CENTRE FOR ENVIRONMENT, FISHERIES AND AQUACULTURE SCIENCE
LOWESTOFT LABORATORY, LOWESTOFT, SUFFOLK NR33 OHT

1997 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 7

STAFF:

Part 1	Part 2
J H Nichols SIC	J Casey SIC
T Boon	T Boon
D Eaton	P A Large
S Warnes	M Sherlock
R A Ayers	P Welsby
M Etherton	M Etherton
T Dinmore	G Williams
D McCubbin	K Leonard
P Blowers	H Emerson
R Bonfield	T A Bailey
I T McMeekan	B Taylor

DURATION: Part 1 : 12 - 26 August, 1997
Part 2 : 26 August - 7 September, 1997

LOCATION: North Sea

AIMS:

1. To carry out a ground fish survey of the North Sea using a standard GOV trawl in order to obtain information on:

   a) Distribution, size composition and abundance of all fish species.
   b) Age - length distribution of selected species.
   c) Distribution of macrobenthos and anthropogenic debris.
   e) Surface and bottom temperature and salinity data using reversing bottles.
   f) Length - weight information using individual fish measurements.

2. To collect material for fish identification courses (T. Watson, CEFAS Lowestoft)

3. To preserve material from diseased fish (S Feist, CEFAS Weymouth)

4. To investigate starfish damage as an indicator of trawling intensity (M. Kaiser, CEFAS Conwy)

5. To collect and process surface sea water for the analysis of Tc-99 and Cs radionuclides as part of the post EARP survey (A1210).

6. To obtain samples for molecular marker studies (R. Millner, CO135)

NARRATIVE

RV Cirolana sailed from Lowestoft at 1545h,12 August and steamed south to North Foreland. Surface water samples for the analysis of Tc-99 and Cs radionuclides were taken at three stations on route before returning to a position off the Thames Estuary where the Groundfish trawl survey was started at 0625h on the following day. The trawl and surface water sampling survey continued in exceptionally calm and warm weather over the next few days. With the exception of one station off the Humber, all eleven stations in the southern sector of the North Sea, south of latitude 54°N, were completed by 0630h 16 August. The survey then progressed in continuing good weather into the eastern North Sea completing all twenty five stations east of longitude 2°E up to latitude 58°30'N by 1330h 23 August. A further nine stations were completed west of longitude 2°W working south towards the Tyne for the mid cruise change over of scientific staff.
Because of unusually heavy usage of fresh water during the first half of the cruise the planned exchange of staff by sea rider was abandoned. Instead it was necessary for RV Cirolana to dock on the Tyne to take a further supply of freshwater on board. The vessel docked in South Shields at 1200h 26 August where the change of scientific staff took place.

Cirolana sailed from South Shields at 1700h on 26 August, and resumed the survey without interruption, completing all planned trawl and most surface water stations in the northern part of the survey grid by early afternoon on 5 September. Taking advantage of the time saved due to the lack of any interruptions for bad weather, trials were conducted using the G.O.V trawl fitted with Balmoral floats in place of the exocet kite, on the morning of 6 September. The final GOV trawl station off Flamborough Head and remaining 2 water stations were completed by the evening of 6 September when Cirolana set a course for Lowestoft and docked at 1200h on Sunday 7 September.

Results

Aim 1.

A total of seventy seven, 30 minute trawl stations were completed. Three were declared invalid due to damage to the trawl, but were successfully repeated. Trawling was carried out using the GOV trawl rigged to the standard specification for International Young Fish Surveys. At each GOV tow, surface and near bottom temperature readings were taken together with water samples for salinity analysis. Eight additional surface and near-bottom temperature and salinity samples were taken at stations off the north of Scotland. A chart indicating the position of each trawl station is attached (Figure 1). Scanmar equipment was used to monitor headline height and door spread. At each station the catch of each species was weighed and all fish, or representative samples were measured. Samples of otoliths for age determination were

taken as specified. Benthos and crustacea were identified to species wherever possible, and any anthropogenic waste material was recorded and weighed. The resultant data were input to computer database using the CEFAS Electronic Data Capture System, and preliminary summations and analyses were made. Charts showing the sea surface and near-bottom temperatures and the distribution of catches of selected species are shown in (Figures 2-9)

These data will be analysed further at CEFAS Lowestoft and will provide a major input to the ICES assessment of North Sea gadoids.

Aim 2.

Specimens of approximately 50 different fish species were preserved for the Laboratory's fish identification courses.

Aim 3.

Several specimens of diseased long-rough dabs (*Hippoglossoides platessoides*) were preserved for further analysis (S. Feist, CEFAS, AHD, Weymouth)

Aim 4.

The incidence of limb regeneration of starfish was recorded at nearly all trawl stations (M Kaiser, CEFAS, Conwy)

Aim 5.

Large surface seawater samples (50-200 litres) were collected at each of the stations of the North Sea groundfish survey for the determination of Tc-99 and Cs radionuclides. Further large water samples were collected at a number of other locations to supplement the radionuclide survey, particularly along the English coastal waters of the western North Sea and off northern Scotland. The completed sampling locations are provided in Figure 10.

A total of 110 surface water samples(59 part a, 51 part b) were collected and filtered(0.45 μm) for Tc-99 (50-200 litres) and Cs radionuclides (50 litres). Preconcentration of the radionuclides was carried out by passing the filtered samples through cartridges containing ion exchange resin. Further processing/radiometric purification and radioassay will be completed out at the Lowestoft Laboratory.

This survey, together with the previous two Tc-99 surveys. will be used to determine the time and spatial distribution of Tc -99 in the North Sea, thereby providing information on the water transport rates from the Irish Sea (the source of Tc-99) and the water migration in the North Sea.

Aim 6.
Tissue samples from 100 cod and 50 poor cod were collected and preserved for genetic studies (R. Millner, CEFAS, Lowestoft)

Miscellaneous

a) The jaws from 3 specimens of smooth hounds were dissected out and preserved for further examination (M. Hain, Florida, USA)

J H Nichols/J Casey
8 September, 1997

Seen in Draft

B A Chapman - Master
M Reynolds - Senior Fishing Mate

Distribution:

Basic list +
J H Nichols
T Boon
D Eaton
S Warnes
R A Ayers
M Etherton
T Dinmore
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Figure 1 Cirolana 7/97: Valid trawl survey stations

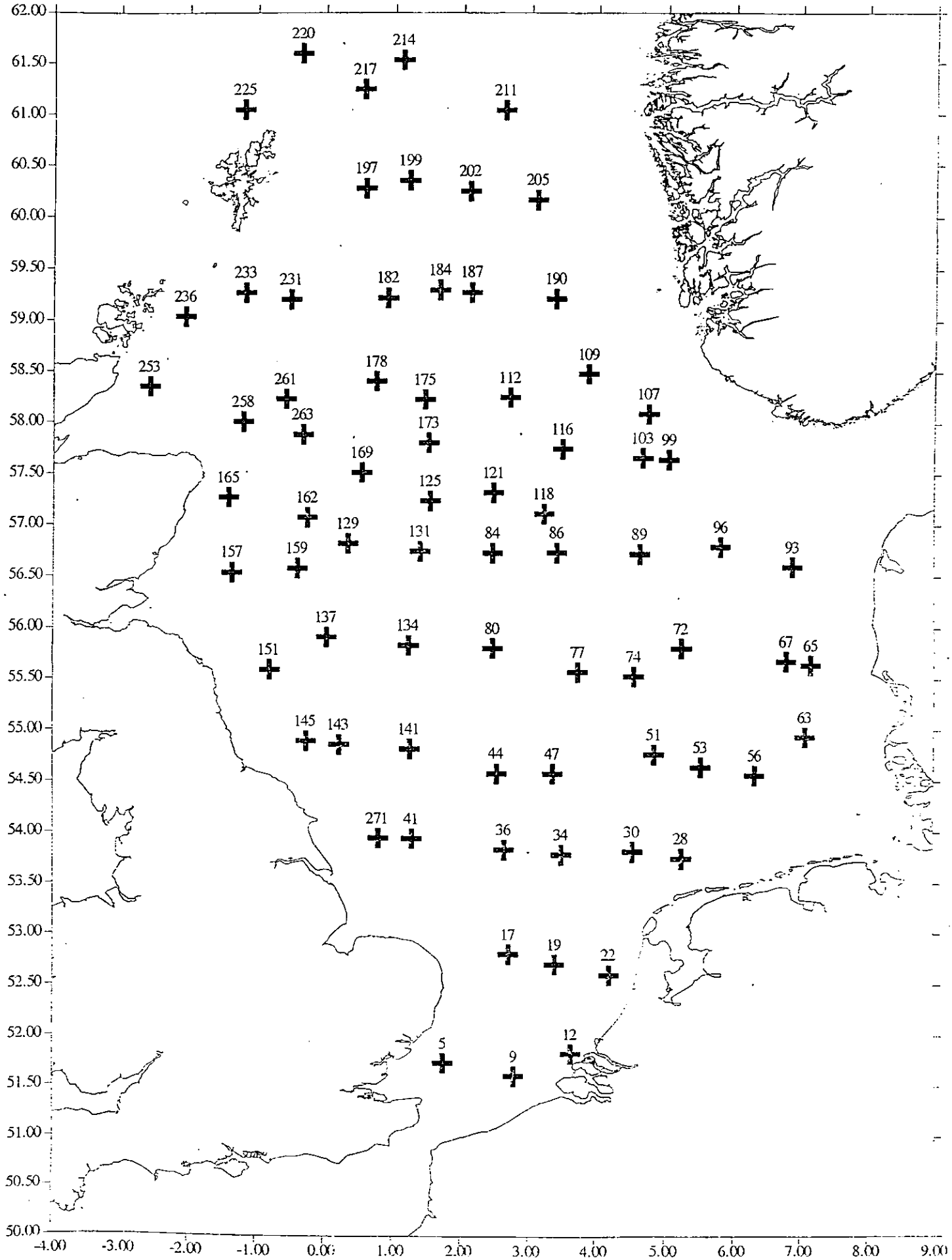


Figure 2 Cirolana 7/97:Sea surface temperatures.

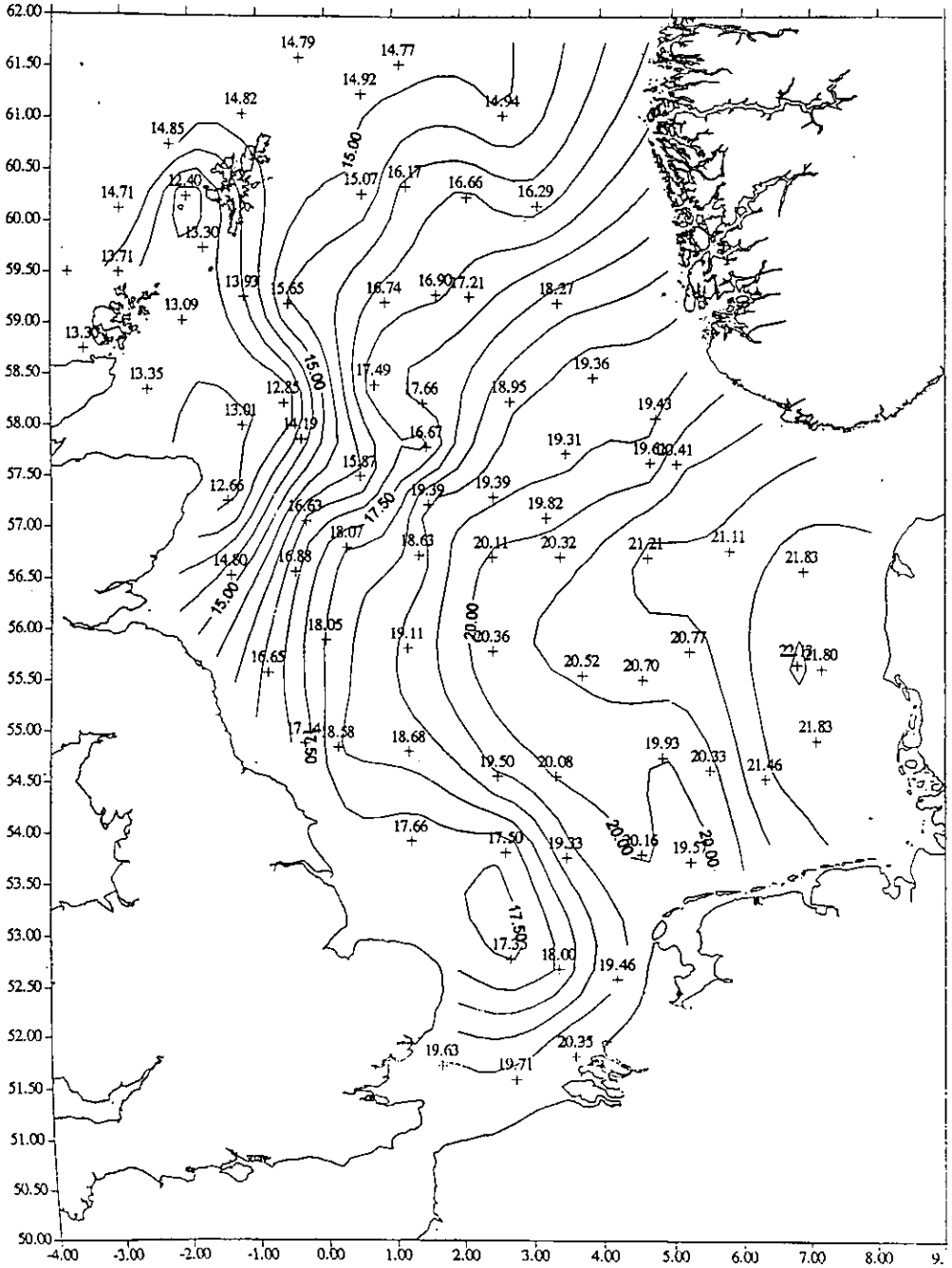


Figure 3 Cirolana 7/97: Near Bottom temperatures.

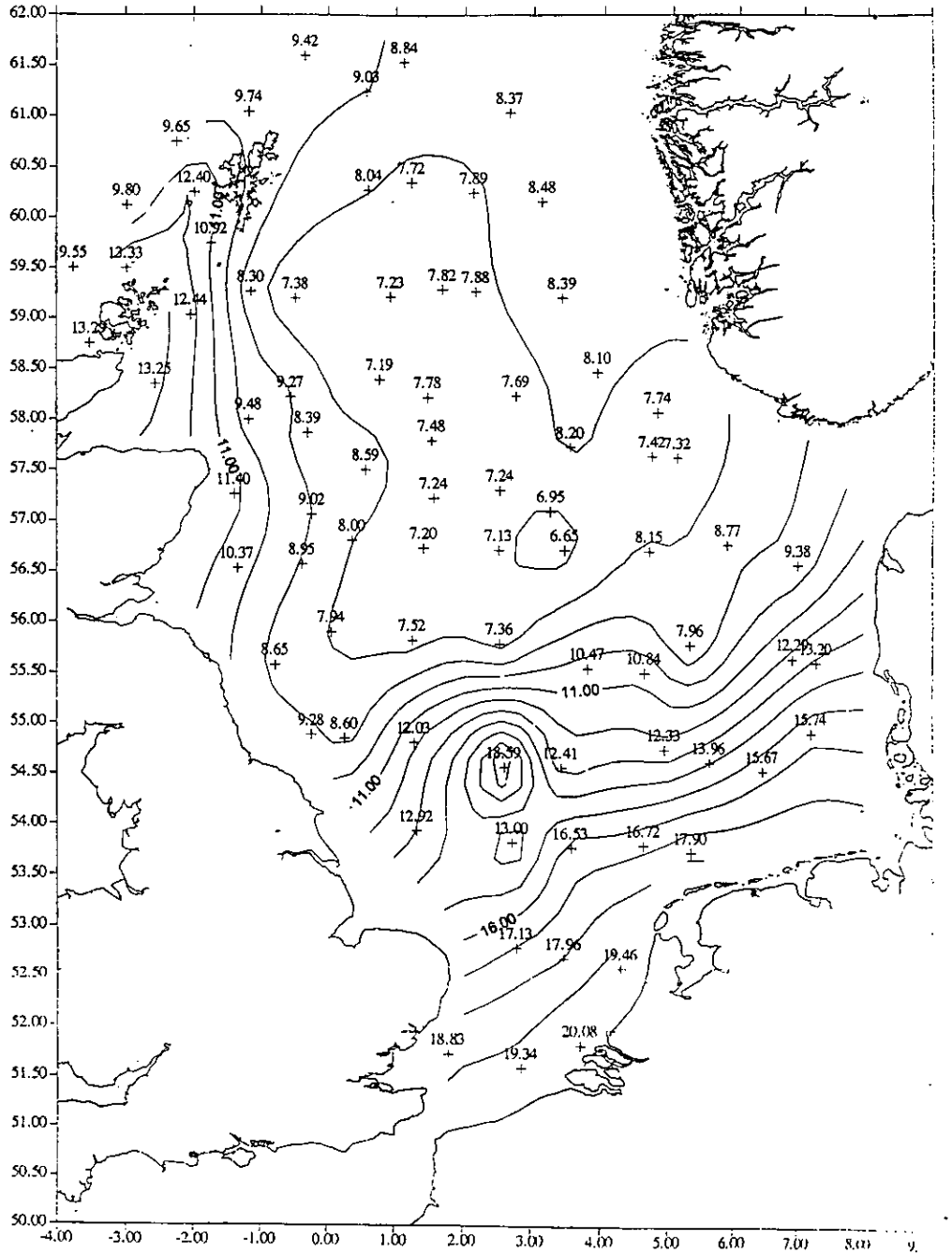


Figure 4 Cirolana 7/97: Cod (kg/h)

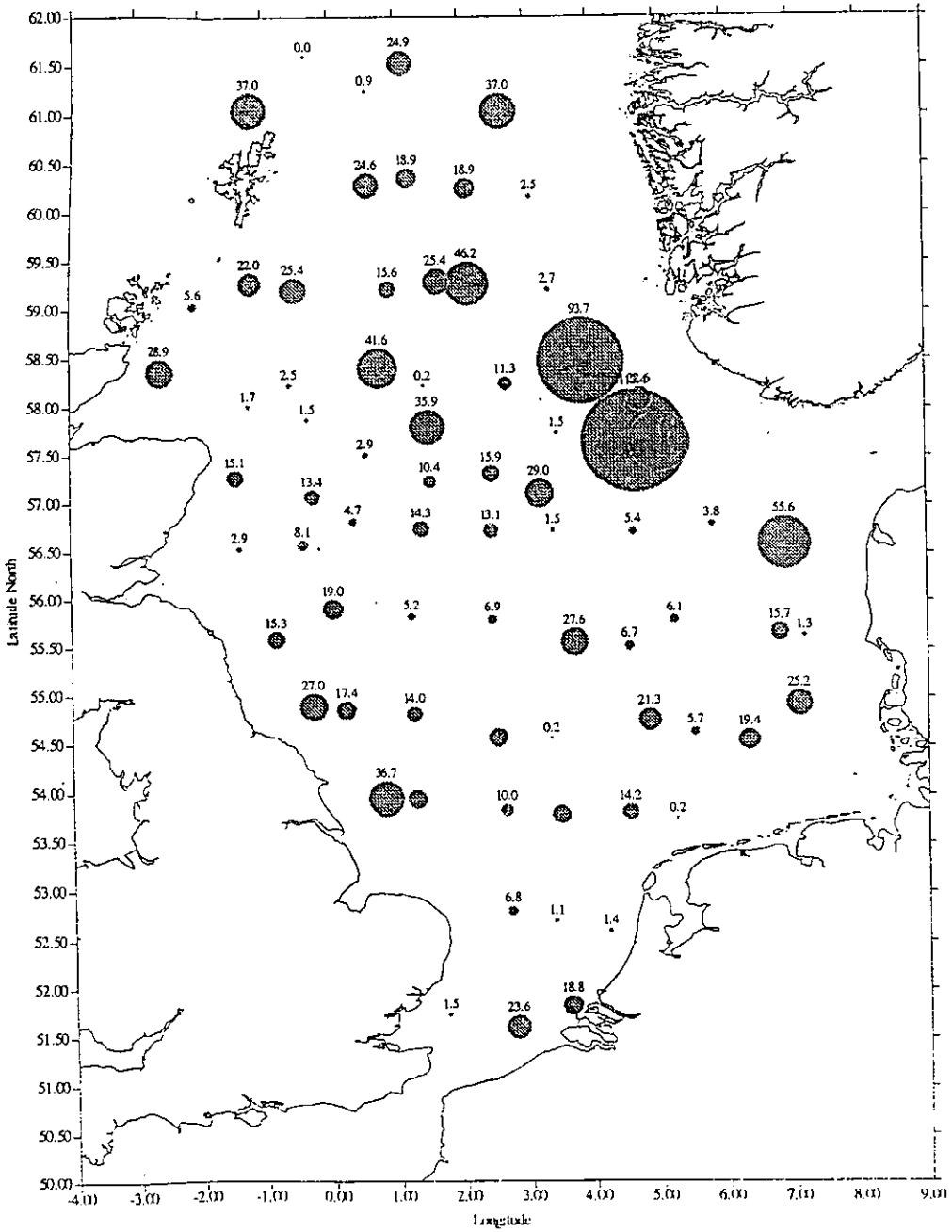


Figure 5 Cirolana 7/97: Haddock (kg/h)

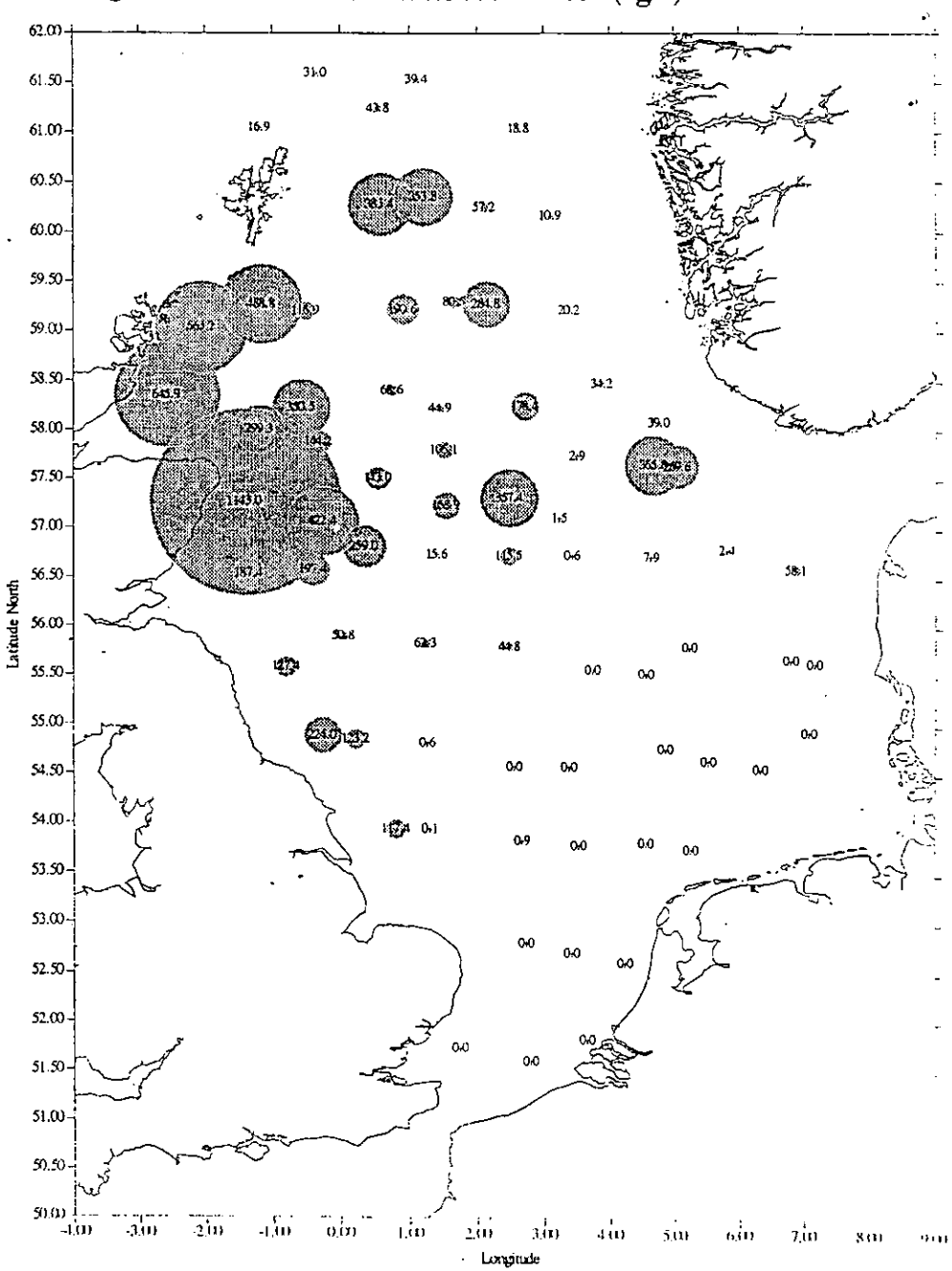


Figure 6 Cirolana 7/97:Whiting (kg/h)

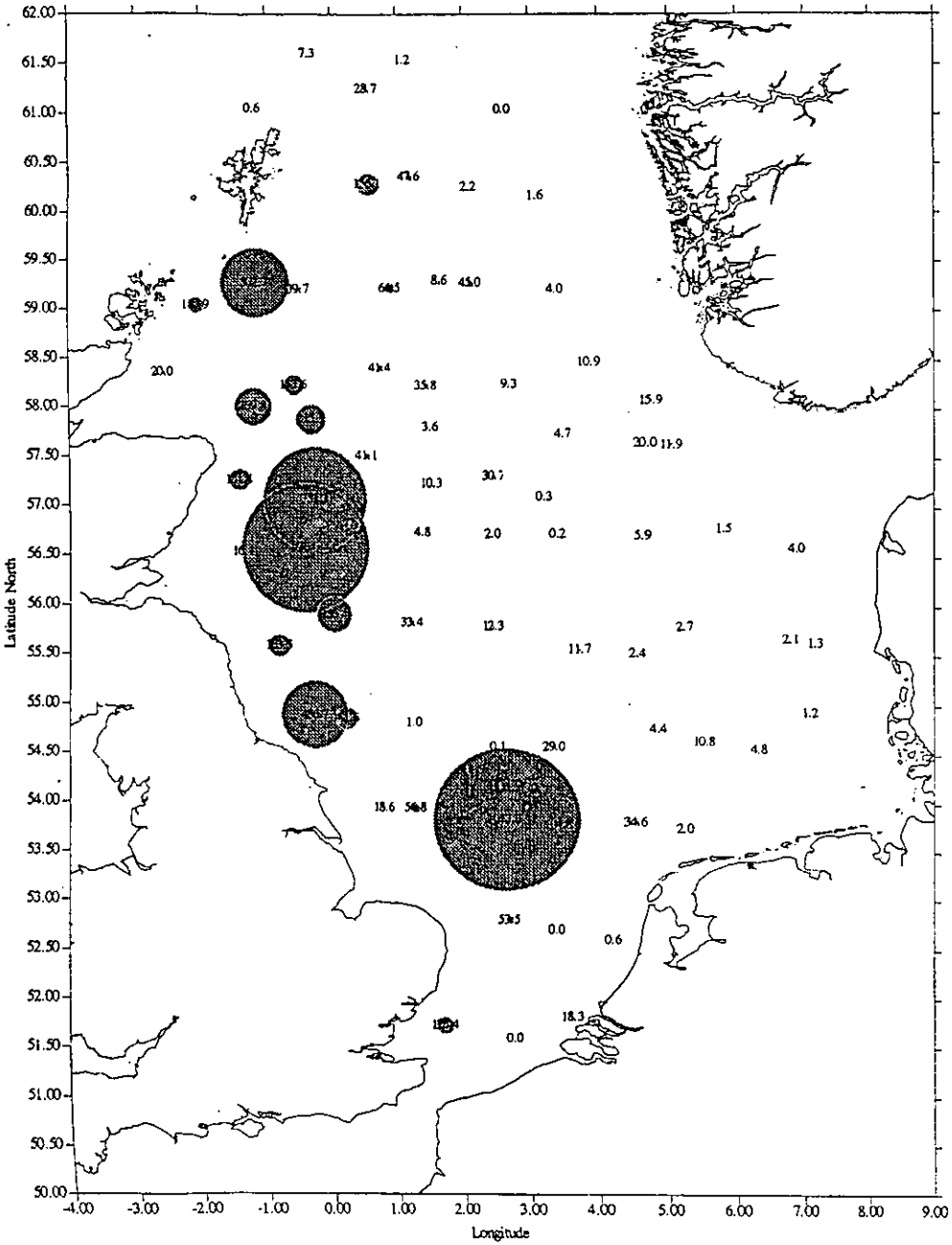


Figure 7 Cirolana 7/97: Saithe (kg/h)

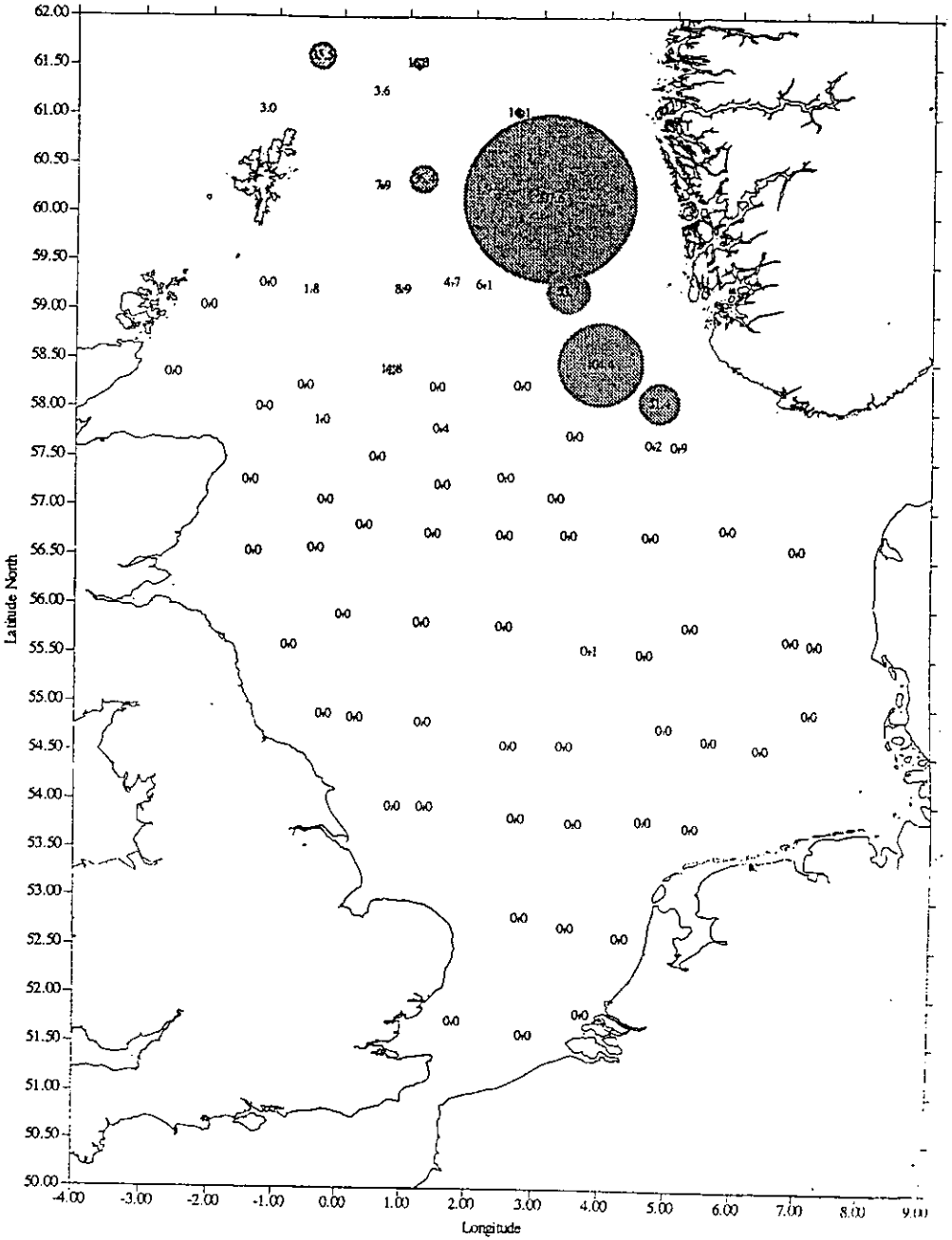


Figure 8 Cirolana 7/97:Lemon sole (kg/h)

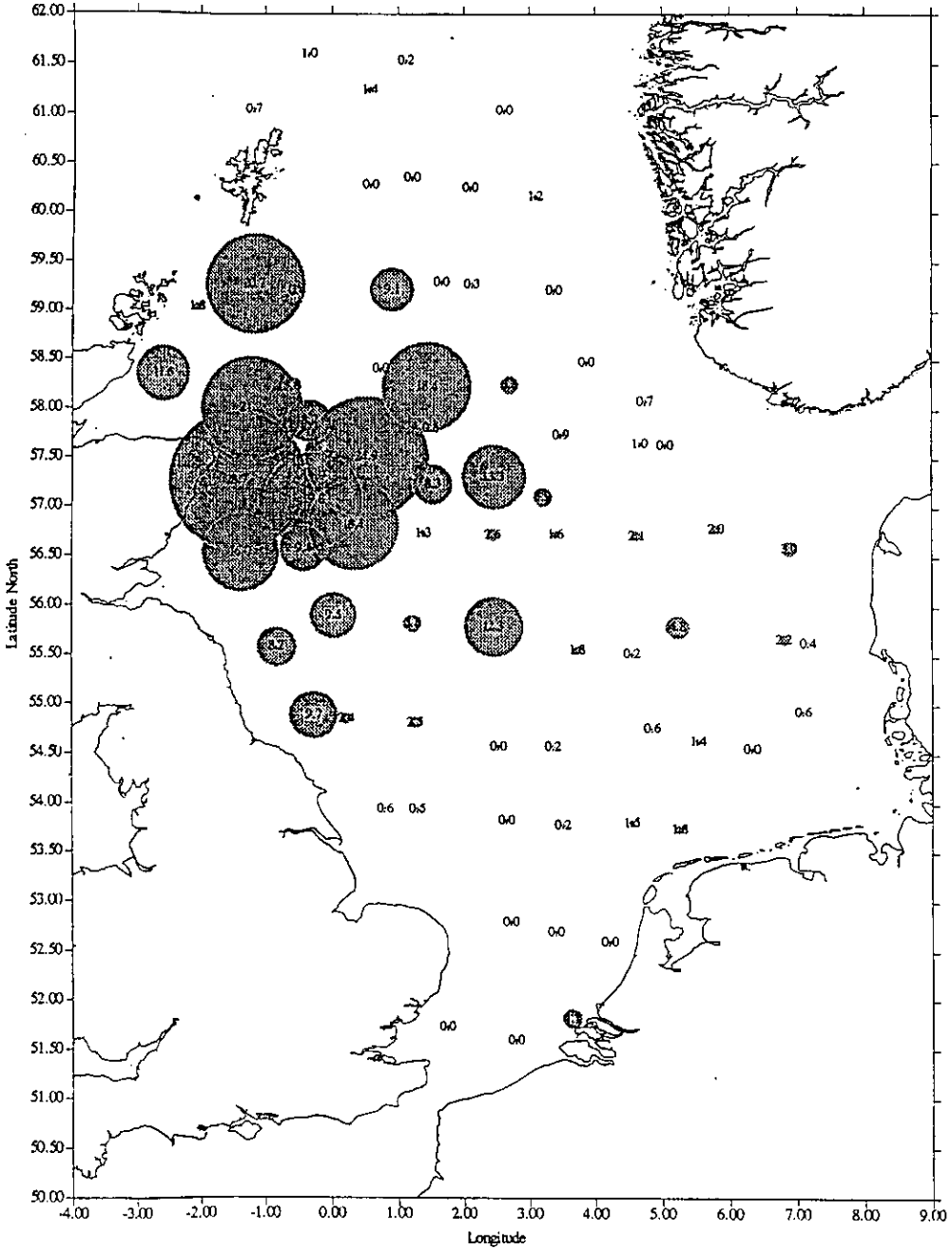


Figure 9 Cirolana 7/97:Dabs (kg/h)

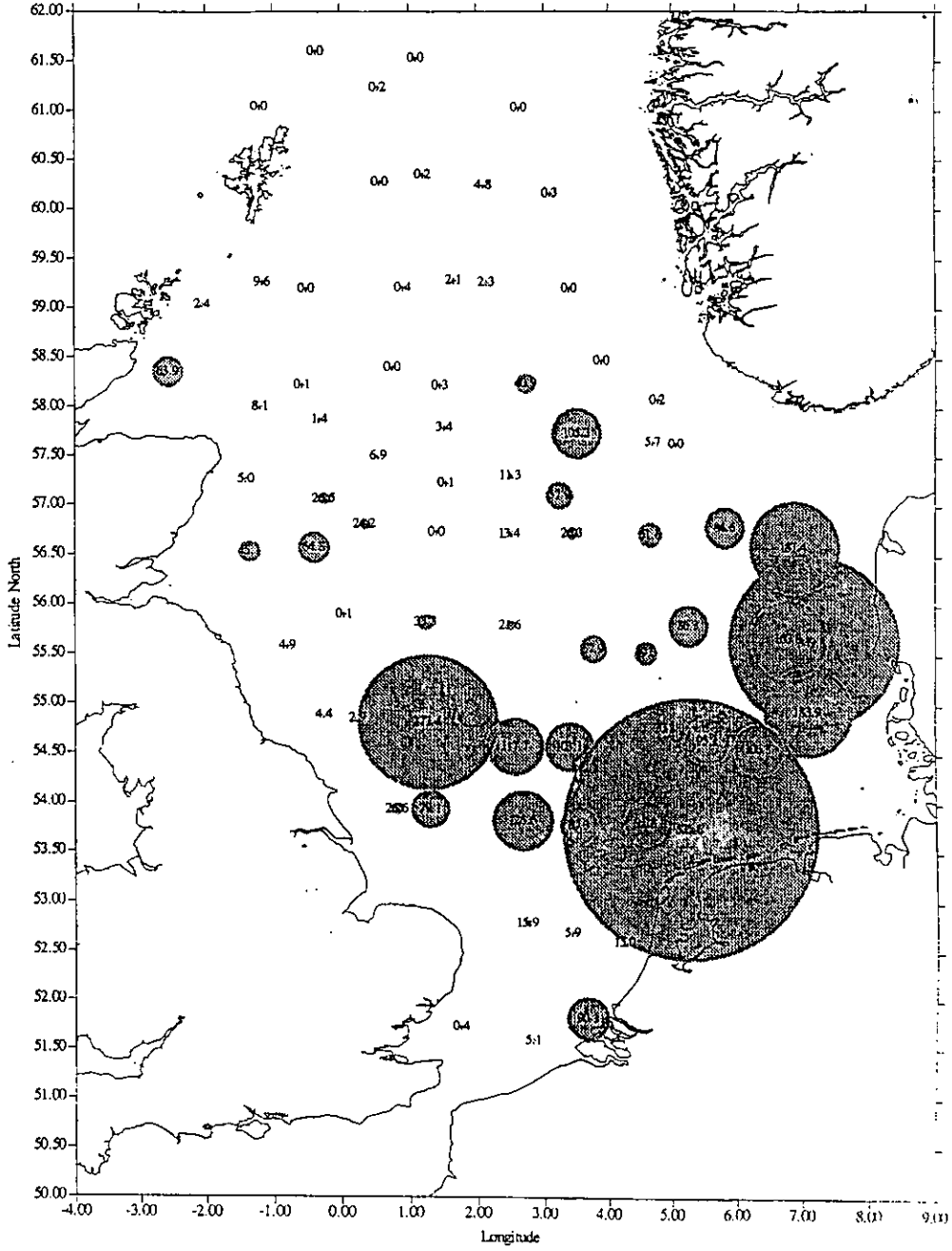
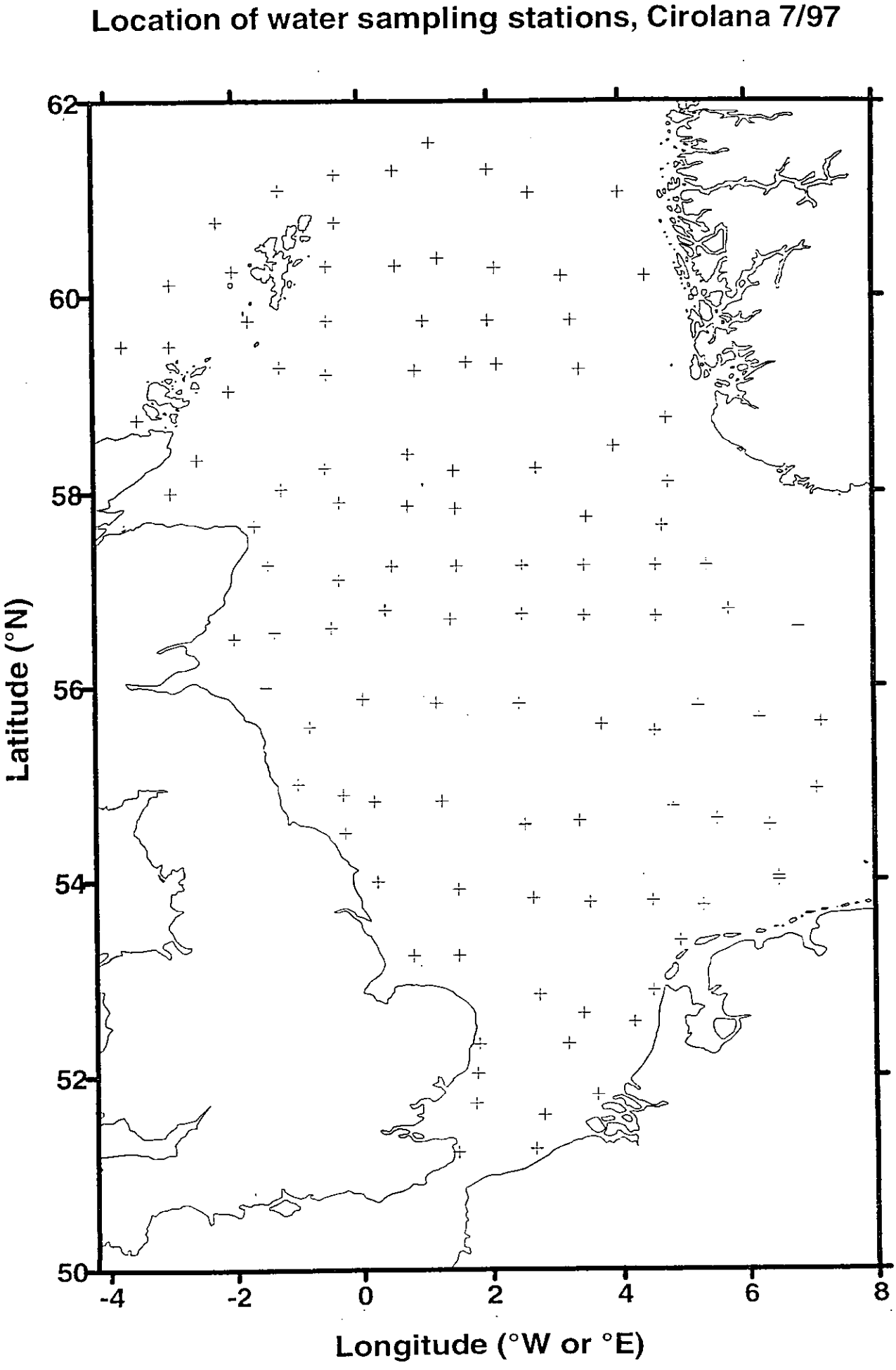


Figure 10


Location of water sampling stations, Cirolana 7/97
62
60
58
56
54
52
50
Latitude (°N)
-4
-2
0
2
4
6
8
Longitude (°W or °E)

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PLAN:

RV CIROLANA will sail from Lowestoft on the early morning tide (HT 0425h) on 12 August. A change of Scientific Staff (9 personnel) will take place on 26 August off the Tyne by sea rider to either North Shields or South Shields.

GEAR:

List distributed separately and marked to relevant individuals for action (Aims 1 - 4). Dr Leonard to arrange gear requirements in relation to Aim 5.

J H Nichols / J Casey
18 July, 1997

Distribution:

Basic list +
J H Nichols
T Boon
D Eaton
S Warnes
R A Ayers
M Etherton
T Dinmore
D McCubbin
P Blowers
R Bonfield
I T McMeekan

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