

UNIVERSITY OF TARTU
ESTONIAN MARINE INSTITUTE

ESTONIAN SVALBARD EXPLORATORY SURVEY 2002

SCIENTIFIC REPORT

TALLINN 2003

Introduction

Considering the obligations resulted from international law, including the requirements of FAO Code of Conduct for Responsible Fisheries and Svalbard Agreement Estonia is a Contracting Party to the Estonian Fisheries Administration is making efforts to contribute to fisheries research in the Svalbard Area.

There is no sufficient information at the disposal of Estonian fisheries administration in regard of the status of the resources of Greenland Halibut in the Svalbard Region IIb. Therefore Estonian Fisheries Administration supported arrangements of the Estonian scientific expedition in order to get more information on this valuable fishery resource.

Scientific part of Estonian expedition was performed by scientists of Estonian Marine Institute, University of Tartu.

This Report is aiming to present the main results of first Estonian Exploratory Survey was carried out in order to obtain recent data on Greenland Halibut stock composition, spatial distribution and relative abundance in Svalbard Regulatory area in 2002.

Survey Area

The exploratory catches were carried out in the North Eastern Atlantic, Svalbard Agreement area (NEAFC/Div: IIb), during the period of 10th October to 4th November 2002. (Figure 1).



Figure 1. The approximate fishing-area of the first Estonian Svalbard Exploratory Survey.

Methodology

Scientific introduction into specific details of the Greenland Halibut research have been provided by the Spanish Institute of Oceanography in Vigo (Centro Oceanografico de Vigo, Instituto Espanol de Oceanografia (IOE)) under the supervision of Dr. Jose Luis del Rio Iglesias on 4-7 October 2002 prior the exploratory expedition started. The introduction contained most important methodological instructions for estimating yield per haul and best practices for doing biological analyses. Estonian scientist was advised on peculiarities of fish fauna of the Svalbard marine area. Overview was given on IOE research, labs and hydro-biological collections of Vigo Institute.

Expedition was carried out with Lootus II OÜ vessel “Lootus II” (ESPU, official N° 5F00G02, fishing N° EK-0010). The deep-water trawl electronic control system (Net Monitoring System Coden 850 AT) was used. The deep-water trawl itself meets the international requirements. Haul was accomplished at depths of 360-875 meters, with minimum duration of 3 hours and 55 minutes, and with maximum duration 7 hours and 40 minutes.

For each trawl haul the following data were collected:

1. DATE AND TIME (UTC)
2. POSITION AND WATER DEPTH AT THE START OF THE HAUL
3. POSITION AND WATER DEPTH AT THE END ON THE HAUL
4. DURATION OF THE HAUL
5. CATCH PER UNIT EFFORT BY SPECIES
6. BY-CATCH WEIGHT BY SPECIES
7. INCIDENTAL MORTALITY OF SEA BIRDS AND MAMMALS

In addition to these parameters 1,060 Greenland halibuts' (*Reinhardtius hippoglossoides*) length, weight and sex were fixed and also otoliths were taken for fish age estimation. Some Greenland halibut's stomachs were studied.

Other fish species were measured and weighed optionally.

Results

Structure of catches

Main species from the deep-water hauls of the Svalbard expedition are shown in the Table 1. Greenland Halibut (*Reinhardtius hippoglossoides*) was dominating in the catches during the Svalbard exploratory expedition. It was followed by redfish (*Sebastes mentella*) and cod (*Gadus morhua*). The amount of roughhead grenadier (*Macrourus berglax*), different species of skate (*Raja sp.*), american plaice (*Hippoglossoides platessoides*) and different species of wolf-fish (*Anarhichas sp.*) was much smaller. Only few individuals of other fish species were occasionally found.

Table 1. Species composition and mean share (%) by weight of fish in the trawl catches taken from the Svalbard fishing area (NEAFC/Div: IIB). Species which occurred only in a very small number are marked with a “+” sign.

Family	Scientific name	English name	Spanish name	%
<i>Pleuronectidae</i>	<i>Reinhardtius hippoglossoides</i>	greenland halibut	Fletan negro	82,9
<i>Scorpaenidae</i>	<i>Sebastes mentella</i>	deepwater redfish	Cabra	5,53
<i>Gadidae</i>	<i>Gadus morhua</i>	atlantic cod	Bacalao	5,36
<i>Rajidae</i>	<i>Raja sp.</i>	skate, ray	Raya	1,78
<i>Anarhichadidae</i>	<i>Anarhichas sp</i>	wolffish	Perro	0,5
<i>Pleuronectidae</i>	<i>Hippoglossoides platessoides</i>	american plaice	Platija	1,69
<i>Macrouridae</i>	<i>Macrourus berglax</i>	roughhead grenadier	Granadero	2,23
<i>Zoarcidae</i>	<i>Lycodes vahliei</i>	vahl's eelpout		+
<i>Psychrolutidae</i>	<i>Cottunculus microps</i>	polar sculpin		+
<i>Gadidae</i>	<i>Micromesistius poutassou</i>	blue whiting	Bacala	+
<i>Gadidae</i>	<i>Pollachius virens</i>	saithe		+
<i>Argentinidae</i>	<i>Argentina silus</i>	greater argentine		+
<i>Lotidae</i>	<i>Onogadus argentatus</i>	arctic rockling		+
<i>Lotidae</i>	<i>Brosme brosme</i>	tusk		+
<i>Gadidae</i>	<i>Melanogrammus aeglefinus</i>	haddock		+
<i>Cyclopteridae</i>	<i>Cyclopterus lumpus</i>	lumpsucker		+
<i>Squalidae</i>	<i>Somniosus microcephalus</i>	greenland shark	Tiburón boreal	+

In addition to listed species some jellyfishes, snails, shrimps, spider-crabs, octopuses and starfishes occurred in catches. However, the amount of jellyfishes, snails, shrimps and spider-crabs was insignificant due to the large mesh-size.

Mortality of sea-mammals and –birds was not observed.

Greenland Halibut (*Reinhardtius hippoglossoides*) was predominantly prevailing at the main trawl depths (700-800 m). At the depths less than 700 m the share of the redfish (*Sebastes mentella*) was raising.

The percentage of males in the yield of the Greenland halibut was higher than females (correspondingly 56 % and 34%). 10 % of the catches were juveniles.

The summary information on the date, position, depth and catch per hour of trawling for the Svalbard exploratory trawl survey are presented in Table 2 and 3.

Other remarks

Three Greenland halibuts were marked, two of them with marks of Norwegian origin (scientific collaboration of Norway, United Kingdom and Germany; N° 193817 N and N° 193801), and one with Russian mark (although the letters on the label were USSR PINRO N° 38345 VH.)

The age composition of catches is not available at the moment because the age reading is not finished yet.

Table 2. Summary information on the date, position, depth and catch per hour of trawling for the Svalbard exploratory survey in October 2002.

DATE	HAUL N°	INITIAL LATIT.	INITIAL LONGIT.	INITIAL DEPTH (m)	FINAL LATIT.	FINAL LONGIT.	FINAL DEPTH (m)	GHL kg/h	RED kg/h	COD kg/h
11.Oct	1	73°54,8	015°34,1	875	74°05,8	015°52,7	873	597,5		
11.Oct	2	74°06,8	016°01,7	750	74°19,8	016°12,7	824	1898,5		6,8
12.Oct	1	74°08,0	016°04,3	748	74°19,6	016°12,2	754	1187,5		
12.Oct	2	74°08,0	016°04,9	730	74°21,1	016°11,0	765	960,2		6,9
12.Oct	3	74°36,6	015°54,0	745	74°48,8	015°30,5	725	1148,9		7,1
13.Oct	1	74°37,2	015°54,3	719	74°49,6	015°30,5	622	1109,8		28
13.Oct	2	74°37,0	015°53,3	748	74°50,3	015°28,5	641	1220,4		
13.Oct	3	74°47,3	015°30,7	767	75°01,9	015°27,1	595	1113,2		
14.Oct	1	74°47,1	015°33,3	714	75°01,9	015°29,8	686	1046,2		6,4
14.Oct	2	74°48,7	015°52,0	359	75°00,5	015°31,9	710	378,8	470,4	
15.Oct	1	74°46,4	015°31,2	776	75°00,8	015°29,0	743	962,8	106,7	19,3
15.Oct	2	74°47,7	015°29,2	783	75°03,2	015°20,9	769	731,1		
16.Oct	1	74°49,1	015°31,0	723	75°04,1	015°24,0	688	688,7	95,5	23
16.Oct	2	74°50,0	015°30,7	712	75°05,0	015°21,6	683	994,2	57,3	103,1
17.Oct	1	74°50,3	015°29,8	728	75°06,4	015°18,6	631	774,3	73,5	99,8
17.Oct	2	74°52,8	015°31,3	683	75°06,1	015°18,1	661	1006,6	84	69,4
18.Oct	1	74°56,0	015°25,8	811	75°08,2	015°07,3	668	917,4	69,1	67,1
18.Oct	2	74°49,3	015°27,4	803	75°05,8	015°16,5	615	652,8	68,1	61,3
19.Oct	1	74°48,1	015°27,2	829	75°03,2	015°22,5	750	481,9	75,3	50,9
19.Oct	2	74°47,9	015°30,3	752	75°04,5	015°23,1	705	531	63	42
20.Oct	1	74°37,1	015°51,5	717	74°52,0	015°29,7	710	720,3	75,3	56,5
20.Oct	2	74°38,2	015°51,8	703	74°54,4	015°30,2	705	647,8	63	42
21.Oct	1	74°39,1	015°50,2	699	74°53,6	015°31,3	673	454	57,3	63,1
21.Oct	2	74°53,0	015°30,0	714	75°03,1	015°06,4	692	1268,7	61,3	51,1
22.Oct	1	74°50,2	015°29,5	737	75°06,0	015°18,2	664	558	37	50,1
22.Oct	2	75°20,9	014°18,8	706	75°38,5	013°59,0	683	390,8	31,1	46,7
22.Oct	3	75°28,1	014°07,5	683	75°12,7	014°42,9	741	440,2	38,5	42
23.Oct	1	75°15,7	014°34,2	661	75°31,2	014°06,2	650	464,9	15,3	51,6
23.Oct	2	75°25,1	014°09,6	723	75°13,3	014°38,0	770	366		21,1
23.Oct	3	75°06,4	015°15,6	672	74°49,6	015°30,8	714	664,8	49	47,3
24.Oct	1	74°50,3	015°37,6	525	75°06,3	015°17,3	670	496	32,4	48,7
24.Oct	2	75°04,0	015°22,6	727	74°48,1	015°31,7	710	412,2	22,2	33,3
25.Oct	1	74°50,8	015°30,2	708	75°07,3	015°16,1	626	426,2	28	52,5
25.Oct	2	75°05,7	015°18,2	679	74°49,8	015°31,8	695	431,2	31,5	57,8
26.Oct	1	74°49,1	015°30,2	739	74°35,6	015°59,3	692	635,3	43,2	54
26.Oct	2	74°35,6	015°59,3	692	74°53,6	015°30,2	697	467,9	60,6	33,6
27.Oct	1	74°48,4	015°51,8	357	75°04,4	015°23,8	679	499,6	79,6	79,6
27.Oct	2	75°03,2	015°26,0	714	74°45,5	015°36,5	695	366,2	37	30,2
27.Oct	3	74°46,5	015°35,8	675	74°30,0	016°07,9	668	495,2	20,2	30,2
28.Oct	1	74°30,8	016°08,9	664	74°46,7	015°36,5	659	363	28	31,5
28.Oct	2	74°50,0	015°30,9	695	75°06,7	015°14,0	586	316	31,5	42
29.Oct	1	75°03,0	015°27,2	695	74°45,6	015°36,4	697	344,7	40,7	40,8
29.Oct	2	74°43,3	015°41,7	677	74°28,4	016°08,6	677	477,1	55,6	55,6
29.Oct	3	74°30,4	016°08,7	644	74°47,4	015°35,5	659	328,9	25,8	29,1
30.Oct	1	74°48,2	015°32,6	694	75°05,3	015°20,4	690	339,8	31,1	36,3
30.Oct	2	75°01,8	015°29,4	710	74°49,7	015°37,6	694	281,3	38,5	47,3
30.Oct	3	74°40,2	015°49,2	659	74°58,5	015°32,4	721	320,9	47,6	30,6
31.Oct	1	74°57,7	015°30,4	732	75°07,6	015°07,8	716	409	36,8	55,3
31.Oct	2	75°24,1	014°13,6	694	75°41,6	013°57,30	688	591,5	38,5	52,5
31.Oct	3	75°41,8	013°57,2	688	75°22,9	014°16,9	681	335,4	49,1	44,2

Table 3. Summary information on the date, position, depth and catch per hour of trawling for the Svalbard exploratory survey in November 2002.

DATE	HAUL N°	INITIAL LATIT.	INITIAL LONGIT.	INITIAL DEPTH (m)	FINAL LATIT.	FINAL LONGIT.	FINAL DEPTH (m)	GHL kg/h	RED kg/h	COD kg/h
1.Nov	1	75°23,5	014°13,5	710	75°43,0	013°56,7	688	470,7	19,6	68,7
1.Nov	2	75°42,6	013°55,6	712	75°29,7	014°05,1	697	679	33,9	101,8
2.Nov	1	75°32,2	013°59,8	730	75°50,2	013°57,4	697	410,1	7,4	27,9
2.Nov	2	75°49,1	013°55,9	728	75°30,8	014°03,6	706	598,1	10	39,8
2.Nov	3	75°28,2	014°08,0	673	75°50,6	013°57,8	686	420,3	8,3	20,8
3.Nov	1	75°49,5	013°57,0	699	75°29,2	014°05,3	706	992,8	54,9	55,3
3.Nov	2	75°30,6	014°05,8	666	75°50,9	013°58,8	670	451,7	25,5	52,7
4.Nov	1	75°49,6	013°55,4	732	75°30,1	014°05,7	675	931,1	31,1	42,1
4.Nov	2	75°32,4	014°03,2	681	75°53,9	013°59,0	690	881,8	17,8	44,5
4.Nov	3	75°54,4	013°59,3	683	76°17,6	014°23,0	677	825,8	11	41,1