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RV *Corystes*

Cruise 0810H

## REPORT

20 May – 3 June 2010

### Ports

**Loading:** Greenock, 20 May

**Unloading:** Greenock, 3 June

### Personnel

F Burns        SIC  
J Drewery  
M O'Sullivan  
A Edridge  
L Ritchie

**Out-turn days per project:** 15, RV1005.

**Fishing/Sampling Gear:** Pelagic Trawl, Gulf VII plankton sampler

### Objectives

1. To carry out mackerel egg survey (ICES Triennial Survey), on the western shelf and slope in the area from 55°N to 60° 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

The mackerel egg survey is an internationally coordinated survey involving vessels from 10 countries. It is an adaptive survey that aims within a number of temporal periods spanning the full spawning season to delineate fully the geographical boundary of mackerel and horse mackerel spawning. This involves carrying out oblique plankton sampling dips using the Gulf 7 sampler down to a maximum of 200m depth, at regular 30' intervals along longitudinal transects until little or no early stage eggs are encountered.

*Corystes* sailed from Greenock at 2130 on the evening of 20 May towards an area west of Islay to calibrate the flowmeters. She arrived at 0730 on 21 May ready to commence calibration trials on the sampler and flowmeters and after some initial issues regarding reconfiguration of the vessels Scanbas system *Corystes* was ready to head to the first station of survey period 4 located NW of the Donegal coast at 55° 15N 8°15W (See Figure 1 for 0810H station positions). After a successful deployment *Corystes* continued west along the 55° 15N with only moderate and then low numbers of early stage mackerel eggs being encountered as the survey continued west off the continental shelf and into deeper water. Numbers began to increase again towards the Rockall Bank. Unfortunately, insurance restrictions imposed on the vessel resulted in *Corystes* only being able to survey to a maximum of 17° W which during this survey was well in advance of the spawning boundary.

This issue was to a large degree negated by the ability of the Norwegian vessel - that was surveying in the adjacent area south of *Corystes* - to divert effort to complete these stations west of the *Corystes* operational limits. (See figure 1)

*Corystes* continued east along the 56° 15N transect encountering low numbers of Stage 1 mackerel eggs with moderate increases seen on the southern tip of Rockall bank and again on the stations directly adjacent to the shelf slope at 56°15N 10°15W before decreasing again on the continental shelf. *Corystes* then proceeded north and then west at 57°15N 7°45W as far as 57°15N 16°45W encountering lower counts of stage 1 mackerel eggs compared to the previous transect though numbers did increase at the western extent of the transect. On 28 May *Corystes* headed east on the 58°15N transect and similarly found only very small numbers of mackerel stage 1 eggs in the deepwater stations with a moderate increase being observed over the continental slope. Having completed this transect as far as 58°15N 7°15W the vessel then headed diagonally up to a station NW of the Butt of Lewis and from there completed a transect east above the North Minch and then along the north coast of Scotland as far as 58°45N 3°45W. After heading north once more *Corystes* then turned west at 59°15N along the northern survey boundary where significant numbers of stage 1 mackerel eggs were observed from the stations at 6°45W and 7°15W. Further west into deeper water the numbers were once again predictably low. The final station on this transect being completed at 59°15N 14°15W on 31 May. *Corystes* then proceeded due south to begin sampling in period 5 which commenced on 31 May. With 3 survey days left *Corystes* completed the 58°15N transect for the second time albeit within the new sampling period, the net effect being to significantly reduce the survey area for the remaining period 5 survey departing later within that period. Significant numbers of stage 1 mackerel were observed on and around the shelf break as was expected but otherwise only very low numbers were reported again in the deepwater stations west of the shelf break. In addition 3 stations were also completed on the 57°15N transect on the continental shelf. Additionally the Norwegian survey vessel completed an additional transect at 59°15N within period 5, complementing the additional period 5 transect completed by *Corystes* at 58°15N. *Corystes* completed one additional station at 56°15N 7°45W followed by two sets of calibration tows during the evening of 2 June before heading for Greenock and were alongside by 1700 on the 3 June.

## Results

A total of 129 plankton stations (see Figure 1) and 16 calibration stations were completed with the Gulf VII. All samples were sorted for fish eggs during the survey with all the mackerel, horse mackerel and hake eggs also being successfully staged and identified at sea. In terms of geographical distribution, spawning activity followed a very similar pattern to that seen in period 3 (survey 0510S) albeit spawning levels were overall much lower than had been observed during that survey. The largest concentrations of early stage mackerel egg were concentrated around the 200m contour especially at 59°15N and again during the repeat period 5 transect at 58°15N although spawning at low levels was encountered over almost all of the survey area as far west as 16°45N. Horse mackerel were almost completely absent from the survey with only a couple of individual eggs being found in couple of stations. This was expected given the northerly latitude of the survey area. The distribution of stage 1 mackerel eggs (horse mackerel have not been included) as well as for all stages are displayed in figures 2 and 3. It must be emphasised that these results are provisional and refer to numbers sampled and are not standardised. 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.

A total of 5 fishing tows were undertaken using *Corystes* own pelagic midwater trawl to collect mackerel ovaries for fecundity and atresia assessment. Information on length, total

weight, liver weight and age was also collected from each sample. The fish were extremely dispersed throughout the survey and also very high in the water column which meant that the trawl achieved only very limited success. On 3 occasions hand lines were used to collect samples after the trawl was retrieved and this proved more successful. 36 adult mackerel were sampled for fecundity, these were caught at 3 locations on the Rockall Bank and a further location south of the Wyville Thompson Ridge at 59<sup>0</sup>15N. (See Figure 1 for trawl/handline locations)

Cast profile information on temperature and salinity were recorded at each Gulf VII station using a Seabird 19+ CTD. A sincere thank you must go to the master and all of the crew on the RV *Corystes* for all the help, advice and assistance provided during the survey which was invaluable and ultimately ensured the overall success of the survey.

Submitted:  
*Finlay Burns*  
4 August 2010

Approved:  
*I Gibb*  
30 August 2010

**Figure 1:** 0810H Gulf sampler positions and cruisetrack. The track displaying the additional sampling undertaken by the Norwegian vessel to cover the stations west of 16°45W in period 4 as well as the additional period 5 transect completed have also been added for reference.



**Figure 2:** 0810H – Total numbers of mackerel eggs recorded\station



**Figure 3:** 0810H – Total numbers of mackerel stage 1 eggs recorded

