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# Preliminary Report of a Cruise with M/T *Masi* to East Greenland Waters in September 1984

by

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## INTRODUCTION

Norway has in the last years annually fished about 2000 tonnes shrimp in East Greenland area. However, little is known about the shrimp stock in the Denmark Strait exept for commercial samples. Therefore we had a cruise in November 1983 with F/F "Eldjarn" in East Greenland waters. The research was, however, restricted in the Denmark Strait because of ice. In 1984 we therefore carried out the investigations earlier in the autumn. A freshfish trawler were hired for the period 7 - 28 September. This report gives som preliminary results from this cruise.

## MATERIAL AND METHODS

The area between Scoresbysound and Angmagssalik were investigated (Fig.1). There were no problems with ice exept for some in the north.

M/T "Masi" F 68 H is a commercial freshfish trawler 46.7 m long with a main engine of 1200 Hp. The bottom trawl equipment was as follows:

| | |
|---|---|
| Trawldoors: | Steinshavn nr 8 |
| Sweepwires: | 40 m |
| Bobbins: | 21" steelbobbins |
| Trawl: | "Campelen Super 1800 mesh" with 35 mm in the codend and about 50 extra floats along the sides. |

Towing Speed was 3.0 knots and standard towing distanse was 1 nautical mile. However, on some stations the towing had to be stoped earlier because doors and/or bobbins were stuck in the clay. Stones were common in most of the tows. It is therefore possible that the gear was too heavy.

West of 31°W it was very difficult to trawl because of rough bottom. Some examples are given in Fig.2.

Totaly 28 trawlstations were fished. Positions are given in Fig.1.

RESULTS

The catches are given in Table 1. Mostly we had small catches. This may, however, be due to the problems we had with the equipment sticking in the clay which in turn caused very short hauls.

East of 28°W almost no shrimp were caught. The best catches were taken around 30°W (Fig.3). If the sexes are separated in the catches we find that the males are dominating in the outer parts of the area while the share of the females are increasing towards the Dohrn-bank at about 66°N - 30°W (Fig.4). There the females amount to more than 90% of the catches. Some of the females had not developed roe. In the outer parts of the area only about 50% of the females had roe, while about 90% had roe around the Dohrn-bank (Fig.5). Fig. 6, which presents the mean lengths in the samples, shows that the shrimps were smallest in north and west, and biggest around the Dohrn-bank.

These results may be interpreted in several ways, but we will put forward the following theory:
The area around the Dohrn-bank at about 66°N - 30°W is the main "hatching" area for this stock. When hatched the larvae are drifting northwards and westwards. Observations indicate that a part of the Irminger current are flowing northwards along 30°W up the Storfjord-deep. This current will turn westwards and southwards. It is also possible that a meander is formed in the area. The larvae seek to the bottom in more shallow waters in the north and west. As the shrimps grow bigger they move towards the Dohrn-bank. At least, the data indicate that there is an active migration when the females start to produce eggs. The difference in the share of females with eggs in the different areas may perhaps be explained on the basis of temperature variations. However, the data from the commercial fishery are supporting the theory that there exist an activ migration towards the Dohrn-bank. In all years the Norwegian fishery has been carried out around the Dohrn-bank and the catches have always been dominated by big mature females. It is therefore difficult to explain the good recruitment to the fishing area without taking into account an activ migration into the area.
If the theory above is correct it means that parts of the nursing areas are protected from fishery because of rough bottom. In addition the whole nursery area is covered by ice a large part of the year. Thus, for this stock it seems to be no danger of over-exploitation of small shrimps. The management of the stock may consentrate on securing that sufficient quantities of females are allowed to survive untill the time they liberate their larvae each year.

Tabell 1. Catch in kg/hour from M/Tr "MASI" in September 1984.

| St nr. | Pos | Depth | Shrimp | Cod | Greenl. halibut | Red fish | Polar-cod | Wolf fish | Grena-dier |
|---|---|---|---|---|---|---|---|---|---|
| 1. | N 70°12' W 20°10' | 310 | - | - | 1.5 | - | 2.2 | - | - |
| 2. | " 69°42' " 19°43' | 320 | 1.0 | - | + | + | 14.0 | - | - |
| 3. | " 69°16' " 22° 08' | 320 | - | Clay | | | | | |
| 4. | " 68°35' " 24°47' | 360 | - | - | 10.0 | + | 3.5 | 1.0 | - |
| 5. | " 68°15' " 26°02' | 310 | - | - | 4.0 | - | 0.3 | 1.5 | - |
| 6. | " 67°25' " 26°51' | 295 | - | Thorne | | | | | |
| 7. | " 66°53' " 27°44' | 375 | 4.8 | - | 17.1 | + | + | - | - |
| 8. | " 66°56' " 28°56' | 350 | 10.0 | - | 30.0 | 2.8 | + | 10.0 | - |
| 9. | " 66°01' " 29°43' | 300 | 1.5 | 52.5 | 18.0 | 27.0 | 6.0 | 105.0 | - |
| 10. | " 65°49' " 30°00' | 350 | - | 34.5 | 16.5 | 267.0 | + | 24.0 | 63.0 |
| 11. | " 66°19' " 30°00' | 355 | 96.0 | - | 127.5 | 90.0 | 0.9 | 4.2 | 72.3 |
| 12. | " 66°33' " 29°21' | 320 | 17.4 | - | 6.0 | - | - | 3.6 | - |
| 13. | " 66°41' " 29°55' | 300 | 27.0 | - | - | 10.5 | - | 4.5 | 3.3 |
| 14. | " 67°02' " 29°58' | 240 | 96.8 | - | - | - | 3.0 | 0.8 | - |
| 15. | " 67°22' " 29°59' | 195 | - | - | - | + | + | - | - |
| 16. | " 67°17' " 30°36' | 390 | 24.0 | - | 10.2 | 96.0 | - | 7.2 | - |
| 17. | " 67°20' " 30°35' | 300 | (6.0) | Sponge | | | | | |
| 18. | " 67°27' " 28°59' | 212 | - | " | | | | | |
| 19. | " 67°56' " 29°11' | 300 | 3.0 | - | - | 1.0 | 1.0 | 2.4 | - |
| 20. | " 67°01' " 31°58' | 260 | 4.2 | - | - | 1.2 | 1.5 | - | - |
| 21. | " 66°53' " 30°39' | 470 | 11.7 | - | 101.4 | 10.2 | - | - | - |
| 22. | " 66°25' " 30°43' | 453 | - | - | 5.1 | 13.2 | + | - | 5.1 |
| 23. | " 66°02' " 30°40' | 500 | - | - | 16.8 | 3.0 | - | - | 24.0 |
| 24. | " 65°28' " 30°52' | 410 | - | - | 24.9 | 160.6 | - | - | 6.9 |
| 25. | " 66°36' " 32°43' | 318 | 35.3 | - | + | 6.0 | + | - | - |
| 26. | " 66°02' " 32°40' | 280 | 135.0 | - | 4.5 | 108.0 | - | - | - |
| 27. | " 66°25' " 30°03' | 330 | 16.8 | - | 19.0 | 13.6 | - | 5.6 | 5.6 |
| 28. | " 66°21' " 30°13' | 390 | 19.2 | - | 50.0 | 48.0 | - | 4.0 | 21.0 |

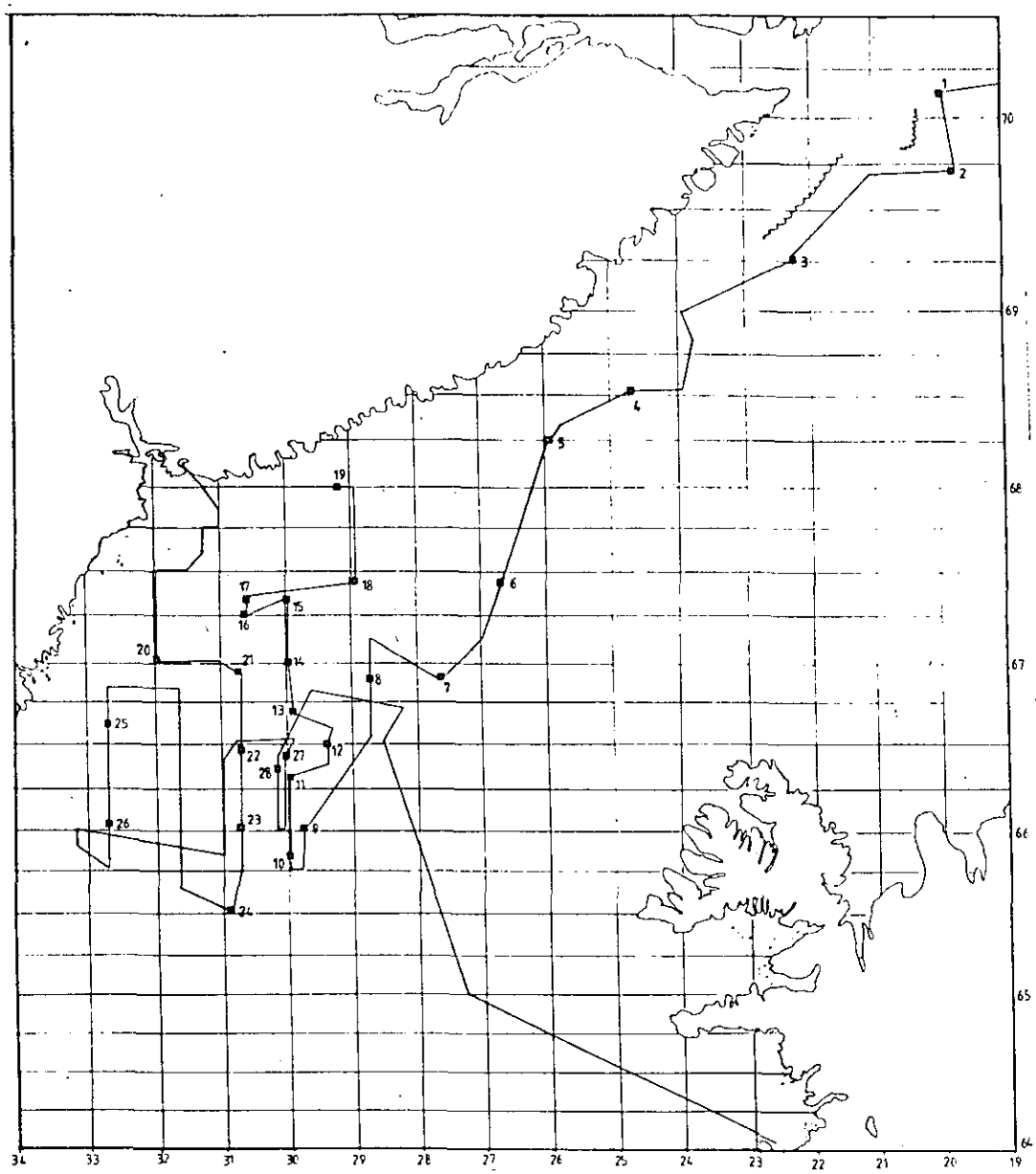


Fig.1. Survey Tracks and bottom trawl stations taken by M/T "Masi" in September 1984.

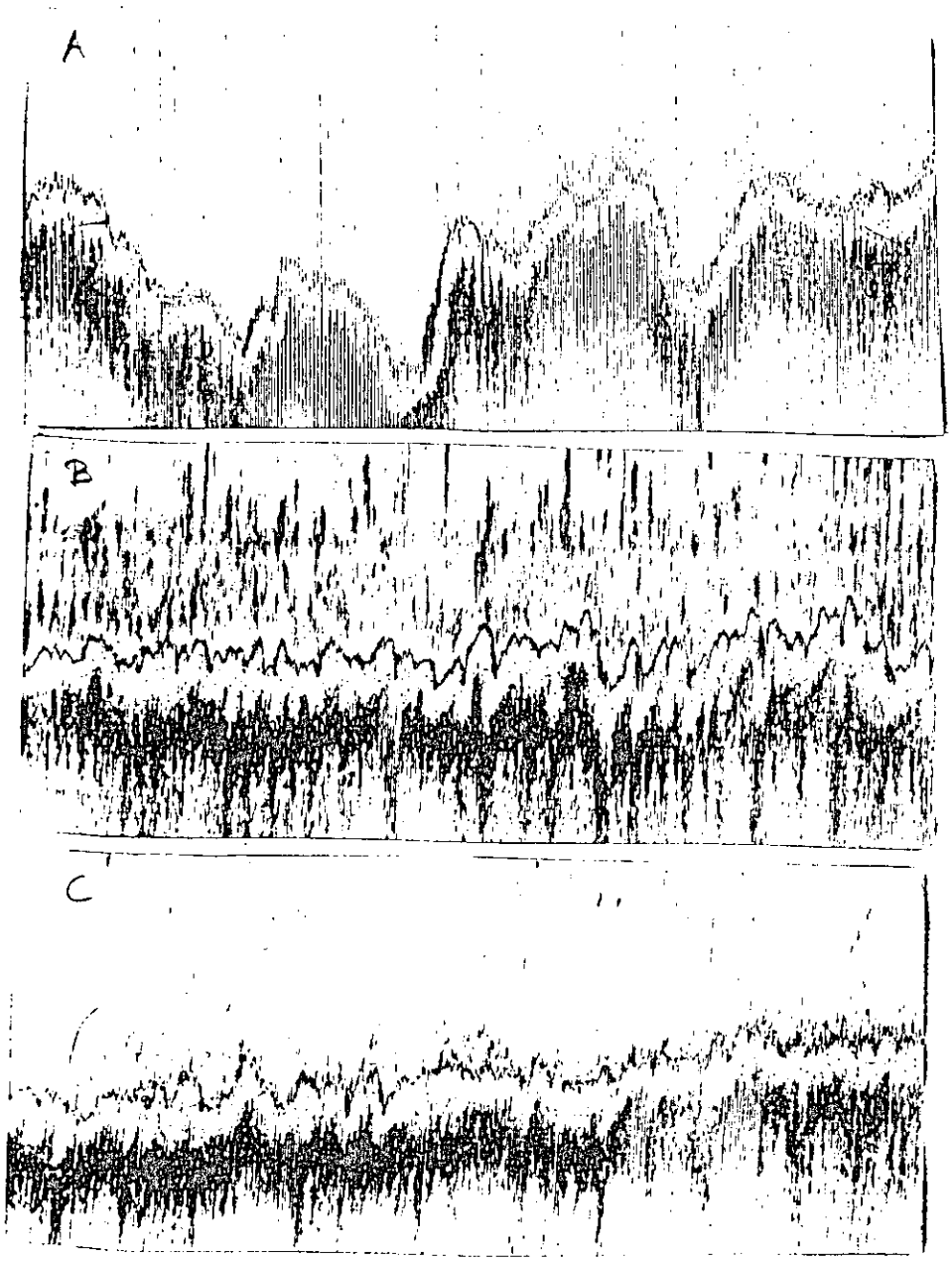


Fig. 2. Examples of bottom configurations in the northern and western parts of the investigated area A: About $67^{\circ}10'N - 32^{\circ}00'W$ B: About $66^{\circ}30'N - 31^{0}45'W$ C: About $66^{\circ}20'N - 32^{\circ}45'W$.

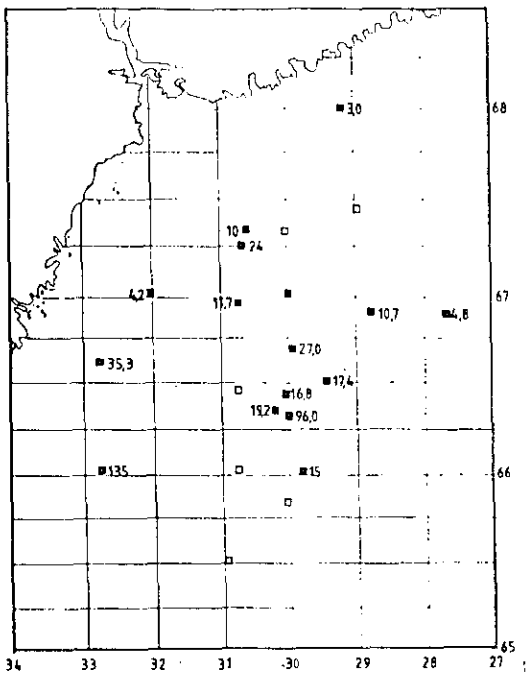


Fig.3. Catches of shrimp. Calculated to kg per hour trawling.

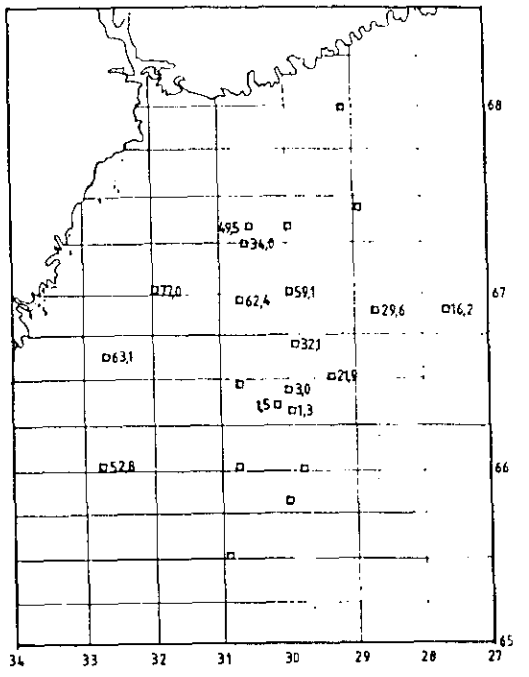


Fig.4. The percentage of males in the catches of shrimp.

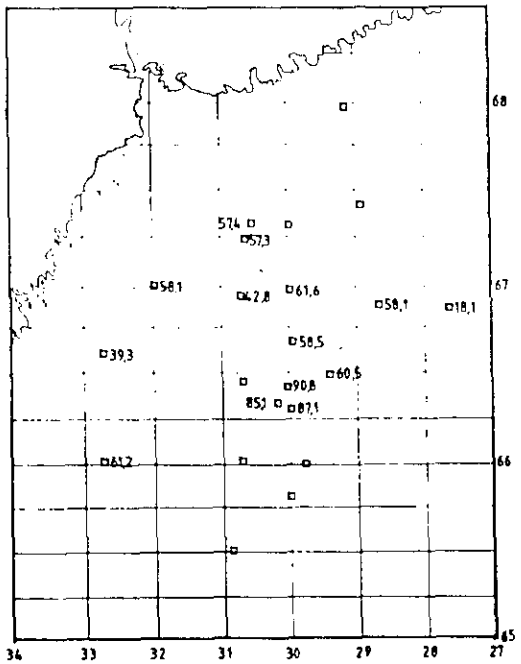


Fig.5. The percentage of the females that have roe.

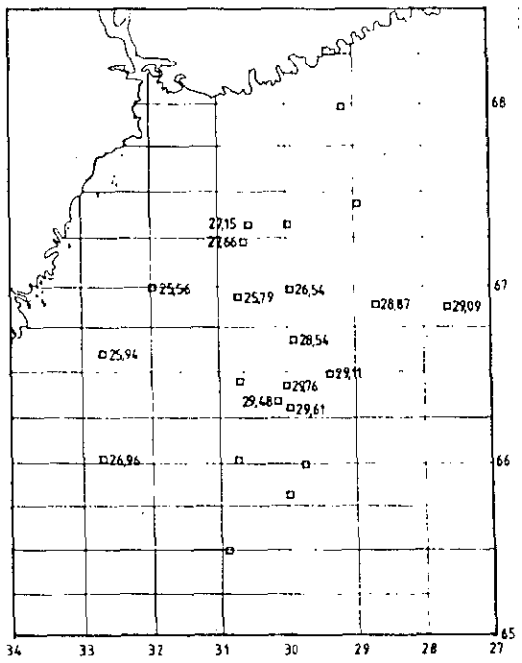


Fig.6. The average carapax length in mm.