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Age-Length Composition of Commercial Catches of Greenland Halibut from Division 1D in September-October, 1999

by

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Abstract

Data on biology of Greenland halibut from commercial catches in the area of West Greenland (1D) are presented in the paper. Biological data were collected by a scientific observer on board of fishing vessel MI-0297 "Maroanjoca" in September/October, 1999.

Fishing was carried out at the depth of 900-1500 m. Fishing gear was a bottom trawl with 140 mm mesh size.

Males 26-73 cm long were registered in catches, the mean length constituted 47.2 cm. Females' length varied from 34 to 104 cm, mean length constituted 50.9 cm.

Age composition of commercial concentrations of halibut was presented by specimens at the age of 4-19, fish from 1990-1993 year classes dominated in catches.

At all surveyed depths, males dominated in catches, and sex ratio constituted 3.7:1.

Introduction

Russian and Greenland have been changed quotas for fishery for commercial fish species in their 200-mile zones since 1992. The main commercial species in the area of the West Greenland is Greenland halibut (*Reinhardtius hippoglossoides*), the Russian catch of which exceeded 500 tons in recent years. No sampling from commercial catches has been done till now. The first biological data on halibut in the fishing zone of Greenland were obtained by a scientific observer in 1999 only.

Materials and Methods

The fishery has been carried out by the "Maroanjoca" trawler (engine capacity is 1.270 kw/1.725 h.p.) in Div. 1D since September, 10 till October, 24, 1999 (Fig. 1). In total, 141 trawlings has been done at the depth from 900 to 1.500 m at the mean duration of trawlings 5-6 hours. Fishing gear was a bottom trawl with the vertical opening of 3 m, horizontal one - 22 m, the mesh size in a codend was 140 mm. The vertical opening of the trawl was controlled by a "Furuno" trawl sounder.

A species composition of each catch was determined. Halibut catch weights were estimated with the use of the conversion coefficients by a number of the produced fish products, by-catches were weighed separately from the main catch. Full (zoological) length of fish was measured with the accuracy to 1 cm and specified by sex, length frequencies

were grouped by length classes of 2 cm beginning from an even number. 4.744 specimens of Greenland halibut were analysed. During the age sampling, the maturation stage was determined by a 6-point scale and a measure of the stomach fullness by a 5-point scale, as well as the qualitative analysis of feeding was done and the total weight of a body was determined with the accuracy to 50 g. Age was determined by scales.

Results

Males 26-73 cm long and females 34-104 cm long were registered in catches, the mean length of which constituted 47.2 and 50.9 cm, correspondingly. Males 44-50 cm and females 42-48 cm long were found mostly often. The largest specimens were presented by females only (Fig. 2).

With the deepen of trawlings from 1.100 to 1.500 m, the mean length of fish increased by about 4 cm did not changed much during the whole fishing period (Fig. 3).

A large part of fish to 64 cm long was presented by males; females dominated at the length of 68 cm and more. In all surveyed areas, males dominated in catches (more than 80 %), and deeper than 1.300 m, a portion of females increased up to about 25 % (Fig. 4). In total in the area, the ratio between males and females was close to 3.7:1.0.

Linear-weight ratio between sexes was similar at the length to 60 cm. At the further increase of the length, the weight of females grew slower compared to males (Fig. 5). At the age below 8, males were larger than females among the same age groups; whereas in the older groups, females' length exceeded that of males. At the same time, growth rates of weight in dependence on the age were similar between both sexes (Fig. 6).

Age composition of commercial concentrations was presented by specimens at the age of 4-19. Halibut of 1990-1993 dominated in catches, 5 % of males and 24 % of females at the age of 10+ were registered (Fig. 7).

Fishery for halibut in the area of West Greenland in September and, especially, in October was based on the pre-spawning concentrations. About 70 % of analysed males and 50 % of females were mature, some individuals had ripen gonads (Fig. 8).

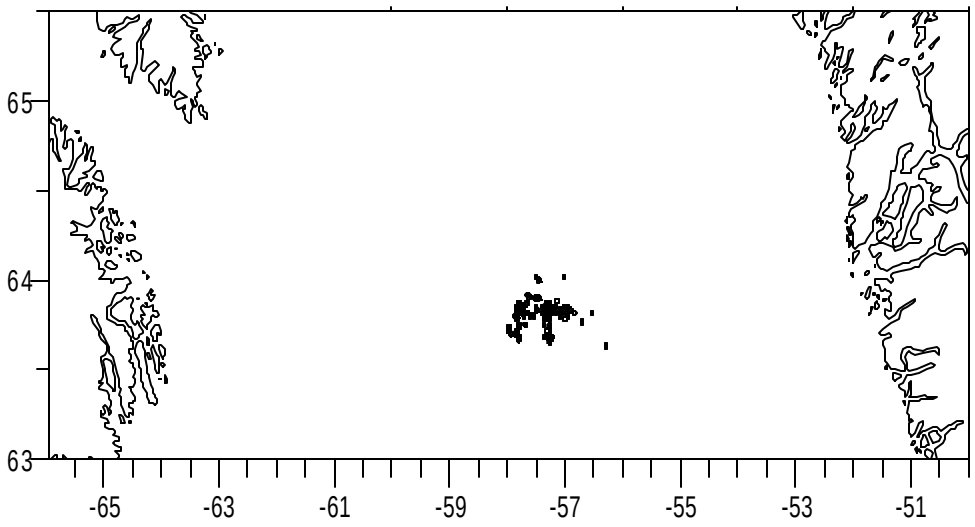

Fig. 1.Distribution of Greenland halibut catches at West Greenland in September-October 1999.

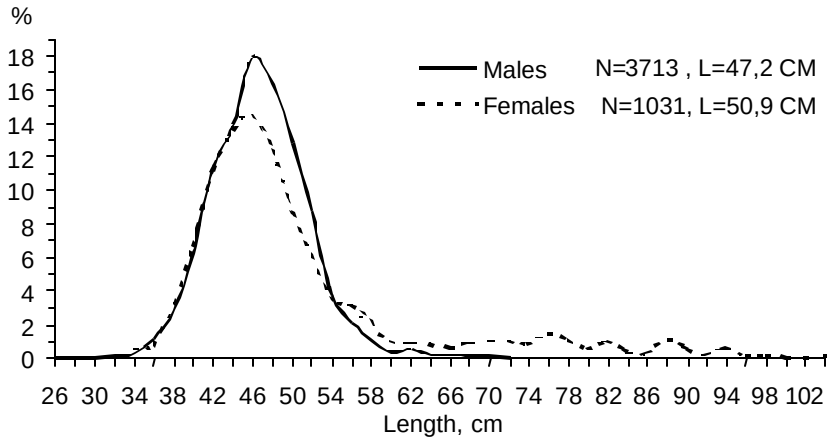

Fig. 2. Size distribution of Greenland halibut in Div. 1D, September-October 1999.

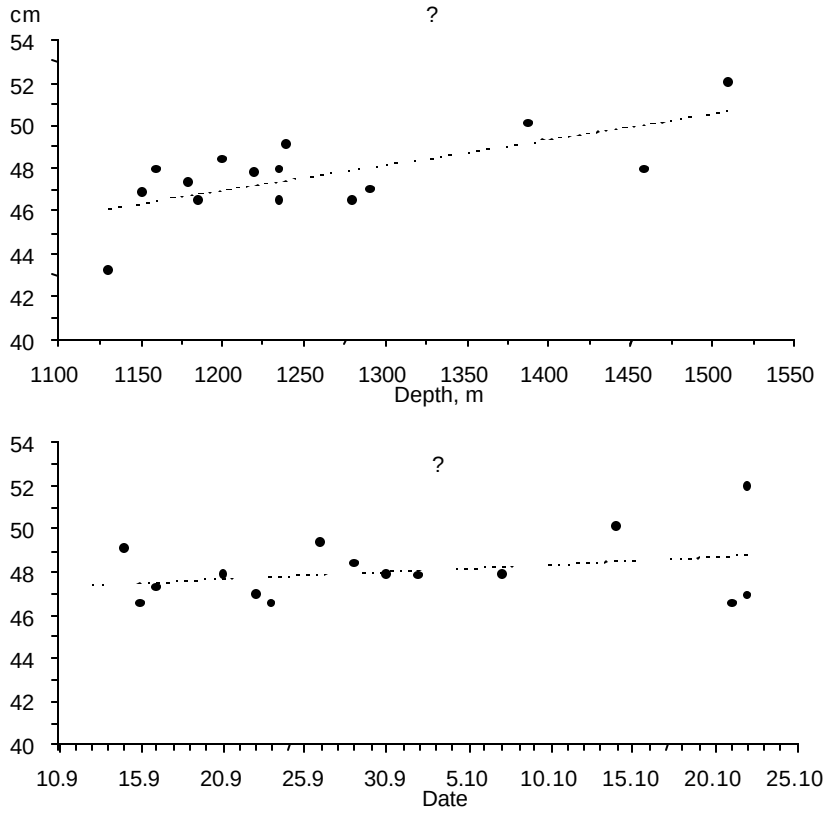

Fig. 3. Average length of Greenland halibut by depth (A) and fishery time (B) in Div. 1D, September-October 1999.

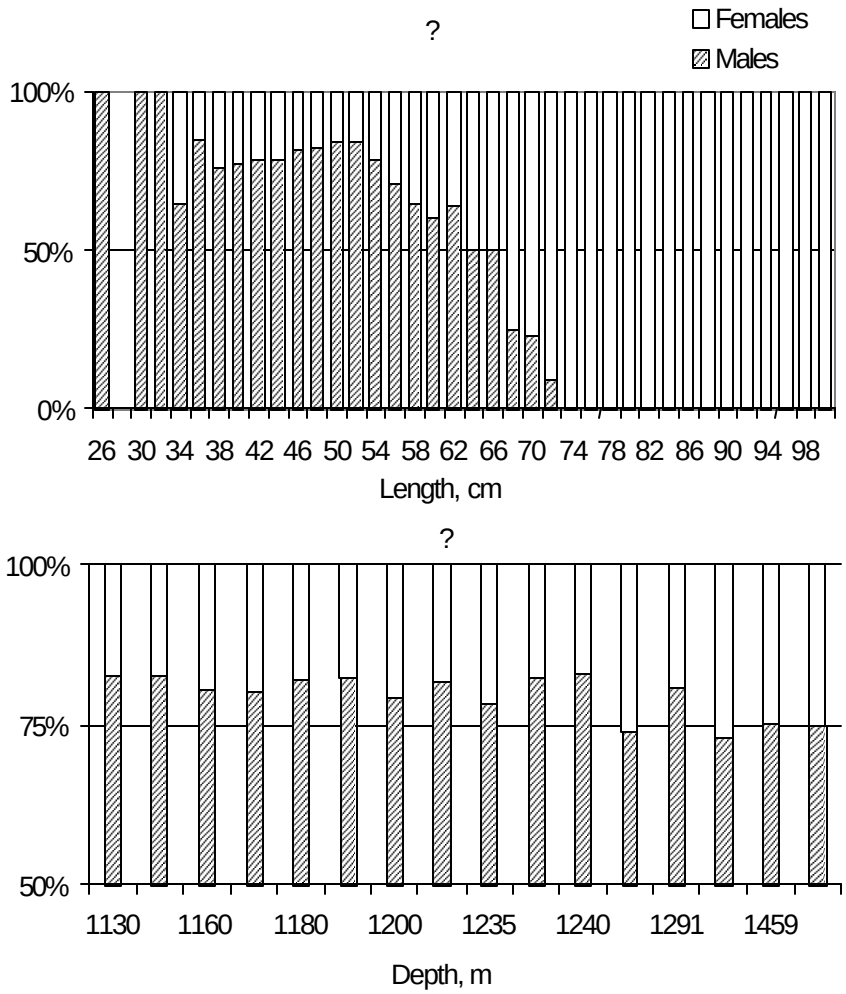

Fig. 4. Sex ratio of Greenland halibut by length (A) and depth (B) in Div. 1D, September-October 1999.

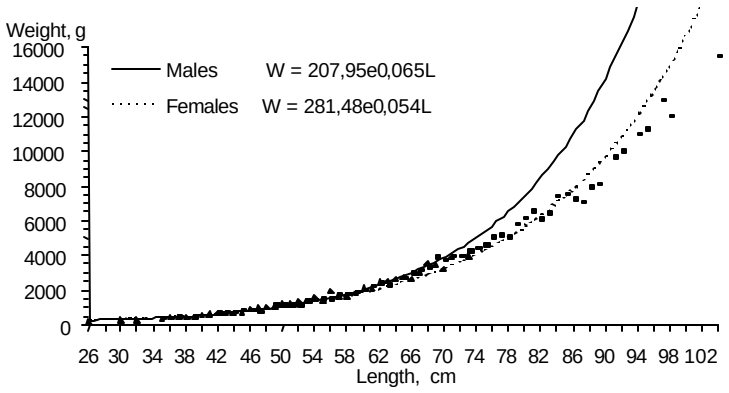

Fig. 5. Length-weight relation of Greenland halibut in Div. 1D, September-October 1999.

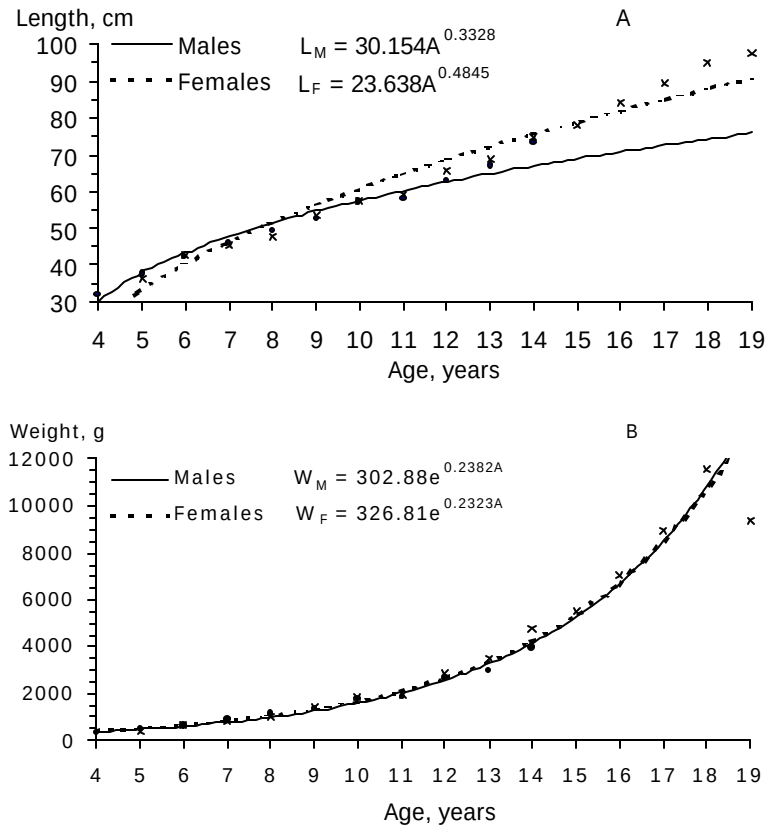

Fig. 6. Age-length (A) and age-weight (B) relation of Greenland halibut in Div. 1D, September-October 1999.

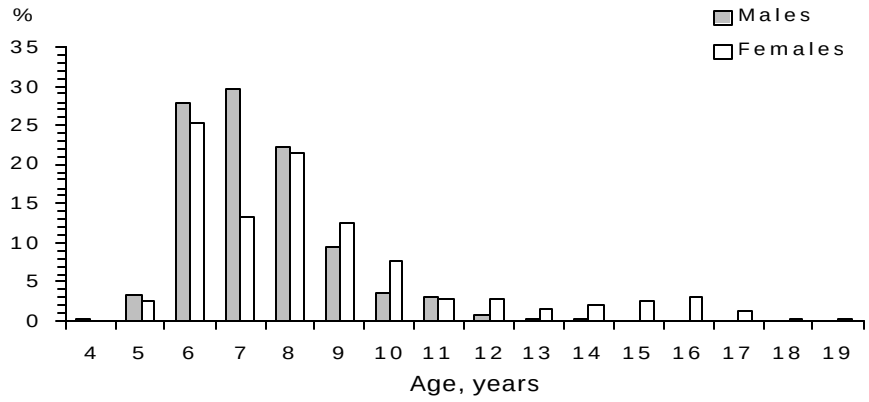

Fig. 7. Age distribution of Greenland halibut in Div. 1D, September-October 1999

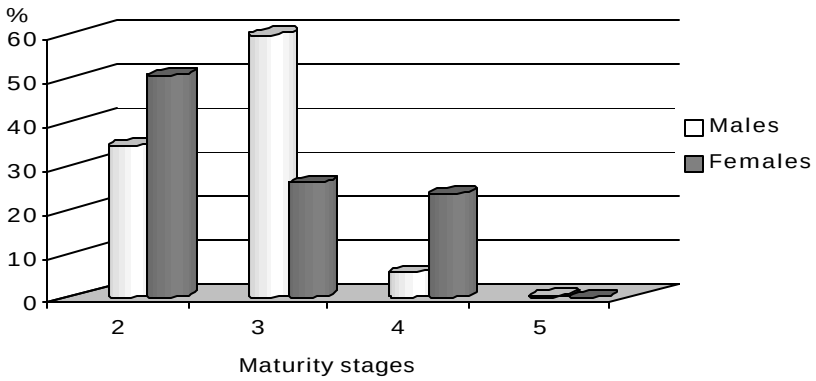

Fig. 8. Sexual maturity of Greenland halibut in Div. 1D, September-October 1999.