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In Confidence Not to be quoted without prior reference to the LaboratoryFRV "Clupea"
Cruise 6/85REPORT

15 May - 4 June 1985

PERSONNEL

M R Heath SO (In Charge)
 S T Forbes SSO
 P W Rankine SO
 P J Hopkins SO
 S Greenstreet (Pitlochry) (part-time)

OBJECTIVES

- 1 To carry out an acoustic survey of herring in the Firth of Clyde and approaches.
- 2 To obtain length and weight data on individual herring.
- 3 To carry out dual beam target strength measurements.
- 4 To collect surface hydrographic data.
- 5 To investigate the incidence of salmon smolts in catches of herring and determine the distribution of potential avian predators on salmon smolts in the sea.
- 6 To obtain a water sample for radio-caesium analysis.

NARRATIVE

"Clupea" sailed from Stornoway on the afternoon of 15 May arriving in Troon the following evening where scientific staff from Aberdeen joined the vessel. The following day (17 May) survey work was carried out in the Sound of Bute, and a member of staff from DAFS, Pitlochry then joined the vessel at Tarbert. Following 3 days of survey work in Kilbrannan Sound and the Firth of Clyde, the vessel proceeded to Troon for the half landing on 21 May.

During the period 22-25 May "Clupea" carried out survey work in the outer regions of the Clyde and in the North Channel between the Mull of Galloway and Rathlin Island. Adverse weather on 26 and 27 May prevented further work in the outer Clyde, so the vessel continued surveying in Kilbrannan Sound and the Sound of Bute.

Following the half landing at Troon on 28 May, a second coverage of the outer Clyde region to the South of Arran was completed. The member of scientific personnel from Pitlochry left the vessel at Campbeltown on the evening of 1 June after which "Clupea" set sail for the passage to Buckie. A water sample for radio-caesium analysis was collected off Cape Wrath, and after stopping at Lossiemouth on the afternoon of 3 June to calibrate the acoustic equipment, "Clupea" docked in Buckie on 22/5.

RESULTS

During the cruise, acoustic survey work was carried out between approximately 0700 and 1900 each day.

Echointegration using the towed transducer was performed continuously, cumulative counts derived from mid-water reflectors being recorded at 15 minute intervals. Significant concentrations of fish shoals were identified whenever possible by means of the PT 163 mid-water trawl. All catches were sorted into component species and length distributions determined on subsamples as necessary.

A total of 16 trawls were carried out during the cruise (Table 1). Otoliths were removed from 337 herring and 91 sprat whilst 198 herring were weighed. Samples of sprat catches were also frozen for subsequent analysis in the Laboratory. One salmon smolt was caught during the cruise, in a catch consisting of herring and sprats.

During periods of suitable weather, seabird counts were carried out by the member of staff from Pitlochry. Salinity at a depth of 2m was recorded continuously from the ship's non-toxic seawater supply using a thermosalinograph.

Attempts at towing the dual beam transducer were not successful since the towed body became unstable in the water at speeds in excess of 2 Kn.

Two complete coverages of the Clyde area were achieved during the cruise. The first was undertaken between 17 and 23 May, the second from 26 May - 1 June. In between these 2 periods, investigation of the approaches to the Clyde was carried out. For these purposes, the Clyde area was defined as that area lying northeast of a line between Corsewall Point (55,00N 05,10W) and Sanda Island (55,17N 05,35W).

Each day's survey track was designed with the objective of achieving a minimum of 10 miles of track per 5' lat x 10' long square within each coverage of the Clyde area (reduced in proportion to the area occupied by land in squares overlapping the coastline). This was successfully achieved for both coverages, although adverse weather during the first survey resulted in somewhat uneven distribution of effort.

Outwith the Clyde area, the objective was to achieve 5 miles of track per square but unfortunately this was not possible in the time available. Under these circumstances surveying effort was stratified according to the water depth, the deepest parts of the North Channel receiving least attention.

During the first coverage of the Clyde, fish shoals identifiable as herring were not widespread. The main concentrations were along the Ayrshire coast between Girvan and Ayr. Sprats were widespread throughout the eastern side of the Clyde whilst shoals observed in the southern part of Kilbrannan Sound were identified as dogfish (Squalus acanthias). No fish shoals identifiable as herring were observed during surveys outwith the Clyde area.

During the second coverage of the Clyde the incidence of herring shoals in the western part of the Clyde was very much higher. Large shoals believed to be herring were found between Campbeltown and Sanda Island, to the south-west of Arran and to the west of Ailsa Craig. As in the first coverage, very few shoals likely to be composed of herring were found in the northern part of the area, whilst herring shoals were only sparsely distributed along the Ayrshire coast. Sprats were once again widespread in the southern part of the region.

The herring caught in trawl catches were generally in the length range 24-30cm except for one haul (C85/85) which contained a high proportion of juvenile fish. All the adult herring caught were in maturity stage 8 (recovered spents).

M R Heath

As seen in draft J A Calder

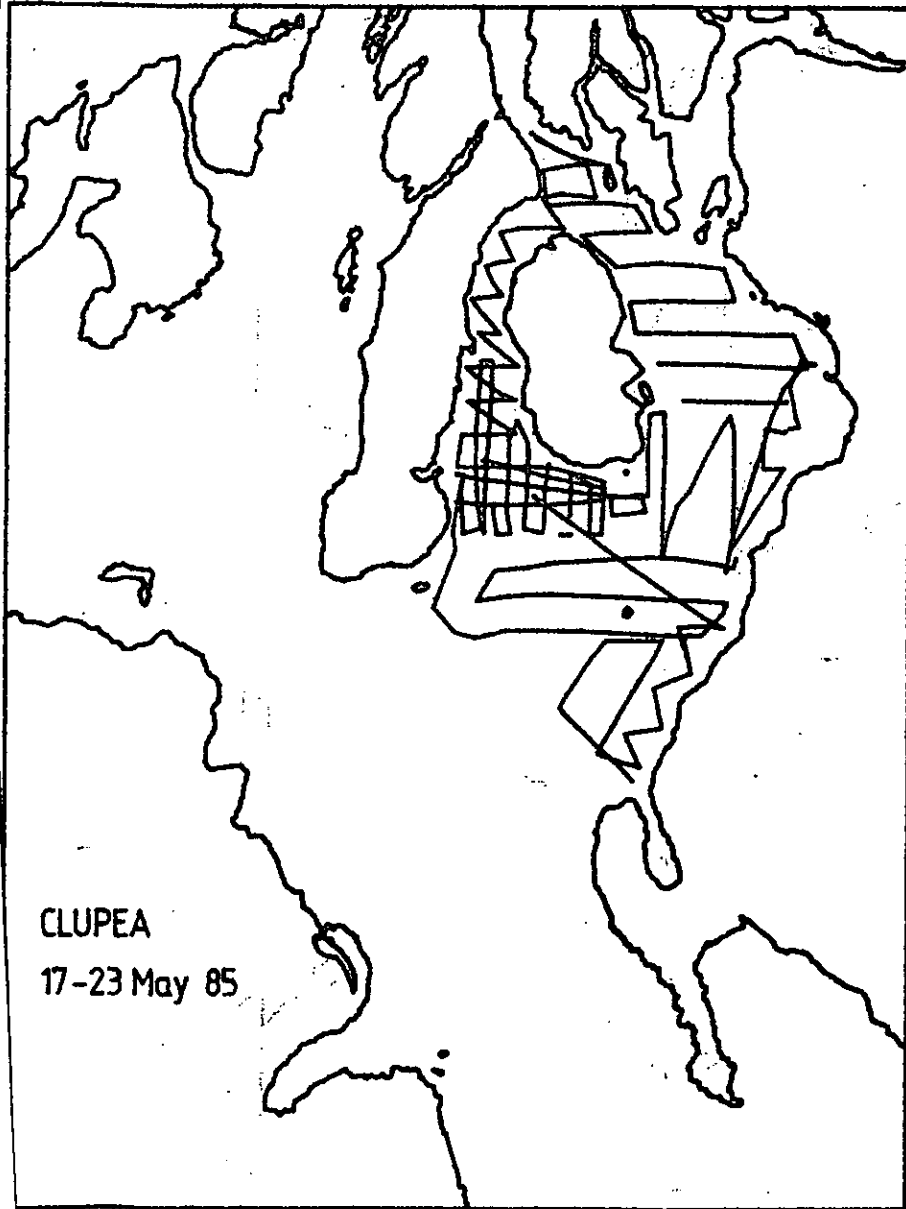
27 June 1985

TABLE 1

NUMBERS OF FISH CAUGHT
"CLUPEA" 18/5 - 1/6 1985

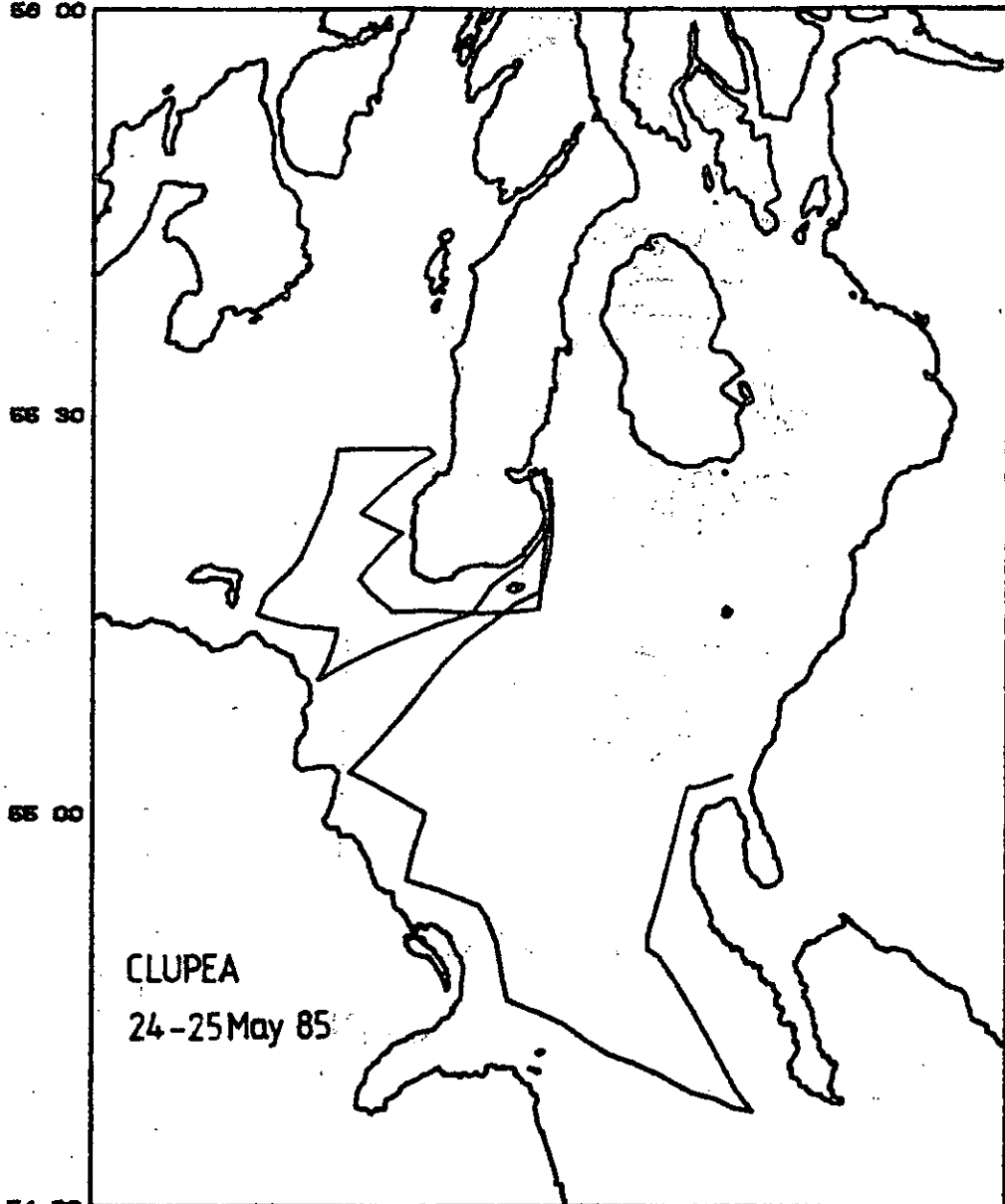
Date	Number of Haul	Position		Dogfish	Herring	Sprat	Salmon Smolt
		Lat (N)	Long (W)				
18/5	73	55,27.0	5,28.2	152			
19/5	74	55,23.3	5,24.8	34			
20/5	75	55,18.7	4,52.5		628	1645	1
22/5	76	55,29.2	4,45.6			1053	
22/5	77	55,23.8	5,06.3			3058	
23/5	78	55,24.8	5,20.3	97	14		
23/5	79	55,12.6	4,59.5			25	
25/5	80	55,25.6	5,30.7				
27/5	81	55,36.1	5,06.6		4		
27/5	82	55,32.1	4,47.8				
29/5	83	55,20.6	5,13.8		678	621	
29/5	84	55,23.4	5,21.7	1	4297	3527	
30/5	85	55,23.1	4,55.2		31	1028	
31/5	86	55,13.9	5,13.4		176	2939	
1/6	87	55,05.8	5,18.3		1	185	
1/6	88	55,13.5	5,22.5				

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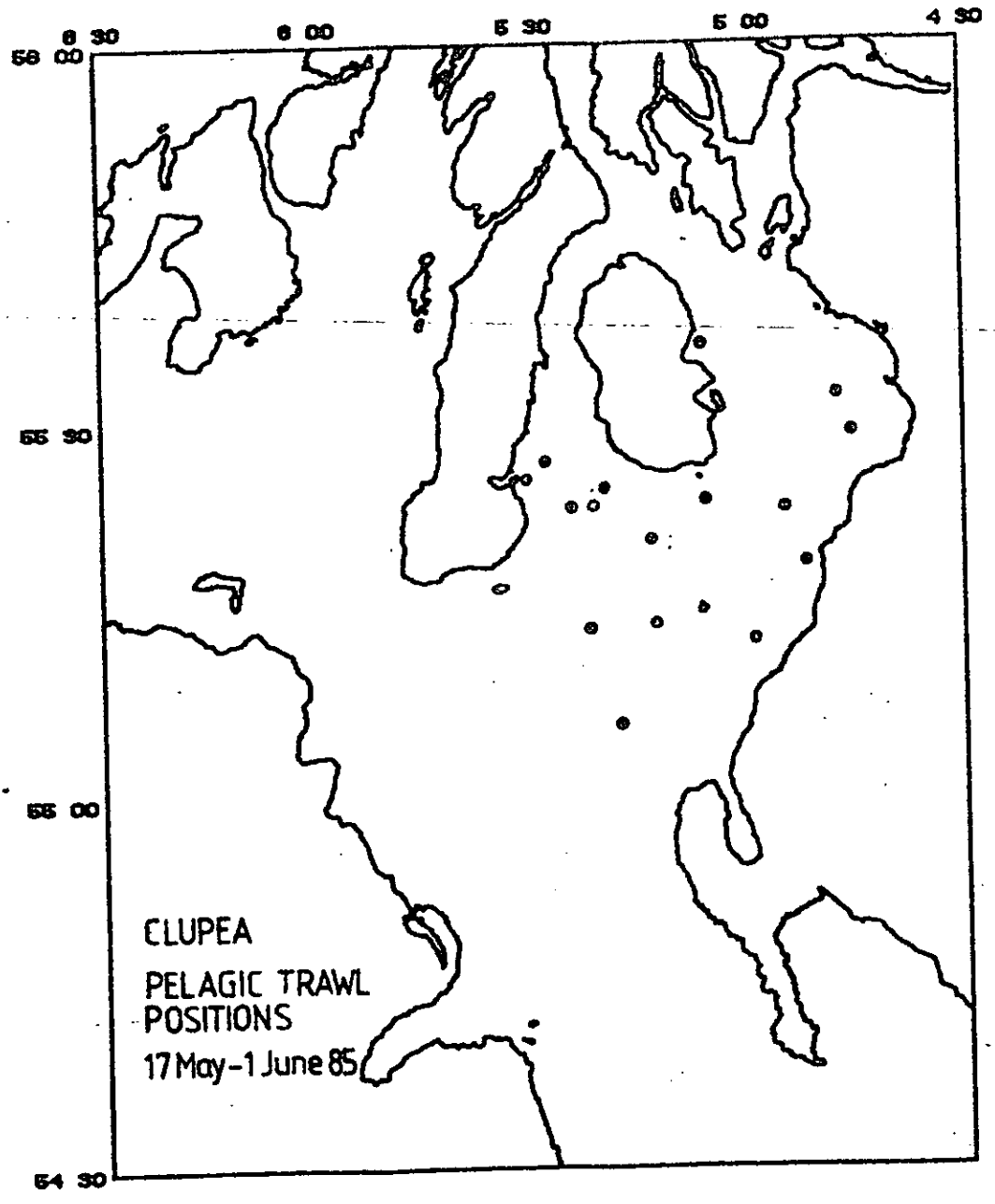
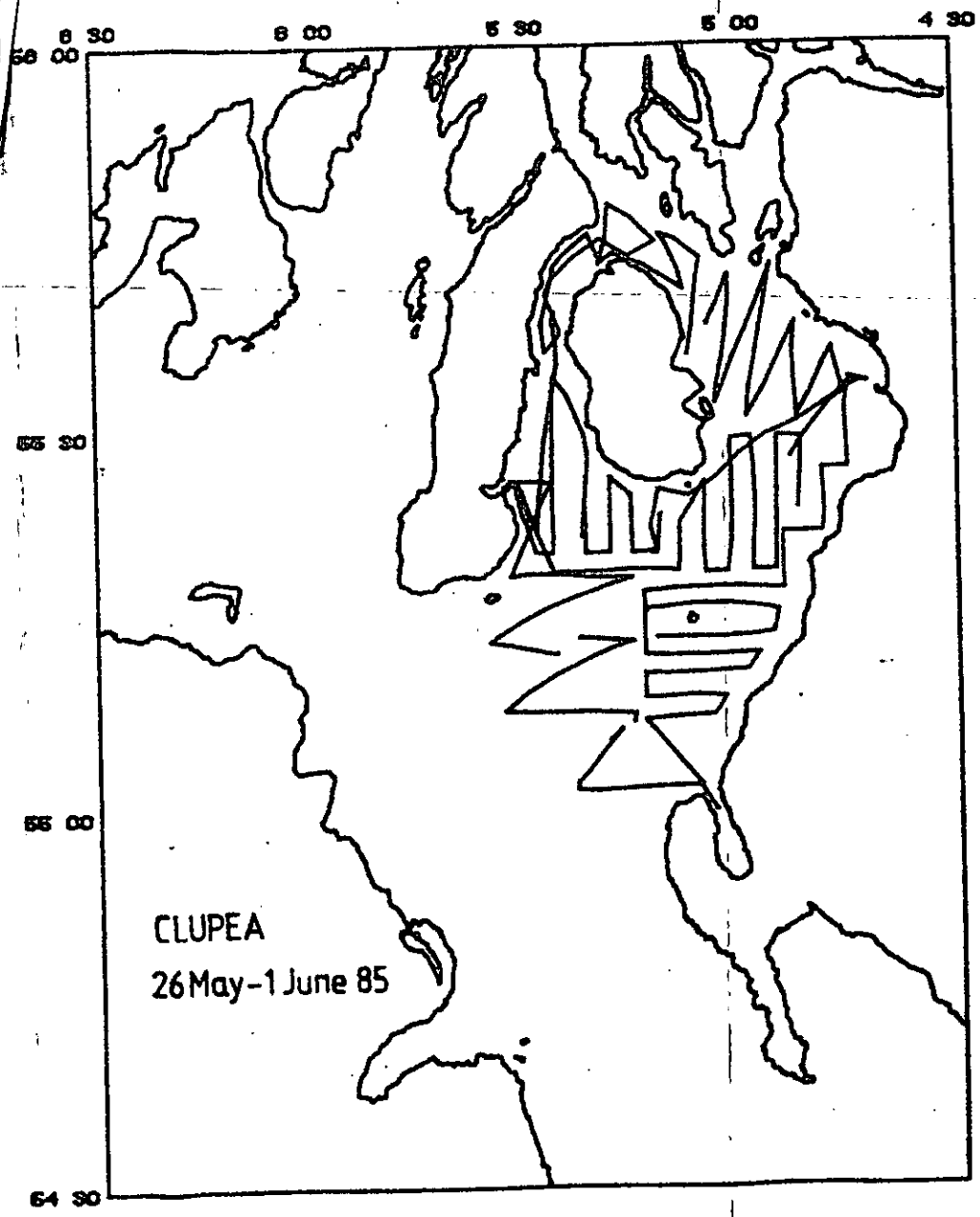


CLUPEA
17-23 May 85

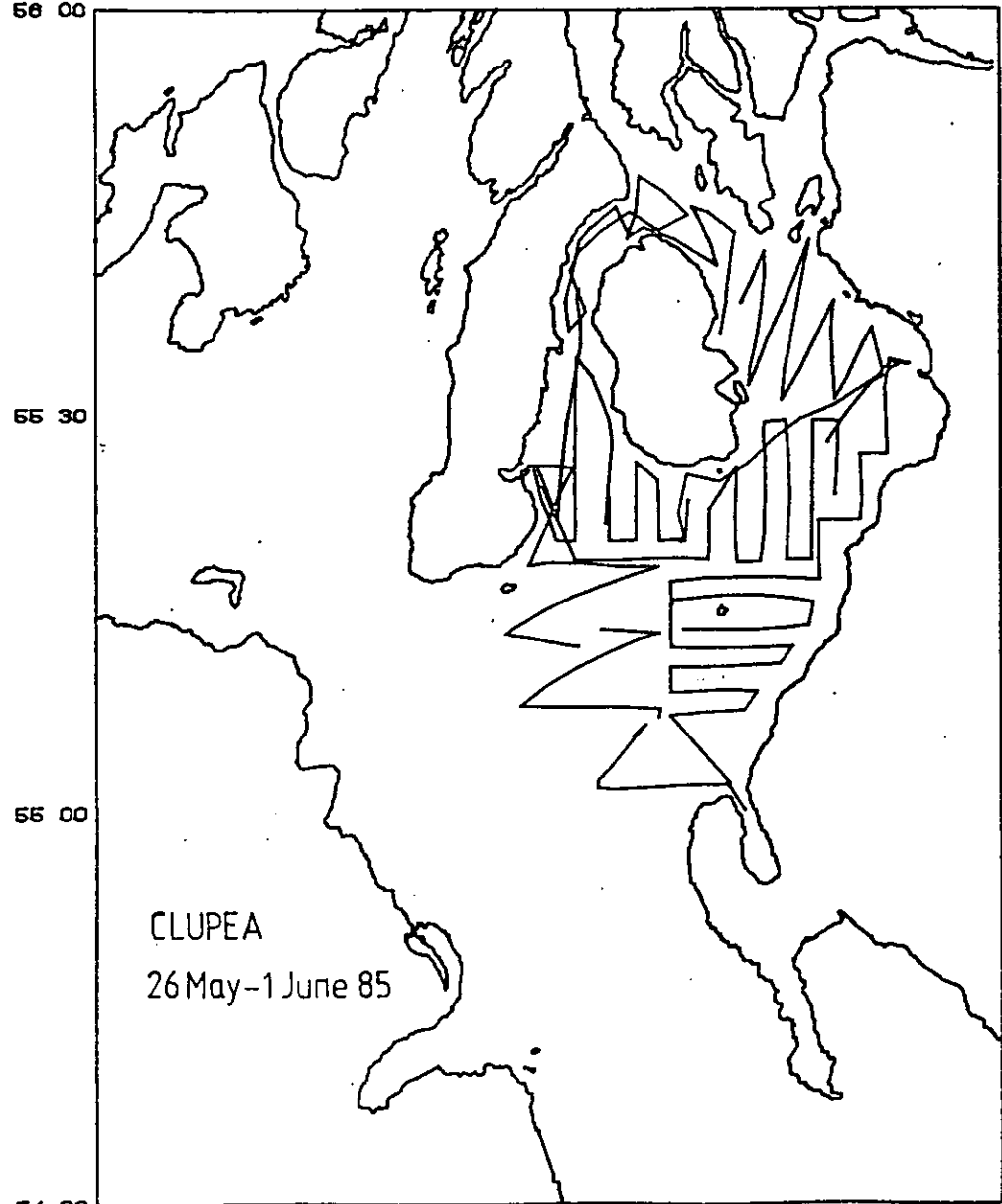
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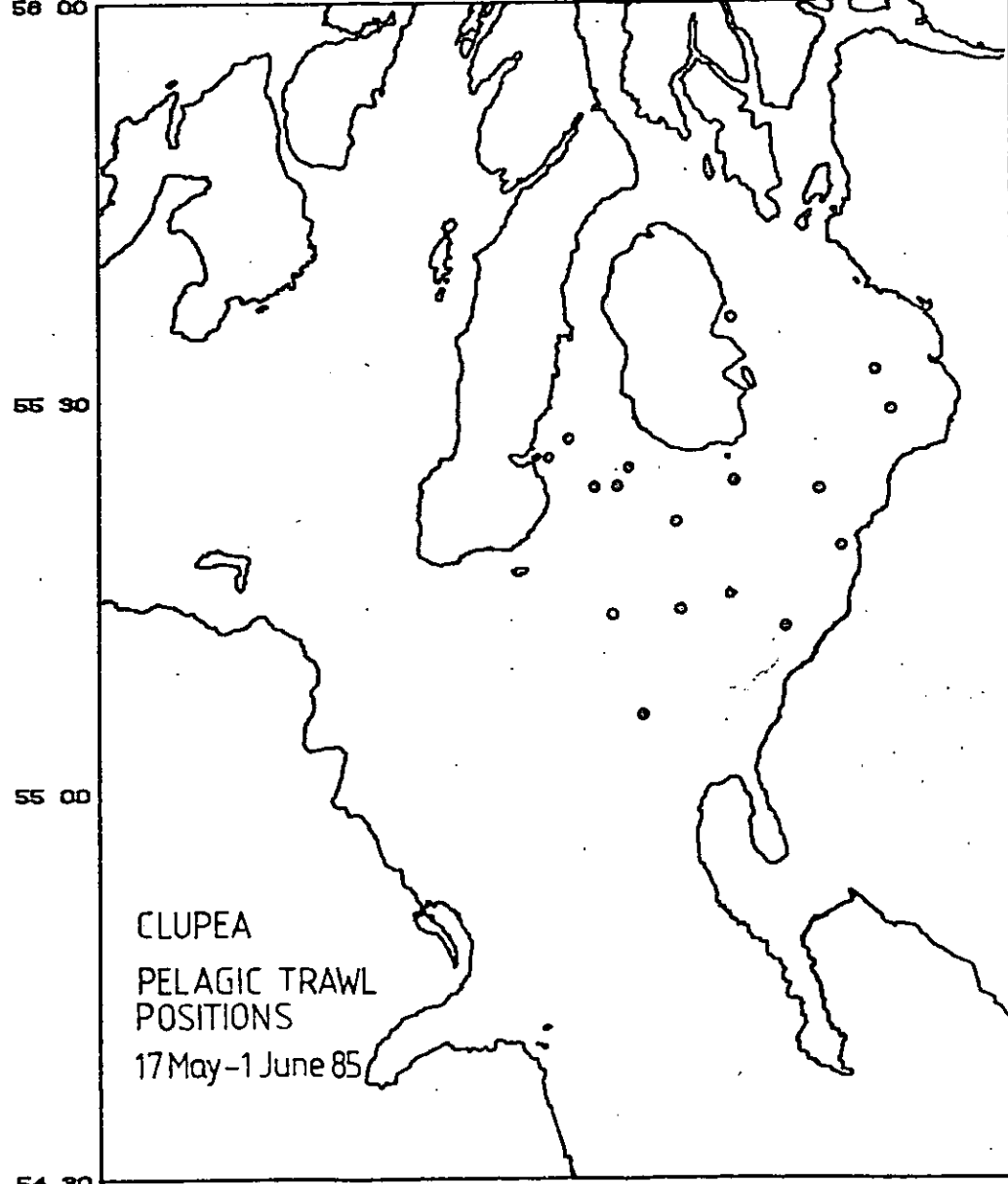
CLUPEA
24-25 May 85

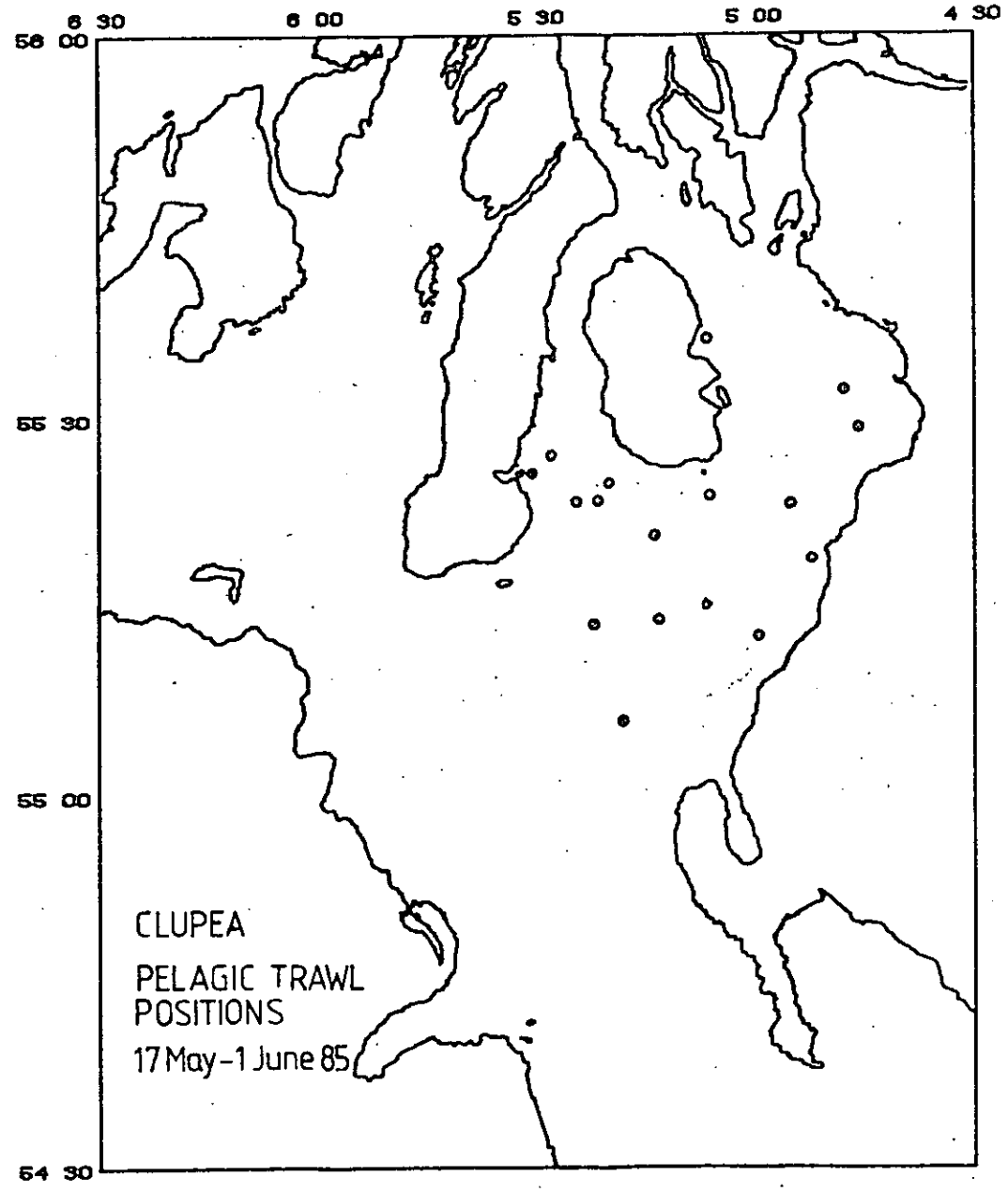
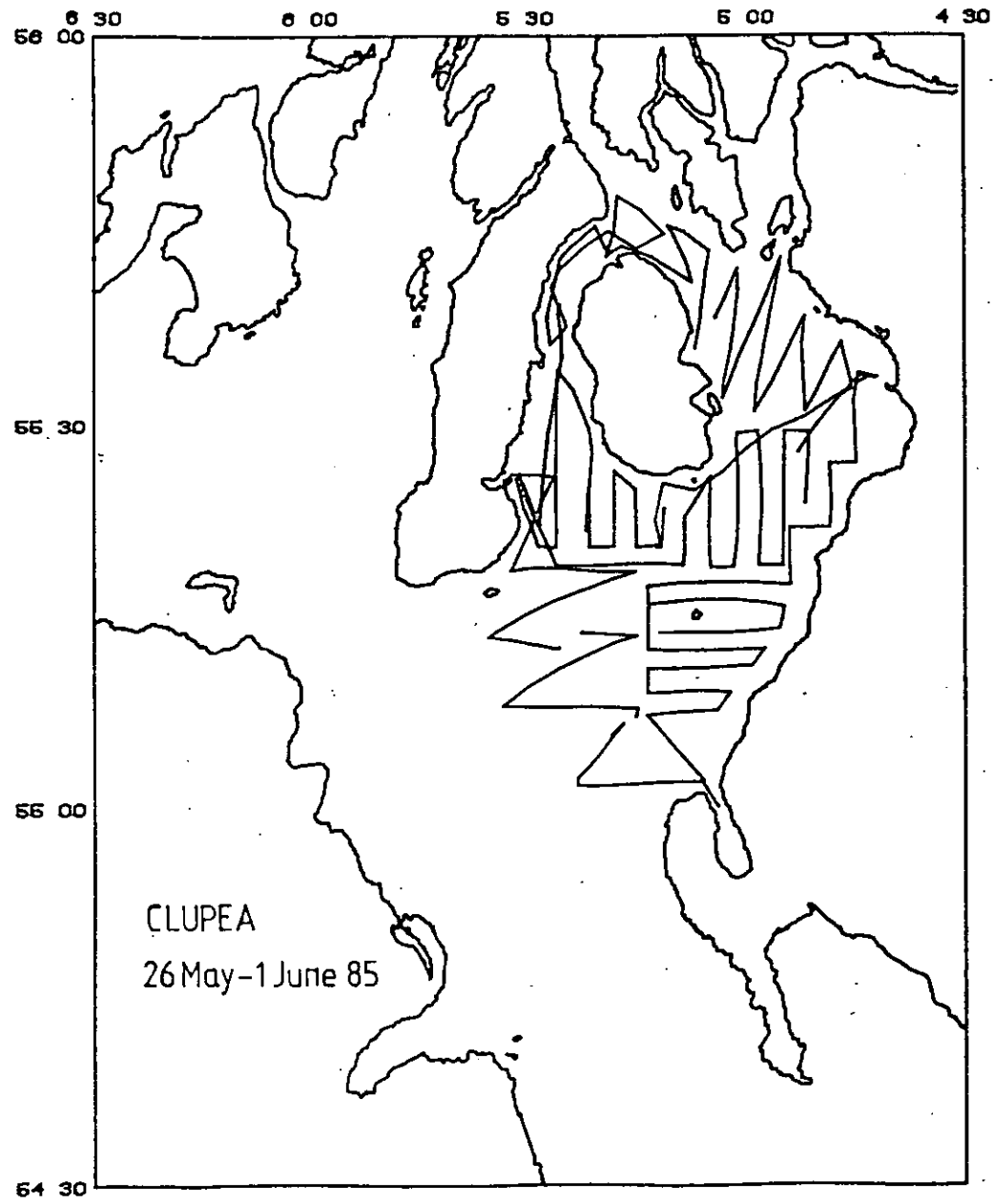


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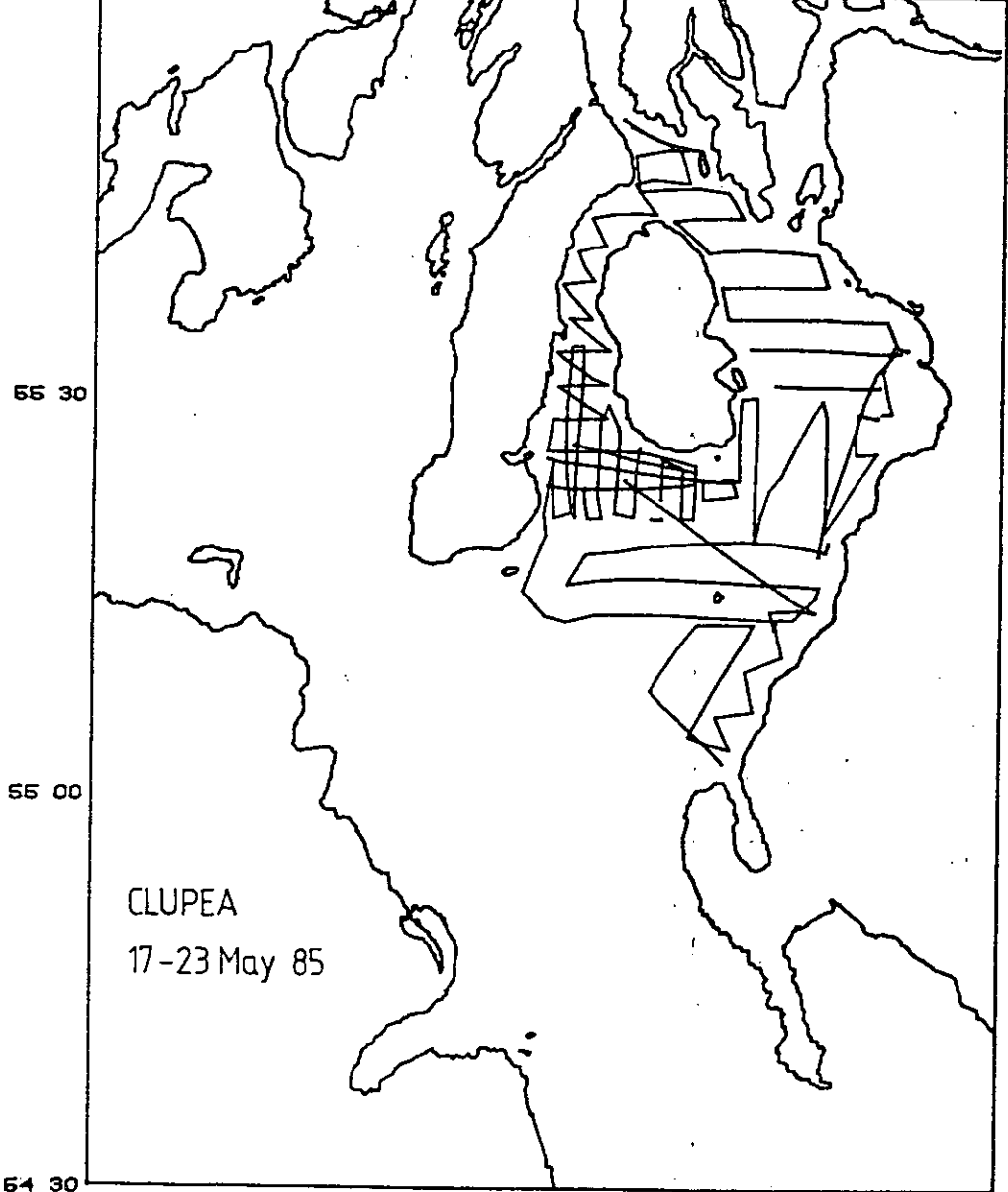


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