

**SCIENTIFIC COUNCIL MEETING – JUNE 2012****ESTONIAN RESEARCH REPORT FOR 2011**

by

S.Sirp

Estonian Marine Institute, University of Tartu, Tallinn, Estonia

This Report contains information for Estonian fishing vessels excluding vessels targeting shrimp. Analysis of available by-catch data in shrimp fishery is included. All catch, effort and length distribution information is from onboard NAFO observers. In Estonia, NAFO observers are employed by the Estonian Marine Institute, and they are specially trained to collect also basic scientific data.

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

In 2006 there were 2 vessels involved in finfish fishery. In 2007-2011 there has been mainly 1 vessel involved in finfish fishery. In 2009-2011 there was 1 additional vessel targeting GHL and COD in last months of these years. Main target species for that vessel is shrimp. Fishing effort was decreasing in 2006-2009. In 2010-2011 the effort increased to the levels of 2006-2007. Effort has increased in Div. 3M and decreased in Div. 3L (Tables 1-2). The catches and discards of demersal and pelagic fish directed fisheries are presented in table 3. Observer estimated catches of shrimp and discards in shrimp directed fishery in 3L in 2011 are in table 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 mixed fishery of demersal and pelagic fish, in codend was 139-145 mm, for skates 286 mm. Length distributions are presented as sampled number of fish (Tables 7-9, figures 1-3). Length distribution of *Sebastes* sp. bycatch in shrimp fishery in 2007-2010 is given in Table 6 and Figures 4-5.

Table 1. Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2011 by division and month. Shrimp fishery excluded.

Month	2011 Division					Grand Total
	3L	3M	3N	3O		
1	89	43	26	0		158
2	225	276	0	0		501
3	275	195	30	21		520
4	169	31	8	11		220
5	0	0	0	0		0
6	21	0	18	19		57
7	158	417	0	0		575
8	126	414	16	0		557
9	177	173	0	0		351
10	0	0	0	0		0
11	0	0	0	0		0
12	0	0	0	0		0
Total effort, hrs	1240	1550	98	50		2938

Table 2. Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2006-2011 by division.

	2006	2007	2008	2009	2010	2011
3L	1621	1705	1527	916	1785	1240
3M	1649	367	324	580	1107	1550
3N	567	388	230	20	152	98
3O	0	172	8	41	49	50
Total effort, hrs	3843	2652	2089	1556	3093	2938

Table 3. Observer estimated catch and discard (tons) of Estonian fleet in NAFO area in 2011. Shrimp fishery excluded.

		3L			3M		
	Scientific name	kept	disc	Total	kept	disc	Total
RED	<i>Sebastes sp.</i>	0.000	0.000	0.000	821.124	1.545	822.669
GHL	<i>Reinhardtius hippoglossoides</i>	175.256	0.030	175.286	104.447	0.000	104.447
RHG	<i>Macrourus berglax</i>	58.208	0.590	58.798	54.796	0.235	55.031
COD	<i>Gadus morhua</i>	0.000	0.000	0.000	94.478	1.337	95.815
SKA	<i>Raja sp.</i>	3.024	0.002	3.026	14.558	0.105	14.663
PLA	<i>Hippoglossoides platessoides</i>	0.000	0.005	0.005	8.712	0.050	8.762
WIT	<i>Glyptocephalus cynoglossus</i>	0.154	0.000	0.154	1.080	0.000	1.080
YEL	<i>Limanda ferruginea</i>	0.000	0.000	0.000	0.000	0.000	0.000
MZZ	Marine species not specified	0.000	2.040	2.040	0.000	4.825	4.825
CAB	<i>Anarhichas denticulatus</i>	0.000	0.080	0.080	0.000	0.055	0.055

		3N			3O			All areas
	Scientific name	kept	disc	Total	kept	disc	Total	Total
RED	<i>Sebastes sp.</i>	133.452	0.075	133.527	120.758	0.043	120.801	1076.997
GHL	<i>Reinhardtius hippoglossoides</i>	1.232	0.000	1.232	0.000	0.000	0.000	280.965
RHG	<i>Macrourus berglax</i>	0.506	0.000	0.506	0.000	0.000	0.000	114.335
COD	<i>Gadus morhua</i>	7.290	0.090	7.380	5.040	0.047	5.087	108.282
SKA	<i>Raja sp.</i>	26.942	0.000	26.942	1.902	0.000	1.902	46.533
PLA	<i>Hippoglossoides platessoides</i>	18.579	0.000	18.579	8.217	0.000	8.217	35.563
WIT	<i>Glyptocephalus cynoglossus</i>	2.064	0.044	2.108	10.626	0.059	10.685	14.028
YEL	<i>Limanda ferruginea</i>	11.946	0.000	11.946	0.825	0.000	0.825	12.771
MZZ	Marine species not specified	0.000	0.525	0.525	0.000	0.455	0.455	7.845
CAB	<i>Anarhichas denticulatus</i>	0.000	0.000	0.000	0.000	0.000	0.000	0.135

Table 4. Observer estimated catches of shrimp and discards in shrimp directed fishery in 3L in 2011.

		2011	
		3L	
		tons	%
Catch	Scientific name	1303.47	
PRA	<i>Pandalus borealis</i>	1303.47	100.00
Discard		53.87	
CAP	<i>Mallotus villosus</i>	33.26	2.55
PRA	<i>Pandalus borealis</i>	10.62	0.81
MZZ	Marine species not specified	9.91	0.76
RED	<i>Sebastes sp.</i>	0.09	0.01

Table 5. Biological sampling list for Estonia in 2011. *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	Directed	3	75		75	75
EST	GHL	3L	OTB	2	OC	Directed	6	150		150	150
EST	GHL	3L	OTB	3	OC	Directed	4	100		100	100
EST	GHL	3L	OTB	4	OC	Directed	2	40		40	40
EST	GHL	3L	OTB	6	OC	Directed	1	20	20	20	20
EST	GHL	3L	OTB	7	OC	Directed	7	135	135	135	135
EST	GHL	3L	OTB	8	OC	Directed	4	70	70	70	70
EST	GHL	3L	OTB	9	OC	Directed	1	10	10	10	10
EST	PRA	3L	OTB	1	OC	Directed	18	3976	3976		
EST	PRA	3L	OTB	2	OC	Directed	14	3214	3214		
EST	PRA	3L	OTB	10	OC	Directed	6	720	720		
EST	PRA	3L	OTB	11	OC	Directed	28	3628	3628		
EST	PRA	3L	OTB	12	OC	Directed	28	4492	4492		
EST	GHL	3M	OTB	2	OC	Directed	2	50		50	50
EST	GHL	3M	OTB	3	OC	Directed	4	100		100	100
EST	GHL	3M	OTB	7	OC	Directed	10	216	216	216	216
EST	GHL	3M	OTB	8	OC	Directed	9	130	130	130	130
EST	GHL	3M	OTB	9	OC	Directed	2	20	20	20	20
EST	RED	3M	OTB	1	OC	Directed	1	24		24	24
EST	RED	3M	OTB	2	OC	Directed	7	165	2	165	165
EST	RED	3M	OTB	3	OC	Directed	1	25		25	25
EST	RED	3M	OTB	7	OC	Directed	5	128	128	128	128
EST	COD	3M	OTB	2	OC	Directed	3	150		150	150
EST	COD	3M	OTB	3	OC	Directed	2	100		100	100
EST	COD	3M	OTB	7	OC	Directed	5	98	64	98	98
EST	COD	3M	OTB	8	OC	Directed	3	50	38	50	50
EST	GHL	3N	OTB	8	OC	Directed	1	18	18	18	18
EST	RED	3N	OTB	1	OC	Directed	2	50		50	50
EST	RED	3N	OTB	3	OC	Directed	4	56		56	56
EST	COD	3N	OTB	3	OC	Directed	1	50		50	50
EST	RED	3O	OTB	3	OC	Directed	3	31		31	31
EST	RED	3O	OTB	6	OC	Directed	1	26	26	26	26
EST	COD	3O	OTB	3	OC	Directed	1	50		50	50

Table 6. Length distribution of *Sebastes* sp. bycatch in shrimp fishery in 2007-2010. Trawl mesh size is 44mm and Nordmore bar spacing is 22mm.

RED	3M								3L		
	No. of specimens				%				No. of specimens		%
LG	2007	2008	2009	2010	2007	2008	2009	2010	LG	2010	2010
6		1	3	2	0.00	0.01	0.74	0.06	6		0.00
7	1	67	13	24	0.01	0.59	3.19	0.75	7	8	0.09
8	11	114	5	63	0.11	1.00	1.23	1.96	8	244	2.85
9	246	76	12	180	2.40	0.67	2.94	5.61	9	607	7.10
10	1052	240	91	408	10.26	2.11	22.30	12.72	10	1826	21.36
11	433	494	37	672	4.22	4.34	9.07	20.95	11	1473	17.23
12	452	1214	60	878	4.41	10.67	14.71	27.38	12	501	5.86
13	1857	1713	66	612	18.11	15.05	16.18	19.08	13	734	8.59
14	2809	2278	64	230	27.39	20.02	15.69	7.17	14	1042	12.19
15	1386	2595	26	100	13.52	22.80	6.37	3.12	15	836	9.78
16	259	1599	20	33	2.53	14.05	4.90	1.03	16	567	6.63
17	327	535	7	5	3.19	4.70	1.72	0.16	17	475	5.56
18	206	162	3		2.01	1.42	0.74	0.00	18	149	1.74
19	223	98	1		2.17	0.86	0.25	0.00	19	58	0.68
20	281	72			2.74	0.63			20	21	0.25
21	238	54			2.32	0.47			21	2	0.02
22	214	31			2.09	0.27			22	1	0.01
23	120	11			1.17	0.10			23		0.00
24	80	5			0.78	0.04			24	1	0.01
25	34	1			0.33	0.01			25	1	0.01
26	15	5			0.15	0.04			26	1	0.01
27	6	3			0.06	0.03			27		0.00
28	4	1			0.04	0.01			28		0.00
29		2				0.02			29	1	0.01
30		1				0.01			30		0.00
31		2				0.02			31		0.00
32		2				0.02			32		0.00
33		3				0.03			33		0.00
34		1				0.01			34		0.00
35		1				0.01			35		0.00
36									36		0.00
37									37	1	0.01
Total	10254	11381	408	3207	100	100	100	100	Total	8549	100

Table 7. Length distribution (sampled number of fish) of cod in 2011 Estonian fisheries in NAFO area. 0-female, 1-male, ind-unsexed.

LG	3M			3M Total	3N			3N Total	3O			3O Total
	0	1	ind		0	1	ind		0	1	ind	
18			1	1								
19												
20												
21												
22												
23												
24												
25							1	1				
26			2	2						1		1
27			3	3			2	2		3		3
28			6	6								
29			7	7			4	4		1		1
30			5	5			3	3		3		3
31			7	7			1	1		2		2
32			7	7			4	4		2		2
33			1	1			2	2		1		1
34			5	5						1		1
35		2		2								
36		1		1						1		1
37												
38							1	1				
39		1	2	3								
40			5	5								
41		1	13	14			3	3		2		2
42			12	12			2	2		3		3
43		1	13	14			3	3		4		4
44			21	21			9	9		5		5
45	1		13	14			6	6		7		7
46		2	12	14			1	1		6		6
47	2	1	20	23						4		4
48	3	1	9	13			5	5		3		3
49			1	1			2	2				
50	1		2	3			1	1				
51		1	2	3						1		1
52	4	1	8	13								
53	3	5	9	17								
54	3	1	11	15								
55	4	1	6	11								

LG	3M			3M Total	3N			3N Total	3O			3O Total
	0	1	ind		0	1	ind		0	1	ind	
56	3	4	11	18								
57	2	2	13	17								
58	6	1	9	16								
59	2	2	15	19								
60	3	6	11	20								
61	3	2	11	16								
62	3	5	4	12								
63	2	1	6	9								
64	2		3	5								
65	2		4	6								
66		1	1	2								
67		2	3	5								
68		1	1	2								
69												
70	1			1								
71	1			1								
72	1			1								
73			1	1								
74												
75	1	1		2								
76		1		1								
91	1			1								
COD Total	54	48	296	398			50	50			50	50

Table 8. Length distribution (sampled number of fish) of Greenland halibut in 2011 Estonian fisheries in NAFO area. 0-female, 1-male, ind-unsexed.

LG	3L			3L Total	3M			3M Total	3N			3N Total
	0	1	ind		0	1	ind		0	1	ind	
32						1		1				
33												
34			1	1	1			1				
35		1	1	2		2		2				
36		1	1	2		3		3				
37		1	6	7		1		1				
38	1		5	6	1	2	4	7				
39		4	8	12	1	3	1	5				
40	1	2	7	10	1	4	4	9				
41	2	6	12	20	4	6	6	16				
42	2	4	16	22	8	7	5	20				
43	6	9	21	36	5	9	8	22		3		3
44	1	7	18	26	6	14	9	29	1			1
45	3	10	18	31	11	11	6	28		2		2
46	4	11	23	38	10	16	9	35	1	1		2
47	4	10	27	41	11	7	11	29		1		1
48	4	8	22	34	15	17	6	38		1		1
49	2	4	25	31	7	5	13	25				
50	4	10	15	29	7	8	11	26		1		1
51	6	13	13	32	10	9	4	23	1			1
52	9	9	10	28	11	10	12	33		2		2
53	2	9	12	23	7	12	8	27		2		2
54	5	10	14	29	6	7	9	22				
55	4	9	10	23	8	10	5	23				
56	7	3	9	19	11	9	6	26	1			1
57	3		8	11	4	8	2	14				
58	2	2	6	10	4	4	3	11		1		1
59	2	5	8	15	4	1	1	6				
60	2	1	5	8		1		1				
61	1	2	5	8	1	2	1	4				
62			6	6	1	1	1	3				
63	1	2	8	11	4	2	1	7				
64	1		4	5	1	1	3	5				
65	2		1	3		2		2				
66			2	2		1		1				
67			2	2		1		1				
68			2	2								
69		1	5	6		2		2				
70			2	2	1			1				

LG	3L			3L Total	3M			3M Total	3N			3N Total
	0	1	ind		0	1	ind		0	1	ind	
71			3	3	1		1	2				
72					1			1				
73												
74												
75					1	1		2				
76												
77			1	1								
78			1	1								
79					1			1				
80												
81			1	1								
82			1	1								
96					1			1				
GHL Total	81	154	365	600	166	200	150	516	4	14		18

Table 9. Length distribution (sampled number of fish) of redfish in 2011 Estonian fisheries in NAFO area. 0-female, 1-male, ind-unsexed.

LG	3M			3M Total	3N			3N Total	3O			3O Total
	0	1	ind		0	1	ind		0	1	ind	
18				3	3							
19				6	6		3	3				
20		1		5	6		4	4				
21				8	8		8	8				
22	1	5		15	21		7	7	1			1
23	1	5		12	18		5	5	4			4
24	1	5		7	13		5	5	5			5
25	5	7		11	23		7	7	1	1	1	3
26	17	8		12	37		5	5	4	2	2	8
27	10	7		10	27		8	8	2		1	3
28	11	4		15	30		3	3	2		2	4
29	3	5		15	23		5	5	1		2	3
30		5		17	22		5	5	2		4	6
31	4	1		23	28		9	9			4	4
32	2			16	18		9	9	1		7	8
33		3		8	11		6	6			2	2
34	6	2		12	20		6	6			2	2
35	2			9	11		5	5			4	4
36		1		3	4		1	1				
37	3			1	4		3	3				
38	2			1	3		1	1				
39	2				2		1	1				
40	1			3	4							
RED Total	71	59		212	342		106	106	18	8	31	57

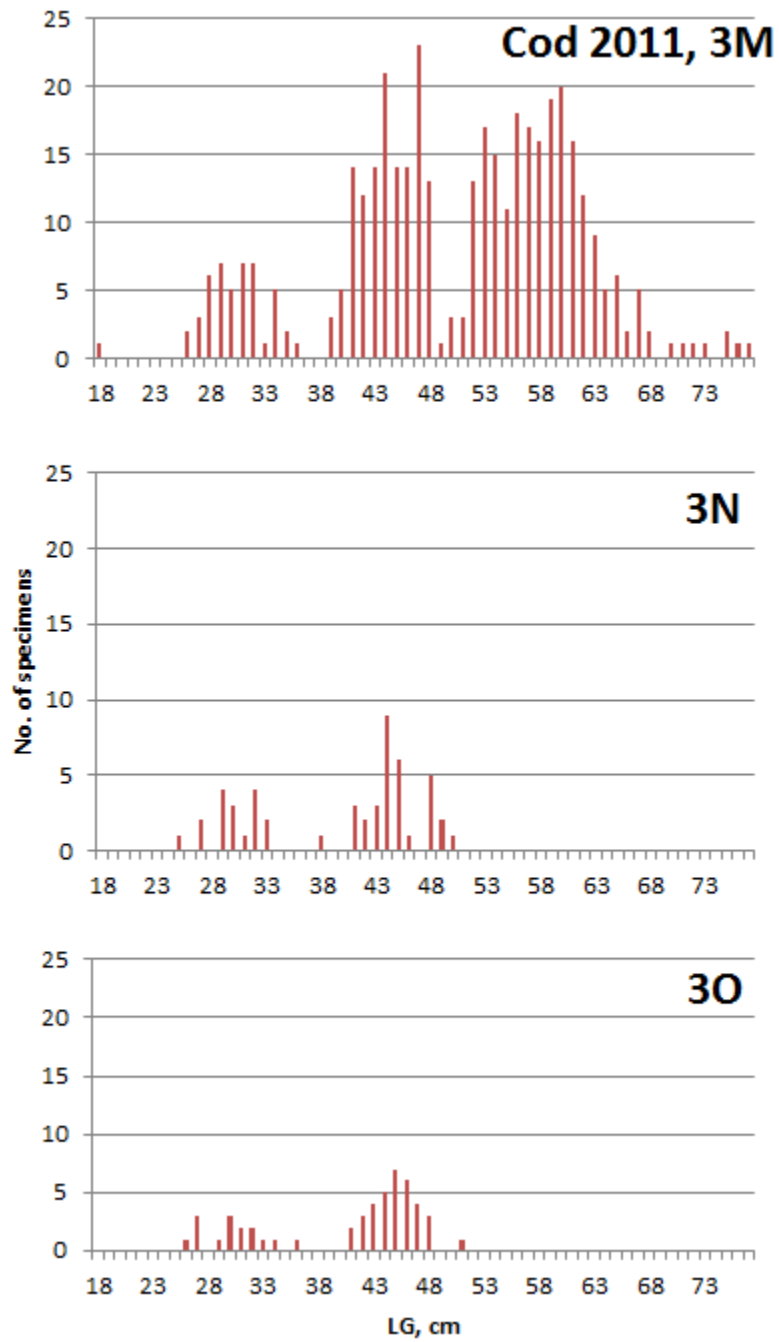


Figure 1. Length distribution of cod in Div. 3M, 3N and 3O Estonian fisheries in 2011.

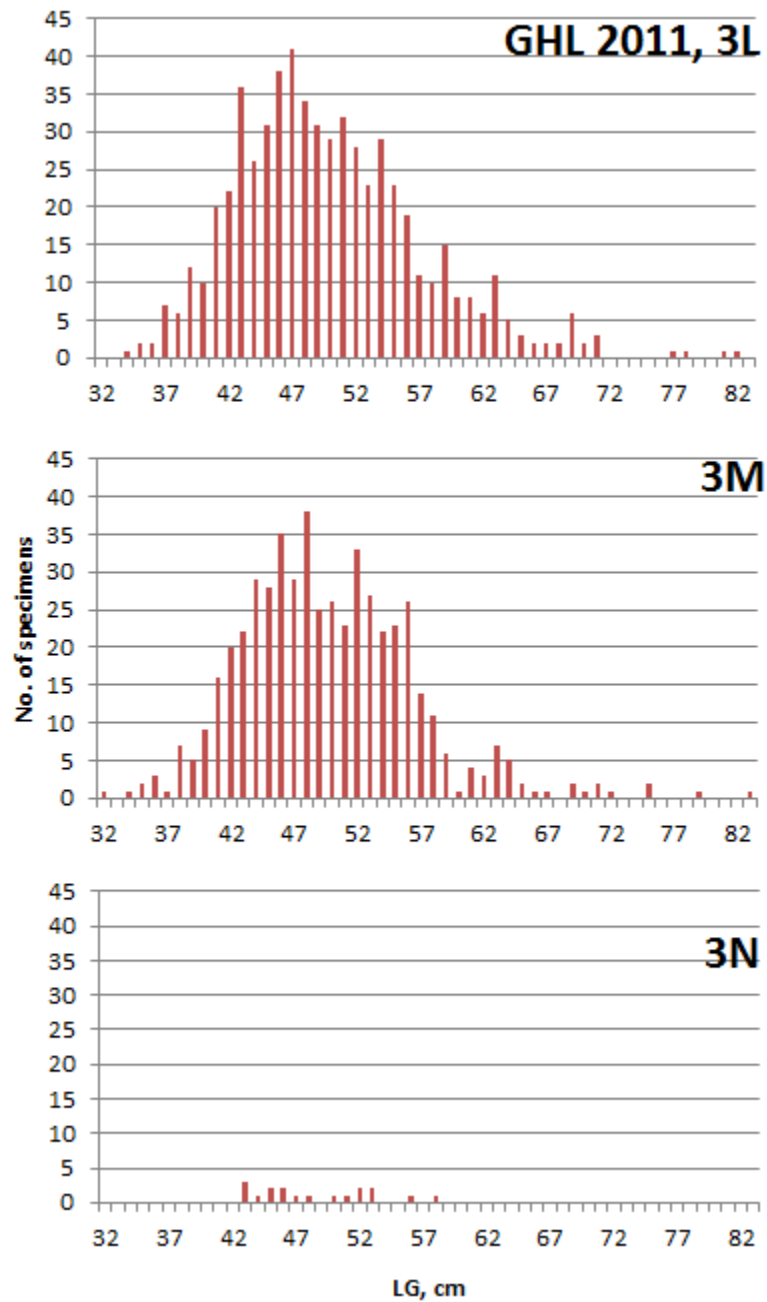


Figure 2. Length distribution of Greenland halibut in Div. 3L, 3M and 3N Estonian fisheries in 2011.

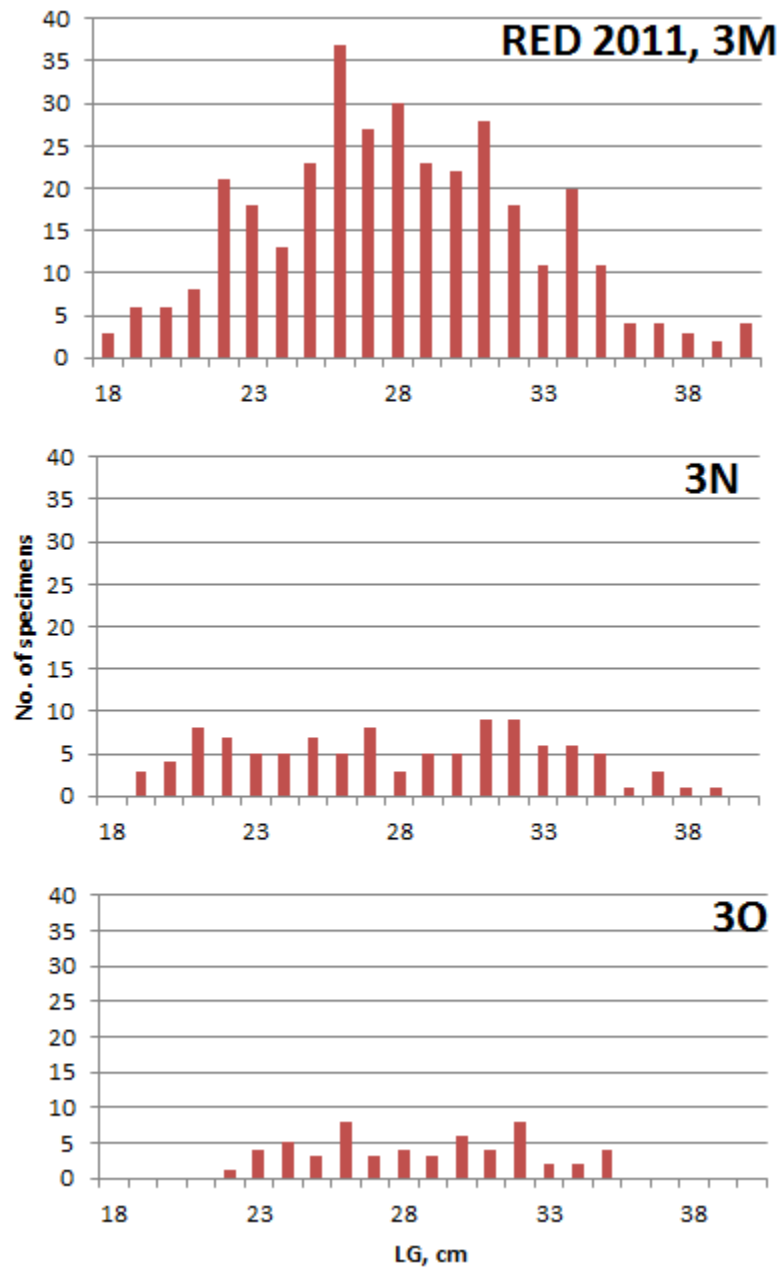


Figure 3. Length distribution of redfish in Div. 3M, 3N and 3O Estonian fisheries in 2011.

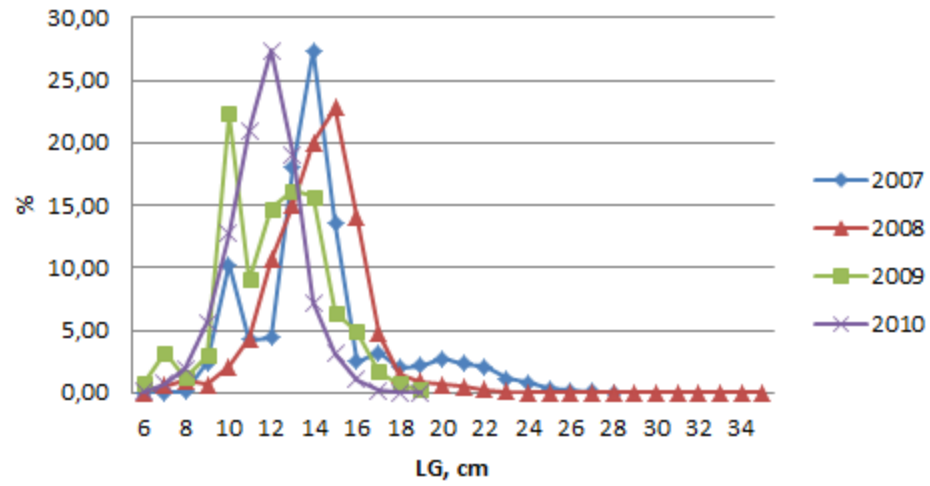


Figure 4. Redfish bycatch length distribution (% of total sampled specimens) in shrimp fishery in Div 3M in 2007-2010.

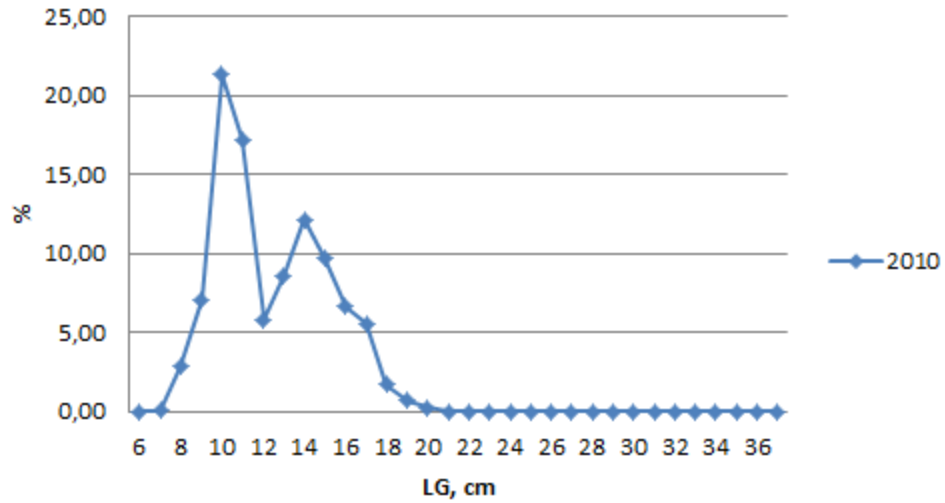


Figure 5. Redfish bycatch length distribution (% of total sampled specimens) in shrimp fishery in Div 3L in 2010.