R1/6 AMM

In Confidence - Not to be quoted without reference to the Laboratory 5CR83

FRV "Clupea"

Cruise 5/83

REPORT

5-25 May 1983

Objectives

1 To tag sandeel (A. marinus) in the Orkney-Shetland area.
2 To investigate the distribution of sandeel (A. marinus) in Orkney-Shetland waters outwith the recognised fishing grounds.
3 To collect samples of bottom sediment on sandeel fishing grounds for particle size analyses.
4 To collect samples of "queens" (Chalmys opercularis) and bottom sediment from within Sullom Voe for hydrocarbon monitoring.
5 To collect a sample of water for radio-caesium monitoring.

Narrative

The cruise commenced at Buckie at 1830 hours on 5.5.83. FRV "Clupea" sailed north to Sullom Voe where sampling for hydrocarbons was completed over 7-8.5.83. Work was thereafter directed at sandeels. A total of 33 trawl hauls were made using a sandeel bobbin trawl, the duration of the hauls varied from 20-60 minutes depending on the area fished as indicated by the echosounder. Trawl hauls were made at distances ranging from 1 to 8 miles offshore. A total of 10000 Ammodytes marinus were tagged and released, divided equally over 10 fishing areas around Shetland. On completion of the tagging objective work was concentrated on determining the distribution of sandeels on grounds around Shetland and Fair Isle and to the east of Orkney.

On 11.5 and 18.5 "Clupea" put into Lerwick for mid-cruise breaks. During the breaks the new fish reduction plant at Bressay and the freezing plant at Scalloway were visited. Arrangements were made at both plants for the collection of samples of sandeels during 1983 in relation to the routine monitoring of the fishery. Five samples of sandeels were obtained directly from commercial vessels.

At Bressay on 11.5 a tag seeding experiment was carried out to determine the efficiency of magnets, sited on the fish reduction lines, in respect to recovery of sandeel tags. At the time the new plant was not fully operational and only one magnet on one of the two processing lines was functioning. A total of 114 sandeel tags, however, was received from staff working at the plant, these tags having been recovered over the five week period since the start of the fishery.

Samples of whole A. marinus were frozen on capture at 3 areas around Shetland. Accurate determination of whole weight at length will be made in the Laboratory for each of these areas.

Gonads of A. marinus from all hauls were examined. All gonads were found to be either recovering spent or immature.

Throughout the survey area small numbers of Gymnammodytes semisquamatus were taken along with A. marinus. The greatest concentrations were observed in inshore waters at Orkney. Random examination of gonads showed all individuals 15 cm to be sexually mature with ripe and running stages predominating.

The greater sandeel Hyperoplus lanceolatus was present in small numbers on all sandeel grounds, but particularly in the Foula and north Shetland areas. Those specimens taken at Foula were small ranging from 9.5 to 18.0 cm whereas those from north Shetland ranged from 23.0 to 39.5 cm. Random examination of the gonads showed all the larger specimens $>$ 23.0 cm to be sexually mature and ripe. Random examination of stomach contents indicated that throughout the length ranges in both areas H. lanceolatus was feeding exclusively on A. marinus.

Data on fresh live weight at length were also collected for H. lanceolatus.

Bottom sediment samples

At each of the 10 grounds where sandeels were tagged a sample of bottom sediment was collected using a Van Veen grab. Samples were preserved in alcohol for later analyses of particle size composition. In general the sediments consisted of fine sand except for that from Grutnes Voe which was observed to be much more coarse.

Hydrocarbon monitoring

From within Sullom Voe 18 samples of bottom sediment were obtained. The samples were deep frozen for later analyses. Six dredge samples of Chlamys opercularis were also collected within the Voe. In addition, a sample of C. opercularis was obtained from Wiesdale Voe. All samples were deep frozen for later analyses by a taste panel.

Radio-caesium monitoring

A water and salinity sample for radio-caesium monitoring was collected at 57°49'N 02°58'W.

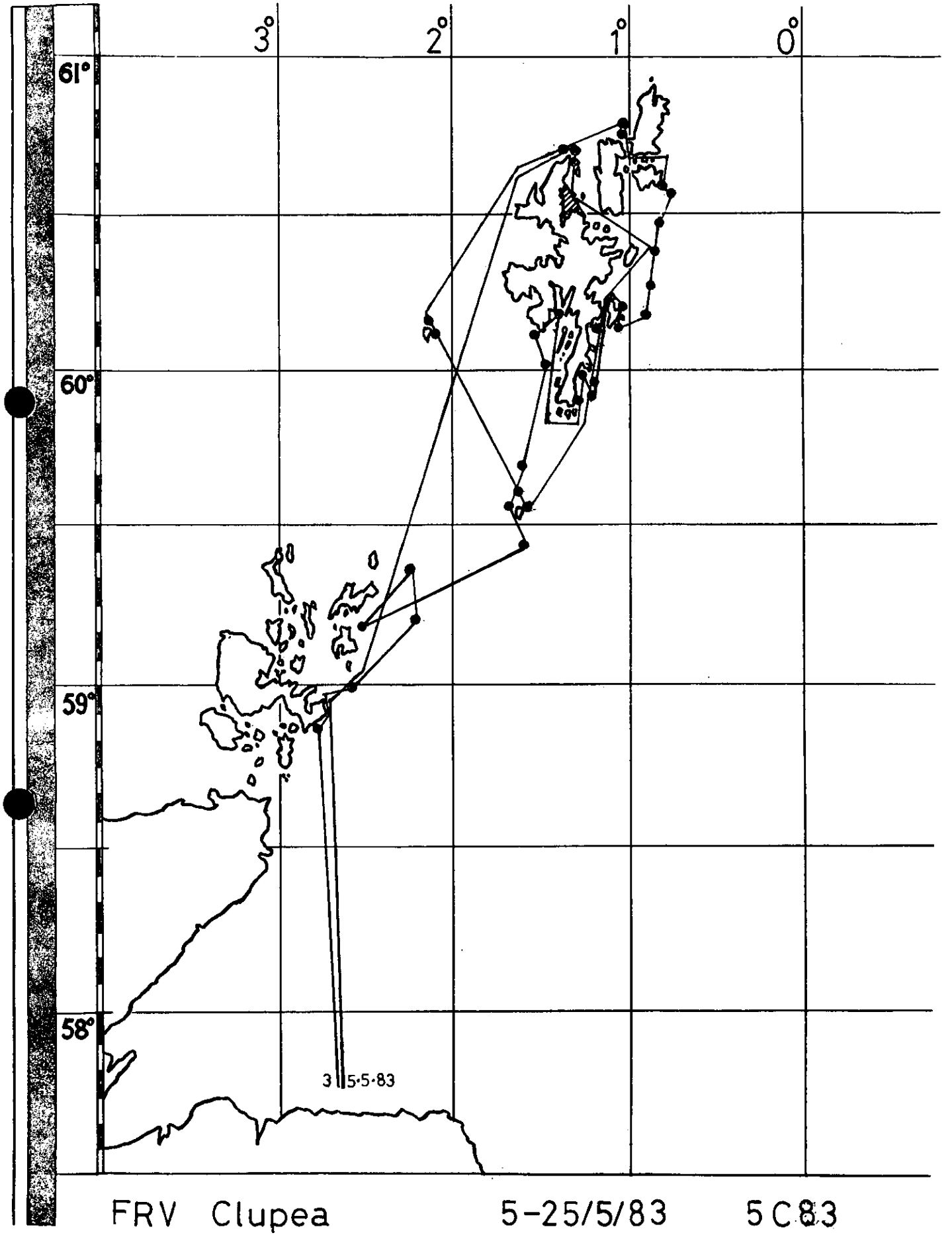
Ad hoc work

A sample of sandeels was collected and frozen for the determination of heavy metals by the Chemistry Section at the Marine Laboratory, Aberdeen.

Seen in draft: G Geddes

J Gauld

30 May 1983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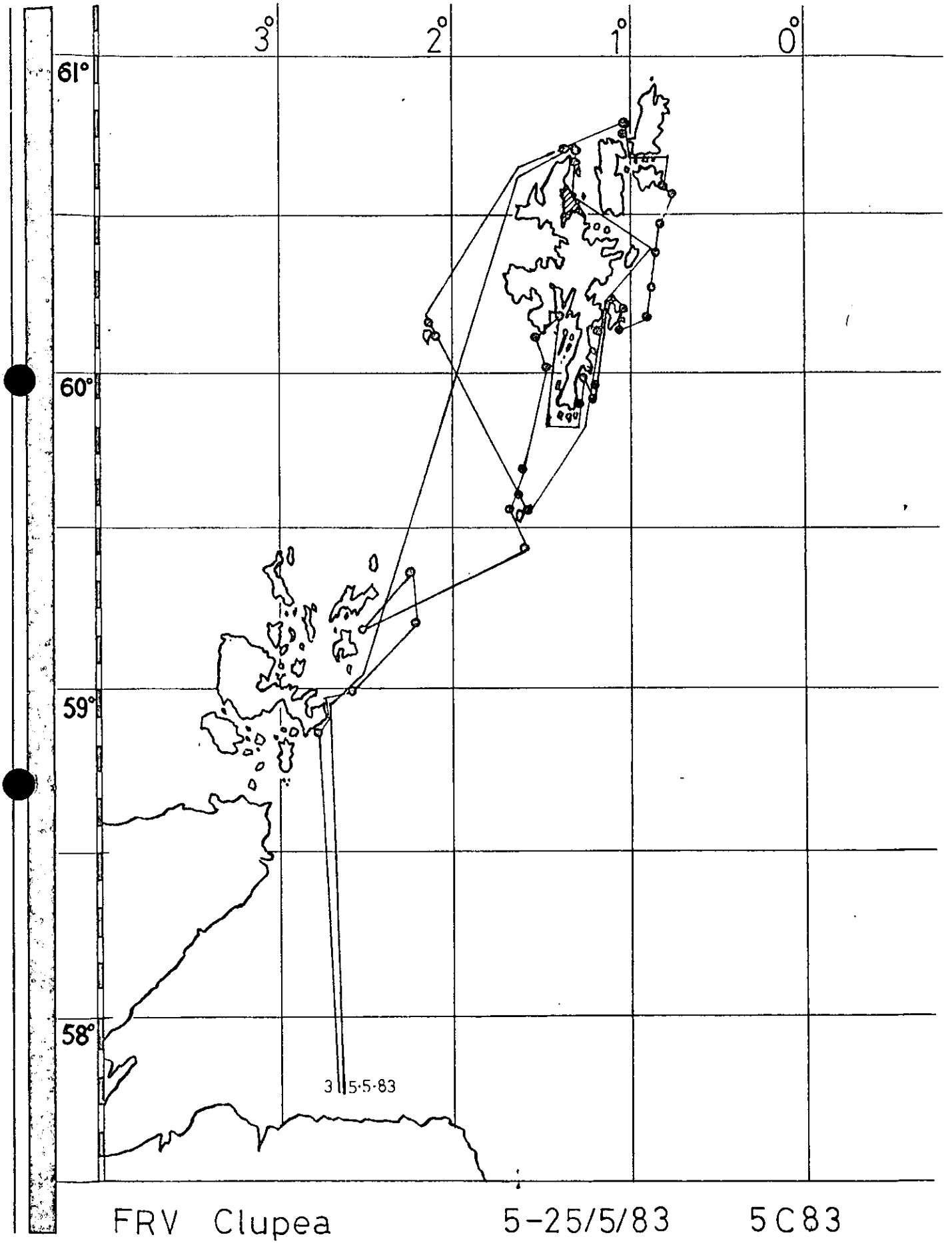

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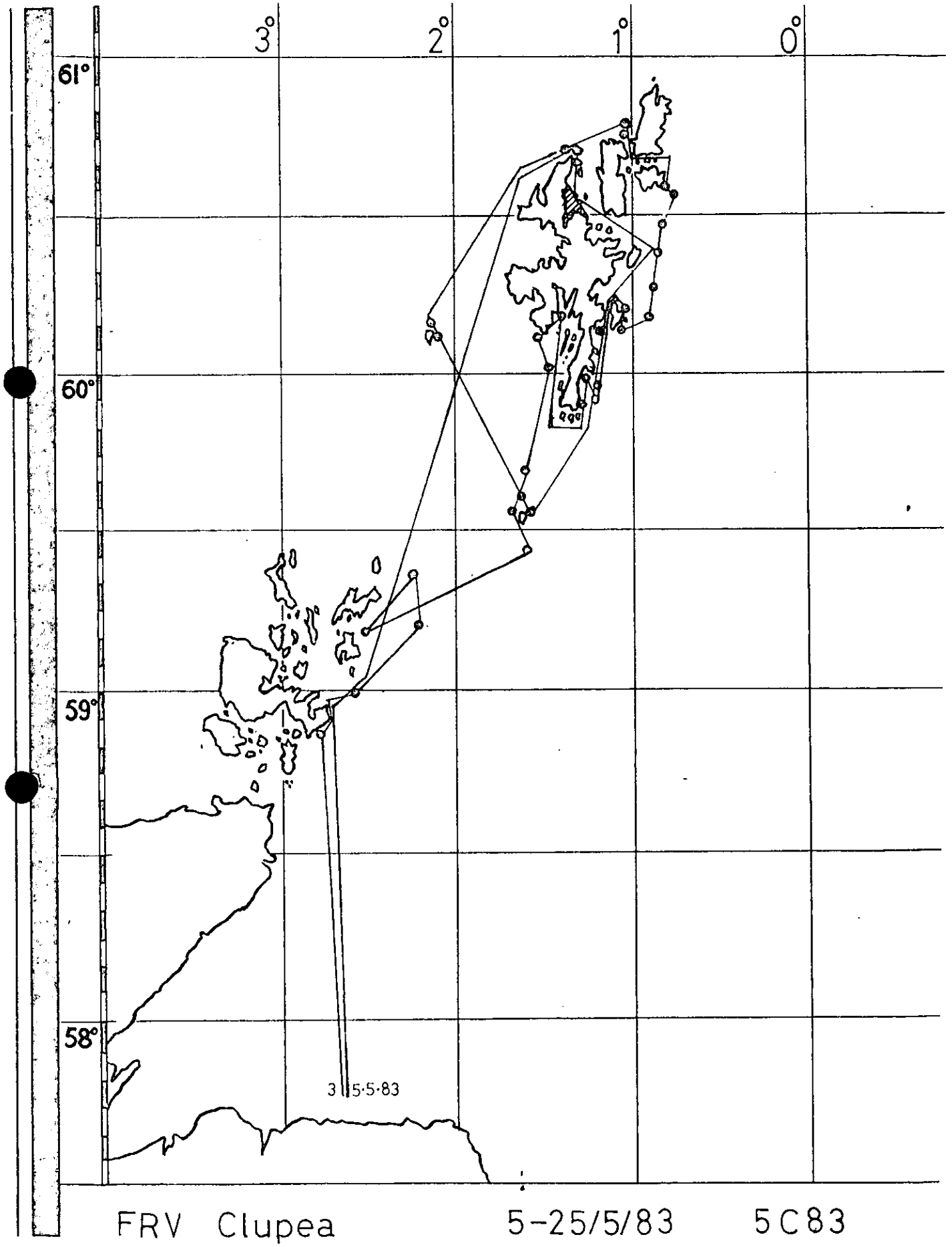

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