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

2008 RESEARCH VESSEL PROGRAMME

REPORT: RV CELTIC VOYAGER: CRUISE 0807.

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DURATION: 25 March – 3 April 2008 (All times GMT)

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 surface salinity samples every three sampling stations.
4. To collect surface chlorophyll samples every three sampling stations.
5. To collect fine mesh (80 micron) PUP net samples for subsequent zooplankton analysis on every Gulf VII deployment.
6. 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 Dublin at 06:00h, 25 March. The vessel was at the first plankton station just east of Dublin harbour by 07:10h. Good progress was made during the first day, sampling with the AFBINI Pronet CTD and software system, due to the continued failure of the Cefas Valeport system. Eight stations were completed in the south of stratum 'A' before the ship headed east into Liverpool Bay. Working in fine weather, 24 stations were completed in stratum 'E' by 05:15h, 27 March. Celtic Voyager then headed west in anticipation of gale force southerly winds forecast later the same day. Plankton sampling continued on the northern transect in stratum 'B' and into stratum 'A', where a further five stations were completed before the ship headed for shelter in Dublin, docking at 20:40h.

Celtic Voyager sailed from Dublin at 10:30h, 28 March as the gale force southerly winds became westerly and eased slightly. Good progress was made, working in sheltered coastal waters, heading north in stratum 'A' during the rest of the day. The final station in stratum 'A' was completed by 02:00h, 29 March. The vessel continued working north along the Irish coast, completing a further three stations in stratum 'C', before seeking shelter from a southerly gale in Belfast Lough, and eventually docking in Belfast at 15:30h, 29 March.

Celtic Voyager sailed from Belfast at 09:00h, 30 March and resumed sampling in stratum 'C' at midday. Good progress was made in moderating conditions, working south down the western coast of the Isle of Man. Largest concentrations of 'cod-sized' eggs were noted in stations around the southwest of the Isle of Man. Sampling continued the following morning, heading east into stratum 'D'. With strong to gale force southerly winds once again forecast, it was decided to head north during the afternoon and then return west to seek shelter in Douglas, Isle of Man where the ship docked at 18:30h.

After a full day in Douglas, Celtic Voyager sailed at 04:45h, 2 April and headed east towards Barrow-in-Furness on the Cumbrian coast. Sampling recommenced, in fine weather, at 08:15h on the most southerly transect in stratum 'D'. Excellent progress was made working north along the English west coast and into the Solway Firth. Sampling continued without interruption along the southern coast of Scotland until the final station was completed south of Luce Bay at 05:45h, 3 April. Celtic Voyager then set course for Belfast where the vessel docked at 12:00h the same day.

RESULTS:

Aims 1 & 5:

A Gulf VII plankton sampler was fitted with a 35cm aperture nosecone and 270μm mesh net for the first 7 stations. As clogging of this net (with phytoplankton) was making egg sorting extremely difficult it was decided to change to a 425μm mesh net which was used for the remainder of the survey. An auxiliary 80μm mesh 'Pup' net was also attached to the sampler frame. A PRONET CTD system (borrowed from AFBINI) mounted on the sampler, provided 'real time' flow-meter data as well as temperature profiles for each double oblique plankton haul. Unfortunately the conductivity sensor mal-functioned during the whole survey and no spare was available. Ninety-nine plankton stations were completed, covering the whole Irish Sea from 53º 00'N to 55º 00'N (Figure 1), with both 425μm and 80μm samples being collected on each station.

Aim 2:

The 270μm and 425μm net samples were examined whilst still fresh at sea. Fish eggs in early stages of development and between 1.1 and 1.75mm diameter were removed and individually preserved in ethanol. A total of 834 eggs were obtained during this cruise, for subsequent species identification using a DNA technique.

Aims 3, 4 and 6:

A sub-surface (3m) thermo-salinograph was run throughout this survey and was continuously logged to the shipboard computer. Thirty-four discrete sub-surface seawater samples were taken from this supply at every third plankton station. These samples were collected for subsequent salinity and chlorophyll analysis back at the laboratory.

Miscellaneous:
Whilst sorting fish eggs, M. Lilley (Swansea Univ.) assessed the extent of juvenile jellyfish abundance in most of the plankton samples obtained. Jellyfish numbers and sizes (maximum 20mm diameter) had increased significantly since two previous surveys in February. Three species (the Common Moon jellyfish, Lion's Mane and Barrel jellyfish) were found with peak abundances occurring in Irish coastal waters and across the NE Irish Sea between the Isle of Man and the Solway Firth. Juvenile jellyfish in Liverpool Bay also occurred in greater numbers and were more widespread than in the previous cruises.

Acknowledgements
Thanks are due to the captain, officers and crew of the RV Celtic Voyager. Their dedication, knowledge and skills contributed to the success of both this survey, and of the previous Cefas charter CV0805, despite the adverse weather conditions which disrupted work on numerous occasions.

Stephen Milligan
Scientist-in-charge
4 April 2008

INITIALLED:

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- Cumbria
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Figure 1. Irish Sea Egg Production Surveys:

Celtic Voyager 0807. 25 Mar - 3 Apr 2008

Plankton station positions