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FRV *SCOTIA*

Cruise 1696S

REPORT

25 September - 10 October 1996

Personnel

R D Galbraith	SSO (in charge)
G I Henderson	SO
P J Barkel	PTO
N S Collie	PTO
T Blasdale	Contract worker
S J McKay	Contract worker
L Bullough	Student
R A Coggan	Visitor (SAMS)

Objectives

1. To carry out fishing trials with an experimental deep water survey trawl.

2. To measure the gear geometry and drag of above at depth.

3. To investigate the selectivity of current regulation cod-end mesh size (100 mm) on deep water species.

4. To obtain video film of the behaviour of these species within the trawl cod-end.

5. To record water temperature at depth during fishing hauls and relate to catch size/ species.

Out-turn days per project: 16 days IAI1

Narrative

After awaiting engine spares *Scotia* left Aberdeen on the evening of 25 September and passed through the Pentland Firth the following day. Shelter from SW gales was sought in Broad Bay until 27 September when, in response to a general alert, *Scotia* took part in a coastguard coordinated search for a fishing vessel which was subsequently found overturned with two crew members missing, presumed drowned. Three hauls were made in the Minch on 28 September to test gear and instrumentation before worsening weather conditions necessitated a return to shelter in Broad Bay. *Scotia* steamed north on 29 September and deep water fishing commenced on 30 September south of the Wyville-Thomson ridge. Work continued until 2 October when deteriorating weather conditions again brought operations to a halt. *Scotia* steamed east and carried out a further three deep water hauls in the Faroe-Shetland channel on 3 October before docking in Lerwick on 4 October.

Scotia left Lerwick on 5 October and steamed to the deep waters of the Faroe-Shetland channel 80 miles north of Flugga. Three hauls were made in this area on 6 October before SW gales again halted work. The vessel dodged until noon on 7 October and with no prospect of any improvement in weather conditions steamed south. Five further instrumented hauls were made in the Moray Firth on 8 and 9 October before *Scotia* set off for Aberdeen. Staff and equipment were disembarked on 10 October at Aberdeen.

Results

1. A total of 22 hauls were made with the experimental trawl, of which 14 were carried out in deep (>500 m) water. No problems were encountered in handling the gear, which was shot and hauled in the same manner as the GOV survey trawl rigged with heavy bobbin footrope (Groundgear C) ie the 530 mm rockhopper bosom was left off the net drum and the bag hauled using alternate gilson forehaulers. The net proved of robust construction and any damage sustained was readily repaired on deck. The gear fished well, with quantities of most commercially exploited deep water species taken. Catch rates of up to 45 baskets per hour were achieved.

2. Typical gear geometry in deep water was as follows: Headline height 5.5 m; Wingend spread 20 m; Door spread 100 m - giving a calculated bridle angle of 15 degrees for the 110 m (60 fathom) single sweeps used. Total warp load was around 9 tonnes at 3 knots. Assuming a warp length/water depth ratio of 2:1 this indicates a gear horsepower requirement of 118 kW, well within the towing capabilities of *Scotia* when using two engines. As a result of the time lost due to engine repairs and bad weather no detailed engineering trials were carried out in deep water.

3. Apart from blue whiting and, to a lesser extent, argentine, few commercially fished deep water species passed through the 100 mm mesh cod-end netting, although some scabbard and juvenile grenadier were found in the small mesh cod-end cover. A statistical analysis of cod-end selectivity by species will be carried out in the Laboratory.

4. Some nine hours of underwater videotapes were shot on deep water hauls but problems in aligning camera and lighting within the flexible cod-end were encountered. A rigid aluminium frame was manufactured in Lerwick during the half-landing. This solved the problem of camera orientation but the recorder unit proved insufficiently robust for this method of fishing and further development work will be required.

5. Bottom water temperature was recorded during all deep water fishing hauls and an investigation of the relationship with catch size and species will be undertaken. Greenland halibut was the only commercial species taken in any number in the very coldest (<1°C) water.

R D Galbraith
1 November 1996

Seen in draft: J Nichols