821	8	1	9	1916	1456	3372
28	198	284	482	42	195	237	1104	506	1610	4		4	1348	985	2333
29	218	247	465	47	106	153	549	217	766	5		5	819	570	1389
30	275	271	546	104	193	297	478	177	655	3	1	4	860	642	1502
31	309	289	598	65	213	278	370	120	490	2		2	746	622	1368
32	371	248	619	119	237	356	293	75	368	1		1	784	560	1344
33	375	149	524	183	229	412	177	36	213	2	2	4	737	416	1153
34	340	74	414	177	127	304	87	7	94	2	1	3	606	209	815
35	244	28	272	218	119	337	31	2	33	2	1	3	495	150	645
36	152	11	163	97	41	138	24	1	25	1		1	274	53	327
37	85	4	89	115	28	143	16	2	18	2	1	3	218	35	253
38	56	3	59	65	17	82	15	2	17	2		2	138	22	160
39	34		34	35	15	50	8	2	10	3	2	5	80	19	99
40	33	1	34	33	3	36	4	1	5	6	3	9	76	8	84
41	27	1	28	22	5	27	4		4	1		1	54	6	60
42	23		23	8	1	9	4	1	5	1		1	36	2	38
43	20		20	6	1	7			0	1		1	27	1	28
44	11	2	13	3		3		1	1			0	14	3	17
45	7	2	9	6		6	1		1	1		1	15	2	17
46	7	1	8	1		1			0			0	8	1	9
47	3		3	2		2			0			0	5		5
48	6		6			0		2	2			0	6	2	8
49	2	1	3			0	1		1			0	3	1	4
50	5	1	6			0			0			0	5	1	6
51	3		3			0			0			0	3		3
52	3		3			0			0			0	3		3
53	4		4			0	1	1	2			0	5	1	6
54	3		3			0	2		2			0	5		5
55			0			0	1		1			0	1		1
56															
57	2		2			0	1		1			0	3		3
58	1		1			0	1	1	2			0	2	1	3
Total	3151	2535	5686	1517	1785	3302	11092	11558	22650	78	53	131	15838	15931	31769
Mean length, cm	32.3	28.8	30.7	33.0	30.7	31.8	26.5	24.9	25.7	30.1	27.0	28.8	28.27	26.19	27.23

Table 11. Age-length composition of *S. mentella* from the Russian trawl catches in NAFO Divs. 3M in 2020.

Length, cm	Age																								Total
	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26		
15	1	3																						4	
16	1	3	4																					8	
17	1	2	4																					7	
18		2	2	1																				5	
19			2																					2	
20			2	1																				3	
21			1	4																				5	
22				1	2																			3	
23					3	1																		4	
25							2																	2	
26						3	1	3																7	
27						1	3	3																7	
28							1	1	3	1														6	
29									1	3														4	
30							1	1	4	1														7	
31								1	3	4	1													9	
32										10	5	2												17	
33										4	7	9	3											23	
34										3	7	10	7											27	
35												6	7	5										18	
36												1	4	7										12	
37									1				3	7	5									16	
38														1		4	3							8	
39													1		2	1	6							10	
40															1	2	3		1					7	
41															1			1	1	1				4	
42																1	1				1			3	
43																		1		2	2			5	
44																					1			1	
45																						1		1	
47																						1	1	2	
Total	3	10	15	7	5	5	8	9	12	26	20	28	25	20	9	8	13	2	2	3	4	2	1	237	
mean length, cm	16	16.3	17.8	20.6	22.6	25.6	26.9	27.6	30.3	31.7	33	33.8	35	36.2	38.2	39.1	39.2	42	40.5	42.3	43	46	47	31.6	
Mean weight	52	53.7	72.6	129	193	233	274.4	303.9	386.3	460.6	495.3	587.3	627.4	705.3	811.7	928.1	917.3	1140	1010	1088	1285	1548	1710	534.4	

Table 12. Length composition (ind.) of *S. marinus* in Russian trawl catches in NAFO Divs. 3MN in 2020.

Length, cm	3M			3N			3MN		
	Females	Males	Total	Females	Males	Total	Females	Males	Total
12		1	1			0		1	1
13									
14									
15									
16		1	1			0		1	1
17									
18									
19									
20									
21		1	1		1	1		2	2
22		1	1			0		1	1
23	1		1			0	1		1
24									
25									
26	1	1	2			0	1	1	2
27		1	1			0		1	1
28	3	5	8			0	3	5	8
29	1		1			0	1		1
30	3	5	8			0	3	5	8
31	5	3	8			0	5	3	8
32	7	1	8			0	7	1	8
33	5	5	10			0	5	5	10
34	2	2	4		1	1	2	3	5
35	5	12	17			0	5	12	17
36	5	3	8		1	1	5	4	9
37	8	6	14		1	1	8	7	15
38	13	13	26	1		1	14	13	27
39	9	13	22	2		2	11	13	24
40	22	15	37			0	22	15	37
41	13	11	24		1	1	13	12	25
42	13	5	18			0	13	5	18
43	17	5	22			0	17	5	22
44	8	3	11	1		1	9	3	12
45	12	5	17	1	1	2	13	6	19
46	21	4	25			0	21	4	25
47	8		8			0	8		8
48	6	2	8	2		2	8	2	10
49	11	2	13		1	1	11	3	14
50	5	7	12			0	5	7	12
51	3		3			0	3		3
52	6	1	7		1	1	6	2	8
53	5	1	6			0	5	1	6
54			0	1		1	1		1
55	3		3	1	1	2	4	1	5
56	1	1	2	1		1	2	1	3
57			0	1	1	2	1	1	2
58			0	1		1	1		1
59			0	3		3	3		3
60			0	1		1	1		1
61			0	2		2	2		2
62									
63									
64									
65									
66			0		1	1		1	1
67									
68		1	1			0		1	1
Total	222	137	359	18	11	29	240	148	388
Mean length, cm	42.0	38.8	40.7	52.2	44.8	49.4	42.72	39.23	41.39

Table 13. Roughhead grenadier (*Macrourus berglax*) length composition (ind.) of the Russian trawl catches in NAFO Divs. 3LMN in 2020.

Length, cm	3L	3M	3N	3LMN
25	1	0	0	1
28	1	1	0	2
31	9	1	0	10
34	11	1	0	12
37	21	2	1	24
40	33	2	0	35
43	22	1	1	24
43	19	0	0	19
49	17	1	0	18
52	12	4	2	18
55	7	0	1	8
58	6	2	0	8
61	2	2	0	4
64	7	1	0	8
67	5	1	1	7
70	0	1	0	1
73	4	0	0	4
Total	177	20	6	203
Mean length, cm	46.3	50.3	52	46.82

Table 14. Roundnose grenadier (*Coryphaenoides rupestris*) length composition (ind.) of the Russian trawl catches in NAFO Div. 3LMN in 2020.

Length, cm	3L	3M	3N	3LMN
25	2	0	0	2
28	2	0	2	4
31	2	0	1	3
34	9	2	0	11
37	4	1	1	6
40	5	4	0	9
43	6	0	0	6
46	3	1	0	4
49	4	2	0	6
52	3	3	0	6
55	2	2	0	4
58	2	2	0	4
61	0	1	0	1
64	2	1	0	3
Total	46	19	4	69
Mean length, cm	42.8	49.2	32	43.96

Table 15. Length composition (ind.) of Yellowtail flounder (*Limanda ferruginea*) in Russian trawl catches in NAFO Divs. 3LN in 2020.

Length, cm	3L	3N	3LN
9	0	1	1
24	0	3	3
25			
26	0	3	3
27	0	6	6
28	1	8	9
29	2	16	18
30	2	31	33
31	0	60	60
32	0	138	138
33	1	211	212
34	2	259	261
35	1	307	308
36	0	212	212
37	1	194	195
38	1	197	198
39	0	174	174
40	0	102	102
41	0	60	60
42	0	29	29
43	0	21	21
44	0	19	19
45	0	12	12
46	0	10	10
47	1	11	12
48	0	4	4
49	0	4	4
50	0	5	5
51	0	4	4
52			
53	0	2	2
54	0	2	2
55	0	4	4
56	0	1	1
57	0	1	1
58	0	1	1
59	0	1	1
60			
61	0	1	1
62			
63			
64			
65			
66	0	1	1
Total	12	2115	2127
Mean length, cm	33.7	36.2	36.14

Table 16. Length composition (ind.) of Thorny skate (*Amblyraja radiata*) in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L	3M	3N	3O	3LMNO
19	1	0	0	0	1
22	0	0	2	0	2
25	0	0	2	0	2
28	1	2	0	0	3
31	1	7	1	0	9
34	0	5	5	1	11
37	4	7	8	0	19
40	6	16	14	4	40
43	4	9	15	3	31
46	4	4	14	1	23
49	2	7	9	1	19
52	6	9	26	3	44
55	5	9	21	0	35
58	9	8	21	2	40
61	22	5	18	1	46
64	8	3	24	2	37
67	4	0	10	0	14
70	9	0	26	3	38
73	5	0	25	0	30
76	4	0	14	1	19
79	2	0	7	3	12
82	1	0	2	0	3
85	1	0	0	0	1
88	0	0	2	0	2
Total	99	91	266	25	481
Mean length, cm	59.3	46.9	59.3	57.1	56.86

Table 17. Length composition (ind.) of Arctic skate (*Amblyraja hyperborea*) in Russian trawl catches in NAFO Div. 3LM in 2020.

Length, cm	3L	3M	3LM
28	1	0	1
31	2	0	2
34	1	0	1
37	5	0	5
40	2	0	2
43	1	0	1
46	1	0	1
49	1	0	1
52	0	1	1
55			
58	0	1	1
61	0	2	2
64			
67	0	2	2
70	0	2	2
73	1	0	1
76	0	2	2
79	0	2	2
82	0	1	1
85	0	3	3
88	0	1	1
91	1	0	1
94	0	2	2
97	0	2	2
100	0	1	1
Total	16	22	38
Mean length, cm	44.2	79.3	64.5

Table 18. Length composition (ind.) of Spinytail skate (*Bathyraja spinicauda*) in Russian trawl catches in NAFO Div. 3LN in 2020.

Length, cm	3L	3N	3LN
10	1	0	1
28	1	0	1
31	1	0	1
34	2	0	2
37			
40	4	0	4
43	5	0	5
46	2	1	3
49	1	0	1
52	5	0	5
55	3	1	4
58	2	1	3
61	1	0	1
64	3	0	3
67	1	0	1
70			
73			
76	1	0	1
79			
82	1	0	1
85			
88	2	0	2
91			
94			
97			
100			
103			
106			
109			
112	1	0	1
115	0	1	1
118	0	1	1
121	0	1	1
124	1	0	1
127			
130			
133			
136	1	0	1
Total	39	6	45
Mean length, cm	57.9	86.5	61.7

Table 19. Length composition (ind.) of Blue wolffish (*Anarhichas latifrons*) in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L	3M	3N	3O	3LMNO
43	1	0	0	0	1
46	1	0	0	0	1
49	2	0	1	0	3
52	3	1	0	0	4
55	5	0	0	0	5
58	8	1	0	0	9
61	5	7	0	5	17
64	4	2	1	1	8
67	5	1	2	0	8
70	3	2	0	0	5
73	1	3	0	0	4
76	3	1	0	0	4
79	2	0	1	0	3
82	1	1	0	0	2
85	2	2	0	0	4
88	0	1	0	0	1
91	1	0	0	0	1
94	1	1	0	0	2
97	1	0	0	0	1
100	1	0	0	0	1
Total	50	23	5	6	84
Mean length, cm	63.7	67.6	63.2	59.5	64.4

Table 20. Length composition (ind.) of Spotted wolffish (*Anarhichas minor*) in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L	3M	3N	3O	3LMNO
40	1	0	0	1	1
43	1	0	0	1	1
46	1	0	0	1	1
49					
52	1	2	0	1	3
55					
58	1	0	1		2
61	1	1	0	2	2
64	1	0	0	1	1
67	1	1	0		2
70	1	1	0	1	2
73	1	3	1	4	5
76	2	0	0	2	2
79	1	3	0	4	5
82	1	2	0	2	3
85					
88	1	3	1	4	5
91	1	1	0	2	2
94	1	0	0		1
97					
100					
103					
106	1	0	0		1
109	0	1	0	1	1
112					
115	0	0	1	1	1
118					
121	1	0	0	1	1
Total	19	18	4	29	42
Mean length, cm	74,0	78,0	84.5	78.2	76.9

Table 21. Length composition (ind.) of Atlantic wolffish (*Anarhichas lupus*) in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L	3M	3N	3LMN
22	1	0	0	1
25	1	0	0	1
28	1	0	0	1
31	2	1	0	3
34	3	0	0	3
37	0	0	1	1
40	2	0	0	2
43	6	0	1	7
46	2	0	1	3
49	7	0	1	8
52	11	0	5	16
55	9	2	4	15
58	7	2	3	12
61	3	1	1	5
64	4	0	2	6
67	1	0	2	3
70	3	1	0	4
73	0	0	3	3
76	0	0	1	1
79				
82	0	0	1	1
85				
88				
91	0	0	1	1
94				
97				
100	0	0	1	1
Total	63	7	28	98
Mean length, cm	51.8	56.4	62.4	55.2

Table 22. Length composition (ind.) of Blue antimora (*Antimora rostrata*) in Russian trawl catches in NAFO Div. 3LMN in 2020.

Length, cm	3L	3M	3N	3LMN
27	2	0		2
29				
31	9	0		9
32	14	3		17
34	11	3		14
36	15	1		16
38	15	4		19
40	6	3		9
44	4	3	2	9
46	6	4		10
48	6	3	1	10
50	4	0		4
52	4	5		9
54	3	1		4
56	2	0		2
58	0	4		4
60	1	2		3
62	0	1		1
64	0	1		1
Total	102	38	3	143
Mean length, cm	39.9	46.5	44.8	41.8

Table 23. Length composition (ind.) of Black dogfish (*Centroscyllium fabricii*) in Russian trawl catches in NAFO Div. 3LMN in 2020.

Length, cm	3L	3M	3N	3LMN
16	2			2
40	1			1
43	0		1	1
46	1		1	2
49	3			3
52	1			1
55	0	1		1
58	2		1	3
61	0	1		1
64	1			1
67	1	1		2
70	3			3
Total	15	3	3	21
Mean length, cm	52.6	62,0	5,0	53.6

Table 24. Length composition (ind.) of Threebeard rockling (*Gaidropsarus ensis*) in Russian trawl catches in NAFO Div. 3LMN in 2020.

Length, cm	3L	3M	3LM
25	2	2	4
28	6	2	8
31	25	5	30
34	24	8	32
37	27	12	39
40	48	3	51
43	58	13	71
46	29	5	34
49	8		8
52	3		3
55			
58	1		1
Total	231	50	281
Mean length, cm	40.7	38.7	40.3

Table 25. Length composition (ind.) of Red hake (*Urophycis chuss*) in Russian trawl catches in NAFO Div. 3LM in 2020.

Length, cm	3L	3M	3LM
31	3	1	4
34	5		5
37	27	1	28
40	27	1	28
43	42	1	43
46	25		25
49	2		2
Total	131	4	135
Mean length, cm	42.2	38.8	42.1

Table 26. Length composition (ind.) of White hake in Russian trawl catches in NAFO Div. 3LM in 2020.

Length, cm	3N	3O	3NO
31	1		1
34	1		1
37	3		3
40	10	1	11
43	13		13
46	23		23
49	25	1	26
52	31	2	33
55	23	2	25
58	11	5	16
61	11	2	13
64	7	2	9
67	5	2	7
70	2		2
73	1		1
76		1	1
79			
82	2		2
85	1		1
88	1		1
91	1		1
94	2		2
97		1	1
100			
103		1	1
Total	174	20	194
Mean length, cm	54,0	63.7	55,0

Table 27. Length composition (ind.) of *Lycodes reticulatus* in Russian trawl catches in NAFO Div. 3LMN in 2020.

Length, cm	3L	3M	3N	3LMN
21	1			1
23				
25	6		1	7
27	9		1	10
29	6		1	7
31	12			12
33	18		1	19
35	23	1	1	25
37	8			8
39	12		2	14
41	12		1	13
43	7		1	8
45	5			5
47	8		1	9
49	4			4
51	6			6
53	5			5
55	1			1
57	1			1
Total	144	1	10	155
Mean length, cm	38,0	35.5	36.3	37.9

Table 28. Length composition (ind.) of Greater eelpout (*Lycodes esmarkii*) in Russian trawl catches in NAFO Div. 3LMO in 2020.

Length, cm	3L	3M	3O	3LMO
31	1			1
33	2			2
35	1			1
37	1			1
39				
41				
43	1	2		3
45	1			1
47		1		1
49		2	1	3
51	2	1		3
53			1	1
55		1		1
57			1	1
59				
61				
63	1			1
Total	10	7	3	20
Mean length, cm	42.7	48.64	53.5	46.4

Table 29. Length composition (ind.) of *Nezumia* in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L	3M	3N	3O	3LMNO
18		0		1	1
19		0		1	1
20					
21		0		2	2
22		0		3	3
23		0		2	2
24		0		1	1
25		0		2	2
26		1		3	4
27		0		1	1
28		4		1	5
29		0	1	1	2
30		1		2	3
31	1			0	1
32	1			0	1
33					
34					
35	1			0	1
36	1			0	1
37	1			0	1
Total	5	6	1	20	32
Mean length, cm	34.2	28.5	29.0	24.4	26.7

Table 30. Length composition (ind.) of Atlantic halibut (*Hippoglossus hippoglossus*) in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L	3M	3N	3O	3LMNO
55		1	2	1	4
58			1	3	4
61			8	1	9
64			6	1	7
67			16	0	16
70			16	5	21
73	2		23	2	27
76	5		24	1	30
79	2	1	18	4	25
82	2		30	1	33
85	3		21	0	24
88	2		19	2	23
91	4	1	19	3	27
94	1		15	1	17
97	4		15	0	19
100	2		11	0	13
103	1		10	1	12
106	0		7	1	8
109	0		5	0	5
112	1		6	0	7
115	0		9	0	9
118	0		3	0	3
121	0		5	0	5
124	1		1	0	2
127	0		1	0	1
130	1		2	1	4
133	1		2	0	3
136	0		1	0	1
139					
142	0		1	0	1
145					
148					
151	0		1	0	1
154					
157					
160	0		1	0	1
163					
166					
169					
172	0		1	0	1
175					
178					
181					
184					
187	0		1	0	1
190	0		0	1	1
193	1		0	0	1
196					
199					
202					
205					
208	0		1	0	1
Total	33	3	302	29	367
Mean length, cm	95.5	76	89.4	83.6	89.5

Table 31. Length composition (ind.) of American plaice in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L	3M	3N	3O	3LMNO
21	0	0	1	0	1
23	0	0	3	0	3
25	0	0	5	0	5
27	2	0	14	0	16
29	12	1	40	4	57
31	16	0	124	3	143
33	21	3	311	5	340
35	15	8	275	16	314
37	6	10	140	13	169
39	3	17	152	16	188
41	7	9	230	27	273
43	13	2	219	10	244
45	3	12	156	10	181
47	7	1	65	6	79
49	2	5	26	10	43
51	1	9	8	6	24
53	0	3	7	2	12
55	0	2	4	0	6
57	0	3	6	0	9
59	0	1	3	2	6
61	0	0	2	1	3
63	0	0	3	0	3
65	0	0	1	0	1
67	0	1	1	0	2
Total	108	87	1796	131	2122
Mean length, cm	36.7	43.6	38.8	41.6	39.1

Table 32. Length composition (ind.) of Witch flounder in Russian trawl catches in NAFO Div. 3LMNO in 2020.

Length, cm	3L	3M	3N	3O	3LMNO
21	0	0	0	1	1
23					
25	0	1	1	1	3
27	2	0	3	0	5
29	0	3	4	3	10
31	1	4	13	15	33
33	1	3	60	34	98
35	0	5	119	96	220
37	3	7	124	128	262
39	4	39	115	116	274
41	3	14	160	174	351
43	4	17	156	95	272
45	9	21	127	57	214
47	9	10	101	16	136
49	3	7	42	21	73
51	1	3	17	10	31
53	0	3	4	2	9
55	0	2	2	2	6
Total	40	139	1048	771	1998
Mean length, cm	43.2	42,0	41.4	40.2	41.0

Table 33. Occurrences of VME indicator species in the NAFO Regulatory Area in 2020.

Trawl coordinates				Trawl depth, m	Species name	Number	Length, cm	Weight, kg
Start		Finish						
N	W	N	W					
42.335	-49.307	43.318	-49.330	400-352	Geodia spp.	3	5-7	0.105
					Polymastia spp.	2	4-5	0.080
43.268	-49.395	43.327	-49.498	350-317	Polymastia spp.	3	5-7	0.110
					Geodia spp.	2	5	0.090
43.263	-49.353	43.323	-49.353	330-310	Anthoptilum	1	20	0.090
43.285	-49.482	43.333	-49.318	220-200	Polymastia spp.	2	4-7	0.060
43.413	-49.353	43.317	-49.333	250-330	Anthoptilum	1	30	0.110
44.033	-49.050	44.050	-49.067	289-238	Phakellia spp.	1	39,5	0.335
44.050	-49.067	44.067	-49.067	232-291	Phakellia spp.	1	28,5	0.186
44.067	-49.067	44.067	-49.050	237-247	Phakellia spp.	1	9,5	0.016
45.517	-48.433	45.450	-48.517	295-300	Phakellia spp.	1	16,5	0.025
45.517	-48.417	45.450	-48.517	315-300	Phakellia spp.	1	10,5	0.018
44.050	-49.067	44.067	-49.050	251-247	Phakellia spp.	1	7,5	0.009
48.255	-45.270	48.233	-45.360	500-510	Primnoa resedaeformis	1	40	0.250
43.262	-51.437	43.325	-51.567	305-350	Anthoptilum sp.	1	35	0.030
43.302	-51.548	43.297	-51.513	420-470	Anthoptilum sp.	1	35	0.030
43.097	-51.322	43.130	-51.185	480-700	Anthoptilum sp.	5	25-35	0.125
43.333	-51.658	43.285	-51.500	450-500	Anthoptilum sp.	2	25-30	0.055
46.490	-45.843	46.367	-45.778	440-500	Keratoisis omata	1	30	0.070
46.730	-46.767	46.337	-46.717	1190	Anthoptilum grandiflorum	1	31	0.020
46.787	-46.780	46.233	-46.743	1248	Halipterus finmarchica	1	30	0.016
46.787	-46.755	46.278	-46.748	1170	Anthoptilum grandiflorum	1	27	0.013
46.765	-46.758	46.290	-46.758	1170	Halipterus finmarchica	1	62	0.019
					Anthoptilum grandiflorum	1	15	0.009
46.800	-46.780	47.290	-46.758	1235	Anthoptilum grandiflorum	1	29	0.013
46.757	-46.777	46.238	-46.743	1220	Anthoptilum grandiflorum	2	19-20	0.014
46.803	-46.780	46.317	-46.768	1210	Anthoptilum grandiflorum	3	13-32	0.029
					Funiculina quadrangularis	1	41	0.006
46.807	-46.797	46.280	-46.775	1310	Anthoptilum grandiflorum	17	26-52	0.144
					Funiculina quadrangularis	1	50	0.010
					Distichoptilum gracile	1	38	0.005
46.847	-46.745	46.250	-46.750	1300	Halipterus finmarchica	1	29	0.005
					Anthoptilum grandiflorum	34	19-44	0.233
43.318	-49.310	43.355	-49.300	410	Thenea	1	6	0.058
47.520	-47.408	47.812	-47.505	300	Stryphnus fortis	1	9	0.080
46.307	-47.422	46.460	-47.332	290	Stryphnus fortis	1	7	0.050
43.428	-49.270	43.422	-49.250	405-475	Nephtheidae	1	6	0.010
43.000	-49.697	43.030	-49.713	368-410	Nephtheidae	11	5-8	0.150
43.323	-49.315	43.433	-49.252	395-444	Nephtheidae	32	5-8	0.450
46.062	-46.520	46.153	-46.513	500-504	Paragorgia arborea	куски	10-53	5.000
46.742	-46.513	46.800	-46.512	520-565	Paragorgia arborea	куски	10-37	2.000
43.433	-49.263	43.375	-49.312	380-426	Nephtheidae	15	5-8	0.200
43.280	-49.397	43.263	-49.368	305-372	Nephtheidae	11	5-7	0.150
43.280	-49.397	43.310	-49.473	256-376	Nephtheidae	7	4-7	0.120
43.267	-49.398	43.300	-49.445	330-336	Nephtheidae	10	5-8	0.150
43.280	-49.398	43.290	-49.428	323-375	Nephtheidae	3	5-7	0.050
43.293	-49.430	43.302	-49.443	322-348	Nephtheidae	14	5-9	0.200

Trawl coordinates				Trawl depth, m	Species name	Number	Length, cm	Weight, kg
Start		Finish						
N	W	N	W					
43.170	-49.553	43.063	-49.592	324-685	Nephtheidae	5	5-7	0.050
43.085	-49.592	43.130	-49.572	290-370	Nephtheidae	8	5-7	0.120
					Pennatula	1	50	0.040
47.968	-44.473	47.968	-44.542	409-450	Duva florida	1	-	0.105
					Primnoa resedaeformis	2	-	0.300
46.433	-45.280	46.470	-45.188	392-544	Primnoa resedaeformis	2	-	0.350
47.312	-45.257	47.265	-45.465	207-214	Primnoa resedaeformis	1	-	0.150

Table 34. Marine mammals recording in the NAFO Regulatory Area in 2020.

Date	Latitude	Longitude	Species	Number	Notes
24.01	43 09N	51 21W	Dolphin	4	1.5 miles northwest
17.02	48 10N	45 59W	Sperm whale	3	300 m distance. Hauling a trawl with halibut
17.02	43 30.4N	50 13.8W	Harp seal	1	Caught by trawl
21.02	43 23.5N	50 35.4W	Sperm whale	1	Fountain 0.8 miles on ship's heading
21.02	46 48.4N	46 46.2W	Sperm whale	1	Trawl hauling
22.02	46 45.5N	46 41.0W	Sperm whale	2	Trawl hauling
29.02	46 50.4N	46 45.2W	Sperm whale	2	Trawl hauling
01.03	46 37.8N	46 36.1W	Sperm whale	2	Trawl hauling
06.03	44 04.3N	48 58.2W	Harp seal	1	Caught by trawl
07.03	46 25.6N	46 45.1W	Harp seal	1	Trawl hauling
11.03	48 10.7N	47 04.0W	White-beaked dolphin	3	next to the vessel when hauling a trawl
12.03	47 26N	44 24W	Sperm whale	1	1000 m 3 fountains
12.03	47 25N	44 34W	whale	1	
17.03	47 18N	45 16W	whale	1	
17.03	47 23N	44 58W	whale	2	
19.03	46 26.6N	47 18.2W	dolphin	50	stocks of 3-4 individuals in each in 0.5 miles from the vessel
31.03	46 13.9N	47 27.3W	Sperm whale	1	1 kbt aft
05.04	48 20.6N	46 16.6W	Sperm whale	1	0,5 kbt aft
05.04	48 24.7N	46 15.7W	Bottle-nosed whale	6	Along the starboard side of the vessel
06.04	48 12.9N	46 31.2W	Sperm whale	3	1 kbt aft
06.04	48 18.5N	46 30.2W	Sperm whale	3	Trawl hauling
06.04	48 18.5N	46 30.2W	Bottle-nosed whale	1	Trawl hauling
08.04	48 41.6N	44 53.6W	Sperm whale	7	Trawl hauling
08.04	43 27.3N	50 22.5W	dolphin	6	Observed at a distance of 200-300 m
12.04	46 20.4N	46 45.1W	Sperm whale	3	Behind the vessel when hauling a trawl
13.04	46 19.1N	46 44.6W	Sperm whale	3	About 250 m distance
17.04	46 23.8N	46 45.6W	Sperm whale	1	Behind the vessel at a distance of 200 m
21.04	46 37.7N	46 47.5W	Sperm whale	3	Next to the vessel at a distance of up to 200 m
24.04	46 19.2N	46 46.1W	Fin whale	2	Behind the vessel at a distance of up to 200 m
24.04	46 28.3N	46 45.6W	Sperm whale	1	Behind the vessel at a distance of 300 m
27.04	46 36.8N	46 47.7W	Sperm whale	1	On the right and behind at a distance of 250-300 m
30.04	46 15.3N	46 44.9W	Sperm whale	2	Trawl setting
01.05	46 39.9N	46 46.6W	Sperm whale	1	At a distance of 250 m from the vessel
02.05	46 20.9N	46 44.4W	Sperm whale	1	At a distance of up to 100 m from the vessel
10.06	46 15.0N	46 45.0W	Sperm whale	5	Trawl hauling

Date	Latitude	Longitude	Species	Number	Notes
22.06	46 15.0N	46 45.0W	Killer whale	1	When hauling the trawl to the deck
22.06	43 56.9N	49 00.3W	Harp seal	1	Caught by trawl
28.06	43 31.0N	49 12.9W	dolphin	10	To the right of the vessel at a distance of 80-200 m
28.06	43 24.4N	49 20.1W	whale	2	A fountain was observed at a distance of 1.2-1.5 km
28.06	43 49.2N	48 59.5W	Harp seal	1	Observed long the starboard side of the vessel when hauling a trawl
29.06	43 18.2N	49 19.7W	Common dolphin	4	Observed to the right of the vessel
30.06	43 21.2N	49 20.1W	Common dolphin	2	About 50-100 m distance
04.07	43 24.6N	49 18.2W	Common dolphin	6	To the right of the vessel at a distance of up to 100 m
05.07	44 48.0N	37 09.9W	Hump-backed whale	3	To the right of the vessel at a distance of more than 500 m
06.07	43 00.8N	49 41.1W	Common dolphin	1	Front right side
09.07	43 01.4N	49 41.4W	Common dolphin	8	In front of the vessel under the bow
09.07	47 30.0N	47 20.9W	Hump-backed whale	2	At a distance of 400-500 m
10.07	47 30.0N	47 20.9W	Bottle-nosed whale	3	At a distance of about 150 m
11.07	47 30.3N	47 24.4W	Hump-backed whale	1	At a distance of 250-300 m from a vessel board
14.07	47 37.7N	47 26.7W	whale	2	To the right behind the vessel in about 300 m
17.07	46 20.4N	47 23.5W	whale	1	A fountain was observed at a distance of 400 m
18.07	46 45.7N	47 18.9W	Porpoise	7	To the left behind the vessel in about 150 m
19.07	42 57.4N	49 43.7W	Common dolphin	4	Vessel goes with a trawl
19.07	43 49.9N	49 00.8W	Fin whale	3	Fountains on the right aft
21.07	43 00.3N	50 55.8W	Common dolphin	15	The group proceeded in 200 m
23.07	43 20.9N	49 17.4W	Common dolphin	2	At the very side of the ship
23.07	43 28.3N	49 23.2W	Common dolphin	16	About 300 m 2 groups of 6-8 specimens in each
23.07	43 29.4N	49 21.7W	Common dolphin	10	Followed by a group at a distance of about 300 m
23.07	43 27.8N	49 19.0W	Common dolphin	8	Aft at a distance of 200-300 m
24.07	43 57.8N	49 01.7W	Common dolphin	4	
25.07	48 11.3N	46 32.2W	Sperm whale	1	100-150 m distance. Hauling a trawl
28.07	48 21.5N	46 13.9W	Sperm whale	2	Parallel course 200 m distance
13.08	48 28.6N	45 59.3W	Sperm whale	5	Behind the vessel while halibut trawling
16.08	48 28.6N	45 59.3W	Bottle-nosed whale	4	Followed the vessel with sperm whales
17.08	48 17.4N	46 23.9W	Sperm whale	2	150 m away from vessel
18.08	48 46.3N	45 21.8W	Bottle-nosed whale	1	Trawl hauling
20.08	46 20.4N	47 19.1W	Sperm whale	3	Distance 250-350 m behind the vessel
20.08	47 00N	48 00W	Sperm whale	10	Next to the vessel when hauling a trawl in any weather
20.08	47 00N	48 00W	Harp seal	4	Next to the vessel when hauling a trawl
21.08	47 00N	47 00W	Sperm whale	7	Next to the vessel when hauling a trawl

Table 35. Marine mammals total numbers in the NAFO Regulatory Area in 2020.

Species	Number	Occurrences	% ratio of the total number
White-beaked dolphin	3	1	1.1
Bottle-nosed whale	15	5	5.3
Hump-backed whale	6	3	2.1
Harp seal	9	6	3.2
Sperm whale	78	29	27.5
Killer whale	1	1	0.3
Porpoise	7	1	2.5
Common dolphin	80	12	28.3
Fin whale	5	2	1.8
Dolphin	70	4	24.7
Whale	9	6	3.2
Total	283	70	100