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PORTUGUESE RESEARCH REPORT FOR 2018

by

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A. Status of the fisheries

In 2018, the Portuguese provisional nominal catches proceeding from NAFO Regulatory Sub Area 3 reached 18 120 ton (Table 1-A). Nominal catches increased continuously from 2000 to 2003, when they peaked at 22 700 ton, but declined sharply afterwards (Table I-B); during 2004-2008 catches stabilized between 11 700 and 13 500 ton. Since then catches increased been between 15 500 and 16 500 ton from 2009 to 2012, and from 16 900 to 19 500 ton in recent years.

The 2018 fishing effort (Table II) and the catches are provisional (data extracted from NAFO Database STATLANT 21A on 17 May 2019). In 2018, 8 trawlers composed the Portuguese fleet that operated in the NAFO area.

In Div 3M (Flemish Cap), cod and redfish are the most important fisheries and represents, each species, now 47% of the total catch in this division and around 26% of the Portuguese catches in all Sub Area 3.

Catches of redfish tripled its value from 2013 (571 ton) to 2015-2017 (around 1600 ton) in Div. 3L. In Div. 3N catches oscillated between 250 and 400 ton in 2015-2016, but more than doubled in 2017 (from 412 to 1023 ton), representing now the most important fishery in Div. 3N. In 2018 redfish catches in Div. 3L and 3N were 2 800 ton. In Div. 3M, from 2015 to 2016, the redfish catches increased around 1 400 ton and remains stable at the same level in 2017 (around 3600 ton), in 2018 catches increase again to 4 700 ton representing now 47% of the total catches in this division and 26% of the Portuguese catches in all Sub Area 3. In Div. 3O, catches of redfish remained relatively stable in recent years and represents about 90% of the total catches in this division and around 16% of the Portuguese catches in all Sub Area 3. Redfish remains by far the most important species in the Portuguese commercial catches from Sub Area 3, representing in recent years around 50% of the overall catch.

The Greenland halibut catches increased in 2017 and 2018 (1 900 and 2 000 ton respectively) after a continuous reduction since 2013. Since 2015, this fishery has been developed in the North (mainly in division 3L). Greenland halibut catches in divisions 3N and 3O became residual.

Roughhead grenadier catches, in recent years, are mainly by-catch of the Greenland halibut fishery and have been decreasing year by year and are residual now. The witch flounder catches, that in 2015 decreased to residual values (55 ton in all Subarea 3), reached in 2016-2017 an average of 250 ton (due the increase of 120 ton in both Div. 3M and 3O), but in 2018 decreased to 118 ton captured mainly in Div. 3M and 3O. The yellowtail catch in Div. 3N and 3O reached 280 ton in 2017 (13 ton in 2016) and decrease again to 31 ton in 2018. Skates catches in Subarea 3 remains stable at the level of 370 ton until 2016, but decrease in 2017 to 246 ton and in

2018 to only 70 ton. The 3O division catches of silver hake, after almost doubled in 2016 (returning to the values of 2014 - at the level of 400 ton), are in 2017-2018 around 140 ton. The by-catch of haddock in Div. 3M, that reached 108 ton in 2016, are now residual, both in this division and in all Sub Area 3. The catch of white hake in Div. 3O decrease from 109 ton in 2016 to 62 ton in 2017 and in 2018 to only 69 ton. The shrimp fishery in Div. 3L, that in 2009 its catches reached 20% of the total catch in this division, declined significantly in 2010. Portugal stopped fishing shrimp in 2013. The catches of other species remained more or less stable in all divisions.

Greenland halibut together with redfish continues to be the bulk of the catch on Div. 3L, catches in this Div. represents 17% of the total Portuguese catches. The catch in Div. 3M (mainly cod and redfish) continue in 2018, like in most 5 recent years, to represent around 50% of the total catch. Div. 3M is, at present, the most important ground for the Portuguese NAFO fishery. In 2018, redfish is the most representative species (around 90%) in the total catches of Div. 3N and 3O. Catches in Div. 3N and 3O represents 28% of the total Portuguese catches.

B. Portuguese Annual Sampling Program

1. Catch and effort sampling.

Effort and CPUE data for 2018 Portuguese trawl fishery on the NAFO Regulatory Area were obtained through the revision of skipper logbooks from three trawlers, kindly supplied by its owners. All the information (round weight of the catch by species, fishing effort, positions and depths) has been recorded on a tow-by-tow basis. The vessel conversion factors were used to convert its processed landings in catches. Effort data in days and hours were supplied by the Portuguese administration, but since 2015 the fishing effort values are available only in days. The update for the past years was extracted from Database STATLANT 21B, on May 21, 2017 (Table II-A/B).

The daily catch and effort data from the logbook were used to estimate the directed effort and CPUE for each of the target species/stock, as well as the main by-catch species and depth range of the different fisheries, on a monthly basis. From the data available, the majority of the fishing effort was directed towards cod, redfish and Greenland halibut. Data regarding directed effort and catch rates of the Greenland halibut fishery are presented in Table III to IV-B and Fig. 1.

The Greenland halibut CPUE series was updated with the 2018 observed CPUEs. The additive model (Ávila de Melo and Alpoim, 1995), was upgraded in 1998 (Alpoim *et al*., 1998) and used, like in previous years, to standardize the observed CPUEs, but excluding the vessel factor because the sampling program in recent years was carried out on vessels that were not sampled before. If the vessel factor is applied, these new vessels will increased a lot the noised. Because they are the only vessels sampled in the recent years, we assumed that all vessels belong to the same category what is realistic. From January 1988 till April 1995, each monthly observed CPUE of this series was previously corrected for 130mm mesh size (Ávila de Melo and Alpoim, 1996). In this analysis, any observation corresponding to a month and a trawler with less than 10 hours of directed effort was rejected. The CPUEs are presented in Tables IV and Fig. 1, with the associated standard errors (+/- 2 standard errors in the Figures) and coefficients of variation.

1.1. Comments on catch and effort data (based on the vessels sampled)

1.1.1. Greenland halibut in Div. 3L, 3M, 3N and 3O

In Div. 3L catch rates declined prior to the boom of the deep-water fishery (Table IV-A, Fig. 1). However, it is from 1990 to 1991, i.e. from the first to the second year of this new fishery in the Regulatory Area, that CPUEs fell by half. Between 1991 and 1994 catch rates remained stable at a low level. Since then, catch rates gradually increased, reaching an upper level in 1999-2000. Catch rates declined in 2001 and remained stable at that lower level in 2002 and 2003. In 2004 the catch rates decline again, reaching the lowest value since 1994. However, after 2004, the Greenland halibut catch rates recovered continuously and, despite the high variability from 2006 to 2018, the catch rates reached, in this period, the highest values observed of the time series (0.532 ton/h in 2018).

Div. 3M catch rates, despite more noisy, follows the same trend as the ones in Div. 3L.

For all Div. 3LMNO combined (Table IV-A, Fig. 1) the observed catch rates series follows the Div. 3L pattern, since this is the division of Sub Area 3 with the highest concentration of Greenland halibut fishing effort.

2. Biological Sampling

In 2018, biological sampling was obtained from three stern trawlers fishing in Div. 3L, 3M, 3N and 3O during all the year. Apart from species under moratoria, a priority to be sampled whenever they appear in the hauls, biological sampling was conducted for the two most abundant species in each haul, following the NAFO sampling recommendations.

Redfish (*S. mentella*) was sampled in Div. 3L, 3M, 3N and 3O (Tab. V). American plaice was sampled in Div. 3M, 3N and 3O. Greenland halibut, redfish (*S, marinus*) and roughhead grenadier were sampled in Div. 3L and 3M. Cod was sampled in Div. 3M and 3N. Witch flounder and thorny skate were sampled only in Div. 3M.

Since 1996, all commercial information is representative of the catch as a whole, although sampling continues to be carried out by sex, with the exception of cod, white hake, Atlantic halibut and haddock. Mean weight and mean weight in the catch are derived from the length-weight relationships calculated from the commercial sampling in 2018 and are presented in Table VI. However, for species/stock with a low sampling level in 2018, the length-weight relationships calculated in previous years were used.

2.1. Catch and by-catch composition of the 2018 trawl fishery (130mm codend mesh size).

The regular mesh size in the codend used by the monitored trawlers fishing groundfish was the 130mm and, when the mesh size is not mentioned it, means that the sample refers to the 130mm mesh size. However, in 2018, no sets were made with the 200 mm mesh size in the codend by the monitored vessels.

2.1.1. Cod Div. 3M

Information on length composition of the cod trawl catch in Div. 3M is available from January to October (Table VII, Fig. 2), from 133 m to 686 m depth.

Lengths between 57 cm and 69 cm dominated the catch, with a modal class at 63 cm (mean length and weight of 63.9 cm and 2206 g).

2.1.2. Cod Div. 3N

Information on length composition of the cod trawl bycatch in Div. 3N is available only for October (Table VIII, Fig. 3), from 173 m to 341 m depth.

Despite the small sampling (6 samples, 247 fish measured) we can conclude that lengths between 48 cm and 57 cm dominated the catch, with a clear modal class at 51 cm (mean length and weight of 58.5 cm and 2286 g).

2.1.3. Redfish (*S. mentella*) **Div. 3L**

Information on length composition of the redfish (*S. mentella)* trawl catches in Div. 3L is available for June and from August to October (Table IX, Fig. 4), from 200 m to 382 m depth.

Lengths between 23 cm and 27 cm dominated the catch, with a modal class at 24 cm (mean length and weight of 26 cm and 261 g).

2.1.4. Redfish (*S. mentella*) **Div. 3M**

Information on length composition of the redfish (*S. mentella)* trawl catches in Div. 3M is available from January to July, except for June (Table X, Fig. 5), from 225 m to 615 m depth.

Lengths between 24 cm and 32 cm dominated the catch, with no modal class (mean length and weight of 28.8 cm and 282 g).

2.1.5. Redfish (*S. mentella*) **Div. 3N**

Information on length composition of the redfish (*S. mentella)* trawl catches in Div. 3N is available for April, September and October (Table XI, Fig. 6), from 173 m to 552 m depth.

Lengths between 21 cm and 26 cm dominated the catch, with a clear modal class at 22 cm (mean length and weight of 24.1 cm and 207 g).

2.1.6. Redfish (*S. mentella*) **Div. 3O**

Information on length composition of the redfish (*S. mentella)* trawl catches in Div. 3O is available from April to June and for September and October (Table XII, Fig. 7), from 214 m to 606 m depth.

Lengths between 19 cm and 23 cm dominated the catches, with a mode at 20 cm (mean length and weight of 23.3 cm and 172 g).

2.1.7. Redfish (*S. marinus*) **Div. 3L**

Information on length composition of the redfish (*S. marinus)* trawl catches in Div. 3L is available for July and August (Table XIII, Fig. 8), from 250 m to 375 m depth.

Lengths between 27 cm and 32 cm dominated the catches, with a modal class at 29 cm (mean length and weight of 30.3 cm and 385 g).

2.1.8. Redfish (*S. marinus*) **Div. 3M**

Information on length composition of the redfish (*S. marinus)* trawl catches in Div. 3M is available from January to March and for August (Table XIV, Fig. 9), from 256 m to 663 m depth.

Lengths between 29 cm and 33 cm dominated the catches, with a modal class between 29 cm and 31 cm (mean length and weight of 33.3 cm and 513 g).

2.1.9. American plaice Div. 3M

Information on length composition of the American plaice by-catch in Div. 3M is available for July and August (Table XV, Fig. 10), from 139 m to 218 m depth.

Lengths between 44 and 52 cm dominated the catch (mean length and weight of 47.5 cm and 1088 g).

2.1.10. American plaice Div. 3N

Information on length composition of the American plaice by-catch in Div. 3N is available only for October (Table XVI, Fig. 11), from 173 m to 293 m depth.

Despite the small sampling (5 samples, 192 fish measured), we can conclude that the lengths between 44 and 52 cm dominated the catch, with a modal class at 48 cm (mean length and weight of 48.8 cm and 1077 g).

2.1.11. American plaice Div. 3O

Information on length composition of the American plaice by-catch in Div. 3O is available only for April (Table XVII, Fig. 12), from 412 m to 437 m depth.

Because small sampling (2 samples, 75 fish measured), we not conclude nothing about length distribution (mean length and weight of 41.1 cm and 584 g).

2.1.12. Greenland halibut Div. 3L

Information on length composition of the Greenland halibut catches in Div. 3L is available from February to October, except for April e July (Table XVIII, Fig. 13), from 117 m to 1991 m depth.

Lengths between 42 cm and 54 cm dominated the catch, with a modal class at 50 cm (mean length and weight of 49.3cm and 935 g).

2.1.13. Greenland halibut Div. 3M

Information on length composition of the Greenland halibut catches in Div. 3M is available from June to October (Table XIX, Fig. 14), from 900 m to 1152 m depth.

Lengths between 42 cm and 56 cm dominated the catch, with two modal classes at 46 and 54 cm (mean length and weight of 49.5 cm and 922 g).

2.1.14. Roughhead grenadier Div. 3L

Information on length composition of the roughhead grenadier catches in Div. 3L is available for May and August (Table XX, Fig. 15), from 997 m to 1277 m depth.

Anal fin lengths between 20 cm and 28 cm dominated the catch, with a clear modal class at 21 cm (mean length and weight of 24.4 cm and 1274 g).

2.1.15. Roughhead grenadier Div. 3M

Information on length composition of the roughhead grenadier catches in Div. 3M is available for July and August (Table XXI, Fig. 16), from 921 m to 1117 m depth.

Anal fin lengths between 18 cm and 21 cm and at 23 cm and 24 cm dominated the catch, with a modal class at 20 cm (mean length and weight of 23.5 cm and 1169 g).

2.1.16. Witch flounder Div. 3M

Information on length composition of the witch flounder by-catch in Div. 3M is available only for February (Table XXII, Fig. 17), from 536 m to 561 m depth.

Because the small sampling (1 samples, 49 fish measured) we not take any conclusion about the dominated lengths in the catch (mean length and weight of 40.8 cm and 689 g).

2.1.17. Thorny skate Div. 3M

Information on length composition of the thorny skate catches in Div. 3M is available only for January (Table XXIII, Fig. 18), from 445 m to 478 m depth.

Because the small sampling (1 samples, 42 fish measured) we not take any conclusion about the dominated lengths in the catch (mean length and weight of 70.3 cm and 4113 g).

3. Acknowledgements

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4. References

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TABLE I-A: PORTUGUESE NOMINAL TRAWL CATCHES (mt) IN NAFO AREA, 2018
(data extracted from NAFO Database Statlant 21A on 17 May 2019).

	DIVISION				TOTAL
SPECIES	3L	3M	3N	3O	2017
Cod	52	4690	26	68	4836
Redfish	1192	4683	1592	2945	10412
American plaice	18	104	20	64	206
Yellowtail flounder			14	17	31
Witch flounder	9	70	6	33	118
Greenland halibut	1719	310	43		2072
Atlantic halibut	29	40	38	47	154
Roughhead grenadier	22	3	6		31
Roundnose grenadier	4	4	1		9
Anarhichas spp.		3			3
Hadocck				2	2
Pollock					
White hake			1	27	28
Red hake					
Silver Hake			1	134	135
Capelin					
Skates	15	22	16	17	70
Monkfish				3	3
Squid		3		7	10
Shrimp					
Unidentified					
TOTAL	3060	9932	1764	3364	18120

TABLE I - B: PORTUGUESE NOMINAL TRAWL CATCHES (mt) IN NAFO DIV. 3LMNO (data extracted from NAFO Database Statlant 21A on 17 May 2019).

SPECIES / YEAR	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Cod	5473	5699	4889	5504	4814	2946	2832	1528	1003	434	255	177	105	281	602
Redfish	10300	9093	8800	9509	9504	8953	9983	10904	9361	7768	7758	9155	8832	6637	9219
American plaice	359	322	291	275	407	468	198	160	298	355	443	376	371	517	748
Yellowtail flounder	280	13	35	31	94	267	71	27	71	145		134	188	68	287
Witch flounder	287	206	55	186	128	108	128	71	131	221	124	141	150	591	485
Greenland halibut	1920	1583	1722	1938	2124	2051	2493	2257	2075	1976	1873	2326	2256	1888	4369
Atlantic halibut	296	207	200	133	96	70	46	56	469	23	32	43	20	59	89
Roughhead grenadier	27	41	90	293	88	488	251	83	266	50	34	77	262	381	302
Roundnose grenadier	1	19	13	42	10	39	48	27	198	29	37	54			
Anarhichas spp.	2	5	5	4	4	6	18	13	41	25	16	28	32	45	112
Hadocck	15	153	30	181	78	64	13	1	3	1	2		6	23	141
Pollock					1									4	114
White hake	69	109	133	109	81	19	25	17	24	55	62	102	157	1266	4090
Red hake			2		1	1	69	1		3	2	4	18	13	2
Silver hake	149	392	266	468	30	35								6	
Capelin															
Skates	246	359	360	452	496	427	435	304	1045	1252	1058	1003	576	1550	1942
Monkfish	12	20	10	24	7	4	1	11	3	13	35	34	6	73	165
Squid	12						1	2	29	5	2	17		11	
Shrimp						5		15	332					50	
Unidentified					110	279	68	11	77	2	1	216	6	15	13
TOTAL	19448	18221	16901	19149	18073	16230	16680	15488	15426	12357	11734	13887	12985	13478	22680

TABLE I - B: cont.

SPECIES / YEAR	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988
Cod	488	361	192	325	550	1545	1316	1670	2640	3657	5986	13362	15142	24130	12963
Redfish	6346	5561	5678	6082	2370	1126	2152	3297	8614	9831	6584	12165	17803	19032	19137
American plaice	634	636	400	718	361	389	289	170	346	323	453	1183	715	1821	1813
Yellowtail flounder	123	350	151	428	87					21			11	5	
Witch flounder	436	576	230	509	381	350	238	385	579	291	851	1980	2257	15	10
Greenland halibut	4318	5027	4688	3997	3245	3347	3313	1942	5970	8811	10547	13961	11171	3616	4194
Atlantic halibut	47	45	28	51	29	15	9	18	45	50	79	229	96		152
Roughhead grenadier	508	613	397	1302	1088	765	787	1377	2224	1996	2004	4053	3211	290	911
Roundnose grenadier															
Anarhichas spp.	88	142	61	552	139	184	121	1358	3219	2303	1697	2842	1941		
Hadocck	78	22	12	11	5	42		2	10	10	165	82	17		
Pollock									13	41	29	424	11		
White hake	1678														8
Red hake	1968	273	43	76	19	54	124	230	270	365	467	1010	469	104	
Silver hake															
Capelin													14		
Skates	1362	883	672	2168	1105	908	796	2062	6239	7604	7019	23304	13557	652	1075
Monkfish	71										37	7		15	
Squid					1		4							47	
Shrimp	16	420	289	227	203	170		17							
Unidentified	322	40	1	115	38	115	23	15	12	245	325	725	779	158	6
TOTAL	18483	14949	12842	16561	9621	9010	9172	12543	30181	35548	36243	75327	67194	49885	40269

TABLE II : PORTUGUESE TRAWL EFFORT IN FISHING DAYS IN NAFO Div. 3LMNO (data extracted from NAFO. (Database Statlant 21B on 21 May 2017)

YEAR	3L	3M	3N	3O	Total geral
2000	519	248	297	329	1393
2001	770	477	361	262	1870
2002	607	263	532	490	1892
2003	503	257	783	753	2296
2004	435	400	406	464	1705
2005	492	407	218	359	1476
2006	408	454	106	517	1485
2007	295	359	162	421	1237
2008	307	464	179	213	1163
2009	512	727	237	188	1664
2010	495	643	214	242	1594
2011	432	770	320	233	1755
2012	235	400	337	299	1271
2013	395	681	350	258	1684
2014	454	791	194	361	1800
2015	374	570	162	336	1442
2016 (a)	346	698	132	347	1523
2017 (a)	282	564	213	278	1337
2018 (a)	302	649	222	194	1367

a) not extracted from Database Statlant 21B, provisional

TABLE III: Portuguese trawl fishery cpue's and bycatch by month and division for 2018.

DIVISION	TARGET SPECIES	MONTH	DEPTH RANGE (m)		CPUE	MAIN BYCATCH		WITCH FLOUNDER	TOTAL
			MIN.	MAX.	(ton/hour)	SPECIES	%	BYCATCH (%)	BYCATCH (%)
3M	COD	JAN	287	484	1.647	RED	5.0	0.1	5.2
3M	COD	FEB	268	520	0.913	RED	11.3	0.0	11.5
3M	COD	MAR	363	560	1.994	RED	1.1	0.0	1.3
3M	COD	APR	175	503	0.762	RED	2.5	0.3	5.0
3M	COD	MAY	201	439	1.619	RED	1.3	0.5	2.4
3M	COD	JUN	148	255	1.310	RNG	1.7	0.7	5.7
3M	COD	JUL	126	292	1.180	RED	7.8	1.0	14.0
3M	COD	AUG	173	213	1.793	PLA	3.3	0.5	4.4
3M	COD	SEP	140	254	0.544	PLA	2.3	0.7	4.8
3M	COD	OCT	123	686	0.595	PLA	2.4	0.5	6.3
3L	RED	JUN	279	338	1.252	COD	2.5	0.0	6.5
3L	RED	JUL	253	438	1.331	SKA	1.7	0.0	3.0
3L	RED	AUG	200	900	1.196	RNG	2.2	0.0	4.6
3L	RED	SEP	283	382	0.540	SKA	2.5	0.0	4.7
3L	RED	OCT	283	435	0.530	HAL	2.9	0.0	3.4
3M	RED	JAN	256	633	0.992	COD	2.2	0.7	5.3
3M	RED	FEB	365	663	2.066	COD	1.0	0.4	2.1
3M	RED	MAR	476	693	1.324	COD	3.9	0.3	6.7
3M	RED	JUL	225	566	2.035	COD	1.5	0.0	1.9
3M	RED	AUG	454	457	0.943	HAL	1.0	0.0	1.7
3N	RED	APR	313	552	1.318	SKA	3.3	0.0	9.0
3N	RED	SEP	298	690	1.061	HAL	3.5	0.1	4.9
3N	RED	OCT	113	411	1.104	HAL	4.4	0.0	6.5
3O	RED	APR	142	610	1.533	HAL	3.7	0.7	8.1
3O	RED	MAY	205	595	0.974	HAL	2.5	0.4	4.6
3O	RED	JUN	258	480	1.228	HAL	1.1	0.0	1.5
3O	RED	SEP	149	668	0.866	SQI	3.4	0.0	9.5
3O	RED	OCT	203	436	2.042	HAL	1.0	0.0	1.7
3L	GHL	FEB	867	1512	0.870	#N/D	0.9	0.0	1.7
3L	GHL	MAR	1087	1252	0.660	RHG	6.3	0.0	10.2
3L	GHL	MAY	1018	1276	0.509	HAL	1.8	0.7	4.5
3L	GHL	JUN	837	1235	0.507	RNG	4.4	0.0	11.4
3L	GHL	AUG	883	947	0.392	RNG	14.3	0.0	24.7
3L	GHL	SEP	882	1991	0.385	RNG	13.0	0.0	22.8
3L	GHL	OCT	117	1269	0.222	HAL	0.1	0.0	0.1
3M	GHL	JUN	921	1114	0.702	RHG	3.4	0.0	9.8
3M	GHL	AUG	926	1120	0.324	RNG	16.8	0.0	27.1
3M	GHL	SEP	900	1119	0.283	RNG	23.2	0.0	45.3
3M	GHL	OCT	930	1130	0.156	-	0.0	0.0	0.0
3N	GHL	SEP	876	1117	0.351	HAL	2.1	0.0	2.1

TABLE IV - A: GREENLAND HALIBUT TRAWL CATCH RATES, 1988-2018: mean annual cpue's corrected for the month, division and vessel of each observation.

	3L			3M			3N			3LMN			
	CPUE	ST.ERROR	C.V.	CPUE	ST.ERROR	C.V.	CPUE	ST.ERROR	C.V.	CPUE	ST.ERROR	C.V.	
1988	0.447	0.099	44.2							0.393	0.096	49.0	1988
1989	0.418	0.072	51.9							0.365	0.073	59.6	1989
1990	0.368	0.039	36.5	0.141			0.173			0.306	0.036	44.1	1990
1991	0.223	0.041	41.4				0.127	0.031	42.2	0.185	0.034	51.4	1991
1992	0.148	0.029	61.1				0.258	0.032	42.8	0.246	0.036	69.4	1992
1993	0.164	0.002	1.5				0.172	0.021	41.8	0.246	0.024	36.9	1993
1994	0.127	0.003	3.3				0.111	0.017	36.9	0.180	0.031	49.1	1994
1995	0.124	0.019	44.4	0.136	0.026	43.1	0.123	0.024	50.9	0.152	0.021	63.1	1995
1996	0.173	0.022	45.0	0.200	0.023	34.6	0.172	0.019	29.6	0.173	0.014	44.9	1996
1997	0.195	0.018	31.1	0.240	0.028	32.7	0.130	0.009	9.2	0.186	0.018	45.1	1997
1998	0.270	0.016	22.2	0.233	0.023	33.6	0.210	0.019	30.4	0.260	0.012	30.3	1998
1999	0.300	0.019	20.2	0.342	0.040	35.5	0.261	0.020	23.0	0.312	0.019	33.6	1999
2000	0.259	0.025	26.0	0.273	0.028	23.3	0.303	0.043	28.2	0.276	0.028	41.3	2000
2001	0.214	0.031	38.2	0.209	0.013	16.0	0.193	0.017	20.1	0.215	0.019	38.9	2001
2002	0.232	0.016	23.4	0.226	0.028	41.3	0.269	0.032	23.6	0.227	0.020	44.4	2002
2003	0.211	0.035	52.0	0.207	0.031	42.3	0.205	0.021	24.6	0.216	0.023	53.1	2003
2004	0.123	0.013	31.4	0.097	0.022	67.6	0.142	0.010	19.5	0.143	0.017	63.2	2004
2005	0.235	0.003	1.8	0.317	0.096	42.7				0.234	0.032	27.2	2005
2006	0.457	0.051	27.2	0.244	0.032	22.8				0.346	0.040	35.0	2006
2007	0.643	0.085	32.4	0.398	0.078	39.2				0.511	0.064	39.7	2007
2008	0.429	0.029	16.6	0.433	0.017	7.8				0.393	0.019	15.1	2008
2009	0.718	0.102	42.7	0.634	0.051	22.9				0.651	0.053	34.8	2009
2010	0.425	0.036	26.6	0.382	0.012	5.3	0.474			0.399	0.030	28.5	2010
2011	0.786	0.083	26.3	0.631	0.080	28.7				0.685	0.061	29.8	2011
2012	0.387	0.051	19.1	0.321						0.338	0.039	20.5	2012
2013	0.470	0.046	24.5	0.287	0.017	12.5	0.387	0.040	14.9	0.395	0.032	28.6	2013
2014	0.460	0.067	40.1	0.254	0.034	24.2	0.416	0.205	88.8	0.411	0.063	57.5	2014
2015	0.597	0.060	33.1	0.639	0.133	48.8				0.579	0.058	40.5	2015
2016	0.827	0.181	73.4	0.813						0.782	0.164	73.6	2016
2017	0.583	0.095	42.8	0.563	0.104	39.5				0.544	0.071	44.1	2017
2018	0.532	0.056	34.2	0.401	0.098	52.8				0.458	0.051	43.2	2018

TABLE IV - B: GREENLAND HALIBUT TRAWL CATCH RATES,
1988-2018 mean cpue's by division corrected for the year, month and vessel of each observation.

	CPUE	ST.ERROR	C.V.	
3L	0.372	0.011	45.1	3L
3M	0.314	0.009	34.6	3M
3N	0.209	0.008	38.4	3N
3LMNO	0.317	0.006	44.9	3LMNO

TABLE V: Intensity of the trawl sampling during 2018, by species, division and month.

SPECIES	DIV.	MONTH	Nº OF SAMPLES	Nº FISH MEASURED	SAMPLING WEIGHT(Kg)	OTOLITHS Nº	OTOLITHS LENGTH RANGE (cm)
COD	3M	JAN	3	271	696	-	-
COD	3M	FEB	10	981	1792	-	-
COD	3M	MAR	9	862	1529	70	48-73
COD	3M	APR	13	1097	2186	101	47-97
COD	3M	MAY	7	513	1063	108	44-79
COD	3M	JUN	9	900	1720	68	45-95
COD	3M	JUL	7	678	1011	97	45-72
COD	3M	AUG	7	605	1027	129	42-76
COD	3M	SEP	8	802	1292	-	-
COD	3M	OCT	16	1605	2833	-	-
COD	3N	OCT	6	247	538	-	-
REDFISH (*S. mentella*)	3L	JUN	2	212	52	-	-
REDFISH (*S. mentella*)	3L	AUG	10	1121	300	-	-
REDFISH (*S. mentella*)	3L	SEP	4	400	149	118	22-37
REDFISH (*S. mentella*)	3L	OCT	1	100	52	-	-
REDFISH (*S. mentella*)	3M	JAN	10	1110	206	-	-
REDFISH (*S. mentella*)	3M	FEB	4	436	90	-	-
REDFISH (*S. mentella*)	3M	MAR	1	56	52	-	-
REDFISH (*S. mentella*)	3M	APR	1	53	48	-	-
REDFISH (*S. mentella*)	3M	MAY	3	250	130	-	-
REDFISH (*S. mentella*)	3M	JUL	21	2294	794	199	26-40
REDFISH (*S. mentella*)	3N	APR	3	342	81	-	-
REDFISH (*S. mentella*)	3N	SEP	4	410	85	89	20-33
REDFISH (*S. mentella*)	3N	OCT	9	900	166	-	-
REDFISH (*S. mentella*)	3O	APR	13	1288	324	209	22-34
REDFISH (*S. mentella*)	3O	MAY	21	2364	347	100	20-27
REDFISH (*S. mentella*)	3O	JUN	8	887	121	25	20-27
REDFISH (*S. mentella*)	3O	SEP	30	3070	592	146	19-34
REDFISH (*S. mentella*)	3O	OCT	2	206	24	-	-
REDFISH (*S. marinus*)	3L	JUL	12	1054	420	91	24-39
REDFISH (*S. marinus*)	3L	AUG	1	111	38	-	-
REDFISH (*S. marinus*)	3M	JAN	14	1311	474	95	21-48
REDFISH (*S. marinus*)	3M	FEB	18	1751	622	62	27-35
REDFISH (*S. marinus*)	3M	MAR	1	105	29	-	-
REDFISH (*S. marinus*)	3M	AUG	1	89	32	-	-
AMERICAN PLAICE	3M	JUL	3	175	192	37	37-63
AMERICAN PLAICE	3M	AUG	3	179	190	-	-
AMERICAN PLAICE	3N	OCT	5	192	201	-	-
AMERICAN PLAICE	3O	APR	2	75	36	28	35-47

TABLE V (cont.)

GREENLAND HALIBUT	3L	FEB	11	1067	1068	105	45-65
GREENLAND HALIBUT	3L	MAR	2	227	148	-	-
GREENLAND HALIBUT	3L	MAY	9	823	1026	135	38-71
GREENLAND HALIBUT	3L	JUN	4	461	336	45	43-66
GREENLAND HALIBUT	3L	AUG	7	683	677	98	37-64
GREENLAND HALIBUT	3L	SEP	11	1075	697	133	32-69
GREENLAND HALIBUT	3L	OCT	9	856	1076	61	37-69
GREENLAND HALIBUT	3M	JUN	3	317	223	30	39-65
GREENLAND HALIBUT	3M	JUL	1	113	139	-	-
GREENLAND HALIBUT	3M	AUG	4	412	414	-	-
GREENLAND HALIBUT	3M	SEP	3	322	185	-	-
GREENLAND HALIBUT	3M	OCT	1	100	162	4	72-78
ROUGHHEAD GRENADIER	3L	MAY	5	226	293	-	-
ROUGHHEAD GRENADIER	3L	AUG	1	57	70	-	-
ROUGHHEAD GRENADIER	3M	JUL	1	49	60	-	-
ROUGHHEAD GRENADIER	3M	AUG	1	69	80	-	-
WITCH FLOUNDER	3M	FEB	1	49	29	-	-
THORNY SKATE	3M	JAN	1	42	101	-	-

TABLE VI: Length-weight relationship by species, stock and sex in 2018.

Species	Stock	Sex	a	b	n	*r2*	Length interval (cm)	Ref.
COD	3M	T	0.0298	2.6894	1003	0.985	42-97	
COD	3NO	T	0.0030	3.2787	245	0.993	36-100	
GHL	2J3KLMNO	F	0.0003	3.8032	325	0.982	39-72	
GHL	2J3KLMNO	M	0.0068	3.0211	169	0.965	37-60	
GHL	2J3KLMNO	T	0.0040	3.1891	1615	0.993	29-78	
PLA	3LNO	F	0.0252	2.7014	20	0.845	35-47	
PLA	3LNO	M	0.0182	2.7847	8	0.805	37-43	
PLA	3LNO	T	0.0055	3.1219	216	0.980	33-62	
PLA	3M	F	0.0122	2.9416	25	0.944	38-63	
PLA	3M	M	0.0037	3.2486	16	0.977	37-54	
PLA	3M	T	0.0112	2.9636	41	0.965	37-63	
REB	3LN	F	0.0075	3.2045	772	0.998	17-36	
REB	3LN	M	0.0090	3.1399	970	0.998	19-33	
REB	3LN	T	0.0069	3.2255	1742	0.999	17-36	
REB	3M	F	0.0211	2.8176	147	0.994	27-40	
REB	3M	M	0.0401	2.6169	103	0.992	23-35	
REB	3M	T	0.0186	2.8509	250	0.995	23-40	
REB	3O	F	0.0156	2.9356	1488	0.999	18-34	
REB	3O	M	0.0090	3.1008	1289	0.988	19-34	
REB	3O	T	0.0128	2.9939	2777	0.996	18-34	
REG	3LN	F	0.0194	2.8953	170	0.994	26-39	
REG	3LN	M	0.0166	2.9369	112	0.974	24-34	
REG	3LN	T	0.0191	2.8993	282	0.995	24-39	
REG	3M	F	0.0041	3.3200	194	0.987	23-48	
REG	3M	M	0.0558	2.5843	176	0.799	21-44	
REG	3M	T	0.0202	2.8812	370	0.890	21-48	
length-weight relationships calculated in previous years								
RHG	3LMNO	F	0.1732	2.7670	231	0.993	8-41.5	SCS 14/10
RHG	3LMNO	M	0.1286	2.8564	197	0.986	7.5-38	SCS 14/10
RHG	3LMNO	T	0.1504	2.8055	428	0.990	7.5-41.5	SCS 14/10
RJR	3LMNO	F	0.0117	2.9927	55	0.925	38-80	SCS 14/10
RJR	3LMNO	M	0.0292	2.7749	87	0.924	40-84	SCS 14/10
RJR	3LMNO	T	0.0030	3.2963	485	0.987	25-84	SCS 14/10
WIT	2J3KL	F	0.0910	2.4068	78	0.953	28-49	SCS 11/05
WIT	2J3KL	M	0.0687	2.4792	66	0.960	28-49	SCS 11/05
WIT	2J3KL	T	0.0709	2.4730	144	0.954	28-49	SCS 11/05

TABLE VII: COD, DIV. 3M, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	1st Q.	2nd Q.	3rd Q.	4th Q.	YEAR	LENGTH GROUP
39								1.6					0.5		0.1	39
42	28.4			11.6	2.4	1.5	1.8	27.5		5.4	2.7	4.8	8.8	5.4	5.1	42
45	51.4	2.1	7.6	36.8	1.8	7.1	84.3	41.8	2.2	14.7	9.9	14.2	52.1	14.7	21.9	45
48	9.5	4.5	30.4	33.9	4.8	26.6	136.2	81.6	12.1	27.4	19.5	21.6	90.3	27.4	38.4	48
51	3.2	13.4	53.5	35.3	13.9	41.8	137.7	72.4	26.2	39.6	34.8	30.7	91.7	39.6	48.4	51
54	64.5	44.9	51.7	84.4	35.4	40.6	171.8	118.8	54.0	40.6	50.6	51.8	127.9	40.6	68.7	54
57	227.3	84.5	85.2	187.9	80.8	81.2	187.2	255.2	87.1	59.9	98.4	112.6	182.8	59.9	118.0	57
60	141.8	124.2	196.3	180.8	180.0	63.2	127.0	173.2	141.7	138.1	166.2	136.6	144.0	138.1	150.0	60
63	138.8	131.9	187.3	149.9	303.0	125.3	67.1	88.2	137.6	196.0	163.5	191.3	90.3	196.0	156.3	63
66	171.5	147.5	83.2	149.9	147.9	187.5	42.7	70.7	232.4	170.1	113.8	163.3	96.7	170.1	128.7	66
69	57.2	107.6	115.2	59.4	118.8	222.4	28.6	26.8	222.2	147.0	107.1	139.9	74.9	147.0	112.1	69
72	35.3	137.9	99.4	30.0	50.0	126.0	15.6	39.9	61.1	100.4	106.6	72.5	33.7	100.4	79.5	72
75	43.8	142.8	63.7	11.5	38.8	31.8		2.2	10.7	31.4	89.2	28.1	3.2	31.4	45.9	75
78	10.1	26.7	17.9	10.2	22.3	18.4			6.3	19.4	20.2	17.3	1.5	19.4	14.8	78
81	3.2	14.9	3.6	9.0		14.7			3.1	8.2	7.5	8.1	0.8	8.2	6.1	81
84	6.9	9.0	1.3	3.9		4.4			3.2	1.8	4.5	2.8	0.8	1.8	2.8	84
87			3.6			3.8					2.0	1.4			1.1	87
90	1.6	4.0		1.1							1.5	0.3			0.7	90
93	5.3	2.0		2.7		3.8					1.2	2.2			1.0	93
96		1.3		1.6							0.5	0.5			0.3	96
99																99
102																102
105		0.7									0.2				0.1	105
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	3	10	9	13	7	9	7	7	8	16	22	29	22	16	89	
SAMPLING WEIGHT(kg)	696	1792	1529	2186	1063	1720	1011	1027	1292	2833	4017	4968	3330	2833	15148	
No. F.MEASURED	271	981	862	1097	513	900	678	605	802	1605	2114	2510	2085	1605	8314	
MEAN LENGTH(cm)	62.7	68.1	64.7	62.0	65.2	66.6	56.6	58.7	65.5	65.2	65.7	64.8	59.4	65.2	63.9	
MEAN WEIGHT (g)	2107	2604	2278	2037	2295	2460	1588	1749	2319	2319	2375	2280	1812	2319	2206	
DEPTH RANGE (m)	320/484	298/500	363/542	239/503	201/460	161/221	156/292	139/218	140/254	133/686	298/542	161/503	139/292	133/686	133/686	

TABLE VIII: COD, DIV. 3N, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	OCT = YEAR	LENGTH GROUP
30	8.9	30
33		33
36	19.9	36
39	35.0	39
42	41.2	42
45	65.8	45
48	117.3	48
51	162.6	51
54	126.6	54
57	79.4	57
60	54.4	60
63	42.6	63
66	45.7	66
69	33.9	69
72	48.0	72
75	20.0	75
78	21.5	78
81	20.1	81
84	18.4	84
87	2.4	87
90	14.5	90
93	13.8	93
96	2.4	96
99	5.5	99
TOTAL	1000	
No. SAMPLES	6	
SAMPLING WEIGHT(kg)	538	
No. F.MEASURED	247	
MEAN LENGTH(cm)	58.5	
MEAN WEIGHT (g)	2286	
DEPTH RANGE (m)	173/341	

TABLE XI: REDFISH (*S. mentella*), DIV. 3N, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	APR =2nd Q.	SEP =3rd Q.	OCT =4th Q.	YEAR	LENGTH GROUP
17			1.4	0.8	17
18					18
19		14.4	5.2	6.0	19
20		56.8	36.9	33.2	20
21	8.3	190.0	163.5	136.7	21
22	26.2	301.4	284.4	234.6	22
23	72.2	175.1	215.9	178.2	23
24	114.6	65.7	142.7	121.7	24
25	136.5	31.7	76.2	79.8	25
26	155.7	67.6	37.3	67.7	26
27	157.0	27.0	15.8	47.1	27
28	129.2	28.3	8.7	37.4	28
29	87.4	10.4	5.0	23.1	29
30	69.4	10.5	4.0	18.7	30
31	33.1	12.4	1.7	10.3	31
32	8.0	2.9		2.2	32
33	2.3	5.7	0.7	2.0	33
34					34
35			0.6	0.4	35
TOTAL	1000	1000	1000	1000	
No. SAMPLES	3	4	9	16	
SAMPLING WEIGHT(kg)	81	85	166	333	
No. F.MEASURED	342	410	900	1652	
MEAN LENGTH(cm)	27.0	23.5	23.3	24.1	
MEAN WEIGHT (g)	292	191	184	207	
DEPTH RANGE (m)	313/552	320/480	173/386	173/552	

TABLE X: REDFISH (*S. mentella*), DIV. 3M, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	JAN	FEB	MAR	APR	MAY	JUL	1st Q.	2nd Q.	3rd Q.	YEAR	LENGTH GROUP
17	1.2	4.6					2.8			1.4	17
18	4.4	2.1					3.4			1.7	18
19	8.6	9.5					9.0			4.6	19
20	18.9	15.9					17.5			8.8	20
21	24.2	48.4					35.4			17.9	21
22	59.9	101.7					79.3			40.1	22
23	88.2	131.4				0.3	108.3		0.3	54.9	23
24	143.4	128.4				0.9	136.2		0.9	69.3	24
25	188.6	130.5				10.6	161.3		10.6	86.8	25
26	155.3	167.9			7.9	19.1	160.9	5.1	19.1	90.8	26
27	123.6	92.4			4.2	35.7	108.9	2.8	35.7	72.6	27
28	67.0	78.3			23.8	62.8	72.2	15.5	62.8	67.4	28
29	50.3	54.8			40.1	100.0	52.3	26.1	100.0	75.6	29
30	18.5	11.3	17.9		60.7	147.7	15.2	39.5	147.7	80.3	30
31	18.1	7.1			44.0	159.8	12.9	28.6	159.8	85.1	31
32	15.4	13.5	35.7	37.7	48.2	164.5	14.6	44.6	164.5	88.3	32
33	4.5		17.9		129.8	100.7	2.4	84.5	100.7	50.9	33
34	4.6	2.1		37.7	156.5	83.7	3.4	115.1	83.7	43.2	34
35	4.1				154.7	56.7	2.2	100.7	56.7	29.3	35
36	0.6		53.6	169.8	112.6	26.9	0.4	132.6	26.9	13.9	36
37			89.3	56.6	55.1	13.2	0.1	55.6	13.2	6.7	37
38	0.6		53.6	18.9	74.9	6.0	0.4	55.3	6.0	3.3	38
39			89.3	132.1	19.8	5.0	0.1	59.0	5.0	2.7	39
40			107.1	18.9	15.7	3.5	0.1	16.8	3.5	1.9	40
41			17.9	56.6	23.7	2.6	0.0	35.2	2.6	1.4	41
42			35.7	113.2	8.5	0.4	0.0	45.0	0.4	0.4	42
43			89.3	37.7	15.7		0.1	23.4		0.1	43
44			53.6	75.5	4.0		0.1	29.0		0.1	44
45			53.6				0.1			0.0	45
46				94.3				32.9		0.1	46
47			89.3	37.7			0.1	13.2		0.1	47
48			71.4				0.1			0.0	48
49			53.6	37.7			0.1	13.2		0.1	49
50											50
51			53.6				0.1			0.03	51
52				56.6				19.8		0.1	52
53											53
54			17.9				0.02			0.01	54
55				18.9				6.6		0.02	55
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	10	4	1	1	3	21	15	4	21	40	
SAMPLING WEIGHT(kg)	206	90	52	48	130	794	348	178	794	1321	
No. F.MEASURED	1110	436	56	53	250	2294	1602	303	2294	4199	
MEAN LENGTH(cm)	26.0	25.4	42.6	41.8	34.9	31.9	25.7	37.3	31.9	28.8	
MEAN WEIGHT (g)	208	196	834	786	470	362	203	581	362	282	
DEPTH RANGE (m)	474/615	480/580	406/411	346/476	324/440	225/582	406/615	324/476	225/582	225/615	

TABLE XI: REDFISH (*S. mentella*), DIV. 3N, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	APR	SEP	OCT	2nd Q.	3rd Q.	4th Q.	YEAR	LENGTH GROUP
17			1.4			1.4	0.8	17
18								18
19		14.4	5.2		14.4	5.2	6.0	19
20		56.8	36.9		56.8	36.9	33.2	20
21	8.3	190.0	163.5	8.3	190.0	163.5	136.7	21
22	26.2	301.4	284.4	26.2	301.4	284.4	234.6	22
23	72.2	175.1	215.9	72.2	175.1	215.9	178.2	23
24	114.6	65.7	142.7	114.6	65.7	142.7	121.7	24
25	136.5	31.7	76.2	136.5	31.7	76.2	79.8	25
26	155.7	67.6	37.3	155.7	67.6	37.3	67.7	26
27	157.0	27.0	15.8	157.0	27.0	15.8	47.1	27
28	129.2	28.3	8.7	129.2	28.3	8.7	37.4	28
29	87.4	10.4	5.0	87.4	10.4	5.0	23.1	29
30	69.4	10.5	4.0	69.4	10.5	4.0	18.7	30
31	33.1	12.4	1.7	33.1	12.4	1.7	10.3	31
32	8.0	2.9		8.0	2.9		2.2	32
33	2.3	5.7	0.7	2.3	5.7	0.7	2.0	33
34								34
35			0.6			0.6	0.4	35
TOTAL	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	3	4	9	3	4	9	16	
SAMPLING WEIGHT(kg)	81	85	166	81	85	166	333	
No. F.MEASURED	342	410	900	342	410	900	1652	
MEAN LENGTH(cm)	27.0	23.5	23.3	27.0	23.5	23.3	24.1	
MEAN WEIGHT (g)	292	191	184	292	191	184	207	
DEPTH RANGE (m)	313/552	320/480	173/386	313/552	320/480	173/386	173/552	

TABLE XII: REDFISH (*S. mentella*), DIV. 3O, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	APR	MAY	JUN	SEP	OCT	2nd Q.	3rd Q.	4th Q.	YEAR	LENGTH GROUP
15		0.3	0.9			0.3			0.2	15
16		3.9	6.9			3.2			2.4	16
17		15.8	19.7	5.4	4.3	11.3	5.4	4.3	9.8	17
18		56.7	85.5	119.4	165.9	43.7	119.4	165.9	65.2	18
19		72.9	159.4	213.2	331.7	66.1	213.2	331.7	109.2	19
20		122.1	146.1	275.8	294.7	86.3	275.8	294.7	135.6	20
21	2.7	174.9	168.2	136.1	133.4	116.4	136.1	133.4	121.3	21
22	8.3	192.8	165.9	71.5	53.8	126.1	71.5	53.8	111.3	22
23	27.3	136.6	119.8	39.8	16.1	96.9	39.8	16.1	81.2	23
24	66.0	104.9	84.9	34.9		87.9	34.9		72.8	24
25	103.9	45.5	22.2	37.7		60.2	37.7		52.7	25
26	141.0	21.6	17.3	27.4		60.4	27.4		50.7	26
27	147.6	11.8	3.3	14.0		55.2	14.0		44.1	27
28	157.4	12.0		9.1		57.9	9.1		45.0	28
29	146.8	12.0		6.2		54.4	6.2		41.8	29
30	103.5	7.1		4.9		37.7	4.9		29.1	30
31	51.4	4.5		2.7		19.2	2.7		14.9	31
32	19.3	2.3		0.9		7.5	0.9		5.8	32
33	16.6	1.4		0.8		6.2	0.8		4.8	33
34	4.5	1.0		0.4		1.9	0.4		1.5	34
35	3.7					1.2			0.9	35
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	13	21	8	30	2	42	30	2	74	
SAMPLING WEIGHT(kg)	324	347	121	592	24	792	592	24	1408	
No. F.MEASURED	1288	2364	887	3070	206	4539	3070	206	7815	
MEAN LENGTH(cm)	28.0	22.5	21.5	21.3	20.1	24.1	21.3	20.1	23.3	
MEAN WEIGHT (g)	283	149	129	126	103	189	126	103	172	
DEPTH RANGE (m)	214/547	286/499	258/480	278/606	261/405	214/547	278/606	261/405	214/606	

TABLE XIII: REDFISH (*S. marinus*), DIV. 3L, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	JUL	AUG	3rd Q. = YEAR	LENGTH GROUP
23		9.0	1.2	23
24	5.3	27.0	8.2	24
25	42.5	36.0	41.6	25
26	46.4	63.1	48.6	26
27	107.8	117.1	109.0	27
28	115.6	135.1	118.2	28
29	143.5	126.1	141.2	29
30	137.7	99.1	132.6	30
31	134.2	135.1	134.3	31
32	114.3	99.1	112.3	32
33	61.5	72.1	62.9	33
34	40.5	36.0	39.9	34
35	26.3	18.0	25.2	35
36	15.4	18.0	15.8	36
37	0.2	9.0	1.3	37
38	5.9		5.1	38
39	2.9		2.5	39
TOTAL	1000	1000	1000	
No. SAMPLES	12	1	13	
SAMPLING WEIGHT(kg)	420	38	458	
No. F.MEASURED	1054	111	1165	
MEAN LENGTH(cm)	30.4	30.0	30.3	
MEAN WEIGHT (g)	387	376	385	
DEPTH RANGE (m)	253/375	250/297	250/375	

TABLE XIV: REDFISH (*S. marinus*), DIV. 3M, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	JAN	FEB	MAR	AUG	1st Q.	3rd Q.	YEAR	LENGTH GROUP
22	0.1				0.1		0.1	22
23	0.5		19.0		0.6		0.6	23
24	1.1	3.1	19.0		1.5		1.4	24
25	0.4	4.6	142.9	33.7	2.0	33.7	2.8	25
26	1.6	13.7	295.2	33.7	5.2	33.7	5.9	26
27	3.0	39.4	276.2	44.9	9.1	44.9	10.1	27
28	61.7	120.7	104.8	123.6	68.8	123.6	70.2	28
29	122.4	190.7	28.6	179.8	129.4	179.8	130.7	29
30	128.4	162.6	57.1	168.5	131.7	168.5	132.7	30
31	127.0	122.9	28.6	179.8	125.8	179.8	127.2	31
32	104.5	108.4	19.0	101.1	104.3	101.1	104.2	32
33	121.7	81.6		67.4	116.3	67.4	115.0	33
34	102.2	73.9	9.5	11.2	98.3	11.2	96.0	34
35	34.6	40.8		11.2	35.1	11.2	34.5	35
36	32.8	19.4		22.5	31.0	22.5	30.8	36
37	38.8	11.1			35.4		34.5	37
38	0.2	5.0		22.5	0.7	22.5	1.3	38
39	9.5	2.1			8.6		8.4	39
40								40
41	14.3				12.5		12.2	41
42								42
43	33.3				29.3		28.5	43
44	9.6				8.4		8.2	44
45								45
46								46
47	28.6				25.1		24.5	47
48	14.3				12.5		12.2	48
49	9.5				8.3		8.1	49
TOTAL	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	14	18	1	1	33	1	34	
SAMPLING WEIGHT(kg)	474	622	29	32	1125	32	1157	
No. F.MEASURED	1311	1751	105	89	3167	89	3256	
MEAN LENGTH(cm)	33.7	31.2	27.4	30.6	33.4	30.6	33.3	
MEAN WEIGHT (g)	534	399	269	378	517	378	513	
DEPTH RANGE (m)	256/605	365/663	507/512	454/457	256/663	454/457	256/663	

TABLE XV: AMERICAN PLAICE, DIV. 3M, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	JUL	AUG	3rd Q. = YEAR	LENGTH GROUP
34		12.0	6.6	34
36	12.5	42.6	28.9	36
38	97.6	65.3	80.0	38
40	72.9	99.3	87.3	40
42	101.7	72.6	85.8	42
44	109.6	126.7	118.9	44
46	125.2	110.0	116.9	46
48	143.7	95.8	117.6	48
50	164.5	92.8	125.4	50
52	33.7	168.8	107.4	52
54	53.7	64.4	59.6	54
56	38.6	31.8	34.9	56
58	18.2	9.0	13.2	58
60	14.3	9.0	11.4	60
62	14.0		6.4	62
TOTAL	1000	1000	1000	
No. SAMPLES	3	3	6	
SAMPLING WEIGHT(kg)	192	190	383	
No. F.MEASURED	175	179	354	
MEAN LENGTH(cm)	47.6	47.4	47.5	
MEAN WEIGHT (g)	1095	1083	1088	
DEPTH RANGE (m)	157/188	139/218	139/218	

TABLE XVI: AMERICAN PLAICE, DIV. 3N, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	OCT = YEAR	LENGTH GROUP
30	4.0	30
32	4.0	32
34	12.0	34
36	8.0	36
38	8.0	38
40	57.0	40
42	72.3	42
44	138.9	44
46	126.8	46
48	160.5	48
50	135.6	50
52	126.8	52
54	86.7	54
56	8.0	56
58	25.6	58
60		60
62	25.6	62
TOTAL	1000	
No. SAMPLES	5	
SAMPLING WEIGHT(kg)	201	
No. F.MEASURED	192	
MEAN LENGTH(cm)	48.8	
MEAN WEIGHT (g)	1077	
DEPTH RANGE (m)	173/293	

TABLE XVII: AMERICAN PLAICE, DIV. 3O, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	APR = YEAR	LENGTH GROUP
34	40.0	34
36	146.7	36
38	186.8	38
40	266.6	40
42	160.0	42
44	119.9	44
46	53.4	46
48	26.6	48
TOTAL	1000	
No. SAMPLES	2	
SAMPLING WEIGHT(kg)	36	
No. F.MEASURED	75	
MEAN LENGTH(cm)	41.1	
MEAN WEIGHT (g)	584	
DEPTH RANGE (m)	412/437	

TABLE XVIII: GREENLAND HALIBUT, DIV. 3L, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	FEB	MAR	MAY	JUN	AUG	SEP	OCT	1st Q.	2nd Q.	3rd Q.	4th Q.	YEAR	LENGTH GROUP
28							1.5				1.5	0.1	28
30													30
32	8.9					1.7	1.5	6.8		1.1	1.5	2.8	32
34	40.5					13.0		30.9		8.4		13.9	34
36	68.1		1.2	2.9	0.8	49.6	18.0	51.9	1.8	32.4	18.0	31.7	36
38	50.0	8.8	4.9	8.7	13.1	96.3	28.0	40.3	6.1	66.9	28.0	42.4	38
40	80.5	30.3	21.9	20.4	22.6	129.2	39.0	68.5	21.4	91.5	39.0	65.6	40
42	117.5	87.3	32.2	83.8	40.5	120.0	56.2	110.4	48.7	91.9	56.2	87.0	42
44	64.4	140.6	48.1	76.7	59.6	138.9	52.0	82.5	57.3	110.8	52.0	86.4	44
46	52.6	214.7	92.0	106.1	129.8	107.1	85.1	91.1	96.5	115.1	85.1	101.3	46
48	67.4	168.7	118.0	182.1	105.2	105.6	112.4	91.5	138.4	105.5	112.4	108.3	48
50	77.7	173.5	98.4	167.7	141.6	61.6	143.1	100.5	120.5	89.9	143.1	102.8	50
52	101.8	81.1	94.3	177.7	139.2	66.4	109.6	96.9	120.9	92.2	109.6	101.0	52
54	77.8	66.9	92.7	80.8	136.5	55.3	90.7	75.2	88.9	84.0	90.7	82.4	54
56	85.4	28.1	138.7	50.5	113.2	25.8	82.2	71.8	110.6	56.7	82.2	75.0	56
58	48.8		104.5	12.5	48.4	13.3	71.9	37.2	75.1	25.7	71.9	42.8	58
60	21.7		58.0	12.7	32.4	8.5	46.4	16.5	43.5	17.0	46.4	24.1	60
62	27.6		39.3	13.6	14.1	2.8	39.0	21.1	31.1	6.8	39.0	18.6	62
64	9.1		24.4	2.7	3.0	3.6	11.7	6.9	17.5	3.4	11.7	8.1	64
66			11.1	1.2			3.3		8.0		3.3	1.9	66
68			9.4			1.4	4.8		6.4	0.9	4.8	2.0	68
70			9.6				1.0		6.5		1.0	1.5	70
72			1.2				1.5		0.8		1.5	0.3	72
74							0.7				0.7	0.03	74
76							0.4				0.4	0.02	76
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	11	2	9	4	7	11	9	13	13	18	9	53	
SAMPLING WEIGHT(kg)	1068	148	1026	336	677	697	1076	1216	1362	1373	1076	5027	
No. F.MEASURED	1067	227	823	461	683	1075	856	1294	1284	1758	856	5192	
MEAN LENGTH(cm)	48.3	48.5	53.7	50.2	51.6	46.0	51.6	48.3	52.6	48.0	51.6	49.3	
MEAN WEIGHT (g)	881	817	1241	935	1046	728	1240	866	1144	840	1240	935	
DEPTH RANGE (m)	867/1512	1110/1230	997/1475	859/1235	845/1284	883/1991	117/1269	867/1512	859/1475	845/1991	117/1269	117/1991	

TABLE XIX: GREENLAND HALIBUT, DIV. 3M, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	JUN	JUL	AUG	SEP	OCT	2nd Q.	3rd Q.	4th Q.	YEAR	LENGTH GROUP
34				17.5			6.5		3.3	34
36			30.0	37.2	10.0		30.1	10.0	15.7	36
38	6.1	26.5	68.8	74.4		6.1	67.3		37.6	38
40	26.4		36.0	132.0		26.4	68.3		47.6	40
42	98.1		24.8	191.8	30.0	98.1	84.2	30.0	89.9	42
44	44.7	26.5	73.6	165.1	20.0	44.7	103.3	20.0	74.5	44
46	277.6	35.4	106.1	109.7	50.0	277.6	101.4	50.0	183.4	46
48	164.1	61.9	57.8	33.1	60.0	164.1	49.1	60.0	103.3	48
50	86.3	141.6	109.7	89.2	100.0	86.3	104.9	100.0	96.1	50
52	34.8	141.6	128.3	40.4	190.0	34.8	97.0	190.0	69.2	52
54	143.4	177.0	127.4	73.0	100.0	143.4	111.5	100.0	126.4	54
56	67.3	230.1	150.2	36.6	50.0	67.3	115.1	50.0	91.7	56
58	11.6	79.6	45.8		110.0	11.6	31.8	110.0	23.5	58
60	19.0	26.5	16.8		90.0	19.0	11.4	90.0	16.1	60
62	11.0	35.4	14.8		50.0	11.0	11.1	50.0	11.6	62
64	9.7		7.6		50.0	9.7	4.2	50.0	7.4	64
66		17.7	2.3		10.0		2.7	10.0	1.6	66
68					20.0			20.0	0.3	68
70					20.0			20.0	0.3	70
72					20.0			20.0	0.3	72
74					10.0			10.0	0.1	74
76										76
78					10.0			10.0	0.1	78
TOTAL	1000	1000	1000	1000	1000	1000	1000	1000	1000	
No. SAMPLES	3	1	4	3	1	3	8	1	12	
SAMPLING WEIGHT(kg)	223	139	414	185	162	223	738	162	1122	
No. F.MEASURED	317	113	412	322	100	317	847	100	1264	
MEAN LENGTH(cm)	49.8	54.2	50.7	45.5	56.2	49.8	49.1	56.2	49.5	
MEAN WEIGHT (g)	919	1232	1003	680	1635	919	904	1635	922	
DEPTH RANGE (m)	931/1114	921/954	910/1152	900/1109	930/1111	931/1114	900/1152	930/1111	900/1152	

TABLE XX: ROUGHHEAD GRENADIER, DIV. 3L, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	MAY =2nd Q.	AUG =3rd Q.	YEAR	LENGTH GROUP
16		52.6	33.4	16
17	10.9		4.0	17
18	24.1	70.2	53.3	18
19	40.5	35.1	37.1	19
20	57.6	87.7	76.7	20
21	79.9	175.4	140.5	21
22	80.4	105.3	96.2	22
23	82.7	70.2	74.7	23
24	102.0	70.2	81.8	24
25	104.3	35.1	60.4	25
26	89.0	70.2	77.0	26
27	76.6	35.1	50.2	27
28	37.1	87.7	69.2	28
29	15.7		5.7	29
30	42.3	87.7	71.1	30
31	26.6	17.5	20.9	31
32	32.1		11.7	32
33	53.4		19.5	33
34	40.7		14.9	34
35	4.3		1.6	35
TOTAL	1000	1000	1000	
No. SAMPLES	5	1	6	
SAMPLING WEIGHT(kg)	293	70	363	
No. F.MEASURED	226	57	283	
MEAN LENGTH(cm)	25.7	23.6	24.4	
MEAN WEIGHT (g)	1476	1157	1274	
DEPTH RANGE (m)	997/1277	1148/1259	997/1277	

TABLE XXI: ROUGHHEAD GRENADIER, DIV. 3M, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	JUL	AUG	3rd Q. = YEAR	LENGTH GROUP
14	20.4		7.3	14
15				15
16		43.5	27.8	16
17		58.0	37.1	17
18	81.6	101.4	94.3	18
19	81.6	87.0	85.0	19
20	163.3	159.4	160.8	20
21	61.2	87.0	77.7	21
22	61.2		22.0	22
23	81.6	87.0	85.0	23
24	61.2	87.0	77.7	24
25	40.8	29.0	33.2	25
26	81.6	29.0	47.9	26
27	61.2	43.5	49.9	27
28	40.8		14.7	28
29	20.4	43.5	35.2	29
30	40.8	72.5	61.1	30
31	61.2	29.0	40.6	31
32		43.5	27.8	32
33	40.8		14.7	33
TOTAL	1000	1000	1000	
No. SAMPLES	1	1	2	
SAMPLING WEIGHT(kg)	60	80	140	
No. F.MEASURED	49	69	118	
MEAN LENGTH(cm)	24.1	23.1	23.5	
MEAN WEIGHT (g)	1240	1128	1169	
DEPTH RANGE (m)	921/954	959/1117	921/1117	

TABLE XXII: WITCH FLOUNDER, DIV. 3M, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	FEB = YEAR	LENGTH GROUP
34	102.0	34
36	142.9	36
38	142.9	38
40	163.3	40
42	285.7	42
44	142.9	44
46	20.4	46
TOTAL	1000	
No. SAMPLES	1	
SAMPLING WEIGHT(kg)	29	
No. F.MEASURED	49	
MEAN LENGTH(cm)	40.8	
MEAN WEIGHT (g)	689	
DEPTH RANGE (m)	536/561	

TABLE XXIII: THORNY SKATE, DIV. 3M, 2018: length composition (0/000) of the 130mm trawl catches.

LENGTH GROUP	JAN = YEAR	LENGTH GROUP
50	71.4	50
52	47.6	52
54		54
56	71.4	56
58		58
60	71.4	60
62		62
64		64
66	47.6	66
68	47.6	68
70		70
72	142.9	72
74	95.2	74
76	142.9	76
78	119.0	78
80	71.4	80
82	71.4	82
TOTAL	1000	
No. SAMPLES	1	
SAMPLING WEIGHT(kg)	101	
No. F.MEASURED	42	
MEAN LENGTH(cm)	70.3	
MEAN WEIGHT (g)	4113	
DEPTH RANGE (m)	445/478	

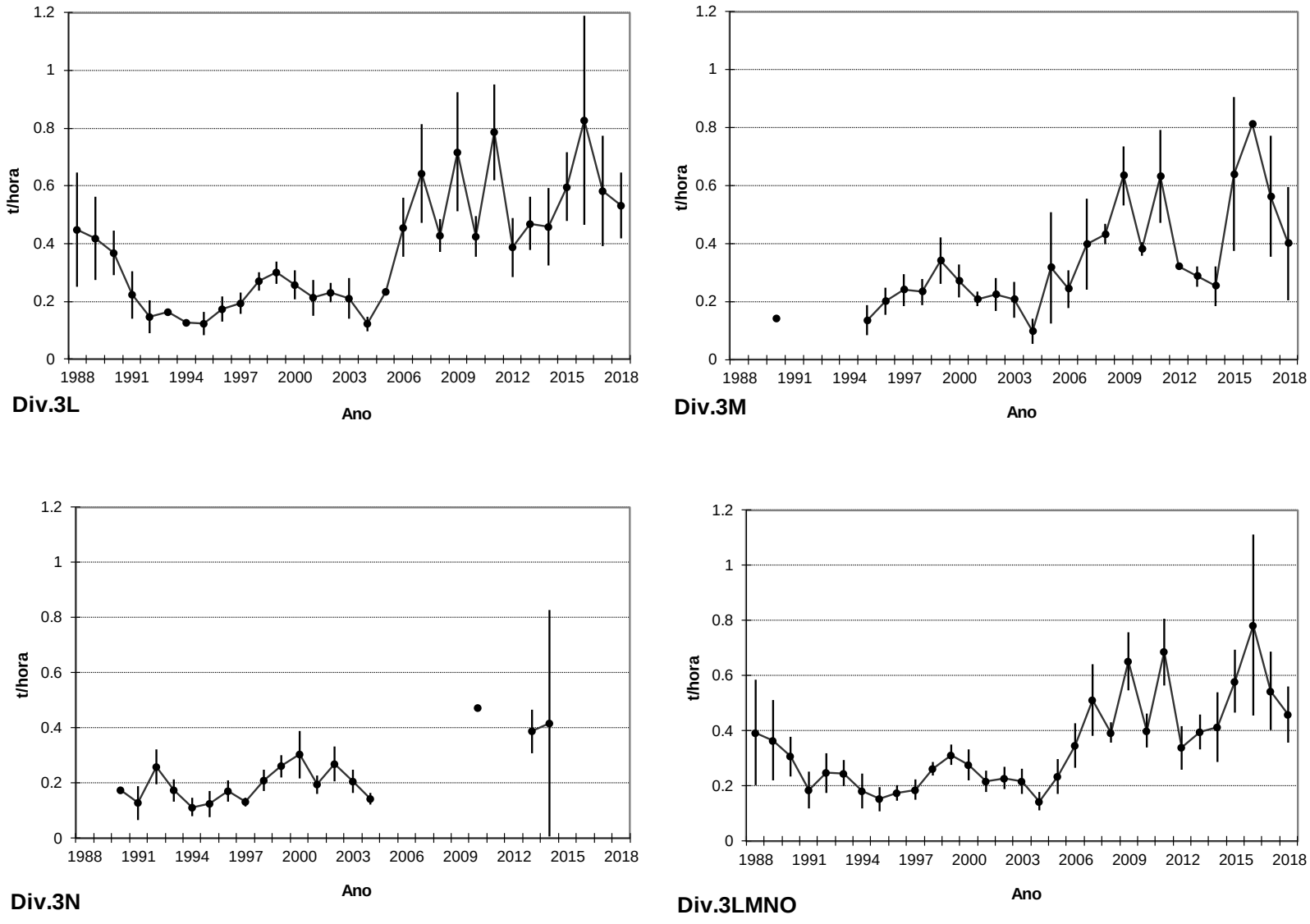

Fig. 1: Greenland halibut trawl catch rates by division, 1988 - 2018.

Fig. 2 - Annual length composition of Cod on Division 3M 130mm trawl fishery in 2018

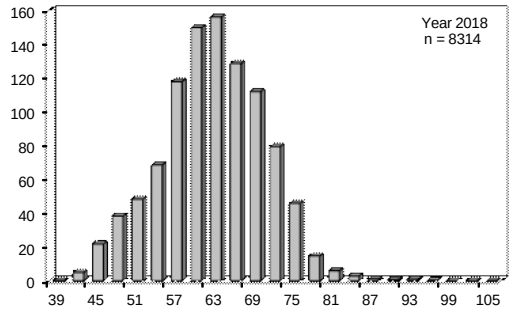

Fig. 3 - Annual length composition of Cod on Division 3N 130mm trawl fishery in 2018

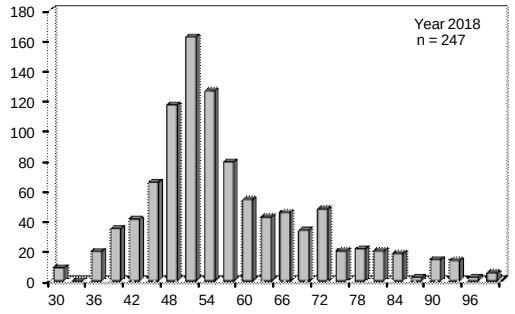

Fig. 4 - Annual length composition of redfish (*Sebastes mentella*) on Division 3L 130mm trawl fishery in 2018

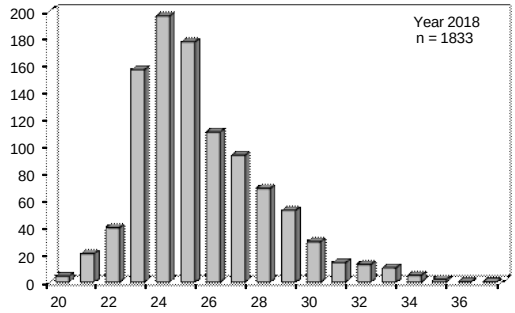

Fig. 5 - Annual length composition of redfish (*Sebastes mentella*) on Division 3M 130mm trawl fishery in 2018

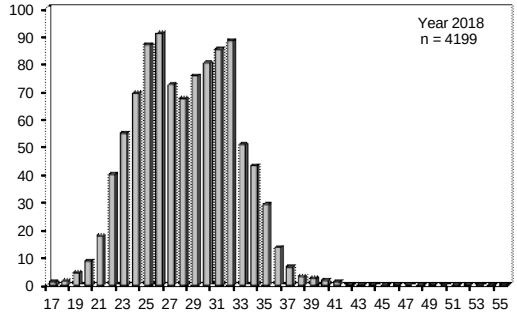

Fig. 6 - Annual length composition of redfish (*Sebastes mentella*) on Division 3N 130mm trawl fishery in 2018

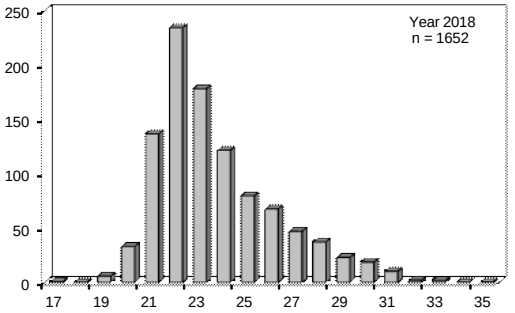

Fig. 7 - Annual length composition of redfish (*Sebastes mentella*) on Division 3O 130mm trawl fishery in 2018

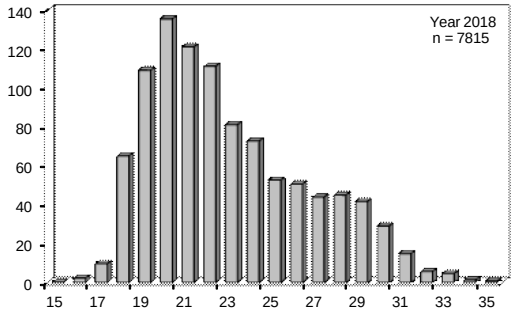

Fig. 8 - Annual length composition of redfish (*Sebastes marinus*) on Division 3L 130mm trawl fishery in 2018

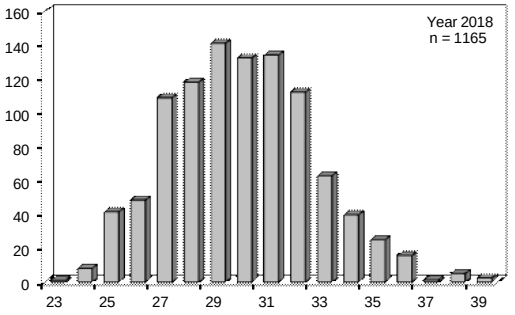

Fig. 9 - Annual length composition of redfish (*Sebastes marinus*) on Division 3M 130mm trawl fishery in 2018

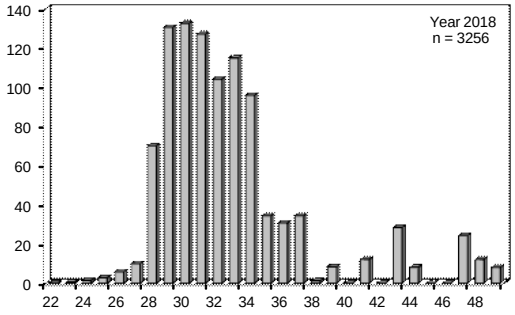

Fig. 10 - Annual length composition of American plaice on Division 3M 130mm trawl fishery in 2018

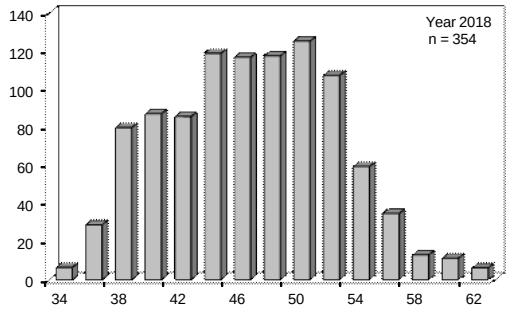

Fig. 11 - Annual length composition of American plaice on Division 3N 130mm trawl fishery in 2018

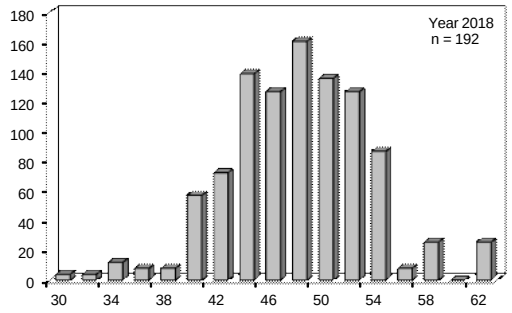

Fig. 12 - Annual length composition of American plaice on Division 3O 130mm trawl fishery in 2018

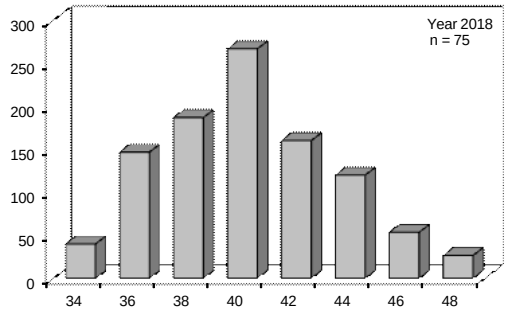

Fig. 13 - Annual length composition of Greenland halibut on Division 3L 130mm trawl fishery in 2018

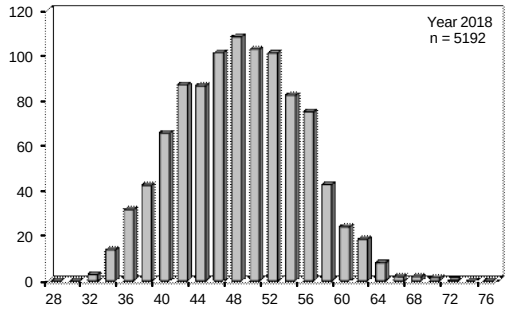

Fig. 14 - Annual length composition of Greenland halibut on Division 3M 130mm trawl fishery in 2018

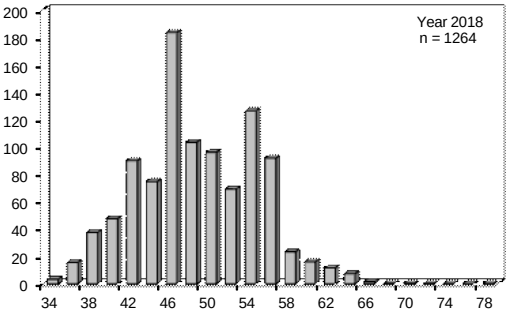

Fig. 15 - Annual length composition of roughhead grenadier on Division 3L 130mm trawl fishery in 2018

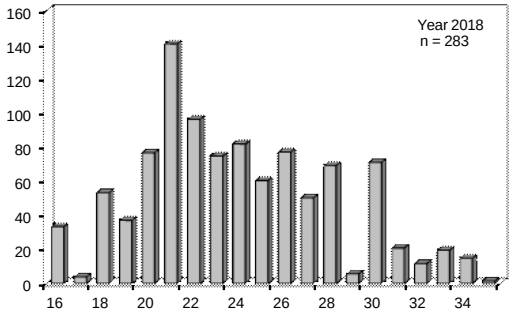

Fig. 16 - Annual length composition of roughhead grenadier on Division 3M 130mm trawl fishery in 2018

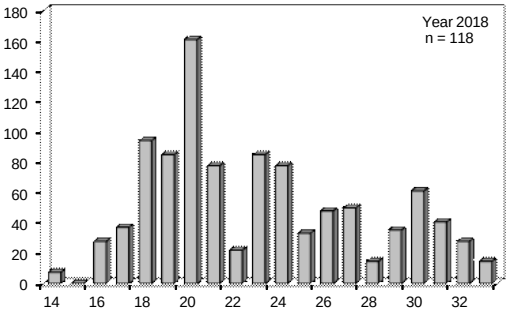

Fig. 17 - Annual length composition of witch flounder on Division 3M 130mm trawl fishery in 2018

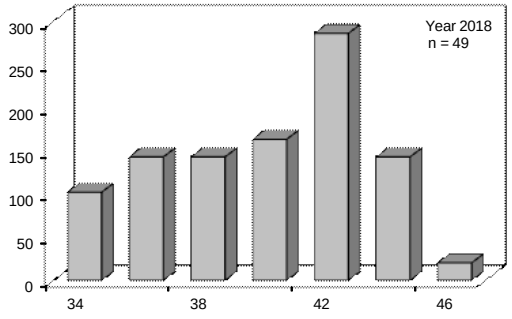

Fig. 18 - Annual length composition of thorny skate on Division 3M 130mm trawl fishery in 2018