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

Cruise Report: CO 1510
Vessel: RV *Corystes*
Date: 13th – 20th April 2010
Area: Irish Sea (north); ICES div. VIIa
Survey Type: Juvenile Gadoid Survey

Personnel:

S Beggs (SIC)	AFBI	13 – 20 April
P McCorriston	AFBI	13 – 20 April
G brady	AFBI	13 – 20 April
E O'Callaghan	AFBI	13 – 20 April
D Sivyer (2 SIC)	CEFAS	13 – 20 April
S Pearson	CEFAS	13 – 20 April
P Bouch	CEFAS	13 – 20 April
M Eade	CEFAS	13 – 20 April
A Shoebridge	Exeter Uni	13 – 20 April

Circulation	✓
DCEO & CEO	✓
Ship Managers	✓
Fisheries Division	✓
ANIFPO	✓
NIFPO	✓

Comments

Signed Head of Branch

Objectives:

i. To conduct a plankton survey using a Gulf VII high speed plankton sampler to determine the distribution and abundance of cod (*Gadus morhua*), haddock (*Melanogrammus aeglifinus*) and plaice (*Pleuronectes platessa*) eggs.

ii. To remove stage 1A & 1B gadoid like 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 (CEFAS).

iii. To collect a salinity water sample at every second sampling station.

iv. To collect plankton (270µm) and fine mesh (80µm) PUP net samples at each of the sampling stations.

v. To record sub-surface salinity and temperature data with the constant thermosalinograph.

vi. To record sub-surface environmental data using the valeport self-logging package mounted on the plankton sampler.

Methods:

A Gulf VII high speed plankton sampler was deployed at a series of fixed sampling stations (Figure 1). The Gulf VII plankton sampler, fitted with a 40cm aperture nosecone and 270µm/ 425µm mesh net was used during this survey, with an auxiliary 80µm mesh 'Pup' net attached. A Valeport CTD mounted on the sampler provided 'real time' flow-meter data as well as salinity and temperature profiles for each double oblique plankton haul. The sampler was towed at between 3-4 knots, the lowest point being ~3 m above the sea bed (where seabed topography safely allowed). A minimum tow duration of 15 minutes was required, meaning that at shallow stations multiple hauls were taken. Gadoid like eggs were removed from the fresh plankton samples at sea and measured, staged and preserved in ethanol. The remaining plankton sample was preserved in a 4% formaldehyde solution. A sub-surface thermosalinograph with attached positional information was run continuously to log temperature and salinity data. Salinity samples were taken from the lab seawater supply at every other station.

Cruise Narrative:

The RV Corystes departed Belfast on Tuesday 13th April shortly after the delayed arrival of sampling equipment from the previous survey onboard the RV Endeavour. The vessel headed directly to the first sampling station in the North Channel (Figure 2). All scientific personnel where present for the first number of stations so that the techniques and procedures involved could be shared between those present on previous surveys and those not. The RV Corystes then made way eastwards along the top row of stations towards stratum D (Figure 1) before continuing southwards. The vessel was briefly visited by a pod of approx. 40 dolphins, providing an entertaining sight for the crew and scientists alike.

Increasing problems associated with net clogging by algae as the vessel moved towards Liverpool Bay were alleviated with the employment of a coarser main mesh 425µm (40 m.p.i.) from station 37 onwards. In anticipation of similar conditions in the western Irish Sea the 425µm mesh was used for the remainder of the survey. It's use immediately reduced clogging of the net and

improved the visual quality of the samples, allowing gadoid like eggs to be more readily indentified.

Sampling continued southwards towards the North Wales coast in excellent weather conditions. The vessel then made her way westwards in stratum B until a fault with the engines forced a return to Belfast for immediate repair. Once the fault was rectified the vessel returned to the Irish Sea and recommenced sampling in stratum C shortly after 14:00 on the 18th April. Sampling in stratum C was completed by the following morning before the vessel returned to stratum B to finish the remaining stations there, before beginning sampling in stratum A. Good progress was made and the vessel finished the last station shortly after 02:00 on Tuesday 21st April. The vessel then returned to Belfast where the equipment was dismantled, stored and prepared for transport back to Lowestoft.

Work Completed:

All 106 stations were successfully sampled, giving complete coverage of strata A, B, C, D and E. The progress of the final survey was aided by the excellent weather conditions throughout. In total 403 gadoid like fish eggs in early development stages 1A & 1B, between 1.10 and 1.75mm diameter were removed and individually preserved in ethanol. A plankton sample and PUP sample were preserved at each station, (no PUP sample stn. 59). The valeport self logging system recorded environmental profile data, while the sub-surface constant thermosalinograph recorded temperature and salinity data along the cruise path. Salinity samples were collected at every second station (odd numbers).

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 from CEFAS and AFBI are commended for their thorough work, excellent teamwork and general enthusiasm which were key to the success of this joint survey.

Signed:

Steven Beggs
SIC

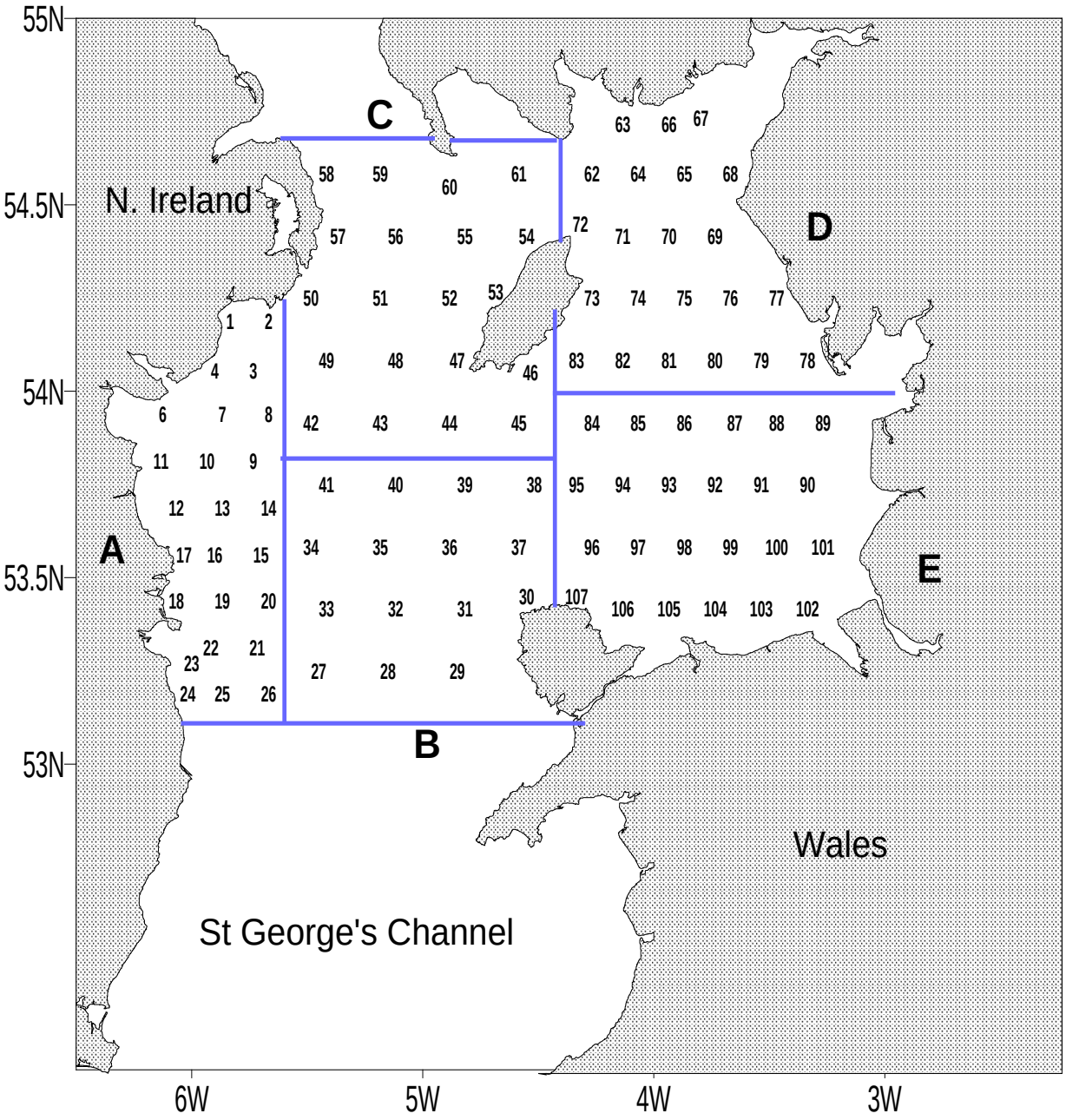

Figure 1. Proposed plankton sampling station positions for cruise CO1510. Numbers are prime station numbers. Station 5 (Dundalk Bay) has been removed as water too shallow.

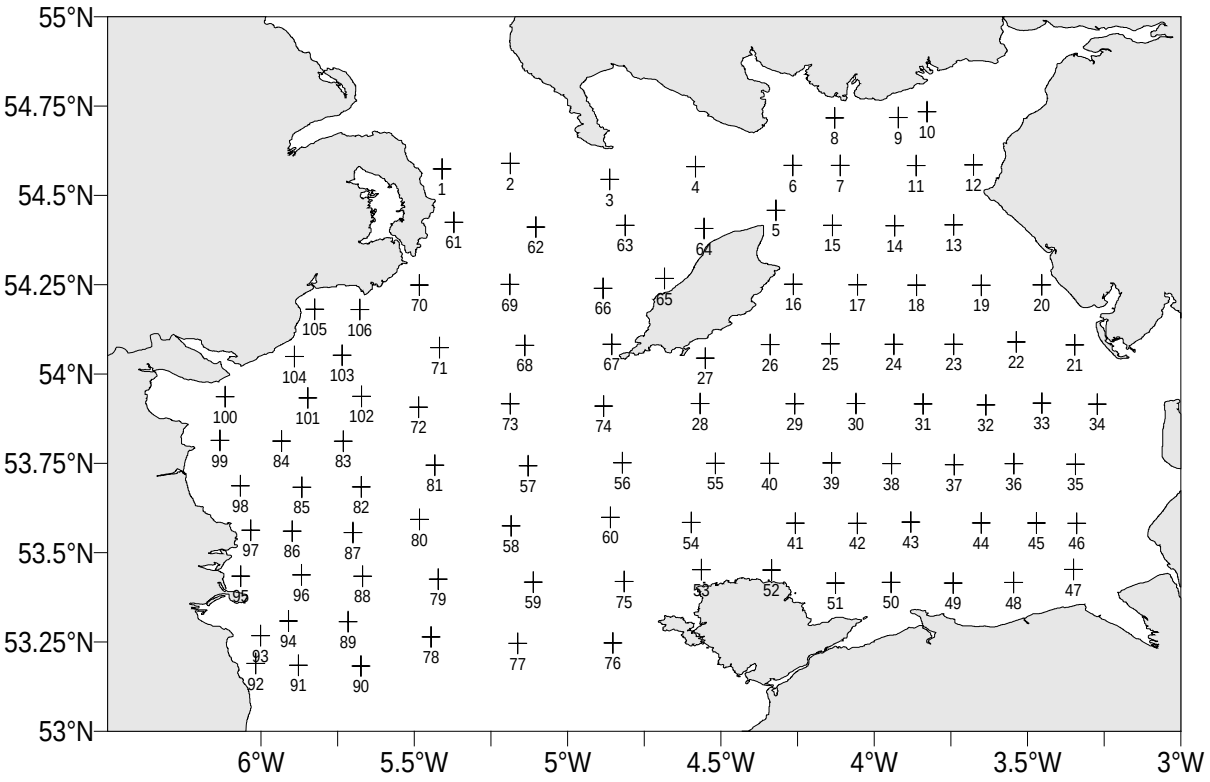

Figure 2. CO1510 sequential sampling positions.

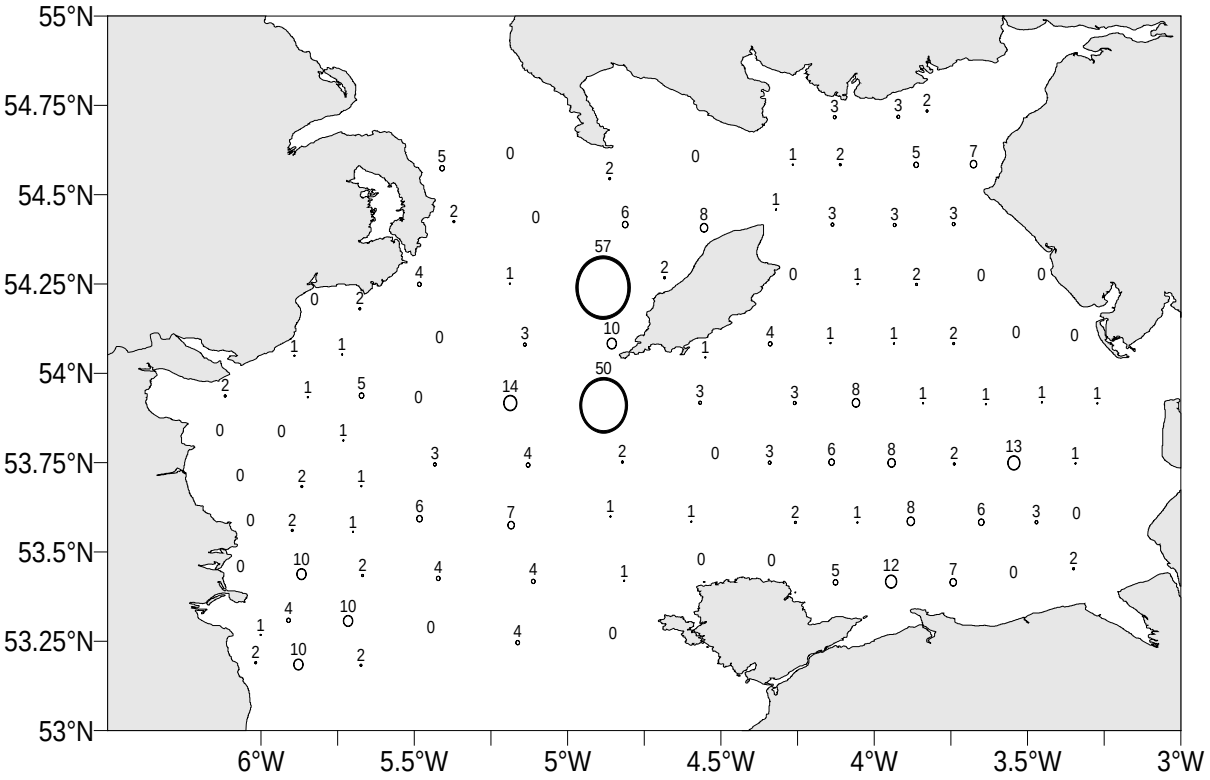

Figure 3. Distribution and abundance of gadoid like stage 1A and 1B eggs sorted, measured, staged and preserved for DNA analysis. Maximum abundance 57 eggs.