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

Cruise Report: CO 4507
Vessel: RV *Corystes*
Date: 6th – 15th November 2007
Area: Irish Sea (north); ICES div. VIIa
Survey Type: Herring Larval & Enhanced Irish Sea Herring Survey

Personnel:

S Beggs (SIC)	AFBI	6 – 15 November
P-J Schon	AFBI	12 – 15 November
P McCorriston	AFBI	6 – 10 November
J Peel	AFBI	6 – 15 November
I McCausland	AFBI	6 – 15 November
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E Warren	AFBI	6 – 10 November

Objectives:

i. To estimate the production of larvae herring in the Irish Sea as part of the time series of biomass indices used in the ICES assessment.

ii. To collect and fix herring larvae for future growth studies.

iii. To collect and fix plankton samples for recruitment studies.

iv. To estimate the distribution, abundance and population structure of herring as part of enhanced Irish Sea herring survey.

Methods:
A Gulf VII High Speed Plankton sampler was deployed at a series of fixed sampling stations shown (Fig.1). The sampler was towed at between 3-5 knots passing steadily through the water column in a 'V' shape, i.e. forming a double oblique tow, the lowest point being ~3 -2 m above the sea bed. In shallow water (<25m) a double, double oblique tow was taken to ensure an adequate sample. Onboard sensors provide temperature, salinity and fluorescence depth profiles. Plankton samples were sorted onboard, with the herring larvae counted and measured to the nearest 0.1mm before being transferred to alcohol for preservation. Numbers of zooplankton predators (i.e. ctenophores) and large crustacea were also recorded. The remaining plankton sample was bottled and preserved in a 4% formaldehyde solution.

The acoustic survey was carried out using the hull mounted 38 kHz transducer and EK-60 echo sounder. A survey speed of 10 knots was maintained were possible. Acoustic data was collected in 15-minute intervals and archived using Echoview software. Targets identified were sampled on an ad hoc basis using the standard midwater trawl with sprat brailer. Trawl catches were sorted to species and length frequencies recorded. A thermosalinograph was run continuously to log surface temperature and salinity.

Cruise Narrative:
The vessel departed Belfast on Tuesday 7th November and headed for the mouth of Belfast Lough where the sampler was deployed and tested successfully. The vessel then proceeded in an easterly direction to survey the eastern Irish Sea and Douglas Bank area before returning to Belfast via the western Irish Sea and County Down coastline. Weather during the survey was moderate to poor resulting in the suspension of sampling while strong winds ensued. As a result of the poor weather and time constraints, a number of stations were dropped, based on their historical importance to the production index. The vessel returned to Belfast on Saturday evening.

The vessel returned to sea for the second part of the survey at around midday on Monday 12th November, and headed directly to the north-eastern coast of the Isle of Man. Poor weather was again an issue during the acoustic survey leading to reduced vessel speeds and bad surface turbulence. Due to time constraints the survey continued despite these problems. The survey encompassing the Isle of Man was completed on Wednesday evening and the vessel docked in Belfast on the morning of Thursday 15th November.

Work Completed:
54 Gulf VII stations were successfully sampled with a total volume of 5.73 litres of water filtered. A total of 4286 herring larvae were caught and subsequently measured to the nearest 0.1mm. Temperature, salinity and chlorophyll *a* fluorescence depth profiles were recorded at each station using the PRONET system.

During the enhanced Irish Sea herring survey an acoustic survey of the eastern and western IOM was completed, with one successful midwater trawl processed.

Preliminary Results:
As in preceding years herring larvae were found to be most abundant to the east of the Isle of Man (Fig. 1). However, a significant catch of herring larvae (51.59 per m^2) was caught at one station in the area of the Mourne spawning ground. This is a welcome finding and is evidence of spawning in this area. The point estimate of production in the north eastern Irish Sea for 2007 was 1.26 x 10^{12}, which is below the series average (Fig. 2).

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)……

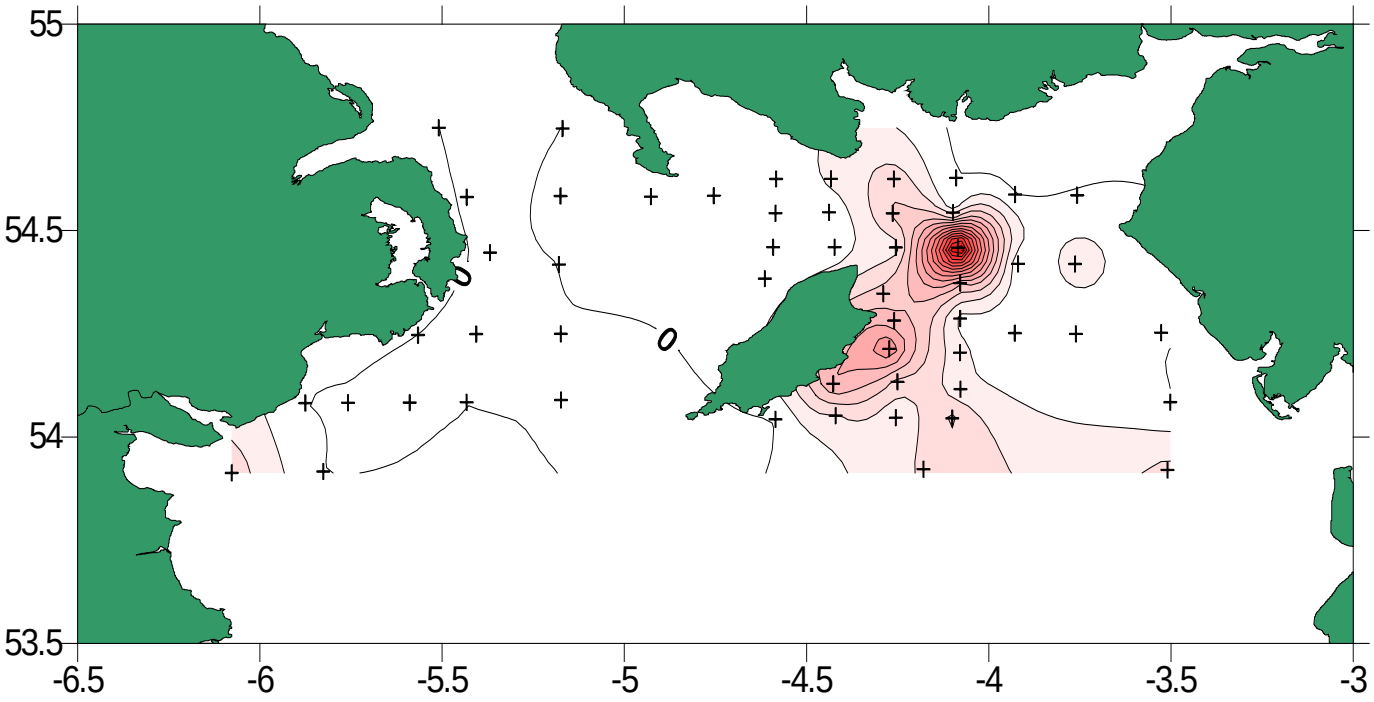

Figure 1. Spatial distribution of abundance of larval herring (no. m²) on CO4507. Areas of circles are proportional to larva abundance (maximum = 340.41 per m²).

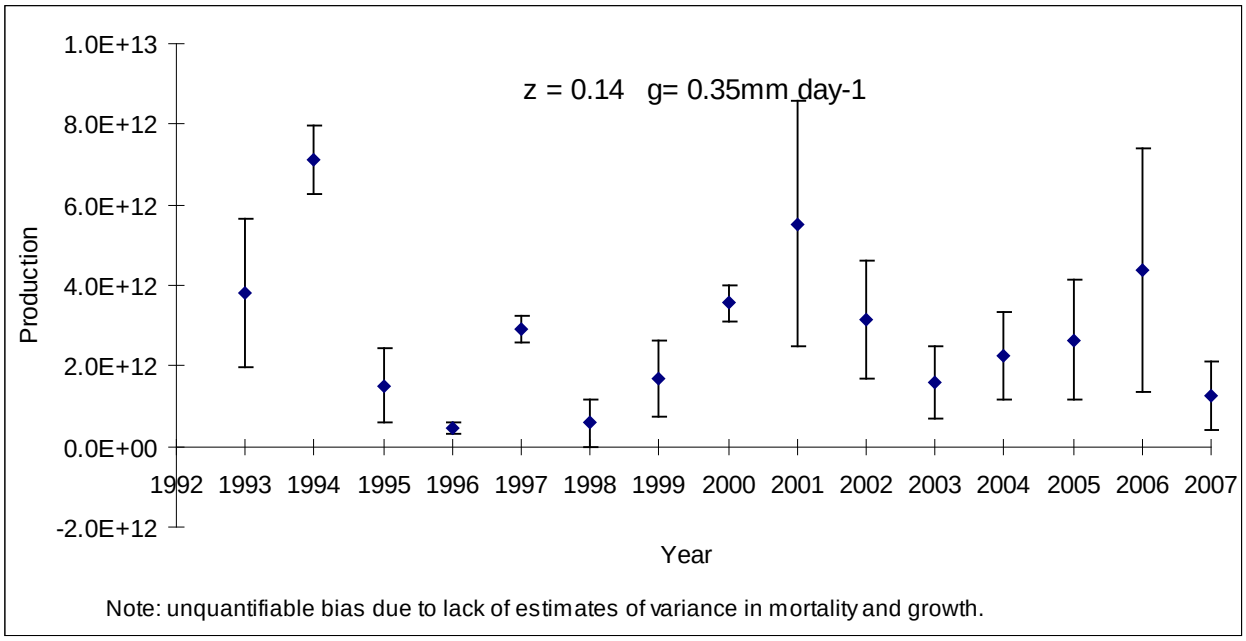

Figure 2. Estimates of larval herring production in the NE Irish Sea from 1993 to 2007. Error bars denote 1 standard error in the estimation of abundance.