MIAS 2057

INSTITUTE FOR MARINE ENVIRONMENTAL RESEARCH

CRUISE REPORT
IMER C/4/78
RVB 7/78

VESSEL — RRS JOHN MURRAY

CRUISE PERIOD — 23 June - 5 July 1978.

PERSONNEL

I R Joint	PSO	Senior Scientist
R F C Mantoura	SSO	
H H Bottrell	SSO	
P H Burkill	HSO	
J A Lindley	HSO	
A J Bale	SO	
R Pipe	SO	
E M Woodward	ASO	

ITINERARY — A sketch chart and station list are attached to this report.

Friday	June	23	Locked out Barry 0930; sampling on track 1 until 2200.
Saturday	"	24	Left Celtic Sea station at 0900 because of heavy swell. Experimental work began at Carmarthen Bay station (31) at 1500 and completed at 2300.
Sunday	"	25	Sampling on grid of stations 1-29 in Carmarthen Bay from 0900 until 1900. Anchored at station 31 at 1900.
Monday	"	26	Sampling and experiments from 0800 until 2300.
Tuesday	"	27	Sampling and experiments from 0800 until 2300.
Wednesday	"	28	Sampling and experiments from 0800 until 2000.
Thursday	"	29	Experimental work from 0800 until 1300. Sampling on grid of stations (1-29) until 2130. Left Carmarthen Bay at 2200.
Friday	"	30	Sampling and experimental work at Celtic Sea station 31 from 0800 until 2300.
Saturday	July	1	Sampling on grid of stations 1-30 in in Celtic Sea from 0900 until 2230.
Sunday	"	2	Sampling and experiments from 0800 until 2000.
Monday	"	3	Experimental work from 0800 until 2200. LHPR tows at 1200 and midnight.
Tuesday	"	4	Left Celtic Sea station at 0900 and sampled on track 2. Arrived Lundy 1530, sampled until 2230 and continued on track 2 sampling every 20 minutes.

Wednesday July 5 — Continued sampling at 20 minute intervals on track 2. Arrived off Barry 0800. Sampling every 15 minutes on track 3 up to Avonmouth; completed at 1400. Locked in Barry 2030.

OBJECTIVES

a) To measure processes involved in the turnover of nitrogenous nutrients in a stratified water column (Celtic Sea) and a mixed water column (Carmarthen Bay).

b) To measure the feeding rates and development times of two species of copepod.

PROCEDURE AND METHODS

The methods used were those outlined in the cruise programme.

a) Experiments were done at stations in Carmarthen Bay and the Celtic Sea to measure:

1) the rate of primary production and nitrate uptake by phytoplankton
2) the uptake of amino acids and the concomitant release of ammonia by heterotrophic microbes.
3) the excretion rate of ammonia, urea, primary amines, DOC, DON and phosphate by zooplankton.

Continuous measurements were made of salinity, temperature, nitrate, nitrite, phosphate, silicate, ammonia, DOC and turbidity on each track and on each of the grids in Carmarthen Bay and the Celtic Sea. Vertical sampling, to measure the profiles of each of these parameters, was done by pumped sampling and water bottle sampling at the Celtic Sea station.

b) At each site, the following experiments were done;

1) Measurement of the feeding rates of copepods using the Coulter Counter and radioisotopes.

2) Development times of copepods were measured under ambient conditions.

3) Net hauls provided material for the determination of length, dry weight, ash weight, caloric value, CHN, lipid content and gut content of copepods. Two LHPR hauls were done at midday and midnight to sample the vertical distribution of zooplankton at the Celtic Sea site.

EQUIPMENT AND OTHER FAILURES

All equipment performed satisfactorily.

The tubing used for the pumped vertical profiling was very unwieldy and it was difficult to achieve the discrimination in sampling that we required; however, adequate data were obtained by a combination of pumped samples and water bottle samples.

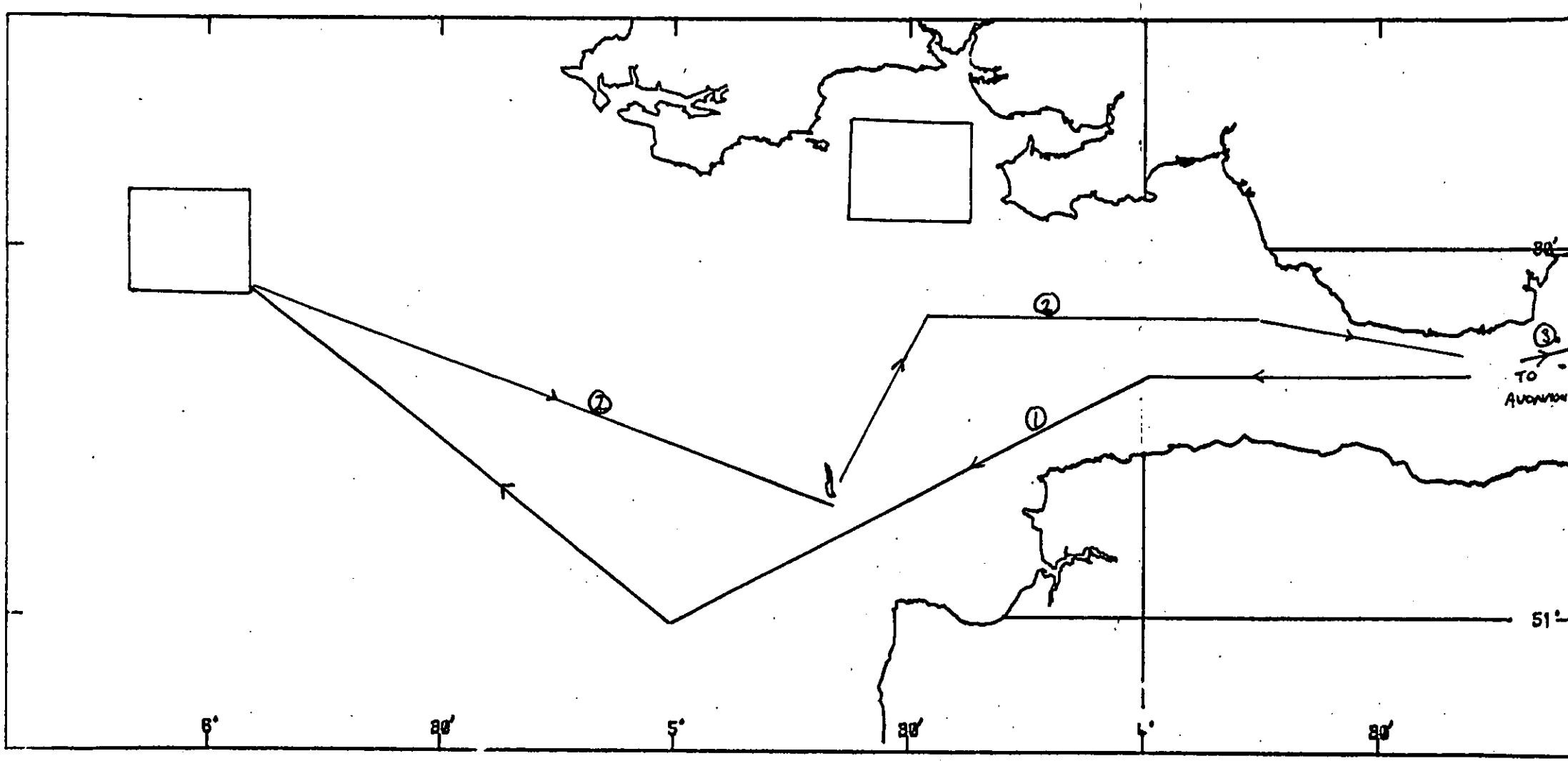
The sediment in Carmarthen Bay was sand and could not be sampled using the gravity corer. No experimental work could be done on nutrient regeneration in the sediment

since that work required undisturbed sediment cores. Bad weather reduced the planned work in the Celtic Sea by one day but an additional track (3) was sampled up to Avonmouth.

Prepared by: I R Joint
Approved by: R S Glover
Date: 18 July 1978

STATION POSITIONS

STATION	CARMARTHEN BAY		CELTIC SEA	
	Lat.N	Long.W	Lat.N	Long.W
1	51°32'	04°38'	51°26'	06°00'
2	51°32'	04°35'	51°26'	05°57'
3	51°32'	04°32'	51°26'	05°54'
4	51°32'	04°28'	51°26'	05°50'
5	51°32'	04°25'	51°26'	05°47'
6	51°32'	04°22'	51°26'	05°44'
7	51°34'	04°22'	51°28'	05°44'
8	51°34'	04°25'	51°28'	05°47'
9	51°34'	04°28'	51°28'	05°50'
10	51°34'	04°32'	51°28'	05°54'
11	51°34'	04°35'	51°28'	05°57'
12	51°34'	04°38'	51°28'	06°00'
13	51°36'	04°38'	51°30'	06°00'
14	51°36'	04°35'	51°30'	05°57'
15	51°36'	04°32'	51°30'	05°54'
16	51°36'	04°28'	51°30'	05°50'
17	51°36'	04°25'	51°30'	05°47'
18	51°36'	04°22'	51°30'	05°44'
19	51°38'	04°22'	51°32'	05°44'
20	51°38'	04°25'	51°32'	05°47'
21	51°38'	04°28'	51°32'	05°50'
22	51°38'	04°32'	51°32'	05°54'
23	51°38'	04°35'	51°32'	05°57'
24	51°38'	04°38'	51°32'	06°00'
25	51°40'	04°38'	51°34'	06°00'
26	51°40'	04°35'	51°34'	05°57'
27	51°40'	04°32'	51°34'	05°54'
28	51°40'	04°28'	51°34'	05°50'
29	51°40'	04°25'	51°34'	05°47'
30	-	-	51°34'	05°46'
31	51°36'	04°30'	51°30'	05°47'



CONTINUOUS SAMPLING TRACKS

23 JUNE – 5 JULY 1978.
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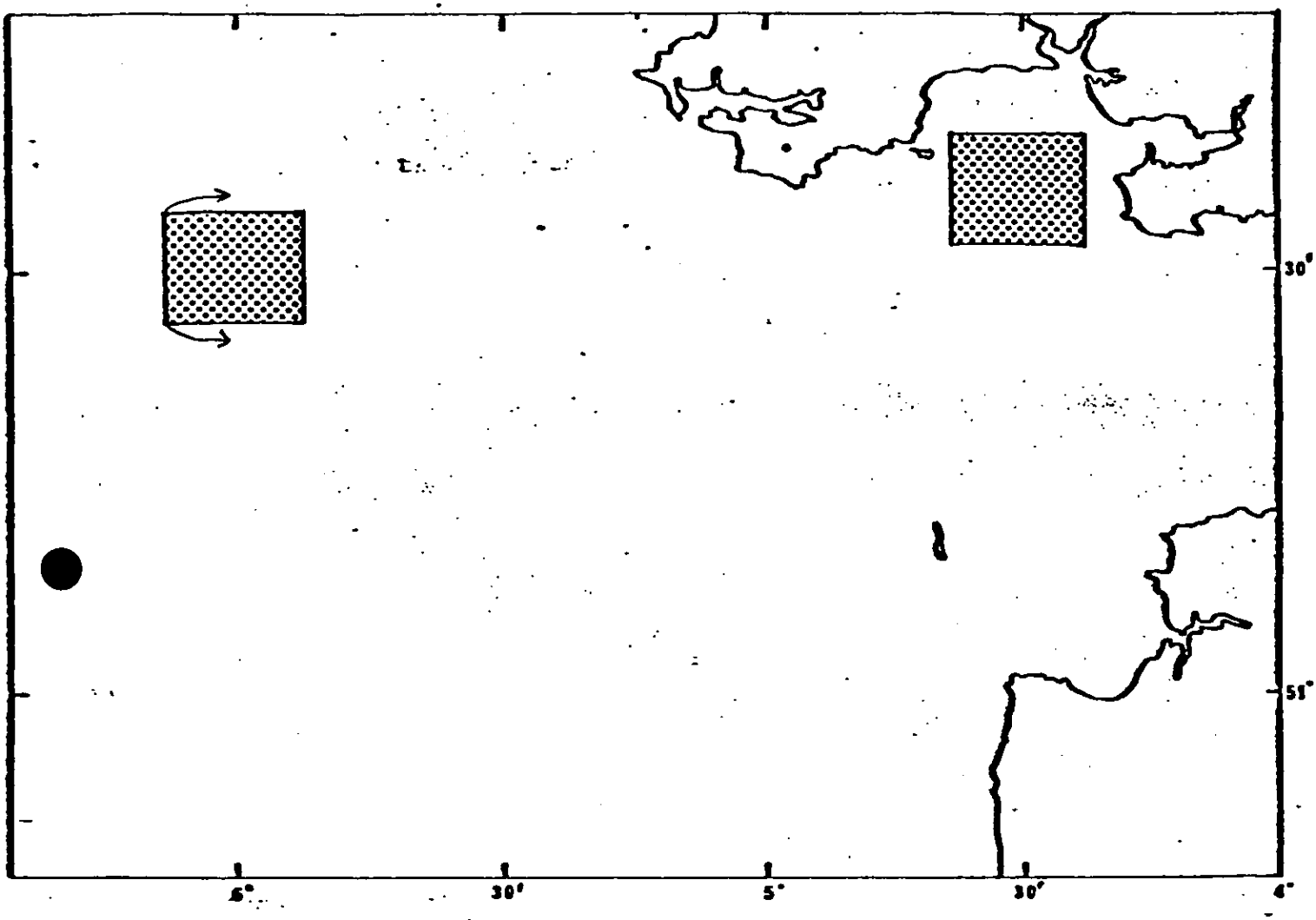
Location of Celtic Sea and Carmarthen Bay sites.



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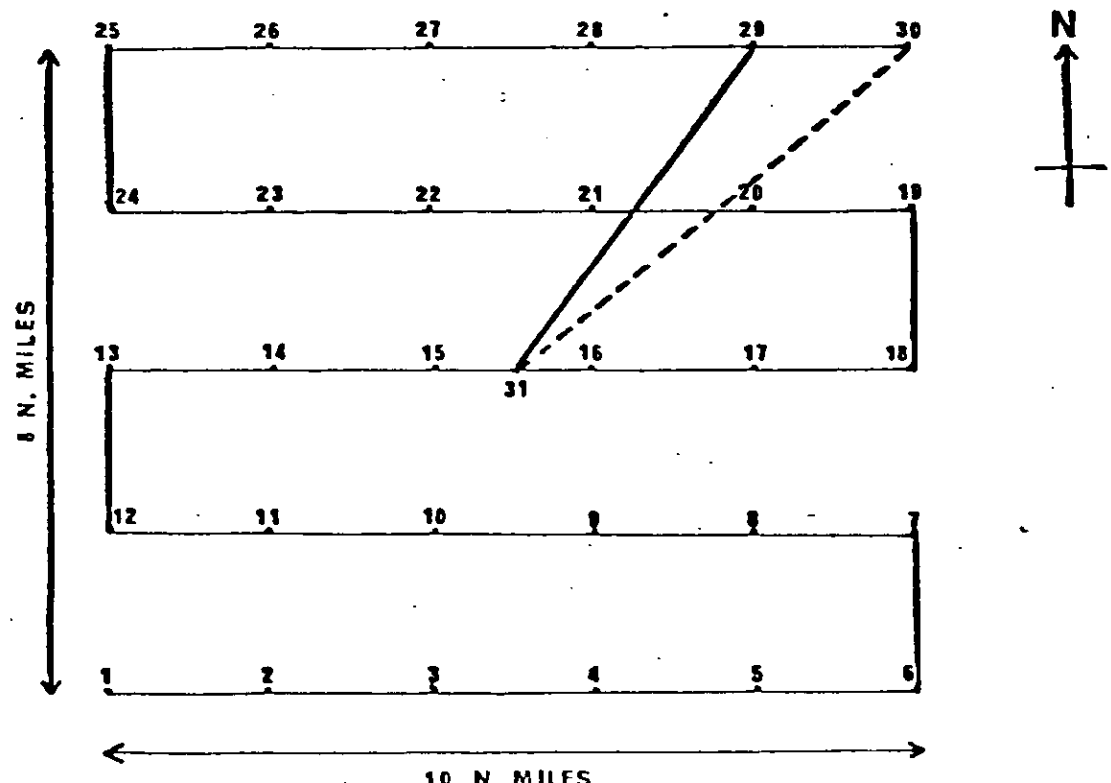
Generalised Cruise Track



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