Indexed 15/9/83 RG

AMM

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

4SR83

FRV "Scotia"

Cruise 4/83

REPORT

27 April - 17 May 1983

Objectives

1 To carry out a survey for mackerel eggs along the edge of the continental shelf from the Bay of Biscay to west of Ireland as part of a coordinated international survey to determine western mackerel spawning stock size.

2 To sample mackerel concentrations in the survey area.

Narrative

"Scotia" sailed from Aberdeen at 1700 on 27 April and made passage via the Pentland Firth towards the northern end of the planned survey area. Sixteen additional plankton stations were worked along the edge of the Continental Shelf and in Donegal bay between latitudes 59°15'N and the survey area. These were carried out to determine the extent of spawning to the north of the planned area and to investigate reports of spawning mackerel in Donegal bay.

One hundred and one plankton tows, six pelagic trawl hauls and three stops for handline fishing were made during the first part of the cruise prior to docking in Lorient at 0930 on 9 May. No time was lost as a result of bad weather or equipment failure and a complete coverage was made of the survey area between 49°N and 54°N. Some outlying stations were omitted where continuous monitoring of mackerel egg abundance indicated zero eggs in adjacent rectangles. Daily radio contact was maintained with "Tridens" in order to provide optimum survey cover and prevent unnecessary duplication of effort. A fault which developed in the Simrad 400 EK echosounder after the last pelagic trawl haul could not be remedied in Lorient since the requisite part could not be obtained in the time available.

"Scotia" sailed from Lorient at 1100 on 10 May to resume plankton sampling along latitude 47°45'N on the morning of 11 May. Gale force westerly winds slowed progress considerably between May 10 and 12. After completing the stations in this latitude and establishing that the "Tridens" would be able to complete the remainder of the survey area to the south, "Scotia" headed north to repeat and extend plankton sampling along the edge of the Continental Shelf to latitude 53°15'N. One bottom trawl haul was made on 13 May. The last plankton tow was made at 0500 on 14 May, a further 25 stations having been completed

in the second half of the cruise. "Scotia" docked in Aberdeen at 0500 on 16 May.

The cruise track and stations worked are given in the figure attached.

Radio-caesium monitoring requirements given in the programme were cancelled prior to sailing. In addition to the programmed requirements effective repairs were carried out to the electronic metering systems of the plankton hydrographic winches which were not functioning at the start of the cruise. The accuracy of Decca positions were also monitored throughout the survey zone and compared against Omega and Sat. Nav. derived positions. Preliminary studies of Omega and Sat. Nav. signal strength were made with a view to interfacing these systems to the computer for use in areas where Decca is unreliable. New calibration figures for the EM log were input to the computer to provide a more accurate speed readout at the computer terminals.

Results

Preliminary analysis of the plankton samples indicates that, as, in all previous surveys, the highest concentrations of mackerel eggs were associated with the edge of the Continental Shelf. The main area of abundance appeared to lie between latitudes 48°N and 51°N.

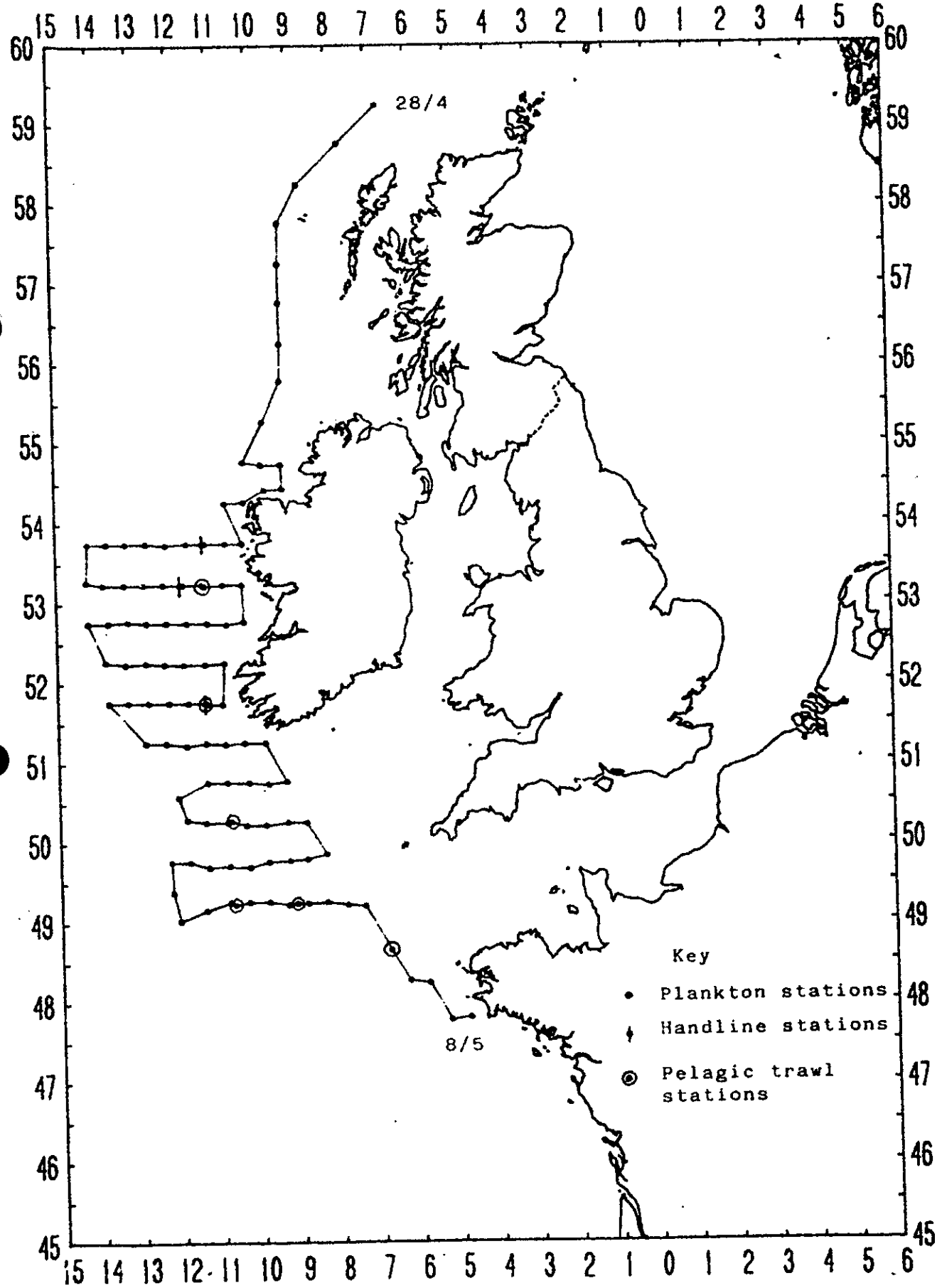
Owing to the extensive area of the egg survey grid only a limited amount of time could be allocated to fishing. No mackerel were taken by handline but small numbers were taken in most trawl hauls. These ranged in size from 22-44 cm with modes of 27 and 32 cm, corresponding to two and three year old fish respectively. The two year old fish were predominantly immature while older fish were in stages III-V (ie ripening to partially spent). Thirty-two stage III female gonads were collected for fecundity analysis, while additional ovary material was collected for histological examination by the MAFF Laboratory, Lowestoft. One sample of mackerel was frozen for parasitological investigations by Dr K MacKenzie.

No concentrations of mackerel-type echotraces were seen during the cruise. The biggest concentration of pelagic echotraces was observed about 80 nautical miles NW of Ushant. These were identified by fishing to be I-group horse mackerel. Adult horse mackerel and blue whiting were the predominant species in other hauls.

Seen in draft: J W Gillon

M Walsh

23 May 1983



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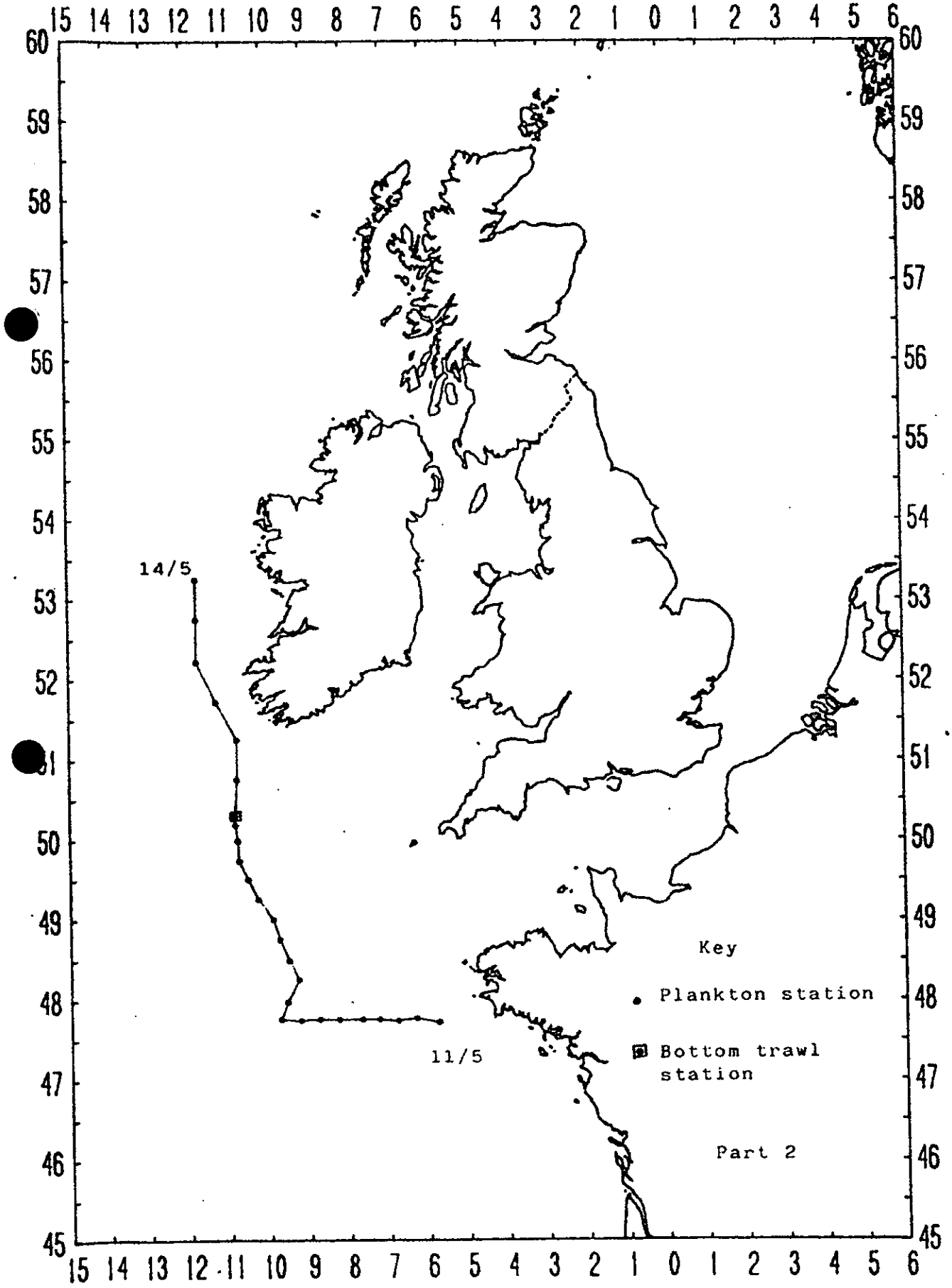
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Key
Plankton station
Bottom trawl station
Part 2

Figure 1(a)

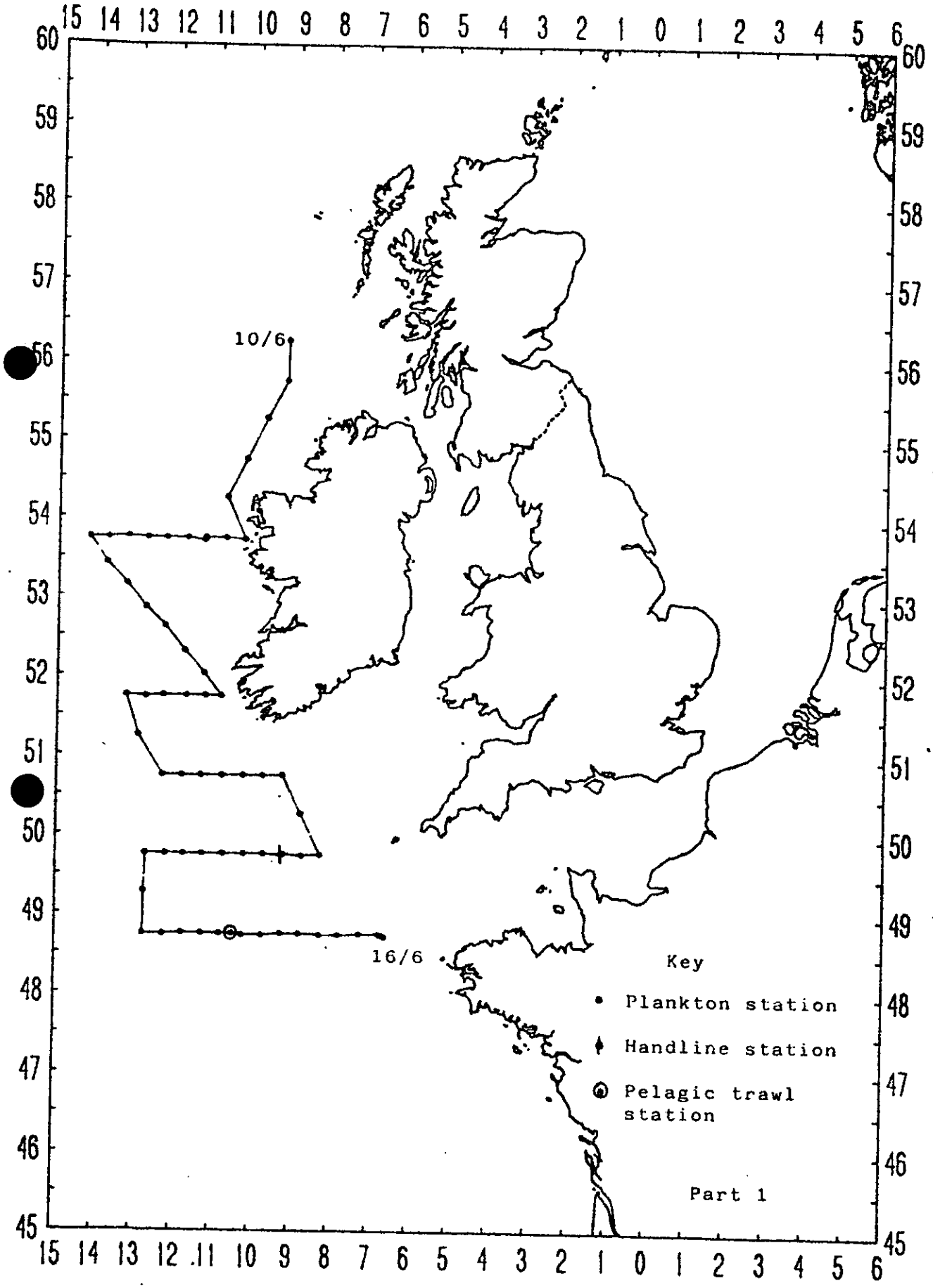

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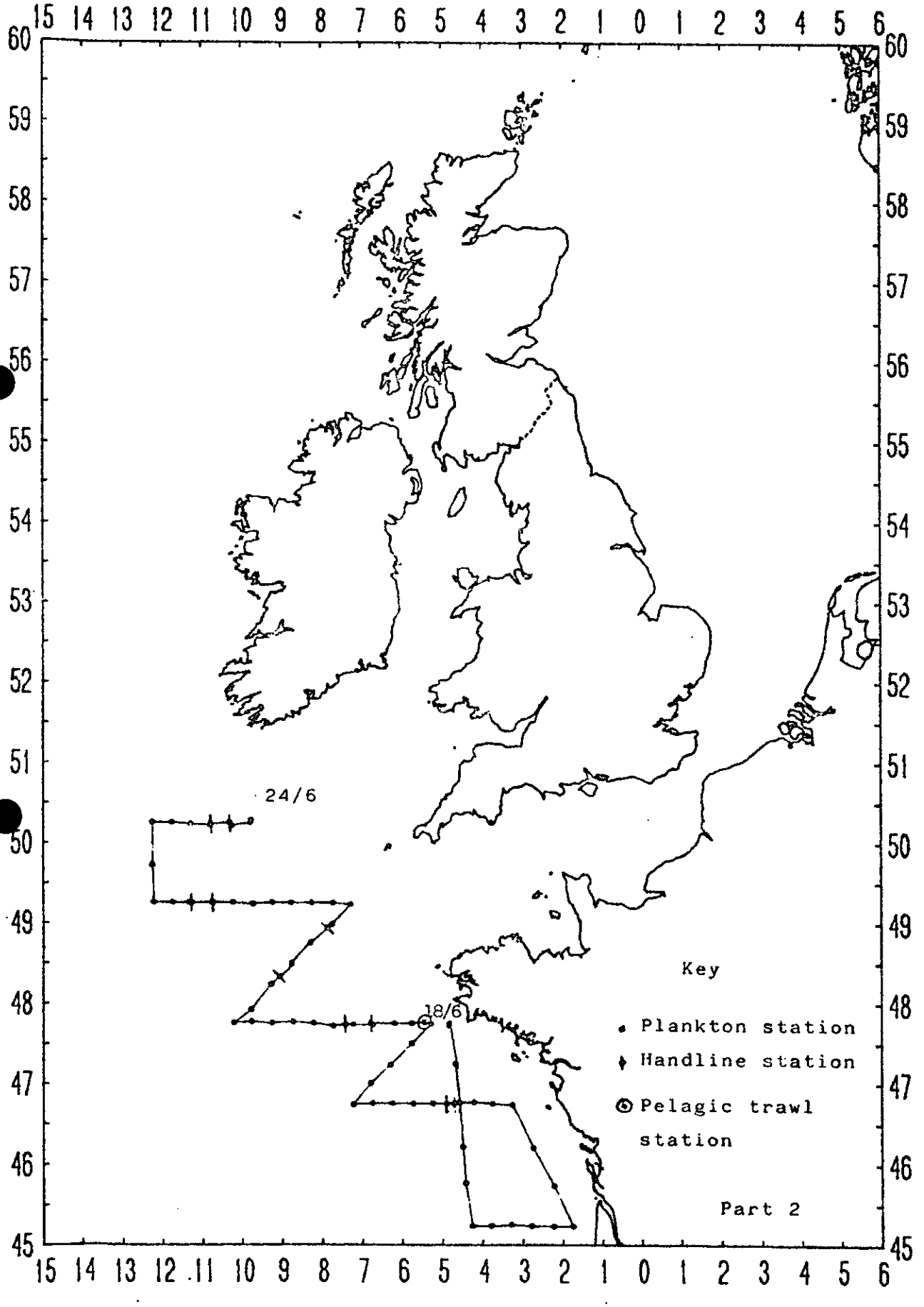
Figure 1(b)



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