

**Cruise Report**  
Cruise no. 0428

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

28. April - 26. May 2004

R/V Magnus Heinason OW2252



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## 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). Plankton samples were taken at each hydrographic station.

The cruise was part of an joint international survey (Faroes, Norway, Iceland and EU) coordinated by the ICES Planning Group on Northeast Atlantic Pelagic Ecosystem Surveys (PGNAPES, formerly PGSPFN, Planning Group on Surveys on Pelagic Fish in the Norwegian Sea). Four vessels participated in the cooperative investigations, the Faroese R/V *Magnus Heinason*, the Danish RV *Dana*, the Norwegian RV *G.O. Sars*, and the Icelandic RV *Árni Fridriksson*. Data from both vessels have been incorporated in a comprehensive report from PGNAPES covering research surveys in the Norwegian Sea during the summer 2004 (ICES CM 2004/D:07).

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 (28/4-10/5) covered the blue whiting concentrations in the southern part of the Faroese area. The second part of the survey (11-26/5) covered blue whiting in the eastern and northern part of the Faroese area and in the Norwegian Sea (Fig. 1).

Cruise tracks with hydrographic stations (CTD), plankton stations (WP2 net 0-200m), and pelagic trawl stations in the Faroese area are shown in Fig. 1. 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 area backscattering recordings ( $s_A$ ) per nautical mile were averaged by each 5 nautical mile and the recordings were and scrutinised on a daily basis and allocated to either blue whiting, herring, plankton or other fish (e.g. lantern fish).

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	27.12 dB
TS transducer gain	27.29 dB
3 dB beam width	6.9/7.1 dg
Along ship offset	0.26 dg
Athw. ship offset	-0.07 dg

For zooplankton sampling a standard WP-2 net with 180  $\mu$ m meshes was used for vertical hauls 0-200m.

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 nm in the southern part of the Faroese area and every 30 nm in the northern part of the area and in the Norwegian Sea (Fig. 1).

## RESULTS

The average  $s_A$  values of blue whiting by statistical square from the *Magnus Heinason* survey are shown in Fig 2. In the southern part of the Faroese EEZ the highest concentrations of post spawning blue whiting were recorded along the eastern edge of the Faroe bank and on the Monk ("Munkagrunnurin"). In the northern area blue whiting was observed in most of the Norwegian Sea with highest concentrations outside the shelf in the southern and central part of the Faroese EEZ (Fig. 2). The length distributions of blue whiting in the Faroese area south of 62°N and north of 62°N is shown in Fig. 4 and the age distribution is shown in Fig. 5. Age groups 1-4 dominated in both areas, i.e. the year-classes 2000-2003. The total biomass estimate of blue whiting in the Faroese area in May 2004 was 4.3 million tonnes.

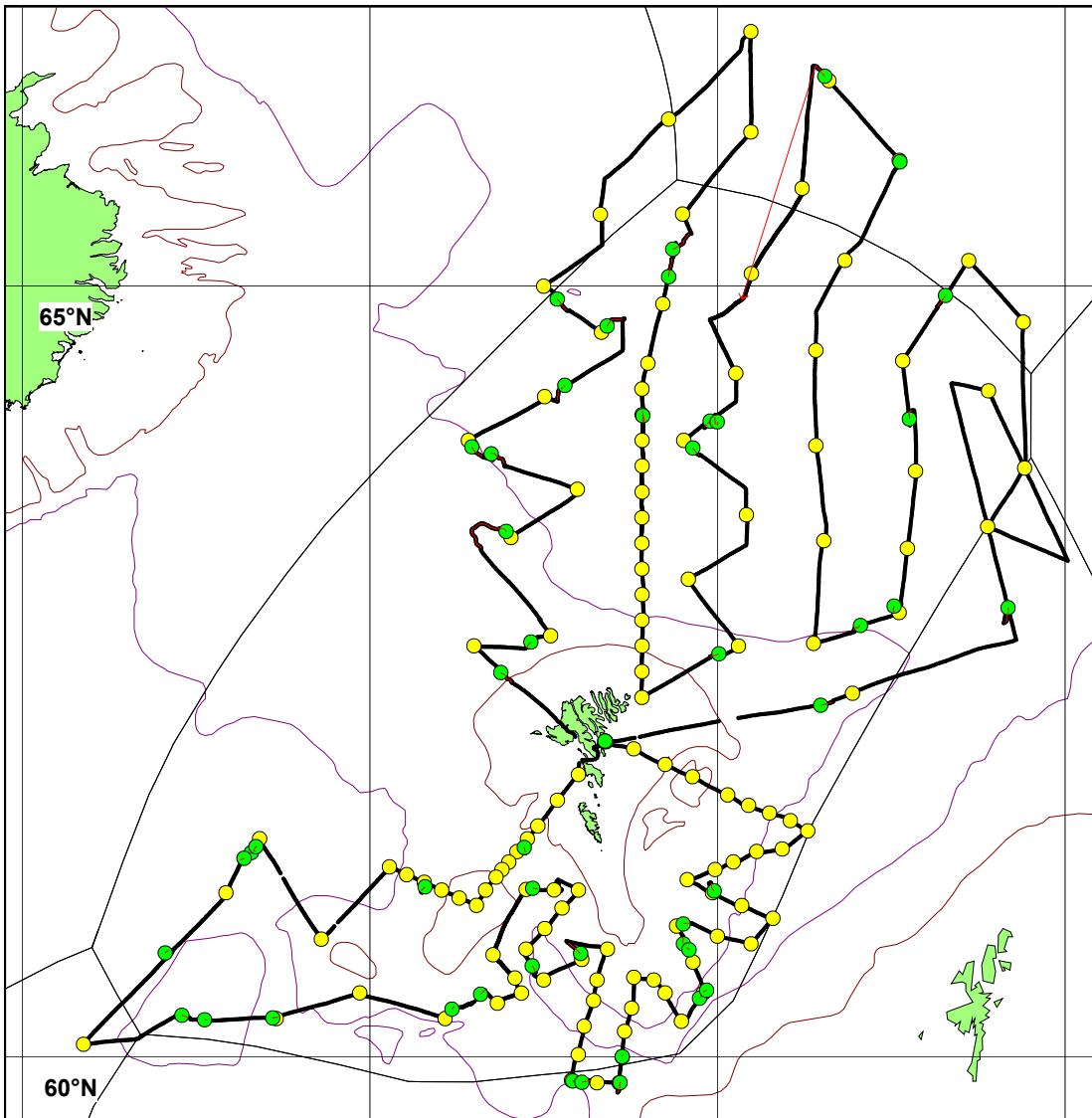
The average  $s_A$  values of herring by statistical square from the *Magnus Heinason* survey are shown in Fig 3. The highest concentrations of herring observed by *Magnus Heinason* were located in the area from 64°30'-66°30'N and 2°00'-9°00'W. Also high concentrations were observed in the eastern part of the Faroese EEZ (Fig. 3). The herring was large (35.5 cm and 350 g on average, Fig. 6). The biomass estimate of herring in the Faroese area in May 2004 was 635 thousand tonnes.

A combined abundance estimates of herring was calculated at a meeting in Murmansk in late August 2004 and reported to ICES at its Annual Science Conference in Vigo September 2004 (ICES CM 2004/D:07). Similarly the distribution and biomass of plankton and temperature charts by depth were combined (Faroese, Norwegian and Icelandic data) in the PGNAPES report.

The sea-surface temperature in the surveyed area is shown in Fig. 7. The influence of the East-Icelandic current was stronger in 2004 compared to 2003, leading to relatively colder water northwest of the Faroes in 2004 than in 2003, which was a year with record high temperatures in this area.

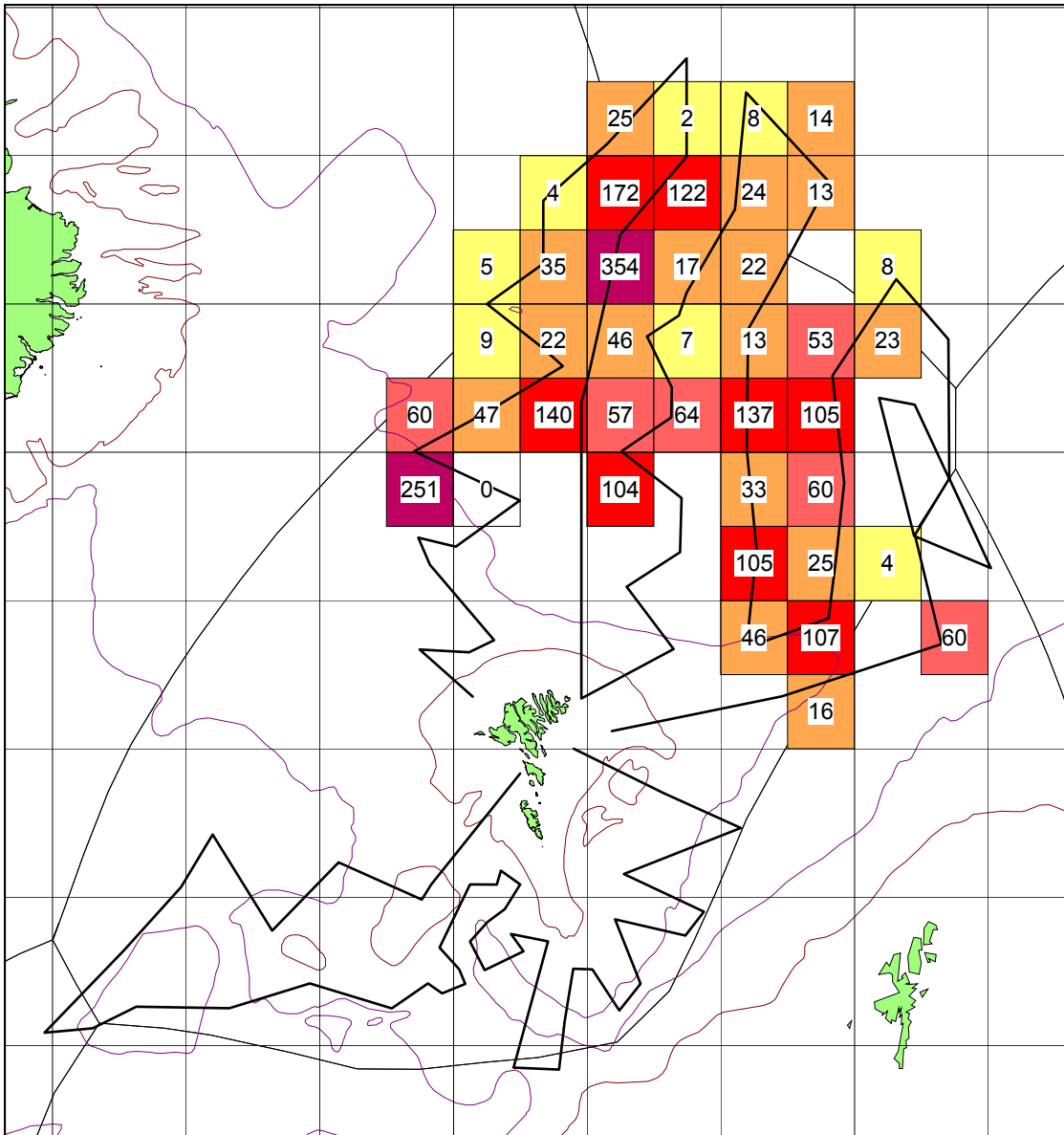
## REFERENCES

ICES 2004. Report of the Planning Group on Northeast Atlantic Pelagic Ecosystem Surveys (PGNAPES). ICES CM 2004/D:07.

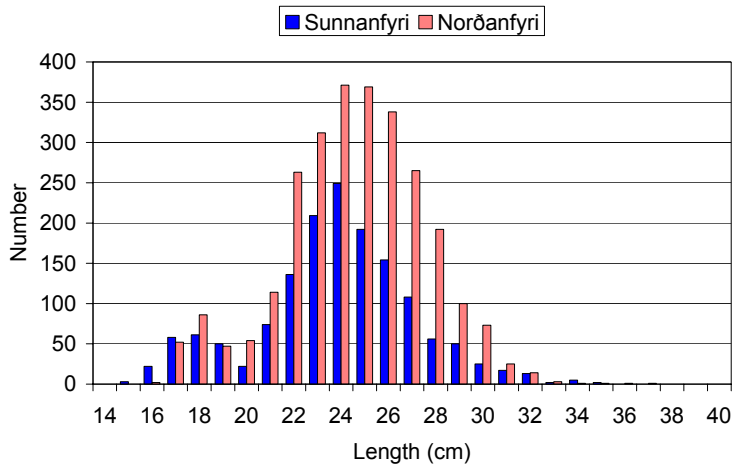


**Fig. 1.** Cruise tracks with hydrographic stations (light yellow ) and trawl stations (dark green ) in the Faroeese area and in the southern part of Norwegian Sea, *Magnus Heinason* 28/4-26/5 2004.

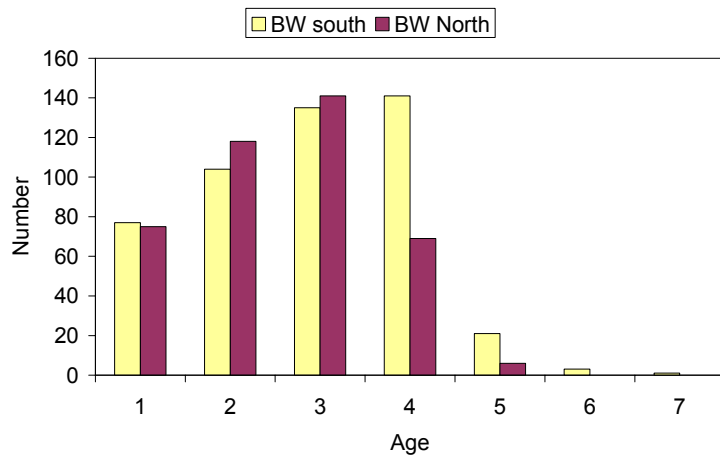




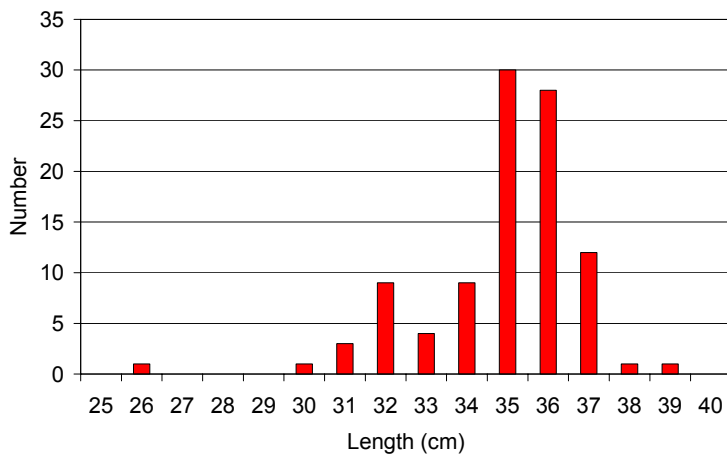
**Fig. 3.** Mean integration values ( $s_A$ ,  $m^2/nm^2$ ) of herring per statistical square (1x2 degrees), May 2004.



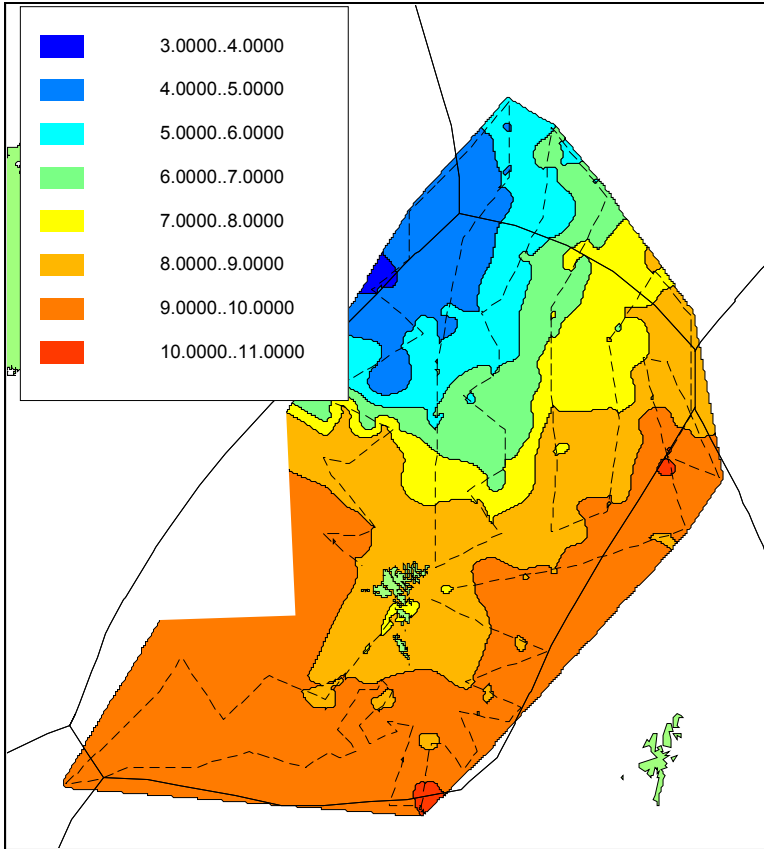
**Fig. 4.** Length distribution of blue whiting in the southern part ( $< 62^{\circ}\text{N}$ , dark blue bars) and in the northern part of the Faroese area sampled from *Magnus Heinason*, May 2004.



**Fig. 5.** Age distribution of blue whiting in the southern part ( $< 62^{\circ}\text{N}$ , light yellow bars) and in the northern part (dark red bars) of the Faroese area sampled from *Magnus Heinason*, May 2004.



**Fig. 6.** Length distribution of herring in the northern part of Faroese area (and in the southern part of Norwegian Sea) sampled from *Magnus Heinason*, May 2004.



**Fig. 7.** Temperature at the surface, *Magnus Heinason*, May 2004.