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Marine Research Institute

Atlantic mackerel and horse mackerel egg survey: Icelandic participation 2 - 16 May 2016

Preliminary Report

June 2016

Preliminary report on the research cruise B8-2016

Atlantic mackerel and horse mackerel egg survey: Icelandic participation 2 - 16 May 2016

Vessel: R/V Bjarni Sæmundsson, TFEA (Iceland – Marine Research Institute (MRI))

Captain: Ingvi Friðriksson

Personel: Agnes Eydal, Björn Gunnarsson (cruise leader), Björn Sigurðarson, Kristín Valsdóttir, Valur Bogason, and Helga Bára Mohr Vang (from the Faroe Marine Research Institute – the first 5 days).

Introduction:

The cruise was a part of an international Atlantic survey, carried out by 10 different European institutes to monitor the spatial and seasonal distribution of Atlantic mackerel and horse mackerel. During this survey mackerel and horse mackerel eggs are sampled using a plankton torpedo or bongo nets. The survey covers the whole spawning area and season. It starts along the Portuguese coast in February and continues until July when the waters west of Scotland are sampled. The planning and coordination of the survey is made within the ICES Working Group for Mackerel and Horse Mackerel Egg Surveys (WGMEGS).

The ICES triennial mackerel and horse mackerel egg surveys have been carried out since 1977. Since then the participating countries and sampling area have expanded. In 2016 the following countries participated in this survey: The Faroes, Denmark, Germany, Ireland, Norway, Portugal, Scotland, Spain, The Netherlands and now for the third time, Iceland.

Objectives:

The MRI sampling undertaken on board the "RV Bjarni Sæmundsson" provided egg data in the area between 58°45´ N to 60°45´ N and 4°15´ W to 17°15´ W during period 5 (May). Also, pelagic hauls were carried out to collect adult mackerel samples to estimate fecundity. These data will be combined to provide a fisheries-independent estimate of the spawning stock biomass of western mackerel and horse mackerel.

Methods:

The sampling of the fish eggs was carried out with a "High Speed Plankton Sampler Gulf VII" plankton sampler with a 280 micron mesh sized net and an opening diameter of 20 cm. A small skrips-depressor of 30 kg was attached to the sampler. The amount of water filtered during each haul was measured using an internal Valeport electronic flowmeter. On the frame an external flowmeter is also mounted, to check for blowing of the net due to large amounts of phyto- and micro zooplankton in the water. On top of the sampler a Seabird 911 plus CTD with altimeter is mounted to monitor live view the depth of the sampler in the water column and the bottom under the sampler. The CTD also measures temperature and salinity. On the way to the area to be surveyed, the flowmeters were calibrated. The Gulf VII sampler was deployed on double oblique hauls to maximum depth of 200 m or to within 5 m of the bottom in shallower water.

During the survey, the samples were sorted for fish eggs using the spray method and mackerel eggs were staged according the sampling protocol. For quality assurance, 10% of the samples were checked and sorted again. All eggs was counted and identified to species. For mackerel eggs, per sample, at least one hundred eggs was measured and the development stage was determined. The remaining mackerel eggs was counted. If the sample contained a lot of eggs they were all sorted from the sample, and then subsampled using a splitter ensuring at least 100 mackerel eggs are staged.

In this survey, a total of 4 pelagic trawl hauls were carried out in the sea surface using a pelagic WB trawl.

Results:

A total of 100 plankton stations were taken during the cruise (Figure 1). Around 20.300 eggs were sorted out and identified to the species level. Of them, approximately 19.560 were mackerel eggs (Fig. 2) and of them, approx. 65% were of stage 1 (Figure 3 and Figure 4). Of other species, pearlside (*Maurolicus mülleri*) was most abundant. Relatively few eggs from other species were found. No horse-mackerel eggs were found during this cruise. The western limit for mackerel spawning of the surveyed area was secured.

The distribution of mackerel eggs revealed high spawning activity in the whole survey area and the concentration of mackerel eggs was probably higher than ever recorded in the area. It must be emphasised that these results are provisional. The full and final results from this and the other mackerel egg surveys will only be available upon assimilation to the full survey database. Egg production results from this survey will be included in the international database for further analysis. The quality assurance revealed that the total number of eggs remaining in all of the checked samples were > 4 %.

A total of 4 fishing tows were undertaken to collect mackerel ovaries for fecundity and atresia assessment. Three of these hauls were empty but a total of 20 mackerel ovaries were collected from approx. 300 sampled individuals from one haul at 59°45,17 N´ – 06°40,69. Information on age, length, sex, maturity, total weight, gutted weight, and liver weight was also collected from the sample.

During the survey, severe weather conditions prevented R.v Árni Fridrikson from operating for up to 36 h.

Cast profile information on temperature and salinity were recorded at each Gulf VII station (Figure 5). After the cruise it came clear that the salinity values needs to be calibrated. This will hopefully be completed in August 2016.

Submitted:

Björn Gunnarsson

30 June 2016

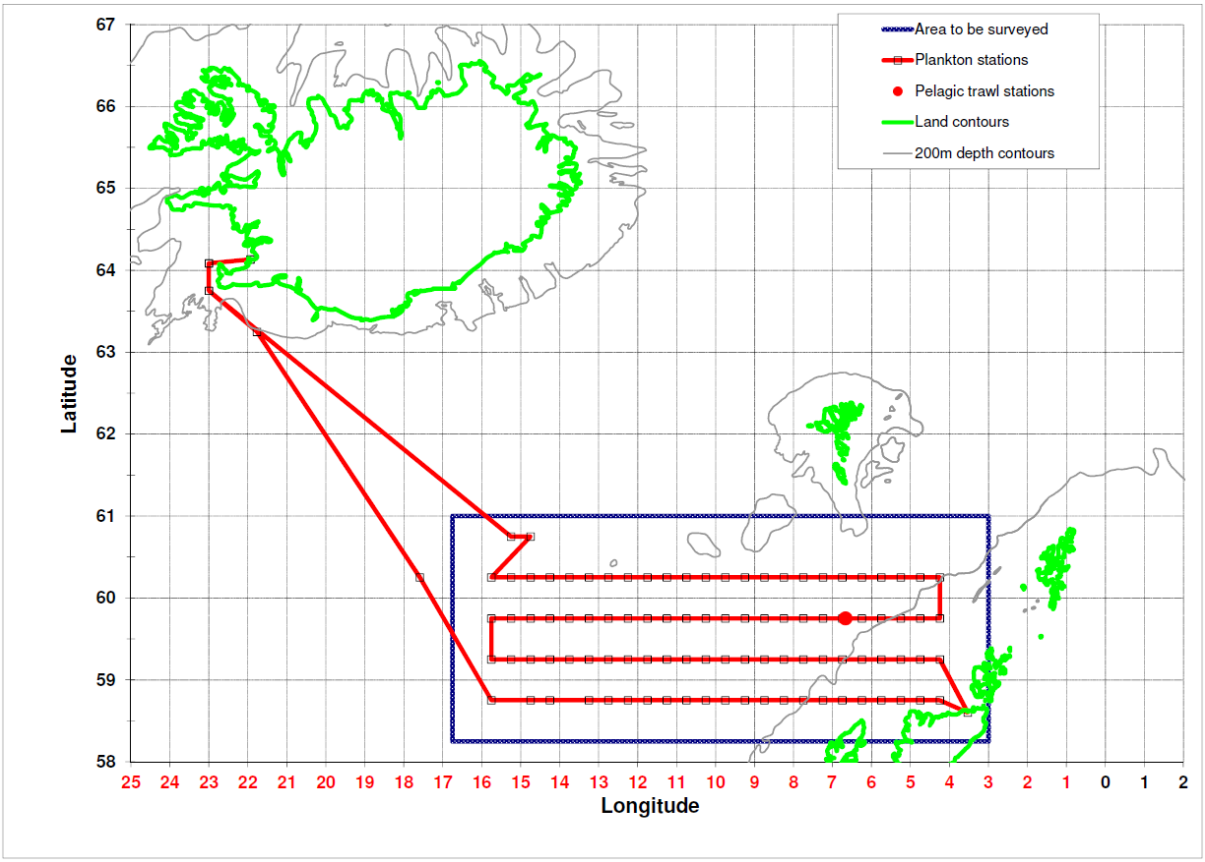

Fig. 1. The route and plankton- and CTD stations worked of RV. Bjarni Sæmudsson during the research cruise B8-2016, 2 – 10 May 2013 (period 5).

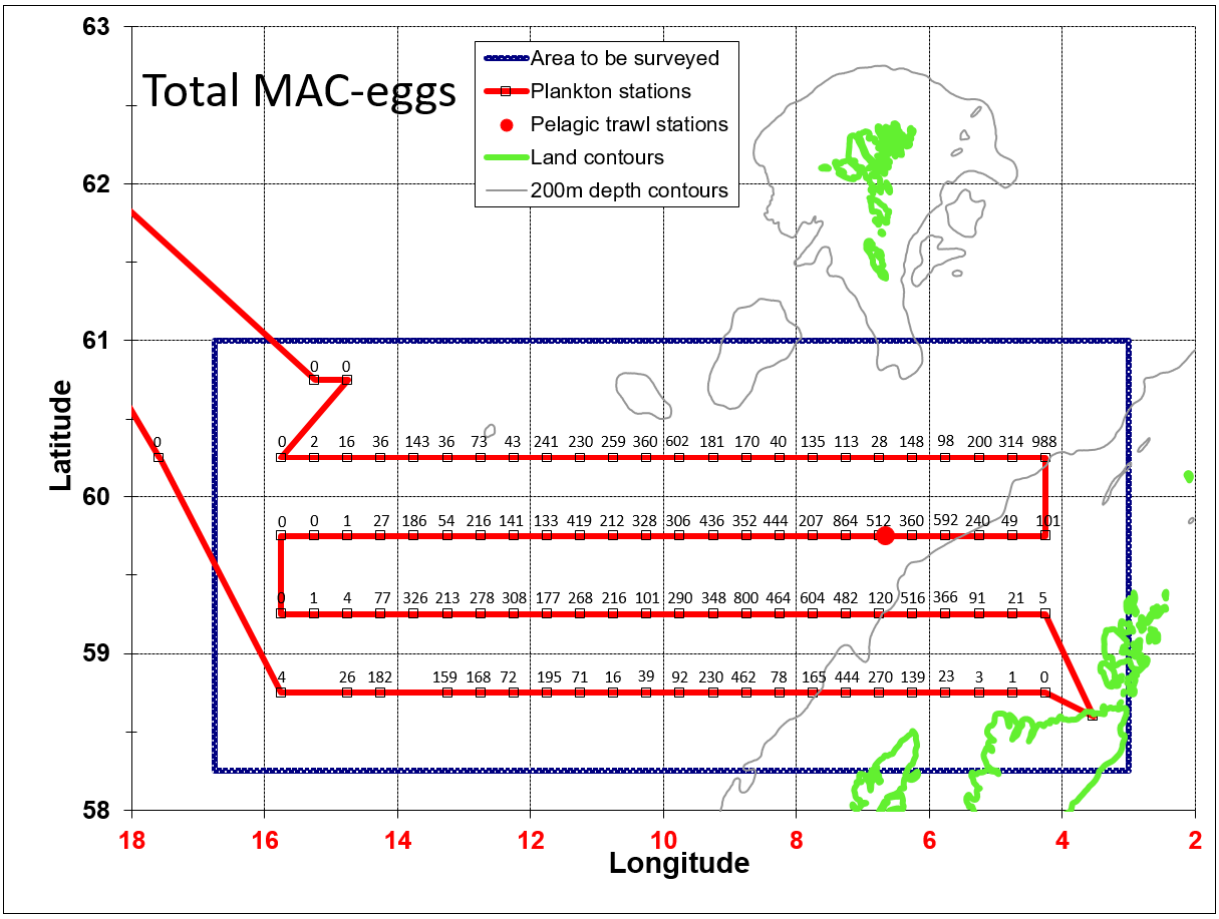

Fig. 2. Total numbers of mackerel eggs during the research cruise B8-2016, 2 - 16 May 2016 (period 5).

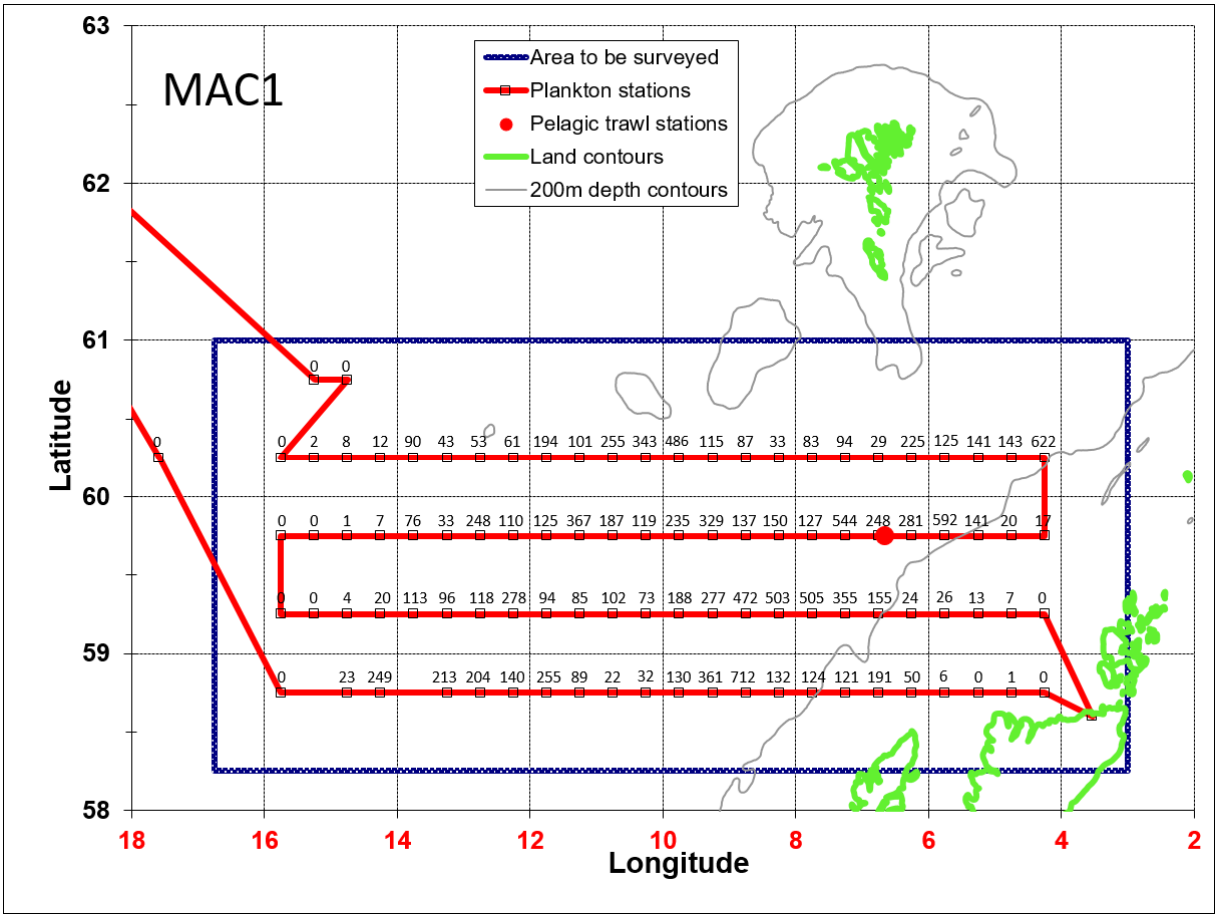

Fig. 3. Number of stage 1 mackerel eggs during the research cruise B8-2016, 2 - 16 May 2016 (period 5).

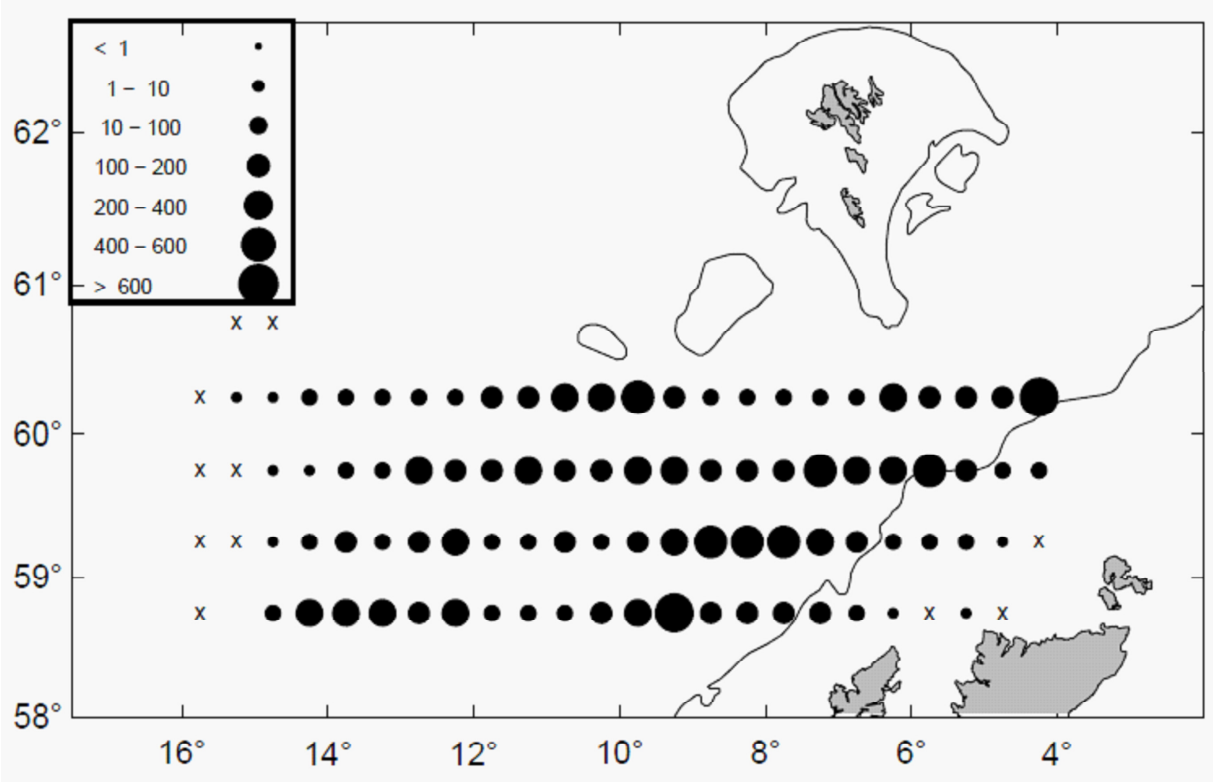

Fig. 4. Number of stage 1 mackerel eggs per m^{-2} during the research cruise B8-2016, 2 – 16 May 2016 (period 5).

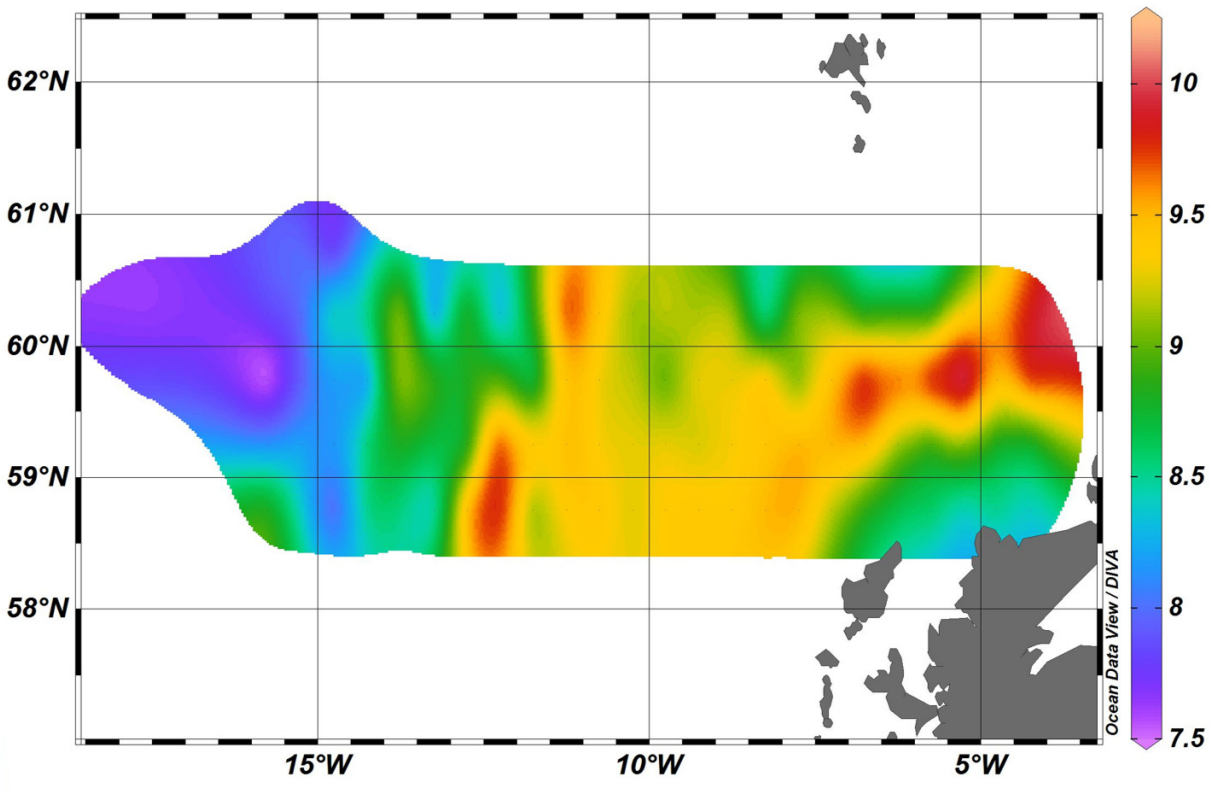

Fig. 5. Temperature at the surface (5m) during the research cruise B8 – 2016, 2 – 16 May 2016 (period 5).