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**SCIENTIFIC COUNCIL MEETING – JUNE 2020****ESTONIAN RESEARCH REPORT FOR 2019**

by

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This Report contains information for Estonian fishing vessels which operated in NAFO RA in 2019. Fishery took place only in SA 3. Catch, effort and length distribution information by sub-areas is from onboard NAFO observers. In Estonia, NAFO observers are employed by the Estonian Marine Institute, and they are also specially trained to collect basic scientific data.

**Sub-area 3****A. Status of the Fishery**

Two vessels were involved in finfish fishery in 2006. There has been mainly one vessel involved in finfish fishery from 2007 to 2012. There were four vessels involved in finfish fishery of which two targeted mainly shrimp and switched to finfish when shrimp catch was poor in 2013. Two vessels were involved in finfish fishery in 2014 but one of them targeted mainly shrimp. In 2015 and 2016 two vessels were fishing only finfish and no fishing for shrimp was carried out. In 2017 there were two vessels targeting finfish as a new vessel joined the fishery. In 2018 and 2019 two vessels were fishing only for finfish all year round.

Almost half of the fishing activities by effort was carried out in SA 3M, around a quarter took place in 3L. Fishing effort was low in 3N and smallest in 3O (Table 1). As a new vessel joined the fishery, the fishing effort increased significantly in 2017 and remained on the same level in 2018, but dropping slightly in 2019. Fishing effort has been fluctuating from 2009 to 2019, being more stable in last three years (Table 2). According to observer estimated catch and discard data, main target species were RED, COD and GHL, followed by YEL and PLA in 2018 (Table 3).

In addition to effort and discard information, specifically trained NAFO observers collected length, weight, sex data and otoliths for ageing. The list of collected data is in Table 4. All lengths are TL and length groups (LG) are rounded to the nearest centimeter. Mesh sizes of trawls in finfish fishery in codend were between 138-146 mm, for skates 285 mm. Length distributions are presented by species as sampled number of fish by subareas (Tables 5-8, figures 1-4).



**Table 1.** Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2019 by division and month.

2019 Month	Division				Grand Total
	3L	3M	3N	3O	
1	100	123	65		289
2		61	14		74
3	162	302	24		488
4	225	357	213		795
5	21	120	115		255
6					0
7	23	604			627
8	512	321			833
9	255		87	35	377
10	37	196	27		261
11	60	196	214	27	497
12	377	310	75		763
Total effort, hrs	1772	2590	833	63	5258

**Table 2.** Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2009-2019 by division.

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
3L	916	1785	1240	531	1413	1425	980	985	1022	1581	1772
3M	580	1107	1550	243	2534	1260	816	486	2702	2922	2590
3N	20	152	98	796	937	856	999	1483	1130	702	833
3O	41	49	50	48	92	423	578	736	560	229	63
Total effort, hrs	1556	3093	2938	1619	4976	3965	3373	3690	5414	5434	5258

**Table 3.** Observer estimated retained catch and discard (tonnes) of Estonia in NAFO areas in 2019 by division.

2019 3- Alpha Code	English name	Latin name	3L			3M			3N			3O			All areas total
			kept	disc	total	kept	disc	total	kept	disc	total	kept	disc	total	
ANG	American angler (=Goosefish)	<i>Lophius americanus</i>													
CAA	Atlantic wolffish	<i>Anarhichas lupus</i>													
CAP	Capelin	<i>Mallotus villosus</i>								0.6	0.6				0.6
CAS	Spotted wolffish	<i>Anarhichas minor</i>													
COD	Atlantic Cod	<i>Gadus morhua</i>	19.0		19.0	1301.2	1.7	1302.9	23.6	8.7	32.3	6.4		6.5	1360.7
GHL	Greenland halibut	<i>Reinhardtius hippoglossoides</i>	495.9	0.3	496.2	30.6		30.6	147.7		147.7				674.4
GSK	Boreal (Greenland) shark	<i>Somnousus microcephalus</i>		16.6	16.6			6.3	6.3		4.9	4.9		0.3	0.3
HAD	Haddock	<i>Melanogrammus aeglefinus</i>													
HAL	Atlantic halibut	<i>Hippoglossus hippoglossus</i>	5.7		5.7	20.7		20.7	13.1		13.1	0.5		0.5	40.0
HKS	Silver hake	<i>Merluccius bilinearis</i>											0.2	0.2	0.2
HKW	White hake	<i>Urophycis tenuis</i>													
MZZ	Marine fishes nei	<i>Osteichthyes</i>		1.2	1.2			8.2	8.2		2.7	2.7			12.1
PLA	Amer. plaice(=Long rough dab)	<i>Hippoglossoides platessoides</i>	8.5	0.1	8.6	51.7	1.1	52.9	73.2	0.1	73.3	8.7		8.7	143.5
POR	Porbeagle	<i>Lamna nasus</i>						0.1	0.1				0.1	0.1	0.2
PRA	Northern prawn	<i>Pandalus borealis</i>													
RED	Atlantic redfishes nei	<i>Sebastes spp</i>	821.4	0.7	822.1	1710.9	4.9	1715.9	473.4	1.2	474.6	238.4	0.6	238.9	3251.5
RHG	Roughhead grenadier	<i>Macrourus berglax</i>	2.3	10.5	12.8	0.6	1.2	1.8	0.8	0.2	1.1				15.7
SHX	Large sharks (NS)	<i>Squaliformes</i>													
SKA	Raja rays nei	<i>Raja spp</i>	0.5		0.5	2.2	0.5	2.7	4.6	0.1	4.7	0.1		0.1	8.0
WIT	Witch flounder	<i>Glyptocephalus cynoglossus</i>	0.2		0.2	24.5	1.6	26.1	0.5	0.1	0.6	0.6		0.6	27.5
YEL	Yellowtail flounder	<i>Limanda ferruginea</i>							367.4	0.3	367.7	5.4		5.4	373.1

**Table 4.** Biological sampling list for Estonia in 2019. \*Number of sexed fish; \*\*Only age structures collected, fish are not aged yet.

Country	Species Code	NAFO Division	Gear	Month	Type of Sample	Retained/ Discarded/ Unsorted	No. of samples	No. Measured	No. Sexed*	No. Aged**	No. Weighed
EST	COD	3L	OTB	4	OC	Unsorted	1	40	40		40
EST	COD	3M	OTB	1	OC	Unsorted	11	154	154		154
EST	COD	3M	OTB	2	OC	Unsorted	1	46	46		46
EST	COD	3M	OTB	4	OC	Discarded	1	1	1		1
EST	COD	3M	OTB	4	OC	Retained	5	334	334	79	334
EST	COD	3M	OTB	5	OC	Discarded	1	2	2		2
EST	COD	3M	OTB	5	OC	Retained	1	90	90		90
EST	COD	3M	OTB	8	OC	Retained	10	310	310	100	190
EST	COD	3M	OTB	9	OC	Retained	1	50	50		
EST	COD	3N	OTB	2	OC	Unsorted	1	10	10	10	10
EST	GHL	3L	OTB	3	OC	Unsorted	6	170	170	50	170
EST	GHL	3L	OTB	4	OC	Unsorted	3	80	80	50	80
EST	GHL	3L	OTB	8	OC	Discarded	5	51	51	50	51
EST	GHL	3L	OTB	9	OC	Discarded	3	168	168	158	168
EST	GHL	3L	OTB	11	OC	Retained	1	72	72	42	72
EST	GHL	3L	OTB	12	OC	Retained	11	1016	1016	367	1016
EST	GHL	3M	OTB	1	OC	Unsorted	9	44	44		44
EST	GHL	3M	OTB	3	OC	Unsorted	2	40	40	15	40
EST	GHL	3M	OTB	7	OC	Discarded	2	10	10	10	10
EST	GHL	3N	OTB	12	OC	Retained	2	202	202	84	202
EST	RED	3L	OTB	4	OC	Retained	2	451	451	63	63
EST	RED	3L	OTB	4	OC	Unsorted	3	100	100	100	100
EST	RED	3L	OTB	5	OC	Retained	1	202	202		
EST	RED	3L	OTB	8	OC	Retained	2	70	70	50	70
EST	RED	3L	OTB	9	OC	Discarded	1	27	27		
EST	RED	3L	OTB	9	OC	Retained	1	105			
EST	RED	3L	OTB	10	OC	Retained	5	339	339		132
EST	RED	3L	OTB	11	OC	Retained	1	59	59		
EST	RED	3M	OTB	1	OC	Unsorted	8	314	314		314
EST	RED	3M	OTB	3	OC	Retained	5	799	799	210	422
EST	RED	3M	OTB	3	OC	Unsorted	7	230	230	50	230
EST	RED	3M	OTB	4	OC	Retained	1	187	187		
EST	RED	3M	OTB	7	OC	Discarded	3	42	42	42	42
EST	RED	3M	OTB	7	OC	Retained	13	573	573	200	573
EST	RED	3M	OTB	8	OC	Discarded	1	30	30		
EST	RED	3M	OTB	8	OC	Retained	2	60	60		60
EST	RED	3M	OTB	10	OC	Discarded	4	47	47		
EST	RED	3M	OTB	11	OC	Discarded	4	168	168		
EST	RED	3N	OTB	2	OC	Unsorted	2	91	91	40	91
EST	RED	3N	OTB	3	OC	Unsorted	3	105	105	55	105
EST	RED	3N	OTB	4	OC	Unsorted	2	80	80	30	80
EST	RED	3N	OTB	9	OC	Discarded	1	269	269		
EST	RED	3N	OTB	11	OC	Retained	6	773	773		
EST	RED	3O	OTB	9	OC	Discarded	1	116	116	116	116
EST	RED	3O	OTB	11	OC	Discarded	1	1	1	1	1
EST	RED	3O	OTB	11	OC	Retained	4	884	884	167	167
EST	YEL	3N	OTB	4	OC	Unsorted	6	220	220	180	220
EST	YEL	3N	OTB	5	OC	Unsorted	2	70	70	70	70
EST	YEL	3N	OTB	9	OC	Discarded	3	208	208	100	100

**Table 5.** Length distribution (sampled number of fish) of cod in 2019 Estonian fisheries in NAFO area. 0-female, 1-male and un-unsexed.

LG, cm	3L		3L Total	3M		un	3M Total	3N	3N Total
	0	1		0	1			1	
36					1		1		
37									
38					1		1		
39					1		1		
40				1	1		2		
41				1			1		
42					1		1		
43				1	1		2		
44				5	3		8		
45				4	4		8		
46									
47				3	5		8		
48		1	1	1	4		5		
49				2	11		13		
50					6		6	1	1
51				1	9		10		
52		1	1	3	8		11	1	1
53				3	13		16		
54		2	2	6	6		12	1	1
55	1	1	2	5	19		24		
56				16	17		33		
57	1		1	11	22		33		
58	1	5	6	14	18		32	1	1
59	3	1	4	26	28		54	1	1
60	1	1	2	21	24		45		
61	3		3	28	32		60		
62		8	8	18	29		47	2	2
63		1	1	27	23		50		
64	1		1	32	27	1	60	1	1
65		1	1	32	24		56		
66	2	1	3	20	7		27		
67				27	14		41		
68	2		2	26	11		37		
69				13	12		25		
70	1	1	2	18	13		31		
71				20	7		27		
72				17	12		29		
73				9	9		18	1	1
74				18	7		25	1	1
75				7	7		14		
76				8	1		9		
77				6	3		9		
78				10	5		15		
79				6	5		11		
80				5	5		10		
81				4	6		10		
82				6	1		7		
83				5	2		7		
84				3	3		6		
85				1			1		

86				3	3		6		
87									
88					2		2		
89				3	1		4		
90									
91					1		1		
92				3			3		
93									
94				3		1	4		
95									
96									
97									
98									
99				1			1		
100									
101				1			1		
102				1			1		
103									
104									
105									
106									
107									
108					1		1		
109				1			1		
110									
111									
112									
113				1			1		
114									
115				1			1		
116									
117									
118									
119									
120									
121									
122									
123									
124									
125									
126				1			1		
Total	16	24	40	509	476	2	987	10	10

**Table 6.** Length distribution (sampled number of fish) of Greenland halibut in 2019 Estonian fisheries in NAFO area. 0-female, 1-male and un-unsexed.

LG, cm	3L		3L Total	3M			3M Total	3N		3N Total
	0	1		0	1	un		0	1	
24										
25										
26										
27										
28					1		1			
29										
30										
31		1	1		1		1			
32	1	1	2							
33	1		1							
34	2	3	5		1		1			
35	9	5	14							
36	11	7	18		1		1			
37	15	15	30							
38	12	7	19		1		1	1		1
39	24	15	39		1		1	2		2
40	13	22	35					4	3	7
41	21	15	36		1		1	2	2	4
42	19	16	35		3		3	4	2	6
43	22	19	41		4		4	8	4	12
44	29	36	65	3	4		7	7	12	19
45	26	43	69	4	3		7	3	3	6
46	27	49	76	1	1		2	8	7	15
47	33	57	90		2		2	4	3	7
48	39	39	78	1	3		4	8	4	12
49	42	61	103	1	5		6	8	5	13
50	48	43	91	1	5		6	4	10	14
51	46	38	84	5	2		7	8	6	14
52	59	28	87	4	5		9	10	1	11
53	63	21	84	5	3		8	4		4
54	57	17	74	3	1		4	3	2	5
55	52	10	62					8	1	9
56	47	7	54	4			4	4	1	5
57	38	5	43	2			2	3	1	4
58	30	5	35	1	1		2	7		7
59	35	2	37	3			3	2	1	3
60	21	3	24	1			1	2		2

61	23		23	1			1	4		4
62	19		19	1			1	2		2
63	12		12	1	1		2	4		4
64	18		18					3		3
65	12		12					1		1
66	13		13	1			1	1		1
67	6		6							
68	5		5					2		2
69	4		4					2		2
70	2		2					1		1
71	2		2							
72	2		2							
73	4		4							
74	1		1							
75										
76	1		1							
77	1		1							
Total	967	590	1557	43	50	0	93	134	68	202

**Table 7.** Length distribution (sampled number of fish) of redfish in 2019 Estonian fisheries in NAFO area. 0-female, 1-male and un-unsexed.

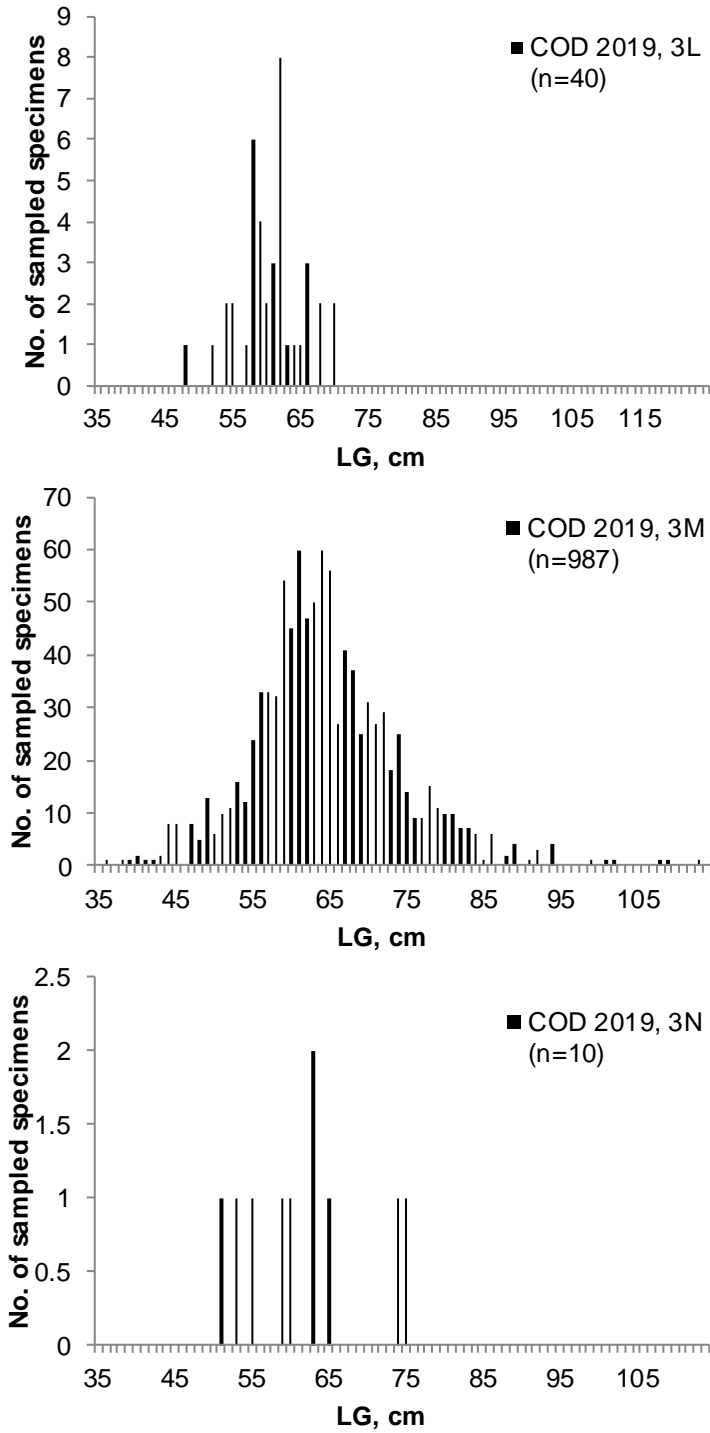
LG, cm	3L			3L Total	3M			3M Total	3N		3N Total	3O		3O Total
	0	1	un		0	1	un		0	1		0	1	
16														
17													1	1
18														
19									1	2	3		1	1
20									1	5	6		2	2
21						1		1	2	6	8		2	2
22						1		1	7	51	58	2	32	34
23		1		1	1	1		2	22	183	205	8	57	65
24	2	7		9	4	7		7	96	260	356	28	130	158
25	2	73		75	4	8		12	102	147	249	44	130	174
26	8	61		69	6	7		13	138	70	208	107	79	186
27	10	86	1	97	8	17		25	87	26	113	122	42	164
28	8	48		56	3	40		43	46	15	61	76	20	96
29	29	39		68	9	110		119	17	8	25	55	6	61
30	37	70	1	108	38	251		289	13	6	19	19	1	20
31	40	44	2	86	101	358	1	460	3		3	16		16
32	59	62		121	191	283		474	3		3	11		11
33	69	76	7	152	196	149		345	1		1	3		3
34	95	22	21	138	199	67		266				3		3
35	80	33	29	142	138	24		162				2		2
36	51	6	14	71	73	10		83						
37	61	4	19	84	43	6		49						
38	34	2	7	43	14	3		17						
39	11	4	2	17	13	5		18						



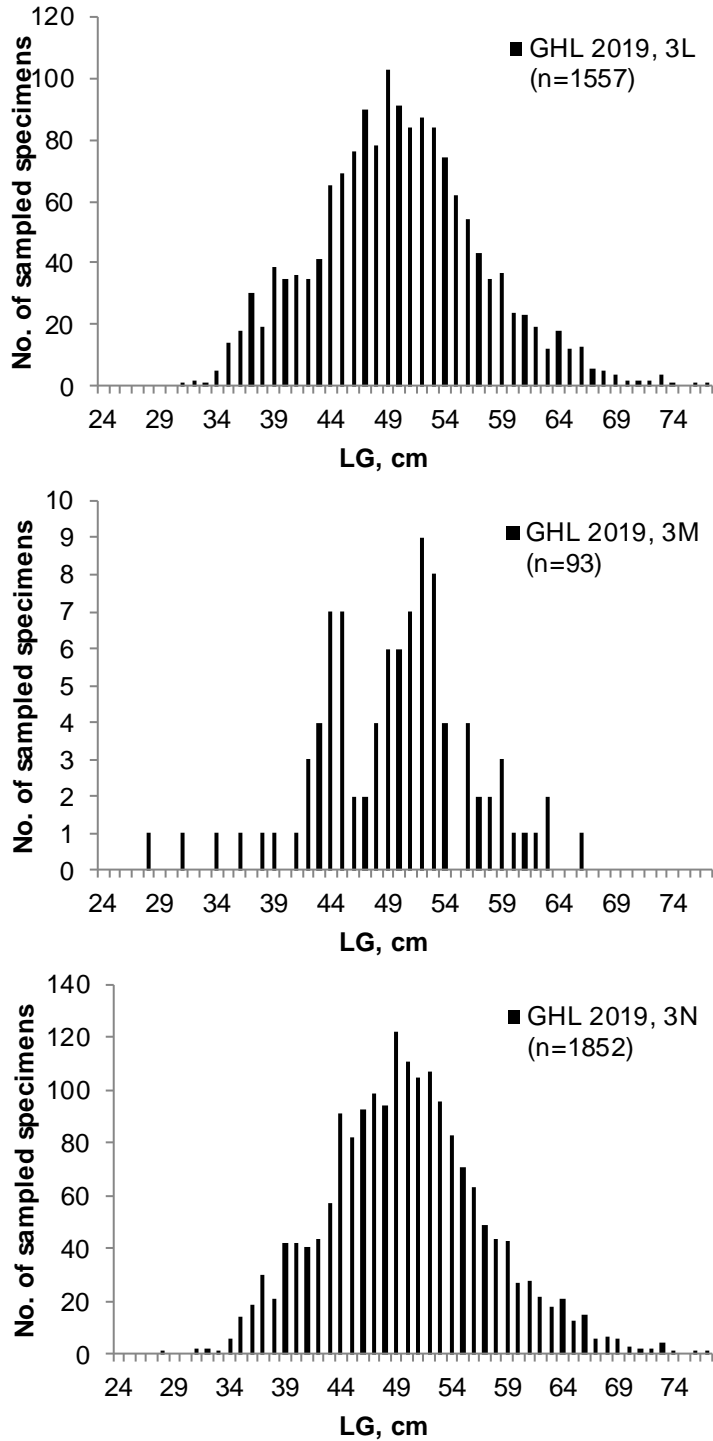
40	11			11	8	4		12				1		1
41	2		1	3	13	1		14						
42	1		1	2	6	9		15				1		1
43					4	1		5						
44					1			1						
45					2			2						
46					8			8						
47					2			2						
48					1			1						
49														
50														
51					2			2						
52														
53					1			1						
54														
55					1			1						
56														
57														
58														
59														
60														
61														
62														
63														
64														
65														
66														
67														
Total	610	638	105	1353	1086	1363	1	2450	539	779	1318	498	503	1001

**Table 8.** Length distribution (sampled number of fish) of yellowtail flounder in 2019 Estonian fisheries in NAFO area 0-female, 1-male and un-unsexed.

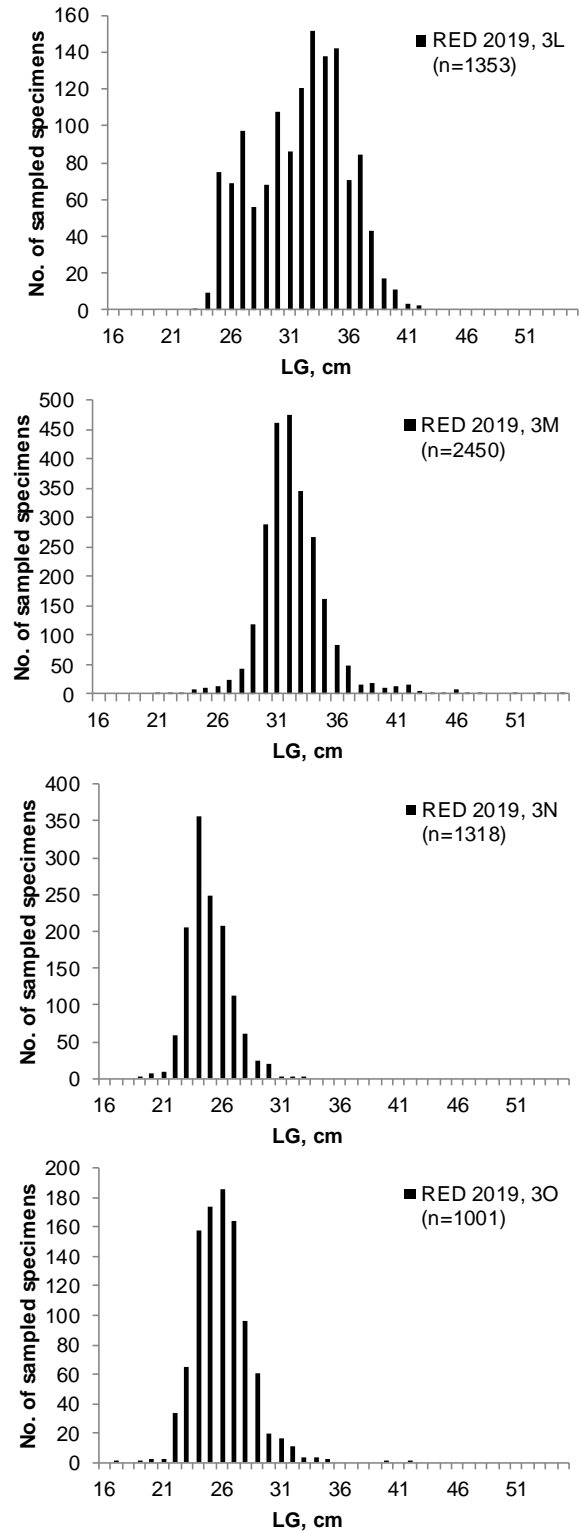
LG, cm	3N		3N Total
	0	1	
25			
26			
27	5	2	7
28	2	8	10
29	3	7	10
30	6	12	18
31	18	19	37
32	8	38	46
33	20	49	69
34	18	55	73
35	31	27	58
36	36	19	55
37	29	3	32
38	32	2	34
39	16	1	17
40	14		14
41	9		9
42	6		6
43	2		2
44	1		1
45			
46			
47			
48			
49			
50			
51			
52			
53			
54			
55			
56			
Total	256	242	498



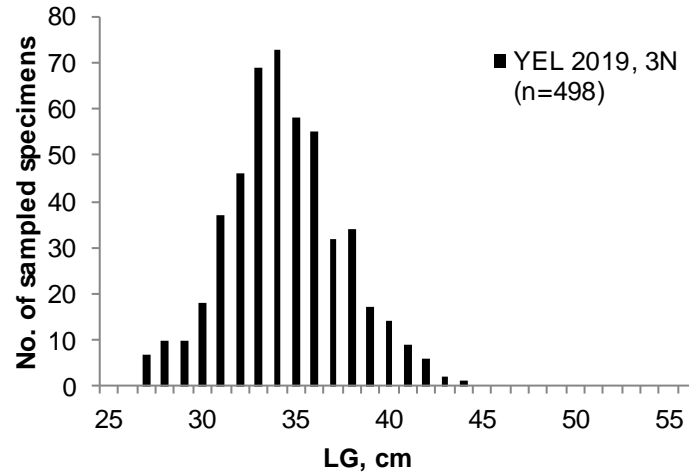
**Figure 1.** Length distribution (number of sampled specimens) of cod in Div. 3L, 3M and 3N Estonian fisheries in 2019.



**Figure 2.** Length distribution (number of sampled specimens) of Greenland halibut in Div. 3L, 3M and 3N Estonian fisheries in 2019.



**Figure 3.** Length distribution (number of sampled specimens) of redfish in Div. 3L, 3M, 3N and 3O Estonian fisheries in 2019.



**Figure 4.** Length distribution (sampled number of fish) of yellowtail flounder in Div. 3N Estonian fisheries in 2019.