

**MINISTRY OF AGRICULTURE, FISHERIES AND FOOD  
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, UK**

**1995 RESEARCH VESSEL PROGRAMME**

**REPORT: RV CORYSTES: CRUISE 5a/95**

**STAFF:** B E Spencer (SIC)  
M J Kaiser  
D B Edwards  
P F Millican  
R Flatt  
K Ramsey (UCNW)  
N Lough (Manchester Univ.)

**DURATION:** 21 April-3 May 1995

**LOCALITY:** Irish Sea

**AIMS:**

1. To survey the seabed and sample benthos at the experimental site off Anglesey (ref. 53.25.5N; 04.01.5W), fished intensively with a beam-trawl fitted with chain mat for the last time in October 1994.
2. To estimate the survival of animals caught in the cod-end using the on-board survival system over a prolonged period.
3. To measure the survival of animals which pass through the mesh of the beam trawl.
4. To film predators attracted to baited camera frames/and/or a frame mounted video camera on the sea bed using various components of the by-catch.
5. To quantify the number of macroepibenthic animals moving onto trawled tracks and control areas by sampling with a 3 m beam trawl.
6. To estimate amphipod abundance with baited traps.
7. To undertake comparative trials with beam trawls and scallop dredges in Manx waters, to establish by-catch composition and damage to the benthos in co-operation with Port Erin Marine Laboratory (PEML), Isle of Man.
8. To test 3 m beam trawl on Nephrops ground near to Isle of Man as part of IMPACT II programme.

**NARRATIVE:**

The scientific staff joined the ship at Lowestoft on 21 April. CORYSTES sailed at 1400 h that afternoon, arriving at the experimental site off the North Wales coast in the evening of the 23 April. A RoxAnn survey of the experimental site was conducted overnight to obtain information of the sediment type and bottom contour profile.

On the 24 April, side-scan sonar runs over the 4 m beam trawl lines made in October, 1994 were aborted due to faulty equipment. Epifaunal sampling of three experimental lines, as a prelude to fishing with the 4 m beam trawl, and infaunal sampling of the experimental grid was made with six replicate 3.5 min. tows with the 3 m beam trawl and Day grab respectively. In the evening, the experiment to study the behaviour of scavengers was begun by fishing a 1500 m long line, 10 times with the 4 m beam trawl to create a disturbance on the sea bed.

On the 25 April, the fished line and control lines were sampled with the 3 m beam trawl to detect changes in epifaunal abundance due to fishing activity. Day grab, and benthos dredge sampling was continued on the experimental grid. During the afternoon slack water, three baited frames with attached stills cameras were deployed on the fished line and two adjacent unfished areas. Baits comprised dabs and dragonets. It was intended to leave the cameras on station for 4 days.

On the 26 April, further sampling of scavenger abundance on the fished line and control areas was made with the 3 m beam trawl. A string of 10 pots baited with either fish, crabs or bivalves and designed to trap amphipods, was deployed for 24 h near to the experimental grid. Sampling continued with the Day grab and benthos dredge. Further trials with the side-scan sonar again failed due to suspected faulty slip rings on the starboard winch.

On the 27 April, further sampling of scavenger abundance and Day grab and benthos dredge sampling of the experimental grid was undertaken. The pots were recovered and fresh ones shot for recovery 48 h later. The pots caught a range of species, including amphipods, hermit crabs, whelks and starfish.

In the evening, side-scan sonar surveys using the port winch, were made of the experimental grid lines but, as anticipated, no tracks from the fishing activity undertaken in October 1994 were seen.

On the 28 April, after the final sampling of the fished line and control areas with the 3 m beam trawl, and sampling of the experimental grid with Day grabs was completed, attention was directed to an inshore site off Red Wharf Bay. Here, a change in benthic scavenging community, from hermit crabs to swimming crabs and *Corystes* dominance, was expected. A putative fished line and control areas was sampled with the 3 m beam trawl as a preliminary to fishing the line 10 times with the 4 m beam trawl later that night. With high winds forecast for the following day, the moored cameras and pots were recovered a day earlier than planned.

On the 29 April, final sampling with the 3 m beam trawl of the line fished overnight off Red Wharf Bay was completed. With half a day to spare, replicate sampling with the benthos dredge to measure catch variability was undertaken with 1, 1.5 and 2 min tows. With major aims of the programme off Anglesey completed, CORYSTES set sail for the Isle of Man, arriving at Port Erin in the early morning of the 30 April.

On the 30 April, Dr A Hill (Port Erin Marine Laboratory) and Mr Meadows (DFR) were picked up by searider from Port Erin. Side-scan and RoxAnn surveys were made in the PEML scallop fishing exclusion zone where some of the scallop impact experimental work will be done by PEML under CSG contract. Preliminary observations with side-scan, RoxAnn and 3 m beam trawl samples were made at the inshore Bradda ground in preparation for comparative fishing trials with the 4 m beam trawl and scallop dredges on the following day.

On 1 May, comparative trials were made between the 4 m beam trawl and 2 sets of 4 scallop dredges deployed from CORYSTES and ROAGAN respectively. Information on suspended sediment concentrations before and after 10 tows of the gears was not obtained due to the failure of the power pack on the CTD rosette. Samples of the fished and unfished lines were collected with replicate tows with the 3 m beam trawl on each line. Frequent sampling failures occurred due to the boulder-strewn nature of the ground which eventually caused irreparable damage to the beam trawl.

On the 2 May, final samples of the fished lines were obtained with the spare 3 m beam trawl and side-scan surveys of all lines. With the comparative fishing programme completed, CORYSTES steamed to a *Nephrops* ground to the west of the Isle of Man for trial deployments of the 3 m beam trawl fitted with or without chains to test its epibenthos sampling capability on soft ground.

With the major and subsidiary aims of the programme completed, CORYSTES set sail at 1700 h on 2 May, docking at Liverpool on the morning tide of 3 May.

## RESULTS

1. All four lines at the experimental grid off Anglesey, were sampled with the Day grab, benthos dredge and 3 m beam trawl.
- 2 & 3. No survival experiments were made, effort being directed to other aspects of the programme.
4. Three stills cameras baited with dragonets and dabs were deployed for 3 days on the fished and unfished tracks.
5. A preliminary assessment of sampling with the 3 m beam trawl at the offshore site, showed that the scavenging hermit crab (*Pagurus bernhardus*) increased in density by about 20 times within 2 days of fishing with the 4 m beam trawl (Table 1). Its density remained high for the rest of the experiment. At the inshore site off Red Wharf Bay, no clear cut pattern emerged, although there was an apparent decrease in numbers of sea mice (*Aphrodite aculeata*) and masked crab (*Corystes cassivelaunus*) after fishing.
6. The baited traps, deployed on two occasions, caught whelks (*Buccinum* and *Colus*), hermit crabs (*Pagurus bernhardus*) and amphipods with the former two species attracted to crab and fish baits respectively. Amphipods (*Orchomene* sp.) were caught at a rate of ca 50 per pot.
7. Comparative impacts of scallop dredges and the 4 m beam trawl on the Bradda ground, Isle of Man, were successfully completed and sampled. Sampling boulder-strewn ground requires a more robust 3 m beam trawl than that used on this cruise.
8. The 3 m beam trawl deployed in 74 m of water on a muddy *Nephrops* ground sampled epibenthos satisfactorily. Short tows of 3.5-10 min. duration caught mainly crustaceans eg *Nephrops*, *Pandalus*, *Crangon* sp. and mysids, irrespective of whether the tickler chains were active or inactive (bound to the beam).

B E Spencer (SIC)  
2 May 1995

### SEEN IN DRAFT:

B A Chapman, Master  
W May, Senior Fishing Mate

### INITIALLED: SJL

### DISTRIBUTION:

Basic list +  
B E Spencer  
M Kaiser  
D B Edwards  
P F Millican  
R P F  
K Ramsey  
N Lough  
P Diamond, NWNW SFC

**TABLE 1: AVERAGE NUMBERS PER TOW OF THE 3 M BEAM TRAWL AT THE ANGLESEY OFFSHORE SITE BEFORE AND AFTER FISHING WITH THE 4 M BEAM TRAWL**

	<u>Before fishing</u>		<u>25 April</u>			<u>26 April</u>			<u>27 April</u>			<u>28 April</u>		
	<u>fished</u>	<u>control1</u>	<u>control2</u>	<u>fished</u>	<u>control1</u>	<u>control2</u>	<u>fished</u>	<u>control1</u>	<u>control2</u>	<u>fished</u>	<u>control1</u>	<u>control2</u>	<u>fished</u>	<u>control1</u>
<b>ECHINODERMS</b>														
<i>Asterias rubens</i>	26.33	28.50	20.00	21.67	19.67	16.83	31.83	25.50	21.17	25.17	22.33	12.86	13.20	21.80
<i>Psammechinus miliaris</i>	96.83	60.33	105.50	77.67	84.83	57.17	251.50	160.83	117.33	102.83	192.50	37.14	121.00	209.00
<b>CRUSTACEANS</b>														
<i>Pagurus bernhardus</i>	3.50	1.50	16.50	11.17	1.83	7.33	63.00	4.50	7.67	50.00	6.17	7.00	42.40	5.80
<i>Pagurus prideaux</i>	5.50	3.33	9.33	5.00	4.33	4.50	11.67	8.17	7.83	5.33	8.33	7.86	4.60	8.40
<b>POLYCHAETES</b>														
<i>Aphrodite aculeata</i>	9.50	10.50	7.83	3.83	5.83	4.83	4.00	7.17	6.33	4.50	3.83	2.86	1.40	5.40
<b>PISCES</b>														
<i>Limanda limanda</i>	2.33	0.50	1.33	5.17	3.50	4.00	6.33	3.17	4.33	4.17	1.00	5.57	3.40	1.40