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Department of Agriculture (NI)
Aquatic Sciences Research Division

Cruise Report-LF/11/94

Ichthyoplankton of the western Irish Sea 24-29 April 1994

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	G McCullough	DANI student

Objectives

1. To sample a grid of stations across the western Irish Sea to determine plankton distributions and abundance's, especially the *Nephrops* larvae, and planktonic predators.
2. To sample fish larvae for species abundance and production data in the Dundalk Bay area.
3. To collect fish larvae for growth analysis using primary increment analysis.
4. To survey the abundance of copepod nauplii in the Western Irish Sea.
5. To collect samples for the DANI student working on secondary production in the Irish Sea.
6. To collect fish larvae for Carbon (C) and Nitrogen (N) analysis.

Methods

A high speed plankton sampler (GULF III type) was deployed across a grid of stations in the western Irish Sea. Samples were collected in fine and coarse mesh nets. At four stations three replicate tows were taken to investigate within station variation. Samples for chlorophyll and nutrient analysis were also collected from a range of depths at these stations.

The plankton samples were fixed in 4% buffered formaldehyde solution and the fish larvae in 97% ethanol. Fish larvae were also measured to the nearest 0.1mm and frozen for C and N analysis. Whilst the ship was sheltering some of the samples were worked up in fresh water, the numbers of

Tomopteris, arrow worms and fish larvae, and the weight of euphausiid and *Pasiphaea* per m³ were determined.

Cruise narrative

Sunday 24 April:

The scientific crew boarded by 21:00 and the ship departed Belfast at 22:00 for the first station.

Monday 25 April:

Station 1 was sampled at 01:20, a further 5 stations (a total of 9 plankton hauls) were sampled until the weather prevented any further work at 11:00. The ship sailed for shelter in Belfast Lough. The scientific crew worked up the samples throughout the rest of the day.

Tuesday 26 April:

The ship departed for Dundrum Bay at 03:00 and arrived at 08:00. A further 8 plankton hauls were taken till the weather prevented further sampling and the ship headed to shelter north of the Skerries.

Wednesday 27 April:

The southerly winds and the swell reduced in the early morning so the *Lough Foyle* departed for the stations in the area around the fixed mooring (Oceanography station 38). Sampling began at 09:45. 6 hauls at 3 stations were made before the weather prevented any further sampling. During the last haul the nose cone was lost off the plankton sampler. This was thought to be due to a loose clip and a more secure attachment was used on the replacement nose cone. The loss of the nose cone also resulted in the loss of a flow meter. The ship sheltered from the wind and the swell just north of the Skerries.

Thursday 28 April:

Yet again the winds appeared to reduce during the early morning so the ship departed at 05:00 for station 33. It was successfully sampled, and then the ship headed north to complete the stations west of Dundalk Bay. stations were sampled, despite the worsening weather. The final station sampled was 13 (Fig 1) and the ship sailed for Belfast Lough at 19:30.

Friday 29 April:

The ship anchored in Belfast Lough over night and docked at 09:00.

Results

A total of 31 hauls were taken at 22 stations (figure 1). The CTD was deployed at 6 stations throughout the cruise.

1,999 cubic metres of water were sampled using fine mesh (35 micron) and coarse mesh (270 micron) samplers. 16 chlorophyll samples were collected for analysis and 16 water samples for nutrient analysis were taken. The copepods *Calanus*, *Pseudocalanus*, *Acartia* and *Temora* were found to be the most abundant copepod species. Stations very close to the shore had high densities of cirripede (barnacle) larvae. The density of zooplankton decreased away from the coastal areas, whereas more euphausiids were caught in the deeper water.

The catches of larval fish were dominated by sand eels, sprat and pleuronectids. Gadoid larvae were few. The coastal region just off Dundalk Bay had the highest abundances of fish larvae, and 24 samples were taken for dry weight and C and N analysis. Stations in the North channel had a well mixed water column whereas some degree of stratification was found over the *Nephrops* grounds.

Acknowledgements

The master and the crew of the *Lough Foyle* must be thanked for their hard work and determination to carry out the cruise despite the poor conditions. Their help and advice is gratefully acknowledged and their assistance was invaluable. The work and conscientiousness of the scientists was thorough and totally professional, throughout the cruise. The cruise would have not been a success but for the ability, the skills and the humour of John Peel, Chris Burns and Gillian McCullough. Conditions were difficult, and their sleep patterns were continually disrupted. I am indebted to them for their exceptional dedication and labour.

Signed:

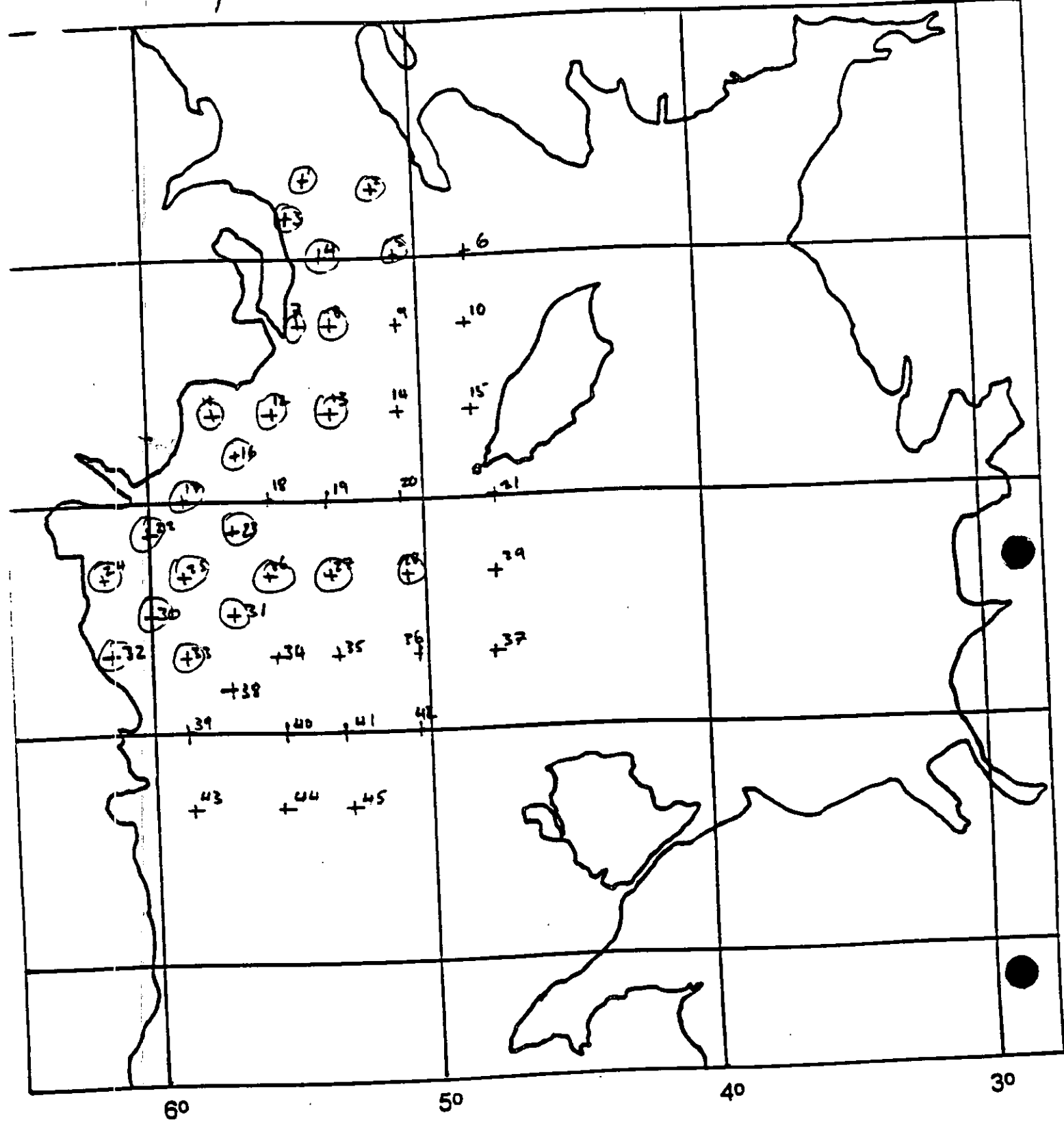
Ships Master: *J. J. Leonard*

SIC

Frank Collins

S. J. Heaney 3/5.

29 April 1994



STATION S SAMPLED shown in circles.