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ESTONIAN RESEARCH REPORT FOR 2012

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This Report contains information for Estonian fishing vessels which operated in NAFO RA in 2012. Vessels targeting shrimp were excluded, except for landings data in sub-areas 0 and 1, and by-catch data in sub-area 3. Landing statistics from sub-area 0 and 1 were collected by the Ministry of Agriculture. All 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 specially trained to collect also basic scientific data.

Sub-area 0 and 1

A. Status of the Fishery

Estonian vessels have been fishing shrimp in sub-areas 0 and 1 from 2011. There has been no finfish fishery in that area. As there are no Estonian observers on board, we report only landings (Table 1).

Sub-area 3

A. Status of the Fishery

In 2006 there were two vessels involved in finfish fishery. In 2007-2011 there has been mainly one vessel involved in finfish fishery. In 2012 there was only one vessel involved in finfish fishery. In 2009-2011 there was one additional vessel targeting GHL and COD in last months of these years. In other cases the main target species for that vessel was shrimp and that vessel was the only vessel that targeted shrimp in 2012.

Total effort has decreased in 2012. Fishing effort was decreasing in 2006-2009. In 2010-2011 the effort increased to the levels of 2006-2007. Effort has increased in Div. 3N (Tables 2-3). Main target species are RED, GHL and SKA, followed by RHG and COD. No discards that were identified to species level were recorded in 2012. The catch and discard of demersal and pelagic fish directed fisheries are presented in table 4. Observer estimated catch of shrimp and discards in shrimp directed fishery in 3L in 2011 and 2012 are presented in table 5.

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 6. 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 9-11, figures 1-3).

Length distribution of *Sebastes* sp. bycatch in Div. 3L shrimp fishery in 2010 and 2012 is given in Table 7 and Figure 4. There was no redfish sampling in 2011. Length distribution of capelin in Div. 3L shrimp fishery in 2012 is given in Table 8 and Figure 5.

Table 1. Shrimp landings (tons) of Estonian fleet in NAFO sub-areas 0 and 1 in 2011–2012.

Year	2011	2012
NAFO Division		
0A	264.031	
0B	1784.968	
1A	1098.447	1387.495
1B	206.161	153.978
1D		0.389

Table 2. Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2012 by division and month. (shrimp fishery excluded)

2012	Division				Grand
Month	3L	3M	3N	3O	Total
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0
5	0	0	0	0	0
6	0	0	0	0	0
7	0	0	0	0	0
8	0	0	0	0	0
9	140	0	284	13	436
10	138	96	266	4	503
11	145	39	211	31	425
12	109	109	36	0	254
Total effort, hrs	531	243	796	48	1619

Table 3. Fishing effort (hours) of Estonian fleet targeting finfish in NAFO area in 2006-2012 by division.

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

Table 4. Observer estimated catch and discard (ton) of Estonia in NAFO areas in 2012 by division.
(shrimp fishery excluded)

	Scientific name	3L			3M			
		kept	disc	Total	kept	disc	Total	
RED	<i>Sebastes sp.</i>	150.770		150.770			0.000	
GHL	<i>Reinhardtius hippoglossoides</i>	86.464		86.464	27.629		27.629	
SKA	<i>Raja sp.</i>	6.690		6.690	5.112		5.112	
RHG	<i>Macrourus berglax</i>	21.874		21.874	11.516		11.516	
COD	<i>Gadus morhua</i>	4.806		4.806	49.608		49.608	
PLA	<i>Hippoglossoides platessoides</i>	2.050		2.050	4.139		4.139	
WIT	<i>Glyptocephalus cynoglossus</i>	3.591		3.591	3.676		3.676	
YEL	<i>Limanda ferruginea</i>			0.000			0.000	
HAL	<i>Hippoglossus hippoglossus</i>	1.492		1.492	2.000		2.000	
MZZ	Marine species not specified		2.735	2.735		1.060	1.060	
HAD	<i>Melanogrammus aeglefinus</i>			0.000	7.710		7.710	
GDE	<i>Gaidropsarus ensis</i>			0.000			0.000	
HKW	<i>Urophycis tenuis</i>			0.000			0.000	
SQI	<i>Illex illecebrosus</i>			0.000			0.000	

	Scientific name	3N			3O			All areas
		kept	disc	Total	kept	disc	Total	Total
RED	<i>Sebastes sp.</i>	36.313		36.313	181.170		181.170	368.253
GHL	<i>Reinhardtius hippoglossoides</i>	151.322		151.322	0.650		0.650	266.065
SKA	<i>Raja sp.</i>	85.344		85.344			0.000	97.146
RHG	<i>Macrourus berglax</i>	38.321		38.321	0.368		0.368	72.079
COD	<i>Gadus morhua</i>	3.139		3.139	2.692		2.692	60.245
PLA	<i>Hippoglossoides platessoides</i>	28.064		28.064	3.214		3.214	37.467
WIT	<i>Glyptocephalus cynoglossus</i>	22.665		22.665	3.026		3.026	32.958
YEL	<i>Limanda ferruginea</i>	30.446		30.446	0.905		0.905	31.351
HAL	<i>Hippoglossus hippoglossus</i>	5.861		5.861	0.400		0.400	9.753
MZZ	Marine species not specified		3.759	3.759		1.915	1.915	9.469
HAD	<i>Melanogrammus aeglefinus</i>			0.000			0.000	7.710
GDE	<i>Gaidropsarus ensis</i>			0.000	0.480		0.480	0.480
HKW	<i>Urophycis tenuis</i>			0.000	0.070		0.070	0.070
SQI	<i>Illex illecebrosus</i>			0.000	0.048		0.048	0.048

Table 5. Observer estimated catches of shrimp and discards in shrimp directed fishery in 3L in 2011 and 2012.

		2011		2012	
		3L		3L	
		tons	%	tons	%
Catch	Scientific name	1303.47		926.02	
PRA	<i>Pandalus borealis</i>	1303.47	100.00	926.02	100.00
Discard		53.87			
CAP	<i>Mallotus villosus</i>	33.26	2.55	3.32	0.36
PRA	<i>Pandalus borealis</i>	10.62	0.81	2.63	0.28
MZZ	Marine species not specified	9.91	0.76	5.56	0.60
RED	<i>Sebastes sp.</i>	0.09	0.01	0.54	0.06

Table 6. 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	9	OC	Kept	2	31	31	31	31
EST	GHL	3L	OTB	9	OC	Discarded	1	2			
EST	GHL	3L	OTB	10	OC	Kept	5	78	74	78	78
EST	GHL	3L	OTB	11	OC	Kept	1	18	16	18	18
EST	PRA	3L	OTB	1	OC	Kept	11	1916	1916		
EST	PRA	3L	OTB	9	OC	Kept	15	1949	1949		
EST	PRA	3L	OTB	10	OC	Kept	21	2814	2814		
EST	PRA	3L	OTB	11	OC	Kept	23	2790	2790		
EST	PRA	3L	OTB	12	OC	Kept	18	2618	2618		
EST	RED	3L	OTB	9	OC	Kept	8	132	132	132	132
EST	RED	3L	OTB	9	OC	Discarded	11	161			
EST	RED	3L	OTB	10	OC	Discarded	10	153			
EST	RED	3L	OTB	11	OC	Discarded	9	276			
EST	RED	3L	OTB	12	OC	Discarded	15	2655			
EST	HAL	3L	OTB	10	OC	Kept	1	1	1	1	1
EST	HAL	3L	OTB	12	OC	Kept	1	1	1	1	1
EST	CAP	3L	OTB	9	OC	Discarded	5	336			
EST	CAP	3L	OTB	10	OC	Discarded	10	880			
EST	CAP	3L	OTB	11	OC	Discarded	7	634			
EST	RED	3M	OTB	10	OC	Kept	4	40	39	40	40
EST	COD	3M	OTB	10	OC	Kept	4	25	25	25	25
EST	COD	3M	OTB	11	OC	Kept	1	23	23	23	23
EST	HAL	3M	OTB	10	OC	Kept	1	1	1	1	1
EST	HAD	3M	OTB	10	OC	Kept	1	5	5	5	5
EST	GHL	3N	OTB	9	OC	Kept	12	209	192	209	209
EST	GHL	3N	OTB	10	OC	Kept	10	173	162	173	173
EST	GHL	3N	OTB	11	OC	Kept	2	34	30	34	34
EST	RED	3N	OTB	9	OC	Kept	3	33	33	33	33
EST	HAL	3N	OTB	9	OC	Kept	2	2	2	2	2
EST	HAL	3N	OTB	10	OC	Kept	1	1	1	1	1
EST	HAL	3N	OTB	11	OC	Kept	2	2	2	2	2
EST	RED	3O	OTB	9	OC	Kept	1	18	18	18	18
EST	RED	3O	OTB	10	OC	Kept	1	22	22	22	22

Table 7. Length distribution of *Sebastes* sp. bycatch in Div. 3L shrimp fishery in 2010 and 2012. Trawl mesh size is 44mm and Nordmore bar spacing is 22mm.

LG, cm	3L			
	2010		2012	
	No. of specimens	%	No. of specimens	%
5			19	0.59
6		0.00	118	3.64
7	8	0.09	98	3.02
8	244	2.85	279	8.60
9	607	7.10	543	16.73
10	1826	21.36	676	20.83
11	1473	17.23	322	9.92
12	501	5.86	241	7.43
13	734	8.59	291	8.97
14	1042	12.19	382	11.77
15	836	9.78	181	5.58
16	567	6.63	41	1.26
17	475	5.56	22	0.68
18	149	1.74	22	0.68
19	58	0.68	6	0.18
20	21	0.25	2	0.06
21	2	0.02	1	0.03
22	1	0.01	1	0.03
23		0.00		0.00
24	1	0.01		0.00
25	1	0.01		0.00
26	1	0.01		0.00
27		0.00		0.00
28		0.00		0.00
29	1	0.01		0.00
30		0.00		0.00
31		0.00		0.00
32		0.00		0.00
33		0.00		0.00
34		0.00		0.00
35		0.00		0.00
36		0.00		0.00
37	1	0.01		0.00
Total	8549	100	3245	100

Table 8. Length distribution of capelin bycatch in Div. 3L shrimp fishery in 2012. Trawl mesh size is 44mm and Nordmore bar spacing is 22mm.

Species	3L	
	LG, cm	No. of specimens
CAP	9	2
	10	52
	11	182
	12	290
	13	608
	14	500
	15	198
	16	18
Total		1850

Table 9. Length distribution (sampled number of fish) of cod in 2012 Estonian fisheries in NAFO area. 0-female, 1-male.

LG	3M		Total			
	0	1				
23		1	1	48	1	1
24				49	2	2
25				50	1	1
26				51		
27				52	1	1
28				53		
29				54	2	2
30				55	1	1
31				56	1	1
32				57	3	4
33				58	1	2
34				59	2	2
35				60	1	1
36				61	1	1
37	1		1	62		1
38				63		1
39				64	1	1
40				65	2	2
41		1	1	66	2	2
42				67	2	1
43	1		1	68		
44		1	1	69		
45	1		1	70		
46	2	2	4	71	2	2
47				72		
				73	1	1
				Total	25	23
						48

Table 10. Length distribution (sampled number of fish) of Greenland halibut in 2012 Estonian fisheries in NAFO area. 0-female, 1-male, ind-unsexed.

LG, cm	3L			3L Total	3N			3N Total
	0	1	ind		0	1	ind	
26							1	1
27								
28								
29						2		2
30						1	2	3
31								
32								
33			1	1		1		1
34		1		1		3	2	5
35		1		1		3		3
36					2	2	1	5
37		1	1	2	1	11	1	13
38	1	3		4	2	9	7	18
39		5	1	6	1	10	1	12
40	1	5		6	5	12	2	19
41	2	6		8	4	14	1	19
42	6	10	1	17	7	23	1	31
43	8	3		11	12	21	1	34
44	5	6		11	13	19	1	33
45	5	3		8	10	8	3	21
46	3	5		8	17	12	3	32
47	5	2		7	14	24	1	39
48	1	1	1	3	14	8		22
49		1		1	2	9	1	12
50	1	2	1	4	7	5	2	14
51	8	4		12	4	7		11
52	3	3		6	10	7		17
53	2	1		3	3	6	1	10
54					3	3		6
55		1		1	5	4		9
56		2		2	1	5		6
57	2			2	5	1		6
58						2		2
59	2			2	1			1
60								
61					1	2		3
62					2	1		3
63					1			1
64								
65						2		2
Total	55	66	6	127	147	237	32	416

Table 11. Length distribution (sampled number of fish) of redfish in 2012 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		0	1	ind		0	1		0	1	
17						1	1						
18								1		1			
19													
20		1	1						1	1			
21		2	2									1	1
22		5	5						3	3	1	4	5
23	3	5	8						2	2	2	4	6
24	6	9	15						1	1	6	5	11
25	7	9	16		2		2		1	1	7	4	11
26	9	20	29		1		1				4	1	5
27	3	12	15	1			1		1	1	1		1
28	6	3	9		1		1		1	1			
29	3	3	6						1	1			
30	6	2	8	1			1		2	2			
31	2	1	3		1		1	1		1			
32	3	1	4		1		1		1	1			
33	3		3		1		1						
34		2	2										
35									2	2			
36		1	1		1		1		3	3			
37					1		1		1	1			
38					2	3	5	3	1	4			
39	1	1	2		1		1	2	2	4			
40	2		2	1	2		3	1	2	3			
41	1		1		4		4						
42					2	1	3						
43													
44					2	1	3						
45													
46					3		3						
47					2		2						
48					2		2						
49					1		1						
50													
51													
52					1		1						
Total	55	77	132	19	20	1	40	8	25	33	21	19	40

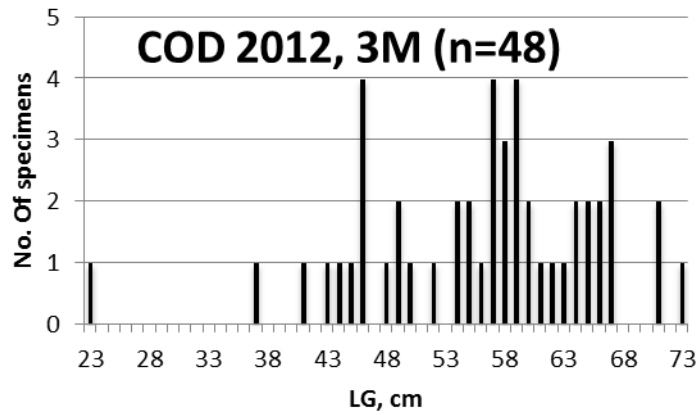


Figure 1. Length distribution (number of sampled specimens) of cod in Div. 3M Estonian fisheries in 2012.

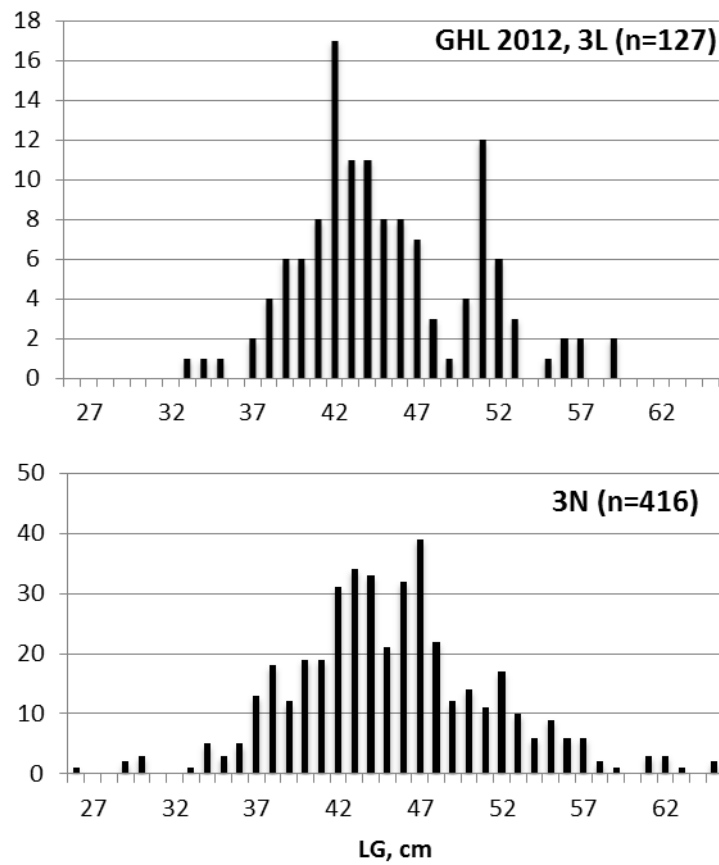


Figure 2. Length distribution (number of sampled specimens) of Greenland halibut in Div. 3L and 3N Estonian fisheries in 2012.

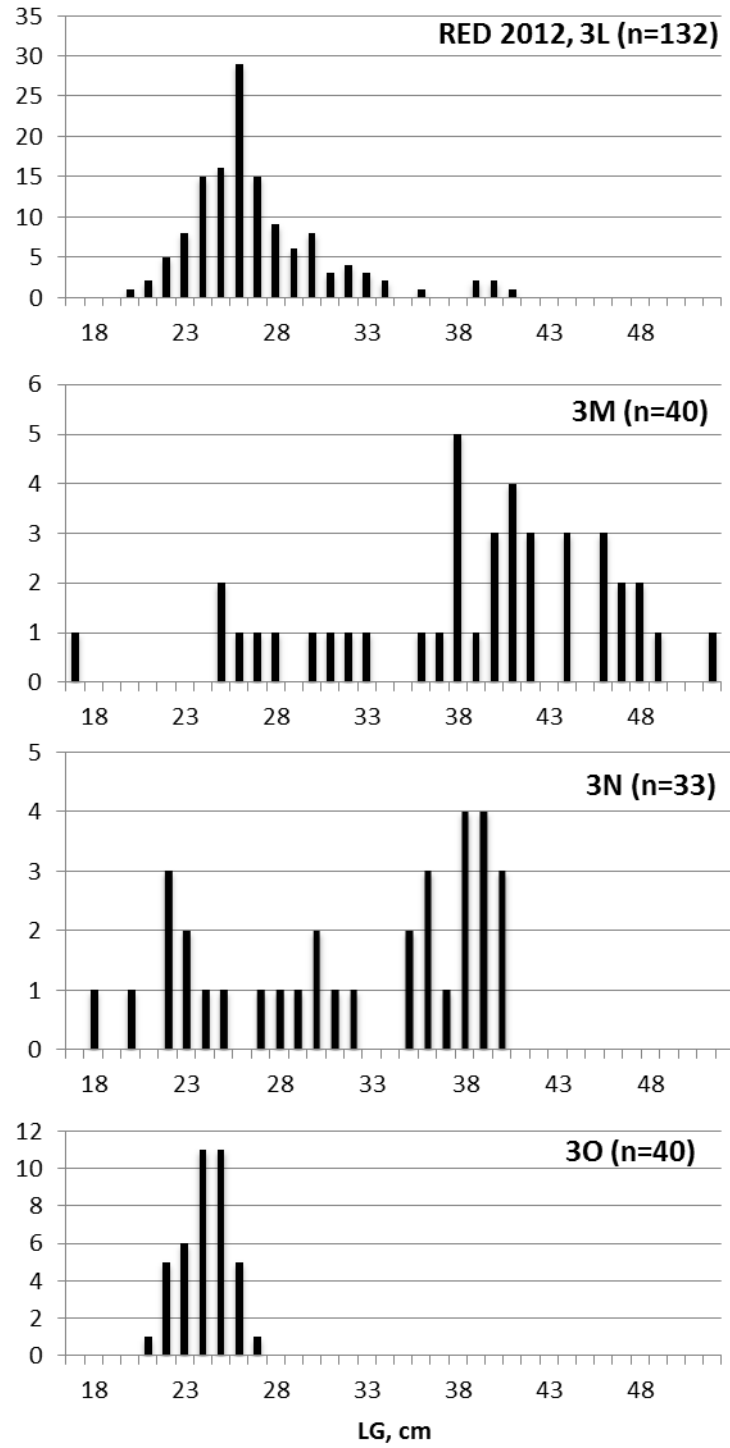


Figure 3. Length distribution (number of sampled specimens) of redfish in Div. 3L, 3M, 3N and 3O Estonian fisheries in 2012.

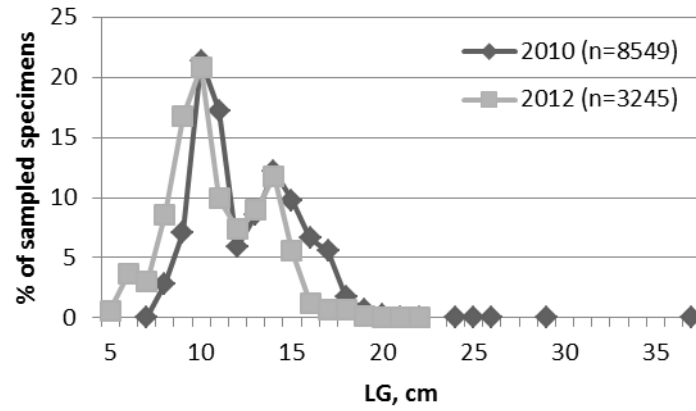


Figure 4. Redfish bycatch length distribution (% of total sampled specimens) in Estonian shrimp fishery in Div 3L in 2010 and 2012.

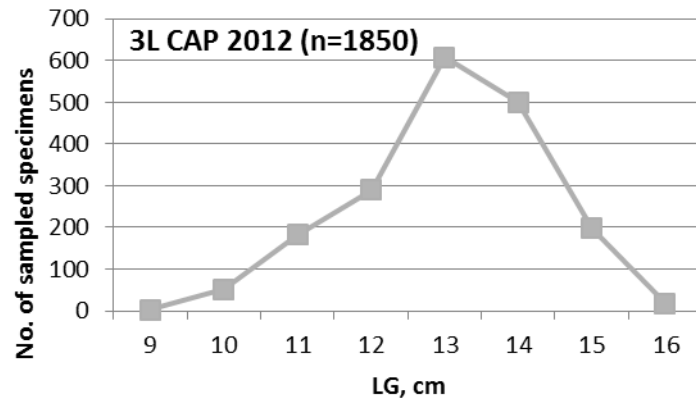


Figure 5. Capelin bycatch length distribution (% of total sampled specimens) in Estonian shrimp fishery in Div 3L in 2012.