

R1/12

IN CONFIDENCE - NOT TO BE QUOTED WITHOUT REFERENCE TO THE LABORATORY

FRV SCOTIA

CRUISE 13/82

13SR82

REPORT

7-19 December 1982

OBJECTIVES

- (1) To carry out a survey of Norway pout and associated by-catch species in the northwestern North Sea.
- (2) To investigate differences in by-catch rates in different strata of horizontally divided trawls.
- (3) To investigate the reaction of Norway pout to trawls by appropriate photographic techniques.
- (4) To investigate the depth distribution of Norway pout using an echosounder and a midwater trawl to sample echotraces.
- (5) To investigate the food and feeding rhythm of Norway pout in relation to available plankton.
- (6) To investigate the light parameters (turbidity, light levels and bioluminescence) on the Norway pout fishing grounds.
- (7) To carry out trials of a fibre-glass Gulf III plankton sampler.
- (8) To sample seawater for radio-caesium analysis.
- (9) To carry out an echosounder search for mackerel concentrations in the area north and northwest of Scotland (additional objective).

NARRATIVE

The beginning of the cruise scheduled for 1 December was delayed by an accident to Mr A Cowie (Fishing Mate). "Scotia" sailed at 0930 on 2 December and set a course for the north coast of Scotland via the Pentland Firth. From 0130 on 3 December to the morning of 4 December, an echosounder survey was carried out for mackerel concentrations in the area north of Scotland - North Rona. The search was abandoned in a force 10 gale and the fishing gear was changed to a bottom trawl in Thurso Bay at 1600 on 4 December. During the following three days, nine trawl stations were carried out, but from 2000 on 7 December to 2000 on 8 December the ship made slow progress in a force 10-11 gale. From 9-11 December comparative hauls were carried out with the three-tier and two-tier trawls. A passage was then made via Fair Isle (to collect a radio-caesium water sample) to the area off the Buchan coast where a further three stations were completed before docking in Aberdeen at 0945 on 13 December.

Change of scientific personnel took place during the half landing and "Scotia" sailed at 1300 on 14 December. Trawl stations were carried out between Aberdeen and the Fladen ground until a force 10 gale halted operations from

1300 on 15 December to 0500 on 16 December. After completing the outstanding trawl stations in the southern part of the area "Scotia" proceeded to Sinclair Bay to change to midwater trawl gear, and thence to North Rona to search for mackerel shoals. The search was completed on 18 December and the ship proceeded to Aberdeen, docking at 1845 on 19 December.

RESULTS

- (1) A total of 18 of the 20 programmed stations were sampled using the three-level trawl BT 151a. Total catch rates of 137-1804 kg/hr were obtained, Norway pout accounting for 0-82.3% of the total catch with an overall average of 28.9%.
- (2) Records of the catch composition in each codend of BT 151a were kept for analysis in the laboratory. In addition four replicate hauls were made with the three-level trawl BT 151a and a two-level trawl with small mesh separating panel BT 151b at station 49 for comparison of by-catch rates between each level of the two trawls.
- (3) A remote-control (acoustic) system for operating an underwater camera on the headline of the net was successfully tried out and several hundred exposures were made on command. The camera flash system failed to operate, however, and no usable photographs were taken.
- (4) Echosounder recordings made during the survey have been returned to the laboratory for analysis. Time did not allow any midwater trawling to sample echotraces.
- (5) Norway pout stomachs were collected for food analysis from all areas where significant quantities of Norway pout were caught. Stomach contents from two stations were examined on board. A similar range of organisms was found in both samples, but with euphausiids, Spiratella, amphipods and crab megalopa larvae predominating at one station, and the copepods Metridia and Pseudocalanus and Spiratella at the other. In one stomach quantities of a phytoplankter were found. Differences were noted in the food of large and small Norway pout.
- (6) After some trawl hauls, light readings were taken using a light meter lowered from the ship. Owing to a technical fault, no reliable readings were obtained with the transmissometer.
- (7) During the first part of the cruise trials were carried out on a prototype fibre-glass Gulf III plankton sampler. These involved a series of tows with the fibre-glass sampler fitted with an I.O.S. monitor and a pitch and roll meter in order to establish the tow stability characteristics for comparison with the aluminium version. The opportunity was also used to test further an acoustic telemetry system being developed for use with a multiple sampling device.

A good set of data was obtained from the experimental tows and also from the fourteen standard oblique Gulf III hauls carried out during the cruise.

- (8) A sample of sea water for radio-caesium analysis was collected in the Fair Isle area.

- (9) Two days at the beginning and end of the cruise were set aside to carry out an echosounder survey for mackerel along the north coast of Scotland west to North Rona, following reports of large shoals of mackerel in that area. No concentrations of mackerel were recorded on either survey (see attached chart). A single haul in midwater north of Loch Eriboll contained haddock and whiting.

R S Bailey
18 May 1983

Seen in draft: J W Gillon
CO

