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R1/12

In Confidence

8SR84 MB

FRV 'SCOTIA'
Cruise 8/84
6-26 July 1984

REPORT

Objectives

- 1 To participate in an ICES-coordinated acoustic and midwater trawling survey of herring in the northwestern North Sea.
- 2 To obtain samples of herring for biological analysis.
- 3 To investigate the possibility of identifying echotraces using TV and still cameras mounted on a towed underwater vehicle.
- 4 To obtain samples of the intestinal tract of herring for the NERC Institute of Marine Biochemistry.
- 5 To collect data on individual weights of herring.
- 6 To collect herring ovaries for fecundity studies.
- 7 To collect herring pyloric caeca for parasitological investigations.
- 8 To collect water samples for radio-caesium monitoring.

Narrative

'Scotia' sailed from Aberdeen at 1100 on 6 July and made a direct course for Fetlar to carry out an acoustic calibration. The acoustic survey began to the north of Shetland at 1445 on 7 July and the next 2 days were spent east of Shetland. The west of Shetland was surveyed from 10-12 July followed by the area to the west of Fair Isle (12 July), the area north and west of the Orkneys (13-14 July), and the area south of Shetland (15 July) 'Scotia' docked in Lerwick for the half-landing at 0845 on 16 July and sailed at 1100 the following day.

An acoustic calibration was carried out in East Wicke Bay south of Lerwick and the acoustic survey continued around the north of Shetland to obtain further echo-integration readings in the areas of herring concentration recorded in the first half of the cruise. The survey then proceeded southwards to the Moray Firth (21-22 July) and the Buchan area (23-24 July) and the acoustic survey ended by repeating an area northeast of Buchan on 25 July where herring traces had been recorded. 'Scotia' docked in Aberdeen at 2300 on 25 July.

Results

1 Acoustic and midwater trawling survey

The cruise track and midwater trawl haul positions are shown on the attached chart. Concentrations of herring were recorded by echosounder to the east and west of Shetland, north and northwest of Orkney and about 30 miles north of the Buchan coast. A total of 31 trawl hauls were carried out, herring being caught in

23 of them. Around Shetland catches consisted mostly of large herring from 24-37cm in length. North and northwest of Orkney and in the approaches to the Moray Firth the herring caught were on average smaller (18-30cm) and some catches of small herring (15-22cm) were made.

Other species caught included mackerel north and northwest of Orkney, Norway pout around Shetland and sprats off Aberdeen, but whiting were caught in much smaller numbers than in previous years.

The output of the 38kHz sounder was digitised and for every transmission samples were stored on mag-tape from 5 metres below the transducer to 10 metres below the sea bed at $\frac{1}{2}$ metre depth intervals. This complete record of the survey is available along with time, date and position information recorded every 20 seconds to allow reconstruction of the echosounder output for future analysis.

During the cruise the thermosalinograph was run continuously and chlorophyll samples taken.

2 Identification of echotraces by TV and still photography

A series of trials were carried out using TV and photographic cameras mounted on a towed underwater vehicle. The vehicle was shot on 7 occasions and in all 760 still photographs were taken. The greatest depth worked was 160 metres and the fastest speed 3.7 knots. Despite the fact that echotraces were observed in midwater and that the vehicle was manoeuvred into the levels indicated, no fish were seen on the television or recorded on film. However, on occasions concentrations of plankton were noted including both the smaller and larger jellyfish species.

3 Samples of herring guts were frozen for the NERC Institute of Marine Biochemistry. Herring were weighed at sea to provide a weight-length relationship, herring ovaries were collected for fecundity analysis and pyloric caeca for parasitological investigation.

4 Three samples of water were collected for radio-caesium monitoring.

R S Bailey

27 November 1984

