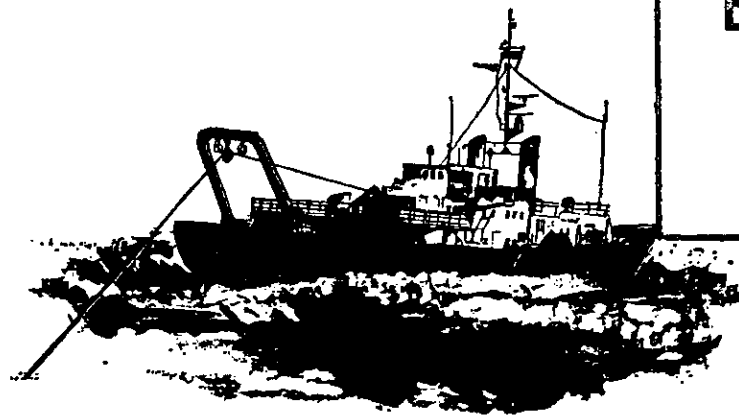


Roscoe NO. 1817

Scottish Marine Biological Association

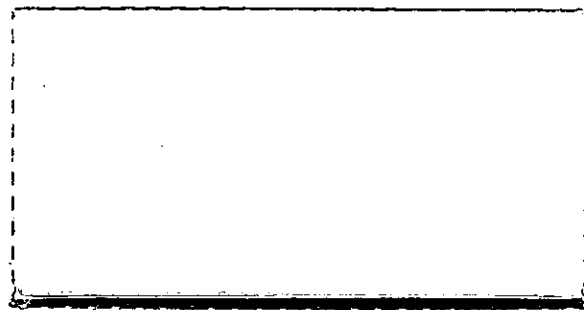
Dunstaffnage Marine Research Laboratory



B. O. D. S.

- 7 NOV 1977

CRUISE REPORT



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Scottish Marine Biological Association
Dunstaffnage Marine Research Laboratory

CRUISE REPORT

RRS Shackleton Cruise 2A/77
24 January - 1 February 1977.

1) Main objectives

The main aims of this biological cruise were, in order of assigned priority, as follows:-

- a) To obtain epibenthic sledge samples of the abyssal macrobenthos in 2900 m depth from the SMBA permanent deep station in the southern Rockall Trough in order to continue a time series of sampling initiated in Nov 1975.
- b) To obtain a sample of the abyssal megafauna using an Agassiz trawl.
- c) To undertake a preliminary survey of the macrobenthic populations on a transect on the Porcupine Bank.

2. Geographical area, cruise track, station positions and gear worked

(See Fig. 1 and Table 1).

3. Sampling gear used

Epibenthic sledge for the seasonal macrofauna sample, Agassiz trawl for obtaining samples of anyssal megafauna and rock dredge, anchor-box dredge and Agassiz for the reconnaissance survey of the Porcupine Bank.

4. Scientific participation

1. J. Bishop University of Liverpool, Port Erin
2. I. Chivers IOS/MSES Barry
3. G.C. Coghill, SMBA
4. F. Dunning RVB Fishing Skipper
5. J.D. Gage, SMBA Principal Scientist
6. R. Griffiths IOS/MSES Barry
7. R.H. Lightfoot SMBA/University of Glasgow, Millport.
8. G. Oliver Royal Scottish Museum, Edinburgh
9. Margaret Pearson, SMBA.
10. A.J. Southward MBA
11. Eve Southward "

5) Sea and weather conditions

The weather became generally bad soon after Shackleton sailed, and we were lucky that local conditions were less severe than reported elsewhere at the start of the cruise or else the ship would not have been able to arrive at the permanent station when she did at ca 0300 hrs 26 Jan. As it was the weather

deteriorated with winds of Force 7-8, accompanied by a heavy southerly swell, until the morning of 28 Jan when the weather had settled sufficiently to allow us to start work. Subsequent weather and sea conditions were fair to occasionally good.

6) Cruise narrative.

Shackleton sailed on schedule at 1200 hrs 24 January and steamed for the SMBA permanent deep station in the southern Rockall Trough into steadily deteriorating weather. By 1600 hrs 25 Jan her speed was down to half. The next day a slight improvement allowed launching the PDR fish and Shackleton made a better speed reaching the deep station on 54°40'N 12°16'W in the early hours of the next day. However, because of the heavy weather, Shackleton hove to until the morning of 28 Jan when Captain Long deemed sea conditions to have improved sufficiently to allow a start to be made.

First, a trial with the IOS pinger lowered 200 m on the main wire was made to check on its signal compatibility with the P.E.S. Mk 3 recorder on board. Once this was successfully accomplished the epibenthic sledge was put over on the main wire using the ship's crane to lift the gear over the side.

Although a faint direct pinger signal was received with 4065 m out, no bottom echo could be distinguished on the PDR. However, a second ping was recorded indicating the pinger to be horizontal and the gear therefore most probably on the bottom in 2910 m. An excellent haul was recovered at 1415 hrs with the six-foot long extension net completely full.

After steaming back into position, the large Agassiz trawl was put over with no pinger at 1500 hrs. The fishing skipper, Mr Frank Dunning, reckoned to be able to bottom the gear without need of weight on the wire, so the chain clump weights provided by IOS Barry were not used. Eventually he was proved correct when the trawl was recovered at 1955 hrs after paying out 6000m of wire, but unfortunately there were only a few specimens in poor condition enmeshed in the netting. The cod end had evidently fouled the frame, but it is uncertain whether this happened during recovery or when shooting the trawl.

After a short steam back to a suitable starting position so that the bottom haul would intersect the desired station position as closely as possible, another

epibenthic sledge haul was made. This time a finer meshed net was fitted. Less wire (3392 m) was payed out for this haul because it was found that the ship's speed could safely be reduced to less than half a knot. With the consequently better wire angle an improved pinger signal was received and another excellent haul recovered at 0103 hrs 29 Jan. Damage to the main wire at approx. 300 m out was noticed during recovery of the latter sledge haul and in fact the winch was stopped for a while so that this could be examined more closely. Luckily, the mouth closing gate on the sledge prevented any washing out of the sample while the gear was hanging stationary on the surging wire.

While this sample was being washed on deck, the damaged portion of wire was cropped and the Agassiz was again readied by Mr Dunning for another attempt on the deep trawl haul required. This time lead weights were tied onto the cod end. After paying out another 6000 m of wire, allowing an hour on the bottom, the Agassiz was winched in and a very impressive catch of large abyssal benthos and fish was recovered at 0651 hrs. This included several specimens of the large abyssal spider crab Paralithodes grimaldii and many very large elasipod holothurians. Whilst this catch was being sorted Shackleton steamed south to start the third epibenthic sledge haul at a position roughly 30 miles away from the permanent station position in order to check on possible spatial changes in the abyssal community within the general area. The sledge was eventually put over at 1035 hrs and eventually recovered again at 1448 hrs, again with an excellent haul.

Having then finished work at the permanent deep station, it was decided to attempt to try for an exploratory haul on the northern slope of the Porcupine Bank using one of the rock dredges aboard. Shackleton arrived on station at 1815 hrs, and ^{the} dredge put over onto a bottom which the PDR record indicated may have had much rock outcropping and recovered again, empty, at 2007 hrs. Although a small dead coral in the dredge bag indicated the gear had bottomed approx. 1650-1710 m depth, there was a large hole in the netting through which the remaining sample could have been lost.

It was then decided to try the anchor-box dredge on the same position. During recovery of this haul the winch was stopped in order to clear wire which had jumped the ^{gantry} sheave cheek and jammed in the block. The dredge was recovered at 2125 hrs with no sample; the swivelling V-shaped mouth gate was found to have become jammed so that the gear could not have sampled properly. We then decided to abandon this station and to steam for the first of the Porcupine Bank stations in 200 m depth, arriving at 0330 hrs 30 Jan. The first operation on this station was unsuccessful, probably because insufficient wire had been payed out to provide the necessary wire scope-ratio in such a depth. Another attempt was then made, recovering at 0420 hrs a sample of what was evidently a very hard sand bottom. The Agassiz trawl was then readied and under Mr. Dunning's supervision a haul was made recovering a small but interesting catch at 0617 hrs. Some damage to the cod end of the net was noticed, no doubt as a consequence of a somewhat rough bottom.

Shackleton then steamed south to the second Porcupine Bank Station in 400 m depth arriving at 1028 hrs. The first anchor box dredge haul was again unsuccessful; but the second, recovered at 1221 hrs yielded a large sample of the muddy sand bottom deposit. This was immediately followed by an Agassiz trawl as previously, recovering a good sample that included a large Monkfish at 1340 hrs.

Shackleton then steamed south for the third and last station of the cruise, located at the upper end of the Porcupine Seabight in 500 m - although this target depth could not quite be attained without risking too close an approach to an old submarine cable (Valencia-Hearts' Content No. 1) that was charted in the area. As previously, an anchor-box dredge was made first, this time using a pinger. A good sample of the now muddy sediment was recovered at 1740 hrs. This was followed by an Agassiz trawl haul at 1820 hrs, recovering at 2000 hrs with a moderately sized sample of the larger fauna. This catch included many small crabs which were kept alive and later transported to Dr. D.I. Williamson of the Marine Station, Port Erin, Isle of Man by Mr. John Bishop.

Owing to the presence of many, mostly redundant, old submarine cables that cross the Porcupine Seabight at greater depths, it was thought safer not to

attempt further dredging and trawling at deeper depths until better information than was available concerning their tracks. Shackleton therefore set course for Barry, finally berthing at No. 1 Dock at 1530 hrs 1 Feb.

J.D.Gage

3 February 1977.

Fig.1

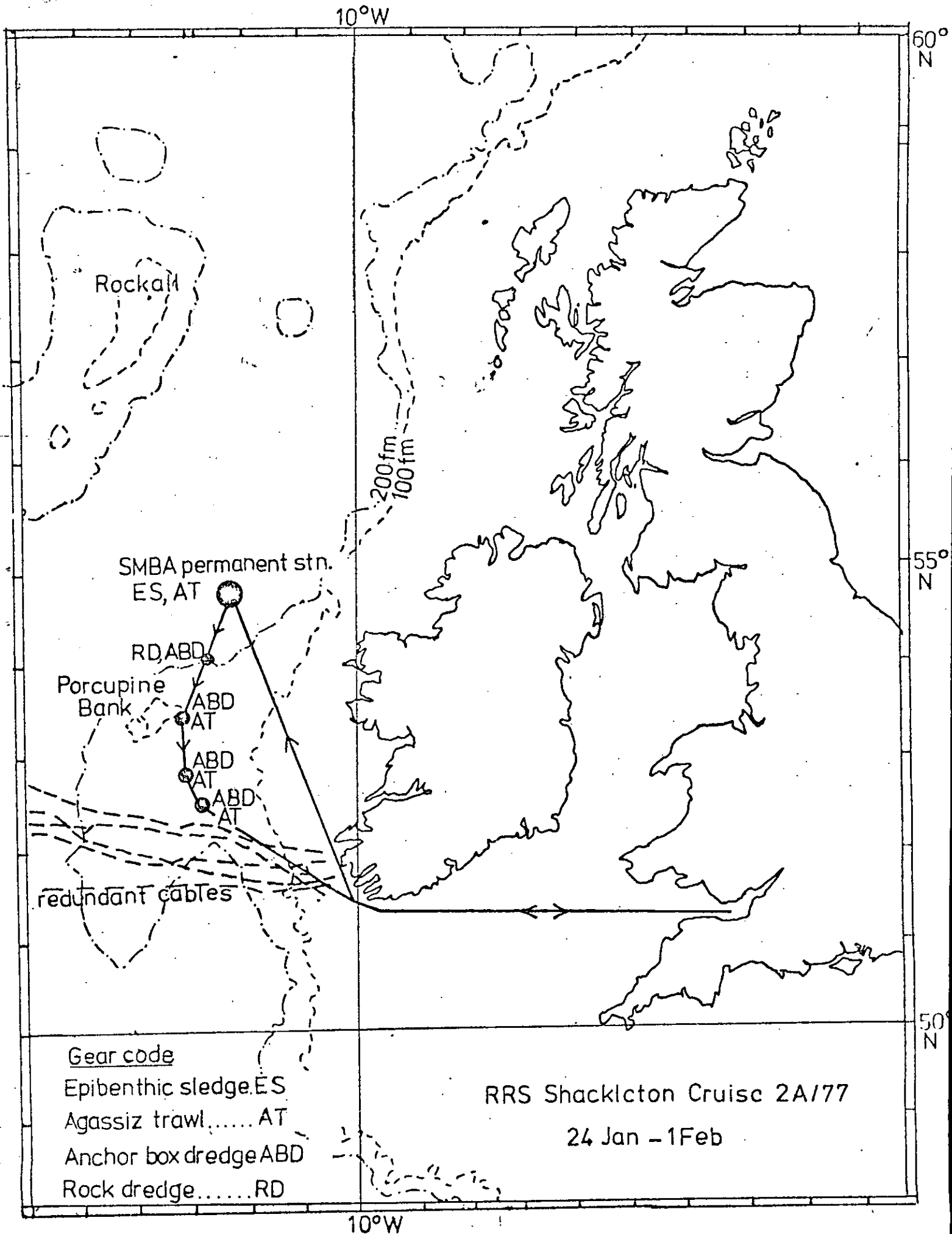


Table 1. Station positions and gear worked (all depths given uncorrected)

Date	Time (GMT) hrs.	Haul	Position	Depth m	Gear	Sample
28 Jan	0956-1415	1	54°38.5'N 12°13.6'W	2910	Epibenthic sledge	Excellent
			to 54°38.6'N 12°13.1'W			
"	1500-1955	2	54°39.5'N 12°14.3'W	2908	Agassiz trawl	Cod end fouled frame;
			to 54°39.8'N 12°12.9'W			No sample
29 Jan	2052-0103	3	54°39.3'N 12°15.8'W	2911	Epibenthic sledge	Excellent
			to 54°38.9'N 12°13.8'W		(0.5 mm net)	
"	0235-0751	4	54°38.0'N 12°10'W	2910	Agassiz trawl	Good
			to 54°37.6'N 12°08.8'W			
"	1035-1448	5	54°32.3'N 12°31.2'W	2951	Epibenthic sledge	Excellent
			to 54°30.6'N 12°30.8'W			
"	1826-2007	6	54°02.8'N 12°38.5'W	1650-1710	Rock dredge	No sample
"	2034-2125	7	54°01.6'N 12°36.9'W	"	Anchor-box dredge	No sample
30 Jan	0330-0353	8	53°30.8'N 13°12.9'W	200	Anchor-box dredge	No sample
"	0354-0420	9	53°30.8'N 13°12.9'W	"	" " "	Satisfactory
"	0501-0617	10	53°29.7'N 13°14.7'W	"	Agassiz trawl	Small sample
			to 53°29.5'N 13°15.2'W			
"	1045-1119	11	52°56.1'N 12°58.0'W	394	Anchor-box dredge	No sample
"	1121-1221	12	52°55.1'N 12°57.9'W	394	" " "	Good sample
"	1240-1340	13	52°53.9'N 12°58.6'W	410	Agassiz trawl	Moderate sample
"	1639-1740	14	52°31.6'N 12°42.3'W	585	Anchor-box dredge	Good sample
"	1820-2000	15	52°32.6'N 12°43.8'W	580	Agassiz trawl	Moderate sample