CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE LOWESTOFT LABORATORY, SUFFOLK, NR33 0HT

2008 RESEARCH VESSEL PROGRAMME

REPORT: RV CELTIC VOYAGER: CRUISE CV08/05.

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DURATION: 5 March - 16 March 2008

LOCATION: Irish Sea

AIMS:

1. To conduct a plankton survey using a 76cm Gulf VII plankton sampler to determine the distribution and abundance of cod (*Gadus morhua*), haddock (*Melanogrammus aeglifinus*) and plaice (*Pleuronectes platessa*) eggs.
2. To remove fish eggs from fresh plankton samples at sea. To measure, stage and preserve these eggs individually, in ethanol prior to species identification using a DNA technique on return to the laboratory.
3. To collect salinity samples at every three of the sampling stations.
4. To collect surface chlorophyll samples every three sampling stations.
5. To collect supplementary sub-surface environmental data using a self-logging package carried on the Gulf VII plankton samplers.
6. To collect fine mesh (80 micron) PUP net samples for subsequent zooplankton analysis on every Gulf VII deployment.
7. To continuously log sub-surface (3m) salinity, temperature and fluorometry data using the ships pumped seawater supply and onboard CTD.

NARRATIVE:

RV CELTIC VOYAGER sailed from Belfast at 19:30h 5 March 2008 and made good progress in already strong South westerly wind, reaching our first station 3.5 hours later. Plankton sampling with the Gulf VII (Aim 1) therefore began at 10:55h 5 March, at 54º 35'N, 05º 25'W (Fig 2, Stn 58). The plankton sampler was equipped with a self-logging environmental package (ESM2 logger) and a fine, 80μm mesh, 'Pup' sampler, which collected supplementary environmental data (aim 5) and biological samples (Aim 6) at each station. Samples of sub-surface seawater also started being taken from the ships clean

seawater supply (which was continuously logged, Aim 7) for subsequent chlorophyll 'a' (aim 4) and salinity (Aim 3) analysis back at the laboratory (contract AE004). Following each plankton station, fish eggs were removed from the fresh sample, then measured and staged. If the eggs were the required size and stage, they were individually preserved in ethanol for subsequent species identification using a DNA technique, back at the laboratory (Aim 2).
The sea was already rough and conditions were forecasted to worsen. After sampling four stations (stn 58, 59, 60, 55 (black arrows), Fig. 1), the Valeport linked to the Gulf VI sampler failed and sampling had to be suspended. Despite many attempts at finding and fixing the problem, the system could not be made to work in a reliable manner. A combination of gale force winds forecasts and gear failure led us to make the decision to return to Belfast where we docked at 01:25h 7 March.
At 9:00h 7 March, we organise to get hold of the Gulf VII and related equipment used by AFBINI during the previous cruise on Corystes, as this proved to be more reliable to use than the Valeport sytem (Aim 1). Due to bad weather we could not sail off again before 20:00h 8 March. The newly mounted Gulf VII plankton sampler, fitted with a 35cm aperture nosecone and 280µm mesh net proved to be more reliable to use, but due to very strong south westerly winds and weather with force 8-9 winds forecasted, we managed to work for a period of 20h only making our way south along the Irish coast in Area A (Fig. 1, red arrows) dockin in Dublin 6:00h 9 March at about 6pm.
As a results of strong wind force 8-10 over the Irish Sea, we had to remain inshore for three days and next sailed at 22:00h on 12 March. Things ran smoothly from then on and by 14:00h 13 March, sampling in Area A was completed (Fig. 1). We made our way to Area D, sampling stations in Area C along the way (Fig1. blue arrows). By 23:30h 14 March, sampling in Area D was completed, and we proceeded to Area E. We followed the route as in Fig. 1 (blue arrow), station 102 was discarded because it is very shallow and sampling there would have required timing with high tide; it was thought a better strategy to abandon station 102 so as to keep on working and sample as many stations as possible in the time remaining until the end of the cruise. By 21:00 15 March, we had almost completed Area D but strong east north east winds and rough sea prevented us finishing sampling in this area, and the last 4 stations had to be left unsampled (Fig. 1). The original plan was to dock in Howth, but strong easterly winds prevented us from doing so. Consequently we sailed back to Dublin and docked at 8:00h 16 March 2008.

RESULTS:

Aims 1 & 6:
A Gulf VII plankton sampler, fitted with a 40cm aperture nosecone and 270µm mesh net was used for the first four stations (Stn 58, 59, 60, 55 on Fig. 1) 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. However after the fourth station (stn 55, fig 1), The Valeport CTD failed to work properly and after a few failed attempts at finding and fixing the problem, it was decided to swap to another more reliable system: a Gulf VII plankton sampler, fitted with a 35cm aperture nosecone and 280µm mesh net. This later gear was used for the remaining of the survey. 77 plankton stations were completed, covering Area A and D entirely, Area E minus four stations (stn 92 to 95), and a few stations in Area C (figure 1), with both 270or280µm and 80µm samples being collected on each station.

Aim 2:

The 270or280μm net samples were examined whilst still fresh at sea. Fish eggs in early development stages and between 1.10 and 1.75mm diameter were removed and individually preserved in ethanol. A total of 991 eggs were obtained during this cruise, for subsequent species identification using a DNA technique.

Aims 3 and 4:

The sub-surface (3m) thermo-salinograph was run throughout this survey and was continuously logged to the shipboard computer. Unfortunately no positional data was available for logging directly to the environmental data file. 26 discrete sub-surface seawater samples were taken from this sub-surface supply at every three plankton station. These samples were collected for subsequent salinity and chlorophyll analysis back at the laboratory.

Aim 5

A new ESM2 environmental data logging package was mounted on the plankton sampler, providing an environmental data back-up to the Valeport CTD and enabling some cross-calibration of both systems. It also recorded a wide range of environmental parameters (temperature, salinity, fluorescence, oxygen, turbidity and light) together with some information on Gulf VII performance (pitch and roll). However due to malfunction of the Valeport CTD system (Aim 1) the system had to be abandoned when swapping to the equipment lended by AFBINI after the forth station.

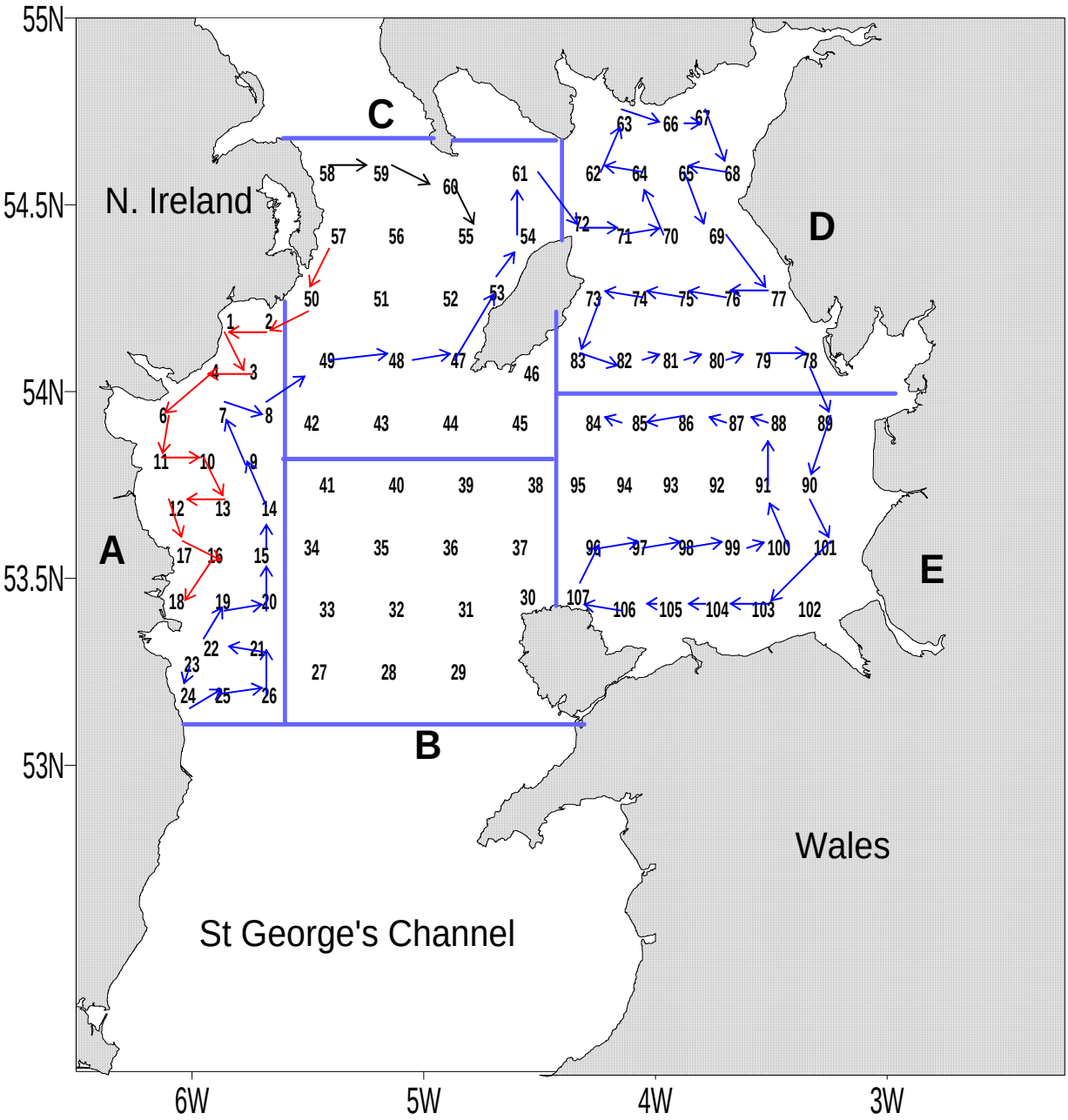

Figure 1. Irish Sea Egg Production Survey: CV Celtic Explorer 08/05 plankton stations, 05 march – 16 march 2008

S. Pitois
Scientist In Charge
18 March 2008

INITIALLED: Dr. M. Armstrong

DISTRIBUTION:
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