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DEPARTMENT OF AGRICULTURE FOR N. IRELAND
AQUATIC SCIENCES RESEARCH DIVISION

CRUISE REPORT: CRUISE LF/30/93: Irish Sea Larval Herring Survey

VESSEL: R.V. Lough Foyle (DANI)

DATES: 14 November - 19 November 1993

AREA OF OPERATION: Irish Sea; ICES Division VIIa

TYPE OF SURVEY: Ichthyoplankton Survey using Gulf III

PERSONNEL:

M. Collas	HSO (S.I.C.)
J. Peel	ASO
C. Burns	ASO
J. McKinney	ASO
A. Geffen	Port Erin Marine Laboratory
S. Lawrence	Port Erin marine Laboratory

OBJECTIVES

1. To investigate the distribution and abundance of herring larvae in the Irish Sea and thus aid assessment of the herring spawning biomass.
2. To collect larvae for otolith microstructure analysis and validation experiments (work carried out by Dr A. Geffen).
3. To investigate the patchiness of catches at one station over a 24 hour period.
4. To collect individual larvae for shrinkage analysis
5. To collect samples of larvae for carbon and nitrogen analysis.
6. To further improve the ichthyoplankton survey methods on Lough Foyle.

METHODS

The high speed plankton sampler (Gulf III type) was deployed at stations every 10nm across the Irish Sea (Figure 1), with one station in every ninth of an ICES square. The sampler was lowered to 5m above the sea bed and was monitored using the Furuno sounder. On retrieval the sampler was rinsed down and the sample sorted. The herring larvae were measured, counted and preserved in either 4% buffered formaldehyde or 97% ethanol. The remaining plankton samples were preserved in 4% buffered formaldehyde. Whilst on the 24 hour station, 10 larvae per

sample were removed for preservation in glutaraldehyde, and others were frozen for carbon and nitrogen content analysis.

CRUISE-NARRATIVE

Sunday 14 November 1993

All scientific crew boarded by 17:50. The Lough Foyle left the dock at 18:10 and proceeded to station 1. All scientists received a comprehensive safety briefing. Stations 1 to 4 were sampled.

Monday 15 November 1993

Work proceeded, with stations 10, 11, 5, 6, 12, 17, 18, 26, 35, 44, 52, 59, 58, 51, 43, 34, 25, 16 being sampled. However at 22:30 the wind changed to a southerly force 7 and sampling halted. The ship dodged between stations 24 and 32, awaiting a lessening in the weather.

Tuesday 16 November 1993

The sea state was still too rough to continue the survey, so the ship headed to Douglas to pick up Dr Geffen and Dr Lawrence. It berthed at Victoria pier at 11:00 and sailed at 11:30. A safety talk and demonstration was given to the new scientists. The ship sailed to the west of the Isle of Man and stations 22, 15, 9, 8 and 14 were sampled. However the sea state worsened so sampling ceased at 20:00.

Wednesday 17 November 1993

Work began at 08:30 at station 16, however no other stations could be sampled due to the weather. Station 10 was chosen as the only viable station for the 24 hour study, it was protected by the Isle of Man from the wind and previous samples had shown a high concentration of larvae. Sampling began at 11:35 and 22 hauls were made throughout the following night and day.

Thursday 18 November 1993

After completing the 24 hour survey the Lough Foyle berthed at Victoria pier, Douglas, at 14:30 and Dr Geffen and Dr Lawrence disembarked. The A frame began to leak oil, so no further Gulf III samples could be taken. The ship sailed at 15:30 and proceeded to Dundalk Bay for further Bongo sampling. The weather had not eased, so at 20:30 the Lough Foyle headed for Belfast.

Friday 19 November 1993

The ship docked in Belfast harbour at 02:30

RESULTS

27 of the 59 stations were sampled successfully, the first 22 within the first 25 hours of sailing. Weather conditions, strong southerlies prevented further stations being sampled. The highest larval density was found at station 10, 3.77 per cubic metre (Figure 2). The RV Roagan will try to finish the Eastern side of the grid next week.

40 larvae were collected for carbon and nitrogen analysis, and over 220 larvae were preserved for micro-increment analysis during the 22 hour fixed station. The fixed station showed a high degree of variability in larval catches over the tidal cycle (Figure 3). Two modes of herring larvae were found throughout the cruise; newly hatched larvae 8-10mm in length and older larvae 15-17mm in length.

ACKNOWLEDGEMENTS

The work of the crew, the master and the officers is gratefully acknowledged. Their help and enthusiasm ensured that what could have been a difficult cruise still proved successful. The scientific crew, John, Joanne and Chris worked very well in conditions which were certainly not perfect. Their ardour and commitment must be commended. Having Audrey and Sara on board also proved a great success, their ideas and assistance were of great benefit to the cruise. Finally I would like to wish John Peel a very Happy Birthday and a marvellous year to come.

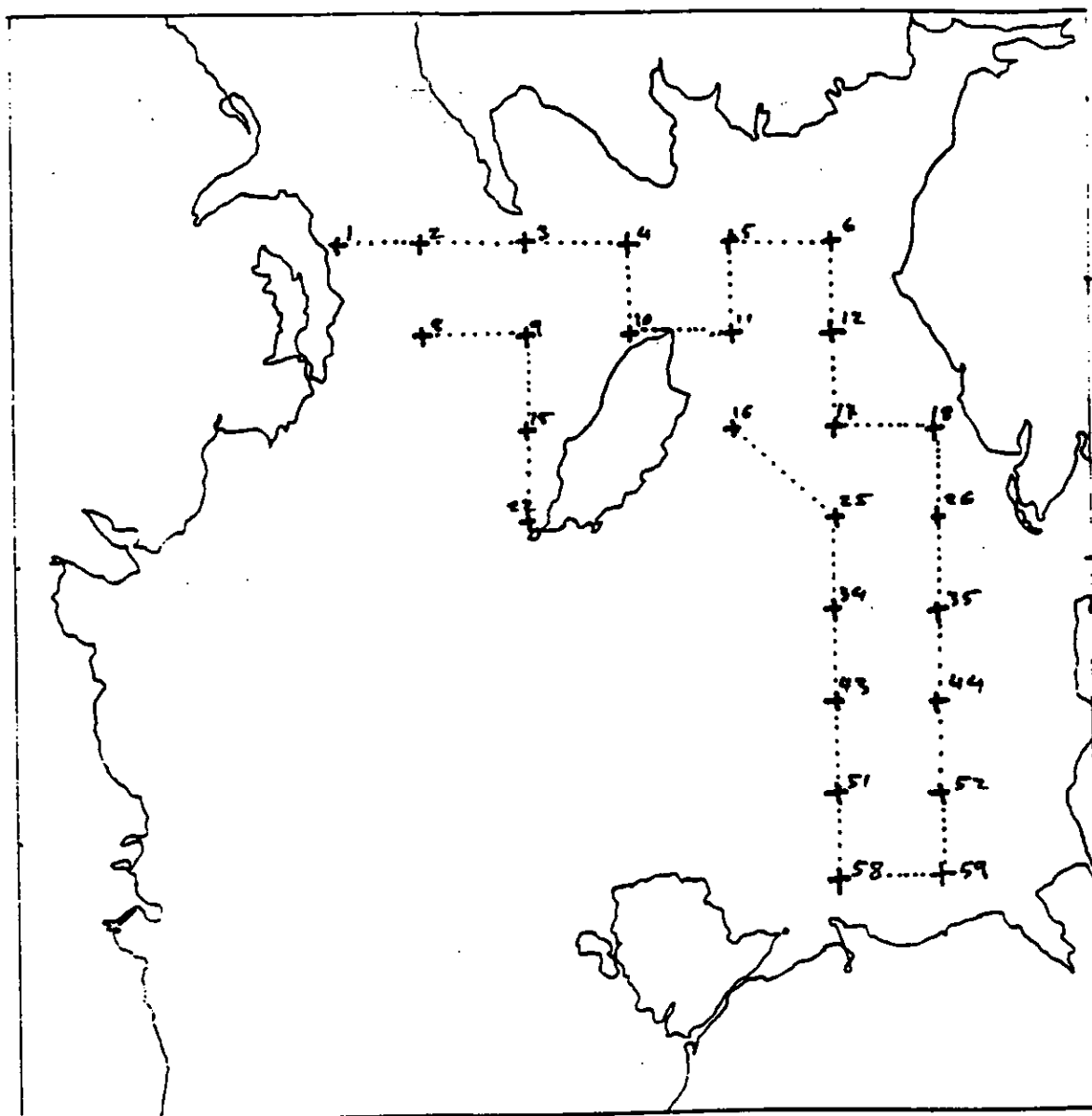
Signed:

Scientist in charge..... M. Gallos date.. 19 / 11 / 93

Ships master..... H. W. B. date.. 19 X 1 1993.

Division Head..... J. S. K. date.. 22 11 93

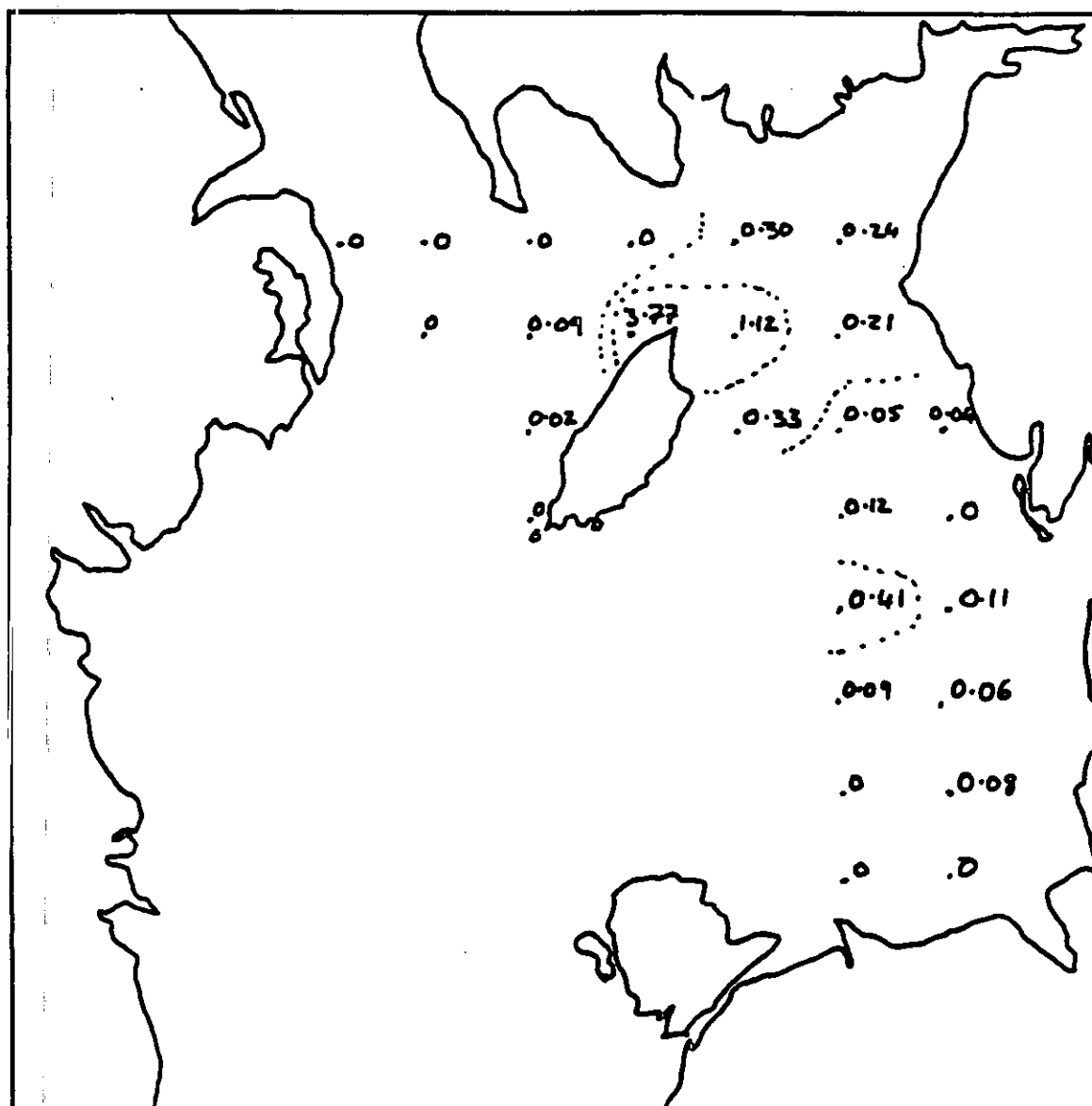
Figure 1 Stations sampled and route taken during LF3093, larval herring survey of the Irish Sea



NOT TO SCALE

The 24 hour survey took place at station 10

Figure 2 Nos of herring larvae per m3 caught at each station on the cruise LF3093



The mean of larvae per m3 at station 10 over the 24 hour period was 0.54

Contours at >1 per m3 and >0.1 per m3

Figure 3 Numbers of herring larvae per m³ caught at station 10 over the 24 hour period

