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CRUISE REPORT

FRS "Explorer"

24 September - 21 October 1969

Narrative

The "Explorer" sailed from Aberdeen at noon on 24 September and proceeded direct to Rockall Bank in conditions unsuitable for trawling. Two bottom trawl and one mid-water trawl hauls were made on the bank to sample blue whiting. After a short echo-survey the wind strengthened to force 11 and work had to be suspended for 30 hours. Mid-water traces were poor in the Rockall area so the ship steamed to Rosemary Bank, where because of bad weather she had to heave to for a further 24 hours. Two fleets of creels were then laid on the bank at 0930 on 1 October but the weather deteriorated almost immediately and the creels were not recovered until 0800 on 2 October.

With the continued absence of mid-water traces likely to be caused by blue whiting a course was set for Lousy Bank. As the wind was again strengthening the ship passed to the west of the bank and proceeded northwards to Rosengarten Bank off south-east Iceland. After a bottom trawl to establish the presence of blue whiting, the mid-water trawl was shot in a pelagic scattering layer echotrace at 1630, but without success. The ship then headed north towards the position where the German research ship "Walther Herwig" had made large catches by mid-water trawl in 1967 and the Laboratory's mid-water trawl was again towed through a midwater echo-trace from 1200-1700 on 5 October and a basket of fish was caught including blue whiting and a large saithe. In a further tow in this area at 2100, $\frac{5}{4}$ basket of blue whiting were caught. Unfortunately the winch for the net-transducer cable broke down during this tow.

Since accurate depth positioning of the mid-water trawl was no longer possible, an echo-survey was made to investigate the extent of the mid-water traces thought to be caused by blue whiting. The mid-water trawl was again shot without the netzonde at 1930 on 6 October. Further work was abandoned because of bad weather which lasted from 0230 on 7 October to 1400 on 8 October; during this time the ship steamed slowly towards the Faroes. Hauls were made with the Laboratory's midwater trawl and an Engels trawl, kindly loaned by the Fisheries Laboratory, Lowestoft to the north of the Faroes between 8-10 October, again without success, and the ship then proceeded to Torshavn.

After an unsuccessful attempt to get the "netzonde" winch repaired, the "Explorer" sailed from Torshavn at 1000 on 12 October, and a course was set for the deep water south of the Faroes skirting the edge of Faroe Bank. Mid-water traces were poor, but a haul was done with the Engel trawl in the deep water and a position suitable for creeling was found on the edge of the continental shelf. As soon as the two fleets of creels were laid the strong tidal current pulled the Dhan Buoys below the surface and the afternoon was spent dragging for them without success. The Engels trawl was shot during the night. After a 24 hour spell of bad weather, dragging for the creels was resumed and three creels were recovered from one fleet. Further hauls were then done with the Engels trawl before steaming north towards the deep water. After two hauls of the Engels trawl the ship proceeded eastwards to the Continental Shelf and the remainder of the cruise was occupied by mid-water and bottom trawling northeast of the Shetlands. The ship docked at Aberdeen at 2200 on 21 October.

Echo-sounding

During the cruise the Marconi echo-sounder was run continuously. Mid-water scattering layers were recorded over much of the area covered, in depths from the surface to about 100 fms. Echo-traces similar to those yielding blue whiting on the "Walther Herwig" (i.e. with a considerable daily vertical migration) were found only in the area south-east of Iceland along the northeastern edge of the Faroe-Iceland ridge. These traces moved vertically from a depth of 150-160 fm during the day to about 50 fms at dusk. This area was the only one in which blue whiting were caught in the mid-water trawl. Similar traces on the northern edge of the Faroe plateau yielded no fish in the Engels trawl, but by that time the "netzonde" was out of action.

Mid-water trawling

In all six hauls were made with the Laboratory's mid-water trawl used on previous blue whiting surveys, and a further nine with the Engels trawl on loan from the Fisheries Laboratory, Lovestoft. No fish were caught in three hauls made with the former, but in the area southeast of Iceland small catches of blue whiting were made with it, together with a single large saithe, two large Sebastes and small numbers of myctophids (Maurolicus muelleri, Lampanyctus elongatus and Benthosema glaciale). The largest catch of blue whiting ($\frac{3}{4}$ basket) was made at position 64° 10' N 10° 16' W with the netzonde operating. There was no obvious difference in length composition between fish taken in mid-water and those taken from the bottom.

The Engel's trawl was only used without a head-line transducer and only small catches were made. These included 17 Ray's Bream, a 157 cm deal-fish, a few lump-suckers, horse mackerel, blue whiting and, in one haul, numerous myctophids.

During the two hauls made with the head-line transducer, the Laboratory's mid-water trawl was fishing with a headline height of 30-35 feet. For a given towing speed and warp-length, however, the net took up to 20 minutes to stabilise its depth and even then oscillated about this depth. The depths recorded, moreover, were different from those obtained during the trials in July, possibly owing to the different sea conditions, indicating that the use of a headline transducer is essential.

Though no direct comparison of the efficiency of the two mid-water trawls was made, the Engel trawl was the more manageable net despite its greater size. Since both nets on occasions caught large active fish, albeit very few, there is no reason to suppose that they were not fishing satisfactorily. During some hauls records were kept of ship speed and warp tension.

Bottom trawling

Ten hauls were made with the SARO trawl used on previous industrial fish surveys to sample blue whiting and confirm their presence in the areas where the mid-water trawls were used. On Rockall Bank 13 baskets of blue whiting were caught in one haul in 200 fms but very few in shallow water. Catches of about three baskets per hour of blue whiting were made on Rosengarten Bank and northeast of the Shetlands. Rabbit-fish Chimaera monstrosa were caught in deep water at Rockall and off Shetland and a sample was collected for a examination of their possible toxic properties by Torry Research Station.

Creeling

Two fleets of creels were laid in about 200 fms on Rosemary Bank and a few specimens of Geryon affinis and about 20 tusk Brosmius brosme were

caught. The three creels successfully lifted from the edge of the Continental Shelf at 59°49'N 05°55'W contained a single Cancer pagurus.

Plankton sampling

A total of 12 routine hauls were made with a W.P.3 net, and a number of horizontal tows were made to determine the composition of echo-traces. A cursory examination of the samples suggested that some mid-water traces which failed to yield fish in the mid-water trawl may have been caused by concentrations of euphausiids.

Fish Echo Counter

The fish echo counter had been rebuilt in a more compact form for this cruise, and several circuit modifications had been incorporated to increase its capabilities. However, several faults showed up on initial trials, and because bad weather severely limited trials with the towed body in the water, the equipment was not fully operational until the second part of the cruise. As a result, no useful survey could be made in the limited time remaining, and the time was spent in checking the performance of the equipment as thoroughly as possible.

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10 November 1969