MINISTRY OF AGRICULTURE, FISHERIES AND FOOD
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1996 RESEARCH VESSEL PROGRAMME

REPORT: RV CORYSTES: CRUISE 6

STAFF: C G Brown
D B Bennett
W J Meadows
A R Lawler
P M Hudson
J M Elson
N Bailey SOAEFD (Part Time)

DURATION: Left Lowestoft 13.00 h 24 April.
Arrived Lowestoft 11.00 h 3 May.
All times are Greenwich Mean Time.

LOCALITY: North Sea (English NE Coast)

AIMS:

1. To conduct a TV survey of the English NE coast Nephrops grounds using a towed sledge and underwater TV camera to evaluate burrow density and estimate Nephrops biomass in the area 55° 35' -54° 45' N and 1° 30'-0° 40' W.

2. To backup the TV survey with a trawl survey to establish the size composition and sex ratio of the Nephrops catch.

3. To collect sediment samples by Day grab to establish the type of substrate most suitable for Nephrops.

4. To carry out a side scan survey to establish if it is safe to deploy the TV sledge in an area of reported seabed damage and to try to distinguish sediment type interfaces.

NARRATIVE:

CORYSTES departed from Lowestoft on 24 April at 13.00 h and sailed to North Shields where N Bailey was picked up by sea rider at 08.00 on 25 April. Due to the fitting of new winch gear on Corystes and the short turnaround there was not enough time for RVSU to complete all the necessary work before we sailed. Consequently the TV sledge was not ready until 20.38 on 25 April when the first tow was made. A total of 74 TV stations was made over the next 6 days with all stations being completed by 01.52 on 30 April. Preliminary Nephrops burrow counts were made over a ten minute part of the tow which was recorded on video tape for further detailed analysis at the

laboratory. Sediment samples were taken by Day grab at each TV station. N Bailey was put ashore at N Shields by sea rider at 08.00 on 29 April.

Trawling commenced at 04.36 on 30 April and 12 trawl stations were completed by 06.40 on 1 May. All Nephrops were measured to obtain a length distribution at each trawl station and in addition samples were examined for Hematodinium infestation. The side-scan sonar was employed from 09.00 on 1 May to see if it was possible to use backscatter signal strength to differentiate between varying sediment types that comprise the Nephrops ground, particularly where two sediment types merge, and to establish the presence or absence of reported severe ground disturbance at specified locations before the TV sledge was deployed in this area. Weather conditions were not suitable for further deployment of the sledge and survey work was finished at 11.40 h on 2 May.

RESULTS:

1. A total of 74 tows with the sledge-mounted TV camera were made over the full extent of the Nephrops fishing grounds and excellent results were obtained for the majority of these. Clear pictures were obtained of the substrate, Nephrops burrows, burrows of other animals and emergent Nephrops as well as trawl marks caused by both footrope and doors. Preliminary Nephrops burrow counts were made at each TV station based on advice from N Bailey (as a result of previous SOAEFD surveys and diving experience) on which were considered to be individual Nephrops burrows or multiple entrances to the same burrow system. All burrow counts, usually of 10 minutes duration, were recorded for further laboratory analysis. Preliminary results suggest that the highest densities of burrows are found in the areas where high catches of Nephrops were found in recent trawl surveys using a chartered local Nephrops fishing boat. These high burrow densities also coincide with the areas of mud as recorded by Roxann (Fig.1). In some areas where commercial fishing was in progress the TV picture was impaired by disturbed fine sediment. Trawl tracks were observed on the sediment surface by the TV and by the side scan sonar (see 4). The TV sledge cable proved very sensitive to length paid out; there was a fine line between lifting the sledge and dragging the cable. To alleviate this floats were fitted to the cable with a marginal improvement noted. Extensive use of Sextant software allowed positioning of the vessel and precise logging of position whilst surveying (see Fig 2).

2. A total of 12 trawl tows of half hour duration with a Boris 600 prawn trawl were made throughout the fishery area to establish the size composition and sex ratio of Nephrops on different parts of the ground, and to relate to the burrow counts of those grounds. Catches were low, partly because of the time of year, but some useful suggestions on alternative rigging of the gear to improve its efficiency were suggested by the Corystes fishing skippers for future surveys. All Nephrops caught were sexed and measured, and in addition samples were examined microscopically for infestation by the blood parasite Hematodinium. Possible infestation rates of between 14% and 27% of those examined was established, these were mainly females. Blood smears of

infected animals were made for verification of infestation by the Millport laboratory.

3. Sediment samples taken by Day grab at all TV stations were frozen for future particle size analysis.

4. Surveying with the side scan sonar over an extensive area of reported damaged Nephrops fishing grounds was carried out to establish safe areas for the deployment of the TV sledge. A series of north-east to south-west runs was completed and seabed damage was located in the form of furrows and ridges at the reported and other positions (see mid-eastern sector in Fig 2). Attempts to distinguish sediment types were successful, particularly with the coarser differences, but similar sediment types will need to be verified with the TV sledge and grab samples before any definite conclusions can be drawn.

CLIVE BROWN
(Scientist-in-Charge)
2 May 1996

ACKNOWLEDGEMENT: The expert advice given by Dr. N. Bailey was greatly appreciated.

INITIALLED: CTM

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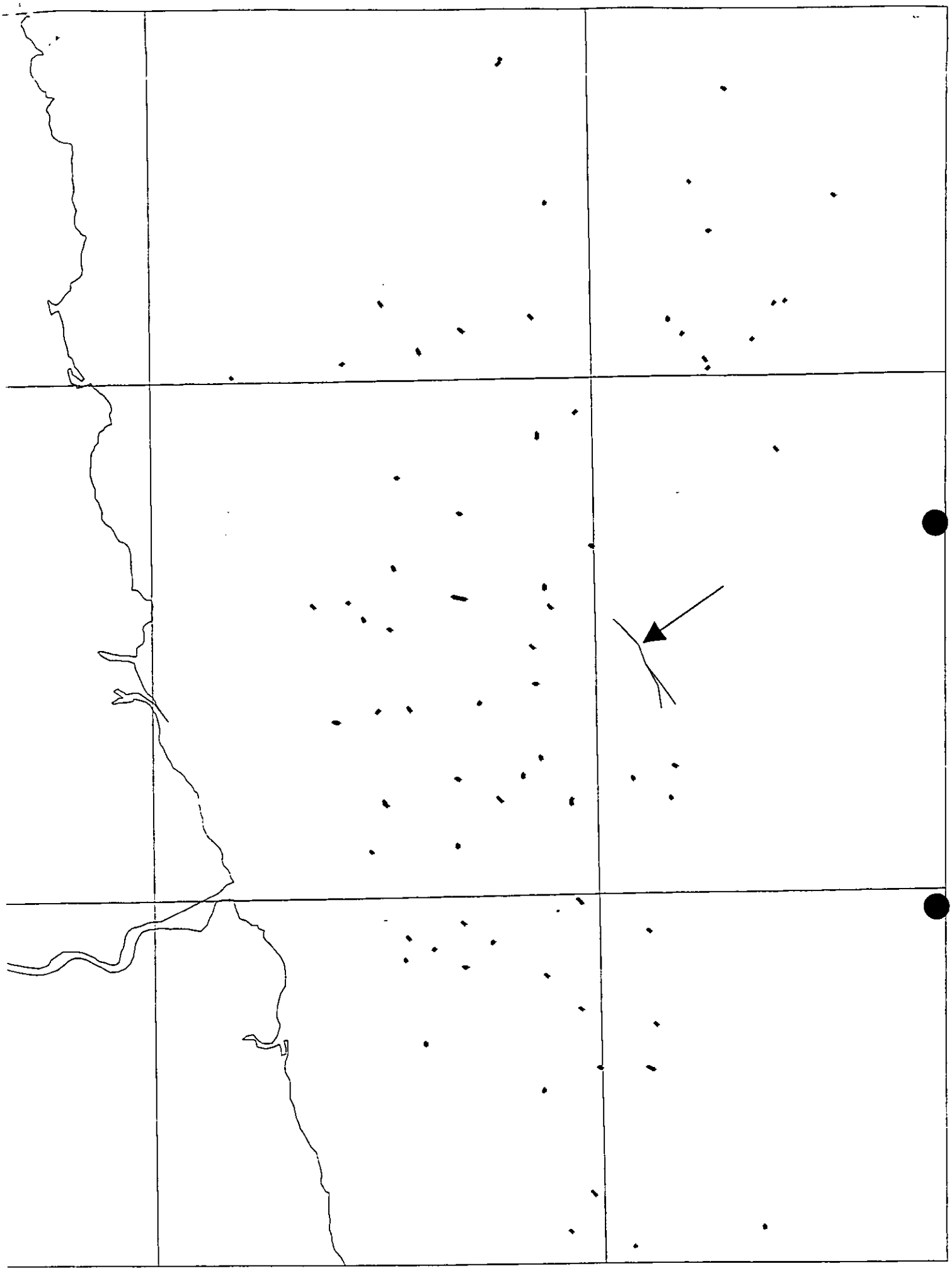
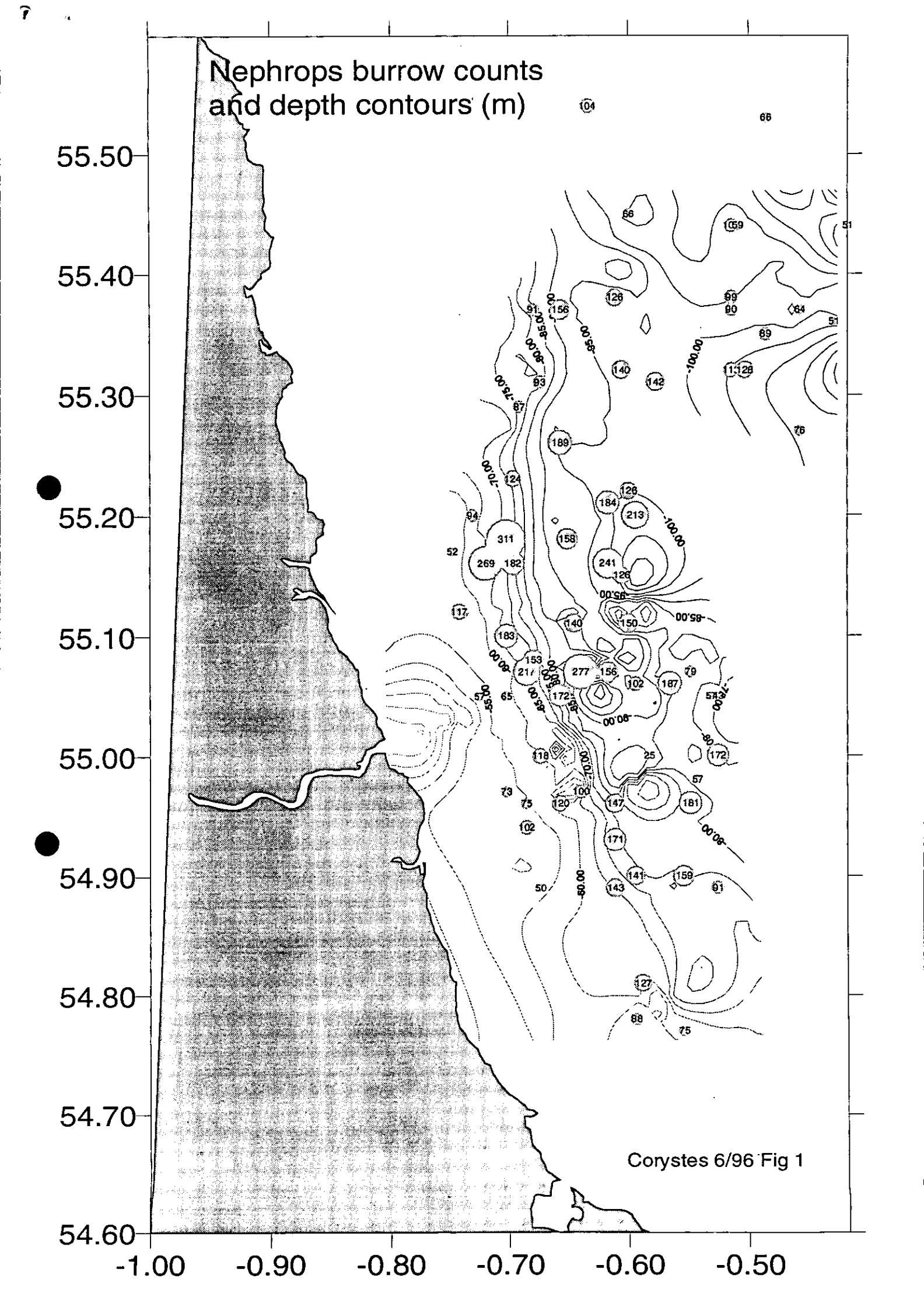


Farn deep Nephrops TV survey 96 FSM Shellfish Resource Group Fig2
Scale: 350000

STATIONS WORKED AND POSITION OF SEABED DISTURBANCE. (arrowed)


Nephrops burrow counts
and depth contours (m)
55.50
55.40
55.30
55.20
55.10
55.00
54.90
54.80
54.70
54.60
-1.00
-0.90
-0.80
-0.70
-0.60
-0.50
Corystes 6/96 Fig 1