Cruise Report 10b

John Cage

R.R.S. Challenger 11 - 18th July 1975

(a) Main Objectives.

Investigations and sampling of deep sea demersal fish populations using a bottom trawl and deep sea pelagic populations using a rectangular midwater trawl.

Studies of the deep sea and shelf benthos using an epibenthic sledge, a box corer, a Craib corer and a multiple corer with camera attachment.

(b) Geographical Area.

Shelf Station $56^{o}01.5N$, $07^{o}.39.2W$ (148m). Craib corer and box corer.

Fishing Station 1 $56^{o}33'N$ $09^{o}26'W$ to $56^{o}39'-09^{o}26'$ (1000m).

Fishing Station 2 $56^{o}36'N$ 09-06'W to $56^{o}31'$ $09^{o}11'$ (700m).

Deep Station $55^{o}03.5'N$, $12^{o}03.5W$ (2900 m) - R.M.T. multiple corer and epibenthic sledge.

(c) Sea and weather conditions.

Excellent. Winds variable southerly ranging from force 2 to 4.

(d) Conduct of the cruise (1) Narrative.

The cruise was scheduled to begin at Dunstaffnage on July 9th however owing to the rescue of the crew and the subsequent recovery of a fire damaged trawler, Challenger arrived at Ardrossan on 10th July. Two members of the scientific party joined ship that evening and the remainder signed on on the 11th July. The sailing time of 12.00 hours was postponed because of crew shortage and an outbreak of scabies which required investigation by the port health authorities. Crew replacements have previously curtailed many

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Deep Water Benthos Programme: Sampling Log

Stn	Date	Cruise No.	Sampler	Depth required	Position required
	13/7/75.		Spade corer		

NO SAMPLE

Sampler rigging and accessory gear used 1/16" Al shear pin in pressure release (should shear @ ~75M)

300 lbs. weights added to column and box spaces.

Attach pinger @ 25 metres. with transducer pointing downwards.

Time	Position			E. M. log		Wire			Depth	Sampler position and general notes
	Source	Lat.	Long.	Fwrd	Side	m out	Angle	Load	(m)	
00.09	Satellite	~~56°02~~ 56°02.4	7°35.5	0	0				152	Spade corer over.
00.14										pinger attached.
19						158.				bottom ascertained by wire meter load
00.25										~~corer~~ - pinger up
00.28										corer up
00.30										" aboard

Corer had gone off - pin sheared and hook released properly - and a sample obtained which was lacking from one bottom corner - the sample surface level had dropped considerably on one side - more probably because of this. Spade had closed but seemed not to have located itself correctly PTO

cruises and it is encouraging to note that R.V.B. were able to provide replacements with remarkable speed. Challenger finally sailed at 10.30 hours on July 12th.

The delay of 3 days to a vital cruise, coming as it does in the middle of a seasonal sampling programme, meant that had the ship returned to Dunstaffnage to unload gear and scientists before the start of the next cruise at Barry, a further 24 hours would have been lost. R.V.B. agreed to allow the cruise to terminate at Barry on the 18th July but refused to grant a request for an extension.

Scientific work at the shelf and the fishing station was completed satisfactorily in excellent conditions and the vessel steamed for the deep station. Unfortunately shortly before arrival on station Challenger developed a generator fault and was instructed to sail to Oban for immediate repair. It soon became apparent that unless there was an extension to the cruise it would have been impossible to return to the deep station. An extension of 24 hours with the cruise terminating at Milford Haven finally allowed us to work for 12 hours at the deep station. Although more time would have been desirable this time enabled us to save some key parts of the seasonal sampling programme.

(2) Ships performance.

The vertical wire work at the shelf station was accomplished without difficulty. The fishing programme was successful due to the skill and experience of the fishing skipper with a crew, few of whom had seen a trawl rigged or worked. Turns developed at the end of the starboard warp and this will require the removal of a

length of warp from both trawl wires. It is essential now that the warps have been marked that equal amounts are taken off each warp and that this information be recorded. The C/O has started a log book for this purpose. Splicing new eyes to the ends of the cut trawl warps is a riggers job and this work must be done before the start of cruise 12b. Communication between Bridge/control room and the after part of the trawl deck continues to be a problem. It would be easy to alter the existing speaker brackets to allow speakers to be directed aft. Problems arose with the auxiliary winches and although these have now been repaired valuable scientific time could have been saved had these been properly maintained. The lack of maintenance of auxiliary winches, metering gear and rollers has been commented upon in previous reports.

The rectangular midwater trawl and the multiple corer work at the deep station was highly successful. Unfortunately, the Shipek camera which was attached to the multiple corer failed to function. The epibenthic sledge trawl haul was only a partial success due to a tear in the net. The fact that the ship increased speed of her own accord from 1 to 5 knots during the operation was probably a contributing factor to the damage. During the final multiple corer haul the ship took off from station at 3 knots without warning. Fortunately the gear was only halfway to bottom and it was successfully recovered. Reference was made in Cruise report 7b to a similar unintended acceleration which damaged the R.M.T. net. We were given to understand that this was a control fault which was to have been rectified at the June refit. <u>This is a very serious and potentially dangerous fault of Challenger which must be repaired without delay.</u>

The new scientific control room is a considerable improvement but it is unfortunate that the suggestion made in report 7b of a console containing all the most important instruments, e.g. Decca, PDR, ships speed, wire out, tension etc., was not adopted.

The requirement for a towing block for the main wire on top of the A frame has been mentioned in previous reports and was also the subject of discussion between Captain Stobie and Dr Barnett. Have any steps been taken? Dr Barnett will be in contact with R.V.B. on this matter.

The P.D.R. fish was damaged during launching at the deep station. The damage is to the inboard plug and was temporarily repaired by one of the scientists. This must be repaired before cruise 12b.

The total lack of tools in the scientific workshop continues to be a major complaint. Surely it would be possible to keep the workshop locked with keys given to one person who would be held responsible at the end of each cruise for any loss or damage?

The Atlas echo-sounder has not been functional on any of the cruises this year. This instrument is very useful for bottom trawling and should be repaired as soon as possible.

The vents in the door of the darkroom were not light-proof. Presumably they are there for a purpose and should therefore be boxed over with a downwardly directed vent. It is generally some time after entering a darkroom before one's eyes accommodate and notice unwanted light and in the meantime valuable research material could be irreplacibly lost.

The Atlas crane failed whilst the multiple corer was being manoevered on deck. The corer weighed less than $\frac{1}{2}$ ton and fault appears to have been on the part of the operator. (See Ships report).

It is our pleasure to record our appreciation to Captain Maw, the officers and crew of R.R.S. Challenger. In a total of only 27 hours on station we achieved an exceptional amount of scientific data through their dedicated co-operation. We also gratefully acknowledge the allocation of an additional 24 hours by R.V.B. without which valuable seasonal samples at the deep station would have been lost.

(3) Future Prospects.

It is the wish of all the scientists involved in the seasonal deep sea sampling programme to express our dissatisfaction and disappointment with the capabilities of Challenger. A considerable amount of time and effort has gone into the preparation for these cruises. Cruise 4B was seriously curtailed due to generator problems and Cruise 7B also suffered although fortunately, from the scientific point of view, only 4 hours were lost. The only work satisfactorily completed on the present cruise was the shelf and the fishing station. The lack of time at the deep station, was a serious blow to four of the five scientific programmes. The crucial part of all seasonal sampling work depends on collecting sufficient material for quantitative and statistical comparison and in this respect Cruise 10b was a complete failure. The qualitative information obtained as a result of the 24 hour extension has saved some parts of the programme (e.g. - breeding cycles, growth etc) and we are grateful to R.V.B. for their efforts in this respect.

Finally may I quote two extracts from a letter to Captain Stobie from Dr Clarke (13/12/74). "It must be remembered that the high cost of the ship is only part of the cost of the research surrounding such a biological cruise, since much time and work is involved before and after the specimen collection phase at sea. The overall potential of R.R.S. Challenger to do the sort of work we envisage is better than any other ship in the U.K. and quite possibly better than any in the work and it will be most regrettable if rather minor defects spoil the opportunity to make inroads into important scientific problems."

" Unless there is a marked improvement in the facilities offered by R.R.S. Challenger it would be better and far less expensive to direct the scientific effort elsewhere."

Since this letter was written many of the minor points to which he refers have been improved and in the meantime the serious problem of the generators has arisen. Unless there is a real effort to get to the roots of the problem and rectify it once and for all, then Dr Clarke's opinions are still valid.

John O'Gordon

21/7/75

Ref: P4/3/10B

RVB Sailing Instructions

RRS CHALLENGER : Cruise 10B/75 : 9-16 July 1975

To the Master

1. Ship's Programme

a) RRS CHALLENGER is to sail from Dunstaffnage on Wednesday 9 July with members of the Scottish Marine Biological Association, University of Manchester and Stirling University for a cruise in the North East Atlantic, West of Scotland, as required by the Senior Scientist (see attached plan). The outline programme is given below.

b)

Wednesday	9 July	pm	Sail Dunstaffnage
Wednesday	16 July		Arrive Dunstaffnage Disembark scientific staff. Proceed Barry on passage.
Friday	18 July		Arrive Barry.

2. Scientific Requirement

a) It is intended to undertake investigation of deep sea demersal fish and plankton and study deep sea and shelf benthos. A rectangular midwater trawl will be used to sample deep sea pelagic populations. A bottom trawl will be used to sample deep sea demersal fish populations.

Samples of deep sea and shelf benthos will be obtained by use of the epibenthic sledge, anchor dredge, grab, box corer, Craib corer and large multiple corer. There is a requirement for accurate depth records using a PDR and associated fish. A Shipek 70mm underwater camera will be used to record the operation of the corer.

b) SMBA equipment will be loaded in Dunstaffnage on Wednesday 9 July and unloaded on Wednesday 16 July in Dunstaffnage. IOS Barry equipment will be unloaded in Barry upon the ship's return on 18 July.

3. Scientific Party

a) From the Scottish Marine Biological Association, Dunstaffnage:

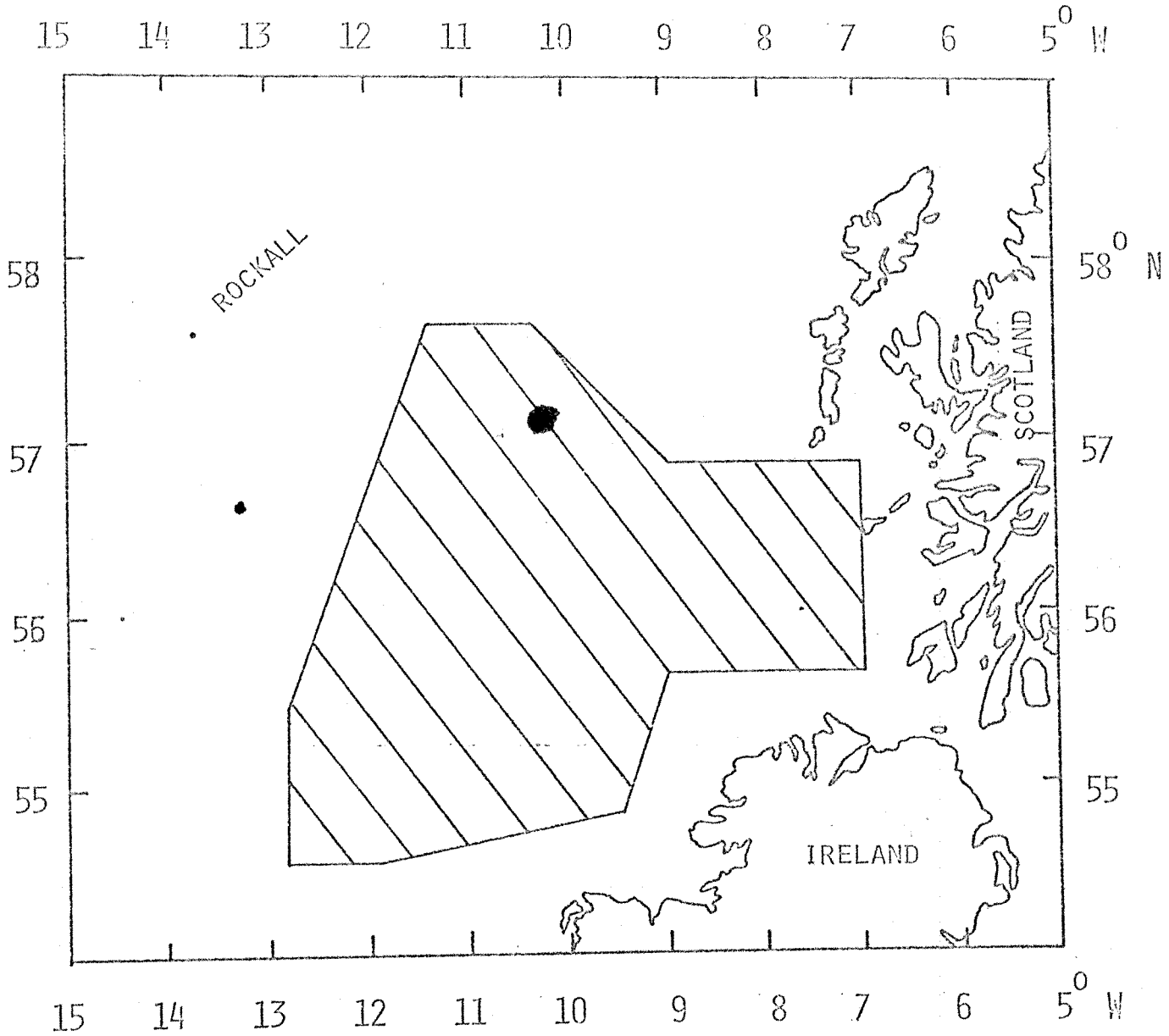
Dr.J.Gordon	Senior Scientist
Dr.P.Barnett	
Dr.J.Gage	
J.Watson	
MissH. Grigg	
Mrs.M.Pearson	

From Stirling University:

Dr.W.Wales

From University of Manchester:

C.Pettitt



PROPOSED WORKING AREA CHALLENGER CRUISE 10B/75

9 - 16 JULY 1975

Dr.J.D.M.Gordon, SMBA, Scotland. RRS CHALLENGER

BOOK № 236 8

STATION POSITION LOG

No. 208 (Deep Stn) Stn. 34 Date 17-7-75 Time from .... to ....

	Position			WIND		Weath. and Vis.	WAVES			Corrected Barometric Press. mbs.	TEMPERATURE		CLOUD		REMARKS AND GEAR USED
	Lat.	Long.	Method of Determination	Dir. from	Speed Kts.		Dir. from	Period secs.	Height ft.		Dry Bulb	Wet Bulb	Type	Amt.	
	55 03·1	11 54·5	-⌖- SUSPECT												
															reducing speed.
9	~~1469 59~~	R					SL1 31550·0			SL2 50388·7	R B11·6		G C 398		P G52·5 Sledge going over.
				R B11·7	C 398	P G52·4	31550·5			503875					Pinger on - lowering away.
9	55 03·2	11° 56·5	⌖												
				B	11·7	C	39·9	G	52·3	50387·3	31549·7				A/c 264° T
1	55 02·9	11 57·0	⌖	B	11·8	C	40·0	G	52·2	31551·3	50385·8				
5	~~55° 02·7~~	~~11 57·6~~	~~○~~	B	11·8	C	40·1	G	52·2	31549·7	50388·7				Sledge on bottom.
1	55° 02·7	11° 57·6		B	11·8	C	40·2	G	52·1						
7	55° 02·7	11° 57·6	DR	B	11·9	C	40·3	G	51·9	31550·9	50382·3				Commenced hauling in.
3	55 03·2	11° 55·0	⌖ ! SUSPECT												
8	55 02·4	11° 59·5	⌖												
4	55 01·6	11 59·3	⌖	B	12·0	C	40·4	G	51·8	SL3-W	SL3-Y				
10	55° 02·1	12° 00·0	⌖	B	12·0	C	40·5	G	51·7	31571·4	50388·8				
1	55 02·1	12 00·0	⌖	B	12·1	C	40·5	G	51·4	31552·0	50425·7				Pinger up
	—	—	—	—			—			—		—			Chain off.
1				B	11·9	C	40·6	G	51·4	31552·3	50425·0				Sledge i/B.

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Deep Water Benthos Programme: Sampling Log

DECCA CHAIN 3B/MP

Stn	Date	Cruise No.	Sampler	Depth required	Position required
34	17.7.75	10/B75	E.S. (haul 1)	2880	55° 03.5'N 12° 03'5'W

Sampler rigging and accessory gear used: E.S, fitted timer actuated closing door, 'two-tone' pinger at 150m
Chains at 100m.
Timer set 11.50 for 3hrs delay, due to fire 14.50.

Time	Position Source	Lat.	Long.	E. M. log Fwrd	Side	Wire m out	Angle	Load	Depth (m)	Sampler position and general notes
1205				0			15° P.			Gear in water, lowering 35m/min to 100m.
1214										Chains on – lowering to 150.
1218				0.75	0.0	150	3° P.			Pinger on – lowering at 40m/min
1230	DECCA	R B11.7	E P C398 C524	0.75	0.0	630	3° P	.25 Tons		Speed increased to 1 kt.
1240				1.00		988	V + 5° P&S			
1250						1440		0.7 ton		
1300				0.75		1910		0.9 ton		
1305				0.7		2075		0.9 ton		
1309				0.75		2342		1.1 ton		
				0.50		2508	15°	1.2 ton		
1319				0.50		2800		1.25		
1324						3000m.				Bottom – No second trace, main pinger faint, may with bottom trace,
1326						3050'				Marked in 27m – second ping momentarily visible
1328						3023m.				

Time	Position Source	Lat.	Long.	E. M. Log Fwrd	Side	Wire m out	Angle	Load	Depth (m)	Sampler position and general notes
1400						3023		1.6 ton	2845m (corr)	
418				0.7	0.0					Started hauling 18m/min.
1425								1.3-1.4		
1435						2600				Ship speeded up to 5 knots of its own accord
1440					0.25-0.5 - Port			1.3 ton.		19 m/min
1500				0.6	0.3 Port	2270		1.3 ton.		20 m/min.
1515				1.0	0.4 Port	2000		1.25 ton.		20m/min
1548				0.8	0.25 Pt.	1368		0.8	2850m (corr)	
1555				1.0	0.4			0.75		
1559				1.0	0.4 Pt.	1000		0.70		
1612				1.0	0.4 Pt		~10-15°	0.50		
1630				~~0.7~~ 1.0	0.4 pt			0.30		Pinger up
1632										Pingers off - hauling chains up
1634										
1636				1.1	0.4 pt			0.20		Chains off - hauling sled inboard.
1641										

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Deep Water Benthos Programme

Stn. 34 Date 19.4.75

ES

No. of Jars	Jar contents description	Preservation status	Sorting status	Disposal
1	Very small sample, but quite rich.	Propylene phenoxytol/ Glycol solution		