

Department of Agriculture for Northern Ireland  
Agriculture and Environmental Science Division

**Cruise Report:** LF4397, Douglas Bank Herring  
**Vessel:** RV *Lough Foyle*  
**Dates & area:** 20-23 October 1997 in the Irish Sea, ICES div VIIa

<b>Personnel:</b>	Mark Dickey-Collas	DANI	SIC/SSO
	Richard Briggs	DANI	PSO
	Willie McCurdy	DANI	SSO
	John Peel	DANI	ASO
	Chris Burns	DANI	SO
	Michael McAliskey	DANI	SO

**Objectives:**

1. To determine the distribution, biomass and population structure of herring on the Douglas Bank spawning ground.
2. To investigate the distribution, production, growth and mortality of herring larvae on the Douglas Bank spawning ground.

**Cruise narrative**

Monday 20 October 1997

The ship sailed from Belfast at 09:00. Poor weather prevented further progress to the sample site so the vessel anchored at Port Logan Bay (off the Mull of Galloway).

Tuesday 21 October 1997

The ship remained at anchor till the winds dropped. It sailed for the Douglas Bank at 13:00. The survey began on the most northern transect at 19:00 (figure 1) and continued through to 11:00 the following day.

Wednesday 22 October 1997

Two successful midwater trawls were made during the first phase of the acoustic survey (Table 1). A further trawl (at 07:30) was abandoned due to deployment

difficulties 12 plankton stations were sampled from 13 00 to 20 30 (Figure 2). A further acoustic survey of a small 10 nm<sup>2</sup> area south of Douglas was carried out between 21 00 and 24 00 (Figure 1).

Thursday 23 October 1997

A different style of acoustic survey, intensively surveying the largest patch of adult herring, was executed between 00 10 and 01 00 (Figure 1). One midwater trawl was made (Table 1). The remaining plankton stations were sampled between 07 00 and 12 00.

### Methods

A sphere-calibrated Simrad EK-500 acoustic system with 38 kHz split-beam transducer mounted in a towed body was employed to carry out echo integrations along transects in the Eastern Irish Sea. Instrument settings used during the survey are given in the cruise report of LF3697. Acoustic targets were identified by means of aimed tows of a Marlin 54m x 47m midwater trawl fitted with a 20-mm stretched-mesh liner and a Furuno netsonde. Species compositions and length frequencies were recorded from all trawl catches. Subsamples of up to 50 herring were taken from each catch for recording of age and other biological parameters.

Plankton samples were fixed in 4% buffered formaldehyde. When present, herring larvae were picked from the sample and fixed in 4% buffered formaldehyde for 3 hours and then transferred into 99.9% ethanol.

### Results

A 700m long aggregation of adult herring (Figure 3) was found on both nights of acoustic survey. It appeared to have moved 1nm south during the survey. A band of small juvenile sprat and thicker plankton was present south of Douglas, on the far eastern side of the acoustic grid.

Herring larvae dominated the plankton catches in the center of the grid and Douglas Bay. Larval abundance was less in the south of the region.

### Acknowledgments

The master, officers and crew of the RV *Lough Foyle* must be thanked for their help and hard work. The scientists operated well and showed a high degree of flexibility and thoroughness. Their team work, dedication and ardor must be commended.

Signed

SIC

*Mark Collins*

Date

*23/10/97*

Master:

*J.A. Hughes*

Date:

*23/10/97*

Section Head:

Date:

Table 1 Details of trawl catches taken during cruise LF4397.

Tow	Date	Shooting details				Total catch (kg)	Percentage composition by weight		
		Time	Lat	Long	depth		herring	sprat	anchovy
1	22 Oct	05:44	54 03.41	4 30.24	38	980	100.00	0.00	0.00
2	22 Oct	07:30	Abandoned						
3	22 Oct	11:00	53 59.28	4 28.45	45	332.2	0.05	99.90	0.05
4	23 Oct	01:20	54 02.96	4 29.68	37	1965.6	100.00	0.00	0.00

54.4

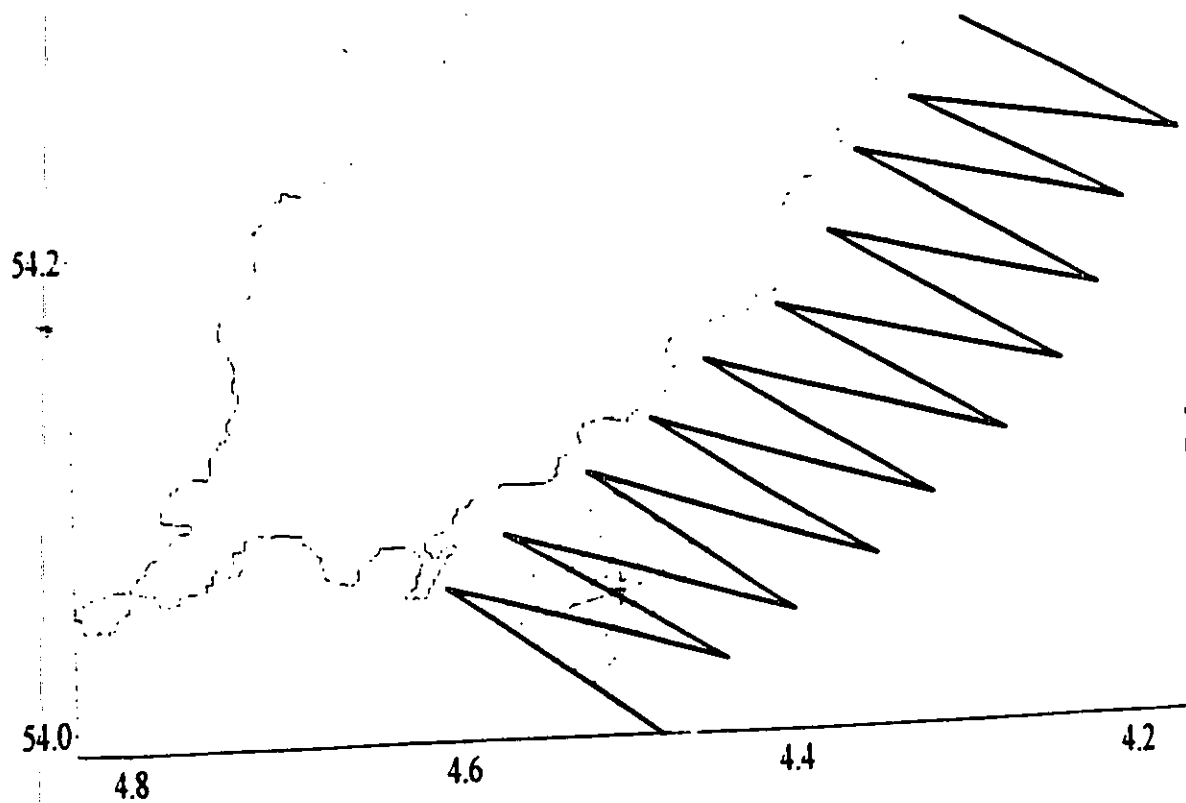
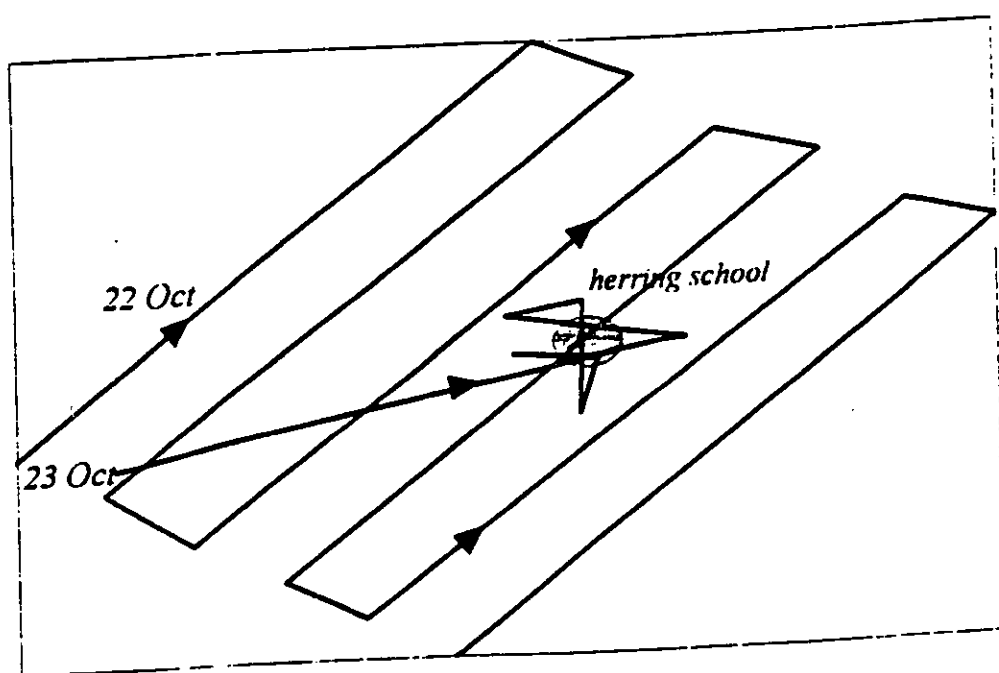


Figure 1 Grid for acoustic survey LF4397, plus small grid (22 October) and multiple passes over herring aggregation (23 October) expanded below.



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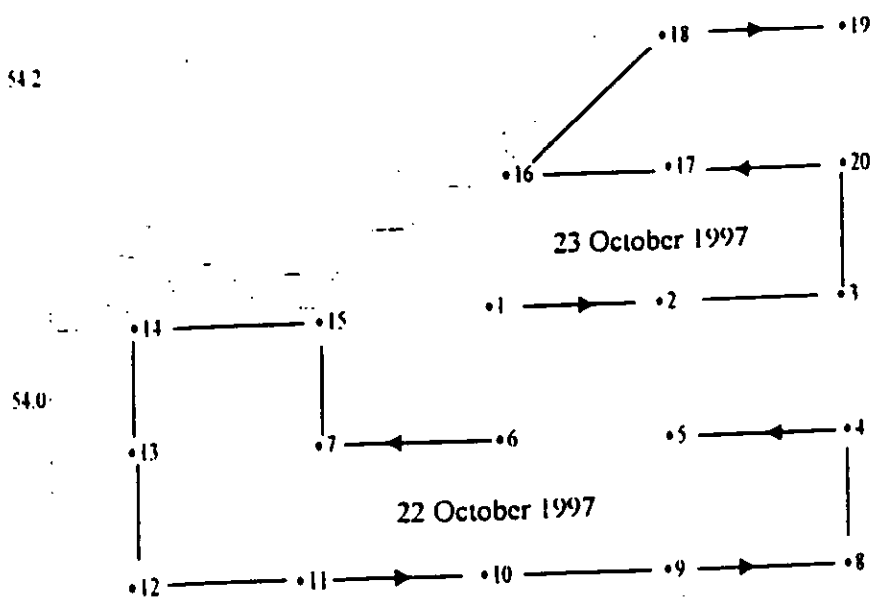


Figure 2  
Plankton stations sampi

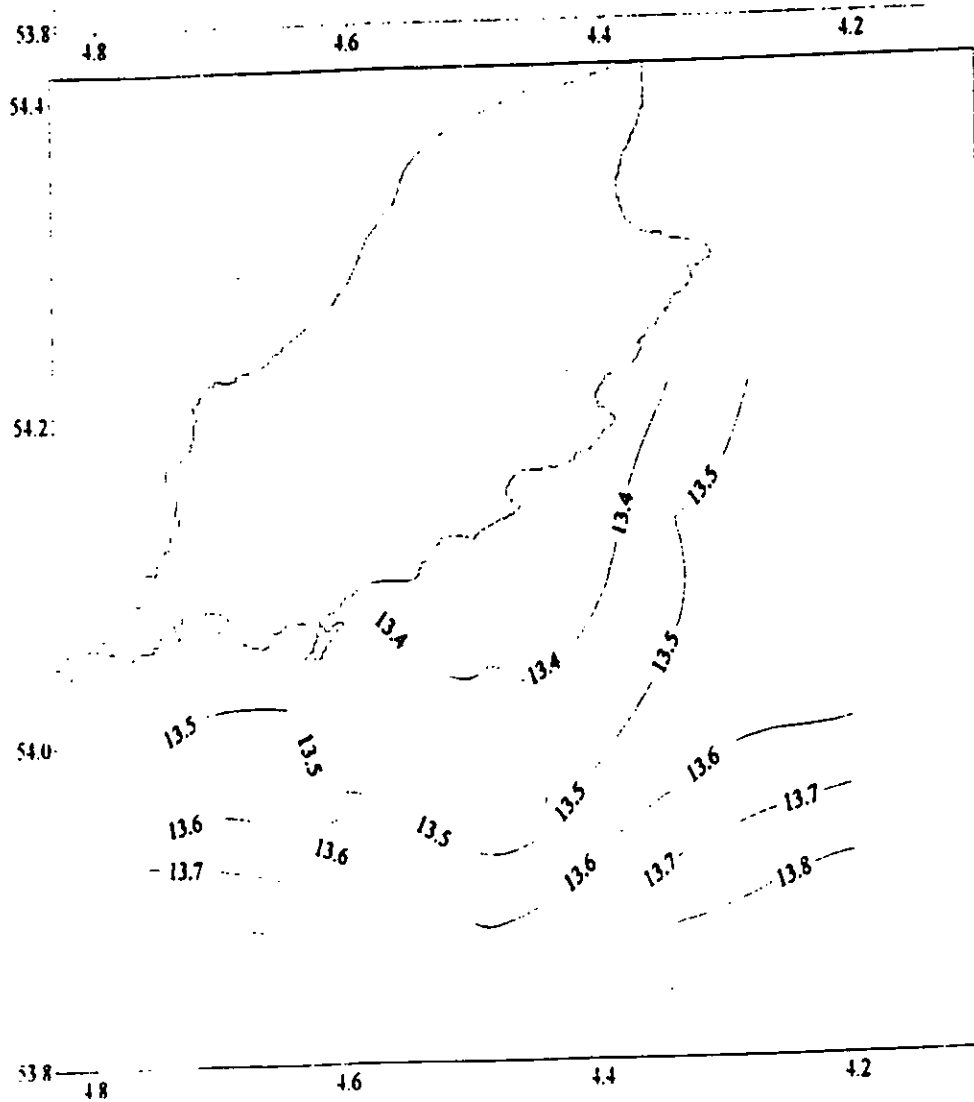
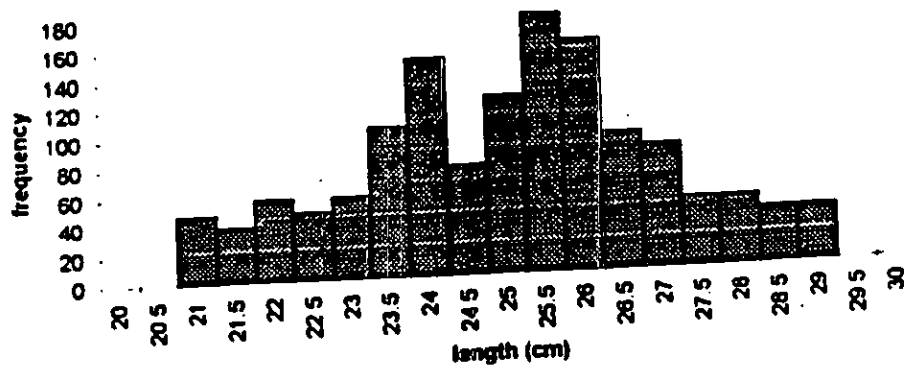


Figure 2b  
Mean water temperature  
(°C)

Figure 3

Length frequency of herring from trawl 1, LF4397



Length frequency of herring from trawl 4, LF4397

