



Serial No. N6420

SCS Doc. 15/04

SCIENTIFIC COUNCIL MEETING – 2015**ESTONIAN RESEARCH REPORT FOR 2014**

By

T.Tõrra & S.Sirp

Estonian Marine Institute, University of Tartu, Tartu, Estonia

This Report contains information for Estonian fishing vessels which operated in NAFO RA in 2014. Vessels targeting shrimp were excluded. Fishery took place only in SA 3. Catch, effort and length distribution information in sub-area 3 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. Estonian research report for 2013 did not include catch and effort statistics, therefore these are presented in this report.

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.

Total effort has decreased in 2014 but was still higher than the average of 2006 to 2013. Fishing effort has been fluctuating from 2006 to 2013 (Tables 1-2). According to observer estimated catch and discard data, main target species were RED, GHL and COD, followed by SKA and YEL in 2013 and 2014 (Tables 3-4).

In addition to effort and discard information, specifically trained NAFO observers collected length, age and sex data. The list of collected data is in Table 5. All lengths are TL and length group (LG) 10 means lengths from 10.0 to 10.9 cm. Mesh size of trawls for finfish fishery in codend was 139-145 mm, for skates 286 mm. Length distributions are presented as sampled number of fish (Tables 6-10, figures 1-5).

Table 1. Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2013 and 2014 by division and month. Shrimp fishery excluded.

2013		<u>Division</u>				Grand
Month	3L	3M	3N	3O	Total	
1	141	0	6	0	147	
2	535	161	27	0	723	
3	135	462	16	0	613	
4	211	198	0	0	409	
5	0	12	0	0	12	
6	0	166	0	0	166	
7	70	958	0	0	1028	
8	69	169	388	2	627	
9	171	266	153	40	630	
10	10	54	165	15	243	
11	0	0	76	28	104	
12	72	89	106	7	274	
Total effort, hrs	1413	2534	937	92	4976	

2014		<u>Division</u>				Grand
Month	3L	3M	3N	3O	Total	
1	506	140	56	0	702	
2	274	146	0	0	420	
3	55	30	17	0	102	
4	42	210	139	37	429	
5	74	227	128	96	524	
6	64	81	109	145	398	
7	0	117	0	0	117	
8	100	40	7	0	147	
9	25	65	213	78	382	
10	122	195	108	38	464	
11	162	11	80	29	280	
12	0	0	0	0	0	
Total effort, hrs	1425	1260	856	423	3965	

Table 2. Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2006-2014 by division.

	2006	2007	2008	2009	2010	2011	2012	2013	2014
3L	1621	1705	1527	916	1785	1240	531	1413	1425
3M	1649	367	324	580	1107	1550	243	2534	1260
3N	567	388	230	20	152	98	796	937	856
3O	0	172	8	41	49	50	48	92	423
Total effort, hrs	3843	2652	2089	1556	3093	2938	1619	4976	3965

Table 3. Observer estimated catch and discard (ton) of Estonia in NAFO areas in 2013 by division. Shrimp fishery excluded.

2013			3L			3M			3N			3O			All areas
	English name	Latin name	kept	disc	total	kept	disc	total	kept	disc	total	kept	disc	total	total
RED	Atlantic redfishes nei	<i>Sebastes spp</i>	100.417	9.156	109.573	759.905	253.609	1013.514	180.246	0.610	180.856	297.678	0.815	298.493	1602.436
GHL	Greenland halibut	<i>Reinhardtius hippoglossoides</i>	363.794	0.895	364.689	280.202	0.125	280.327	97.929	0.030	97.959	0	0	0	742.975
COD	Atlantic Cod	<i>Gadus morhua</i>	3.989	1.694	5.683	243.825	204.621	448.446	50.659	1.245	51.904	5.456	0.205	5.661	511.694
YEL	Yellowtail flounder	<i>Limanda ferruginea</i>	0	0	0	0	0	0	439.785	12.783	452.568	0.312	0	0.312	452.880
SKA	Raja rays nei	<i>Raja spp</i>	3.333	0.065	3.398	10.746	0.093	10.839	140.652	1.640	142.292	4.845	0.095	4.940	161.469
PLA	Amer. plaice(=Long rough dab)	<i>Hippoglossoides platessoides</i>	4.376	0.032	4.408	12.620	0.016	12.636	119.616	2.914	122.530	5.597	0.105	5.702	145.276
RHG	Roughhead grenadier	<i>Macrourus berglax</i>	28.797	2.465	31.262	53.023	4.025	57.048	29.026	2.865	31.891	0	0	0	120.201
WIT	Witch flounder	<i>Glyptocephalus cynoglossus</i>	1.618	0.170	1.788	1.074	1.545	2.619	12.625	0.022	12.647	1.371	0	1.371	18.425
HAD	Haddock	<i>Melanogrammus aeglefinus</i>	0	0	0	18.141	0	18.141	0	0	0	0.105	0	0.105	18.246
CAS	Spotted wolffish	<i>Anarhichas minor</i>	1.839	0	1.839	8.674	0	8.674	2.998	0	2.998	0.845	0	0.845	14.356
HAL	Atlantic halibut	<i>Hippoglossus hippoglossus</i>	0.388	0	0.388	3.071	0	3.071	6.394	0	6.394	1.401	0	1.401	11.254
ANT	Blue antimora	<i>Antimora rostrata</i>	0	0.370	0.370	0	0.210	0.210	0	0.040	0.040	0	0	0	0.620
RNG	Roundnose grenadier	<i>Coryphaenoides rupestris</i>	0	0.305	0.305	0	0.305	0.305	0	0	0	0	0.005	0.005	0.615
GDE	Threadfin rockling	<i>Gaidropsarus ensis</i>	0	0.275	0.275	0	0.065	0.065	0	0.235	0.235	0	0	0	0.575
HKW	White hake	<i>Urophycis tenuis</i>	0	0	0	0	0	0	0	0	0	0.525	0	0.525	0.525
CAB	Northern wolffish	<i>Anarhichas denticulatus</i>	0.157	0	0.157	0.160	0	0.160	0.083	0	0.083	0	0	0	0.400
CFB	Black Dogfish	<i>Centroscyllium fabricii</i>	0	0.113	0.113	0	0.100	0.100	0	0.010	0.010	0	0	0	0.223
ANG	American angler (=Goosefish)	<i>Lophius americanus</i>	0	0	0	0	0	0	0.192	0	0.192	0	0	0	0.192
GPE	Longfin hake	<i>Phycis chesteri</i>	0	0	0	0	0.050	0.050	0	0	0	0	0.015	0.015	0.065
CAA	Atlantic wolffish	<i>Anarhichas lupus</i>	0	0.005	0.005	0	0.020	0.020	0	0	0	0	0	0	0.025
HKS	Silver hake	<i>Merluccius bilinearis</i>	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0.009
MZZ	Marine fishes nei	<i>Osteichthyes</i>	0	3.105	3.105	0	4.685	4.685	0	2.685	2.685	0	0.560	0.560	11.035

Table 4. Observer estimated catch and discard (ton) of Estonia in NAFO areas in 2014 by division. Shrimp fishery excluded.

2014			3L			3M			3N			3O			All areas
	English name	Latin name	kept	disc	total	kept	disc	total	kept	disc	total	kept	disc	total	total
RED	Atlantic redfishes nei	<i>Sebastes spp</i>	346.854	2.000	348.854	602.026	1.640	603.666	137.078	0.425	137.503	232.828	0.575	233.403	1323.426
COD	Atlantic Cod	<i>Gadus morhua Reinhardtius hippoglossoides</i>	12.170	0.150	12.320	615.204	1.640	616.844	12.386	3.180	15.566	8.887	0.005	8.892	653.622
GHL	Greenland halibut		431.261	0.665	431.926	101.436	0.090	101.526	87.956	0.045	88.001	0	0	0	621.453
SKA	Raja rays nei	<i>Raja spp</i>	8.437	0.320	8.757	10.787	0.335	11.122	149.937	0.250	150.187	71.337	0	71.337	241.403
HKS	Silver hake	<i>Merluccius bilinearis</i>	0	0	0	0	0	0	0.768	0	0.768	149.276	1.575	150.851	151.619
RHG	Roughhead grenadier	<i>Macrourus berglax</i>	33.650	5.565	39.215	93.307	1.535	94.842	14.086	1.555	15.641	0	0	0	149.698
PLA	Amer. plaice(=Long rough dab)	<i>Hippoglossoides platessoides</i>	6.676	0.035	6.711	43.838	0.080	43.918	19.754	3.940	23.694	14.210	0	14.210	88.533
HAD	Haddock	<i>Melanogrammus aeglefinus</i>	0	0	0	6.803	0	6.803	2.257	0	2.257	76.489	0	76.489	85.549
WIT	Witch flounder	<i>Glyptocephalus cynoglossus</i>	2.693	0.240	2.933	18.032	1.625	19.657	9.748	0.035	9.783	11.896	0	11.896	44.269
ANG	American angler (=Goosefish)	<i>Lophius americanus</i>	0	0	0	0	0	0	2.592	0	2.592	24.192	0	24.192	26.784
YEL	Yellowtail flounder	<i>Limanda ferruginea</i>	0	0	0	0	0	0	25.320	0.035	25.355	0.199	0	0.199	25.554
HAL	Atlantic halibut	<i>Hippoglossus hippoglossus</i>	6.296	0	6.296	3.079	0	3.079	7.542	0	7.542	7.875	0	7.875	24.792
RNG	Roundnose grenadier	<i>Coryphaenoides rupestris</i>	0	4.285	4.285	0	0.870	0.870	0	0.450	0.450	0	0	0	5.605
CAS	Spotted wolffish	<i>Anarhichas minor</i>	0.305	0	0.305	0.609	0	0.609	3.447	0	3.447	0.228	0	0.228	4.589
CAA	Atlantic wolffish	<i>Anarhichas lupus</i>	1.344	1.330	2.674	0.160	0.130	0.290	0.875	0.235	1.110	0	0	0	4.074
ANT	Blue antimora	<i>Antimora rostrata</i>	0	1.590	1.590	0	0.705	0.705	0	0.180	0.180	0	0	0	2.475
HKW	White hake	<i>Urophycis tenuis</i>	0	0	0	0	0	0	0	0	0	1.540	0.545	2.085	2.085
CAB	Northern wolffish	<i>Anarhichas denticulatus</i>	1.200	0.030	1.230	0.080		0.080	0.080	0	0.080	0	0	0	1.390
GDE	Threadfin rockling	<i>Gaidropsarus ensis</i>	0	0.775	0.775	0	0.165	0.165	0	0.055	0.055	0	0	0	0.995
CFB	Black Dogfish	<i>Centroscyllium fabricii</i>	0	0.245	0.245	0	0.175	0.175	0	0.130	0.130	0	0	0	0.550
CRQ	Queen crab	<i>Chionoecetes opilio</i>	0	0	0	0	0	0	0	0.240	0.240	0	0	0	0.240
GPE	Longfin hake	<i>Phycis chesteri</i>	0	0.055	0.055	0	0.085	0.085	0	0.015	0.015	0	0	0	0.155
MZZ	Marine fishes nei	<i>Osteichthyes</i>	0	2.265	2.265	0	3.895	3.895	0	2.055	2.055	0	1.570	1.570	9.785

Table 5. Biological sampling list for Estonia in 2014. *Number of sexed fish; **Only age structures collected, fish not aged yet

Country	Species Code	NAFO Division	Gear	Month	Type of Sample	Directed/ Bycatch/ Discard	No. of samples	No. Measured	No. Sexed*	No. Aged**	No. Weighed
EST	GHL	3L	OTB	1	OC	Kept	10	950	44	44	950
EST	GHL	3L	OTB	2	OC	Kept	8	779	73	60	779
EST	GHL	3L	OTB	3	OC	Kept	2	48	24	24	48
EST	GHL	3L	OTB	5	OC	Kept	2	67	26	29	67
EST	GHL	3L	OTB	9	OC	Kept	1	62	62	21	62
EST	GHL	3L	OTB	10	OC	Kept	3	163	163	52	163
EST	GHL	3L	OTB	11	OC	Kept	2	112	112		112
EST	GHL	3M	OTB	4	OC	Kept	4	101	72	76	101
EST	GHL	3M	OTB	5	OC	Kept	2	57	20	21	57
EST	GHL	3M	OTB	6	OC	Kept	3	81	47	51	81
EST	GHL	3M	OTB	10	OC	Kept	1	52	52	21	52
EST	GHL	3M	OTB	11	OC	Kept	1	56	56	8	56
EST	GHL	3N	OTB	4	OC	Kept	2	50	48	50	50
EST	GHL	3N	OTB	9	OC	Kept	4	286	286	84	286
EST	GHL	3N	OTB	10	OC	Kept	2	119	119	42	119
EST	GHL	3N	OTB	11	OC	Kept	1	60	60		60
EST	PRA	3L	OTB	1	OC	Kept	1	200	200		
EST	PRA	3L	OTB	2	OC	Kept	2	401	401		
EST	RED	3L	OTB	6	OC	Kept	4	140	44	44	44
EST	RED	3L	OTB	8	OC	Kept	12	2076	2076	305	1133
EST	RED	3L	OTB	9	OC	Kept	1	99	99	6	99
EST	RED	3L	OTB	11	OC	Kept	2	200	200		200
EST	RED	3M	OTB	1	OC	Kept	1	264	264	90	264
EST	RED	3M	OTB	2	OC	Kept	3	487	487	170	487
EST	RED	3M	OTB	5	OC	Kept	2	308			
EST	RED	3M	OTB	7	OC	Kept	7	296	137	139	139
EST	RED	3N	OTB	3	OC	Kept	2	142	27	27	27
EST	RED	3N	OTB	4	OC	Kept	1	153			
EST	RED	3N	OTB	8	OC	Kept	1	153	153		153
EST	RED	3N	OTB	9	OC	Kept	5	751	751	10	563
EST	RED	3N	OTB	10	OC	Kept	1	100	100	10	100
EST	RED	3N	OTB	11	OC	Kept	1	126	126		126
EST	RED	3O	OTB	4	OC	Kept	4	508	38	38	38
EST	RED	3O	OTB	9	OC	Kept	3	359	356	21	306
EST	RED	3O	OTB	10	OC	Kept	1	100	100	10	100
EST	RED	3O	OTB	11	OC	Kept	1	104	104		104
EST	COD	3M	OTB	8	OC	Kept	1	57	57	41	57
EST	COD	3M	OTB	8	OC	Discarded	1	1	1	1	1
EST	COD	3M	OTB	9	OC	Kept	2	73	73	54	73
EST	COD	3M	OTB	9	OC	Discarded	2	1	1	1	1
EST	COD	3M	OTB	10	OC	Kept	4	262	262	79	262
EST	COD	3M	OTB	10	OC	Discarded	4	4	4		4
EST	PLA	3M	OTB	10	OC	Kept	1	31	31	21	31
EST	PLA	3N	OTB	1	OC	Kept	1	67			
EST	YEL	3N	OTB	1	OC	Kept	1	104			

Table 6. Length distribution (sampled number of fish) of cod in 2014 Estonian fisheries in NAFO area. 0-female, 1-male.

LG, cm	3M		3M Total
	0	1	
38		1	1
39	1		1
40	1	3	4
41	3	4	7
42		2	2
43	6	4	10
44	2	2	4
45	2	1	3
46	4	3	7
47	5	6	11
48	6	6	12
49	6	1	7
50	6	7	13
51	12	10	22
52	20	16	36
53	14	15	29
54	23	9	32
55	14	11	25
56	11	10	21
57	13	5	18
58	12	9	21
59	15	3	18
60	10	7	17
61	3	4	7
62	6	2	8
63	3	4	7
64	2	4	6
65	3	4	7
66	4	2	6
67	2	1	3
68	1	3	4
69		2	2
70		2	2
71	1		1
72	3	1	4
73	1	1	2
74	1		1
75		1	1
76	2	2	4
77	2		2
78	1		1
79	2	1	3
80			0
81	1		1
82			0
83	1		1
84	1		1
85			0
86	1		1
87			0
88			0
89	1		1
90			0
91	1		1
Total	229	169	398

Table 7. Length distribution (sampled number of fish) of Greenland halibut in 2014 Estonian fisheries in NAFO area. 0-female, 1-male, ind-unsexed.

LG, cm	3L			3L Total	3M			3M Total	3N			3N Total
	0	1	ind		0	1	ind		0	1	ind	
29			1	1				0				0
30				0				0				0
31			1	1				0				0
32				0				0				0
33				0				0				0
34				0				0				0
35			6	6				0				0
36			3	3			1	1		1	1	2
37	1		6	7				0	1			1
38	1		32	33		2	2	4	1	3		4
39		1	44	45				0	4	2		6
40	4	2	74	80	1	2	1	4	3	4		7
41	7	3	126	136	1	1	3	5	6	4		10
42	3	5	122	130	1	5	6	12	6	6		12
43	2	4	116	122	6	4	8	18	10	15		25
44	7	3	104	114	7	3	8	18	13	14		27
45	11	6	141	158	5	11	10	26	13	10		23
46	12	9	154	175	4	6	6	16	17	12		29
47	19	14	174	207	8	10	7	25	23	9		32
48	24	10	77	111	5	7	9	21	26	15		41
49	14	8	79	101	7	8	5	20	15	14		29
50	21	7	75	103	6	14	9	29	26	6	1	33
51	26	10	82	118	10	13	7	30	31	17		48
52	23	15	79	117	12	2	9	23	28	9		37
53	25	8	74	107	8	7	4	19	24	7		31
54	21	11	47	79	6	2		8	26	3		29
55	21	4	21	46	8	4	4	16	15	4		19
56	17	3	12	32	6	5	1	12	18	4		22
57	20	1	11	32	5			5	7			7
58	17		4	21	5			5	10	1		11
59	20		2	22	5			5	7	1		8
60	8	1	2	11	6			6	2	1		3
61	15	1	2	18	6			6	8			8
62	11	1	2	14	4			4	2	1		3
63	6		1	7				0	2			2
64	3			3	2			2	1			1
65	4			4				0	1			1
66	3		1	4				0	1			1
67	4			4	2			2				0
68	1			1	1			1				0
69	2			2	2			2	1			1
70			2	2	1			1				0
71	2			2	1			1				0
72				0				0				0
73	1			1				0	1			1
74				0				0	1			1
75				0				0				0
76				0				0				0
77				0				0				0
78				0				0				0
79				0				0				0
80				0				0				0
81				0				0				0
82				0				0				0
83	1			1				0				0
Total	377	127	1677	2181	141	106	100	347	350	163	2	515

Table 8. Length distribution (sampled number of fish) of redfish in 2014 Estonian fisheries in NAFO area. 0-female, 1-male, ind-unsexed.

LG, cm	3L			3L Total	3M			3M Total	3N			3N Total	3O			3O Total
	0	1	ind		0	1	ind		0	1	ind		0	1	ind	
17				0				0				0			1	1
18				0				0			2	2			2	2
19		1		1				0	5	2		7	5	3	4	12
20	6	9		15	1	4		5	14	15	4	33	13	26	6	45
21	17	25		42	8	17	2	27	46	70		116	46	65	55	166
22	62	73	4	139	13	40	11	64	72	118	9	199	71	78	129	278
23	128	147	3	278	35	41	11	87	114	117	15	246	92	53	131	276
24	196	134	2	332	27	22	13	62	134	71	10	215	50	24	73	147
25	261	85	13	359	26	39	25	90	106	40	33	179	27	13	38	78
26	260	86	24	370	42	59	74	175	80	22	51	153	13	3	27	43
27	184	72	16	272	64	74	62	200	47	12	27	86	7		4	11
28	113	55	11	179	76	61	79	216	29	6	25	60	3	1	3	7
29	85	44	15	144	56	16	72	144	9	4	28	41	2	2		4
30	88	12	3	103	54	13	72	139	6	2	15	23	1			1
31	75	11	1	87	16	3	34	53	9	1	8	18				0
32	62	2	2	66	13	1	12	26	2		5	7				0
33	48	1	1	50	9	1		10	1		3	4				0
34	30		1	31	14			14	1			1				0
35	13	1		14	12			12	1		3	4				0
36	8			8	9	1		10			6	6				0
37	3			3	7	1		8	1		2	3				0
38	7	1		8	5			5			8	8				0
39	3	1		4	1			1			8	8				0
40		1		1	2			2			6	6				0
41	1			1	2			2				0				0
42				0	2			2				0				0
43	2	1		3				0				0				0
44	1	1		2	1			1				0				0
45				0				0				0				0
46				0				0				0				0
47	2			2				0				0				0
48				0				0				0				0
49				0				0				0				0
50				0				0				0				0
51	1			1				0				0				0
Total	1656	763	96	2515	495	393	467	1355	677	480	268	1425	330	268	473	1071

Table 9. Length distribution (sampled number of fish) of American plaice in 2014 Estonian fisheries in NAFO area. 0-female, 1-male, ind-unsexed.

LG, cm	3M		3M Total	3N		3N Total
	0	1		ind		
26			0	1	1	
27			0	1	1	
28			0	2	2	
29			0		0	
30			0	1	1	
31			0	2	2	
32	1		1	3	3	
33			0	5	5	
34			0	6	6	
35			0	5	5	
36			0	7	7	
37			0	5	5	
38		1	1	7	7	
39		3	3	3	3	
40		1	1	3	3	
41	1	2	3	3	3	
42		2	2	2	2	
43			0	4	4	
44	1		1		0	
45	1	1	2		0	
46	2		2	2	2	
47	2		2	1	1	
48	5	1	6		0	
49	1	1	2		0	
50	2		2		0	
51	1		1	1	1	
52	1		1		0	
53			0	1	1	
54	1		1	1	1	
55			0		0	
56			0	1	1	
Total	19	12	31	67	67	

Table 10. Length distribution (sampled number of fish) of yellowtail flounder in 2014 Estonian fisheries in NAFO area ind-unsexed.

LG, cm	3N	3N Total
	ind	
27	1	1
28		0
29	1	1
30	1	1
31	14	14
32	9	9
33	12	12
34	13	13
35	10	10
36	10	10
37	5	5
38	12	12
39	2	2
40	4	4
41	5	5
42	2	2
43	1	1
44	1	1
45	1	1
Total	104	104

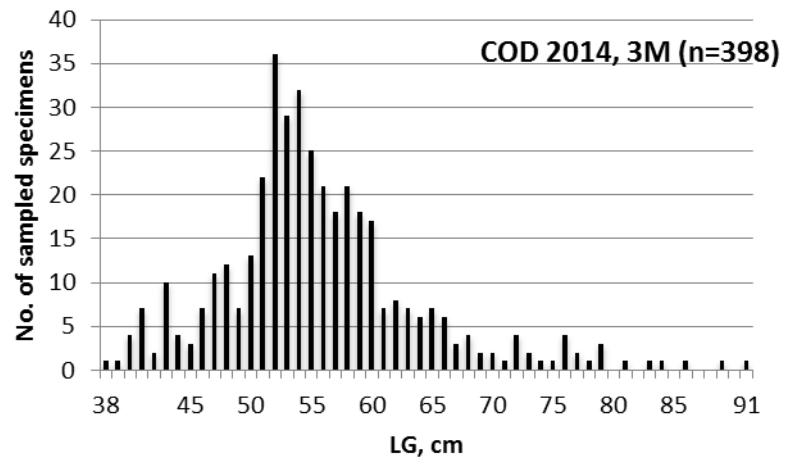


Figure 1. Length distribution (number of sampled specimens) of cod in Div. 3M Estonian fisheries in 2014.

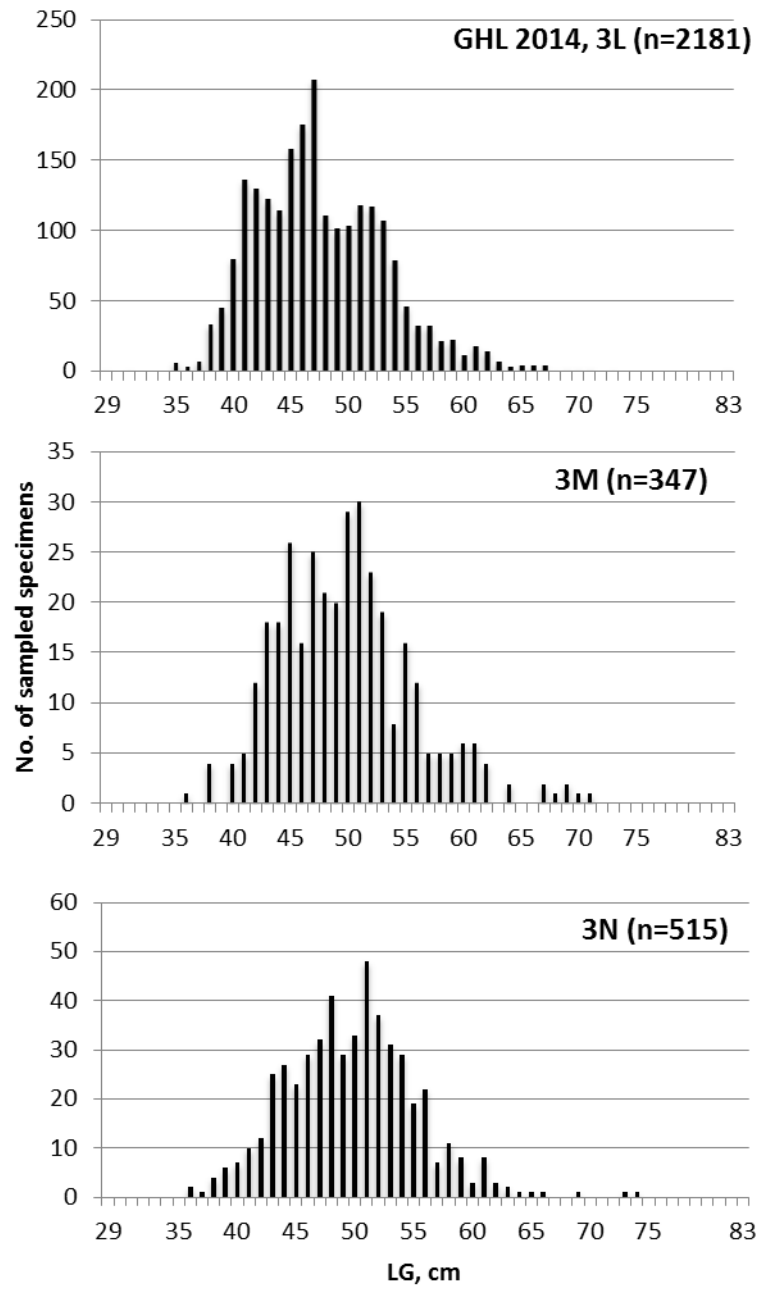


Figure 2. Length distribution (number of sampled specimens) of Greenland halibut in Div. 3L 3M and 3N Estonian fisheries in 2014.

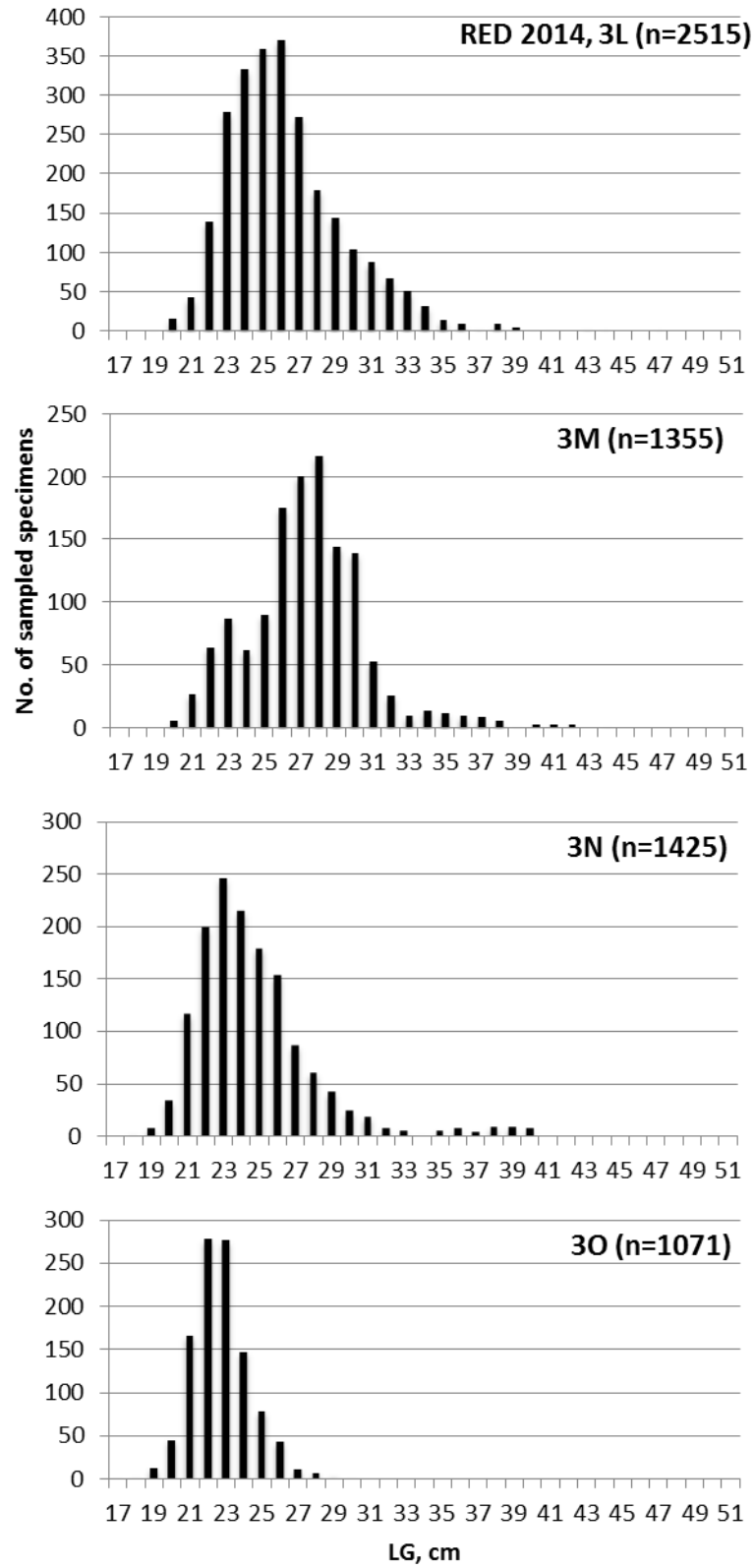


Figure 3. Length distribution (number of sampled specimens) of redfish in Div. 3L, 3M, 3N and 3O Estonian fisheries in 2014

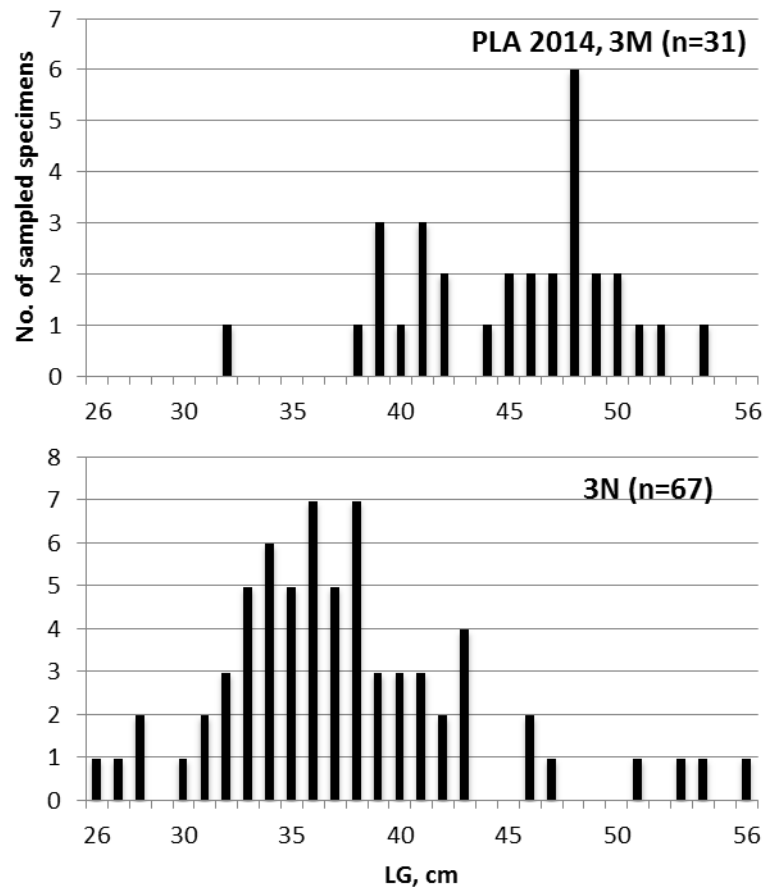


Figure 4. Length distribution (sampled number of fish) of American plaice in Div. 3M and 3N Estonian fisheries in 2014.

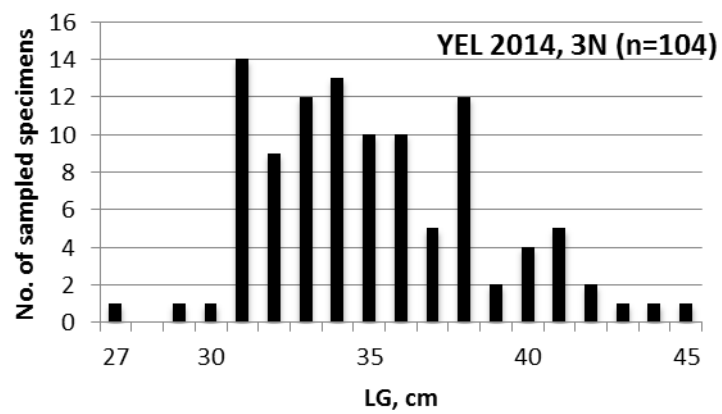


Figure 5. Length distribution (sampled number of fish) of yellowtail flounder in Div. 3N Estonian fisheries in 2014.