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## CRUISE REPORT

FRV "CLUPEA"

6-22 July 1976

## OBJECTIVES:

1. To carry out an echointegrator and midwater trawling survey for sprats in the area north of Scotland and around the Orkneys and Fair Isle.
2. To carry out intensive trawling on concentrations of sprats throughout the day and night to establish diurnal changes in catch rate.
3. To sample sprats for biological purposes and to investigate their suitability for canning.

## NARRATIVE:

"Clupea" sailed from Aberdeen at 1450 on 6 July and headed north for the Orkney area. The remainder of the week was devoted to an echointegrator survey from Fair Isle to North Rona before docking in Kirkwall at 2000 on 9 July. The echointegrator was calibrated on 8 July.

The following week "Clupea" left Kirkwall at 1030 on 12 July to work in an area northwest of Noup Head where dense traces were found the previous week. In bad weather on 13 July, the integrator survey was resumed to the west of Orkney and "Clupea" spent the night at anchor in the Kyle of Tongue. On 14 July an echosurvey was carried out towards Cape Wrath but in increasing wind, a course was made to the east and the "Clupea" tied up at Stromness at 1900. The following day trawling was carried out west of Orkney before docking in Kirkwall for the weekend at 2200.

By a directive from the laboratory, the third week was spent carrying out an echointegrator survey for herring and other pelagic fish from Fair Isle south to the Buchan coast. "Clupea" left Kirkwall at midnight on 18 July, and the survey continued, with an interruption due to bad weather on 19 July, until the ship docked in Aberdeen at 0615 on 22 July.

## ECHOINTEGRATOR SURVEY:

The echointegrator was used continuously throughout the cruise except when trawl hauls were made to establish the identity of echotraces. Pelagic fish traces were found over a large area between Fair Isle and Orkney and also in the area northwest and west of Orkney. The biggest concentrations were recorded to the northwest of Noup Head. These consisted of scattered plumes near the bottom and smaller plume-like traces extending a few metres from the sea bed. In one area off Noup Head heavy continuous bottom traces were found and, from the presence of herring fishing vessels in the area, it is likely that these were caused by herring. During the survey off the east coast of Scotland pelagic fish traces were again recorded in the area south of Fair Isle and in two areas off the Buchan coast. In the latter area reports of commercial fishing boats suggested that the traces were probably herring.

Besides echotraces characteristic of pelagic fish, other traces found were as follows:

a) A planktonic scattering layer in the top 50 m. This was particularly heavy west of Orkney.

b) Scattered marks which ascended at dusk and descended at dawn.

#### MIDWATER TRAWLING:

During the survey 10 hauls were made using an O-group gadoid trawl. Seven hauls were made using a codend of  $\frac{1}{2}$ " knotless netting, the other three using a 20 mm codend.

One haul southwest of Fair Isle contained coelenterates (Cyanea) together with numerous O-group whiting. The remaining hauls were made to the west and northwest of Orkney. Hauls through the midwater scattering layer contained coelenterates (mainly Cosmetira and Aequorea) and in two hauls sprat larvae about 2 cm long were meshed in the codend. Hauls through echotraces close to the sea bed west of Orkney contained sprats (the largest catches being  $6\frac{1}{2}$  baskets in a  $\frac{3}{4}$ -hour haul) and small numbers of spurdogs.

The sprats caught were in two size-groups, recently metamorphosed sprats from 3-4.5 cm and mature sprats from 8.5-15 cm. Most sprats in the second group were ripe or partially spent, but none were found in a ripe and running condition. Samples of gonads were preserved for fecundity determination and samples of stomachs for food content analysis. In addition, Mr B Cole (Torry Research Station) canned sprats on board and froze further samples for processing in the laboratory.

R.S. Bailey  
6 October 1976

Seen in draft: A. Mair