Department of Agriculture and Rural Development (Northern Ireland)
Agriculture and Environmental Science Division

Cruise Report: CO 4505
Vessel: RV *Corystes*
Date: 6th – 15th November 2005
Area: Irish Sea (north); ICES div. VIIa
Survey Type: Irish Sea Larval Herring

Personnel:

S Beggs (SIC)	SSO	6 - 15	DARDNI
P McCorriston	TSO	6 - 15	DARDNI
J Peel	ASO	6 - 15	DARDNI
G Foster	SO	6 - 15	DARDNI
S Bloomfield	SO	13 - 15	DARDNI
R Gilmore	SO	6 - 10	DARDNI
K McAndrew	RA	6 - 15	Univ. Bangor

Objectives:

i. To estimate the production of larvae herring in the Irish Sea as part of the time series of biomass indices used by ICES for the assessment of Atlantic herring in VIIa (N).

ii. To collect and fix zooplankton samples for recruitment studies.

iii. To collect and fix herring larvae for otolith extraction and growth estimates.

Methods:
The GulfVII high speed plankton sampler was deployed at all stations with the exception of 35. The flight of the sampler followed a 'V' shape, i.e. forming a double oblique tow. The lowest point of the tow was approximately ~3m above the sea bed. In very shallow water a double, double oblique tow was taken, to ensure that enough water was sampled. Samples were sorted onboard, with the herring larvae being counted and measured to the nearest 0.1mm before being preserved in alcohol. Numbers of zooplankton predators (i.e. ctenophores) and large crustacea were also recorded. The remaining plankton sample was bottled and preserved in formaldehyde solution for future analysis.

Cruise Narrative:

Sunday 6th November
All crew and scientific staff were aboard by 21:10 and the vessel set coarse immediately for the first station to assess the conditions. Sea conditions proved sufficiently stable and the GulfVII was deployed.

Monday 7th November

A further two stations were sampled before conditions worsened and the decision was made to return to Belfast Lough due to forecasted force 10 gales. The vessel remained in Belfast Lough with the forecasted gales arriving in the late afternoon, whereupon force 10 gusts battered the Belfast Lough area.

Tuesday 8th November

The vessel left Belfast Lough as soon as sea conditions allowed and headed directly towards the eastern Irish Sea area. In much improved weather conditions 19 stations were sampled. Intermittent problems arose with the PRONET data retrieval system which were traced to a damaged cable and mended with running repairs.

Wednesday 9th November

A further 19 stations were sampled in the eastern Irish Sea before worsening sea conditions forced sampling to be abandoned. Due to an electrical problem with one of the main engines and forecasted gale force winds it was decided to return to Belfast. The decision was made to return to sea on Sunday evening to complete the remaining stations.

Sunday 13th November

All crew and scientific staff were aboard by 21:30 and the vessel set coarse for the first station. Weather conditions were good and the first sample was taken just before midnight.

Monday 14th November

The vessel continued to make good headway in continually changing conditions with all remaining 19 stations sampled by midnight. The vessel returned immediately to Belfast arriving at the docks in the early hours of Tuesday morning.

Work Completed:

During the cruise 62 stations were successfully sampled with a total volume of over 4.4^6 liters of water filtered with the GULFVII high speed plankton sampler. A total of 2667 herring larvae were caught and subsequently measured. Temperature, salinity and chlorophyll *a* fluorescence depth profiles were recorded at each station using the PRONET system.

Preliminary Results:

In common with previous years herring larvae were found to be most abundant to the east and north of the Isle of Man (Fig.1), and less abundant in the western Irish Sea.

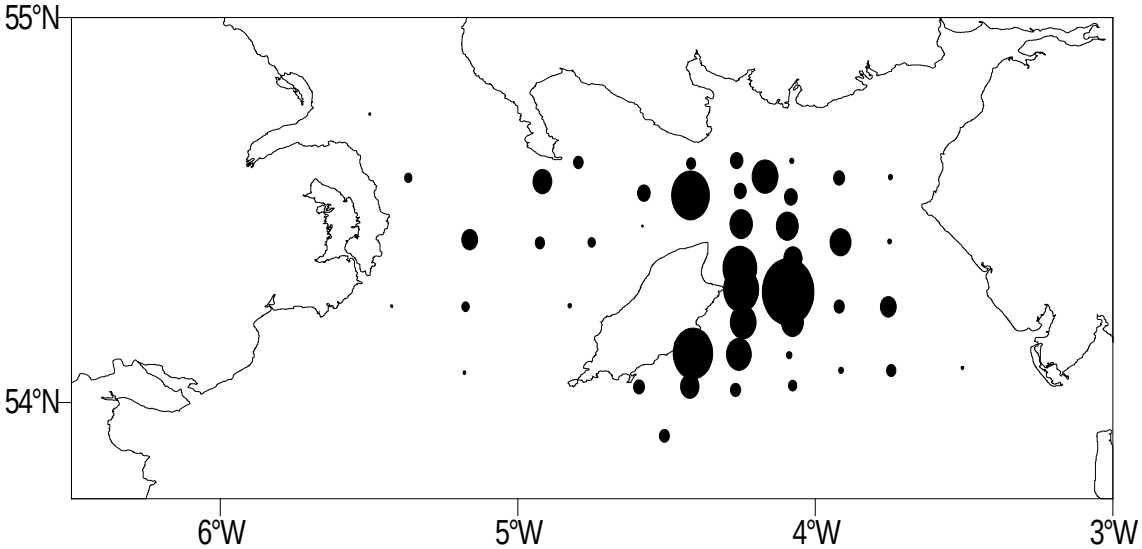

Figure 1. Stations sampled and the abundance of larval herring (per m²) on CO4505. Areas of circles are proportional to larva abundance (maximum = 355 per m²).

The point estimate of production in the north eastern Irish Sea for 2005 was 3.3 x 10^{12}, which is above the series average of 2.9 x 10^{12} larvae (Fig. 2).

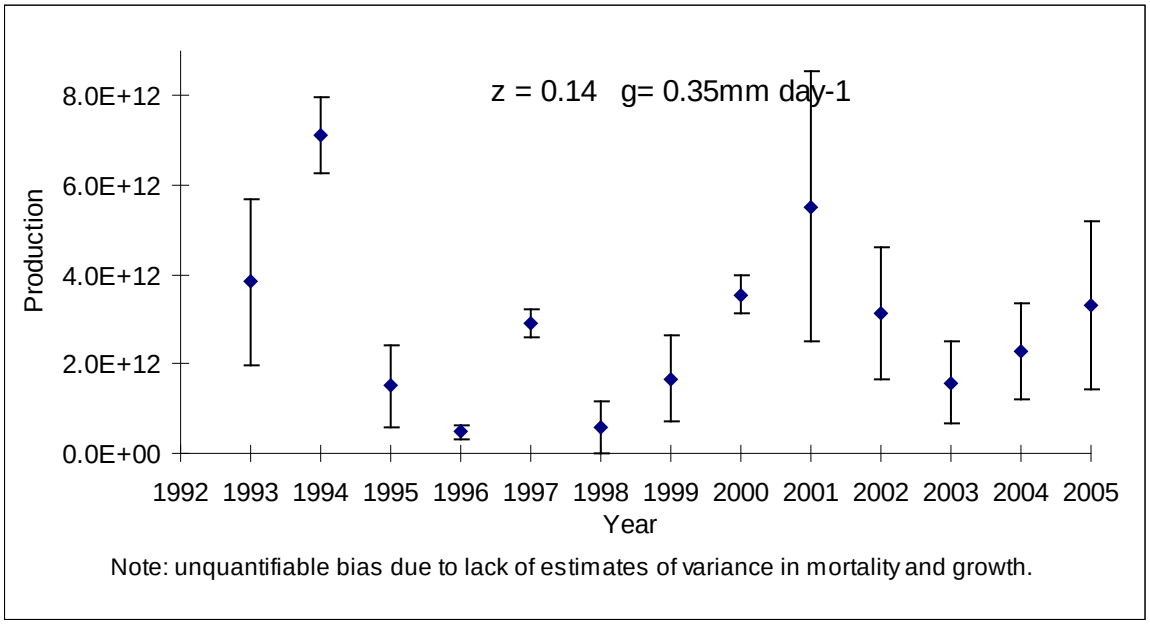

Figure 2. Estimates of larval herring production in the NE Irish Sea from 1993 to 2005. Error bars denote 1 standard error in the estimation of abundance.

Mean sea surface temperatures (°C) in the north eastern Irish Sea during 2005 were approximately 1°C higher than the series average of 11.9°C. The estimated date of mean spawning fell on the 9th October with 90% of spawning occurring during a 29 day period (Fig. 3). Spawning in 2005 was therefore approximately a week later than the series mean which lies on the 1st October.

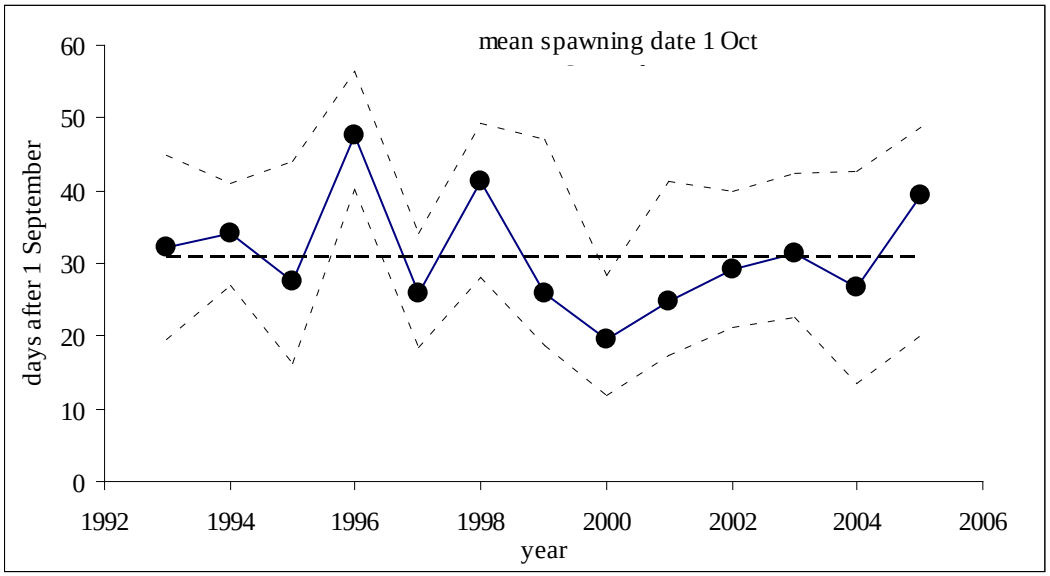

Figure 3. Mean spawning date of north eastern Irish Sea herring, estimated from larval herring abundances. Dotted lines denote the period over which 90% of the larvae caught during the survey were produced.

Acknowledgements:
The Officers and Crew of *RV Corystes* are thanked for their assistance and work in what at this time of year are often rough and unpleasant conditions. They are particularly praised for their assistance in dealing with running repairs to the equipment which may have caused further delay to the survey. The scientific staff are commended for their good humor, efficiency and strong teamwork which was crucial to the successful completion of the survey.

Scientist in Charge *Master (seen in draft)*

Date