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Department of Agriculture for Northern Ireland

Aquatic Sciences Research Division

Cruise Report: LF2094 Ichthyoplankton Survey of the Irish Sea
Vessel: R V *Lough Foyle*
Dates: 7- 12 August 1994
Area of Operation: North Western Irish Sea; ICES Division VIIa
Type of Survey: Plankton sampling, MIK net and oceanography

Personnel:			
	Mark Collas	DANI	(SIC)
	Clive Fox	MAFF	HSO
	Michael McAliskey	DANI	SO
	John Peel	DANI	ASO
	Adam Windrum	J M Uni	student
	Gillian McCullough	Queens	student

Cruise Objectives:

1. To investigate the abundance and distribution of zooplankton of the western Irish Sea.
2. To investigate the distribution of pelagic juvenile fish and macrozooplankton in the western Irish Sea.
3. To obtain samples of juvenile whiting and their food stuff for lipid analysis.
4. To collect specimens for N and C analysis of Irish Sea fauna.
5. To sample the plankton at four stations for a Queens studentship
6. To collect water samples for nutrient and chlorophyll analysis in different hydrographic regions of the Irish Sea.
7. To investigate microzooplankton grazing and copepod production in the mixed, stratified and coastal waters of the western Irish Sea.
8. To test a new type of gasket on the nose cone of the high speed plankton sampler.

Cruise Narrative.

Sunday 7 August 1994

The *Lough Foyle* left Belfast dock at 19:00, and sailed for station 4. Stations 4 and 7, in the North Channel, were sampled with the MIK net.

Monday 8 August 1994

Stations 13, 14, 16, 16A and 20 were sampled with the MIK net up to dawn (05:30) and then the high speed plankton sampler was deployed at stations 20, 16A, 16, 13, 6, 4, 14B, 14C, 14, 15, 15A, 15B. From dusk to the dawn of the 9 August the MIK net was deployed at stations around the mouth of Strangford Lough and to the west of the Isle of Man (15B, 15, 15A, 22, 21, 26, 27, 30 and 31).

Tuesday 9 August 1994

The ship moved to the waters south of the Isle of Man and plankton samples were collected with the high speed plankton sampler at stations 31, 32, 33, 25A, 25, 22, 21, 26, 27, 30, 40, and 41. After dusk (21:00) the winds became stronger and the worsening seas state hindered the speed of sample collection over the following 24 hours. However stations 41, 39, 44, 51, 52 were still successfully sampled with the MIK net. No sample was taken at station 40 due to the net hitting the sea bed and returning full of gravel. The cruise was also delayed by 40 minutes as a result of a faulty fuel pipe.

Wednesday 10 August 1994

Despite the poor sea state stations in the region of the Isle of Man-Dublin front (42, 43, 52, 44, 39, 38, 45 and 50) were sampled by the high speed plankton sampler. At station 51 the sample was lost, as the nets gave way under the pressure of the rough swell. The MIK net was then successfully deployed at stations 50, 45, 38, 37A, 37, 36A, 46A, 46, 45A, 49 and 48A, as the ship headed towards Dundalk Bay.

Thursday 11 August 1994
Plankton samples were collected in Irish coastal waters at stations 49, 48A, 48, 47, 46A, 46, 45A, 37A, 37, 36A and 36. The ship began its journey to Belfast at 20:00 during which MIK net hauls were made at stations 47, 36, 33, 32, 25 and 25A.

Friday 12 August 1994.
The *Lough Foyle* docked in Belfast at 09:00.

Methods.
The plankton samples were collected by the high speed plankton sampler deployed from the Lebus oceanographic winch. The plankton was partially sorted and then fixed in buffered 4% formaldehyde. Data on the temperature and salinity structure of the water column were collected during each plankton sampler deployment with the real-time monitoring system, *Pronet*. Further plankton samples for production experiments were collected using a vertically hauled ring net. Water, nutrient, chlorophyll and microzooplankton samples were taken from the CTD water bottles. The MIK net was deployed, at night, to collect macrozooplankton and juvenile fish. The whiting juveniles collected were individually measured, weighed and the stomachs and otoliths removed for later analysis. The remaining tissue from each whiting was frozen and freeze-dried the following day for lipid analysis by MAFF at Lowestoft.

Results.
Plankton hauls were carried out over the 4 day period (figures 1 and 2). Nutrient and chlorophyll samples were taken at 13 stations across the western Irish Sea. 4 production experiments were executed, and 106 whiting were frozen for lipid analysis. The cruise investigated areas of mixed, coastal and frontal waters (figure 3).

No high density patches of fish were found during the cruise (figures 4, 5 and 6), although the Isle of Man-Dublin front did appear to act as a barrier, with lesser fish numbers to the south

of the Isle of Man. The high levels of juvenile fish found over the stratified region in June were no longer present. The catches of pelagic juvenile whiting were also lower than those of August 1993 (LF2093).

Assessments of the macrozooplankton yet again showed the expected high abundance of euphausiids (>10gm^{-2} wet weight) over the central mud patch, and higher catches of pasiphaea in the North Channel (figures 7 and 8). Low densities of *Nephrops* larvae were found, but only in the north of the region (figure 9).

Acknowledgements

The officers and crew of the *Lough Foyle* were yet again totally professional and very helpful throughout the cruise. Their advice and hard work ensured a very successful and safe cruise. The scientific staff could not be faulted. Adam worked extremely well on his first cruise, and Gillian co-ordinated the water sampling and production experiments in a very professional manner. Michael, as watch leader, overcame equipment and logistical problems with ease and ensured that the day team gelled into a productive and efficient working unit. The MIK net deployment and sample sorting was carried out at night mostly by John and Clive, whom never seemed put off by the high catches of jelly fish or disheartened by the low catches of fish. Yet again John grappled with jellies that most people would quake at. The presence of Clive Fox was of great benefit to the cruise, his ideas, humour and hard work is gratefully acknowledged.

Signed

SIC M. Gallacher Date 12/8/94

Master ..... Date 12/8/94

Division Head pp Date 12/8/94

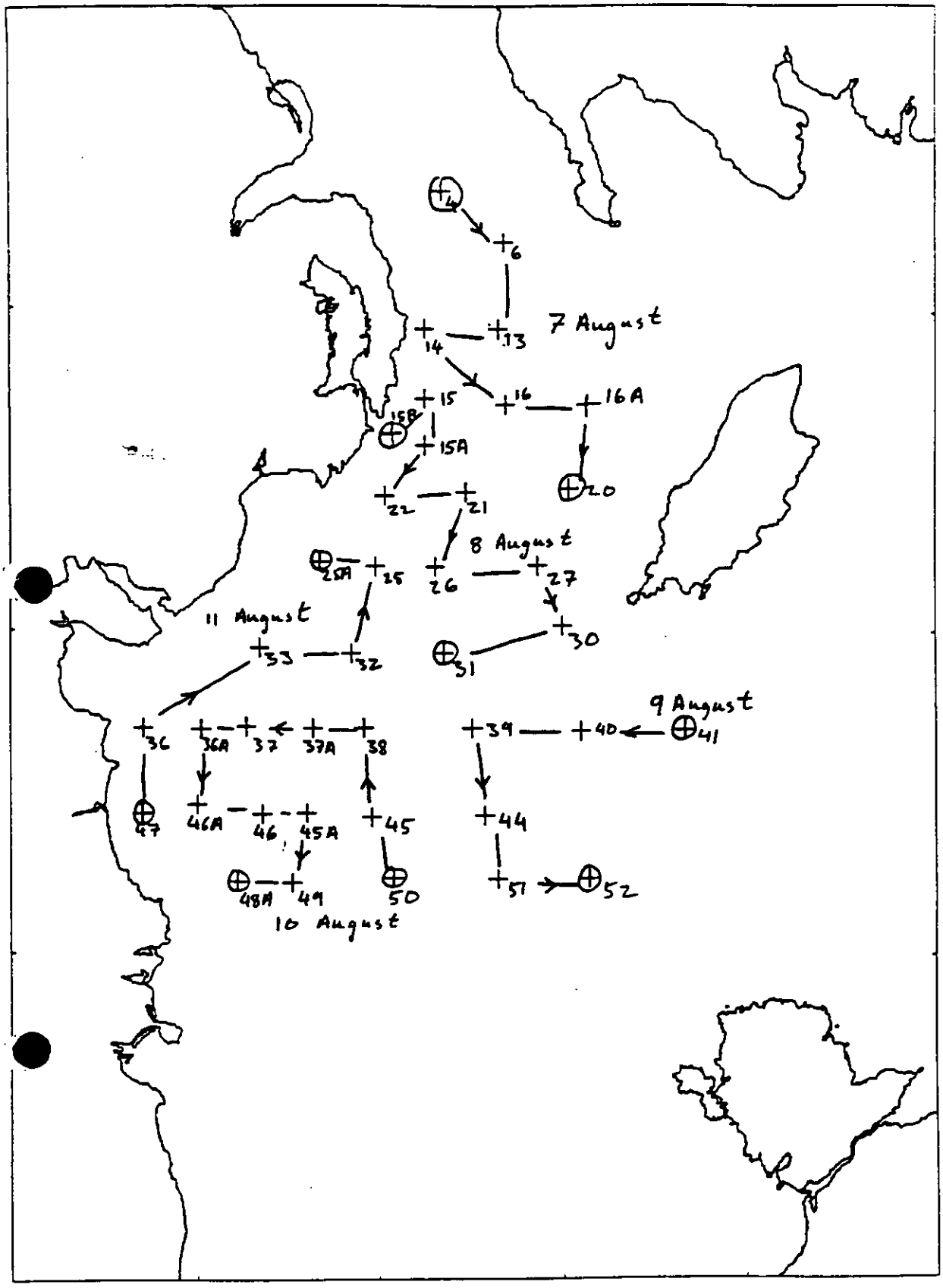

Figure 1 Stations sampled by the MIK net

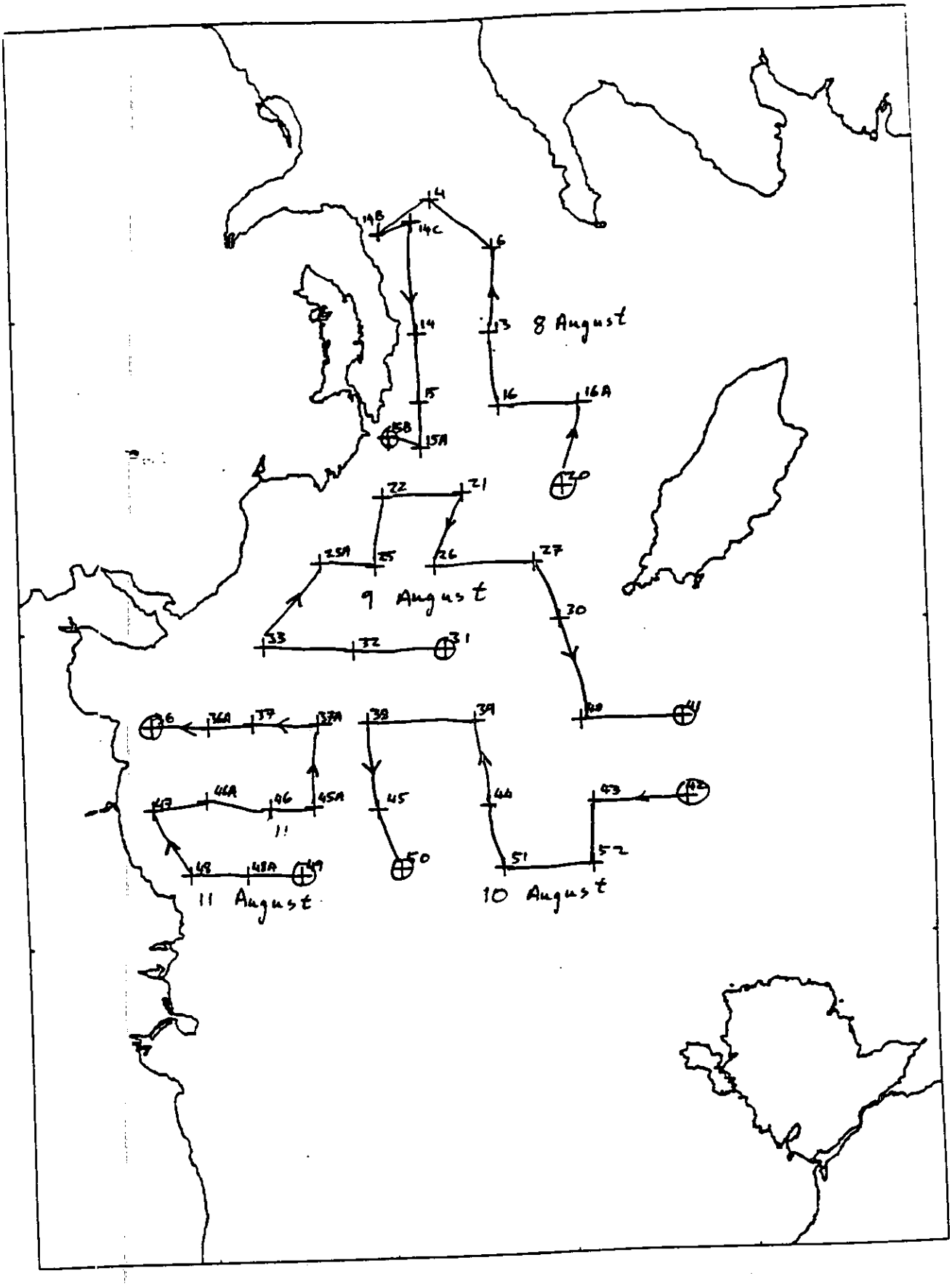

Figure 2 Stations sampled by the high speed plankton sampler

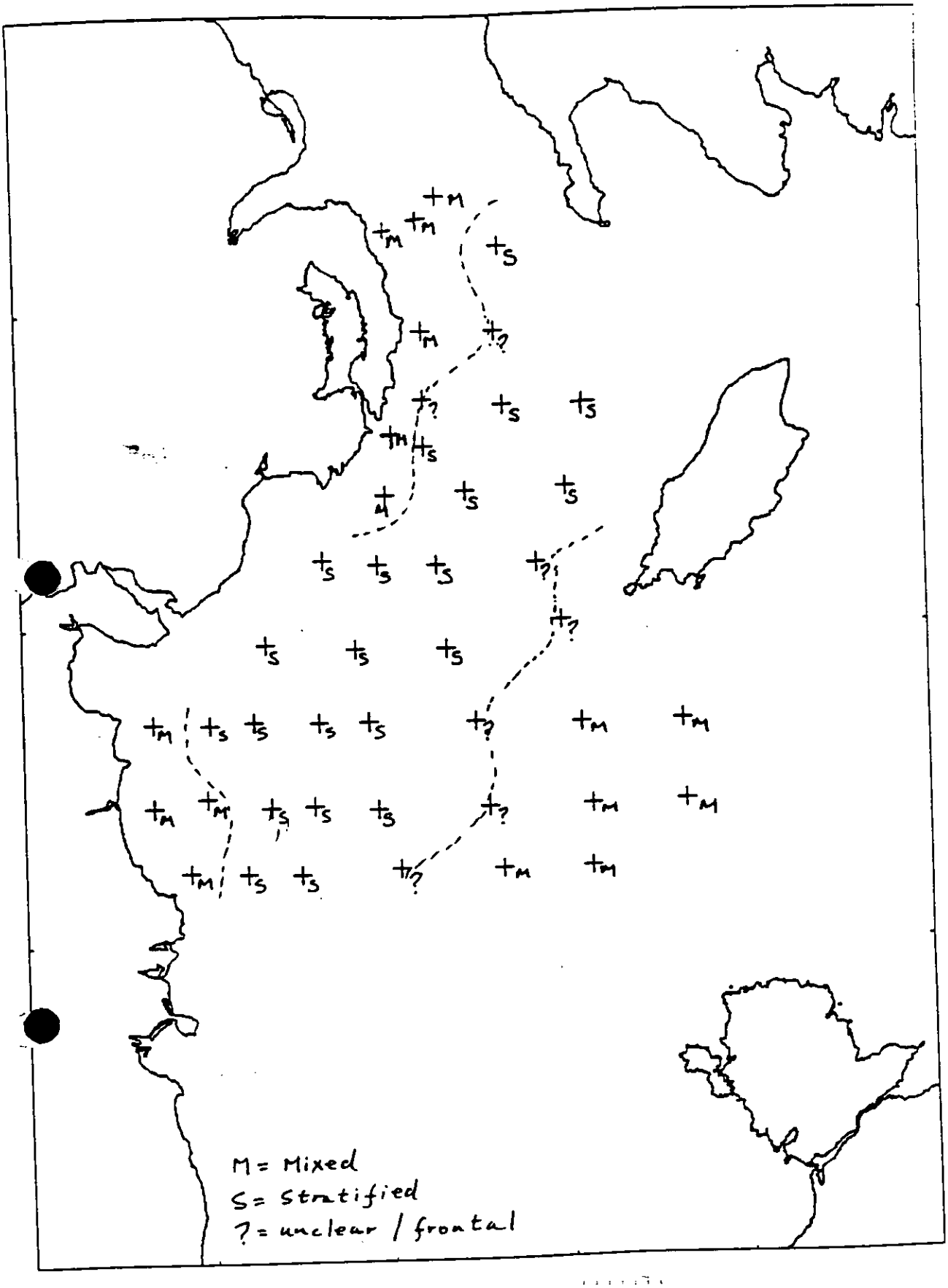

Figure 3 Water column structure during the cruise LF2094, 7-12 August 1994

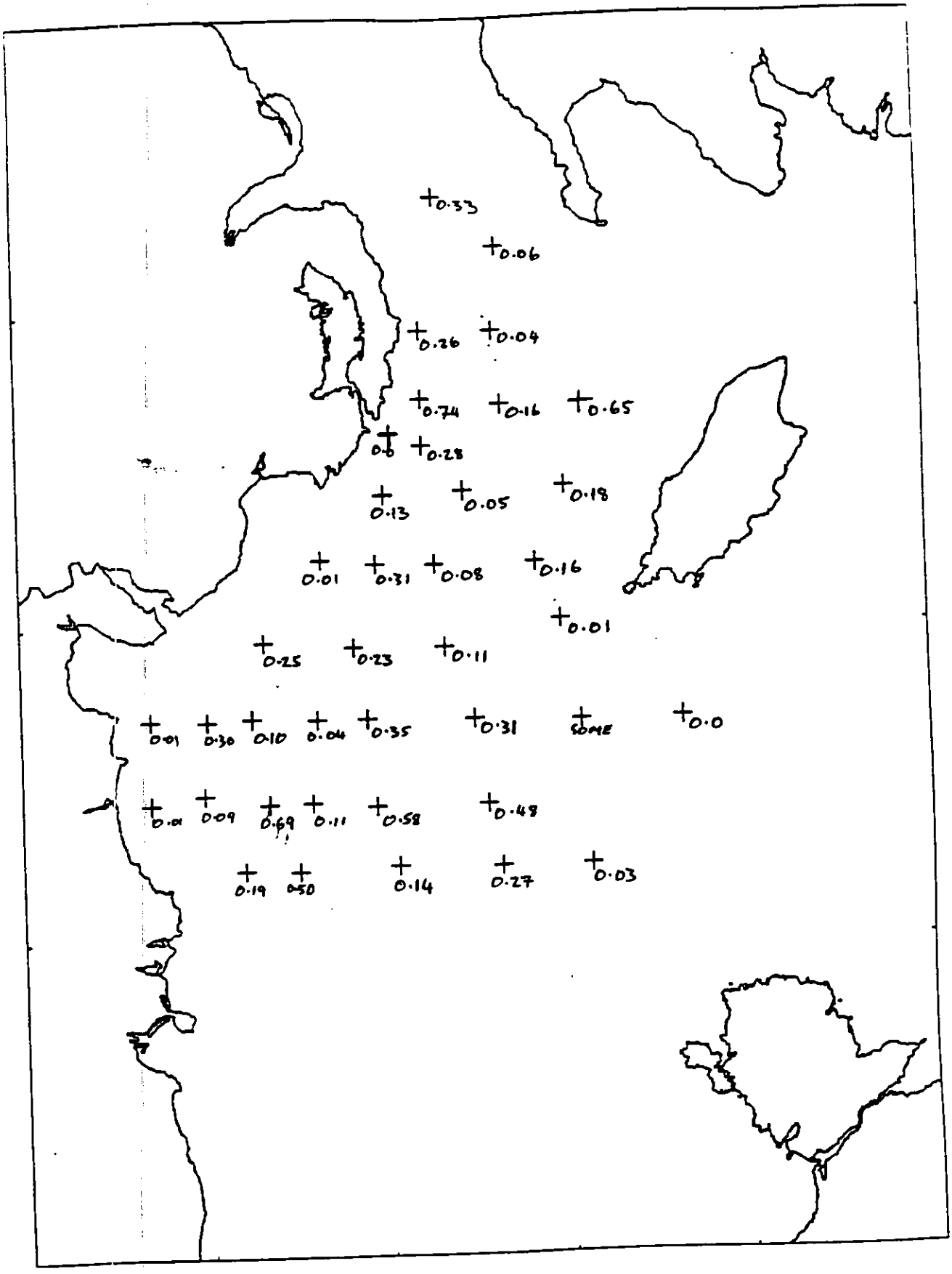

Figure 4 Catches of fish per m² caught during LF2094 with the MIK net

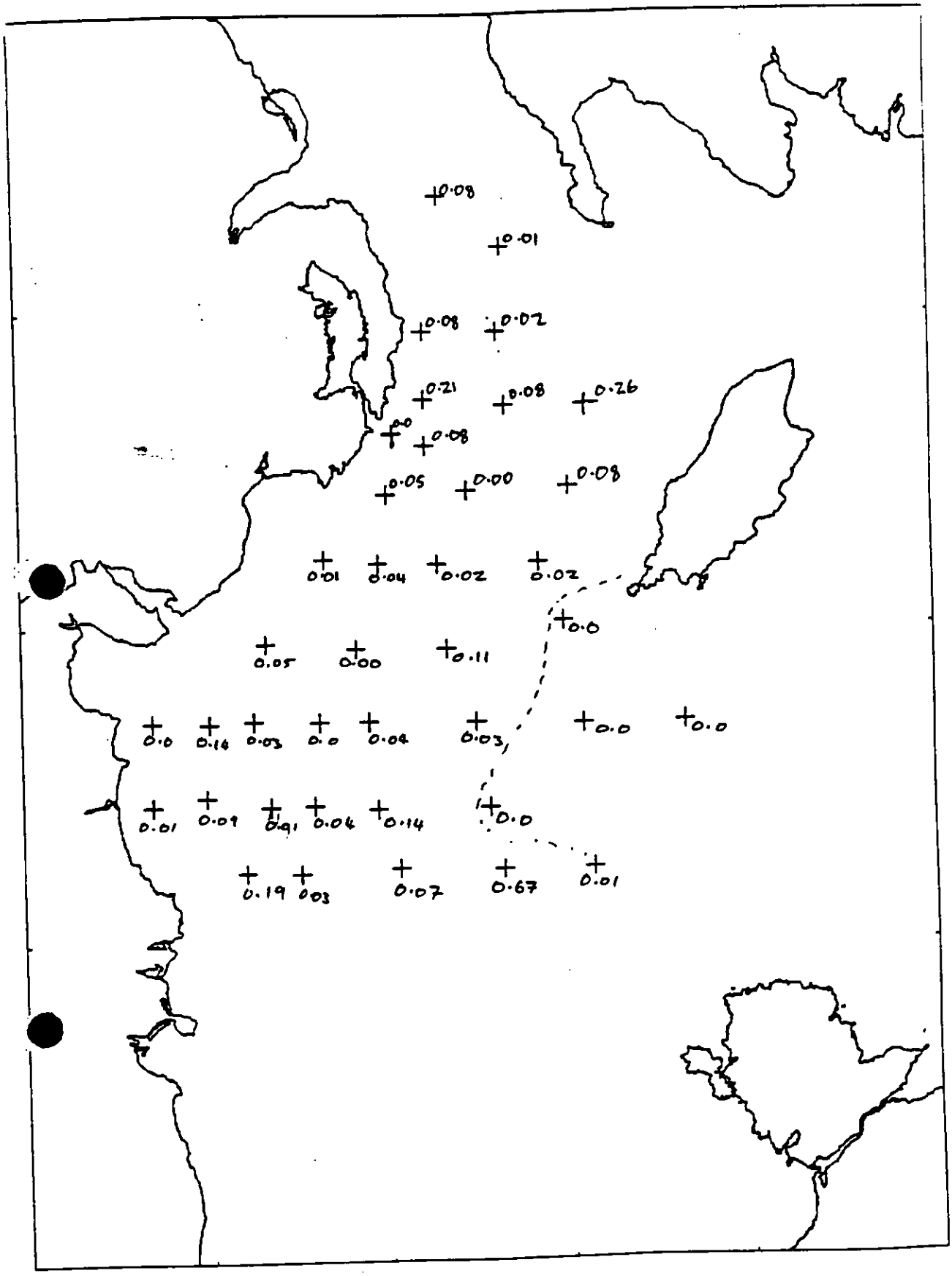

Figure 5 Catches of whiting per m² caught during LF2094 with the MIK net

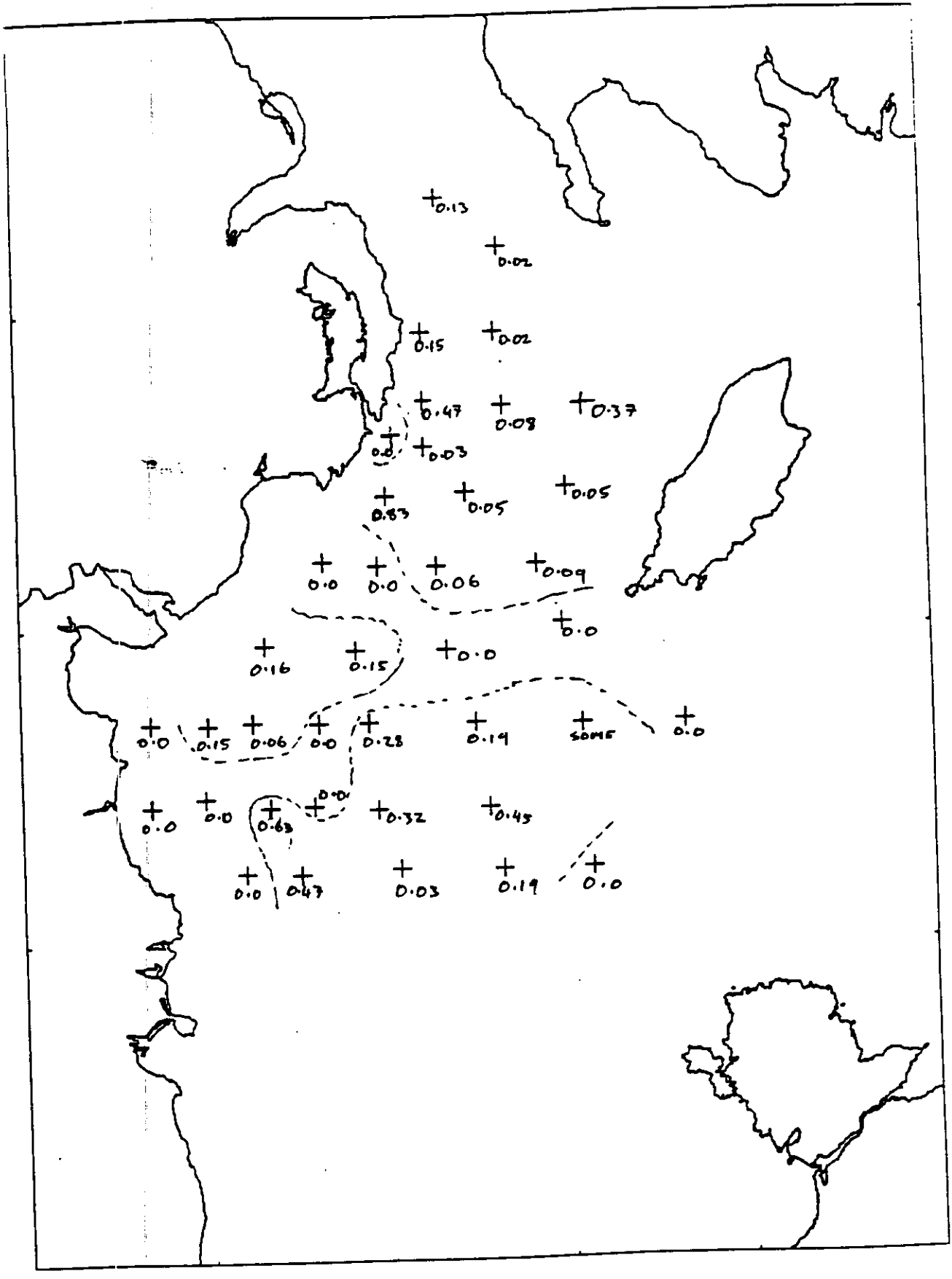

Figure 6 Catches of sprat per m² caught during LF2094 with the MIK net

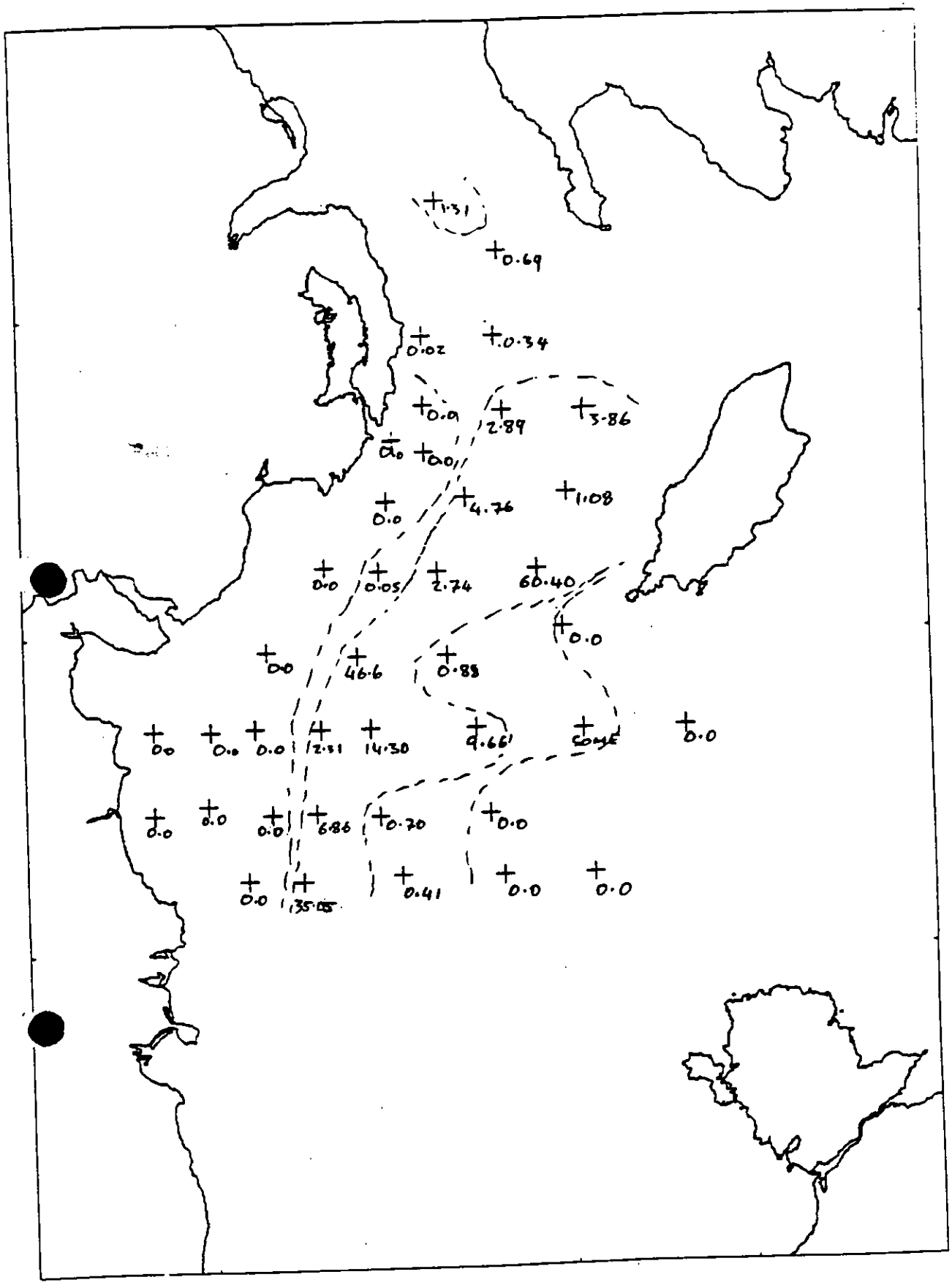

Figure 7 Catches of euphausiid per m² caught during LF2094 with the MIK net

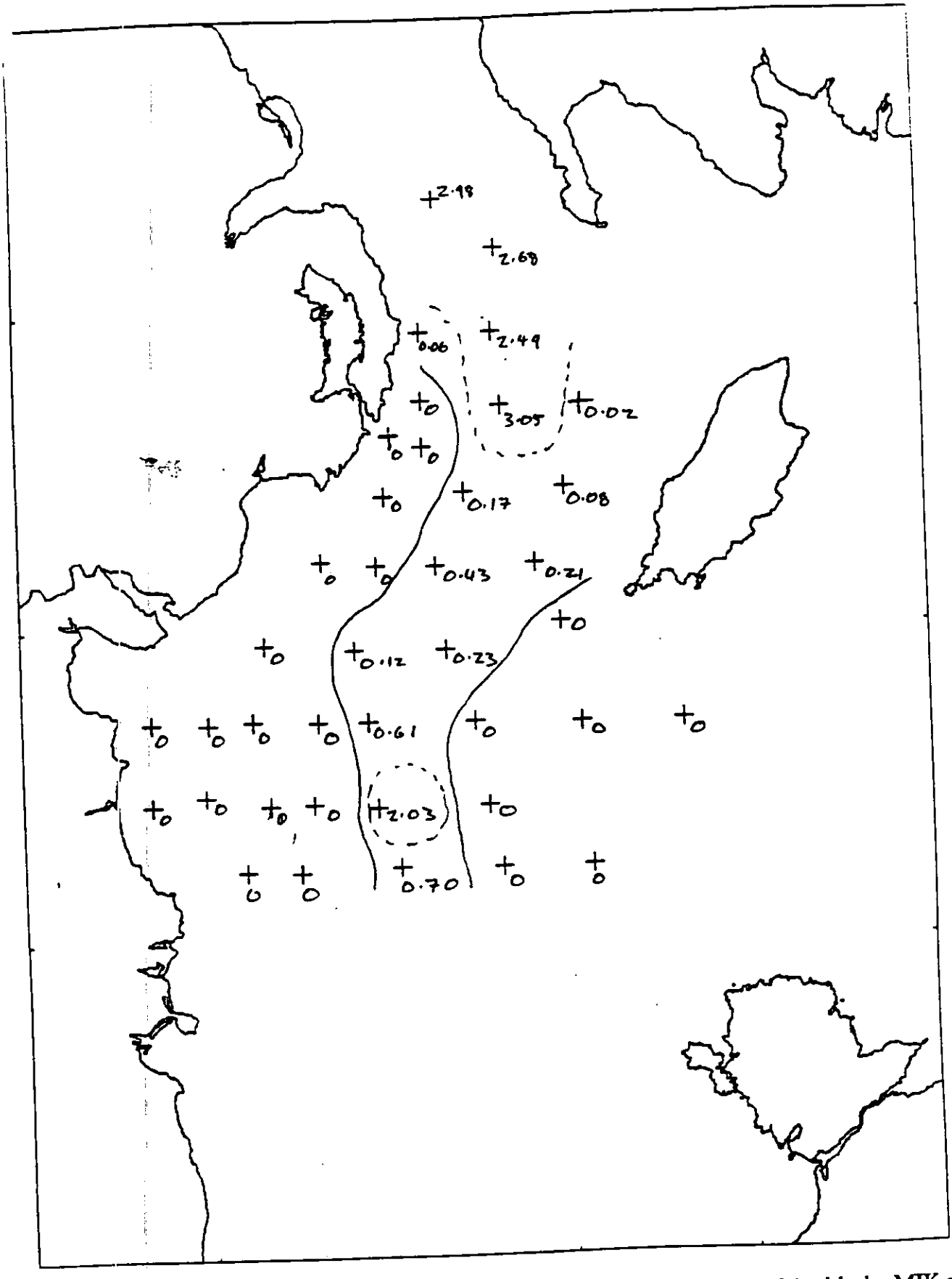

Figure 8 Catches of pasiphaea (ghost shrimp) per m² caught during LF2094 with the MIK net

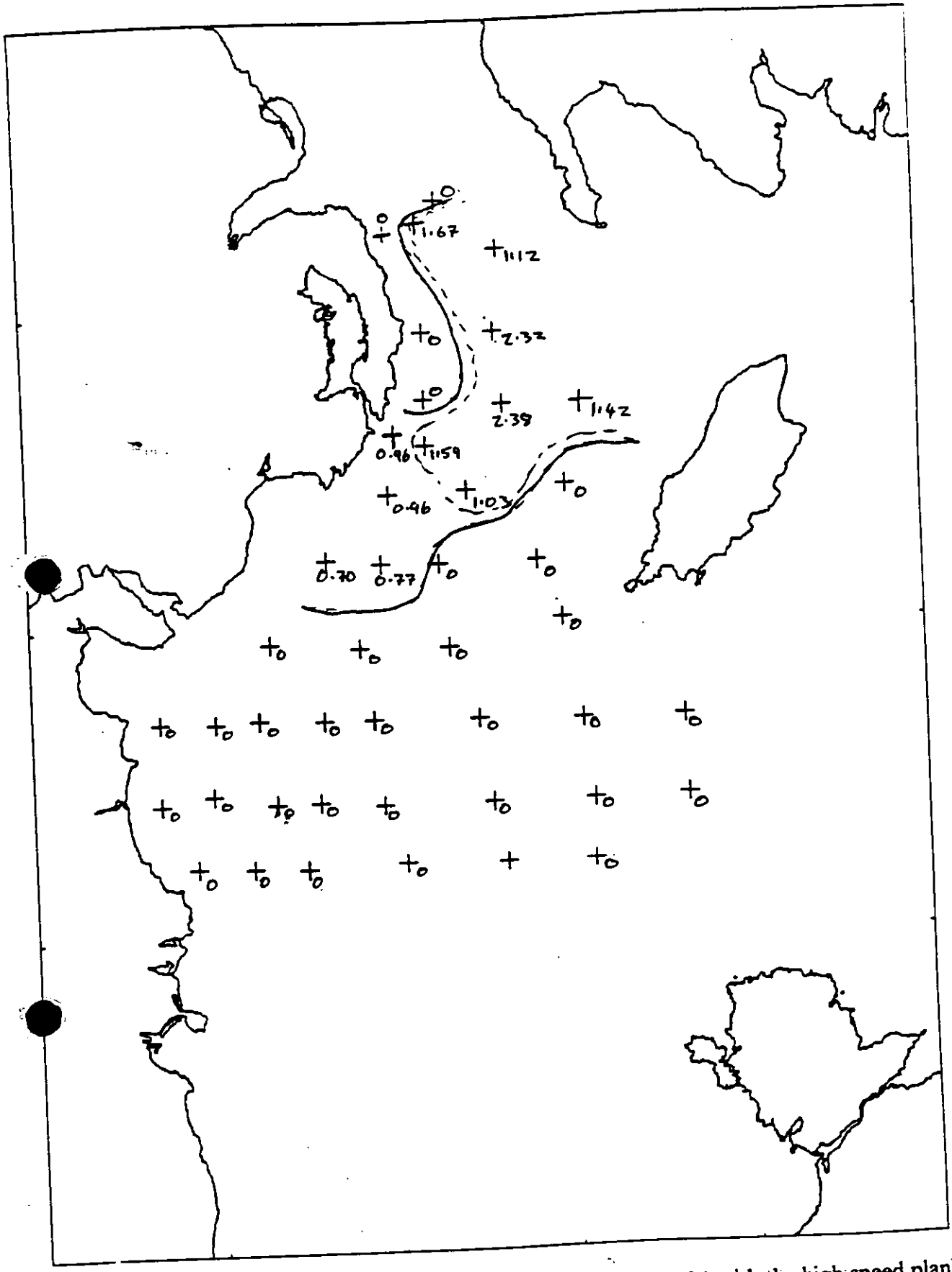

Figure 3 Catches of *Nephrops* larvae per m² caught during LF2 094 with the high speed plankton sampler