

R1/12

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FRV *Scotia*

Cruise 0704S

REPORT

20 April - 9 May 2004

Personnel

D Reid	(In charge)
I Gibb	
F Burns	(In charge 2-9 May)
C Davis	
R Watret	
A Virjee	Visitor (20 April – 1 May)
P Freitas	Visitor (20 April – 1 May)

Half Landing: Galway, 1 May 2004

Objectives

1. To carry out mackerel egg survey (ICES Triennial Survey), on the western shelf and shelf edge.
2. To collect fish samples, by trawling, for atresia and maturity assessment.

Out-turn Days per Project: MF01TB – 20 days

Narrative

Scotia sailed from Aberdeen at 1200 hours on 20 April and proceeded to the Moray Firth to perform calibrations on the sampler flowmeters. *Scotia* then proceeded northwards and arrived at the first station (59°45'N, 5°15'W) at approximately 0830 hours on 21 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 initial period of the survey between latitudes 59°45'N and 54°15'N. South of this, the transect spacing was reduced to 30' to ensure comprehensive coverage of the survey area. Due to a gap in the survey area that should have been completed by the preceding German survey an additional transect was completed south of the intended survey area at latitude 52°45'N. *Scotia* completed one more transect north before heading into Galway for the half landing. *Scotia* arrived into Galway on the afternoon of 1 May and departed 24 hours later to resume sampling at 54°45'N, 10°15'W. From here *Scotia* proceeded west and then continued to sample northwards, on alternate rows of latitude to those covered during the first half. Sampling was completed at 0900 hours on 8 May and the ship headed for Aberdeen.

Results

A total of 139 plankton stations (see Fig. 1) and 18 calibration stations were collected during the cruise with the Gulf III. 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 densities of mackerel eggs were recorded in the area between the 200 m contour and the Porcupine Bank (52°30'N and 54°N). Very large numbers were also recorded near to the 200 m contour between 55°N and 56°N. Overall, the mackerel egg concentrations were concentrated along the 200 m contour with eggs being encountered in reasonable numbers along the entire length of the survey area at this depth. No large densities of horse mackerel eggs were recorded during this survey. The samples that scored the highest numbers of horse mackerel eggs were clustered around the 200 m contour south of 54°30'N although a scattering of eggs were recorded on or near the 200 m contour north of this. The distributions of mackerel and horse mackerel eggs at stage 1 and all stages are shown in Figures 2 to 5. The distribution of all fish eggs is shown in Figure 6. The distribution of stage 1 mackerel eggs appears to be quite northerly with relatively large numbers being encountered in the area 57°N to 59°30'N. This would appear to echo the results seen 3 years ago 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 III sampler. These samples were then placed in ethanol for analysis back in the lab.

A total of seven 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 PT170 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 station using a Seabird 19 CTD. Figure 7 shows the temperature recorded at 20 m depth from the CTD profiles. Figure 8 shows the contoured data after gridding. The general picture was as expected with warmer water in the south and off the continental shelf.

F Burns / D G Reid
19 May 2004

Seen in draft: Captain Peter Barratt, OIC *Scotia*

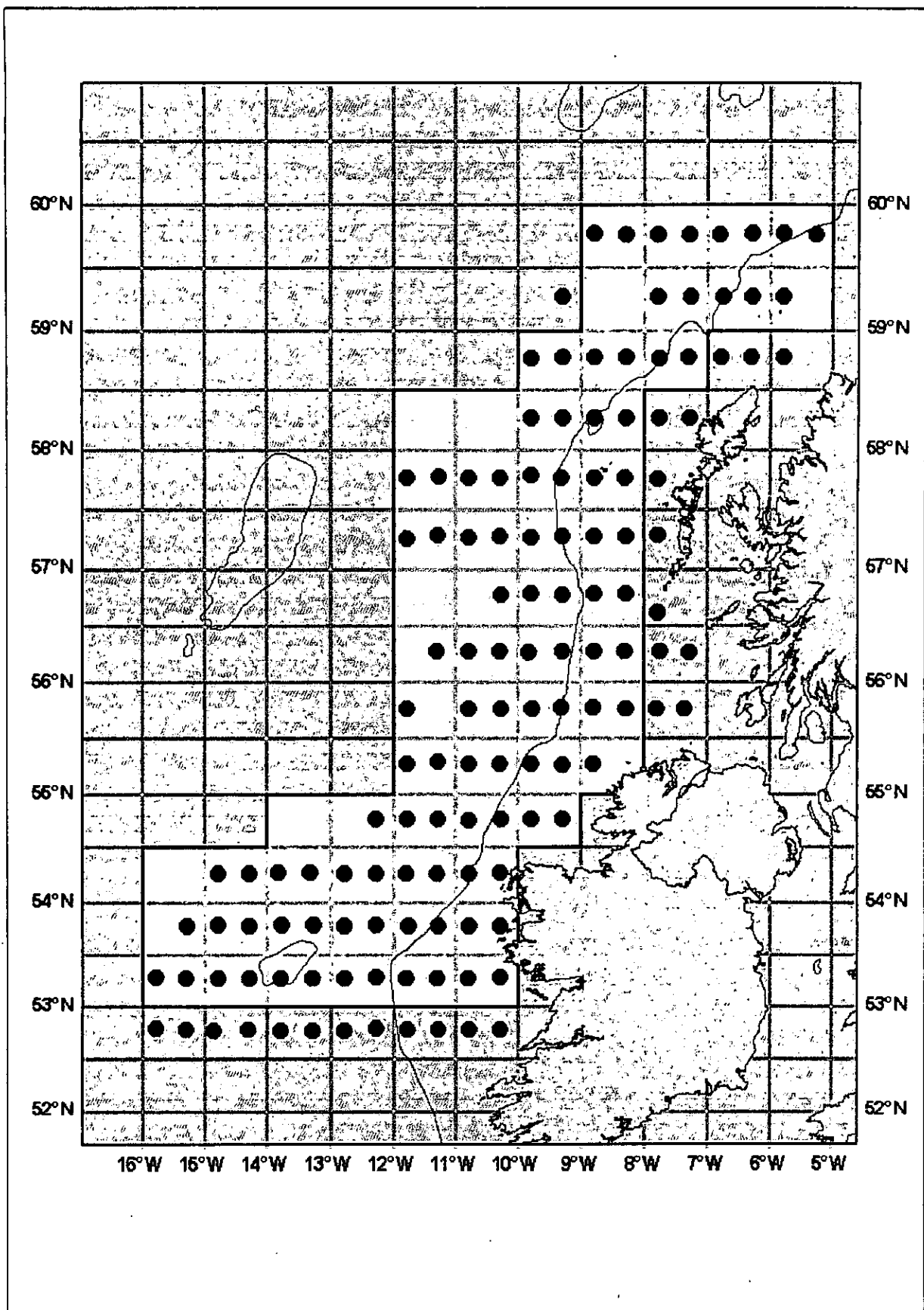


Figure 1. 0704S Plankton sampling stations

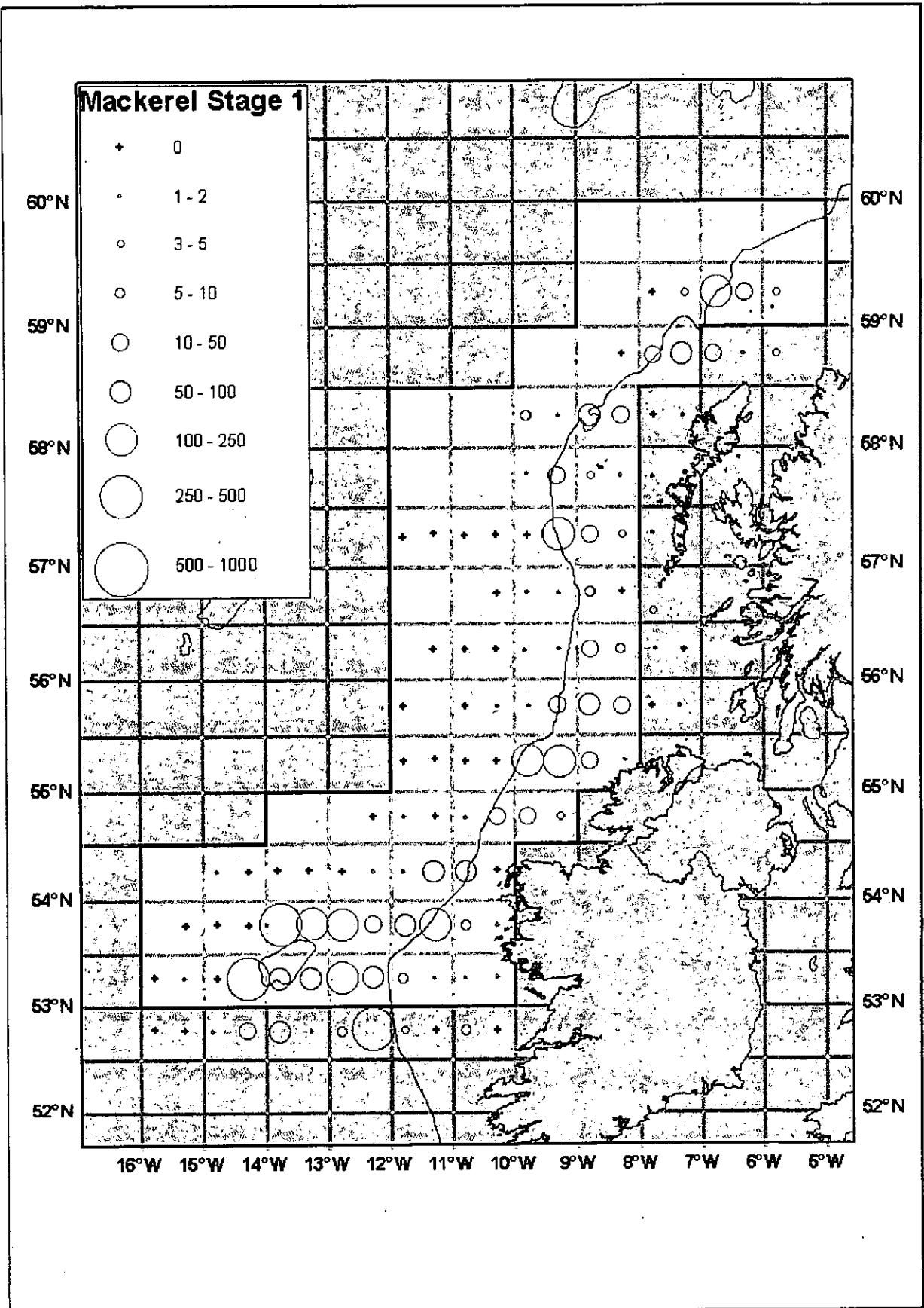


Figure 2. Distribution of stage 1 mackerel eggs for survey 0704S

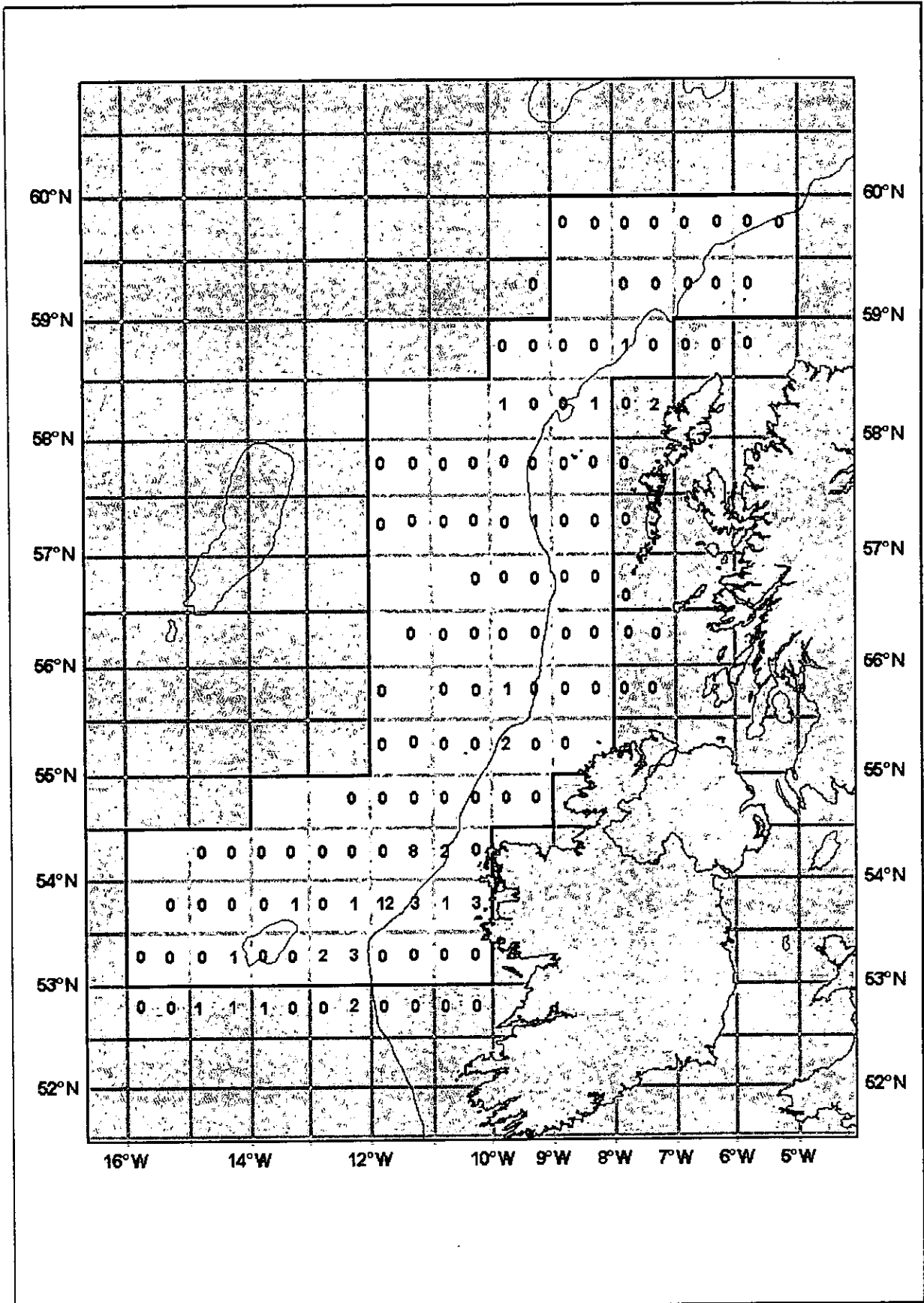


Figure 3. Distribution of stage 1 horse mackerel eggs for survey 0704S

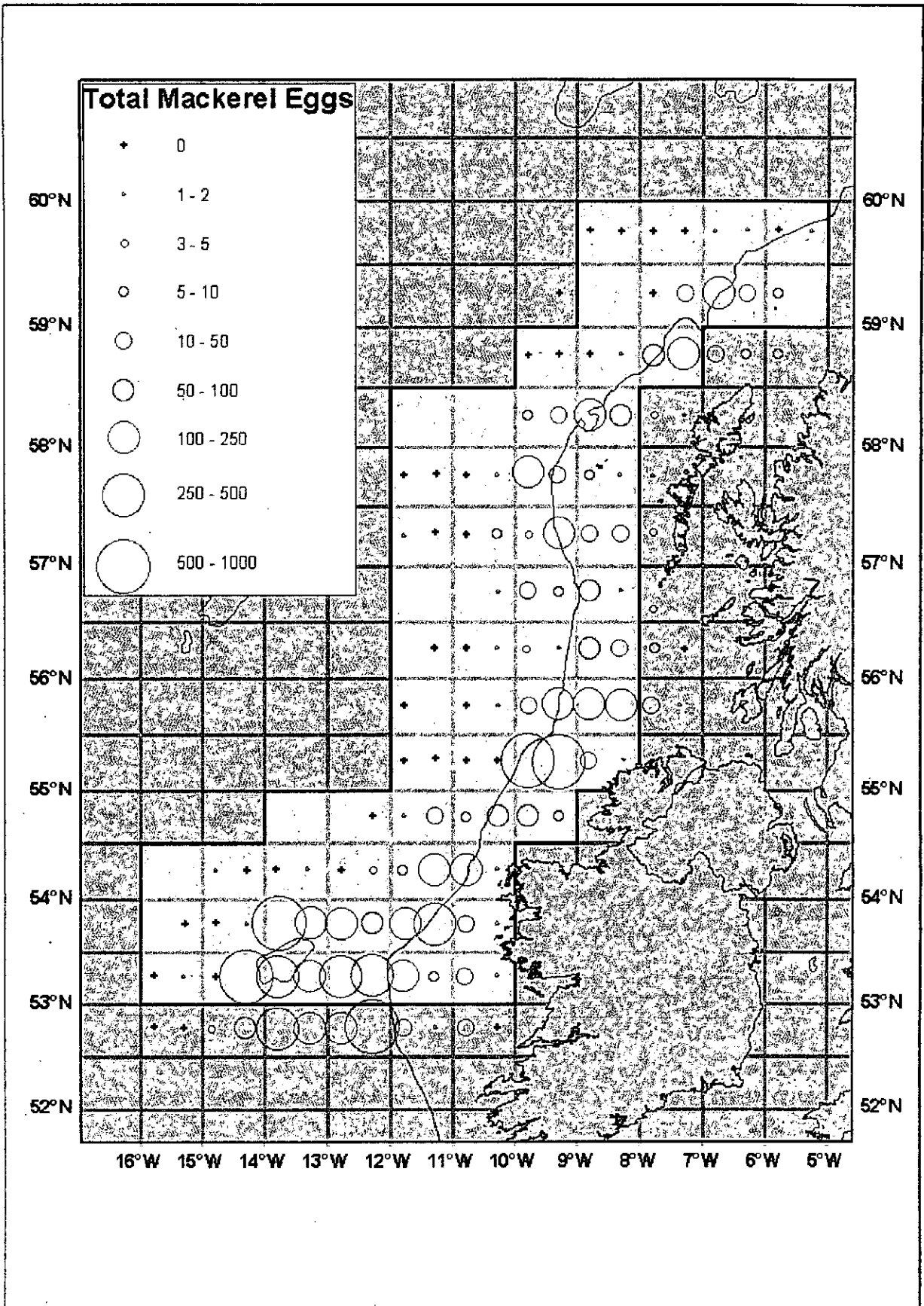


Figure 4. Distribution of mackerel eggs at all stages for survey 0704S

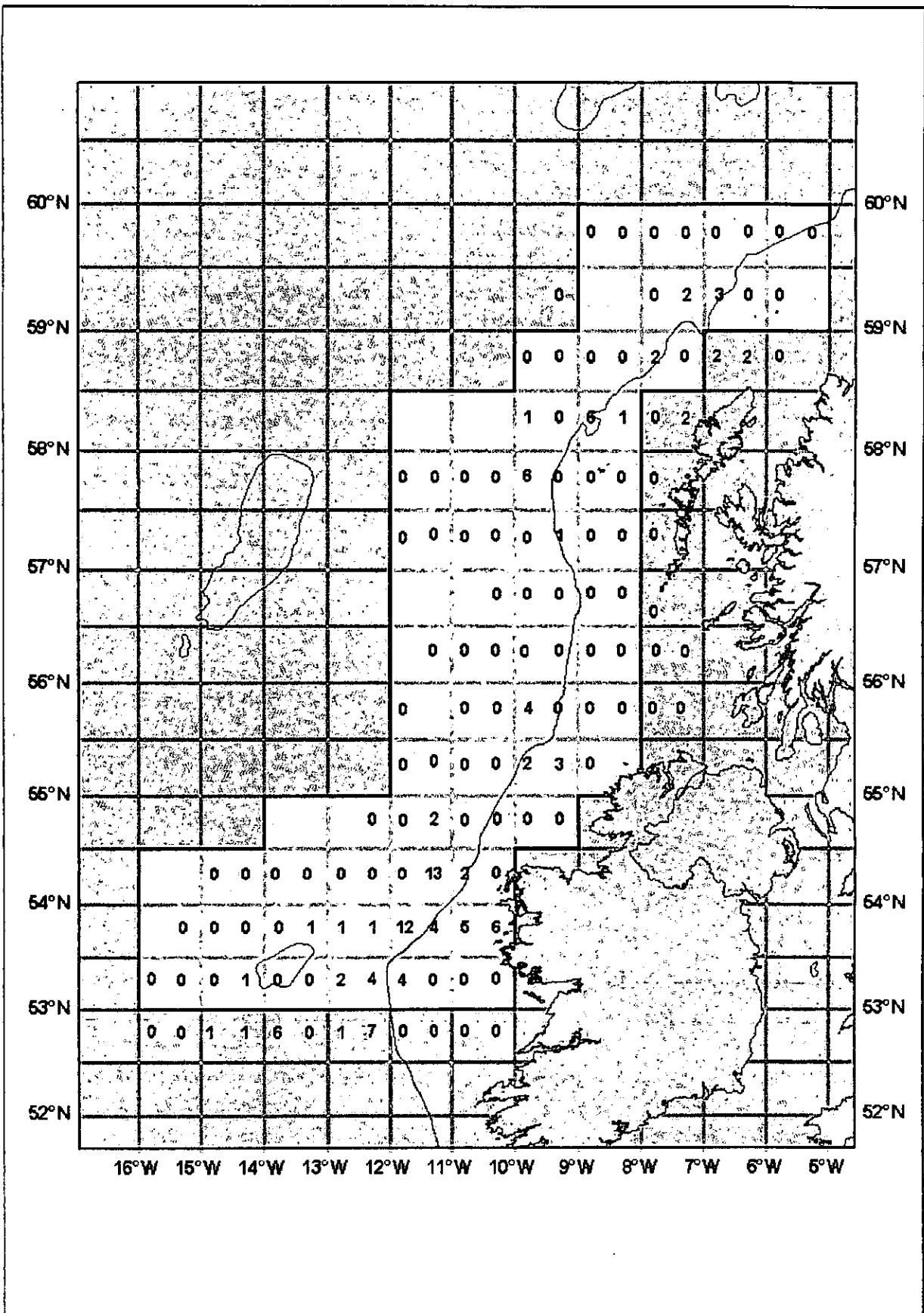


Figure 5. Distribution of horse mackerel eggs at all stages for survey 0704S

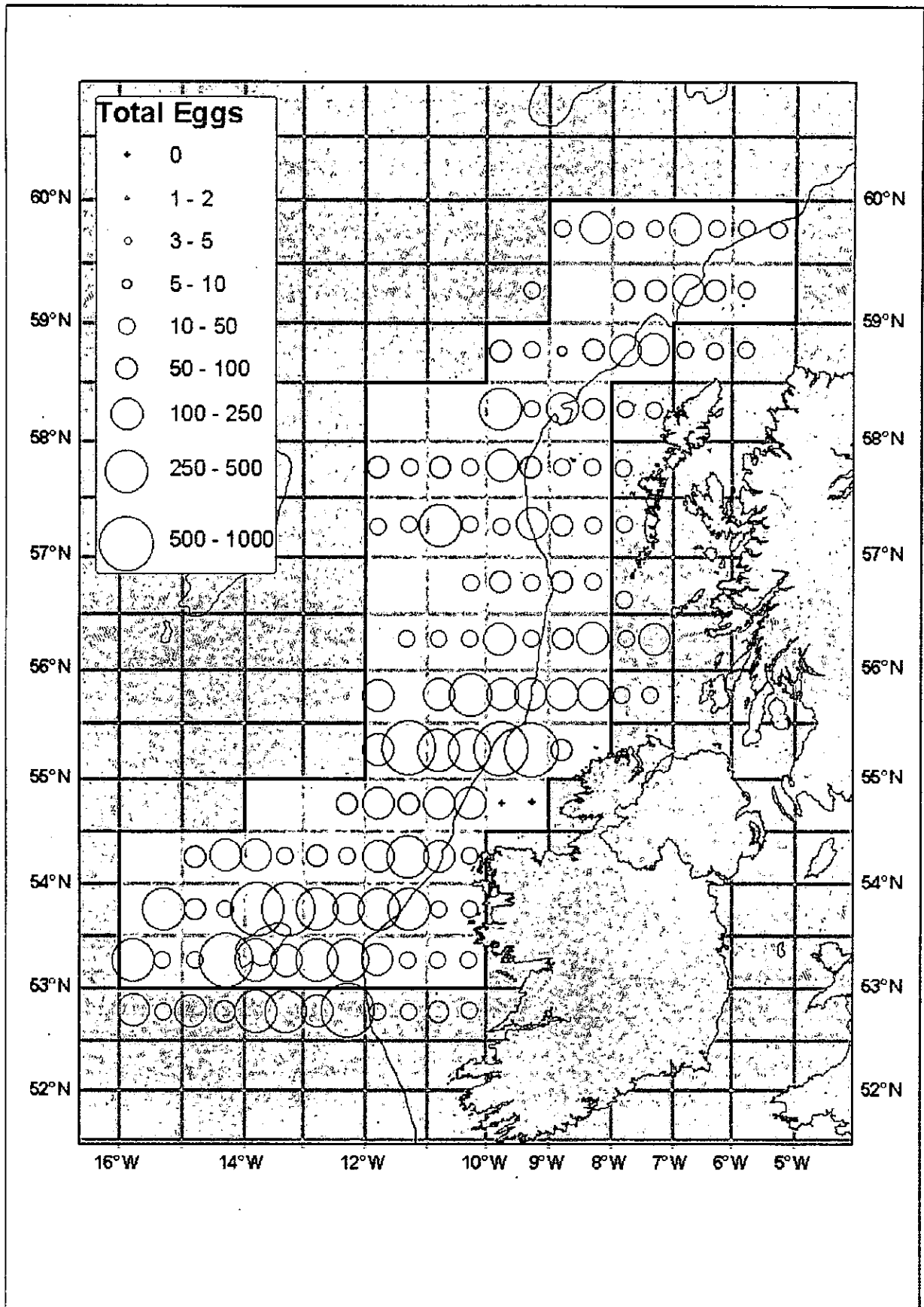


Figure 6. Distribution of all fish eggs for survey 0704S

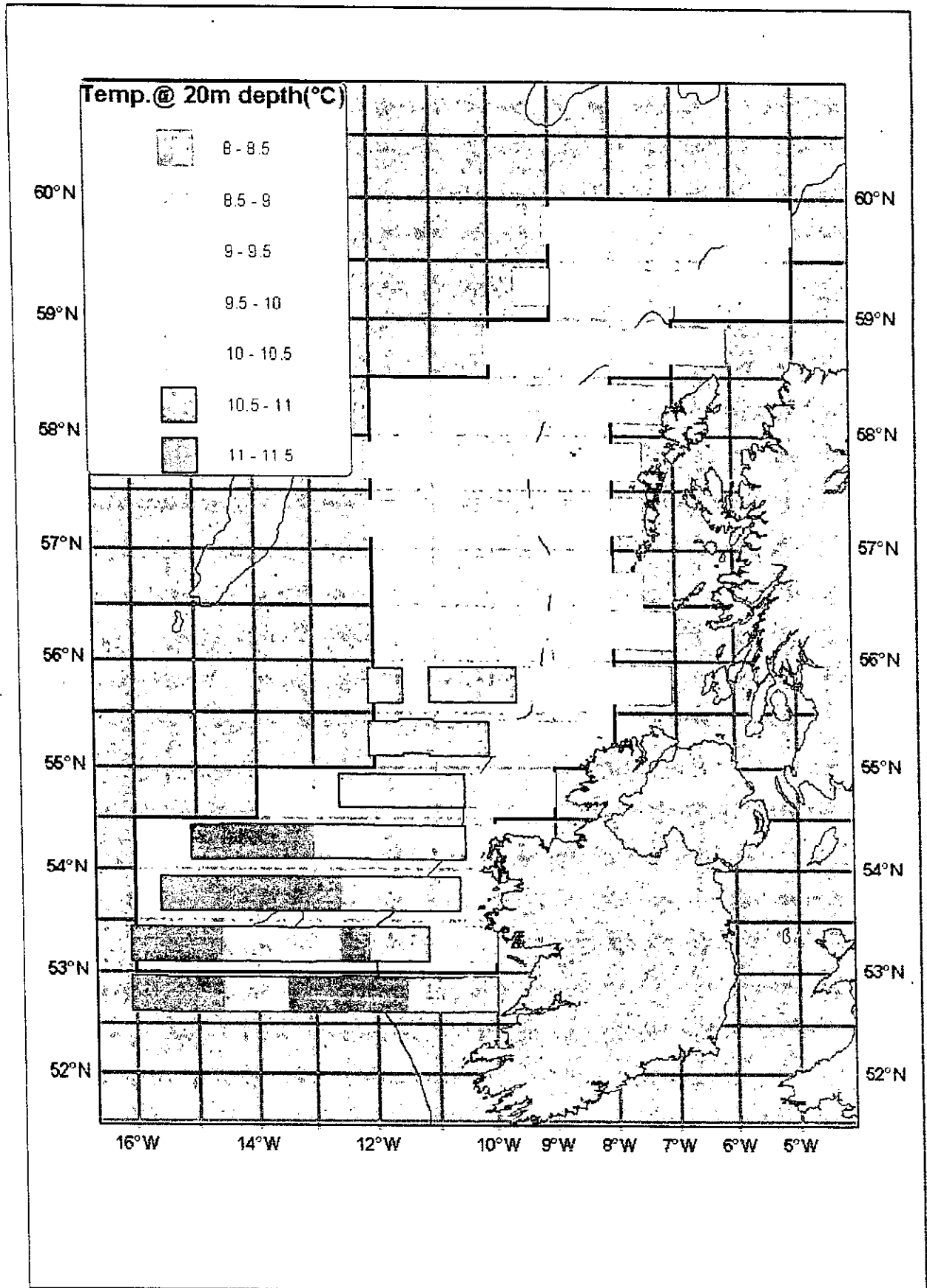


Figure 7 Temperature at 20m for survey H704S

Survey 0704S. CTD Temperature data at 20m. (°C)

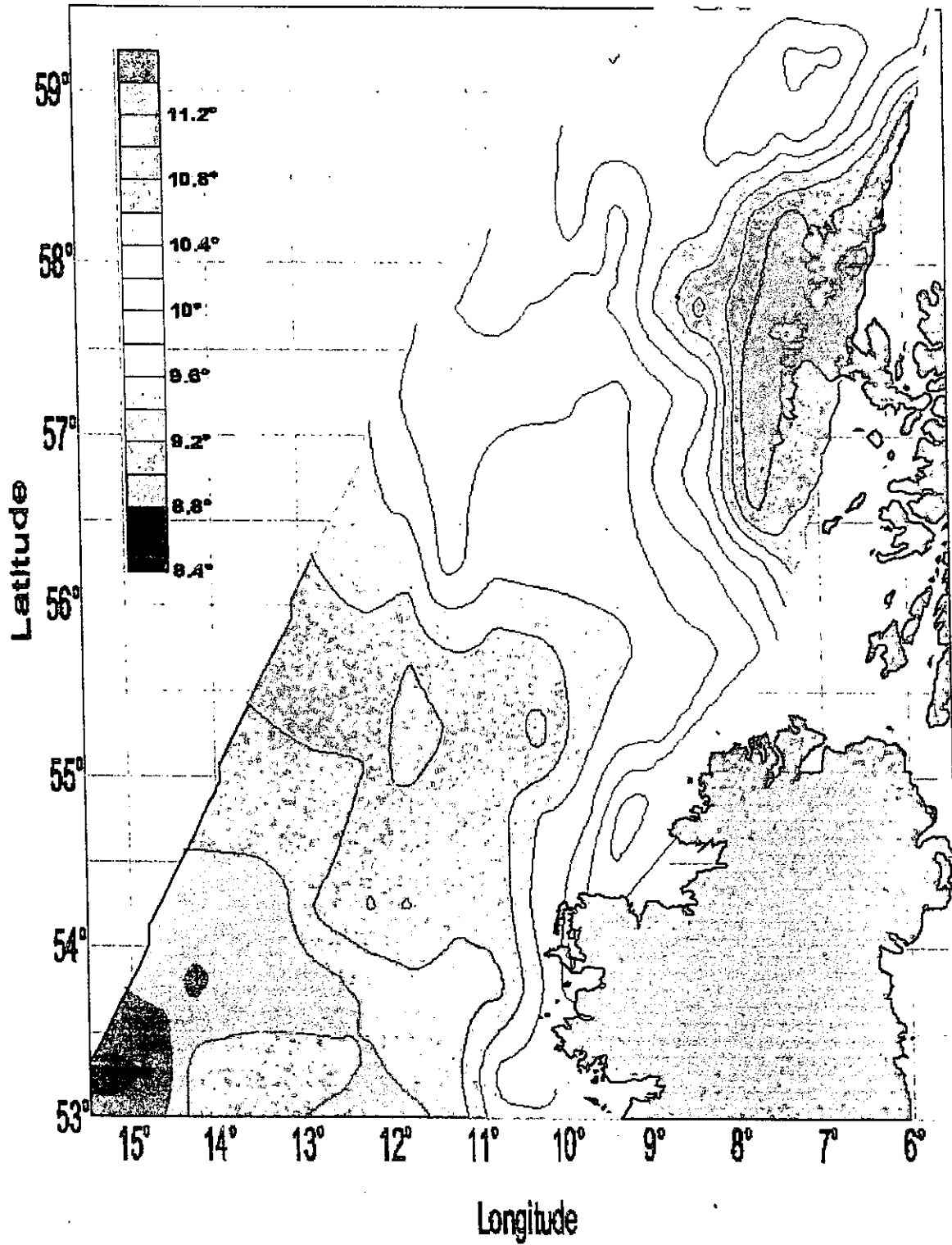


Figure 8. Contoured 20m Temperature data for survey 0704S