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

## CRUISE REPORT

FRS EXPLORER

19 APRIL - 2 MAY 1972

Objectives

- (i) Routine North Sea trawl survey.
- (ii) Environmental observations.
- (iii) Lay current meter moorings (omitted due to curtailment of cruise).

Narrative

The 13-day cruise was worked as one continuous operation, no calls were made to port and there were no hold-ups due to adverse weather.

(i) Trawling

Trawling began in the Fladen area and proceeded to Ling Bank then northwards to 64 N. The return track covered trawl positions off the Shetland, Orkney and main land coasts.

Out of 44 trawls, 42 valid hauls of 1 hour duration were made with the 48' Aberdeen trawl in the Fladen, N Central, Northern, Orkney, Moray Firth and Eastern Areas.

Recruit haddock were well represented in practically every haul. The largest catch was 3750 young haddock (11-20 cms) on grounds east of The Patch.

Whiting however were generally sparse throughout the survey. Recruit stocks were sampled in the Moray Firth, East and Orkney grounds. The only concentration of non-recruit fish was on grounds east of Orkney.

Of the industrial fish species, T esmarkii, was everywhere represented with few exceptions. The biggest single haul was on the Fladen ground in which 3,135 specimens were taken. Very few T poutassou were caught; small numbers being found in the Bressay and Fladen grounds.

Herring and mackerel appeared frequently in the catches.

Samples of gadoids (fillet, liver, kidney) were preserved for trace metals analysis. Parallel samples of whole fish were kept for pesticide and PCB analysis.

Whiting, when taken in sufficient numbers, were examined for infestation with the cestode Gilquinia squali, as part of the Parasitology Section's biological tag programme.

Numerous other specimens were kept for examination for parasites etc.

## (ii) Environmental observations

Much of the data has yet to be processed; the following are the interim findings.

### Temperature

Water-bottle sampling and bathythermograph casts revealed only minor temperature structure in the water column which was just beginning to warm up. The range of temperature over the survey area was from 8.3°C at 61°N 00°25'E to 6.8° at 59°N 1° to 1°30'E. Horizontal temperature gradients from the thermograph at 3 m were generally slight and gradual except for rather more vigorous variation in the inner Moray Firth.

### Salinity

No results are as yet available. The salinograph was operating on the new pumped water supply delivering 20 litres per minute. After some minor aeration troubles the instrument operated satisfactorily for some time then failed due to some deep-seated defect.

### Nutrients and productivity

Water-bottle samples were taken for phosphate, nitrate, nitrite, ammonia and silicate analysis; pump samples were filtered for particulate carbon and chlorophyll determinations. The nitrate samples showed appreciable uptake in some areas and the amount of chlorophyll varied noticeably over a wide range. Detailed results are awaited.

### Mercury

Sea water samples (4l, unfiltered) were treated for mercury analysis on board ship. Twelve samples gave a mean value of 0.021 µg mercury/litre.

### Plankton

Good coverage was secured using the Dutch Gulf III sampler but the experimental Loch Ewe and all plastic nets were early casualties. Their design will have to be reconsidered for use by the larger vessels in the open sea. Standard net hauls were frequently quite rich.

### Foreign fishing vessels

A concentration of large purse seine vessels was encountered actively fishing in a region about 50 miles east of Flugga. Trawls in the vicinity yielded mackerel and herring.

R Johnston  
10 May 1972