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FRV *Scotia*

Cruise 3/92

REPORT

26 March-14 April 1992

Personnel

M Heath	PSO (29 March-14 April)
R Stagg	PSO (26-29 March)
D Moore	SSO
J Dunn	HSO
A Robb	HSO
P Rankine	HSO
L Cargill	SO
J Hunter	HPTO (26-29 March)
J Beyer	Visitor, Danish Fisheries Institute 26 March-6 April

Objectives

1. To conduct a survey of haddock and cod egg and larvae distribution over a wide area of the NW shelf and northern North Sea.

2. To sample adult haddock and cod over the survey area to assess their spawning state.

3. To collect additional samples of fish eggs and larvae at selected key sites for otolith microstructure analysis, and measurements for molecular markers of hydrocarbon pollution.

4. To collect water samples at North Sea Task Force sampling stations.

5. To collect a water sample for radio-caesium monitoring.

Narrative

Scotia sailed from Aberdeen on the morning of 26 March in deteriorating weather, and made for a North Sea Task Force sampling station in the Moray Firth for equipment trials. The passage north was slowed down by bad weather, but after completion of trials the following morning, the vessel proceeded around the north coast of Scotland to begin sampling in the North Minch.

Stations in the Minch were sampled during 27-29 March, and staff exchange was carried out off Oban around midday on 29th. During the following days, the vessel continued working in poor weather conditions on the western shelf, to the west of the Outer Hebrides, and then northwards to the west of Shetland. Stations to the north of Shetland were sampled prior to arrival in Lerwick for the mid-trip break on 6 April.

After leaving Lerwick on the morning of 7 April, the vessel sampled a series of east-west survey lines across the North Sea, working progressively southwards, arriving off Aberdeen on the morning of 14 April.

Results

Plankton sampling was carried out at a total of 157 stations during the cruise, covering an extensive area of the NW shelf and North Sea. At each station, plankton samples were collected from four depth layers with the OCEAN sampler, and CTD, chlorophyll fluorescence and water transparency recorded from instruments mounted on the sampler. A conventional Gulf III sampler was used instead of the OCEAN sampler at 13 stations to the west of the Outer Hebrides, due to poor weather conditions. Eggs and larvae of all fish species were sorted from the plankton samples aboard the ship.

Trawl sampling was conducted at 13 widely spaced stations to determine the spawning state of adult haddock. At two sites, one off the west of Scotland and one in the North Sea, eggs were stripped from ripe female haddock, fertilised *in vitro*, and incubated in an aquarium system. The size and subsequent development of the fertilised eggs was then documented over the following days up to hatching. The incubated eggs were used as specimen material for identification of haddock eggs in the plankton samples.

Norway pout eggs and larvae were widespread over the northern North Sea and NW shelf. Larval saithe were caught in large numbers at all stations along the shelf edge from west of the Hebrides into the northern North Sea. These two species constituted the bulk of the catch of gadoids species during the cruise. Larval sandeels were caught off the west of Scotland, but the highest numbers were caught in the central North Sea area, south of 57 °30'N. Dense concentrations of late larval herring were found off the mouth of the Tay estuary.

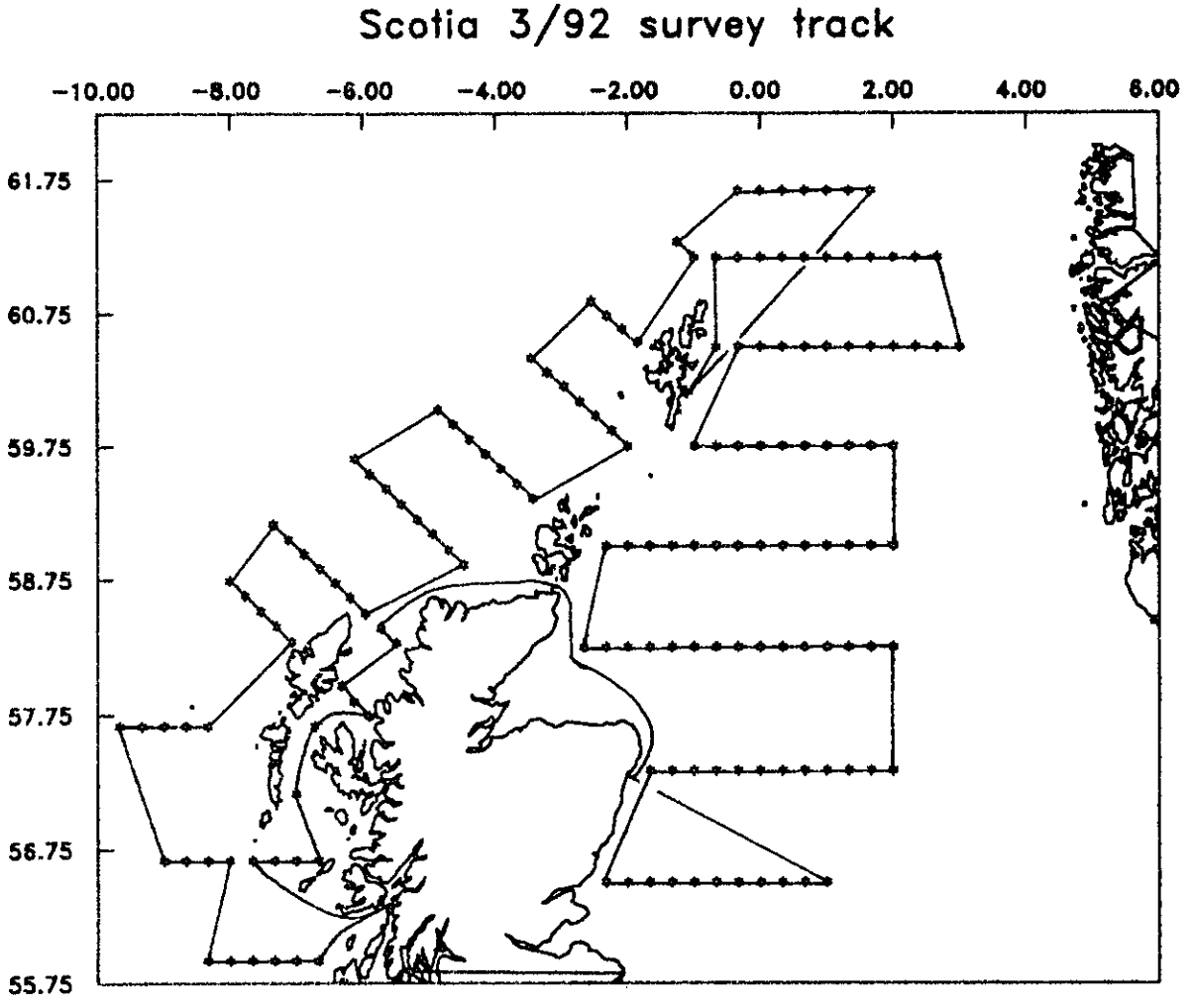
Spawning or spent adult haddock were caught in all trawls, but haddock eggs and larvae were extremely scarce. In the North Sea, eggs and larvae were found together in a narrow band extending from east of Shetland southwards along the 100 m depth contour and then down into the central North Sea. Early stage eggs in the correct size range for haddock, but no haddock larvae, were caught off the north west of the Hebrides and west of Shetland. In general, the adult fish in the western areas were in a less advanced spawning state than in the North Sea.

Specimens of larval fish of a variety of species were collected at selected sites using a Methot net, and preserved for biochemical analysis. At each of these stations, water samples were collected for hydrocarbon analysis.

Water samples were collected at or near each of the seven North Sea Task Force stations, and a water sample for radio caesium analysis was collected near Fair Isle.

Sea temperature, salinity, chlorophyll fluorescence, transparency and hydrocarbon fluorescence were monitored throughout most of the cruise from instruments towed at 2-4 m depth alongside the vessel.

M Heath
11 May 1992


Scotia 3/92 survey track
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