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Biomass estimate, length distribution, and growth of the shrimp stock on Flemish Cap (Div. 3M) in June 1997.

by

Árni Nicolajsen
Fiskirannsóknarstovan, Nóatún, P.O.Box 3051,
Tórshavn, Faroe Islands.

Introduction

In the fall of 1996 the Faroese Government decided to carry out a fisheries research program on the shrimp stock component on the Nose of the Bank in the NAFO regulatory area (Div. 3L) out side the Canadian EEZ in a one year period. To be able to compare this stock with the one on Flemish Cap, a stratified random trawl survey was conducted on Flemish Cap (Div. 3M).

Materials and methods.

The survey was carried out in June 1997 by the Faroese commercial shrimp trawler Høgifossur. A single and double Angmassalik 3000 shrimp trawl with 40mm meshsize in the codend and 22mm bar spacing in the sorting grade was used.

The stations were selected as in a stratified random trawl survey design. For each station the density was calculated. The catch data were standardised by dividing the catches by length of tow and width of the trawl. The length of tow was calculated by multiplying towing time with the average towing speed. The width of the trawl (single and double) was calculated as the average distance between the doors as measured by Scanmar distance measuring devices. The midpoint position of the tow was assigned to the density values (Fig. 1). A spatial analysis was done using the Surfer software package applying the kriging method.

From the shrimp catch at each station a sample of about 200 specimens was taken and their oblique carapace length (OCL) was measured with vernier callipers to the nearest 0.5mm. The length frequencies were pooled together without any standardisation or weighting.

Results

The results of the stock biomass calculations was 22745t. With the spatial analysis program a contour plot for each trip was produced that shows highest densities in an almost SW-NE oriented band across the middle of the Cap (Fig 2).

Length frequency is shown in Fig. 3. By looking at the peaks of the modes, it is possible to get a rough estimate of mean length at age. These are 7.5mm, 14mm, 18.5mm, 22mm, and 24mm for age groups 1 through 5 respectively. A tentative growth curve is shown in Fig. 4.

The proportion of age group 1 relative to the other age groups is very small. Age groups 2 and 3 seem to be fairly strong, roughly estimated to about 13% and 30% respectively. Age groups 4 is about 15%. Furthermore there is a large female component of about 42%.

Discussion

The stock biomass calculations seems to be consistent with recent findings of Parsons *et.al.* (1997) who, based on a research trawl survey in September-October 1996, calculated the biomass with spatial analysis software to about 21500t.

Reference

PARSONS, D.G., D.W. KULKA & P.J.VEITCH. 1997. Distribution, biomass, abundance and demography of shrimp (*Pandalus borealis*) on Flemish Cap (NAFO Div. 3M) based on data obtained during a Canadian research trawl survey, September-October 1996. *NAFO SCR Doc.* 97/81. 14p.

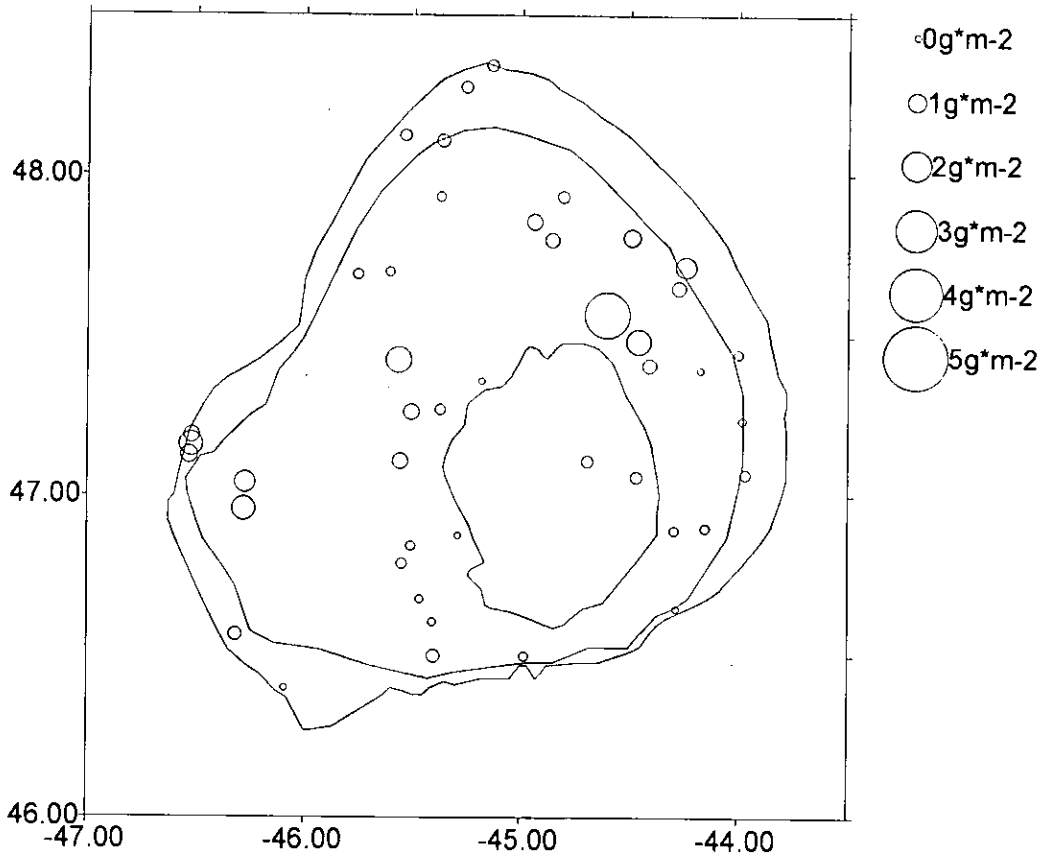

Figure 1 Average density (g*m-2) of northern shrimp at haul midpoint in Div 3M.

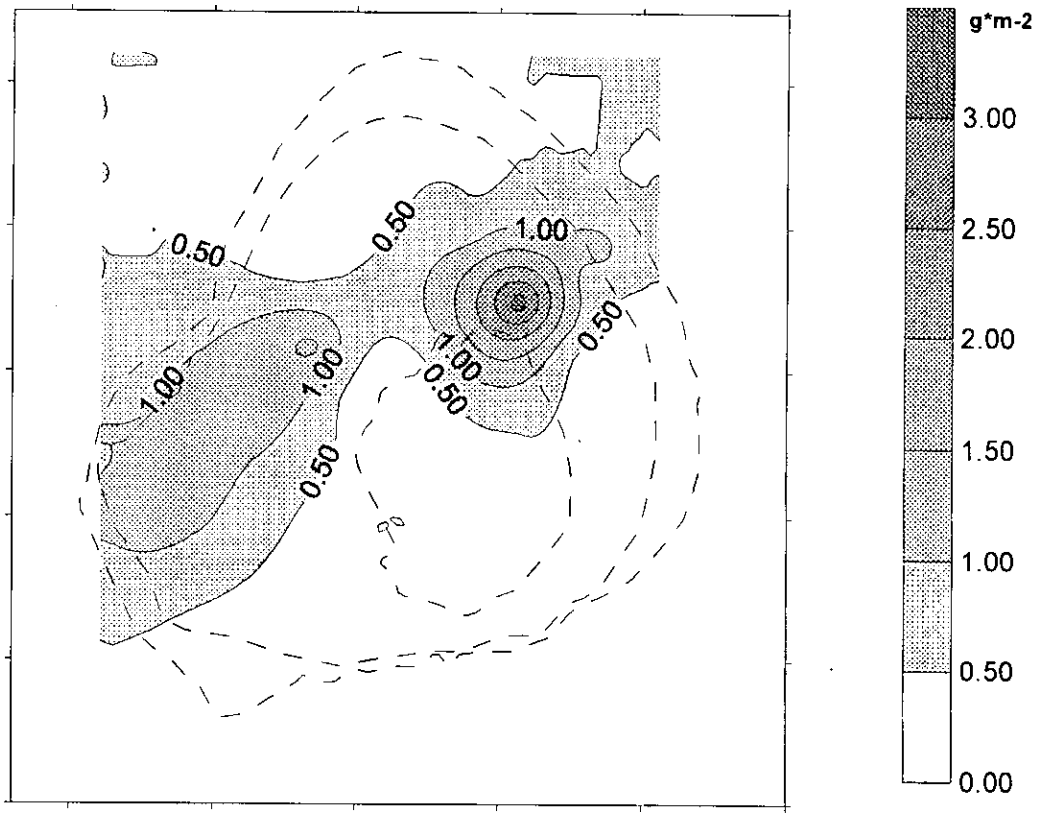

Figure 2 Density (g*m-2) contour plot of northern shrimp in Div 3M.

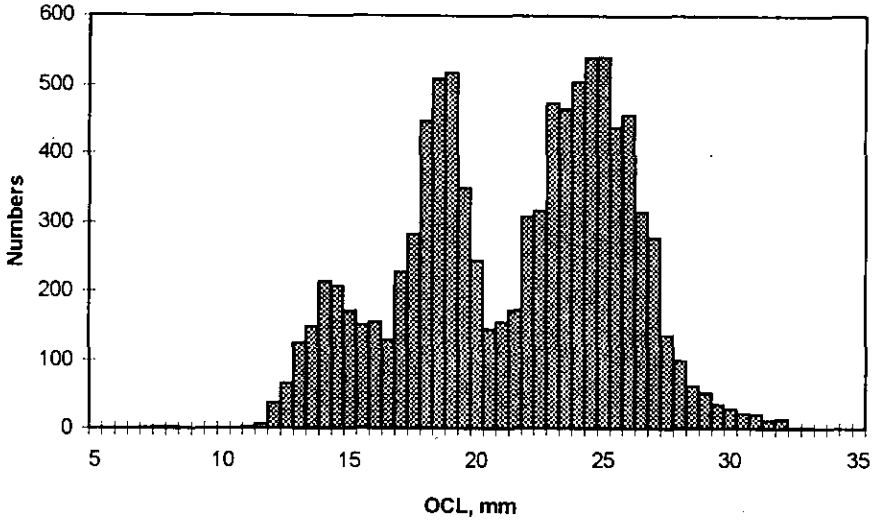

Fig 3. Length frequency for shrimp in Div 3M in June 1997.

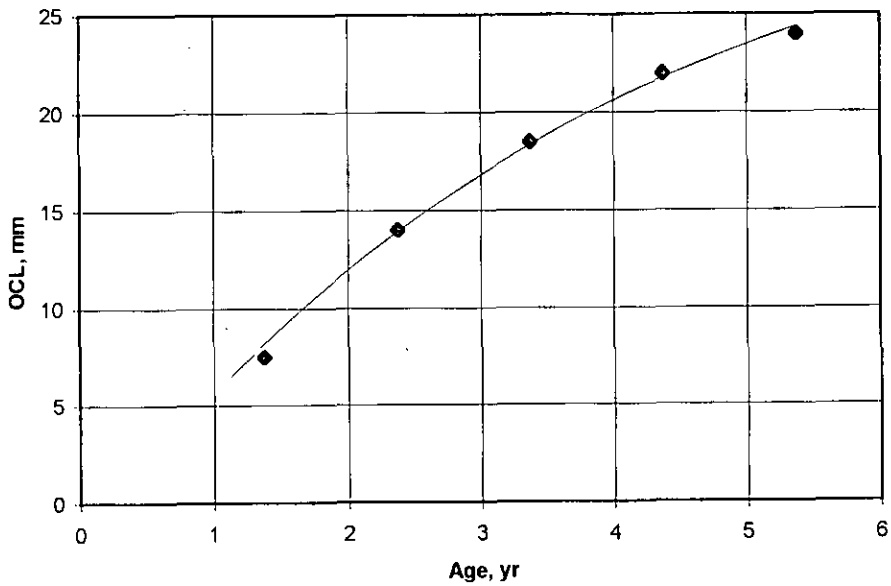

Fig 4. Growth of shrimp in Div 3M.