

John Gage for information

Scottish Marine Biological Association Cruise Report
Dunstaffnage Marine Research Laboratory, Oban
R.R.S. Challenger. Cruise No. 5B/76 5-11 April.

(a) Main Objectives.

To investigate the populations of deep-sea demersal fish on a transect down the continental slope and to carry out physiological and microbial investigations on some of the fish species.

Trials with the multiple corer and to work a transect of stations down the slope.

To obtain live fish from close to the surface using an Oxfam net and a 2 m ring net.

(b) Geographical area.

Shelf Station $56^{\circ} 01.50N$ $07^{\circ} 40.2 W$ (148 metres)

Craib coring and a bottom water sample

Fishing Station 1 Bottom trawl towed from $56^{\circ} 40'N$ $09^{\circ} 13'W$
 $56^{\circ} 25'N$ $09^{\circ} 17'W$ (1000 m)

Multiple Corer Station 1 $56^{\circ}25'N$ $09^{\circ}19' W$ (1078 m)

Multiple Corer Station 2 $56^{\circ}30'N$ $09^{\circ} 25'W$ (1210 m)

Multiple Corer Station 3 $56^{\circ}32'N$ $09^{\circ}37'W$ (1474 m)

Fishing Station 2 Bottom trawl from $56^{\circ}40'N$ $09^{\circ}26'W$ to
 $56^{\circ}31'N$ $09^{\circ}41'W$ (1500 m)

Fishing Station 3 Bottom trawl from $56^{\circ}37'N$ $09^{\circ}06'W$ to
 $56^{\circ}26'W$ $09^{\circ}03'W$ (500 m)

Multiple Corer Station 4 $56^{\circ}25'N$ $09^{\circ}15'W$ (945,994 and 1047 m)

Multiple Corer Station 5 56°23'N 09°11'W 711, 786 and 835 m

Multiple Corer Station 6 56°23'N 09°09' (530 and 545 m)

2 m Ring Net Towed from 56°22'N 09°08'W to 56°24.7'N 09°08'W

Fishing Station 4 Bottom trawl from 56°40' 09°08'W to
56°27.9 09°03'W (750 m)

(c) Personnel.

J.D.M. Gordon	SMBA	Senior Scientist
J. Allen	SMBA	
J. Watson	SMBA	
J. Duncan	SMBA	
A. Cooper	SMBA	
K. Hoare	SMBA	
R. Richards	Stirling University	
M. Horne	Stirling University	
L. Oswald	Stirling University	
L. Ross	Stirling University	

M. Home was a last minute replacement for C. Pettitt of Manchester University.

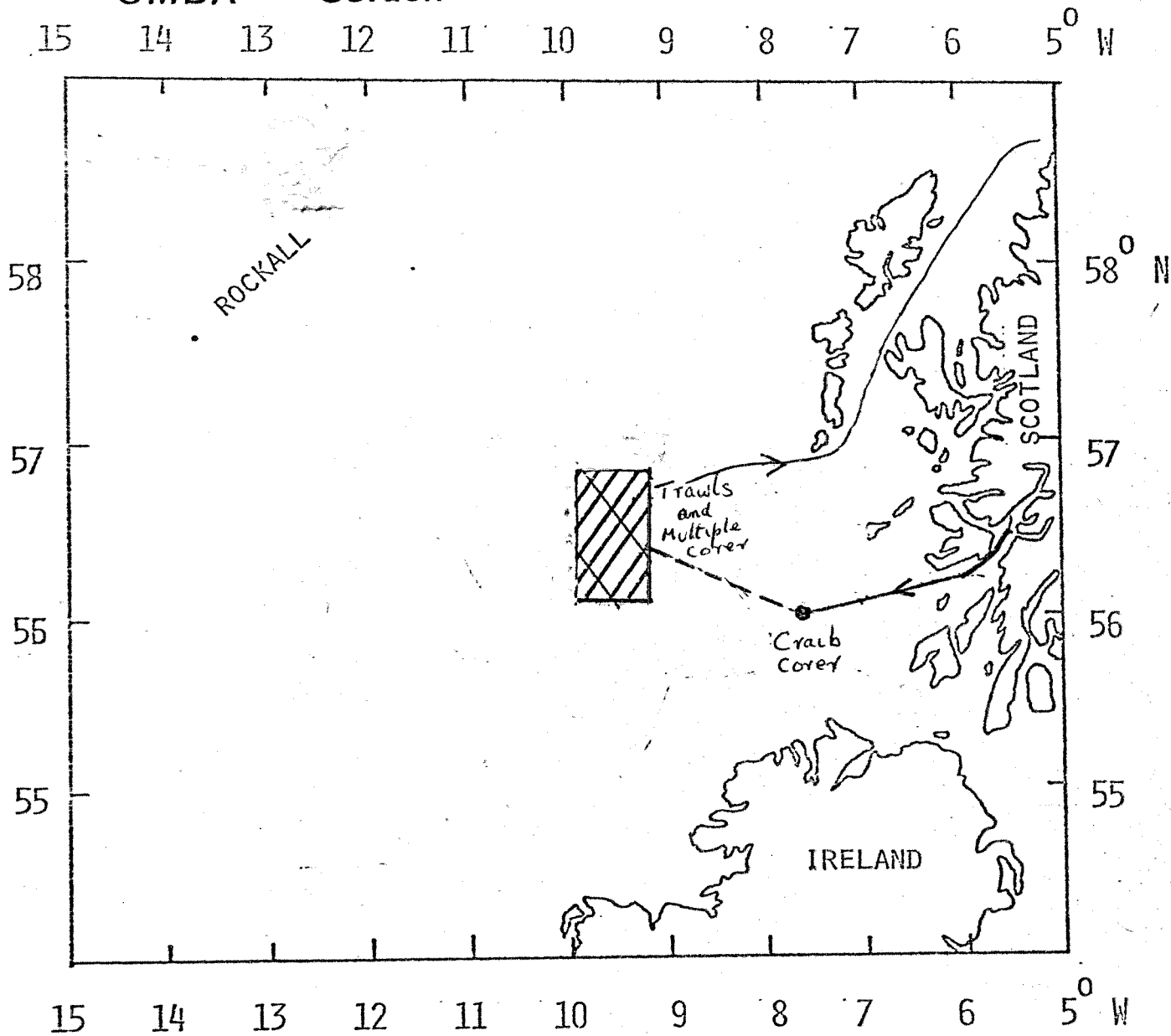
(d) Sea and weather conditions.

The start of the cruise was delayed until 16.00 on 6th April due to strong winds. The wind direction was variable from West to North during the working part of the cruise. The first station on the 7th April was worked in Force 5 and thereafter the wind dropped to force 2 - 3 only increasing to force 5 by the last station on the 9th April. The sea conditions were good throughout the period.

RRS CHALLENGER

Cruise 5B/76 - 5 - 11 April 1976

SMBA -- Gordon



(e) Conduct of the cruise, scientific equipment operation and handling.

This was a short cruise and despite the loss of one day it was generally very successful. The Shelf station was worked from 00.42 until 04.35 on the 7th April. Problems were encountered with the clutches of the hydrographic winch and kinks in the wire itself, but once these were overcome, satisfactory cores were obtained from this station. Challenger then steamed for the trawling station and the Samrad transducer was launched at 12.50. The first trawl at 1000_m was then carried out and good results were obtained. Trawling was complete by 18.00 and the vessel hove to while the catch was cleared from the deck.

Trials with the multiple corer began at 19.49 in 1078 m and problems were encountered with the new design for the base. After modifications to the legs, successful cores were obtained from the next station (1210 m). Challenger then steamed to the next station and further cores were obtained from 1474 m. The Oxfam net was streamed on the hydrographic wire whilst on this station but no fish were obtained. Multiple coring was complete at 03.38 and Challenger steamed for the next trawling position. A watch was kept on the echosounder over the dawn period and records of the deep scattering layer were obtained.

Trawling began at 08.50 and an attempt was made to fish at 1500 m. This was the deepest trawl ever attempted by Challenger. On recovery the starboard door came inboard far in advance of the port door and there were signs that only the port door had taken the bottom. At first it was thought that the water was too deep

but in retrospect it appears that the problem was caused by slippage of the clutches of the trawl winches (see section and the Chief Engineers report). Only a few midwater fish were taken by this trawl. Challenger then steamed for the next station and a successful trawl was carried out in 500 m. It was during this trawl that the slipping clutches were first noticed. Trawling was complete by 19.00 and the vessel steamed to the multiple coring station.

Coring at 1000 m began at 20.20 and the modifications which had been carried out resulted in a series of good cores. Two further series of cores were obtained from 700 and 500 m and the work was complete by 04.31.

The 2 m ring net was launched at 05.00 on the 9th April and the vessel headed towards the next bottom trawling station at $1\frac{1}{2}$ k. This net is designed for fish larvae and plankton and only occasionally takes larger fish. No large fish were obtained but the plankton sample was of use to Stirling University.

The final bottom trawl at 750 m was carried out between 08.50 and 13.50. Another good haul was obtained and the Challenger then set course for Aberdeen docking at 09.00 on the 11th April.

Table 1 shows the distribution of ship-time on the various aspects of the cruise.

The loss of the first day due to high winds meant that the 1250 m trawl, an attempt to use the trawl without the bobbins, camera work with the multiple corer and the continuation of the coring transect to 2000 m could not be accomplished. The

Table I

Bottom Trawling	19.75 hrs
Coring	15.5 hrs
Deep scattering layer and 2 m ring net	3.25 hrs
Steaming between stations	<u>22.5 hrs</u>
Total scientific time from arrival at shelf station to break off for Aberdeen	61 hrs
Total passage time	52 hrs
Time lost at start due to weather	<u>24 hrs</u>
Total Cruise shiptime	137 hrs.

Aggassing trawl was not used following the withdrawal^a of
Mr Pettitt.

(f) Ship performance.

Challenger is now much more reliable vessel than previously and the modifications to the stern and the funnels carried out during the last refit are much appreciated.

The cooperation of the officers was excellent and the catering is still of a high standard. The efforts of the 2nd Steward, John Burns, in organising social events on this and previous cruises, has in my opinion helped to give Challenger an identity.

The help from the bo'sun and deck crew was adequate without being exceptional.

(g) Criticisms and recommendations.

(1) The P.D.R. was tested at Dunstaffnage and found to be satisfactory. On arrival at the first station however it failed and could not be repaired. The Atlas echo-sounder which was out of action throughout 1975 was still not functioning, despite promises that the transducer would be repaired during the refit. Fortunately there was a portable Simrad echo-sounder belonging to I.O.S. Bidson on board and we took the liberty of using this equipment. Had this echo-sounder not been aboard the cruise would have been abortive. It is essential that the P.D.R. and the Atlas echo-sounder are repaired as quickly as possible.

(2) The metering gear was working well except for the tension meters on the port trawl wire and the main wire. The latter was particularly annoying since with the P.D.R. out of action

we were unable to use a pinger on the multiple corer and the tension meter would have indicated when the gear was on the bottom.

(3) In consultation with the fishing skipper (Mr Dunning) new brackets had been fitted to the inside of the A-frame to take new bridles for the bottom trawl. Unfortunately the blocks which Mr Dunning specified had not been supplied and the original bridles had to be used.

(4) Reference has already been made to the fact that the clutches on the trawl winches were slipping. The Chief Engineer will be submitting a detailed report on this but it appears that when the cable drums are full the winches are only rated at 4 tons. Tonnages of this order are applied to the winches during the initial stages of clearing the doors over the stern. The reason for this is that once the net is outboard the ship is put full ahead to put enough tension on the bridles to raise the doors clear of the quarters. When the new blocks on the inside of the A-frame have been supplied and the longer bridles are in use these excessive tonnages will not be exerted on the winches.

(5) Delays were experienced with the clutches and gears of the hydrographic winch but this later turned out to be due to the fact that the deckhand on watch was unfamiliar with the gear. The kinks in the wire were more serious and the Chief Officer removed 200 m of wire on the following day.

(6) The quality of the drinking water could be improved.

John D.M. Gordon
15th April 1976.