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Provisional Results of the Russian Fishery for Greenland Halibut
in the Area of West Greenland in 2005

by

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Abstract

The Russian fishery for Greenland halibut in 2005 lasted from July to November. Six trawlers of tonnage class 6 and 7 operated in this fishery. The bulk of the catch consisted of Greenland halibut of 30-108 cm in length and was taken in a depth range of 1 000 to 1 300 m. Most of males were observed to be mature at the length of 44 cm (L_{50}) at age 6 (A_{50}). The same level of maturity in females was registered at the length of 62 cm at age 9.

Introduction

Mutual relations between Russia and Greenland in fisheries were first established in 1992. On the basis of exchange Russia gained an opportunity to fish for redfish, capelin, rock grenadier, catfish, Greenland halibut and true halibut in the Fishery Zone of Greenland. Greenland was allocated quotas of cod, haddock, capelin and shrimp in the Exclusive Economic Zone of the Russian Federation. Besides, fisheries in both above zones allow for 10% by-catch of demersal fish. Later on, capelin, catfish, rock grenadier and shrimp were taken out of the quota exchange.

Greenland halibut is the most important target species of the Russian fishery in the area of West Greenland. The size of Russian quota of the Greenland halibut had been increasing gradually from 1 000 tons in 2001 to 1 700 tons in 2005. Observers were placed onboard fishing vessels only in some years, therefore biological information arrived at PINRO irregularly. In 2005, scientific data were collected by observers onboard two fishing vessels operated in Division 1D.

The objective of this paper is to present data on biology and fisheries of the Greenland halibut obtained during the research in the West Greenland area in 2005.

Materials and Methods

Data on the Greenland halibut biology was taken from commercial catches by bottom trawl with a mesh size not less than 140 mm. Zoological length of 200-250 individuals sorted out by sex was measured using size-class of 2 cm beginning from an even number; maturity and feeding were analyzed and age samples were collected. The Greenland halibut age was estimated at PINRO using scales picked out from the dorsal area of the body. Maturity was estimated according to the following scale of stages: 2 – immature; 3 – maturing; 4 – prespawning; 5 – spawning; 6 – postspawning. To study feeding intensity a 5-point scale was applied as follows: 0 – no food in stomach; 1 – very little food; 2 – little food; 3 – stomach is full with food and has folds; 4 – very much food, folds are stretched. Mean index of stomach fullness was used as an indicator of feeding intensity.

Results

In 2005, target fishery for Greenland halibut from July to November was conducted by two trawlers of tonnage class 6 and four trawlers of tonnage class 7. The fishery embraced 900-1 500 m depth range close to the 200-mile zone limits (Fig. 1). Most of the catch was taken in a depth range of 1 000 to 1 300 m, although the highest average daily catch rate of 10.6 tons was registered at 1 400-1 500 m depths (Table 1).

The highest fishing effort (about 50% of total fishing efforts) was applied in Div. 1D where the major part of the quota was fished (Table 2).

Proportion of the Greenland halibut in trawl catches was close to 100%. The main component of by-catch was roughhead grenadier as well as skates and threebeard rockling. Provisional data show the total catch to be 1 693 tons, of which 500 tons were taken in Div. 1AB and 1193 tons in Div. 1D.

Catches in Division 1D comprised Greenland halibut of 30-108 cm in length and were dominated by individuals being 46-52 cm long at age 6-8 (Figure 2 and 3). Mean length of males and females made up 48.7 cm and 54.7 cm, respectively. The ratio of males and females was 1.6:1.

By the beginning of October, 76% of males examined were mature. Maturation of females occurred in later period; about 75 % of them were immature. The length, at which most of males were mature (L_{50}) was 44 cm, the age (A_{50}) was 6 years. The same level of maturity in females was registered at the length of 62 cm at age 9. Full maturity of males was noted at the length of 61 cm (L_{100}) at age 10. Females became fully mature at the length of 74 cm at age 13 (Fig. 4).

In the diet of Greenland halibut, squid and shrimp were highly important. Among prey species found in stomachs of Greenland halibut were roughhead grenadier, *Nezumia*, serrivomerid eel and lanternfishes. Cannibalism was not pronounced. Feeding intensity was low; mean index of stomach fullness made up 0.5 (Table 3).

Table 1. Distribution of fishing effort and catch of Greenland halibut by depth in July-November 2005.

Depth, m	Number of		Catch	
	sets	hours	t	t/fish. day
<1000	25	116	66	7.5
1000-1099	207	1117	608	7.4
1100-1199	105	550	298	8.8
1200-1299	152	936	455	8.6
1300-1399	58	354	166	7.6
1400-1499	9	50	29	10.6
>1500	22	126	67	7.5
Total	582	3262	1693	8.0

Table 2. Distribution of fishing effort and catch of Greenland halibut by Divisions in July-November 2005.

GRT NAFO Code	Number of			Catch per		Total catch
	sets	fishing days	hours	hour	fishing day	
Division 1A						
6	71	25.8	4425	0.40	6.87	1769
7	79	27.7	3930	0.62	8.83	2443
Total	150	53.5	8355			4212
Division 1B						
6	15	5.2	1020	0.49	9.59	50.3
7	11	4.4	54.0	0.53	6.63	28.8
Total	26	9.6	156			79.1
Division 1C						
7	88	39.6	4585			280.7
Division 1D						
6	141	50.1	8494	0.46	7.82	3885
7	177	60.6	9628	0.55	8.66	523.7
Total	318	110.7	1812.2			912.1
Grand total	582	213.4	3262.2			1693.1

Table 3. Composition of Greenland halibut diet in Div. 1D in July-October 2005.

Prey species	Frequency of occurrence, %
Squids	70.67
Shrimps	3.91
Octopus	1.96
Amphipods	0.56
Roughhead grenadier	0.56
Lanternfish	0.56
Common grenadier	0.56
Serrivomerid eels	0.56
Blue hake	0.28
Threebeard rockling	0.28
Greenland halibut	0.28
Digested food	10.89
Other	8.94
Mean index of stomach fullness	0.5
Number of stomachs examined	2274
Number of stomachs with food	352

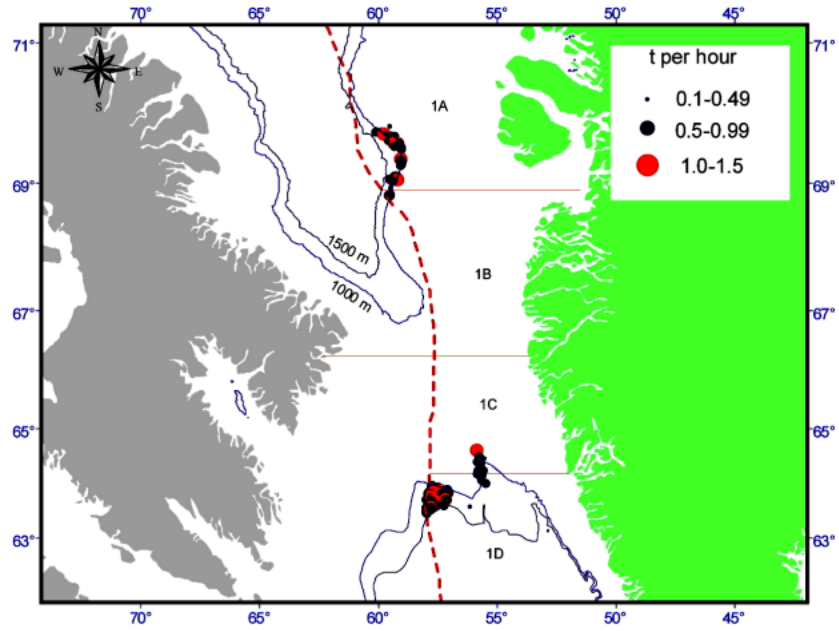


Fig. 1. Distribution of Greenland halibut catches in July-November 2005.

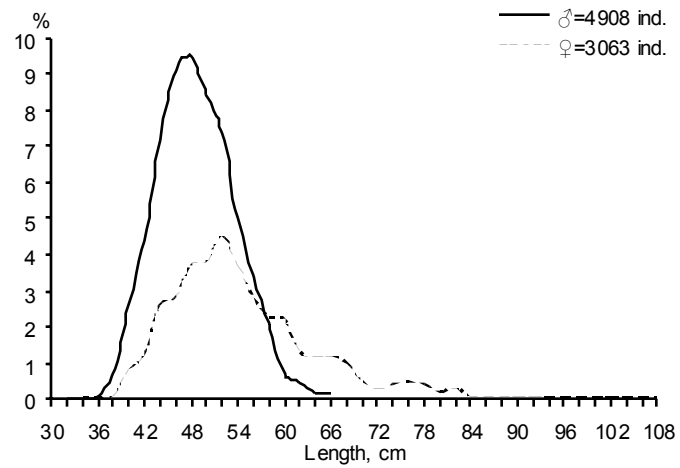


Fig. 2. Size composition of Greenland halibut catches in Div. 1D in July-October 2005.

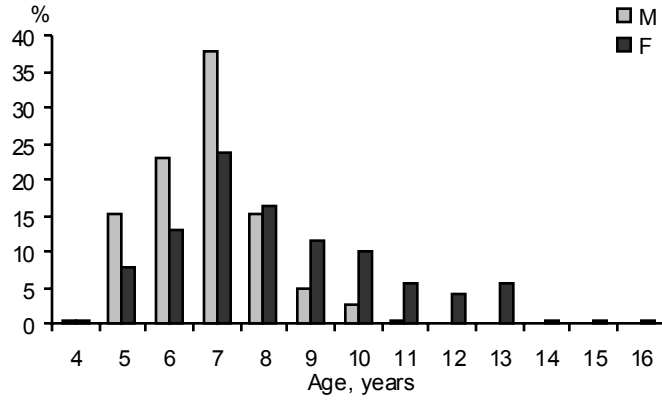


Fig. 3. Age composition of Greenland halibut catches in Div. 1D in July-October 2005.

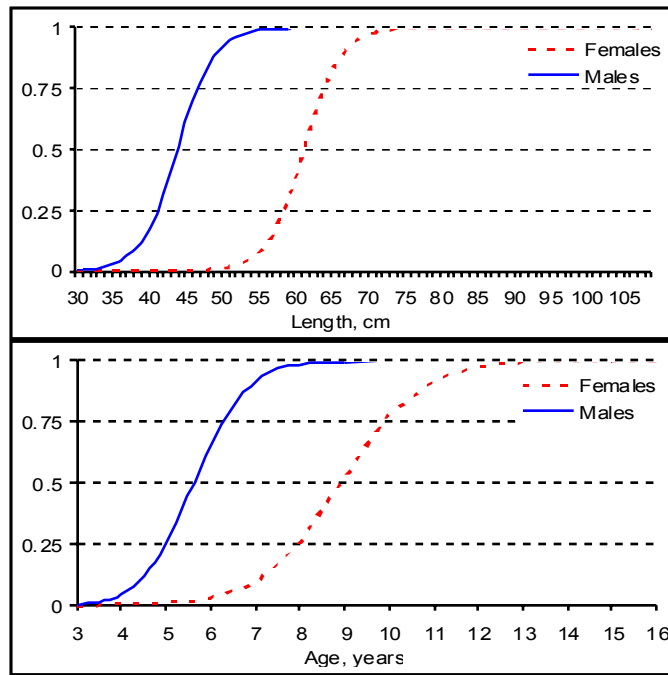


Fig. 4. Maturity ogives of Greenland halibut by length (top panel) and by age (bottom panel).