R1/3

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Charter Cruise H22 (pt 2)

FRV *Lough Foyle*

REPORT

Cruise 2/91

22 February - 1 March 1991

Personnel

M Heath	PSO (in charge)
C Hall	SSO (22-25 February)
R Mitchell	SSO
J Pirie	SSO
J Dunn	HSO
R Payne	HSO (22-25 February)
A Matthews	SO
T Taylor	SO (25 February - 1 March)
P Brennan	Student (25 February - 1 March)
A Rees	Visitor (Dunstaffnage Marine Laboratory, 27 February)
J Matthews	Visitor (Dunstaffnage Marine Laboratory, 27 February)
J Overnell	Visitor (Dunstaffnage Marine Laboratory, 27 February)
K Jones	Visitor (Dunstaffnage Marine Laboratory, 27 February)

Objectives

1. To deploy and service instruments on moorings in Loch Linnhe.

2. To carry out a programme of physical, chemical and biological sampling in Loch Linnhe.

Narrative

Scientific equipment was loaded in Oban on 22 February. The following day, instruments were installed at the Lismore and Outer Loch Linnhe moorings, the associated small boat work being carried out by SOAFD staff from a rubber boat supplied by SOAFD. Shortly after this, the vessel suffered failure of the governor on the main engine, thereby losing all propulsion except the bow thrusters. The auxiliary engine on the ship was not operational. Fortunately, the vessel was in relatively open water at the time of failure, and no sampling gear was being towed. After approximately three hours the vessel reached Craignure anchorage where repairs were undertaken.

The vessel was underway at 1000 on 24 February and proceeded to the mooring site in Inner Loch Linnhe. Instruments were successfully deployed and ARIES tows carried out in the Inner and Outer basins of the loch. Scientific staff were exchanged at Dunstaffnage on 25 February and the programme proceeded to completion with the vessel docking at Oban at

1200 on 1 March. A party from Dunstaffnage Marine Laboratory joined the vessel in the Inner loch on the morning of 27 February and disembarked by rubber boat off Dunstaffnage at 2200 the same day.

Results

The instruments recovered from the Lismore mooring which had been deployed during *Lough Foyle* cruise 1 (January 1991) comprised two nutrient analysers, two data loggers (fluorometer and transmissometer with each logger) and two current meters. All instruments except one of the data loggers had functioned correctly. The performance of the nutrient (nitrate) analysers was particularly encouraging. All these instruments were replaced with serviced units, and in addition, the Inner and Outer loch moorings were equipped with instruments for the first time.

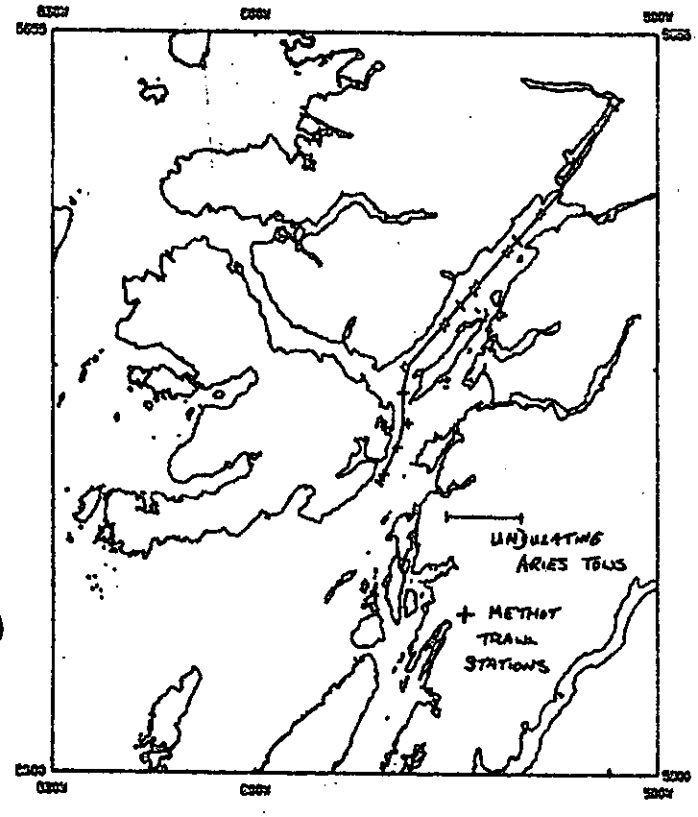
The ship breakdown on 23 February caused the sampling programme for primary and secondary production measurements and ARIES deployments to be delayed by 24 hours. The time was made up at the expense of replicating the acoustic surveying and by incorporating the production sampling at the Outer loch mooring site into the 24 hour sampling study.

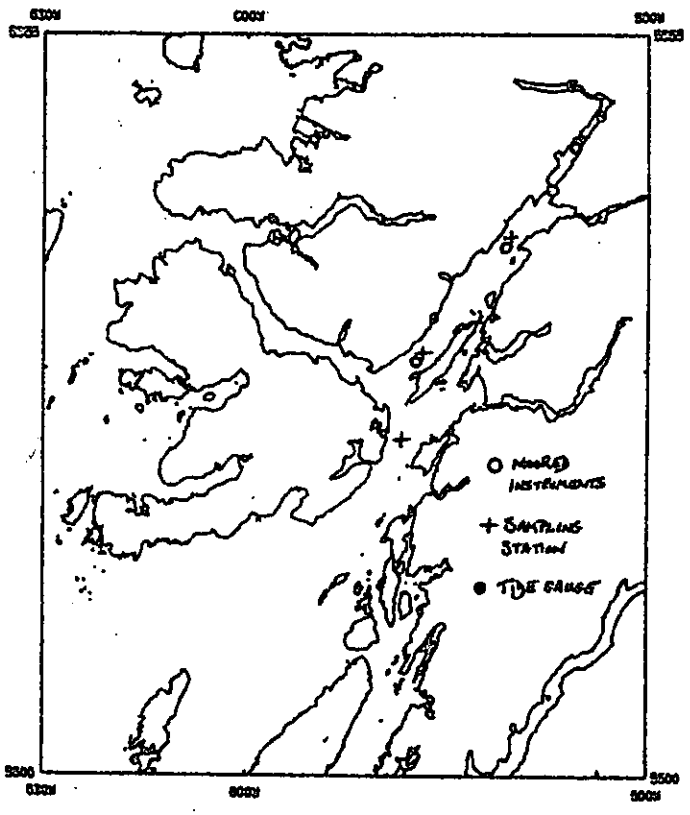
The ARIES and towed CTD data indicated substantially higher salinities in the Inner basin than during the January cruise and nitrate concentrations were higher throughout the loch. Zooplankton biomass and chlorophyll concentrations remained low in all areas.

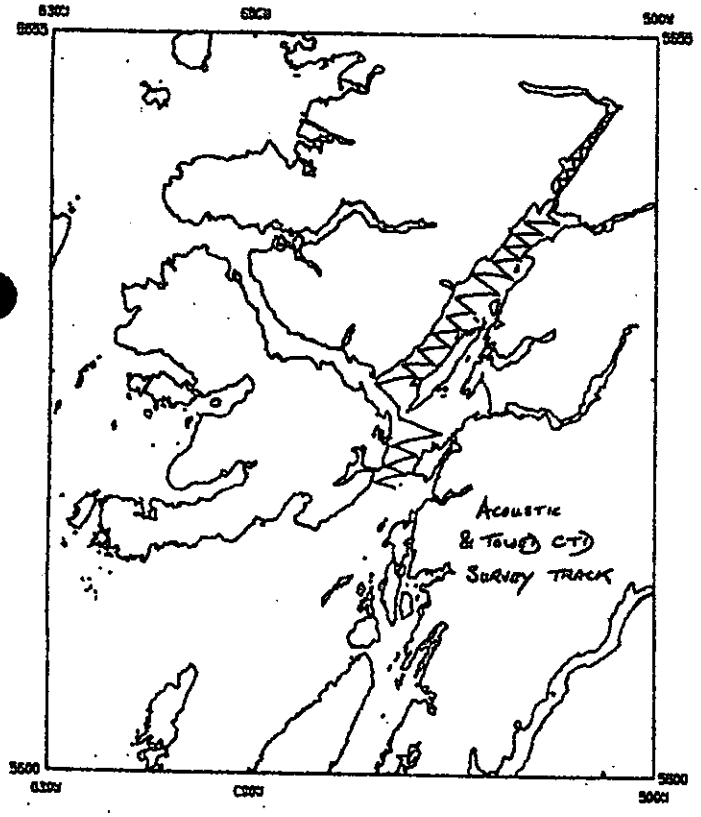
Replicated ammonia excretion rate measurements were carried out on live specimens of copepods, *Sagitta* and euphausiids or decapods at each of the fixed sampling positions. At the same time, measurements of and inorganic carbon and nitrogen assimilation by phytoplankton were carried out on water samples from the surface layers.

The acoustic surveying indicated numerous areas of echoes from fish or macroplankton within the sea loch, and the Methot-net sampling confirmed the presence of large numbers of euphausiids (*Meganyctiphanes*), decapods (*Pasiphaea*) and 0-group sprat, although fewer sprat were caught than in the January cruise. Specimens of sprat were retained for otolith daily growth ring and RNA/DNA studies to determine fish growth rates.

M Heath
14 March 1991


UNDULATING
ARIES TOWS
+ METHOT
TRAWL
STATIONS


MOORED
INSTRUMENTS
+ SAMPLING
STATION
TIDE GAUGE


ACOUSTIC
& TOWED CTD
SURVEY TRACK