Agri-Food and Biosciences Institute
Agriculture, Food and Environmental Science Division
Fisheries and Aquatic Ecosystems Branch

Cruise Report: CO 1508
Vessel: RV *Corystes*
Date: 14th – 22nd April 2008
Area: Irish Sea (north); ICES div. VIIa
Survey Type: Irish Sea Egg Production

Personnel:

S Beggs (SIC)	AFBI	14 – 22 April
P McCorriston	AFBI	14 – 22 April
I McCausland	AFBI	14 – 22 April
E Warren	AFBI	14 – 22 April
S McCully	CEFAS	14 – 22 April
J Pettigrew	CEFAS	14 – 22 April
G Padda	CEFAS	14 – 22 April
D Eaton	CEFAS	14 – 22 April
D Brown	CEFAS	14 – 22 April

Objectives:

i. To conduct a plankton survey using a Gulf VII high speed plankton sampler to determine the distribution and abundance of cod, haddock and plaice eggs.

ii. To remove fish eggs from fresh plankton samples at sea. To measure, stage and preserve these eggs in ethanol prior to species identification using a DNA technique on return to the laboratory.

iii. To collect chlorophyll and a salinity water sample at every third sampling station.

iv. To collect fine mesh PUP net samples at each of the sampling stations

Methods:
A Gulf VII High Speed Plankton sampler was deployed at a series of fixed sampling stations (Figure 1). The sampler was equipped with a 40cm aperture nose cone and 425µm mesh with 280µm mesh cod ends. A PUP sampler was also attached fitted with a General Oceanics standard speed mechanical flowmeter and fine mesh. The sampler was initially deployed using the PRONET system logging depth, volume filtered, temperature and salinity. Due to damage the fluorescence sensor was not available. Further problems with the sampler meant that salinity data was also unavailable. During the survey it became apparent the PRONET system could no longer be used and a General Oceanics standard speed mechanical flowmeter was fitted to the internal

nose cone. To allow safe deployment a SCANMAR depth sensor was attached to the frame and used to provide live depth data.

The sampler was towed at between 3-4 knots passing steadily through the water column in a 'V' shape, i.e. forming a double oblique tow, the lowest point being ~3 m above the sea bed. A minimum tow duration of 15 minutes was aimed for. Gadoid like eggs were removed from the fresh plankton samples at sea and measured, staged and preserved in ethanol. The remaining plankton sample was bottled and preserved in a 4% formaldehyde solution. A thermosalinograph with attached positional data was run continuously to log surface temperature and salinity. Salinity and chlorophyll samples were taken at every third station.

Cruise Narrative:

The vessel departed Belfast on Monday 14^{h} November at approx. 19:00 and headed directly to the first station off the north Down coast. Scientific personnel were allocated tasks according to previous practical experience in the methodology. It was decided to make use of the relatively good weather conditions and concentrate effort in the more exposed central sections. Stations in stratum C were completed during the first 24hrs and in comfortable conditions sampling continued into stratum B. Throughout the first few days of sampling an intermittent fault was detected in the electronic sampling equipment. This fault which caused breaks in data logging became progressively worse leading to the complete failure of data transmission from the sampler to deck unit. With worsening weather conditions and attempts at repair onboard failing to locate the fault the decision to return to Belfast for repairs was made on the evening of Wednesday 16th April.

Attempts to locate the fault with the sampling equipment were made during Thursday 17th April in Belfast and with repairs made the vessel sailed again at 20:00 on Thursday evening making directly for the north-eastern Irish Sea. On redeployment of the sampler unit it was evident the problem with data transmission had not been successfully identified. To continue the survey it was decided that an internal General Oceanics standard speed mechanical flowmeter and Scanmar depth sensor would be used to collect volume data and monitor the deployment of the sampler respectively.

Using these alternative technologies the vessel continued sampling in stratum D. In worsening conditions completion of sampling in stratum D (prime stations 82, 83) was impossible and the vessel continued sampling at the more sheltered stations in sector E. After returning to sample the remaining stations in stratum D and a single station in stratum B (prime station 37) sampling in the eastern Irish Sea was completed by Sunday 20th April.

The vessel steamed directly to the western Irish Sea, and following a northerly direction, sampled the remaining stations in stratum A. In the location of prime station 10 and an area of low tidal energy a number of calibration tows were taken at fixed speeds of 3, 4 and 5knots over 1nmile. These were conducted to provide reference calibration readings from the General Oceanics standard speed mechanical flowmeters. The final station was completed at 07:30 on Tuesday 22nd April and the R.V. Corystes returned directly to Belfast.

Work Completed:

A total of 104 stations were sampled giving complete coverage of strata A, C, D and E. The 3 most southern stations in stratum B (27, 28, 29) were dropped from the sampling plan, as was the case in previous surveys. Fish eggs in early development stages 1A and 1B and between 1.10 and 1.75mm diameter were removed and individually preserved in ethanol. A total of 110 eggs were obtained during this cruise, for subsequent species identification using the DNA technique. The

PRONET logging system was used with varying success at stations in strata C and B. Due to the problems with this system only temperature, depth and internal flow data were recorded from these tows. At the remaining stations subsurface (5m depth) temperature and salinity were provided by the thermosalinograph (Figures 2 and 3). A main plankton and PUP sample were preserved at each station and salinity and chlorophyll samples collected at every third station.

Acknowledgements:
The Master and Crew of *RV Corystes* are thanked for their assistance and cooperation in ensuring the successful completion of the survey. The scientific staff are commended for their thorough and efficient work throughout the survey and general good humour and teamwork which was crucial to the successful completion of the survey.

Signed:

Scientist in charge (SIC)……..date ……

Head, AESD Aquatic Systems…… date ……

Master (seen in draft)……

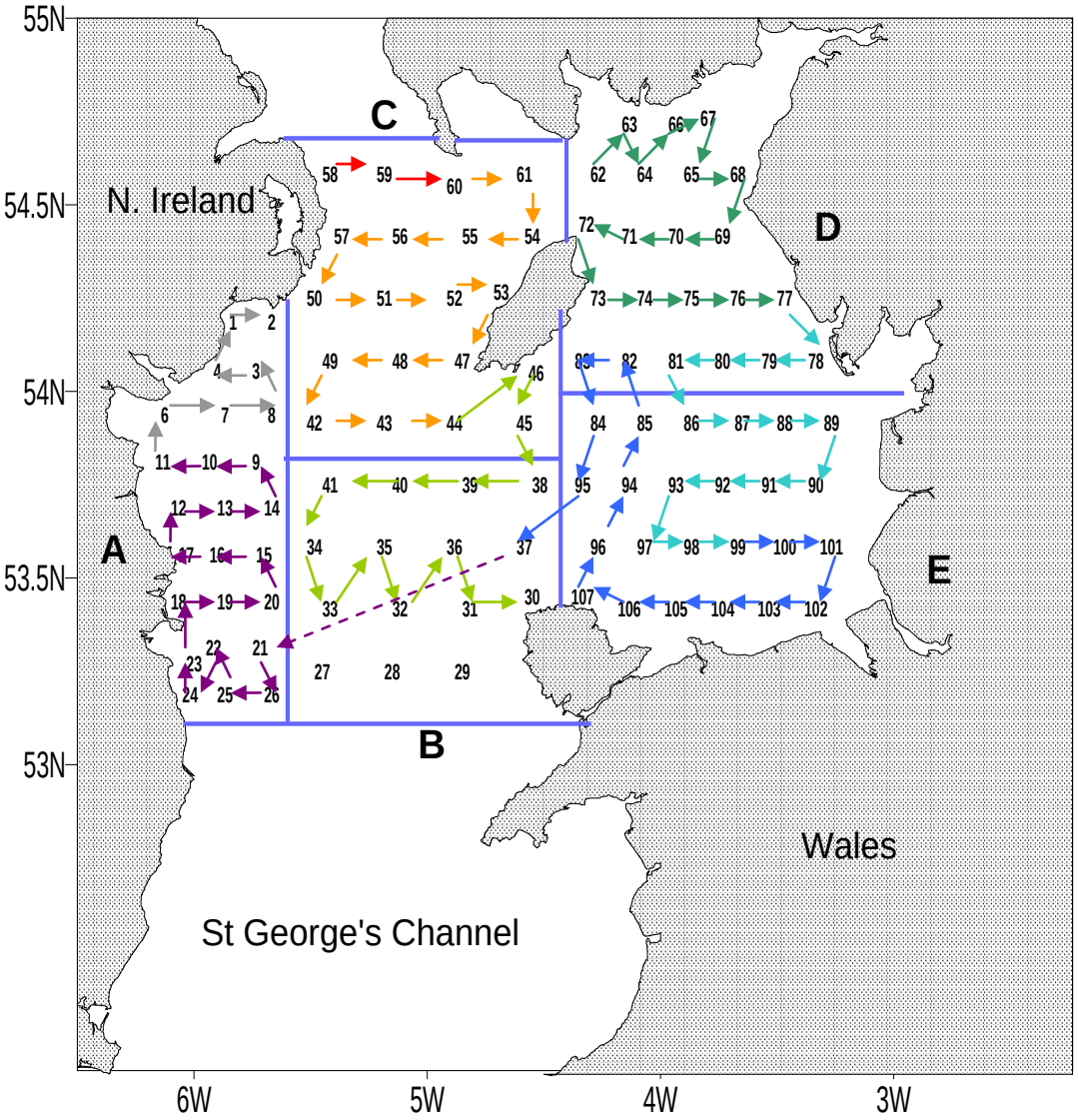

Figure 1. CO1508 Irish Sea egg production cruise survey track and sampling positions. Stations 27, 28 and 29 were not sampled. Changes in arrow colour represent days. First station sampled 58. Sampling break occurred after station 30 due to equipment failure, with sampling resuming at station 62.

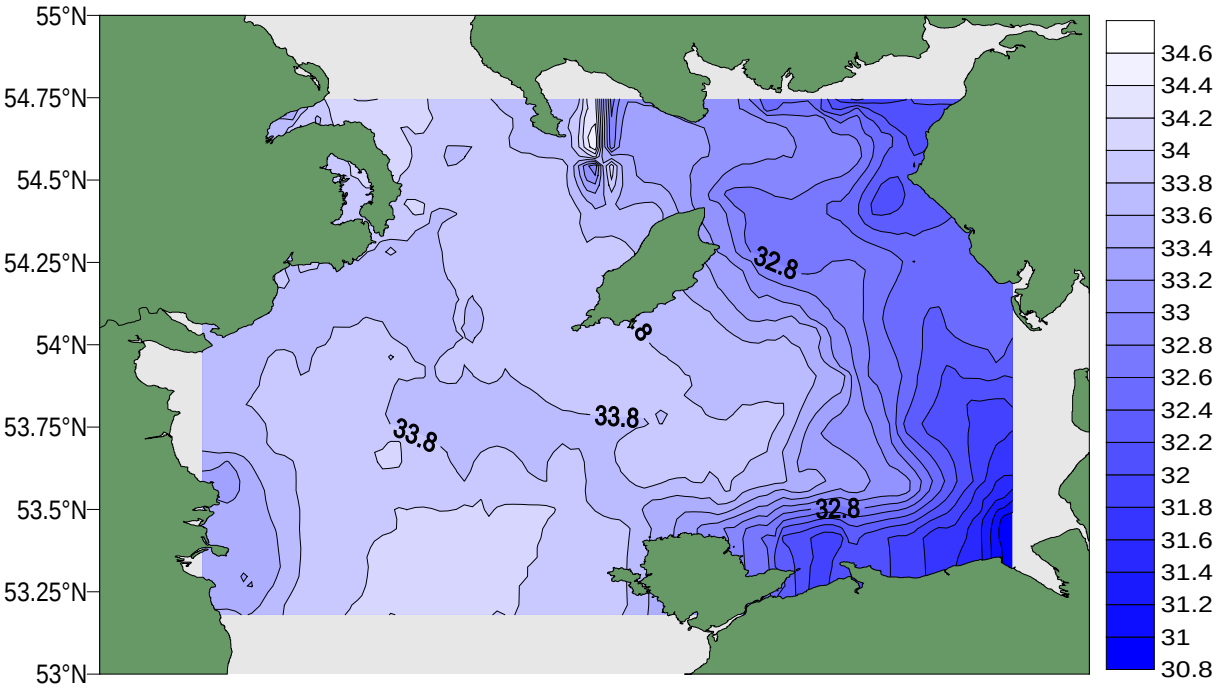

Figure 2. Salinity profile of Irish Sea during CO1508 reconstructed using kriging of subsurface (5m depth) thermosalinograph data.

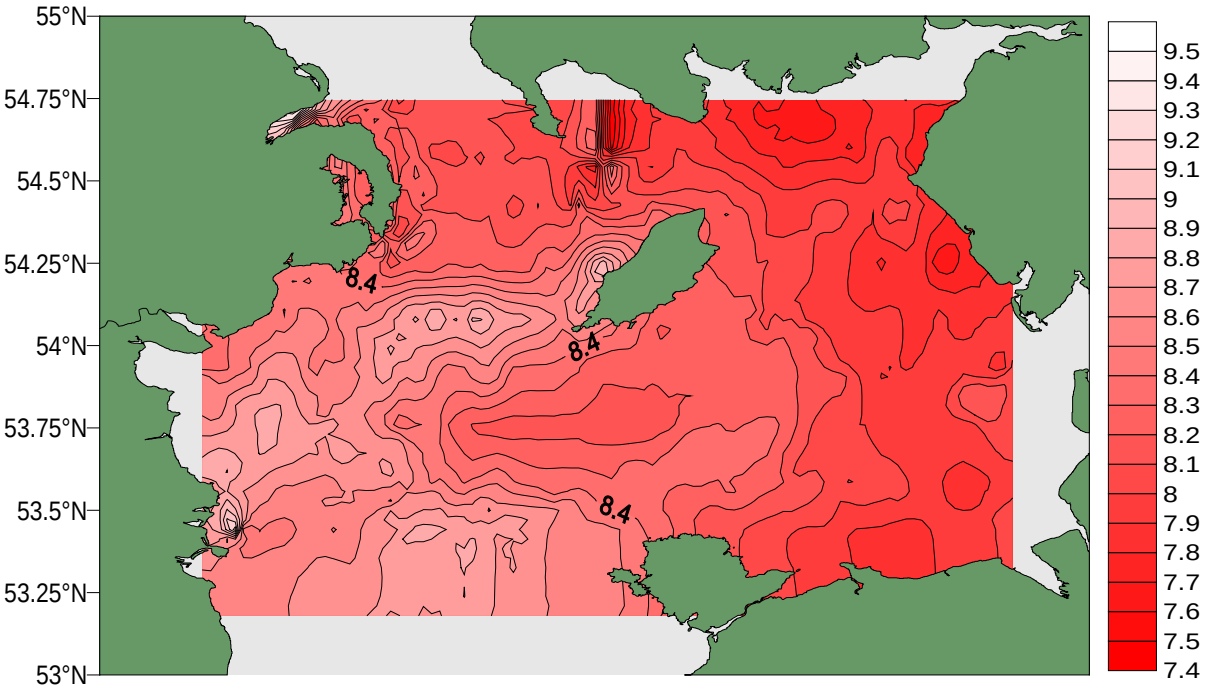

Figure 3. Temperature (°C) profile of Irish Sea during CO1508 reconstructed using kriging of subsurface (5m depth) thermosalinograph data.