

Cruise Report
Cruise no. 0232

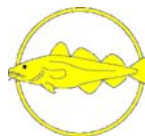
**Joint investigations on the environment and pelagic fish in the Faroese area and in
the Norwegian Sea**

15 - 29. May 2002

R/V Magnus Heinason OW2252



Jan Arge Jacobsen
Leon Smith
Mourits Joensen
Rógvi Mouritsen



Faroese Fisheries Laboratory - POBox 3051 - FO 110 Tórshavn, Faroe Islands

INTRODUCTION

The main aims of this survey was to investigate the distribution and abundance of postspawning blue whiting in the Faroese area and to investigate the distribution and stock size of Norwegian spring spawning herring in the Faroese area and the Norwegian Sea. Hydrographic data were collected along the cruise tracks and along the Faroese standard section North (north along 6°W north of the Faroes, where also plankton samples were taken).

The cruise was part of an international cooperation coordinated by the ICES Planning Group on Surveys on Pelagic Fish in the Norwegian Sea (PGSPFN). Cooperating vessel during this investigation was R/V *G.O. Sars* from Norway. Data from both vessels will be incorporated in a comprehensive report from PGSPFN covering research surveys in the Norwegian Sea during the summer 2001 (Jacobsen *et al.*, 2002).

This report is based only on data from the *Magnus Heinason*, and therefore no estimate of herring is given due to incomplete coverage in the Norwegian Sea.

MATERIAL AND METHODS

The area was covered from south to north. The first part of the survey (1-12/5) was planned to cover the blue whiting concentrations in the southern part of the Faroese area, but due to a strike, this survey was cancelled. The second part of the survey (14-29/5) covered blue whiting in the eastern and northern part of the Faroese area and thereafter *Magnus Heinason* participated in the joint coverage of Norwegian spring spawning herring in the Norwegian Sea.

Cruise tracks with hydrographic stations (CTD), plankton stations (WP2 net 0-200m), and trawl stations in the Faroese area are shown in Fig. 1. In Fig. 2, a similar map is shown for the total area covered, including cruise tracks for the Norwegian vessel. Acoustic data were recorded with a Simrad EK-500 echo sounder. Data from the hull mounted 38 kHz transducer were logged at sea and used in the fish abundance estimation. The S_A recordings per nautical mile were averaged by each 5 nautical mile and the recordings were and scrutinised on a daily basis. A large “blue whiting” trawl (45-50 m opening) was used to identify the acoustic recordings of fish as well as for biological sampling (Fig. 3).

The 38 kHz Echo sounder was operating with the following settings, as obtained from a copper sphere calibration prior to the survey:

Max. Power	2000 W
Time varied gain	20 log R
Pulse length	Medium
Bandwidth	Wide
Angle sensitivity	21.9 dB
2-way beam angle	-20.6 dB
Sv transducer gain	27,6 dB
TS transducer gain	27,9 dB
3 dB beam width	6,9 dg
Along ship offset	-0,14 dg
Athw. ship offset	0,02 dg

For zooplankton sampling a standard WP-2 net with 180 µm meshes was used for vertical hauls 1-200m.

A CTD was used to record temperature and conductivity (salinity) down to 1000 m depth or to the bottom. Water samples were taken from each station, with water bottles mounted on the CTD, for analysis of nutrients. Samples for chlorophyll were collected from the upper 100m. CTD and WP-2 stations were taken every 10-20 m in the Faroese area and every 60 m in the Norwegian Sea.

RESULTS

The average s_A values of blue whiting by statistical square from the *Magnus Heinason* survey are shown in Fig 4. Blue whiting was observed in most of the Norwegian Sea except in the westernmost stations, where the influence of the cold East-Icelandic current is greatest (Fig. 3). The length distribution of blue whiting in the Faroese area and in the Norwegian Sea indicated that the 2000 and 1999 year-classes were most numerous in the area, as can be seen as spikes around 22 and 26 cm, respectively in Fig. 5.

The average s_A values of herring by statistical square from the *Magnus Heinason* survey are shown in Fig 5. The highest concentrations of herring observed by *Magnus Heinason* were located in the area from 69-72°N and northwards and between 3°W-8°E. The length distribution of herring in the Norwegian Sea is shown in Fig. 7.

Combined abundance estimates of blue whiting and herring, respectively, are given in the 2002 PGSPFN report to ICES (Jacobsen *et al.*, 2002).

Distribution of plankton and temperatures were combined with the Norwegian data and are given in the PGSPFN report for 2002 (Jacobsen *et al.*, 2002).

REFERENCES

- Jacobsen, J.A., Guðmundsdóttir, Á., Heino, M., Holst, J.C., Krysov, A., Melle, W., Mork, K.A., Røttingen, I., Tangen, Ø. & Vilhjálmsson, H. 2002. Report of the Planning Group on Surveys on Pelagic Fish in the Norwegian Sea 2002. ICES CM 2002 (D:06): 1-68.

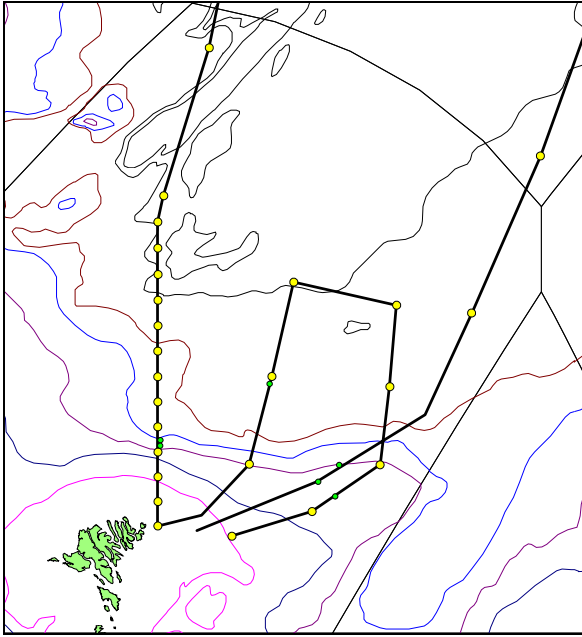


Fig. 1. Cruise tracks with hydrographic stations and trawl stations in the Farøese area, *Magnus Heinason* 14-19/5 2002.

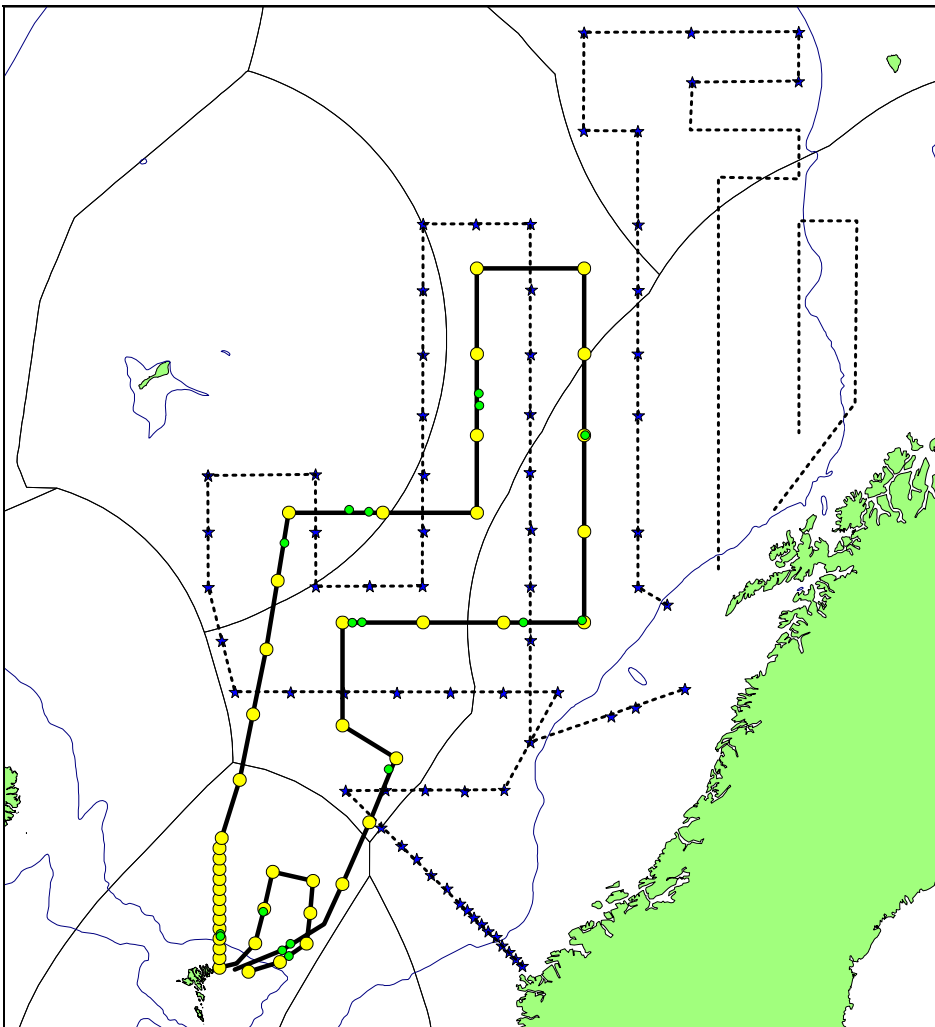


Fig. 2. Cruise tracks with hydrographic stations and trawl stations in the Farøese area, *Magnus Heinason* and *G.O.Sars* (NO) during May 2002.

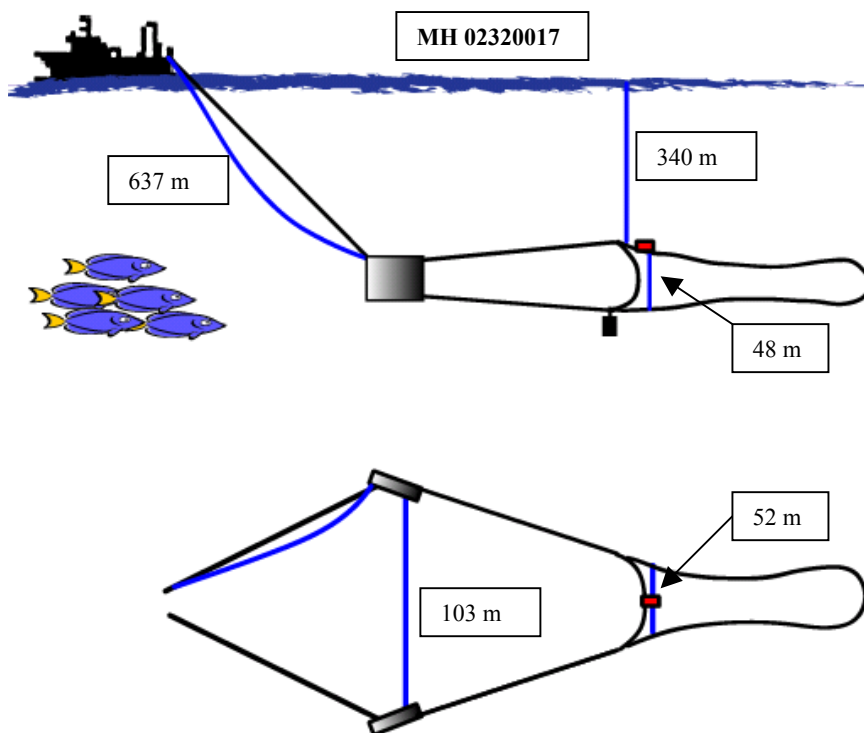


Fig. 3. Schematic drawing of the sampling trawl with some dimensions indicated (trawlstation 02320017).

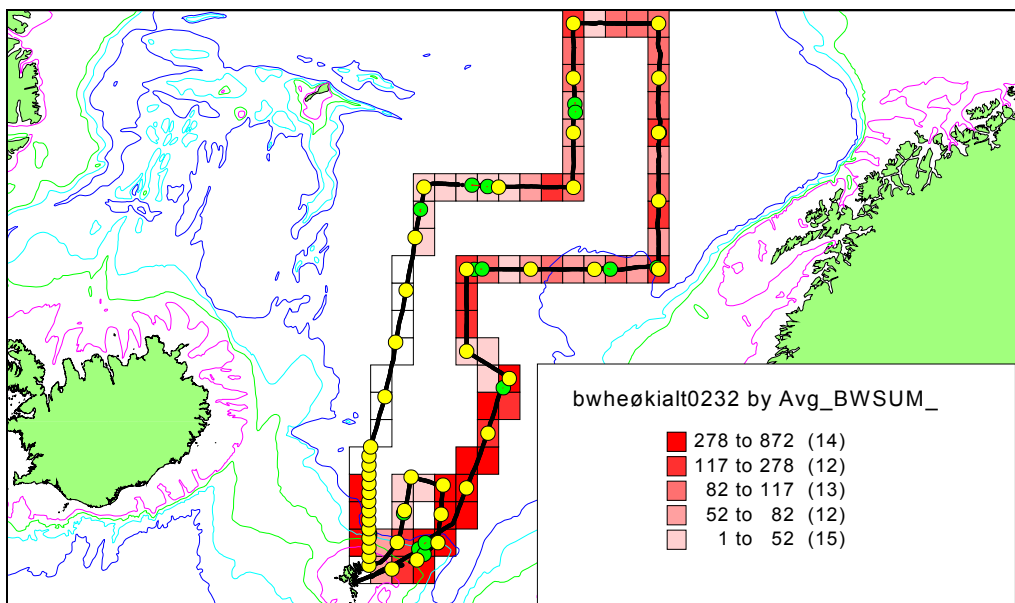


Fig. 4. Mean integration values (s_A , m^2/nm^2) of blue whiting per statistical square, May 2002.

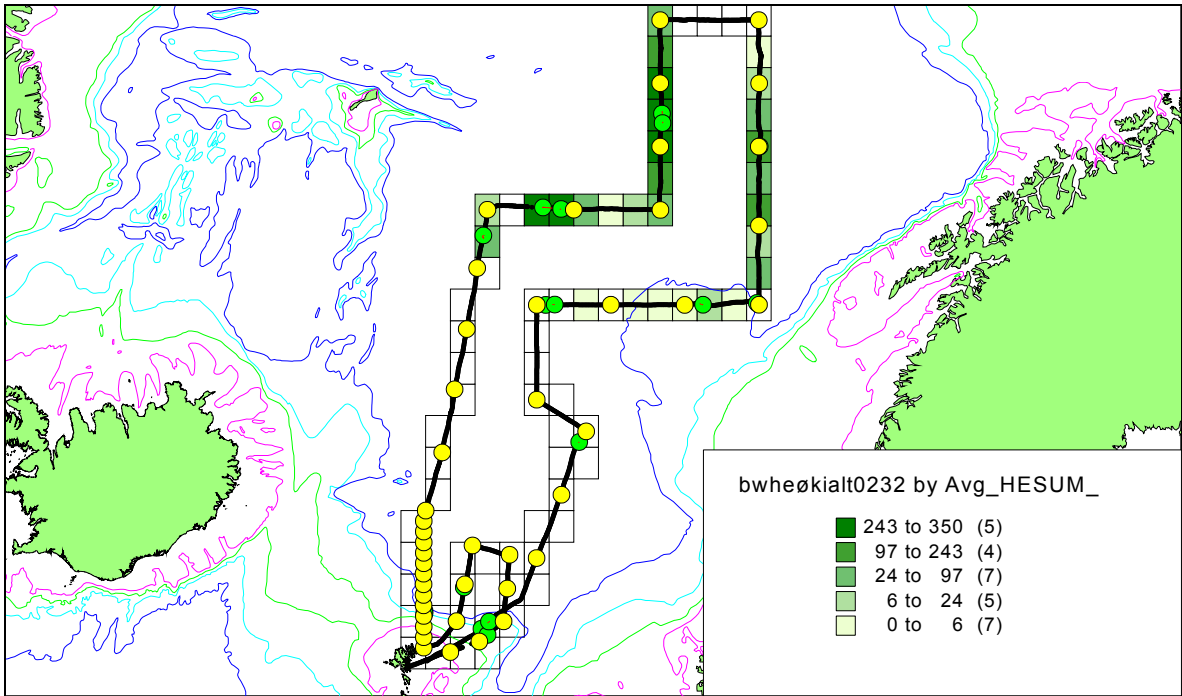


Fig. 5. Mean integration values (s_A , m^2/nm^2) of herring per statistical square, May 2002.

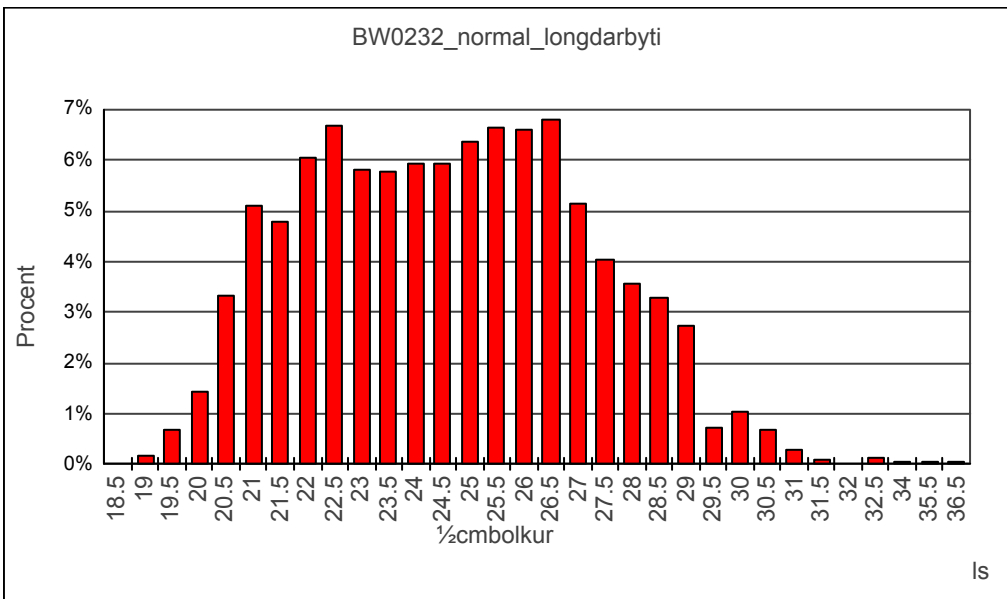


Fig. 6. Length distribution ($\frac{1}{2}$ cm intervals) of blue whiting in the Faroese area and in the Norwegian Sea sampled from *Magnus Heinason*, May 2002. The 2000 and 1999 year-classes can be seen as spikes around 22 and 26 cm, respectively.

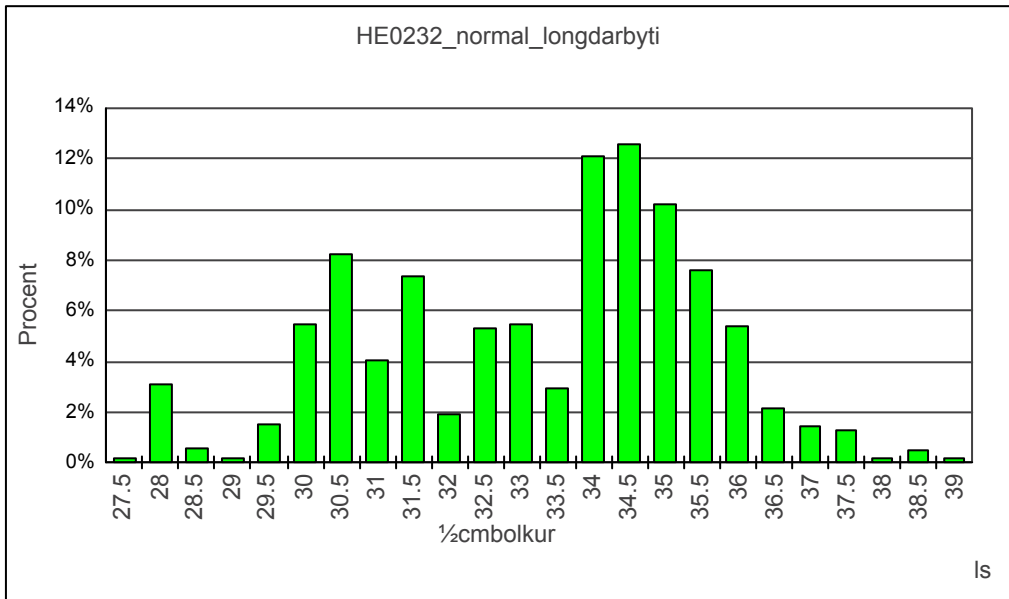


Fig. 7. Length distribution ($\frac{1}{2}$ cm intervals) of herring in the Norwegian Sea sampled from *Magnus Heinason*, May 2002.