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SCIENTIFIC COUNCIL MEETING – JUNE 2021**ESTONIAN RESEARCH REPORT FOR 2020**

by

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This Report contains information for Estonian fishing vessels which operated in NAFO RA in 2020. 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**

In 2020 one ship worked year-round and second ship had a fire accident on board in the spring, therefore operated for only five months. Both vessels were fishing only for finfish. One trip started in 2019 was completed in 2020. In 2020, five more trips took place. All these trips had an observer on board who also took biological samples (Table 1). Unfortunately, fire accident caused an electrical short circuit during which the observation data and samples of that voyage were destroyed.

Almost half of the fishing activities by effort was carried out in SA 3L, around a quarter took place in 3M. Fishing effort was lower in 3N and smallest in 3O (Table 2). The fishing effort that has been on an upward trend since 2017 fell again to the level of the beginning of the previous decade (Table 3). According to observer estimated catch and discard data, main target species were RED, COD and GHL, followed by YEL and PLA in 2020 (Table 4).

In addition to effort and discard information, specifically trained NAFO observers collected length, weight, sex data and otoliths for age reading. Compared to the previous year, the number of samples taken has decreased by almost half, but the number of measured specimens decreased by one third. The list of collected data is in Table 1. All lengths are TL and length groups (LG) on figures 2-4 are rounded to the nearest centimeter. Mesh sizes of used OTB trawls in finfish fishery in codend were between 138-146 mm and 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. Biological sampling list for Estonia in 2020. Gear OTB, Type of Sample OC. *Number of sexed fish;
**Only age structures collected, fish are not aged yet.

Country	Species Code	Species Code	Month	Retained/Discarded/Unsorted	No. of samples	No. Measured	No. Sexed*	No. Aged**	No. Weighed
EST	COD	3L	3	Retained	1	20	20	20	20
EST	COD	3L	6	Discarded	1	12	12	4	12
EST	COD	3M	2	Retained	2	100	100	-	100
EST	COD	3M	3	Retained	5	210	210	160	210
EST	GHL	3L	1	Retained	2	124	124	21	124
EST	GHL	3L	9	Retained	15	983	548	291	111
EST	GHL	3L	9	Discarded	1	29	29	29	29
EST	GHL	3L	10	Retained	7	602	268	130	130
EST	GHL	3M	1	Retained	2	109	109	33	109
EST	GHL	3M	10	Retained	1	98	-	-	-
EST	GHL	3N	1	Retained	2	128	128	-	128
EST	RED	3L	3	Retained	5	400	100	50	100
EST	RED	3L	6	Retained	11	1602	1602	307	383
EST	RED	3L	9	Retained	3	218	218	50	50
EST	RED	3M	1	Retained	2	343	343	-	194
EST	RED	3M	2	Retained	7	650	250	50	100
EST	RED	3M	7	Retained	7	1058	1058	231	238
EST	RED	3N	1	Retained	1	151	151	-	50
EST	RED	3N	12	Retained	2	487	320	-	186
EST	RED	3N	12	Discarded	1	12	12	-	12
EST	YEL	3N	11	Retained	3	573	253	63	380
EST	YEL	3N	12	Retained	3	576	219	42	97
Total					84	8485	6074	1481	2763

Table 2. Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2020 by division and month.

2020	Division				
Month	3L	3M	3N	3O	Grand Total
1	93	123	58		274
2	13	166			179
3	69	80	49	101	299
4			125	189	314
5	15				15
6	368	30			398
7	31	237			268
8	43		15		58
9	460	16			476
10	287	53			340
11			57		57
12		20	230		250
Total effort, hrs	1379	725	534	290	2928

Table 3. Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2010-2020 by division.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
3L	1785	1240	531	1413	1425	980	985	1022	1581	1772	1379
3M	1107	1550	243	2534	1260	816	486	2702	2922	2590	725
3N	152	98	796	937	856	999	1483	1130	702	833	534
3O	49	50	48	92	423	578	736	560	229	63	290
Total effort, hrs	3093	2938	1619	4976	3965	3373	3690	5414	5434	5258	2928

Table 4. Observer estimated retained catch and discard (tonnes) of Estonia in NAFO areas in 2020 by division.

2020		3L			3M			3N			All areas
3-Alpha Code	Latin name	kept	disc	total	kept	disc	total	kept	disc	total	total
CAP	<i>Mallotus villosus</i>								0,2	0,2	0,2
CAS	<i>Anarhichas minor</i>		0,1	0,1		0,2	0,2			0,0	0,3
COD	<i>Gadus morhua</i>	24,0	0,5	24,5	185,4	2,0	187,4	8,4	0,2	8,6	220,5
GHL	<i>Reinhardtius hippoglossoides</i>	402,7	11,0	413,7	52,2	0,8	53,0	84,1	0,8	84,9	551,6
GSK	<i>Somnnonus microcephalus</i>		2,7	2,7		1,8	1,8		3,0	3,0	7,5
HAL	<i>Hippoglossus hippoglossus</i>	11,0	0,1	11,1	1,5		1,5	1,7		1,7	14,3
HKW	<i>Urophycis tenuis</i>			0,0			0,0	1,9		1,9	1,9
MZZ	<i>Osteichthyes</i>		3,8	3,8		3,1	3,1		0,7	0,7	7,6
PLA	<i>Hippoglossoides platessoides</i>	149,2	0,7	149,9	6,6	0,6	7,2	29,3	0,1	29,4	186,5
POR	<i>Lamna nasus</i>			0,0			0,0		0,6	0,6	0,6
RED	<i>Sebastes spp</i>	660,6	1,8	662,4	860,9	1,3	862,2	82,9	0,3	83,2	1607,8
RHG	<i>Macrourus berglax</i>	9,2	2,1	11,3	1,4	0,2	1,6		0,2	0,2	13,1
SKA	<i>Raja spp</i>		0,3	0,3		1,0	1,0	0,1	0,5	0,6	1,9
WIT	<i>Glyptocephalus cynoglossus</i>	1,0	0,4	1,4	29,0	0,7	29,7	7,7	0,1	7,8	38,9
YEL	<i>Limanda ferruginea</i>			0,0			0,0	128,7	0,2	128,9	128,9

Table 5. Length distribution (sampled number of fish) of cod in 2020 Estonian fisheries in NAFO area. 0-female, 1-male.

LG, mm	3L		3L Total	3M		3M Total	Total
	0	1		0	1		
310		1	1				1
315	1		1				1
320		2	2				2
325	1		1				1
330	1		1				1
335	1		1				1
345		1	1				1
355	1	1	2				2
360	1		1				1
380	1		1				1
470	1		1				1
500	1		1	1		1	2
510		2	2		1	1	3
520					2	2	2
530	2	1	3	2		2	5
540	1	1	2	4	8	12	14
550		1	1	2	7	9	10
560	3		3	3	2	5	8
570	2	1	3	2	3	5	8
580				3	7	10	10
590	1		1	5	8	13	14
600				9	12	21	21
610	1		1	5	12	17	18
620				4	11	15	15
630	1		1	7	18	25	26
640				10	14	24	24
650	1		1	5	10	15	16
660				6	11	17	17
670				12	8	20	20
680				11	7	18	18
690				8	7	15	15
700				8	4	12	12
710				9	8	17	17
720				6	6	12	12
730				4	2	6	6

	3L		3L Total	3M		3M Total	Total
740				1	1	2	2
750					2	2	2
760				1	1	2	2
770				1	1	2	2
780				3		3	3
790				1	1	2	2
800				1		1	1
820				1		1	1
830				1		1	1
Total	21	11	32	136	174	310	342

Table 6. Length distribution (sampled number of fish) of Greenland halibut in 2020 Estonian fisheries in NAFO area. 0-female, 1-male and un-unsexed.

LG, cm	3L			3L Total	3M			3M Total	3N		3N Total	Total
	0	1	un		0	1	un		0	1		
310	1			1								1
330	1			1								1
340		3		3								3
350	1	1	1	3								3
360	4	2		6								6
370	5	3	1	9								9
375	2			2								2
380	4	5		9	1			1	1		1	11
385		1		1		1		1		1	1	3
390	12	12	8	32					1		1	33
395	1			1	1			1	2		2	4
400	4	10	5	19	1	1		2				21
405	1	2		3					1		1	4
410	14	10	15	39			1	1				40
415	2	1		3	2	1		3	1		1	7
420	10	12	26	48		2	5	7	2	1	3	58
425	5	2		7	1			1	3	1	4	12
430	12	7	20	39	1		2	3		2	2	44
435	1	3		4		2		2	2	2	4	10
440	19	17	25	61					3	1	4	65
445	6	3		9	3	2		5	2	2	4	18
450	35	16	36	87	1	3	7	11				98
455		3		3	3	2		5	1	1	2	10
460	33	15	46	94	3	1	8	12	1		1	107

	3L			3L	3M			3M	3N		3N	Total
				Total				Total			Total	
465	3	1		4		2		2	3	4	7	13
470	40	21	67	128	1		18	19	1	3	4	151
475	3	1		4	5			5	5	2	7	16
480	36	14	68	118	1		14	15	2	1	3	136
485	3	1		4	2	5		7	2	3	5	16
490	47	28	96	171	2	1	14	17	2	1	3	191
495	3			3	1	2		3	3		3	9
500	33	21	51	105	3	1	10	14	2		2	121
505	4			4	2	1		3	5		5	12
510	33	18	60	111	4		8	12	5	1	6	129
515	2	1		3	3	3		6	3	5	8	17
520	35	15	66	116	4	2	4	10	2	1	3	129
525	1	2		3	1			1	3	3	6	10
530	43	17	43	103	2		2	4	1		1	108
535	1			1	3			3	6	2	8	12
540	30	12	26	68	2	1	1	4	2		2	74
545					2	1		3	2		2	5
550	30	10	21	61	3			3	2		2	66
555	1	1		2	2	1		3	4		4	9
560	30	8	27	65	1		2	3	3		3	71
565	2			2	2			2	3		3	7
570	28	4	16	48	1			1	1		1	50
575	3			3	1			1	3		3	7
580	13	2	15	30			1	1				31
585	1			1	1			1	2		2	4
590	22	4	18	44			1	1				45
595	1			1	1			1				2
600	9		6	15								15
605	2			2	1			1	2		2	5
610	9		3	12	1			1	1		1	14
615	3			3								3
620	7	2	2	11	2			2				13
630	3		1	4	1			1	1		1	6
640	1			1								1
650		1		1								1
670					1			1				1
675					1			1				1
680	2			2								2
Total	657	312	769	1738	74	35	98	207	91	37	128	2073

Table 7. Length distribution (sampled number of fish) of redfish in 2020 Estonian fisheries in NAFO area. 0-female, 1-male and un-unsexed.

LG,mm	3L			3L Total	3M			3M Total	3N			3N Total	Total
	0	1	un		0	1	un		0	1	un		
185											1	1	1
195						1		1					1
200									1	1	1	3	3
205	1			1		1		1	3			3	5
210						1		1					1
215		1		1	1			1	3	5	4	12	14
220					1	2		3	1	7	6	14	17
225		1		1	2			2	6	18	15	39	42
230		1		1	1			1	7	36	13	56	58
235	2	7		9	1	11		12	9	58	23	90	111
240		4	2	6	1	9		10	13	32	15	60	76
245	6	7		13	4	18		22	16	45	29	90	125
250	4	13		17	2	14		16	7	21	11	39	72
255	5	26		31	10	27		37	26	15	18	59	127
260	4	17	3	24	11	15		26	19	4	6	29	79
265	6	39		45	28	23		51	26	7	7	40	136
270	6	30	4	40	19	19		38	12	2	3	17	95
275	7	41		48	25	10		35	27	1	9	37	120
280	11	53	4	68	20	11		31	12		2	14	113
285	11	82		93	28	20		48	11		2	13	154
290	13	53	5	71	18	13	2	33	5		1	6	110
295	36	66		102	20	32		52	10		1	11	165
300	17	89	33	139	21	28	15	64	4			4	207
305	28	56		84	8	40		48	2			2	134
310	43	78	39	160	23	66	17	106	1			1	267
315	43	47		90	11	51		62	4			4	156
320	51	62	53	166	35	57	38	130					296
325	74	20		94	33	54		87	1	1		2	183
330	70	31	49	150	58	45	38	141					291
335	57	5		62	48	30		78	1			1	141
340	73	26	53	152	87	25	63	175					327
345	82	3		85	65	19		84		1		1	170
350	76	5	21	102	78	11	71	160					262
355	48	5		53	58	6		64					117
360	53	3	22	78	85	6	91	182					260
365	41			41	47	3		50					91
370	37		9	46	50		37	87					133

	3L			3L Total	3M			3M Total	3N			3N Total	Total
375	33			33	31	2		33					66
380	32		2	34	20		22	42					76
385	21			21	15			15					36
390	14		1	15	6		4	10		2		2	27
395	14			14	2			2					16
400	4			4			1	1					5
405	2			2	1			1					3
410	5			5	2		1	3					8
415	2			2	1			1					3
420	3			3	1			1					4
425		2		2									2
430	1	1		2									2
435					1			1					1
455					1			1					1
460		2		2									2
465		2		2									2
475	1	1		2									2
495	1			1									1
500					1			1					1
515	1			1									1
530	1			1									1
550	1			1									1
Total	1041	879	300	2220	981	670	400	2051	227	256	167	650	4921

Table 8. Length distribution (sampled number of fish) of yellowtail flounder in 2020 Estonian fisheries in NAFO area 0-female, 1-male and un-unsexed.

LG, mm	3N			3N Total
	0	1	un	
245			2	2
250	1			1
255	1	1	4	6
260	2	1	3	6
265		1	8	9
270	1		7	8
275	1	4	14	19
280	1	4	6	11
285	6	6	21	33
290	7	2	13	22
295	3	8	23	34
300	4	1	12	17
305	6	9	14	29
310	3	4	19	26
315	6	16	37	59
320	7	9	29	45
325	19	16	47	82
330	7	17	33	57
335	13	23	39	75
340	14	14	37	65
345	24	13	57	94
350	18	12	31	61
355	21	13	39	73
360	11	10	30	51
365	13	7	26	46
370	9	2	22	33
375	12	2	15	29
380	12		12	24
385	12		15	27
390	10		9	19
395	12		15	27
400	5		10	15
405	4		7	11
410	4		7	11
415			3	3
420			1	1
425	1		4	5

	3N			3N Total
430	3		2	5
435			2	2
440	2			2
445	1		1	2
450	1			1
470			1	1
Total	277	195	677	1149

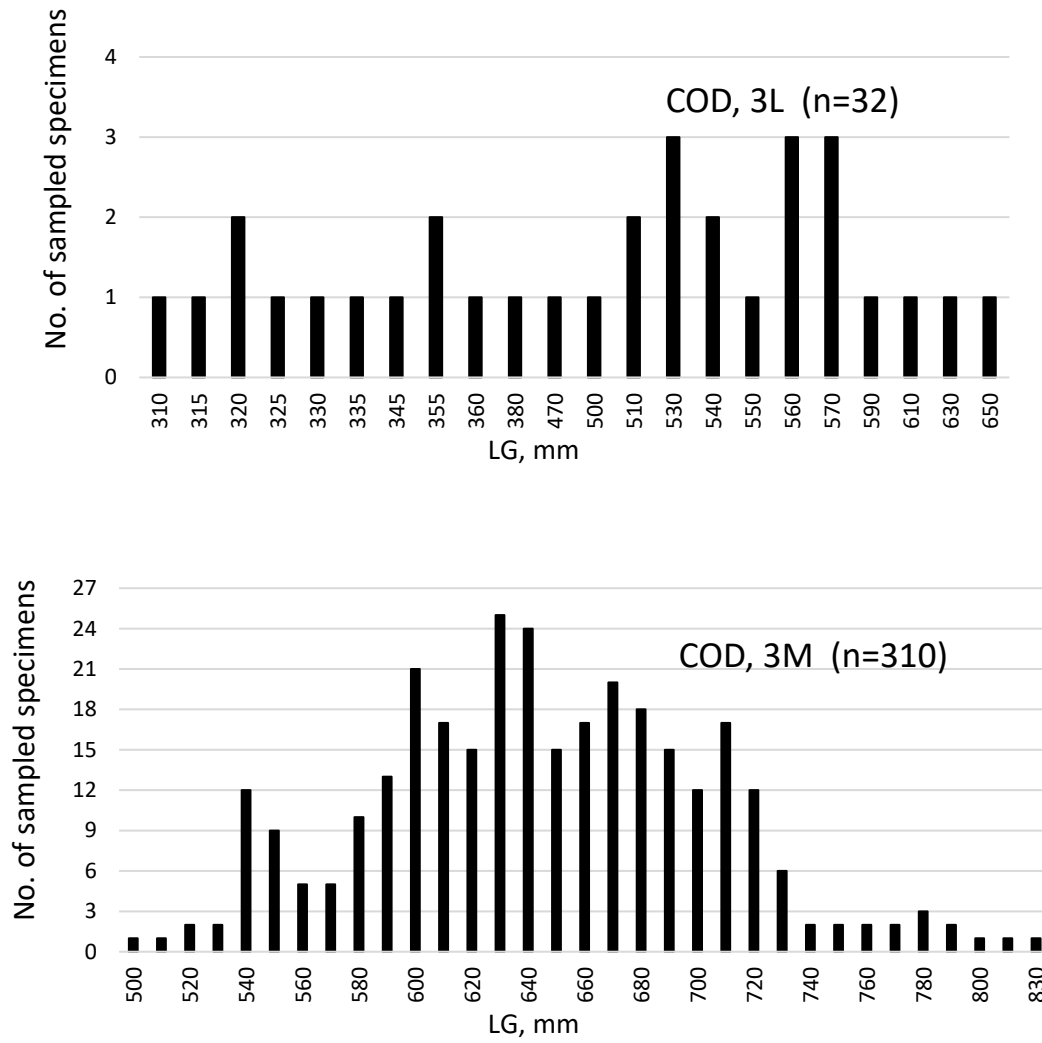


Figure 1. Estonian fisheries length distribution (number of sampled specimens) of cod in Div. 3L and 3M in 2020.

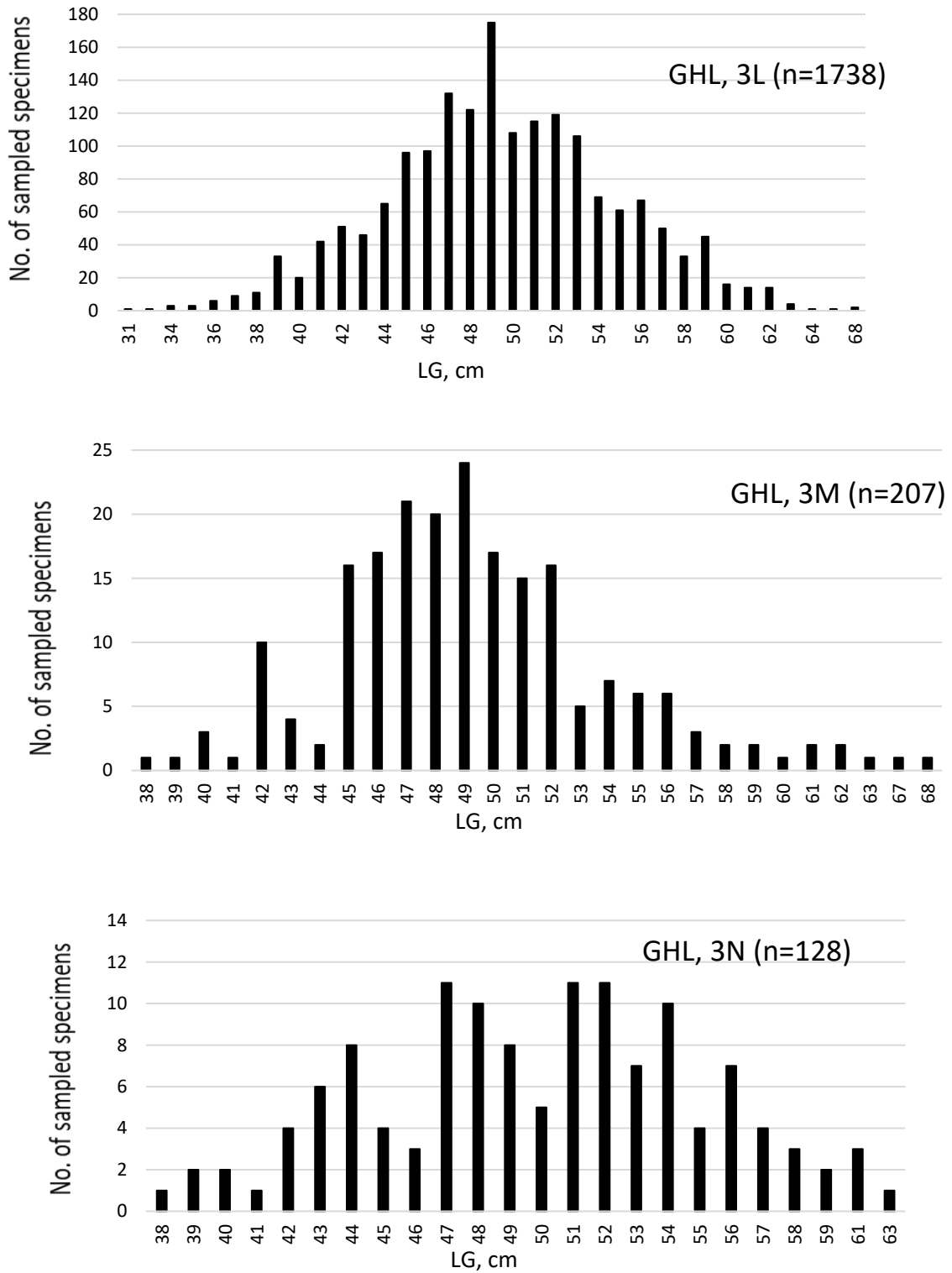


Figure 2. Estonian fisheries length distribution of Greenland halibut in Div. 3L, 3M and 3N in 2020.

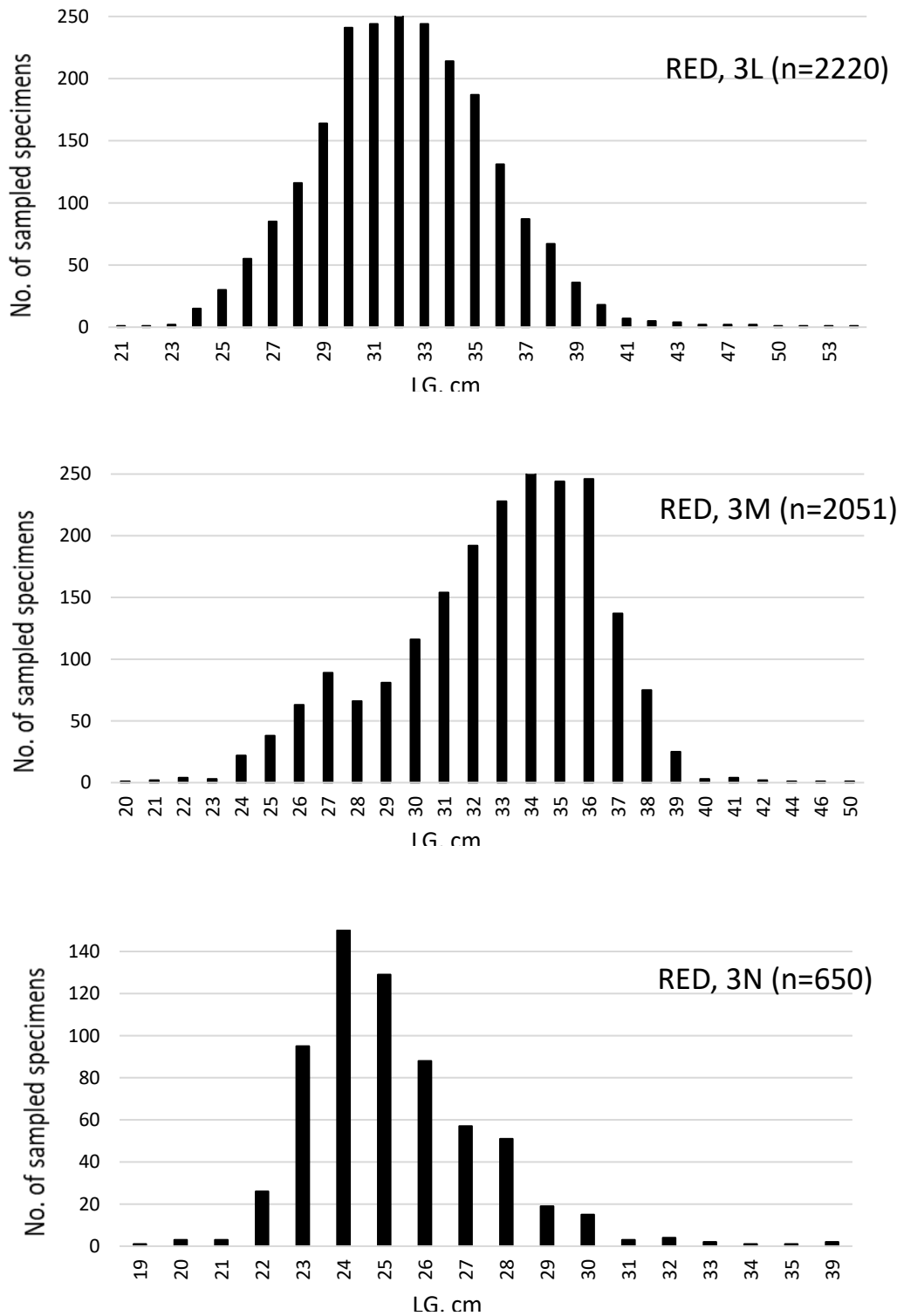


Figure 3. Estonian fisheries length distribution of yellowtail flounder in Div. 3N in 2020.

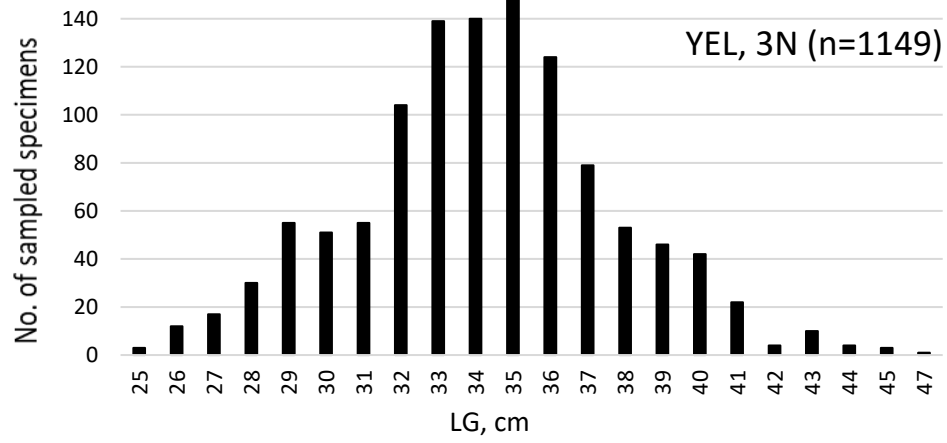


Figure 4. Estonian fisheries length distribution of yellowtail flounder in Div. 3N in 2020.