Cruise Report
Cruise no. 1710

Joint investigations on blue whiting south of the Faroes and in the area west of the British Isles

29/3-12/4 2017

R/V Magnus Heinason OW2252

Jan Arge Jacobsen
Ebba Mortensen
Jens Arni Thomassen
Mourits Mohr Joensen

HAVSTOVAN
FAROE MARINE RESEARCH INSTITUTE
POBox 3051 - FO 110 Tórshavn, Faroe Islands

INTRODUCTION

The main aims of this survey was to investigate the distribution and abundance of spawning and post-spawning blue whiting in the areas south of the Faroes, west of the British Isles and Porcupine Bank. Zooplankton and hydrographic data were collected along the cruise tracks.

The cruise was part of the joint international blue whiting survey (IBWSS) on the spawning grounds west of the British Isles, the Porcupine Bank and the Rockall Bank. Four parties and five research vessels (see text table below) took part in the survey, coordinated by the "Working Group of International Pelagic Surveys" (WGIPS) in ICES (formerly WGNAPES). The results from all vessels combined will be used in the assessment of blue whiting by the "Working Group on Widely Distributed Stocks" (WGWIDE) in August 2017.

Ship	**Nation**
Magnus Heinason	Faroes
Kings Bay	Norway
Celtic Explorer	Ireland (EU)
Tridens	Netherlands (EU)

The present survey report is based on data from R/V *Magnus Heinason* only. Therefore no estimate of blue whiting is given due to incomplete coverage of the whole spawning area.

MATERIAL AND METHODS

Cruise tracks with hydrographic stations (CTD) and pelagic trawl stations in the surveyed area are shown in **Fig. 1**. Acoustic data were recorded with a Simrad EK-60 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 nautical mile and the recordings were scrutinised on a daily basis with the EchoView 8 software and allocated to blue whiting, plankton or other fish (e.g. pearlside, lantern fish) based on pelagic trawling aimed at the various acoustic recordings. The 38 and 200 kHz Echo sounders were calibrated prior to survey with a standard copper sphere.

RESULTS

The preliminary results from the Faroese investigations in April 2017 indicated less abundance of blue whiting this year compared with previous years. Almost no one year olds (the 2016 year-class) were seen in the northern area this year. This could be an indication of less spawning last year, at least on the western banks (Rockall and Hatton Bank areas).

The main bulk of the spawning stock of blue whiting was still south of the area surveyed by *Magnus Heinason*, and had by early April not reached the Faroese zone on its northward post-spawning migration towards the Nordic Seas to feed. The sum of the s_A values of blue whiting per each nautical mile along the cruise tracks from the *Magnus Heinason* survey are shown in **Fig. 2**, and the average s_A values of blue whiting by statistical squares in **Fig 3**.

The weather seriously hampered the survey. Due to air bubbles submerged in the upper meters in the sea and due to the general tendency of blue whiting to spread out in bad weather (as single scatterers as opposed to more dense layers), the acoustic registrations were most likely underestimated.

Most of the blue whiting observed in the Faroese area were three and four year old fish with a mean length of about 26 cm (115 g) (**Fig. 4** and **5**). This was larger fish than last year with meanlength and weight of 22.8 cm and 79 g, respectively.

A combined abundance estimates of blue whiting will be calculated at a post-survey meeting later in April 2017 and reported to ICES in September 2017.

The sea-surface temperature (SST) in the surveyed area south of the Faroes was between 7-8.5°C (**Fig. 6**), a bit warmer than last year. Temperature and salinity casts down to 500 m if possible were taken along the track. The zooplankton samples generally showed very low abundance, indicating that the spring bloom was in its beginning.

The planned cruise tracks of the four participating vessels during the joint spawning stock survey are shown in **Fig. 7**.

Other species
Pearlside (*Maurolicus mülleri*) was abundant in the upper scattering layer along with lanternfish in the deeper layers in the surveyed area.

Survey effort for *Magnus Heinason* 29/3-12/4 2017:

Effective survey period	Length of cruise track (nm)	Trawl stations	CTD stations	Plankton sampling	Aged fish	Length-measured fish
1-10/4	1400	7	16	11	401	990

Trawl specifications for *Magnus Heinason*:

Circumference (m)	640
Vertical opening (m)	45–55
Mesh size in codend (mm)	40
Typical towing speed (kn)	3.0–3.2

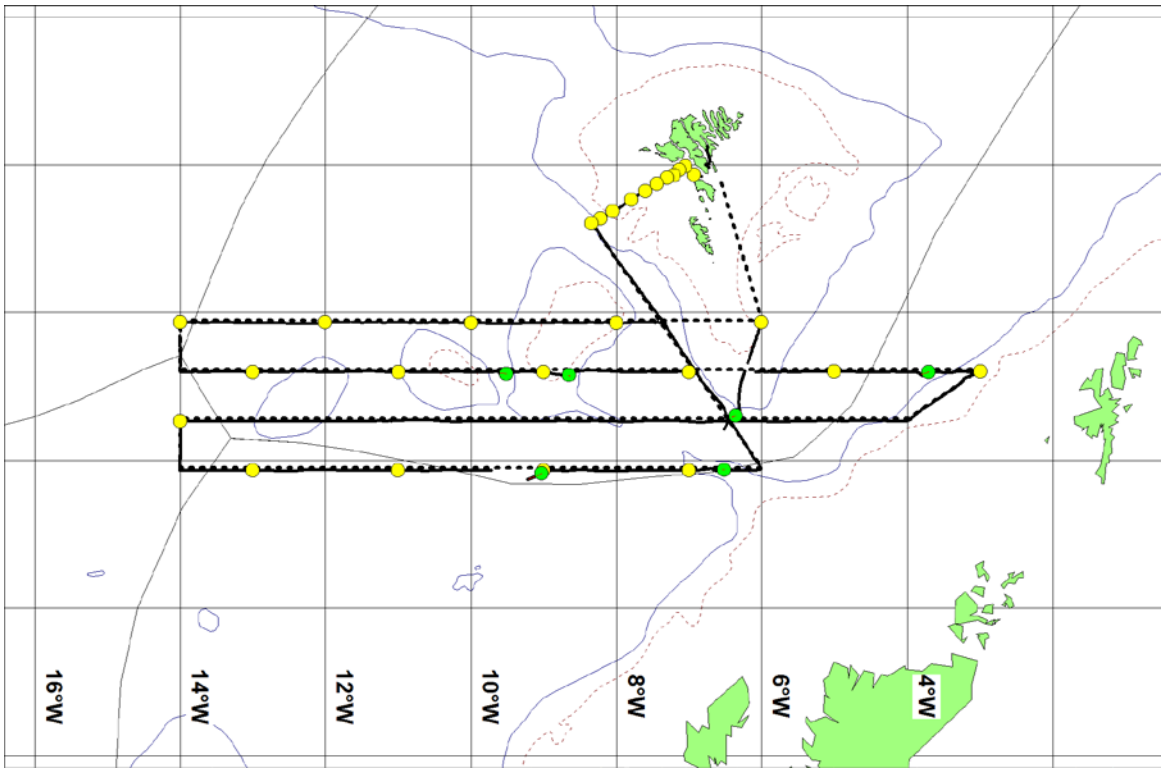

Figure 1. Cruise tracks (black lines) with hydrographic stations (light yellow circles) and trawl stations (green circles) south of the Faroes, *Magnus Heinason* cruise 1710, 29/3-12/4 2017.

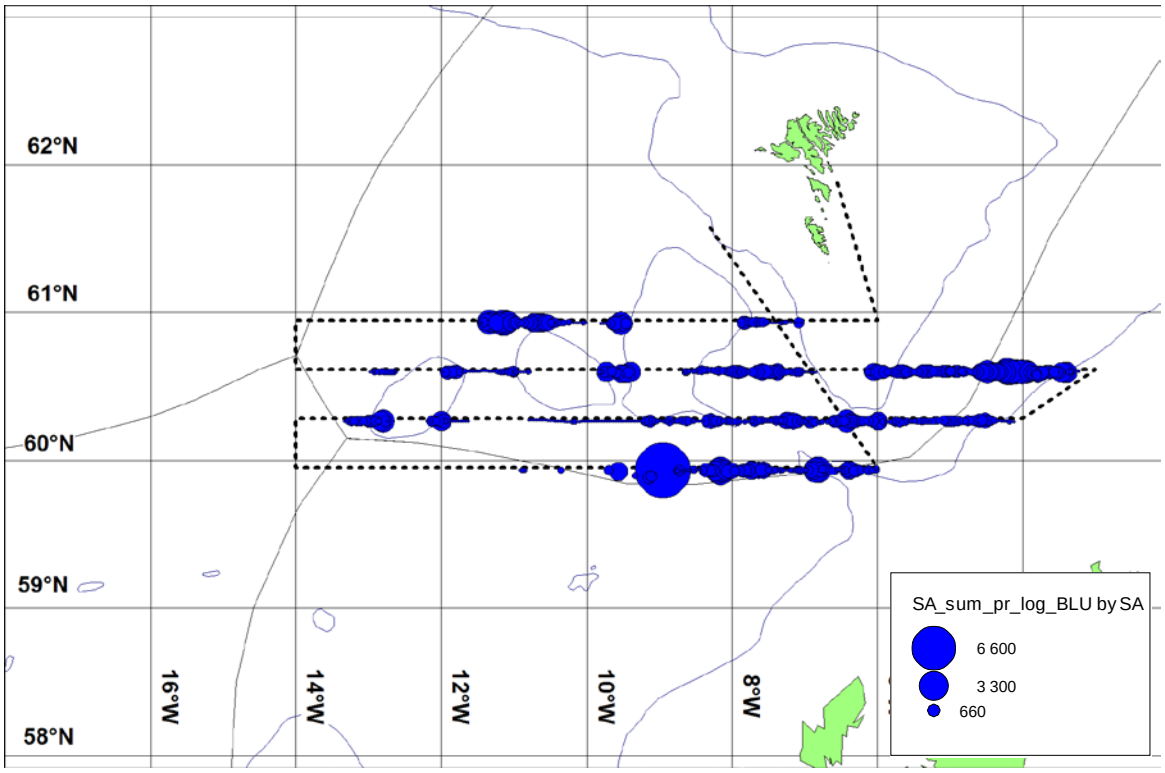

Figure 2. Integration values (s_A, m^2/nm^2) of blue whiting per each nm along the cruise tracks, *Magnus Heinason* cruise 1710, 29/3-12/4 2017. The size of the circles corresponds to amount of fish.

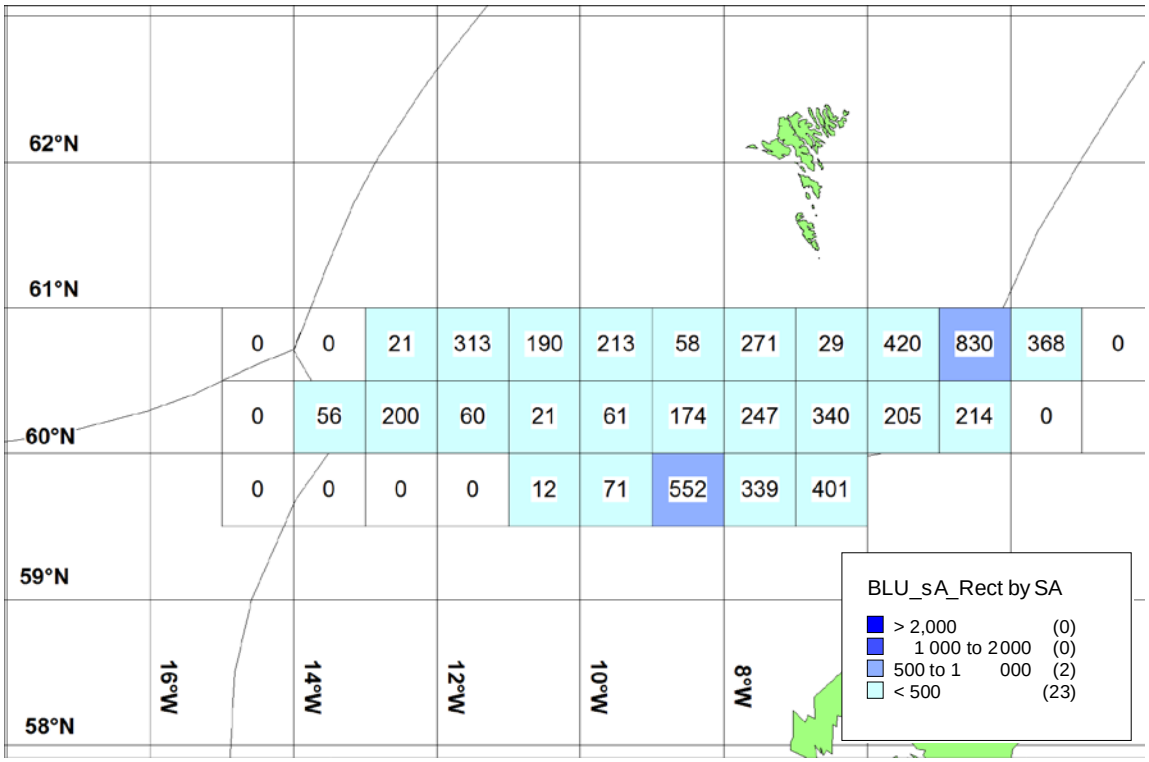

Figure 3. Mean integration values (s_A, m^2/nm^2) of blue whiting per statistical square (1x2 degrees), *Magnus Heinason* cruise 1710, 29/3-12/4 2017.

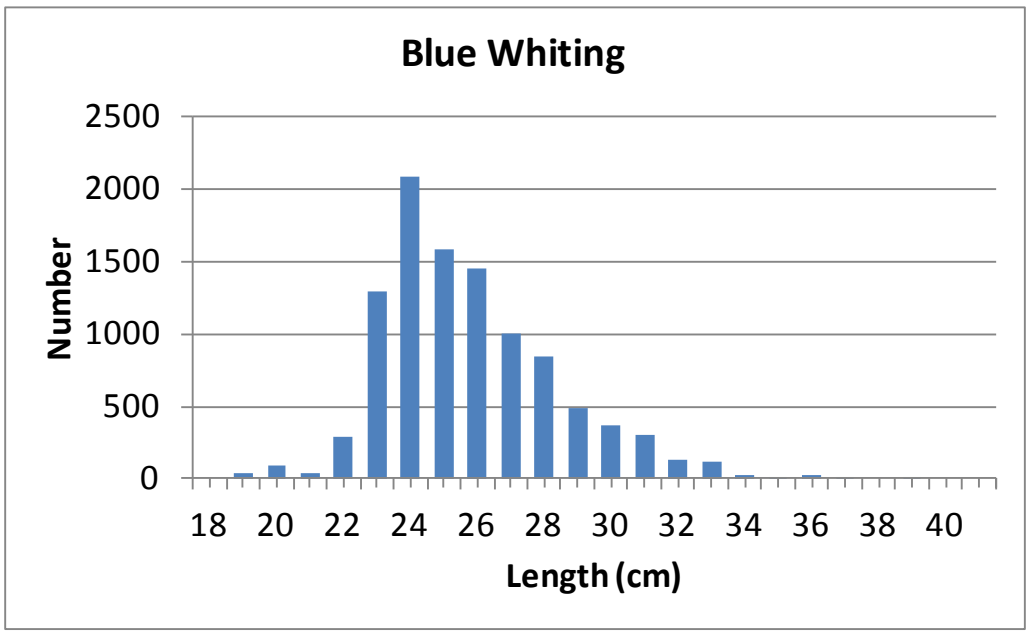

Figure 4. Length distribution of blue whiting south of the Faroes, *Magnus Heinason* cruise 1710, 29/3-12/4 2017.

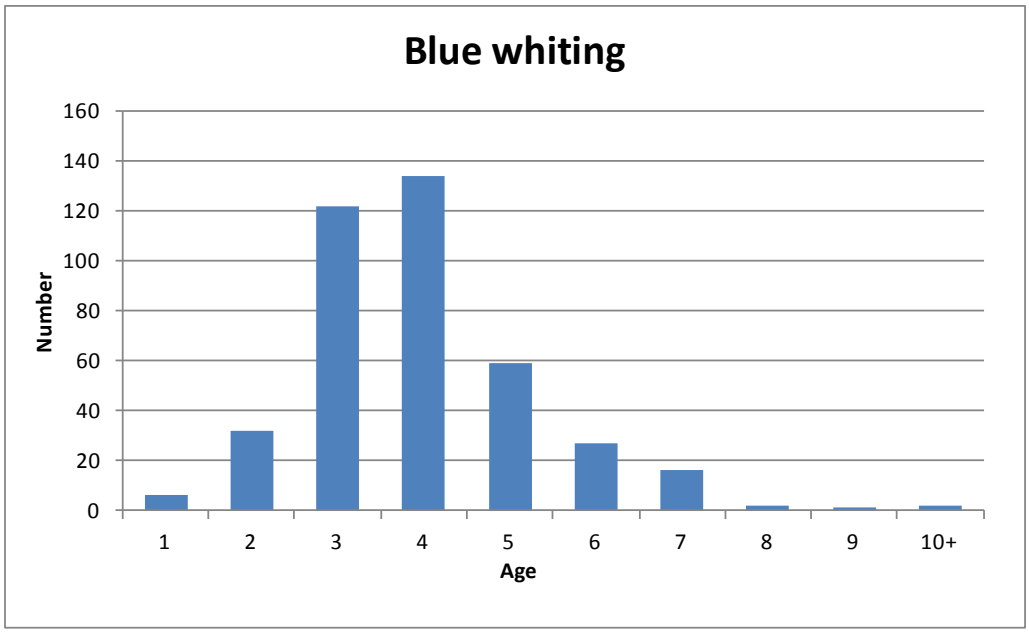

Figure 5. Age distribution of blue whiting south of the Faroes, *Magnus Heinason* cruise 1710, 29/3-12/4 2017.

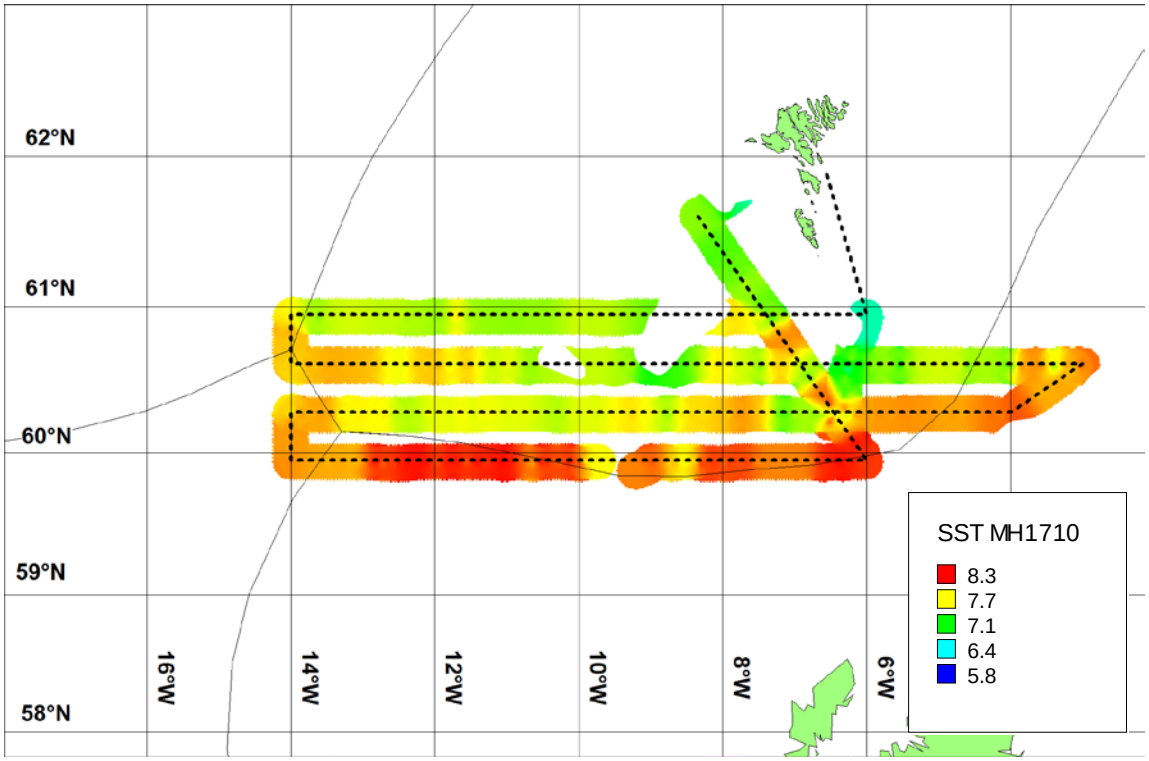

Figure 6. Sea-surface temperature (°C) south of the Faroes, *Magnus Heinason* cruise 1710, 29/3-12/4 2017.

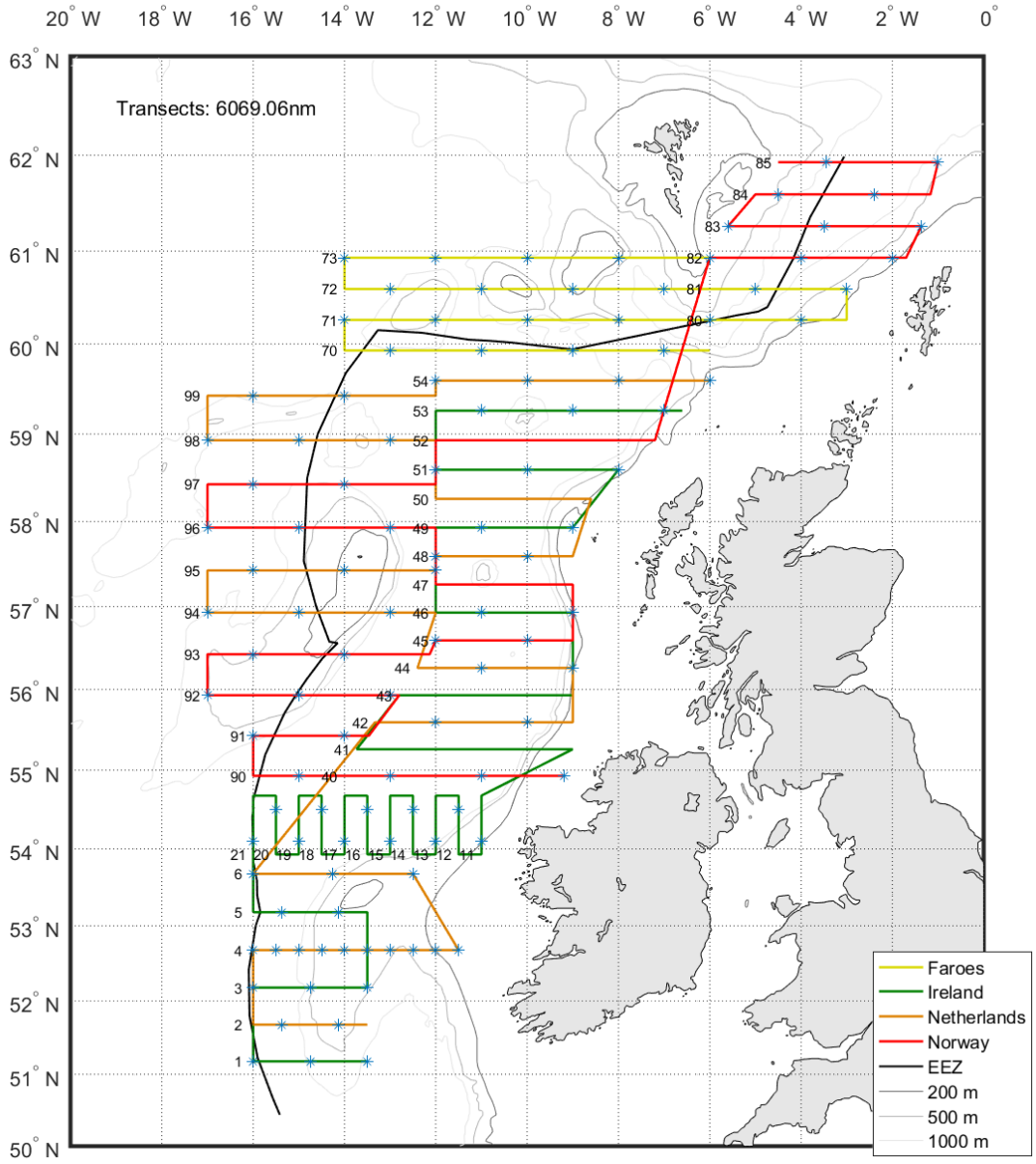

Figure 7. Planned cruise tracks during the joint international blue whiting spawning stock survey (IBWSS) in April 2017.