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FRV "Scotia"
Cruise 5/86

5SR86

Report

16 May - 5 June 1986

Personnel

M Walsh	SSO (in charge)
M Mowat	SSO
A Naha	HSO
P Rankine	SO (25 May - 5 June)
P Hopkins	SO (16-24 May)
Miss J Staples	ASO
L Cargill	ASO
R Redshaw	(student visitor)

Objectives

1 To carry out a survey for mackerel eggs on the spawning grounds of the 'western' mackerel stock.

2 To sample mackerel concentrations in the spawning area.

3 To obtain mackerel ovaries for fecundity determination.

4 To investigate mackerel egg development, incubation and mortality rates at different temperatures.

5 To monitor temperature, salinity and chlorophyll in the sampling area.

6 To obtain radio-caesium samples.

7 To investigate parasite infection in haddock and lemon sole at 4 stations to the north of Scotland.

8 To write a computer programme and to install equipment designed to link the "Scotia's" new navigation system to the scientific monitors around the ship.

Narrative

"Scotia" sailed from Aberdeen at 1530 on 16 May and completed 2 radio caesium stations off Aberdeen and the Pentland Firth before carrying out 3 out of the 4 bottom trawl stations to the north of Scotland on 17 May. The third radio caesium station off Cape Wrath was then completed and a course set towards the 200 metre contour west of the Hebrides and thence southwards along the edge of the shelf towards the planned survey area. Eight plankton stations were worked en route, to determine the extent of spawning north of the planned area, before commencing the main survey grid on 19 May.

Thirty-three plankton stations and 4 pelagic trawl hauls were completed in the main survey area between 19 and 24 May before docking in Falmouth for the half landing. Regular radio contact with "Cirolona" and "Tridens" was maintained to ensure optimum survey coverage. Galeforce westerly winds slowed progress considerably between 20 and 22 May and repeated difficulties were encountered with the Simrad cabled head-line transducer system during trawling operations.

"Scotia" sailed from Falmouth at 0930 on 25 May and resumed plankton sampling along latitude 50°15'N later that evening. During the second part of the cruise 75 plankton, 7 handline and 10 pelagic trawl hauls were made in the main survey area and an additional 4 plankton hauls were made in latitude 55°15'N to the north of it. Severe

westerly gales hampered work for approximately half a day between 26 and 27 May.

Over the survey period as a whole an almost complete coverage of stations between 50° and 55°N was made with replicate sampling in some of the more important rectangles.

"Scotia" docked in Greenock at 1000 on 5 June. The cruise track and stations worked are shown on the attached charts.

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, mainly to the south of 52°30'N. North of the grid area mackerel eggs were present but not abundant.

Fishing by both pelagic trawl and handlines yielded small catches of mackerel during most hauls. These ranged in size from 25-45 cm with the main modes at 27 and 37 cm. A comprehensive age length key over the total size range was accumulated; 98 ovaries for fecundity and histological analysis were collected, these were predominantly in partially spent condition. Very few fish of pre-spawning maturity were observed. The other main species in the catches were horse mackerel and blue whiting.

With regard to the distribution and abundance of pelagic fish type echotraces these were noticeably more abundant along the edge of the Shelf than elsewhere. They were not, however, invariably associated with high mackerel egg abundance nor were the fishing positions yielding the best mackerel catches necessarily associated with the presence or abundance of echotraces.

During the second half of the cruise ripe eggs were collected and fertilized on 3 separate occasions and incubation experiments were carried out. Small samples of ripe unfertilized eggs and whole mackerel were frozen for biochemical investigation at the SMBA laboratory at Oban and a preliminary analysis of the plankton samples was undertaken for the IMER Plymouth laboratory.

Data on sea surface temperature, salinity and chlorophyll were collected at each plankton station. Temperature-depth profiles for each plankton haul were logged on computer from a Scanmar depth and temperature monitor mounted on the sampler.

Bottom trawl fishing north of Scotland was unsuccessful; the gear suffered damage in one haul and no fish for parasite investigations were caught in the other 2.

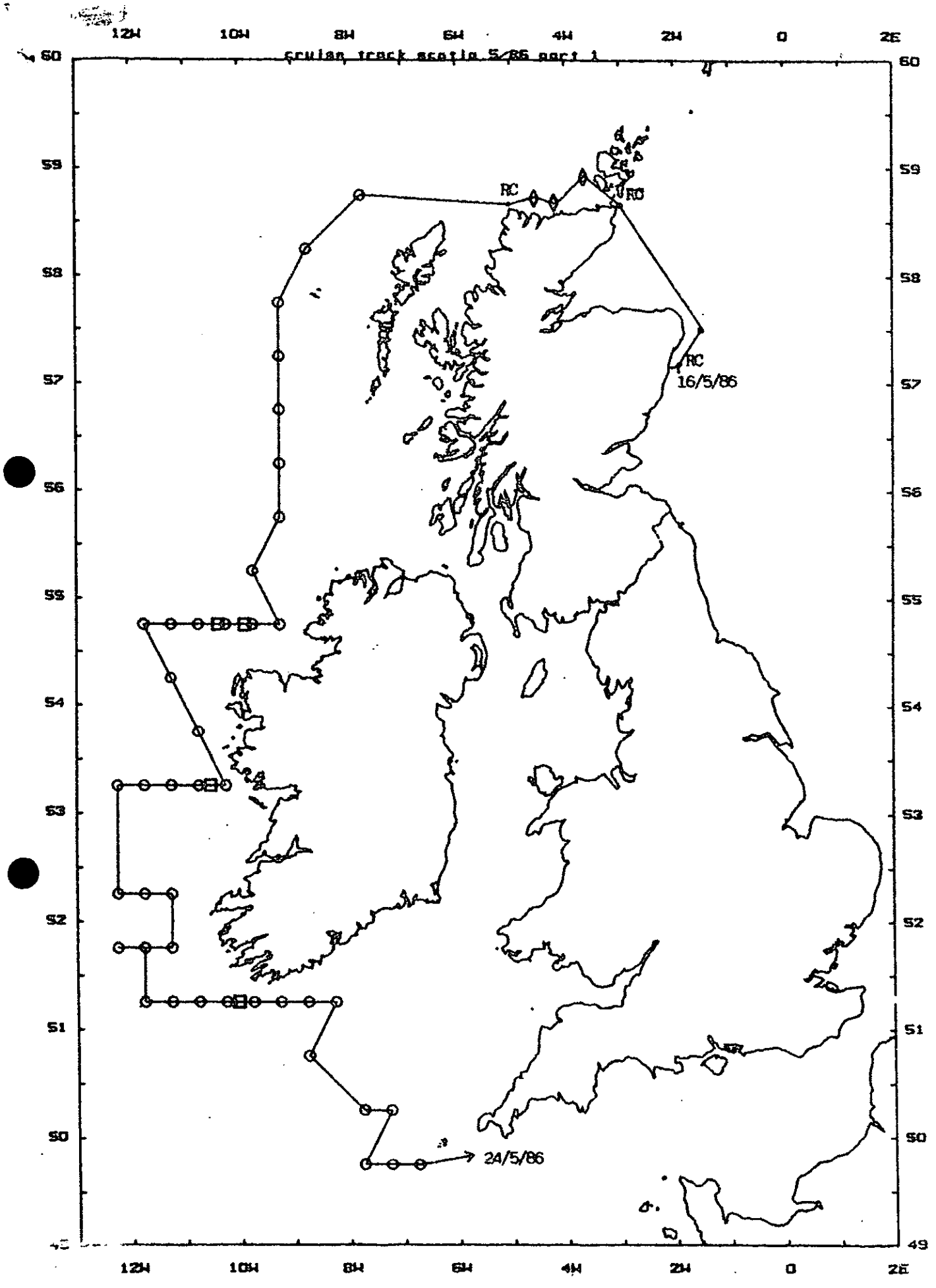
During the course of the cruise the new Chameleon controller was interfaced with the ship's navigation system (MNS2000) and with some of the monitors and RS232 ports in the scientific spaces. New software was written and the new system tested. A further one week of ship's time is estimated to debug, tidy up and complete the required work. The PDP11/34 computer will then be removed.

In the second half of the cruise tests were made on the maximum hauling-in speed of the new motor on the plankton winch. A brief summary of results has been prepared.

M Walsh
18 June 1986

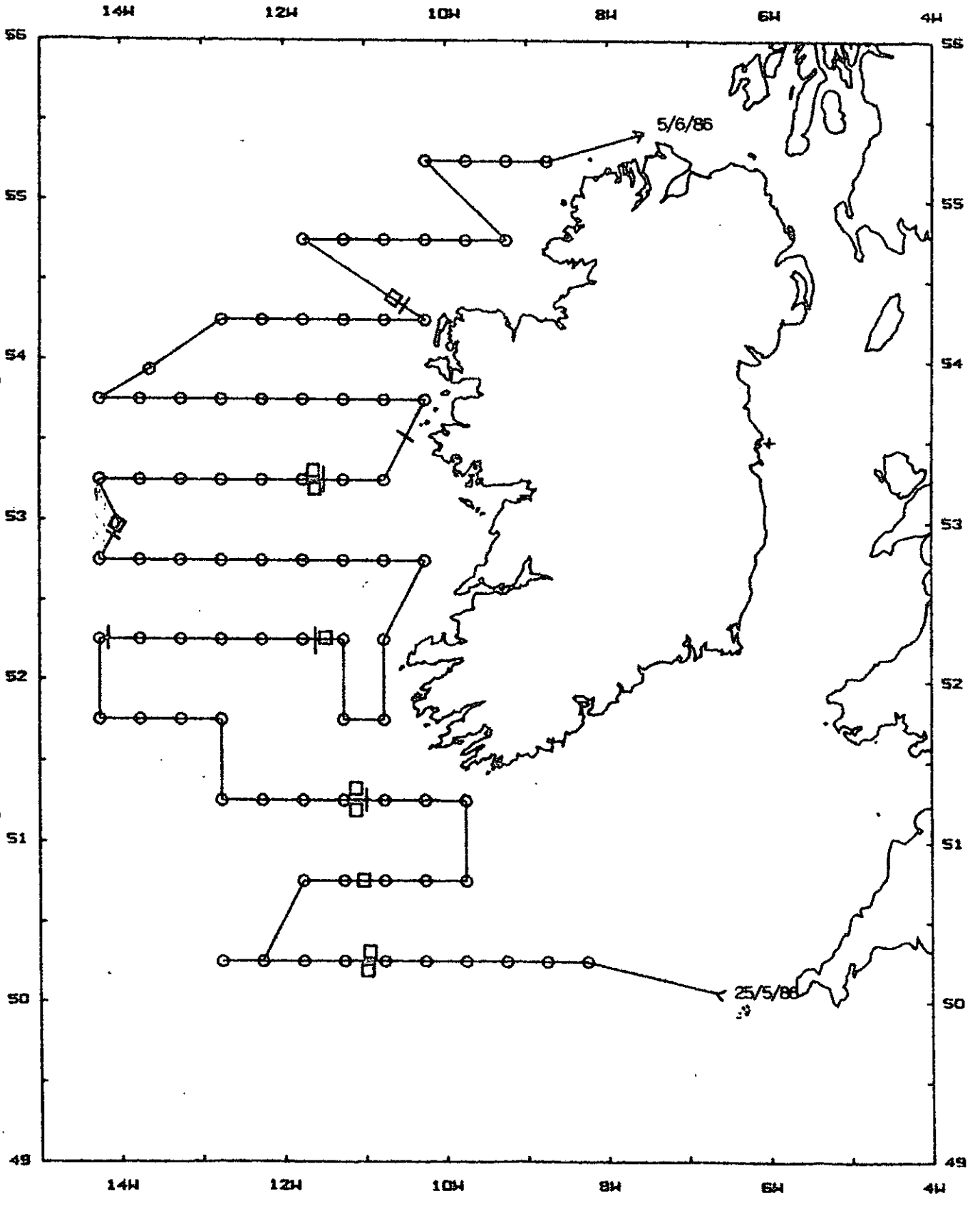
Seen in draft: N E McInnes, CO

CRUISE TRACK SCOTIA 5/86 PART 1



- Plankton haul
- Pelagic trawl haul
- Bottom trawl haul
- RC Radio caesium station

CRUISE TRACK SCOTIA 5/86 PART 2



○ Plankton haul

□ Pelagic trawl haul

| Handline haul