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Charter Cruise FRV *Lough Foyle*

0044H

## Report

Cruise 5/91, 17-24 May 1991

## Personnel

M Heath	PSO (in charge 17-20 May)
S Hay	HSO (in charge 20-24 May)
R Mitchell	SSO
C Hall	SSO (17-20 May)
J McKie	HSO
P Copland	HSO (20-24 May)
R Adams	SO (17-20 May)
Mrs A Matthews	SO
L Cargill	SO
P Brennan	Student (20-24 May)
Miss B Bellerby	Visitor (Plymouth Marine Laboratory)

## 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

SOAFD equipment was loaded and set up in Oban on 17 May, and the vessel sailed at 1530. All three moorings were serviced over the next 2 days with no problems being encountered. Coring, water sampling and CTD work were carried out at night on fixed stations, and towed instruments deployed during daylight. A pickup line for a fleet of creels was snagged on the ARIES tow-wire during a deployment on 20 May, but prompt action resulted in no damage to the sampler and minimised disturbance of the creels. Scientific staff were exchanged at Dunstaffnage on the afternoon of 20 May. The cruise continued with the completion of the series of ARIES tows during the afternoon of 20 May.

The fixed station in the Firth of Lorne was sampled and during 21 May the zig-zag surface CTD tow survey was made back to Fort William. During the evening, two Methot net tows were made in the inner loch and the fixed station in the inner loch was sampled from 0100 on 22 May. The rest of the Methot tows out to the Firth of Lorne were completed and the ship moored up to the Lismore mooring in the evening. From 2100 on 22 May until 1800 on 23 May a three hourly sampling schedule was performed

to study diurnal variability and to provide a long series of calibration data for the 15 m instruments on the Lismore mooring. The ship then proceeded to anchor and sonar gear was calibrated. Some plankton hauls were made to provide live material for experiments at Dunstaffnage Marine Laboratory and the ship docked at Oban 0800 on 24 May; unloading was completed by 1030 and the light data collected from the datalogger at Dunstaffnage en route to Aberdeen.

## **Results**

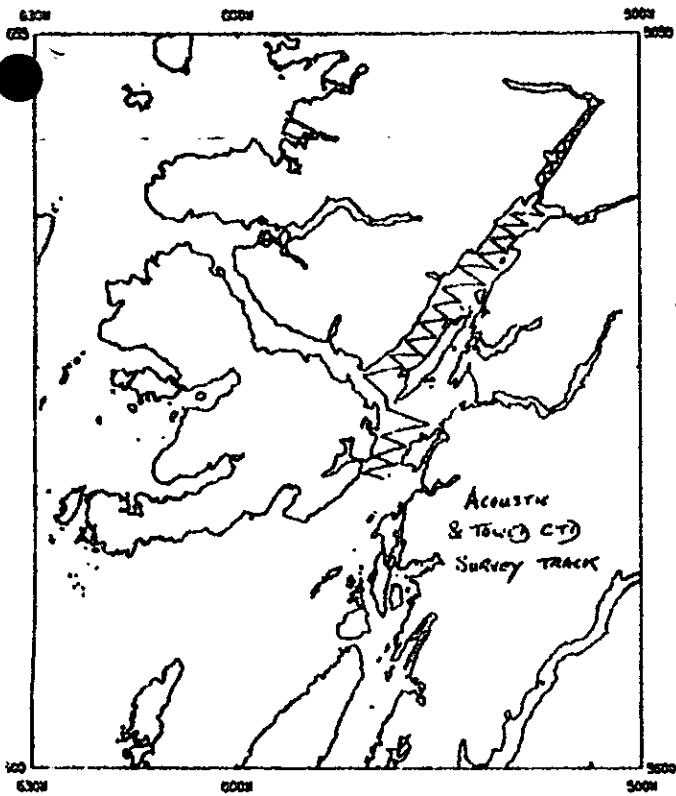
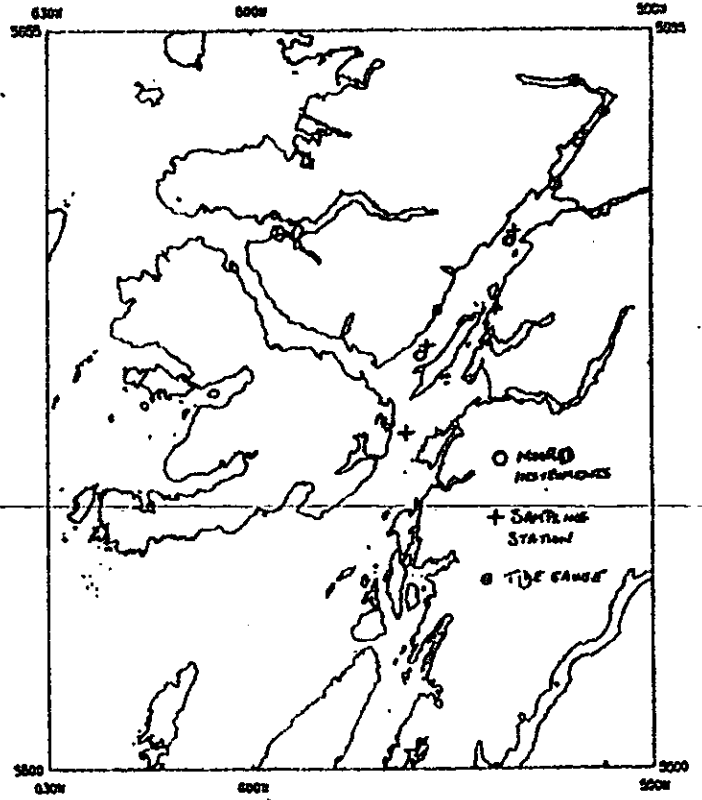
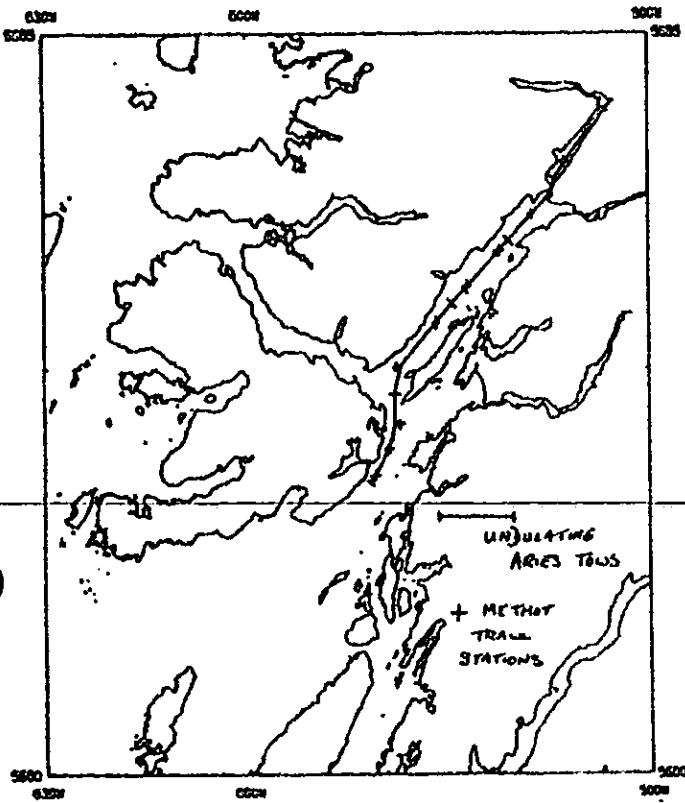
The moored instrumentation had functioned well and the data recovered documented the spring bloom of phytoplankton in Loch Linnhe, and the associated depletion of dissolved nitrate concentrations. The first evidence of algal fall-out in the sediment traps was found in the samples collected 6 days prior to the cruise.

Samples for the ARIES deployments indicated large increases in zooplankton biomass since the previous cruise. In addition, large numbers of jellyfish (*Aurelia*) were present at the mouth of the outer basin of the loch. However, water sampling with ARIES and at the fixed stations showed that nutrient levels had not been drawn down to low levels by the spring bloom, and minimum nitrate concentrations recorded during the cruise were approximately 3 mgat/m<sup>3</sup>. Maximum chlorophyll concentrations were in the range 6-8 mg/m<sup>3</sup>, although the moored instruments indicated that the peak of the bloom had occurred some days previous to the cruise.

The continuous sampling record from 15 m depth during the diurnal sampling station showed large amplitude (approximately 8-3 mgat/m<sup>3</sup>) fluctuations in nitrate conforming to a tidal schedule, similar to those observed in the moored instrument records. These were due to vertical movement of the pycnocline over the tidal cycle. Bursts of internal waves were also evident in the nitrate, CTD, and fluorescence data continuously monitored from 15 m. Even preliminary examination of the large amount of additional data collected during the station was not possible at the time.

M Heath  
S Hay

30 May 1991



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17-24 May 1991