THE CENTRE FOR ENVIRONMENT, FISHERIES & AQUACULTURE SCIENCE, LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK, NR33 0HT.

2002 RESEARCH VESSEL PROGRAMME

~~PROGRAMME~~ REPORT - RV CORYSTES: CRUISE 10

STAFF:

B Harley (SIC)
J Dann (2IC)
M Easey
M Dunn
M Brown
T Dinmore
M P-Humphreys
J Ellis
R Stocks
T Boon (part-time)
R Ayers (part-time)

DURATION:

25 July – 8 August

LOCALITY:

North Sea (IVc), English Channel (VIId).

AIMS:

1. To undertake a beam trawl survey in the southern North Sea and eastern Channel as part of an ICES co-ordinated programme to i) obtain fisheries independent data on the distribution and abundance of commercial flatfish species, and ii) derive age compositions of sole and plaice for use in the assessment of stock size.

2. To collect biological data including maturity and weight at age of commercial flatfish and non-commercial fish by-catch.

3. To quantify the epibenthos using 4m beam trawl by-catch data.

4. To carry out detailed survey of sole distribution in selected areas of VIId.

NARRATIVE: (all times in BST)

CORYSTES sailed from Lowestoft at 1118h on 25 July. For this survey the micro-CTD was attached to the beam along the headline rope. The survey began in fine weather and five 4m-beam trawl stations off Southwold and Aldeburgh were completed before steaming overnight to start the survey in VIId off Dungeness on 26 July. The day's fishing started well with two tows but then on the third tow of the day, as the beam trawl was being hauled, the warp parted (possibly at the splice) and the gear was lost completely. Although the ship grappled for three hours we were unable to recover the beam and CTD. At 1300, fishing continued with No. 1 beam with a new Micro-CTD attached and a further four stations were completed without incident, before the ship steamed overnight to the western end of the English side of the survey area. Fishing continued on Saturday morning at prime station 25, the tow mid channel off the Isle of Wight. The 3rd tow of the day was invalid due to a two foot square hole in the codend and liner but the station was not repeated and fishing continued without incident and a further seven stations were fished. On 28 July prime station 49 had to be hauled early due to extensive amounts of static gear across the tow. Once this tow had been hauled at around 1330, the sea rider put Trevor Boon and Richard Ayers ashore at Hayling Island Ferry jetty. The Corystes continued the survey at 1500 once the sea rider had been recovered. In total seven stations were fished on this day. Monday 29 July was another very calm and sunny day and seven prime stations were fished in an easterly direction from Newhaven to Dungeness. Prime station 62 had to be abandoned due to static gear littering the tow and, because the ship had no echo sounding colour plotter, we were unable to check the surrounding area for an alternative tow. Once the fishing stations had been completed, time was allowed to attempt to recover the No. 3 beam lost on July 26. At approximately 1630 the grapple hooked the net of the lost beam and by 1730 the entire set of gear was safely on board. The survey continued on 30 July, using No.3 beam trawl. The tow at prime station 59 was fished for only 15 minutes due to an unexploded bomb at the end of the tow (this was detonated moments after we had left the area). The remaining core English sector stations, including prime station 62 which was abandoned previously, and the 12 Hastings Shingle Bank tows were completed before steaming overnight to start the French sector stations near the Cherbourg peninsula.

Seven stations were fished in a generally easterly direction along the French coast. On the last tow of the day, after towing for 18 minutes, the fishing skipper started to haul the net as the tonnage meter on the winch showed a significant increase in load. It took almost an hour to get the net onboard and this was only possible by flipping the beam over and towing the back out of it. On investigating the remaining contents of the codend it was noted that the net was probably full of brittlestars, dead shell and sand in excess of 4 tonnes. The headline had parted and the net was damaged. Repairs were carried out overnight and fishing resumed as usual the next morning. The first tow on 1 August was hauled after 15 minutes due to weight in the codend but the remaining 8 stations were all fished without incident. Each of the day's stations were noted for their large benthos catches with prime station 4 having almost half a tonne in benthos alone. Fishing continued in an easterly direction with seven stations being fished without incident on 2 August. On 3 August five stations in the mid channel were fished before prime station 29 had to be abandoned when nearly a tonne of shell debris was caught in just 9 minutes. The tow was not repeated and one more station was fished that day. On the first haul on 4 August, the surveys biggest single catch of sole was recorded. Six hundred and sixty sole were caught in the half-hour tow at prime station 72, an inshore station south of Boulogne. The remaining 8 stations fished that day produced some good catches. Fishing was

delayed until 1700 on 5 August due to winch problems. The final 2 core stations in VIId were completed by 2000h, and Corystes sailed overnight to start the final set of stations in IVc.

The following morning started well with 5 stations being fished from outside the Thames estuary and fishing in a generally north-westerly direction. However, the sixth tow of the day at prime station 93 was invalid due to the net coming up with no belly. It was thought that this happened early in the tow and because the ground was so uneven and hard, it was decided not to repeat the tow. The No.1 beam trawl was put back on and the remaining 2 tows of the day were fished without incident. The last two stations off Orford Ness were fished the following day before CORYSTES docked at Lowestoft at 2040h on 7 August.

RESULTS:

Aim 1: 69 valid and 3 invalid primary stations used in the estimation of year class strength of sole and plaice, together with five additional stations, were fished in VIId, and 14 valid and 1 invalid station were fished in IVc (Figure 1). At each station the standard 4m-beam trawl, fitted with chain mat, flip-up ropes and 40mm cod-end liner was trawled at a speed of approximately four knots. All fish were counted, weighed and measured. Length-stratified samples of otoliths of sole, plaice and dab by sex and lemon sole, brill, flounder, turbot, whiting and cod were taken from the English and French sectors of VIId and from IVc. Commercial shellfish (scallops, spider crabs) were counted and weighed and edible crabs and cuttlefish measured. The number of otoliths collected are shown below:

	Sole	Plaice	Dab	Lemon Sole	Brill	Turbot	Flounder	Whiting	Cod
VIId: English sector	332	250	339	106	23	8	48	20	18
VIId: French sector	330	396							
IVc	292	96	81	76	4	-	44	23	1

Sole abundance: Figure 2 shows the distribution and relative abundance of sole. The catches were dominated by the 2001 year-class as 1 year-olds. The catch rate of sole averaged 3.2kg/h on the English side (2.9kg/h in 2001 and 1.7kg/h in 2000) compared with 5.0kg/h off the French coast (5.1 kg/h in 2001 and 2.0kg/h in 2000).

Plaice abundance: Figure 3 shows the distribution and relative abundance of plaice. Large plaice were found in particularly high abundance along the French coast north of the Baie de Somme. The catch rate of plaice averaged 5.9kg/h on the English side (5.4kg/h in 2001 and 4.0kg/h in 2000) compared with 15.9kg/h off the French coast (22.2kg/h in 2001 and 11.8kg/h in 2000).

Other species: Cuttlefish (*Sepia officinalis*) were measured and biological data on length, sex, weight and maturity was collected on selected stations. Baillans wrasse (*Crenilabrus bailloni*), noted as excessively rare in northern European seas (Wheeler, 1978), was positively identified at prime stations 6 and 16, two tows off the French coast, associated with hard ground. Also,

two seahorse species, *Hippocampus hippocampus* and *Hippocampus ramulosus*, were caught at eight stations along the French coast.

Aim 2: All otolithed fish were measured to the nearest cm, weighed individually, sexed and assigned a maturity based on a five-stage key. All non-commercial fish by-catch from the 4m-beam trawl were identified, weighed and measured. As part of the new EU data regulations all ray species caught were sampled for length, sex, maturity and weight.

Aim 3: The benthic by-catch was quantified at 104 stations. Catches off the Suffolk coast were generally low and comprised of few species (e.g. swimming crabs, shrimps, sea mice and starfish). Catches were greater off the southern coast of England and included a lot of non-native species (e.g. slipper limpet *Crepidula fornicata* and the ascidian *Styela clava*). Other interesting species observed included the hermit crab *Diogenes pugilator* (off Poole), the echiuran worm *Maxmülleri lankesteri* (off Dungeness), and the sea mouse *Hermione hystrix* and the shrimp *Alpheus macrocheles* (stations in mid-Channel). The inshore waters off the Baie De Seine and Baie de Somme were dominated by starfish *Asterias rubens* and swimming crabs, whereas the coarser grounds off Cap d'Antifer were dominated by dead mans fingers *Alcyonium digitatum* and green sea urchins *Psammechinus miliaris*. The fauna of the hard grounds in the Dover Strait and south of the Isle of Wight was dominated by sessile filter feeders, including a variety of sponges and ascidians. The brittlestar *Ophiothrix fragilis* were extremely abundant at prime stations 26, 31, 34, and 71. Indeed, the large catch of *O. fragilis* (ca. 1 tonne) at the latter station was sampled on deck and not quantified.

Aim 4: 74 plaice and 37 sole were caught at the twelve stations on and around the Hastings Shingle Bank dredge site. Since 2000 when this grid of stations were first surveyed there has been an almost 100% increase in the number of plaice caught (65 in 2001, 39 in 2000) and over a 100% increase in the number of sole caught (20 in 2001, 18 in 2000).

Other aims: Samples of live spider crabs were collected for Cambridge University. A number of additional biological samples were collected at the request of Jim Ellis. A short-snouted seahorse (*Hippocampus hippocampus)* and samples of greater sandeel (*Syngnathus acus*) were collected for a study on syngnathiform phylogenetics. One hundred and ninety-five sole, sixty-three lemon sole and one hundred and fifty-seven plaice were collected and frozen for Melanie Bergmann of Bangor University. Thirty-four samples of various fish species were collected for Terry Watson for the CEFAS fish identification course.

Again, the mini-CTD was attached to the headline of the beam trawl and continuous temperature, depth and salinity values were recorded whilst the beam was fishing. A valid profile was recorded on all valid tows.

For the first time on a CEFAS Beam Trawl Survey, the Electronic Data Capture (EDC) equipment was used for recording all biological data. Although there were a few technical and software problems, the units were used at every station and the system work very well. My recommendation is that they be used on all CEFAS trawl surveys in the future.

B Harley
7 August 2002

Seen in draft: M Elliott (Master)
B Salter (Senior Fishing Mate)

Basic list +
B Harley
J Dann (2IC)
M Easey
M Dunn
M Brown
T Dinmore
M P-Humphreys
J Ellis
R Stocks
T Boon
R Ayers
Fishing skipper CORYSTES
W Vanhee, Belgium
Frans v Beek, Netherlands
A Tetard, France
Kent and Essex, Sussex, Southern, Devon and Cornwall SFC

Figure 1. Corystes 10/02 - Position of 4m beam trawl stations

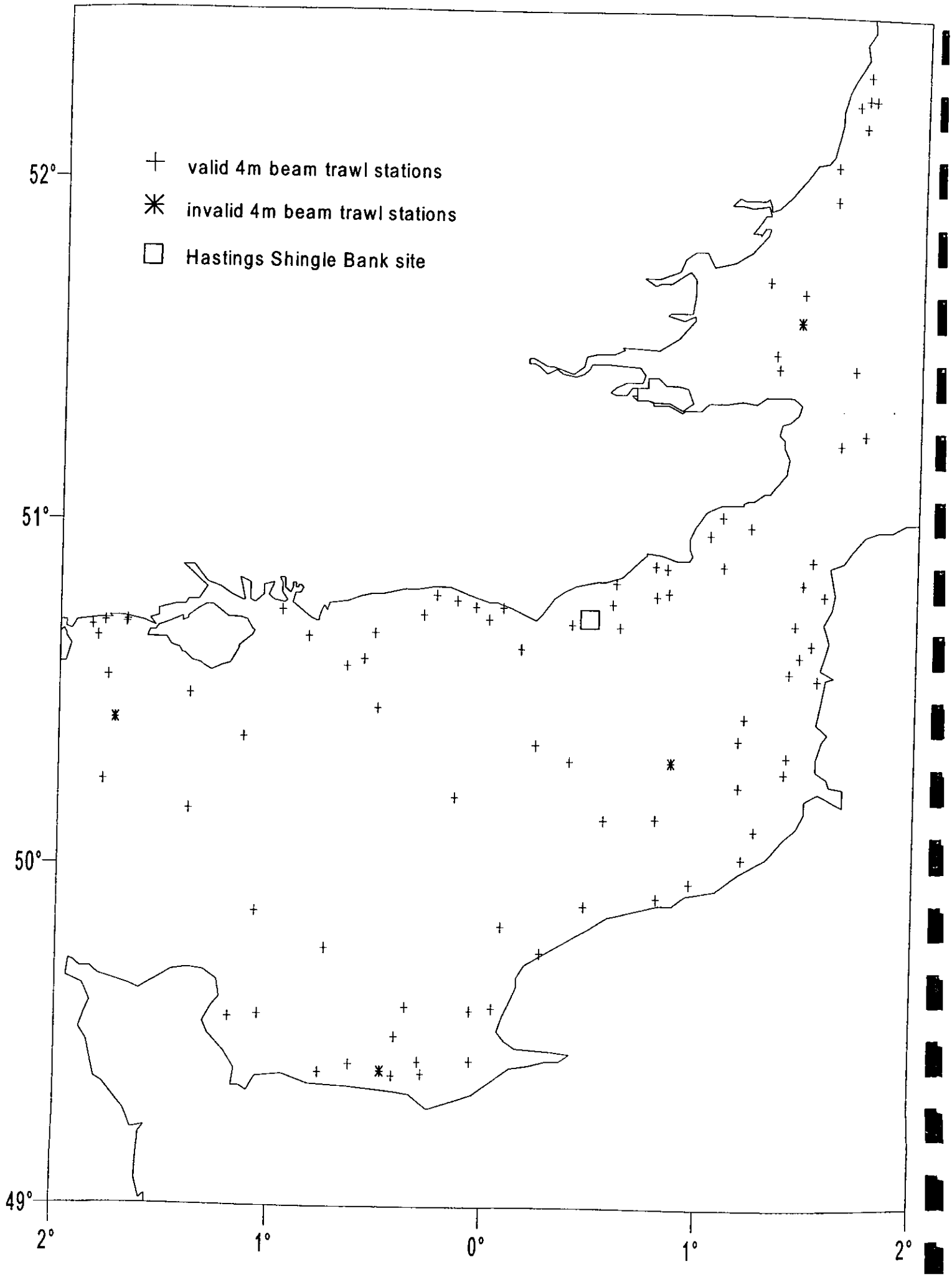

Figure 2. Corystes 10/02 - Abundance of sole (No. of fish per 30 min tow)

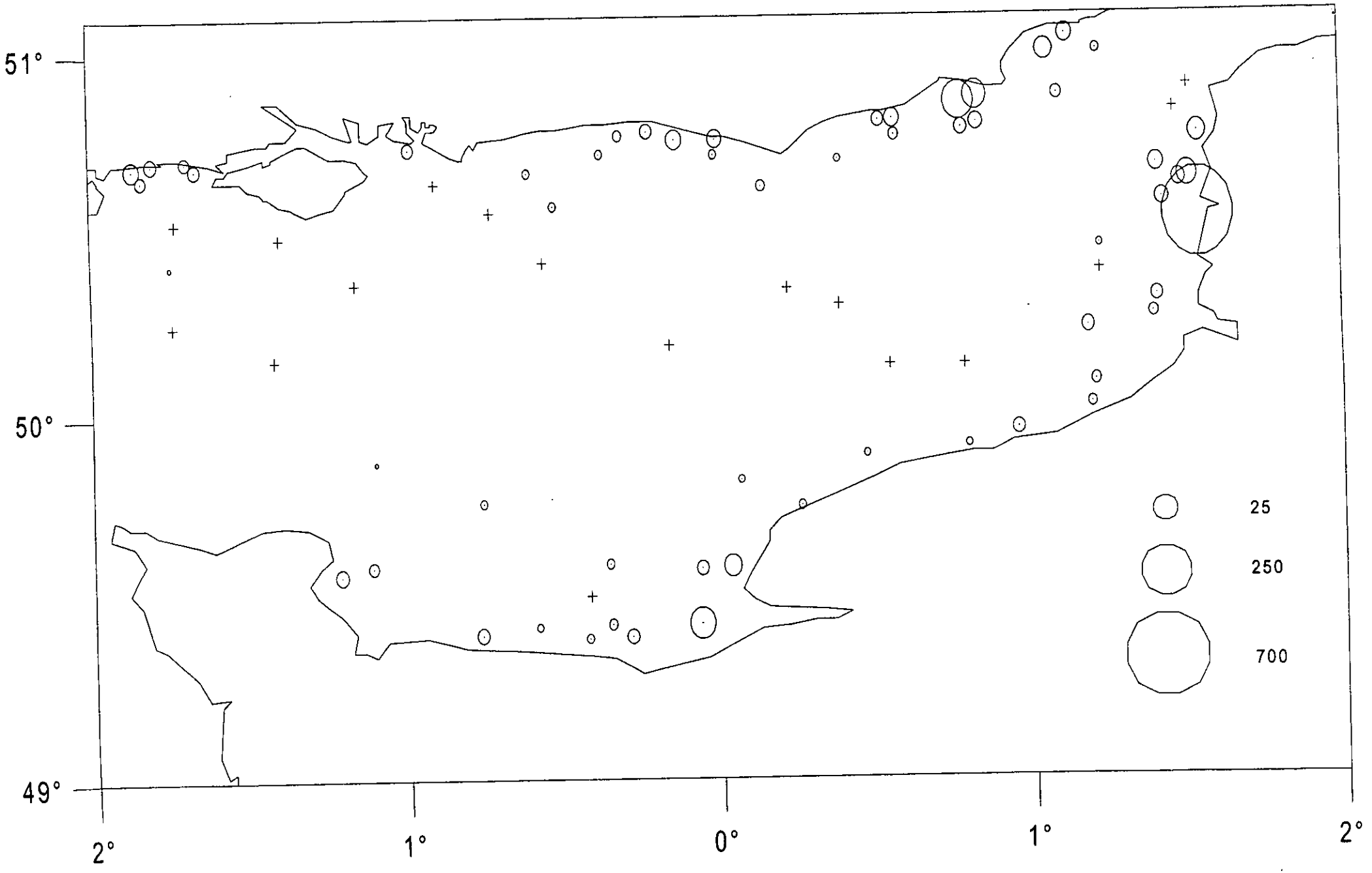

Figure 3. Corystes 10/02 - Abundance of plaice (No. of fish per 30 min tow)