R1/12 AMM

In Confidence Not to be quoted without reference to the Laboratory 4SR81

FRV "Scotia"

Cruise 4/81

REPORT

30 April - 12 May

Objectives

To assess the fishing performance of the new small Jackson Pelagic Trawl (PT160) and to improve pelagic trawling techniques on "Scotia".

Narrative

Gear and instrumentation were loaded on the 29 April in Aberdeen. "Scotia" sailed on the 30th at 19.00 and the electromagnetic log was calibrated over the measured mile immediately after leaving the harbour. The vessel then steamed to the North Minch. Gear engineering trials (9 hauls) were carried out in the Sound of Raasay on the 2nd, 3rd and 7th of May, east of Barra on the 4th of May and in deep water south-west of St Kilda on the 9th of May. Fishing trials (7 hauls) took place on the Shiants East Bank on the 5th, 6th, 7th and 10th of May, and on Curachan Bank on the 8th of May. When the vessel was not trawling she was engaged in acoustic surveys for pelagic fish. The area from North Rona to Barra Head was searched. The net drum broke down on 10th May and "Scotia" returned to Aberdeen arriving at 12.00 on the 11th. Gear was unloaded on the 12th.

Results

(a) Acoustic Surveys

The main concentrations of pelagic fish found were on the Shiants East Bank and Curachan Bank. Small shoals were found south of Tiumpan Head. Only a few very small shoals were found elsewhere. Large demersal shoals were found near Barra Head.

(b) Gear Engineering Trials

3 m^2 suberkrub doors were used throughout the cruise. The headline height, net depth, net width and sweep tensions were measured at a range of speeds with either 300 m or 600 m of warp and with various wing-end weights. With 300 m of warp out measurements were made with 200, 400, 600 and 800 kg per side. With 600 m of warp out 400 and 800 kg per side were used. Net speeds ranged from 3.2 to 5.8 knots. The response rate to speed change was measured and the effect of altering the length of the lower sweep extension was investigated. The gear behaved in a predictable manner during these trials. A report is

being prepared on the measurements to inform staff using the gear how it should be rigged to achieve various combinations of depth and towing speed.

The door pennants were prone to tangle with the sweep/backstrop couplings. Chain pennants and alternative types of coupling will be supplied for the next cruise using this gear, to try to overcome the problem.

The net was towed near the bottom on uneven ground, with the weights touching the sea bed. When obstacles were encountered and the gear had to be raised, it was found to respond quickly to increased speed.

The normal method of shooting gear from the net drum is relatively slow. As one of the gilson winches was not working during the cruise, it was not possible to try out alternative procedures for increasing shooting speed. This could be done on subsequent cruises.

(c) Fishing Trials

The net caught substantial quantities of young herring on both the Shiants East Bank and the Curachan Bank, including one haul of about 150 baskets. The fish were caught during darkness whilst towing at speeds greater than 5 knots. The captured fish did not appear to be in dense concentrations and were at 15 to 40 m depth. Samples were taken from all catches and frozen for later examination at the Laboratory.

No fish were caught during daylight hours. Although shoals were found during daylight it did not prove possible to maintain sonar contact with them for long enough to permit sampling by trawl. To achieve this would require an improvement in our sonar tracking technique and in the speed of shooting.

General

The electromagnetic log on "Scotia" was found to be seriously inaccurate, reading about one knot low at trawling speeds. During the cruise, several different calibration methods were tried. The absence of an accurate log is a major handicap in gear research and a replacement for the Doppler log is required.

Peter A M Stewart

25 May 1981

Seen in draft: J Gillon