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MINISTRY OF AGRICULTURE, FISHERIES AND FOOD  
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1979 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 8  
(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

L Birkett  
D Harding  
B Knights  
S Stevens  
S Milligan  
C Garrod  
S Flatman  
P Griffiths  
D Palmer  
B Rackham

DURATION:

Left Grimsby 1730 h 21 August  
Returned Grimsby 1300 h 15 September  
All times are Greenwich Mean Time

LOCALITY:

North Sea

AIMS

1. To carry out the 1979 Groundfish Survey of the North Sea (1A1.6).
2. To obtain length and age distributions of major commercial fish species.
3. To examine fish stomach contents with special reference to predation by fish upon fish.
4. To collect water samples and fish muscle samples for radio-caesium studies (AEP1).
5. To test the data-logger facility in respect of surface water sampling by means of the environmental package (121E).

Requests for material as follows were received too late for inclusion in the published cruise programme:

6. A range of fish species for the York University Archaeological Unit (via P Walker).
7. Whole plaice for Mr A Murray (Burnham).
8. Haddock eyes for Dr C Slingsby (University of London).
9. Cultures of ichthyophora from infected fish tissues for FDL, Weymouth (via J D Riley).

## NARRATIVE

RV CIROLANA left Grimsby at 1730 h (GMT) 21 August, proceeding northwards. Surface-water samples were taken at three stations between the Humber and the Tyne; the groundfish survey commenced off the Tyne at 0818 h 22 August. The general plan for the survey was to work northwards in the western part of the North Sea, southwards in the eastern part towards the central North Sea, and to complete the survey in the Southern Bight. A chart showing the cruise track and the positions of all stations is attached (Fig 1); the positions of the primary fishing stations are shown separately in Fig 2. Surface water samples (Aim 4) were usually taken at night and on passage between fishing positions; the positions of the water sampling stations are shown separately in Fig 3.

A brief call close to Aberdeen was made on 24 August to pick up a supply of paper rolls for the teletyper. These were transferred to the vessel while lying offshore, by courtesy of the Aberdeen pilot, and there was no loss of working time on this account. Work was interrupted for about 12 hours on 11-12 September to enable the Chief Steward to be landed for medication. Otherwise the programme was carried out without interruption and by midnight, 14 September, all aims having been completed, course was set for the home port. The vessel tied up at Grimsby at 1300 h, 15 September.

## RESULTS

Aim 1. A total of 116 valid trawl hauls was made at 42 of the pre-selected "primary stations" shown in Fig 1. Nine hauls were invalidated, and 2 primary stations abandoned, due to the gear being damaged. Every catch was completely sorted and the total weight of each species of fish or commercial shellfish recorded. A system of sub-sampling on the deck was used for the less important species, when in copious supply.

Aim 2. Length distributions were recorded for every species of fish at each trawl station. Stratified otolith samples from the commercial fish species were taken at each haul, stratification being in accordance with the ICES flatfish and roundfish sampling areas.

Aim 3. Stomachs of the larger predators were examined; the contents, and the estimated length of any fish eaten, were recorded.

Aim 4. Surface water samples were taken at 43 stations on passage, and at five others in a line across the northern North Sea at which also bottom water samples were taken using a Miskin sampler. The water samples were all filtered and the radio-caesium concentrated by passing through an ASL ion-exchange resin column. Samples of fish muscle were taken for caesium studies in 12 pre-selected areas.

Aim 5. The MB Mini-datalogger was installed in the HP cabinet and connected to the environmental package. Operational tests of the system were satisfactory.

Aim 6. A collection of fishes was deep-frozen for the York University Archaeological Unit.

Aim 7. Ten whole plaice (5 in each sex) were deep-frozen for Mr Murray.

Aim 8. Heads of medium-sized haddock, and a large sample of whole juvenile haddock, were deep-frozen for Dr Slingsby.

Aim . Twelve cultures, presumed to be of ichthyophora, were prepared from fish tissues for FDL, Weymouth.

OTHER MATTERS

1. The thermograph was run continuously throughout the voyage.
2. Surface and bottom temperatures and salinity samples were obtained at each primary station, using Hydrobios bottles (except at the first two primary stations, because the meter wheel and its flexible drive had to be replaced). Vertical thermistor dowerings were also made at most of the primary stations.
3. The environmental sensors were run continuously throughout the voyage, in water pumped from 3m depth. From the continuous traces it was possible to observe the locations of oceanographic fronts along the cruise track. A temperature-depth probe and the Oriel submersible fluorometer were lowered at selected stations to determine the existence of a thermocline and the pattern of chlorophyll distribution in depth. These observations indicated production or accumulation of chlorophyll-a just below the thermocline where the latter was strongly developed, and high production throughout the water column in mixed water.
4. The HP2100A computer was run continuously throughout the cruise. The complete data resulting from each haul (weight of each species caught, length composition) were input to the computer as soon as they became available, thus enabling an immediate check to be made on the results while they were still fresh in the mind. This operation ran smoothly and the service it provided was invaluable.
5. Ship's data sources (ie log, anemometer, compass encoder) were connected to the data logger via permanent wiring which was installed during the cruise. Running tests of the system gave good results. Permanent wiring was also installed to collect analog data from two sources in the main laboratory and one in the hydrochemical laboratory.
6. A photographic record (colour transparencies) of the benthos retained by the trawl was made at the end of each haul.
7. A more detailed preliminary scientific report on the lines of those for the 1977, 1978 Groundfish surveys will be made available. This will provide a concise summary of the types of data available from the survey.

Leon Birkett  
19 September 1979

SEEN IN DRAFT: R A Taylor  
W J Saxby

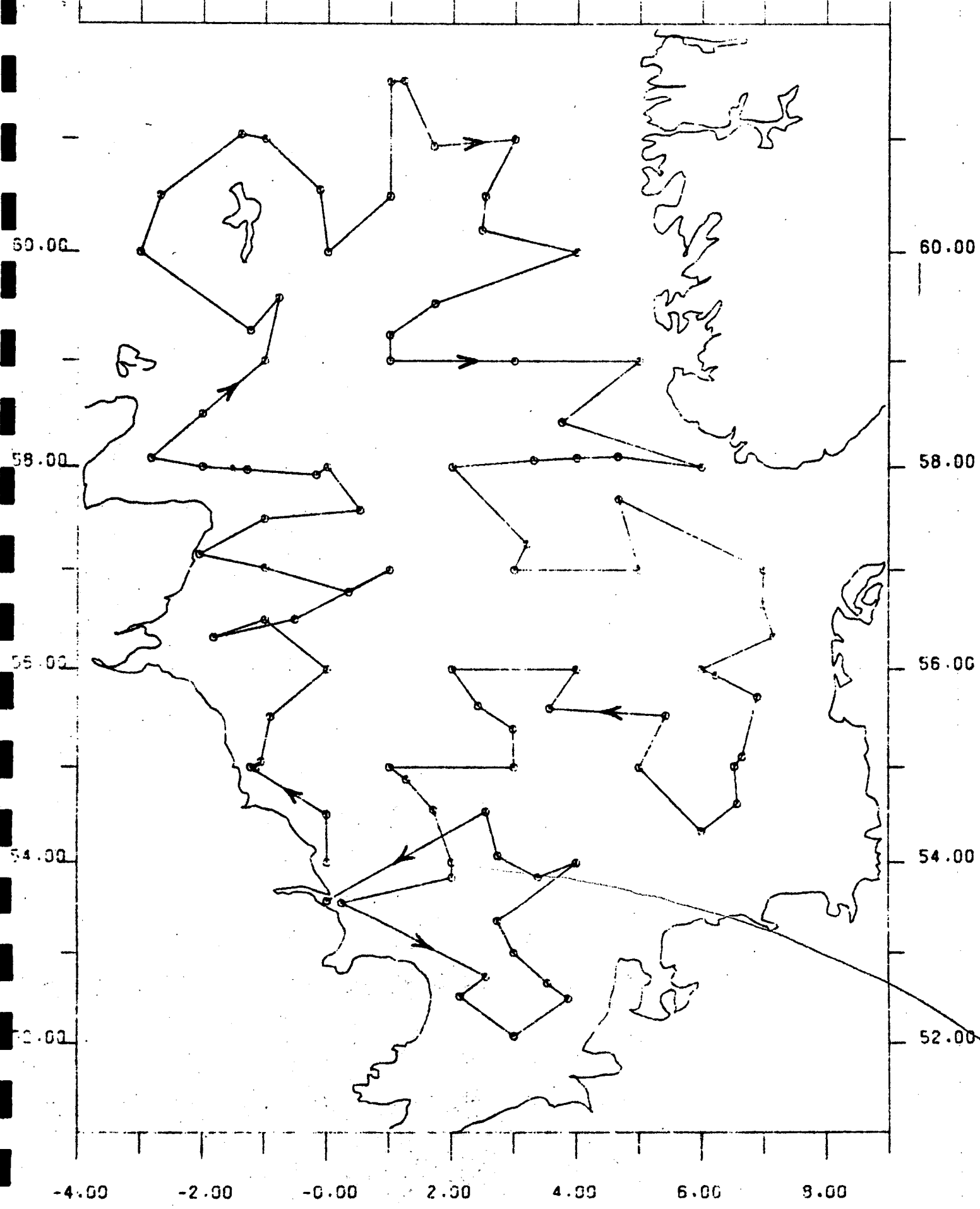
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J Pope  
Capt R A Taylor  
MAROPS, Norway



CIROLANA 8/79 STATIONS

Fig 1

Fig 1.

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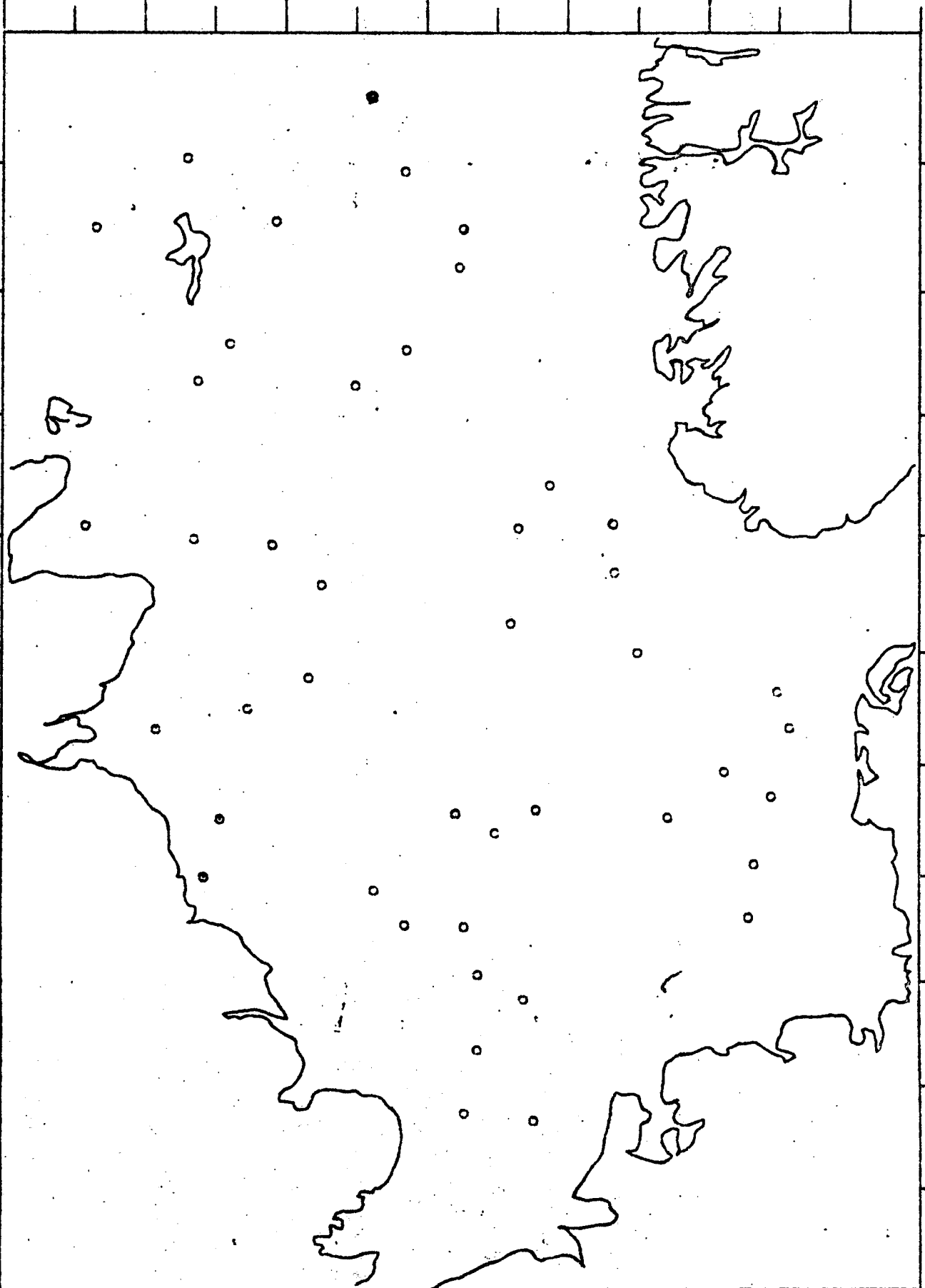
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CIROLANA 8/79 FISHING STATIONS

RG 2



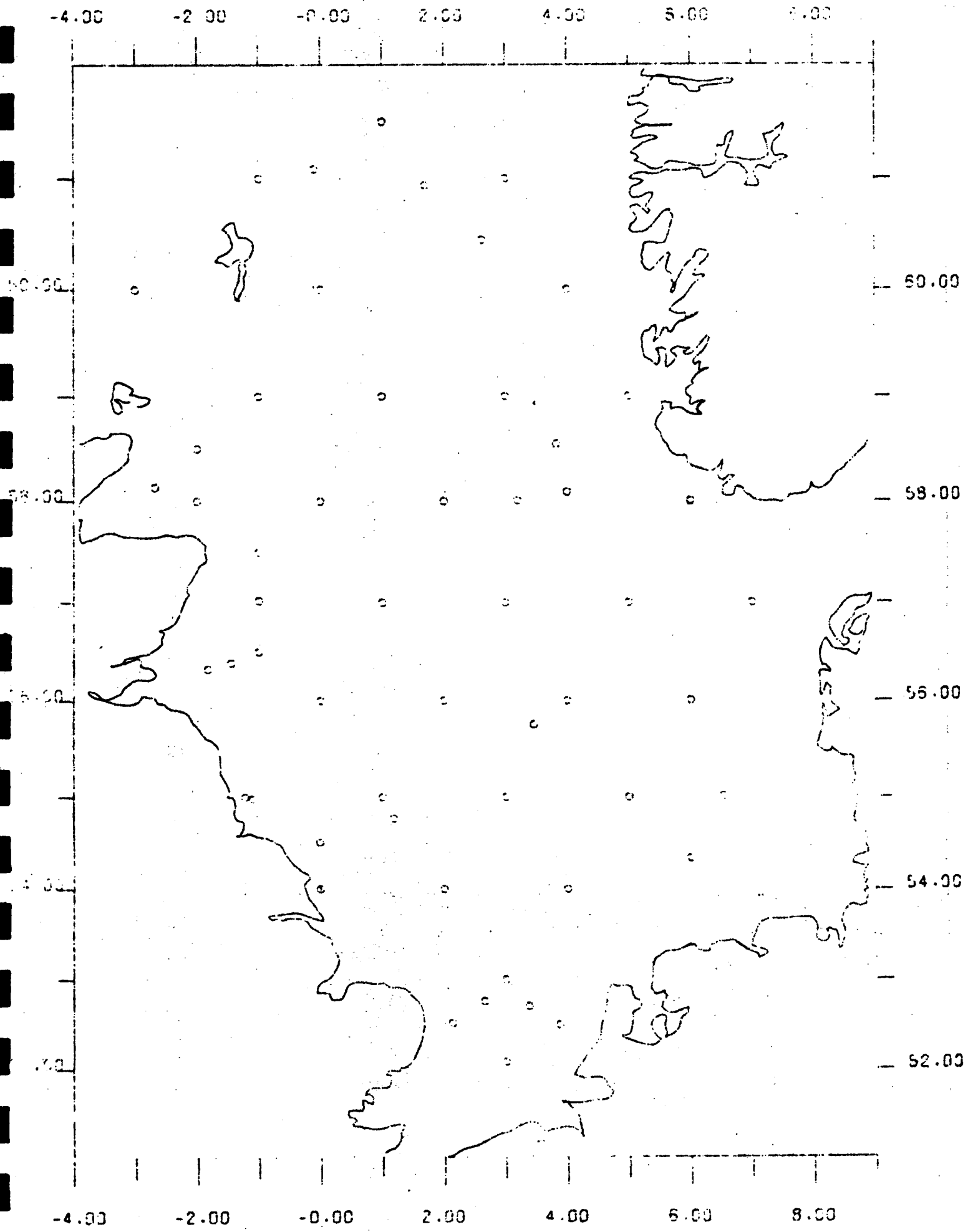


Fig 3