

R1/3

Not to be cited without prior reference to the FRS Marine Laboratory, Aberdeen

MFV Unity

Cruise 0507H

## **REPORT**

4 – 24 June 2007

### **Personnel**

F Burns (In charge)

M Mathewson

K Summerbell

M Campbell

I Gibb (5 – 9 June)

J Mair (12 – 24 June)

### **Objectives:**

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

**Out –turn Days per Project:** RV0706 – 20 Days.

### **Narrative**

Unity sailed from Fraserburgh at 1200 on the 4 June and proceeded into the Buchan Deeps to test the samplers and calibrate the flowmeters. Unity then headed north towards the first plankton station at 59°45N, 4°45W arriving at approximately 0400 hours on the 5 June to commence the survey. Survey stations were then taken at 30'E/W intervals, on transects separated by one degree of latitude. Problems with the Seabird 19 CTD as well as previously unnoticed damage to one of the Gulf VII sampler nosecones meant an impromptu visit to Stornoway on the morning of the 7 June in order to pick up spares for the CTD and to effect repairs on the sampler nosecone. Surveying commenced once again on the afternoon of the 7 close to the west side of Lewis before heading south and then west using the same sample spacing as previously described. Unforeseen circumstances resulted in an FRS staff member being put ashore on Barra on the morning of the 9 June to fly home. Unity then headed south and then skirted west along the north coast of Ireland before crossing the shelf break and continuing west as far as 14°45W when Unity headed back east on the 54°45N transect. Replacement personnel were picked up on the morning of the 12 from Killybegs where the vessel also took on fresh water. Having left Killybegs Unity commenced sampling again at 1600 heading west over the shelf break at 54°45N before cutting back onto the shelf and then heading west once more along the transect at 54°15N. A half landing was made in Galway on the 15 June for 24 hours before the vessel continued surveying south using the same sample spacing as before until the southern survey boundary at 51°45N was reached. Once completed, Unity headed north interlacing with transects completed during the first run. Sampling effort on the return run was concentrated around areas of high mackerel and horse mackerel egg abundance, which were highlighted during the initial outward run. The last

sample was completed by 2030 at 59°45N, 4°45W and the vessel was alongside by 0830 hours on the 24 June. See fig.1 for the 0507H cruise track.

## Results

A total of 161 full plankton stations (see fig. 2) and 5 calibration stations were collected during the cruise with the Gulf VII sampler. Depth, temperature and salinity profiles for each deployment using the microcat CTD after the seabird CTD started to malfunction not long after the survey had begun. All samples were sorted for fish eggs during the survey. Full comprehensive staging of the extracted mackerel and horse mackerel eggs was not possible during this survey however, preliminary staging was carried out to comply with the adaptive survey design and to enable a western boundary to be delineated. Based on these preliminary figures, the results provided a fairly predictable snapshot of both species with the largest concentrations of early stage eggs being located south of 56°N, on and around the 200m although mackerel eggs were recorded in various numbers at most survey stations (see figs. 3 and 4). This contrasts markedly with the last survey in May where not only were numbers of mackerel eggs encountered higher but also the main egg concentrations were much further west off the shelf break. Overall, this time mackerel egg numbers and in particular early stage mackerel egg numbers were low compared with the earlier surveys in April and May. Very few horse mackerel eggs were recorded north of 54°, however, south of this latitude they were more numerous than mackerel with the largest concentration being found on the southernmost transect at 51°45N 10° 45W where over two thousand early stage horse mackerel were encountered. (see figs. 5 and 6) Their overall distribution during this survey was consistent with what has been encountered during previous surveys at this time although the final results for both species will need to wait for the results of the full staging, which will take place post survey. Egg production results from this survey will then be included in the international database for further analysis. Egg densities presented in this report are very preliminary and presented as an illustration of distribution pattern only. The pup net was used at 6 locations -shown on the map- to collect duplicate plankton samples to assist in the creation of genetic markers for both mackerel and horse mackerel.

Nine trawl samples for adult fish were taken during the survey using the PT160 trawl to collect samples for fecundity and atresia assessment. Information on length, sex, maturity, total weight, gutted weight, liver weight and age was also collected from each sample. The locations of the samples are shown on the attached map (see fig.1). These locations were based on the planned adult sampling protocol provided by ICES WGMEGS. A big thank you is due to Stephen Bellany and all the crew of the Unity whose cooperation and patience helped to ensure the success of the survey.

F Burns  
16 July 2007