DEPARTMENT OF AGRICULTURE FOR NORTHERN IRELAND

Agricultural and Environmental Sciences Division

CRUISE REPORT LF2198

JUVENILE GADOID STUDY 18-22 MAY 1998

PERSONNEL

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OBJECTIVES

1. To investigate the abundance and geographic distribution of juvenile gadoids in the western Irish Sea, as part of the juvenile gadoids index (1994 to 1998).
2. To collect otoliths for new recruitment project to investigate whiting growth and hatch day distributions.
3. To collect samples for biochemical investigations of larval and juvenile fish condition.
4. To investigate the spatial and temporal changes in ctenophore and chaetognath abundance.
5. To investigate the degree of MIK sample variability of at fixed sites, complementing previous ring net and Gulf VII studies.
6. To obtain phytoplankton samples and physical data from the DANI mooring in the centre of the western Irish Sea.

METHODS

This cruise is the first of two cruises investigating the abundance of this year's gadoid production in the western Irish Sea. Two grids of stations were worked, one with the high speed plankton sampler (Gulf VII/Pronet for larvae) and one with the MIK net (for juveniles). Plankton samples were sorted onboard and preserved in buffered 4% formaldehyde. Fish larvae and juveniles were picked from the samples and fixed in 99% ethanol. Some fish were measured and frozen for biochemical analysis.

Other macrozooplankton were counted and weighed, and the height and width of 20 randomly selected ctenophores per station were measured.

The CTD was lowered at the DANI mooring and water samples were taken from 6, 12, 22, 23, 53, 64 and 93m depth. 250ml of seawater was filtered from each sample for chlorophyll analysis.

On completion of the two grids and CTD deployment, a 28 hour study took place with the MIK net at two fixed stations. The positions of the stations were chosen during the cruise; one at the site with the highest fish abundance (station 39, 1.8 per m^2) and one at the site with the highest level of thermal stratification (station 43, delta T= 3.6°C). The stations were 7.2 nm apart. The study enabled the degree of within station variation to be assessed. One sample was taken from each station every 4 hours (Table I).

Table I. Sampling programme at stations 39 and 43.

20 May 1998		21 May 1998	
Station 39	Station 43	Station 39	Station 43
12:00	14:00	00:00	02:00
16:00	18:00	04:00	06:00
20:00	22:00	08:00	10:00
		12:00	14:00

CRUISE NARRATIVE

Sunday 17 May 1998

Scientific staff boarded the vessel and attended a pre-cruise briefing which included a safety demonstration and discussion. The RV *Lough Foyle* sailed at 22h.00 and proceeded south to station 29 (Figure 1).

Monday 18 May 1998

One MIK net station was worked before daylight, problems were encountered with the attachment mechanism of the net to the frame. The ship proceeded to station 5 to begin the plankton sampler grid. 17 plankton stations were sampled. At 21:00 sampling of the MIK net samplings continued with the net lashed to the frame.

Tuesday 19 May 1998

Over night, eight MIK net stations were sampled (Figure 1). A large catch of jelly fish resulted in the loss of a cod end at one station, the deployment was repeated. The remaining eleven plankton stations were sampled and the CTD deployed at the mooring by 18:00. The ship steamed complete the MIK net grid over night.

Wednesday 20 May 1998

The two grids were completed by 03:00. The ship headed for station 39 and variability study began at 12:00.

Thursday 21 May 1998

The study was complete by 14:00 and the vessel headed back to Belfast.

Friday 22 May 1998

The vessel docked at Belfast and was unloaded.

RESULTS

58 deployments were made during the cruise (1 CTD, 28 Gulf VII & 29 MIK net) resulting in 75 million litres of seawater being filtered. The distribution of the plankton conformed to the findings of previous cruises (Figure 2). However the level of within station variation in fish abundance was high with a CV of approximately 80% for the MIK net samples and 40% for the Gulf VII samples (results from cruise LF1898). Time of sampling appeared not to effect the level of catches of dominant species (Figure 3). This suggests that the use of simple distributional maps needs further assessment in terms of the spatial and within station variation and may be inappropriate for the description of plankton abundances.

ACKNOWLEDGMENTS

The Master, officers and crew of *MRV Lough Foyle* are thanked for their enthusiastic co-operation throughout this very successful cruise. The scientific staff are to be congratulated for their example of effective team work in completing all objectives effectively and efficiently.

Mark Collas 26/5/98

M Dickey-Collas
(Scientist in Charge)

A Niblock
(Master)

S. D. Heaney

SI Heaney
(Aquatics Systems)

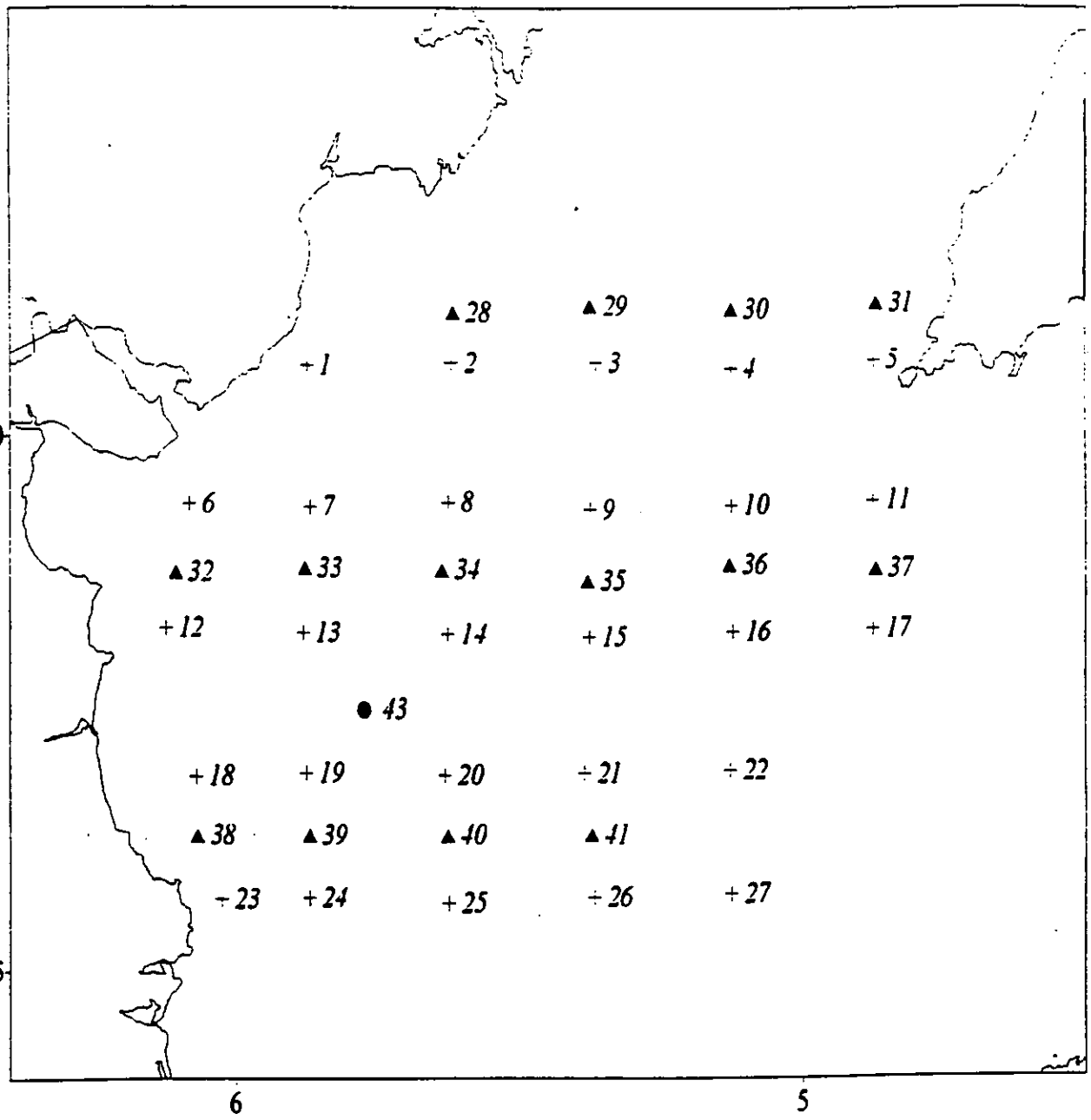
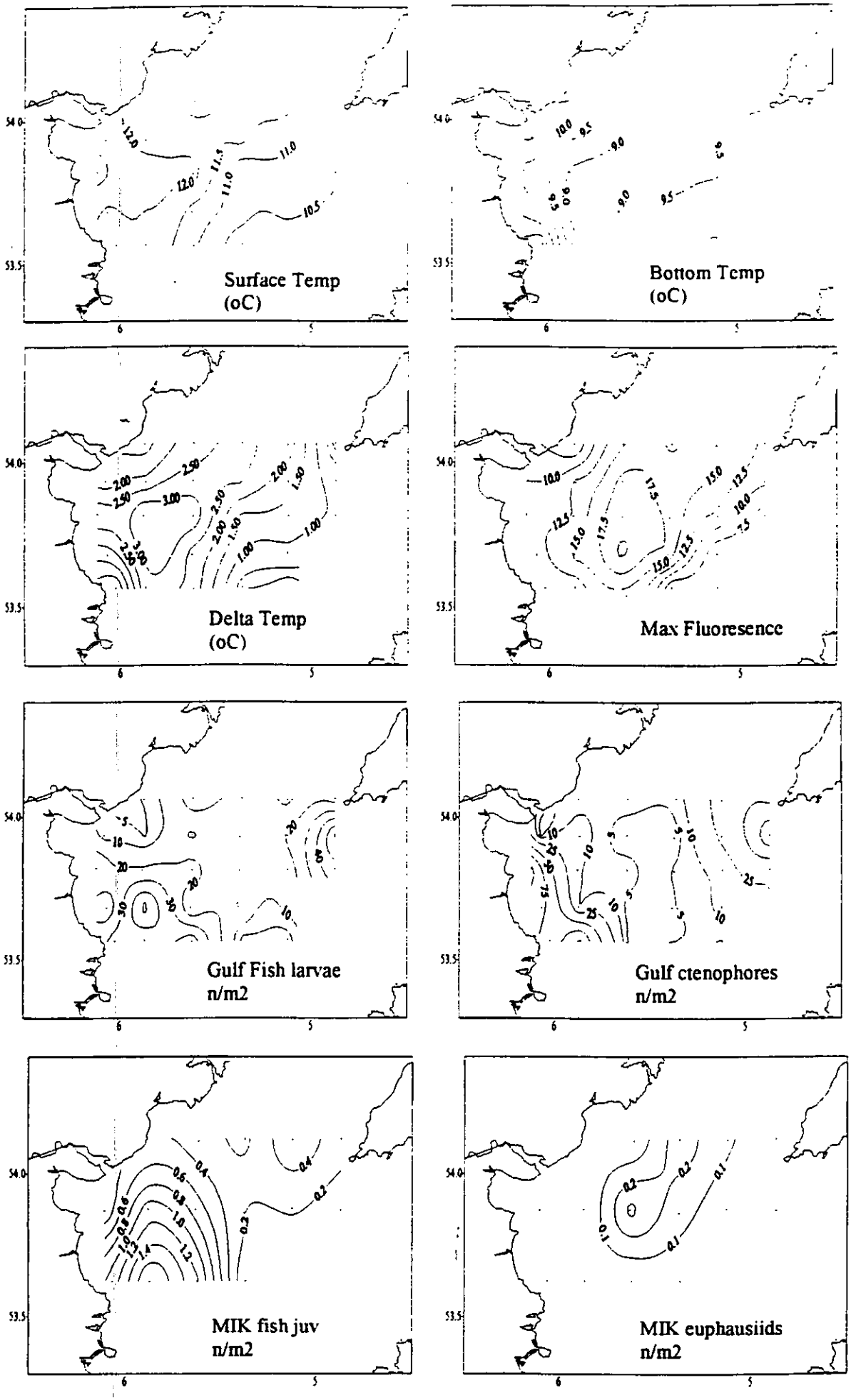


Figure 1 Stations sampled during LF2198.

cross - plankton sampler
triangle- MIK net



Physical and abundance data from Cruise LF2198

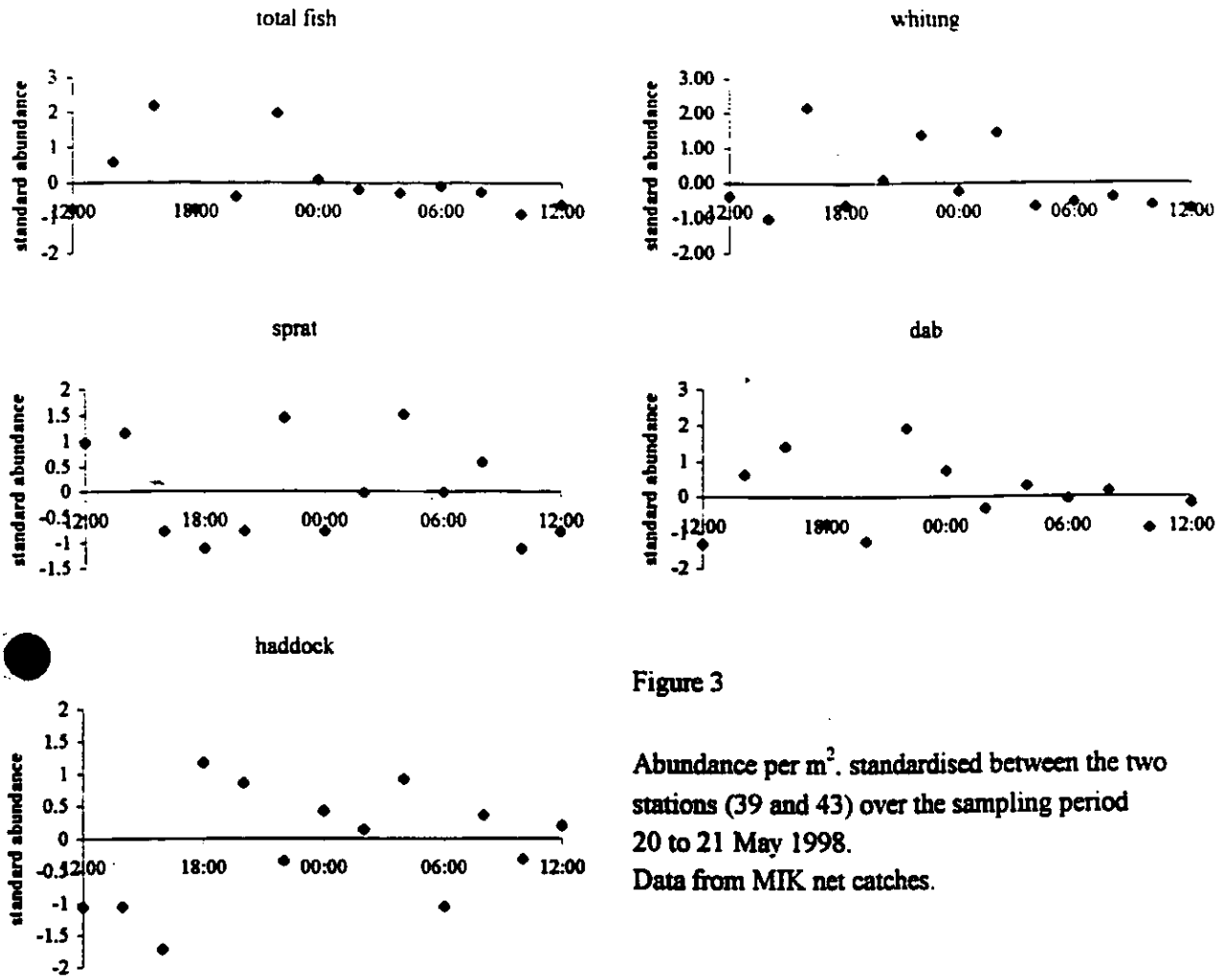


Figure 3

Abundance per m^2. standardised between the two stations (39 and 43) over the sampling period 20 to 21 May 1998.
Data from MIK net catches.