R1/12

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Scotia

Cruise 0507S

Report

3 -23 April 2007

Ports

Loading: Aberdeen, 2 April
Half Landing: Killybegs, 10 April
Unloading: Aberdeen, 23 April

Personnel

F Burns (In Charge)
E Armstrong
M Campbell
R Watret
A Tait
I Gibb (10 – 23 April)

Out –turn Days per Project: 20 days to MF01TA

Objectives

1. To carry out mackerel egg survey (ICES Triennial Survey), on the western shelf and shelf edge in the area from 50^{o}N to 60^{o} N using the Gulf VII plankton sampler.

2. To collect adult samples of mackerel and horse mackerel, by trawling, for atresia and fecundity analysis.

Narrative

Scotia sailed from Aberdeen at 1200 on the 3 April and proceeded to an area east of Peterhead to perform calibrations on the sampler flowmeters. *Scotia* then proceeded northwards and arrived at the first station (59°45N, 5°15W) at approximately 1000 on the 4 April to commence the survey. Survey stations at 30'E/W intervals, on transects separated by one degree of latitude, were conducted successfully during the outbound survey run until on the 10 April the *Scotia* arrived in Killybegs for the midcruise break at which point Iain Gibb joined the vessel. On the afternoon of the 11 April *Scotia* resumed the survey continuing south using the same transect spacing and sampling intervals as before until reaching the southern survey boundary at 50°45N. Because of the large size of the survey area comprehensive coverage of the return leg of the survey was not going to be possible. Consequently *Scotia* interlaced back north on the return leg using alternate transects to those covered on the first outbound leg targeting areas of high abundance as well as firming up boundary coverage missed during the outbound leg of the survey. The survey was completed east of Cape Wrath by 1000 on Sunday 22 April and *Scotia* made for Aberdeen, docking in the early hours of Monday 23 April.

Results

A total of 152 plankton stations (see Figure. 1) and 21 calibration stations were collected during the cruise with the Gulf VII. All samples were sorted for fish eggs during the survey with the eggs also being successfully staged and identified at sea for mackerel and horse mackerel. The highest density of mackerel eggs were recorded at a location on the shelf edge northwest of Donegal. In addition large numbers of mackerel eggs were encountered on the shelf edge west of Ireland and at locations east of the porcupine bank. Overall, the mackerel egg concentrations were located along the 200m contour with eggs being encountered in varying numbers along the entire length of the survey area at this depth. Numbers of horse mackerel eggs were low throughout the survey area with only one sample location yielding significant numbers. Generally horse mackerel displayed a much more southerly distribution compared with mackerel. The only large concentration of horse mackerel eggs on this survey is located right on the southern boundary of the survey area on the shelf break at 50°45N. The distribution of mackerel and horse mackerel eggs at stage 1 and for all stages are shown in figures 2 to 5. The majority of stage 1 mackerel eggs appear to follow the general pattern described above with very few being encountered north of 56°N. This is in contrast to the results seen 3 years ago during this period where much greater concentrations of stage 1 mackerel eggs were encountered above 57°N although the full conclusions must wait for the assimilation of the full survey database. Egg production results from this survey will be included in the international database for further analysis.

In addition to the mackerel egg samples, plankton samples were also collected for Steve Hay for genetic sub population plankton analysis. These were collected from a pup net which was attached to the side of the Gulf VII sampler. These samples were then placed in ethanol for analysis back in the lab.

A total of five tows were carried out using the GOV trawl to collect mackerel and horse mackerel ovaries for fecundity and atresia assessment. Information on length, total weight, liver weight and age was also collected from each sample. Due to the success of the GOV in catching the target species the PT160 was not used during the survey.

Sea surface temperature and salinity were collected continuously using the thermosalinograph whilst cast profile information on temperature and salinity were recorded at each Gulf VII station using a Seabird 19 CTD.

Finlay Burns
25 May 2007

Figure 1: 0407SGulf sampler positions. Locations of fish trawls using the GOV are denoted by blue circle on map).

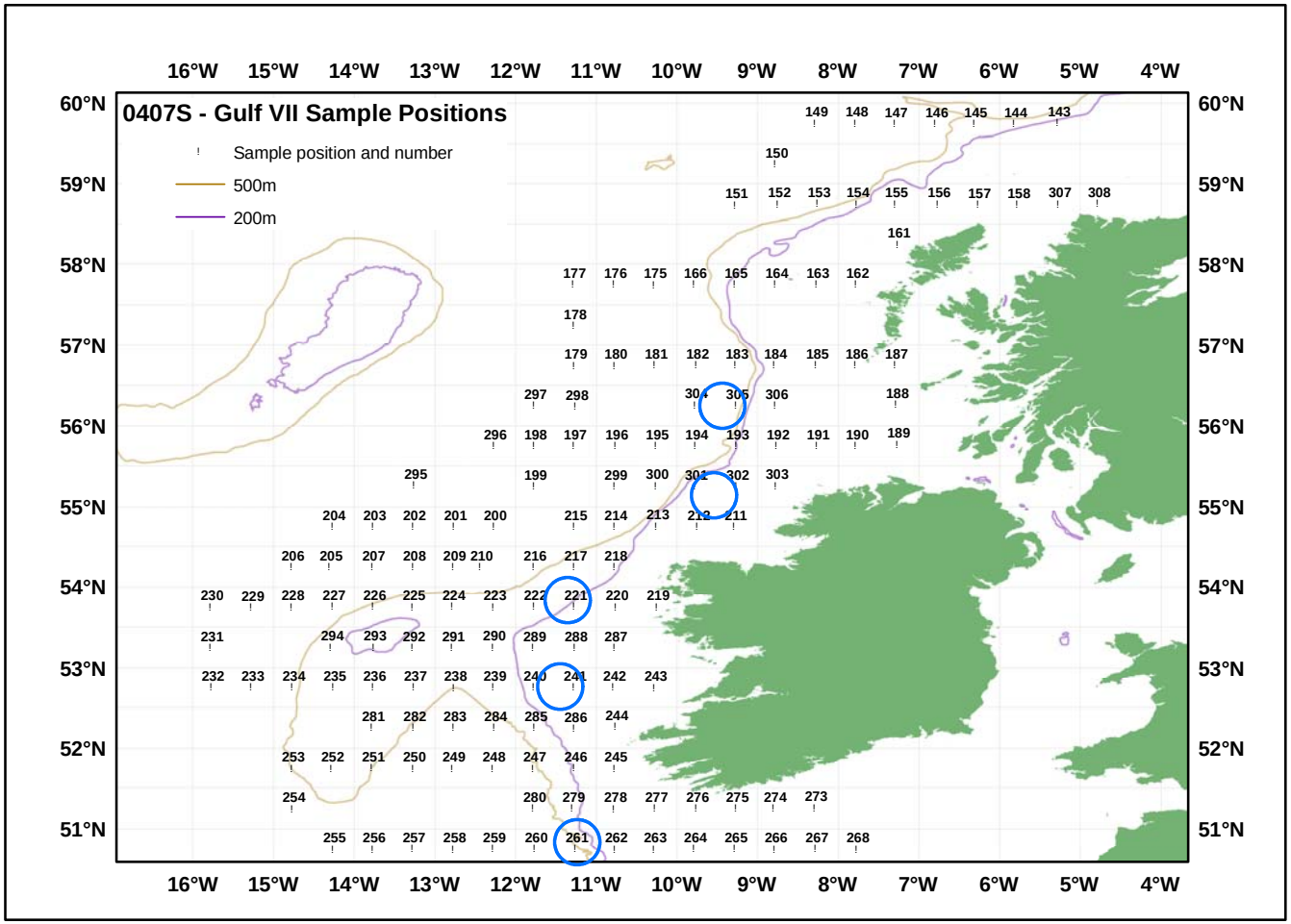

Figure 2: 0407S – Total numbers of mackerel eggs recorded.

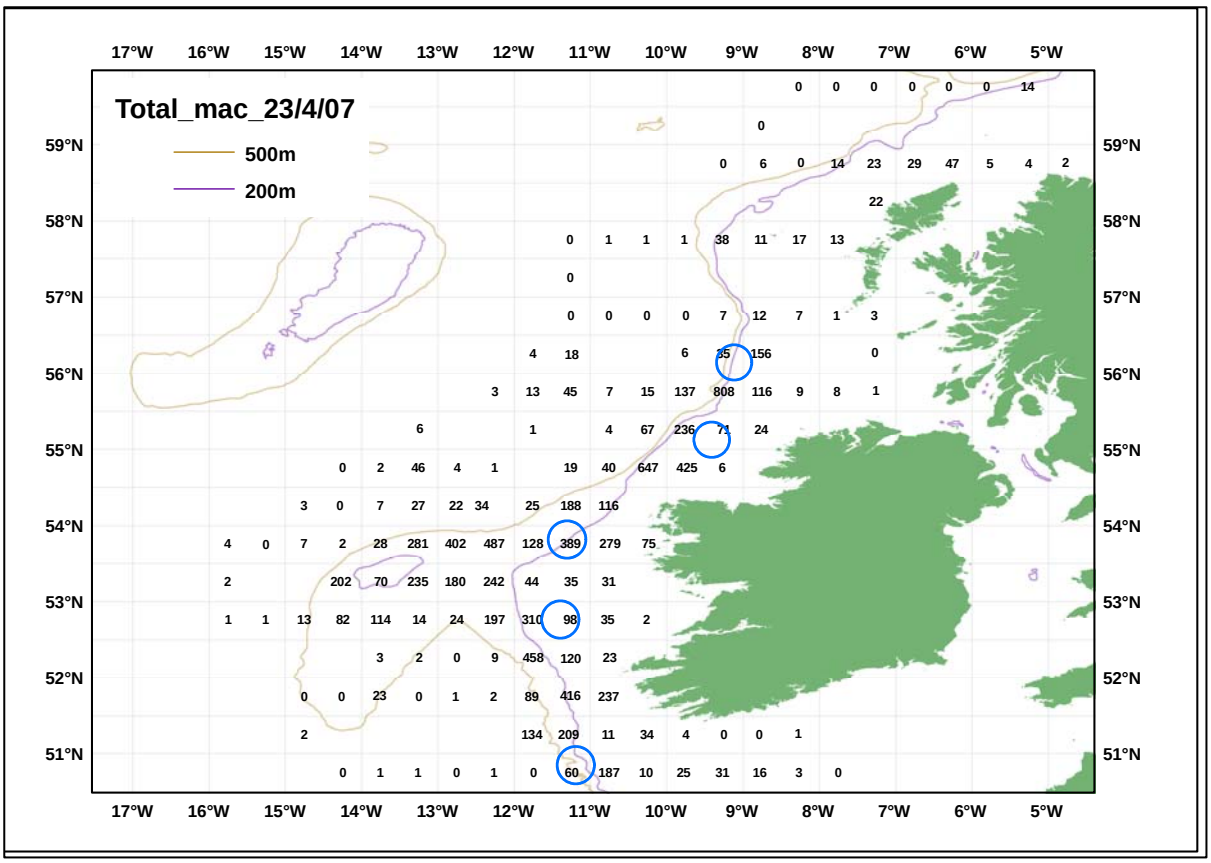

Figure 3: 0407S – Total numbers of mackerel stage 1 eggs recorded.

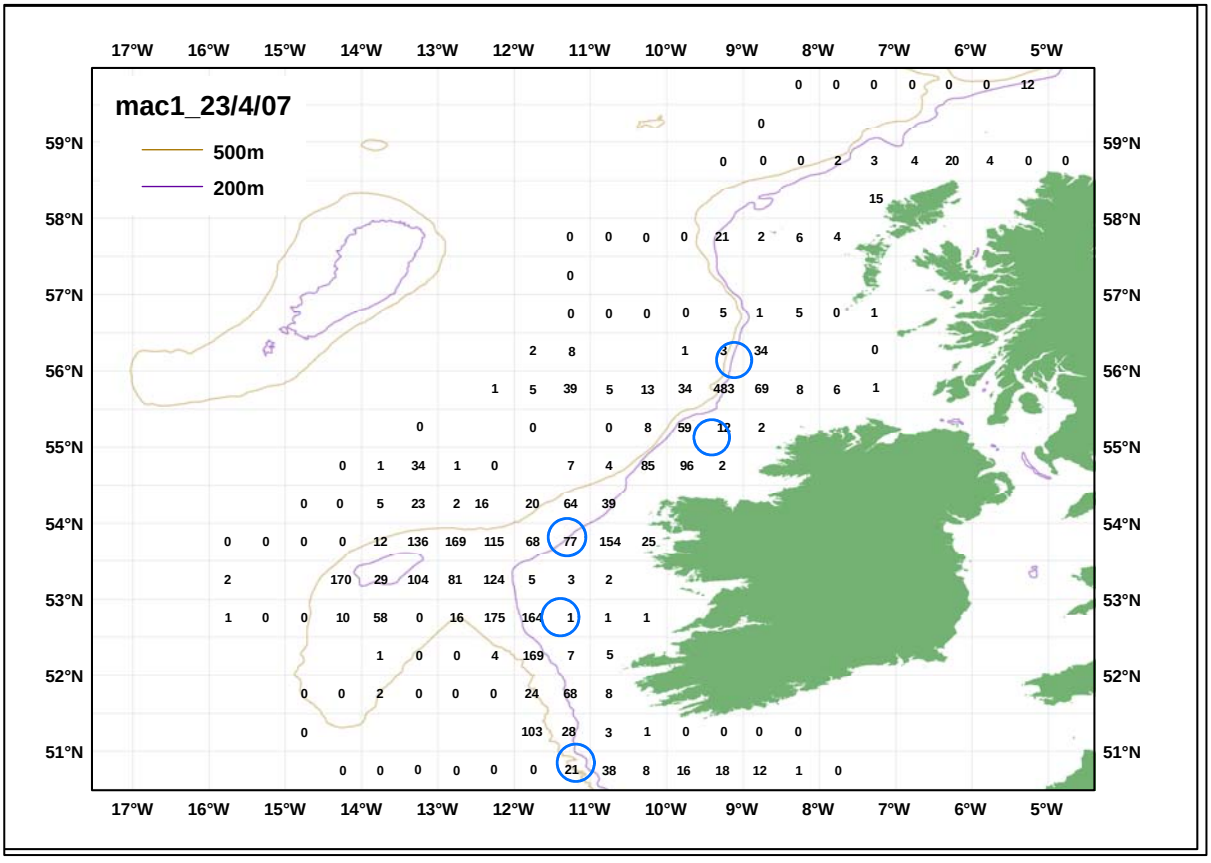

Figure 4: 0407S – Total numbers of horse mackerel eggs recorded.

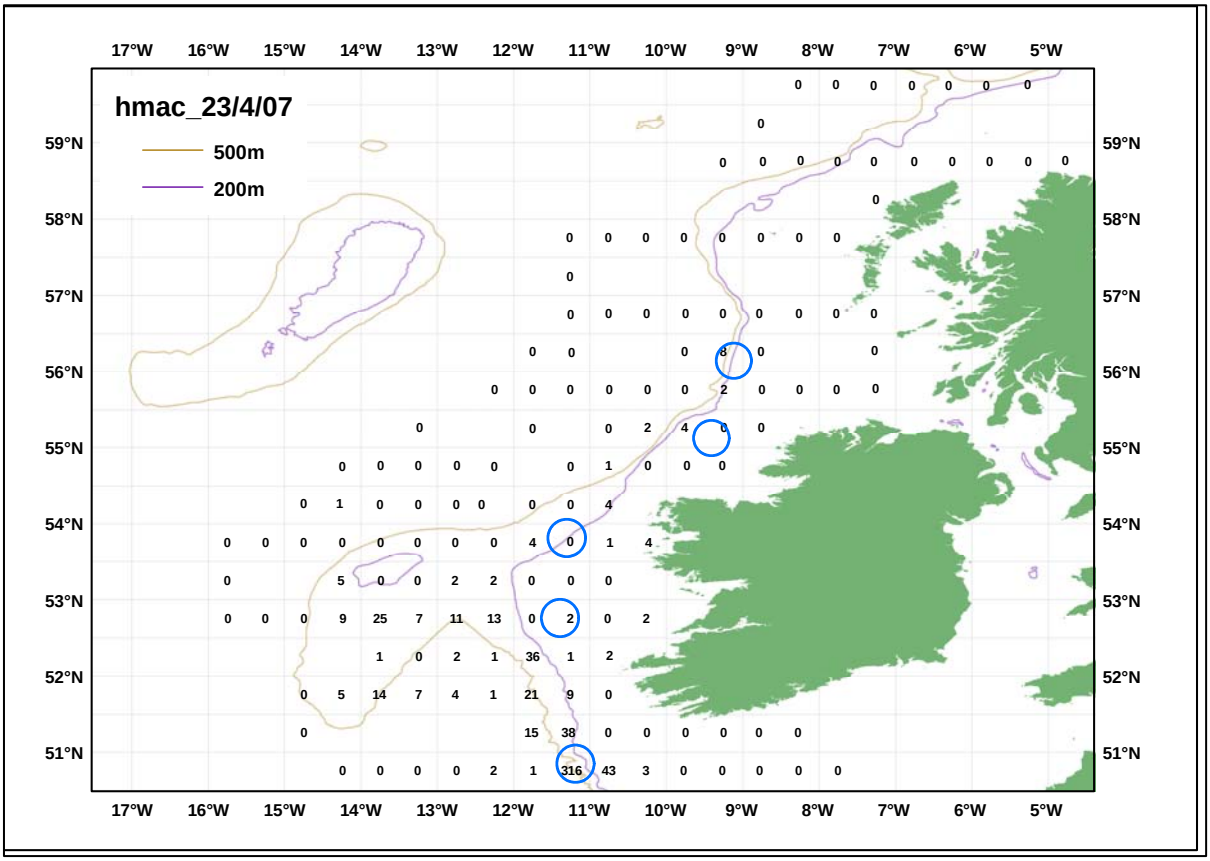

Figure 5: 0407S – Total numbers of horse mackerel stage 1 eggs recorded.