

*This is rather the herring
larval survey & associated
work including G.D.A.V.
The series of growing
age of larvae & influence
The problem of the
Mourne-Esk is being
addressed by a new
initiative
Down to 4/2.*

Cruise Report: LF4597 Larval Herring Survey

Vessel: RV *Lough Foyle*

Dates & area: 2 - 6 November 1997 in the Irish Sea (north), ICES div VIIa

Personnel:	Mark Dickey-Collas	DANI	SIC/HSO
	Chris Burns	DANI	ASO
	John Peel	DANI	ASO
	Michael McAliskey	DANI	SO
	B Goodman	UU	stud
	G Greer	UU	stud

Objectives:

1. To survey the distribution and abundance of herring larval from the Manx and Mourne Irish Sea stocks, to produce a larval production estimate (index) and provide data on larval drift.
2. To investigate the abundance of euphausiids and other macro zooplankton in the Irish Sea.

Cruise narrative

Sunday 2 November 1997

All scientific crew were onboard by 21 00, and the ship sailed for station 59 at 22 00 (Figure 1). A full safety drill and demonstration were carried out.

Monday 3 November 1997

25 stations were successfully sampled

Tuesday 4 November 1997

In poor weather conditions 2 stations were sampled. The vessel sheltered off Peel

Wednesday 5 November 1997

The ship returned to Belfast in the early morning to let off a crew member and then set off for station 1. 11 stations were sampled in poor weather

Thursday 6 November 1997

In deteriorating weather 2 more samples were collected and the ship headed for Belfast at 02 30

Methods

At each station the high speed plankton sampler was deployed to 4m off the sea bed. The temperature and salinity of the water column was monitored with the Pronet system. The plankton samples were sorted and all the fish removed and identified. The herring larvae were measured to the nearest 0.1mm and then fixed in 99% ethanol.

The remaining macrozooplankton were sorted from the plankton samples, identified and weighed to the nearest 0.1g, and then returned to the main sample. The plankton samples were then fixed in 4% buffered formaldehyde and stored.

Results

Over 2.5 million litres of sea water were sampled during the cruise. As in previous years the Manx larvae had drifted north and east to the Scottish and English coasts (Figure 2). The estimated abundance of larvae in the north eastern Irish Sea was 1.22×10^{11} (standard error = 0.14×10^{11}). This resulted in a production estimate of 2.91×10^{12} .

Very few herring larvae were found in the western part of the survey area, giving an abundance of 1.23×10^9 (standard error = 0.85×10^9) and production of 1.2×10^{11} , approximately 4% of total Irish Sea production.

Discussion

Although not all stations were sampled, the important area north-east of the Isle of Man was comprehensively surveyed. This allows a reasonable estimate of the larval production to be made. The data from previous years have been reanalysed to account for the distributional and sampling variance (Figure 3). The small number of Mourne spawned larvae is consistent with the very low catches in 1994 and 1996 and with the nil catch in 1995. 11

The spawning date distributions of north east Irish Sea spawned herring were calculated for the production estimates of 1993 to 1997 (Table I). Whilst the timing of spawning varied between years (calculated at the date of 50% of larval production plus incubation period of eggs), the spawning period over which 70% of the production occurred was relatively stable at 2 weeks. Only the spawning in 1995 seemed to occur for longer, 28 days (Table I).

Acknowledgments

Poor weather dominated the cruise after the first day. Work on the *Lough Foyle* in rough seas is not pleasant, and the officers, crew and scientists onboard must be commended for their hard work and determination to see the job through.

Signed

SIC.

Mark Collier

Date: 22/1/98.

Master:

Date:

Section Head:

J. J. Henry

Date: 4.2.98

Table I Central spawning date for north east Irish Sea herring, and period over which 70% of spawning took place.

YEAR	central spawning date	length of spawning period (days)
1993	2 Oct	14
1994	4 Oct	12
1995	27 Sept	28
1996	17 Oct	13
1997	26 Sept	13

Figure 2 Abundance of herring larvae (no per m²), LF4597

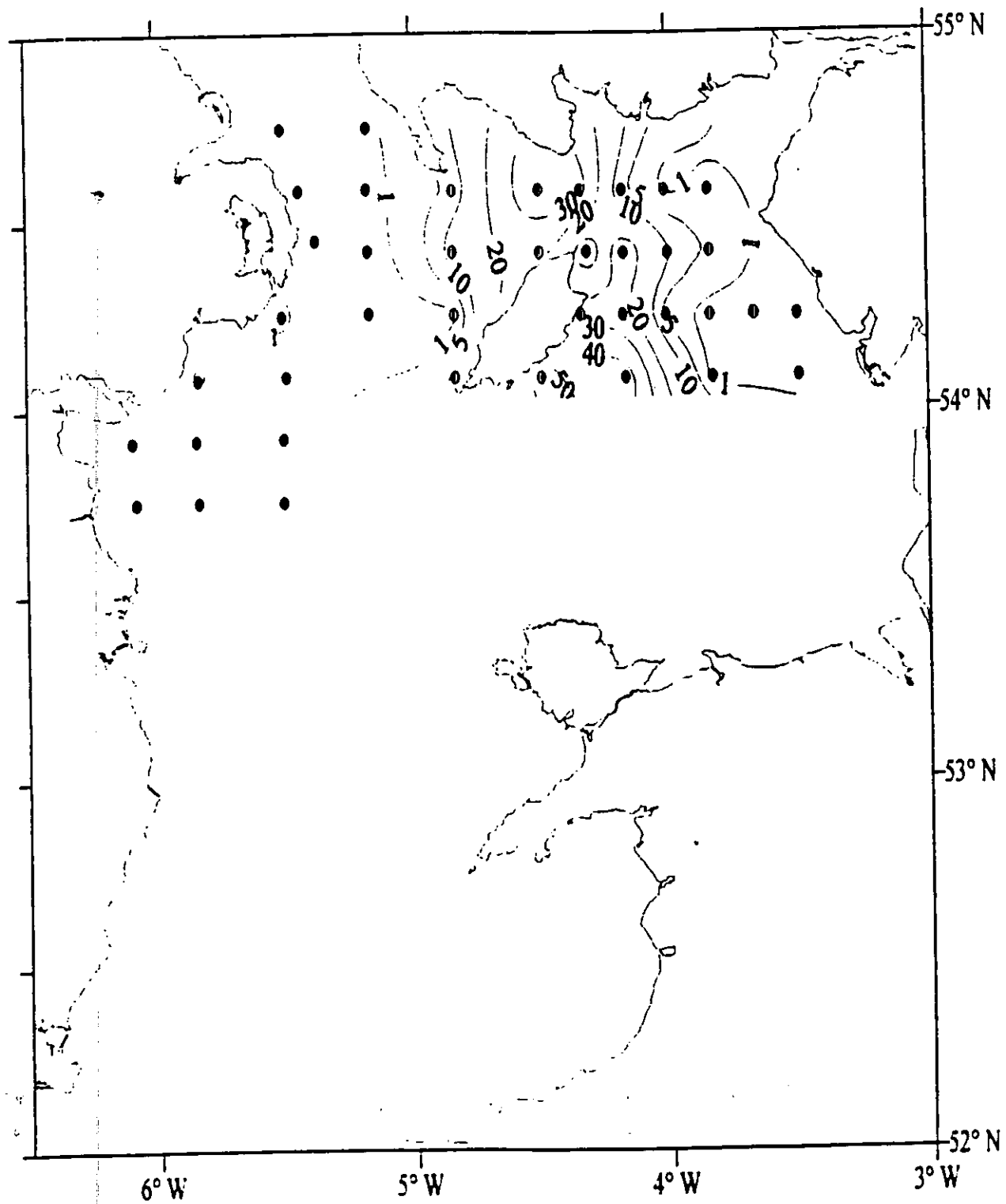


Figure 1 Stations sampled on LF4597 2-6 November 1997

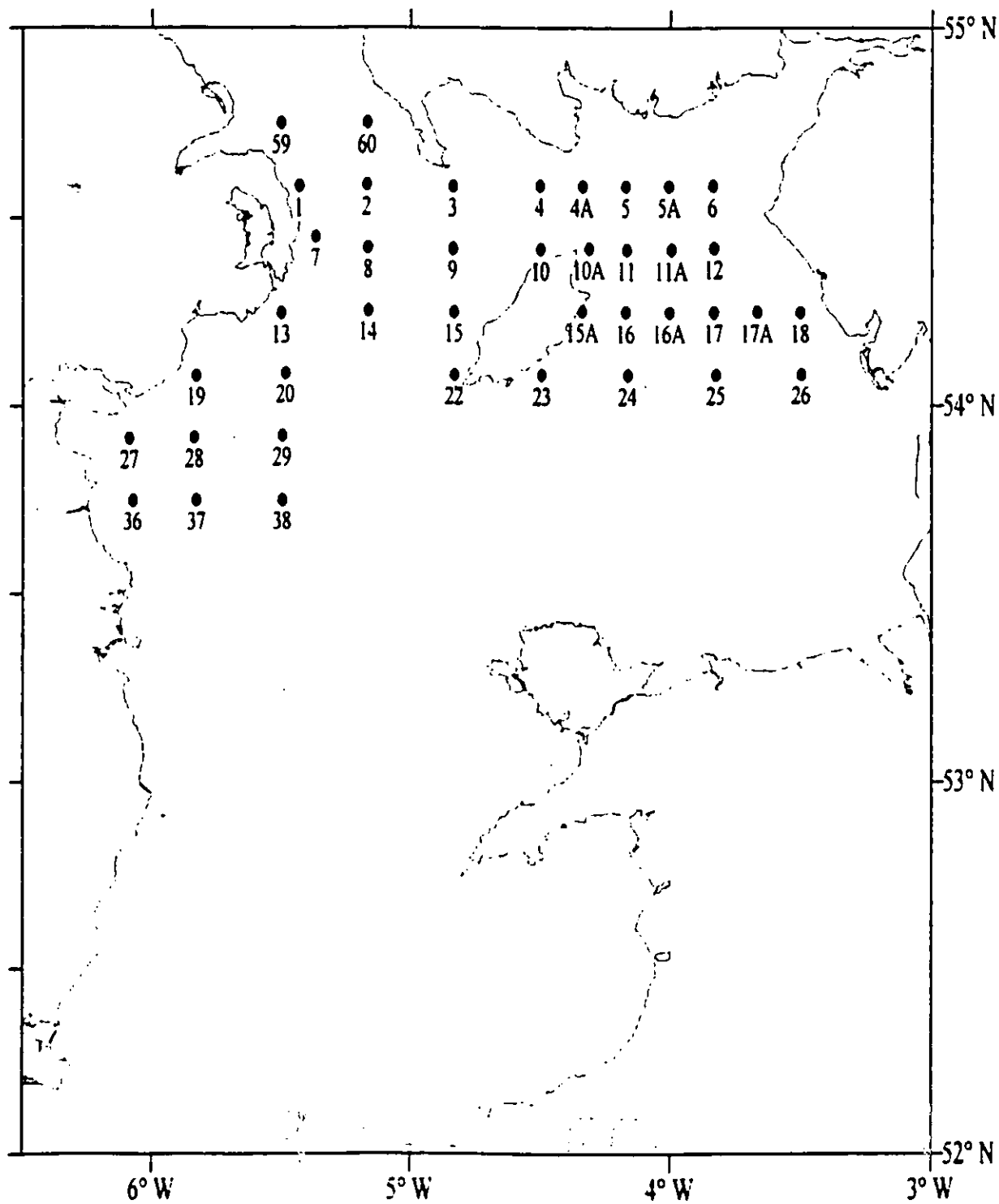
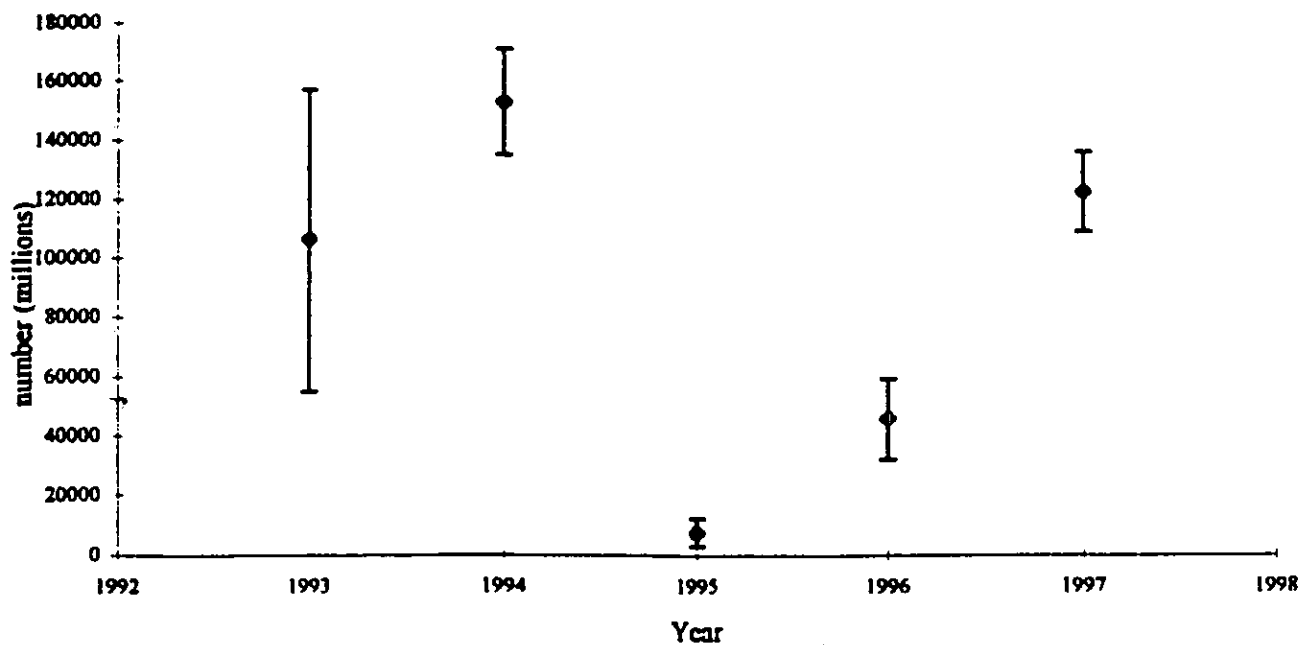
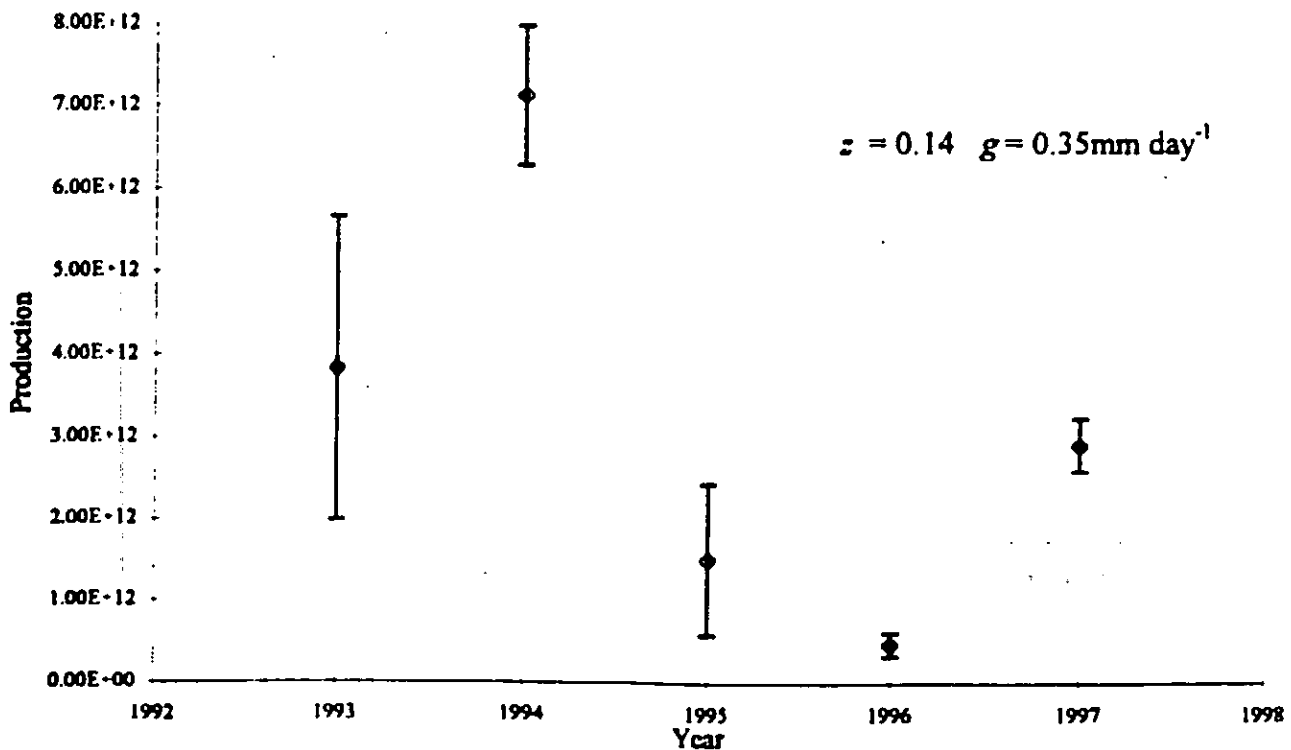


Figure 3

a) Larval herring abundance in the north east Irish Sea in November 1993-1997



b) Larval herring production in the north east Irish Sea from 1993 to 1997



Note: unquantifiable bias due to lack of estimates of variance in mortality and growth.