

Indexed

26

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In Confidence: Not to be quoted without prior reference to the Laboratory

FRV 'Scotia'

6SR84 MB

Cruise 6/84

Report:

29 May - 22 June 1984

Objectives:

- 1) To carry out a survey for mackerel eggs in the North Sea as part of a co-ordinated international survey to determine North Sea spawning stock size.
- 2) To sample mackerel concentrations in the survey area.
- 3) To test and install new computer software.

NARRATIVE

'Scotia' sailed from Aberdeen at 1830 on 29 May and made passage to Hirtshals to represent the United Kingdom at the opening of the North Sea Centre by Queen Margrethe of Denmark. 'Scotia' arrived early on 31 May and later that day (from 1900 to 2100 hrs) the British Ambassador and Mrs James Mellon hosted a reception on board for approximately 85 guests including 'Scotia's' officers and scientific staff.

On 1 June Capt Gillon and Mr Adams represented 'Scotia' at the official opening ceremony at which DAFS was also represented by Mr Gordon, Professor McIntyre and Capt Corse and at which MAFF was represented by Mr Griffiths and Mr Ramster.

Together with the other visiting research vessels and the Hirtshals - based 'Dana', 'Scotia' participated in an open day on Saturday 2 June when an exhibition depicting the work of the Marine Laboratory, Aberdeen, the Fisheries Laboratory, Lowestoft and Torry Research Station was on view on 'Scotia'. On the evening of that day virtually all officers, ratings and scientific staff from 'Scotia' attended a reception given by our Danish hosts at the North Sea Centre. It proved to be a fitting end to one of the happiest and most memorable occasions with which 'Scotia' has been involved.

'Scotia' sailed from Hirtshals at 1730 the following day and the mackerel egg survey commenced at 0430 on 4 June after a flowmeter calibration had been completed.

During the following six days 'Scotia' completed 79 plankton stations between 56° and 57°N to cover the centre of the survey area while 'Tridens' covered the area to the south and 'Dana' the area to the north to provide a combined total area coverage. During this period 'Scotia' carried out four trawls and two handline hauls. Four hours were lost making repairs to a roller on the plankton winch.

On completion of the first survey, a second survey commenced at 14.00 on 10 June and a further 41 plankton hauls, one trawl haul and two flowmeter calibrations were carried out between 55° 45'N and 56° 45'N before 'Scotia' left the survey area to

arrive in Aberdeen for the half landing at 02.00 on 14 June. As in the first survey, "Dana" covered the Northern part of the survey area and "Tridens" the southern part to provide a second complete area coverage.

During the period up to the half landing some difficulties were experienced with the IOS depth - monitoring system on the plankton sampler so that during a small number of hauls sampling depth had to be estimated from warp length. After sustaining some damage to the receiving transducer during bad weather on 8 June the system was eventually replaced by a Simrad cableless system for the remainder of the cruise.

"Scotia" sailed again from Aberdeen at 1530 on 15 June to commence a third combined survey with the Norwegian research vessel "Michael Sars". During this survey 82 plankton hauls, six trawls, five handline hauls and three flowmeter calibrations were made in the northern part of the survey area between $56^{\circ} 15' N$ and $58^{\circ} 40' N$ while the southern part of the area and the Skagerrak were covered by "Michael Sars". Throughout the period of the three combined surveys day to day radio contact was maintained between ships to co-ordinate coverage of the survey area.

THE EGG SURVEY

Plankton sampling was carried out using a high speed Loch Ewe sampler with 500μ mesh and 250u codend towed at five knots. Hauls were stepped horizontally at 20, 15, 10 and 5 metres and just below the surface for a period of three minutes at each depth. Fish eggs were picked out from all hauls and sea surface temperature, salinity and chlorophyll were monitored continuously.

A preliminary analysis of the samples indicates that in the area covered by "Scotia" the greatest concentrations of stage I mackerel eggs were encountered during the first of the three surveys. In the first and second surveys, which covered roughly the same area, mackerel eggs were most abundant between $2^{\circ} 30' E$ and $4^{\circ} 30' E$ ie in the centre of the area surveyed as in most previous years. In the third survey the proportion of old eggs appeared to be higher and the distribution more scattered. In this survey the highest concentrations of mackerel eggs were found at Latitude $57^{\circ} 30' N$ between $3^{\circ} 30' E$ and $4^{\circ} 30' E$ and at $58^{\circ} 20' N$ $2^{\circ} 30' E$.

MACKEREL SAMPLING

Fishing yielded small quantities of mackerel on 3 out of 11 occasions with the pelagic trawl. There was no catch with handlines. Three additional May-caught samples were obtained from the "Tridens" for fecundity investigations. The size range of the 208 fish examined was 22-46 cm with modal lengths at 41 and 34 cm. The main age groups were 3, 4, 5, 1 and 15 year olds ie yearclasses 1981, '80, '79, '83 and '69. Over 90% of fish caught were mature and most of these had already begun to spawn. A small number of ovaries were collected for fecundity and histological examination.

Other species caught were herring, spurdogs and haddock. 175 baskets of herring (modal size 18 cm) were caught in one haul at $56^{\circ} 40' N$ $3^{\circ} 41' E$.

COMPUTER SOFTWARE INSTALLATION

Version 2.0 of the PARSEC system software was installed and is now functioning although a few minor problems remain to be corrected.

M Walsh
J A Adams
17 July 1984

