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By-catch of Snow Crab of the Genus *Chionoecetes* in Greenland Halibut Fishery in Division 3L in 2000

by

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Abstract

Data relating to by-catch of snow crab (Genus *Chionoecetes*), its size composition and distribution by depth, collected by a commercial vessel from 23 February to 16 May 2000 are presented.

The by-catch was comprised of 521 males, of them 55.5% were of commercial size. Snow crab occurred in the depth range from 730m to 1145m, the greatest amount (69.5%) was taken in depth 800-900m.

Introduction

In the management of resources of the world ocean knowledge of the size and composition of by-catch in the fishery for various species becomes an important element.

In harvesting of commercial species permitted to be taken as catch a problem arises of inadvertent outtake (by-catch) of other commercial species, which are not for various reasons targeted by the fishery at a particular time. This problem is associated with a number of aspects: overlap in the distribution of a considerable number of species; their differing abundance, specific features of their distribution, biology; their ability to avoid fishing gear etc.

Up to now researchers have not given any consideration to the issue of by-catch of deep-water snow crab in the fishery for Greenland halibut in Flemish Pass.

The purpose of this paper is to identify the size and sex composition, distribution by depth and the size of by-catch of snow crab in a directed fishery.

Deep-water species of snow crab evolved into distinct species as a result of adaptation of the parent form *Chionoecetes opilio* to deep waters. *Ch.opilio* has the most extensive distribution range (Ajupov *et al*., 1993).

Due to certain difficulties associated with identification of species of the snow crab (Jadamec *et al*., 1999) and absence of sufficient data to do this, the issue of species identification as regards the crab taken as by-catch has not been considered. Below in the text it is referred to as snow crab opilio (*Chinoecetes opilio*). The identification of species of the crab can be feasible provided that further information on its morphology is available.

For the first time the paper presents data on by-catch of snow crab in a directed fishery for Greenland halibut.

Material and Methods

Over the period of operation on the Greenland halibut fishery in Flemish Pass from 23 February to 16 May 2000 a total of 224 hauls were done by the vessel MI-2386 “Kapitan Naumov”. Of these hauls 219 were done in Saint John’s area (Div. 3L) and 5 on Flemish Cap (Div.3M).

Bottom trawls TURBOT – 454 and BACALAO-494 with the wing spread of 18 and 20 m, respectively, vertical opening of 3.5 m and mesh size of 130 mm in trawl cod-end were used. Besides, 130 inch doors “Tiboron” were used and 200 kg of chain were additionally attached to the ground-rope “Rockhopper”.

182 hauls were done with the trawl TURBOT-454 and 32 with the trawl BACALAO-494.

All snow crabs from by-catch were collected and biological analysis was performed.

A field biological analysis included:

1. Measurement of carapace width to the nearest 1 mm,
2. Measurement of carapace length (to eye pit) to the nearest 1 mm
3. Identification of sex
4. Identification of molt stage
5. Identification of damages to legs
6. Identification of the presence of ectoparasites

After the biological analysis all crabs were released alive into the sea.

Results

The Greenland halibut fishery was conducted in depth 730-1300 m with the duration of hauls of up to 5-6 hours. The majority of hauls were done in depth 800-1050 m and their duration was 4 to 6 hours.

A commercial species – snow crab opilio (*p.Chionoecetes*) (Fig.1) occurred as by-catch in the Greenland halibut fishery. There was no snow crab in catches taken on Flemish Cap.

By-catch of the crab in the Saint John’s area was 0.5 individual per our haul or 1.1 individual per one ton of halibut. Of the total number of hauls done in Div.3L hauls with a by-catch of crab accounted for 13.2%.

In catches snow crab was represented by males only, with the carapace width of 72-123 mm (Fig.2). Males of commercial size (with carapace width of more than 100 mm) made up 55.5% of the total number.

Snow crab occurred in depth from 730 to 1145 m, the greatest number was taken in depth 800 and 900 m, 39.9% and 29.6%, respectively (Fig.3). Before the beginning of April all crabs were at molt stage 2. From early April and until the end of the fishery 2.9% of crab in catches were found to have molted.

The percentage of crab with damaged legs was 55.6%, such a high percentage was apparently due to fishing operations in the area. No ectoparasites were found on snow crab.

Further information on snow crab by-catch will enable to identify more precisely the species of this crab, undertake a comprehensive analysis of the distribution and structure of its population in the area under review.

References

AJUPOV, I.P *et al*. 1993. Commercial crabs, invertebrates and algae of sea waters off Sakhalin and Kurile Islands. *Far East Press*, Juzhno-Sakhalinsk, 192 p. (in Russian)

JADAMEC, L.S.,W.E.DONALSON, and P.CULLENBERG 1999. Biological field techniques for *Chionoecetes* crabs. Published by University of Alaska Sea Grant College Program, 80 p.

Fig. 1. Snow crab opilio (*Chionoecetes opilio*).

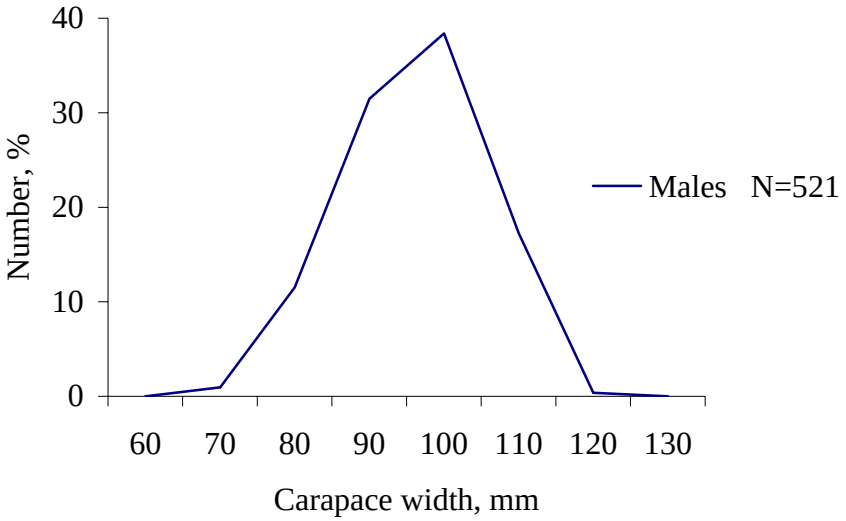

Fig. 2. Size composition of male snow crab opilio in Div. 3L in February-May 2000

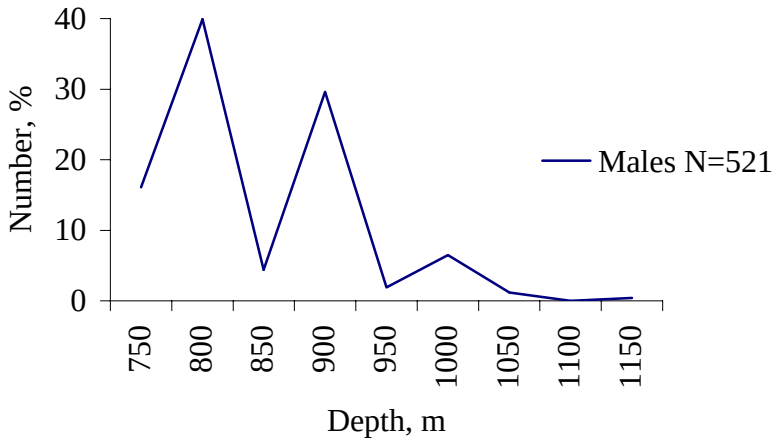

Fig. 3. Distribution of male snow crab opilio by depth in Div. 3L in February-May 2000.