

R1/12

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FRV "Scotia"

Cruise 4/89

4SR89

REPORT

22 April-16 May 1989

Personnel

M Walsh	SSO (in charge)
W S MacDonald	SO
D Beveridge	SO
I Gibb	ASO
Miss J Simpson	ASO

Objectives

1. To carry out a survey for mackerel eggs on the spawning ground of the "western" mackerel stock.
2. To sample mackerel concentrations in the spawning area.
3. To obtain mackerel ovaries for fecundity determination and the estimation of atresia.
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.

Narrative

"Scotia" sailed from Aberdeen at 1130 on 22 April and completed 4 radio caesium stations off Aberdeen, Buckie, the Pentland Firth and Cape Wrath before setting a course for the 200 metre contour west of the Hebrides. Six plankton stations were worked in the rectangles closest to this contour en route for the main survey grid further south.

Sampling began in the main survey area on 24 April. During the following 4-day period 25 plankton stations, 4 handline hauls and 2 trawl hauls were completed before "Scotia" docked in Cork for an unscheduled half landing on the evening of 27 April to land the first officer who had become seriously ill.

"Scotia" sailed from Cork at 0930 on 29 April with a new fishery officer and resumed the survey later that day. During the next 6-day period a further 51 plankton stations 10 handline hauls and 3 trawl hauls were completed before docking in Lorient at 1000 on 6 May. The half landing here was later than scheduled and reduced by one day in order to allow completion of all southern Biscay stations and to compensate for time lost in Cork. During this second phase of the cruise, two 250 µ plankton nets sustained damage and from 4 May

to the end of the cruise were replaced by a 500 μ net. In addition, the Scanmar depth temperature sensor on the plankton sampler ceased to function on 2 May.

"Scotia" sailed from Lorient at 1000 on 7 May and resumed the survey later that day. A further 59 plankton stations and 13 handline hauls were completed during the remaining part of the cruise before docking in Aberdeen at 2300 on 16 May. The radio cassium stations at Cape Wrath and Pentland Firth were sampled again en route to Aberdeen.

Over the survey period as a whole a very wide coverage of stations was achieved as a result of fine weather and an improved engine performance after the refit.

Cruise tracks and stations worked are shown on the attached charts.

Results

During the cruise fish eggs were picked out and counted from the 135 samples collected. A preliminary analysis of these indicates that, as in previous surveys, the greatest concentrations of eggs were associated with the shelf edge, mainly south of 52°N.

Fishing by bottom trawl (5 hauls) and handline (27 hauls) was more successful than in previous mackerel egg surveys enabling sampling of the spawning stock over a wide area. The size range of sampled catches was 20-47 cm. The length frequency distributions were polymodal with modes between 31 and 44 cm and with no clearcut geographical trend in size. All samples were aged at sea, the most abundant year classes being those of 1984, 1985 and 1981. Seventy ovaries were collected for fecundity and atresia investigations. Only a minority of fish, however, appeared to be in prespawning condition, the majority being either ripe or partially spent.

Three separate incubation experiments were run using eggs from ripe females fertilized on board. Egg development rates were monitored at 5 different temperatures to evaluate the precision of previous estimates.

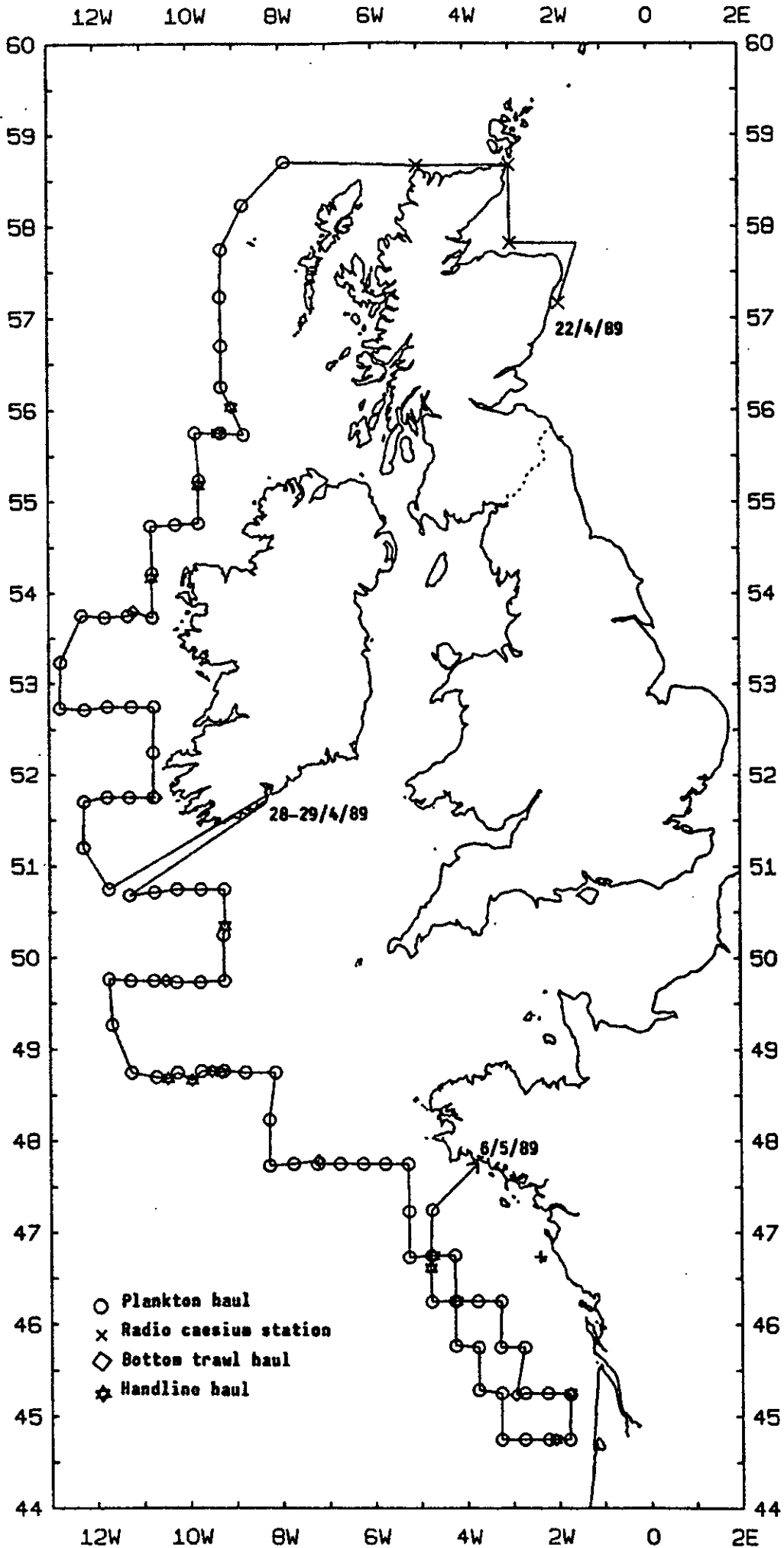
Data on sea surface temperature and salinity were monitored continuously and chlorophyll samples collected at each plankton station.

M Walsh

12 July 1989

Seen in draft: N E McInnes

CRUISE TRACK SCOTIA S4/89 PART 1



CRUISE TRACK SCOTIA S4/89 PART 2

