

Amanda TTN (?)

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

1983 RESEARCH VESSEL PROGRAMME

**REPORT: RV CIROLANA: CRUISE 6
(PROVISIONAL: Not to be quoted without prior reference to the author)**

STAFF

- B C Bedford
- LE Woolner
- Mrs W A Dawson
- Mrs M J Boon
- R D E Hudson
- P M Hudson
- S M Stevens
- Mrs J Harrop
- B O'Brien (Eire observer)

DURATION

Left Grimsby 16.00 h 24 May

Arrived Grimsby 01.30 h 20 June

All times are Greenwich Mean Time

LOCALITY

Continental slope - West of Ireland, Celtic Sea, North Biscay.

AIMS

1. To conduct a plankton survey of the area to assess the abundance of mackerel eggs and larvae.
2. To sample mackerel and other pelagic species on the spawning grounds using either bottom or midwater trawls and to sample other groundfish.
3. To use the 2m neuston net to sample mackerel larvae at the surface.
4. To take surface water samples for shipboard analysis of chlorophyll 'a' and phaeophytins.
5. To rendezvous with RV CHALLENGER (SIC S Coombs) at Great Sole Bank and carry out comparative hauls with them using the UOR (undulating oceanographic recorder).

NARRATIVE

CIROLANA sailed from Grimsby at 1600 h 24 May and set course north-about through the North Sea for a first working position West of Hebrides. Good weather allowed a fast passage, Pentland Firth being reached in 24 Hours and the ship arriving some 30 miles west of Barra Head at 0930 h 26 May. Trial launchings of the Tin Tow Net (TTN) were made here to familiarise staff with the modified control unit, the new data logging systems and chlorophyll chemistry. A single trawl haul and TTN calibration tows were also carried out in the area between Hebrides and the Donegal coast before the ship moved overnight to 54° 15' N 10° 15' W on the morning of 27 May to begin the survey proper. Thenceforth work continued uninterrupted until 1800 h 8 June when course was set for Brest, arriving there at 1000 h 9 June. During this

period of almost 13 days 111 stations were worked with the 53 cm TTN. These were arranged in a series of east to west sections, being one half degree of latitude apart from each other along the lines of 45 minutes and 15 minutes in each degree of latitude beginning at 53° 45' N. Similarly each station was set apart by one half degree of longitude, likewise at 45 minutes and 15 minutes in each degree. As well as the TTN stations, some 23 half-hour hauls were made with the neuston net; 5 bottom hauls of one hour were made with the Portuguese high headline trawl and 6 hydrographic stations were worked using Nansen bottles to sample at ten depths. Throughout all this time the weather held generally good, the only objective not accomplished being a single neuston net haul which was not attempted in a heavy swell in strong winds.

On leaving Brest at 1000 h 10 June course was set toward 48° 45' N 08° 45' W with intent to rendezvous with RV CHALLENGER to carry out Aim 5. In the event close contact was not made between the two ships, a combination of disparate speeds, different sampling methods and indifferent weather serving to keep CIROLANA always a little ahead of CHALLENGER. Nevertheless the comparative work was begun at 2330 h 10 June and carried out satisfactorily with some 18 hauls completed, each in a separate rectangle, before conclusion of the joint work at 1300 h 13 June. During this period time was found for two one hour trawl hauls in the vicinity of Gt Sole Bank and 4 neuston net hauls. Following completion of Aim 5, CIROLANA then returned to complete the remainder of the survey (Aims 1 to 4), picking up the sampling grid at 48° 45' N 12° 45' W at 0010 h 14 June.

Weather conditions at this time were poor with strong to gale SW'ly winds, but these soon dropped and the remainder of the cruise was carried out in good weather. A further 22 TTN hauls, 2 bottom trawls, 7 neuston net hauls and 2 hydrographic stations were completed in the area between 48° 45' N and 46° 45' N before the survey was terminated at 48° 15' N 06° 15' W at 1200 h 17 June. Included in the TTN stations worked were some 12 done at the request of the Netherlands vessel TRIDENS whose cruise partially overlapped and with whom radio contact had earlier been made. Radio contact was also maintained with RV SCOTIA during the time when she was in the area.

On completion of work, course was set via the English Channel and after a good passage the ship arrived in the Humber at 1500 h 19 June. CIROLANA docked at 0130 h 20 June.

RESULTS

1. 151 hauls were made with the 53 cm plankton sampler within the designated survey area. Most of these were with a 60 mpi net but clogging problems at some stations necessitated the substitution of one of 40 mpi. All the samples from these hauls were examined by eye and assessed for mackerel egg abundance according to the rough scale, many, moderate, few and none. The results of this quick assessment (to be used as a guide only) are shown in Fig 3. They appear to confirm that egg abundance is greatest in the area around Gt Sole Bank.

The new arrangements for mounting flowmeters - both internal and external - worked admirably throughout the cruise, there being a need to change only one flowmeter on one occasion. The Guildline package also generally worked very well, excepting the Ph probe about which doubts had already been expressed during CIROLANA 4/83. Only very occasional aberrations in recording depth and salinity were experienced. It is worth noting that none of the scientific staff had had previous experience of operating the new control systems, yet all learned the new routine quickly and easily.

Likewise the new computer data logging systems generally worked very well. Watch keeping scientific staff were able to edit the results for each haul, "topping and tailing" to remove irrelevant values generated when the probe is lifted in and out of the water. For each haul tables of flow rates and

and volumes filtered in each ten meter depth band were printed as routine, as were graphs of temperature, salinity dissolved oxygen and Ph against depth.

The good weather enjoyed during the cruise resulted in there being no problems in diving the sampler at controlled speeds. Most hauls were to a depth of 100 metres, although on the shelf where the presence of a marked thermocline was observed at about 25 metres, hauls were dived only to 50 metres.

2. Ten one hour hauls were made with the Portuguese high headline trawls. These were distributed from approximately 56° N to 47° N. Mackerel were caught in only six of the hauls, the best catches being of $2\frac{1}{2}$ baskets achieved on two occasions. Both of these hauls were made in the depth range 110-130 metres. Those made in 160-190 metres were either devoid of mackerel or had only a few individual fish. Scad were present in all hauls south of $50^{\circ}30'$ N averaging approx 3 baskets/hour with a best catch of 5 baskets. Length, sex and maturity observations were made on all mackerel catches and otoliths were collected in stratified samples for ageing. Scad catches were sampled in the same way. 295 mackerel otoliths from 3 sampling areas and 492 scad otoliths from two sampling areas were obtained.

The echo sounder was continuously throughout the passage of the survey and no major midwater traces were seen. One moderate sized trace was observed at approximately $49^{\circ}45'$ N $08^{\circ}45'$ W during the comparative work with CHALLENGER but this occurred just at dusk otherwise an attempt would have been made to identify it by feathering.

Demersal fish were equally scarce in all ten hauls. The mean weight of all fish caught per one hour haul was only 164 kg or 5 baskets. $2\frac{1}{2}$ baskets/hour of haddock were taken at both Stanton and Porcupine Banks otherwise, with the exception of blue whiting, demersal species usually amounted only to odd specimens. Blue whiting were present in most hauls averaging $1\frac{1}{2}$ baskets/hour. Length measurements were made for all species caught together with sex and maturity for the more important commercial species. Otoliths were collected from 248 blue whiting (from four sampling areas), 80 megrim, 42 hake, 4 lemon sole, 2 monk (anglerfish), 6 John Dory, 3 cod and 3 pollack.

3. The 2 metre neuston net was towed for half an hour at the surface at 33 stations at approximately noon and midnight each day. Very few mackerel larvae were found in the hauls made west of Ireland but in the area around Gt Sole Bank and to the north and east they were more abundant with up to 80 in a single haul. Ever present in neuston hauls were small silvery rockling (onos) sometimes in large (>200) numbers. Also observed at some stations were sandeel and crab larvae in fair numbers.
4. The intention to monitor sub-surface sea water continuously for chlorophyll 'a' was frustrated when the fluorometer failed early in the cruise when a transformer burned out. This proved to be beyond repair so sampling was limited to discrete samples at each plankton station. These took the form of two 250 ml surface water samples filtered for on board acetone extraction and analysis for total chlorophyll, nanoplankton chlorophyll and phaeophytins. Discrete depth samples were obtained using Nansen bottles at 10 depths down to 100 metres. Eight stations of Nansen bottle casts were worked at 1° intervals of latitude, southward from $53^{\circ}45'$ N, usually at the 200 metre contour. Surface salinity samples were taken at each plankton station and from each depth from the Nansen bottle casts, as were temperatures. The sea surface thermograph was run continuously throughout the cruise.

5. Communication was established with CHALLENGER shortly after she sailed on 6 June and arrangements made to rendezvous in rectangle L.16 (see Fig 2) early on 11 June. Unfortunately the time allocated for this comparative work coincided with the one period of indifferent weather experienced during the entire cruise and the ships never worked alongside or indeed within sight of one another. Nevertheless each ship worked its respective plankton sampling gear in the 18 rectangles designated sufficiently close together in time to give meaningful comparisons. Results of the experiment must await detailed analysis of the catches at the laboratory.

MISCELLANEOUS

- a) A small herring sample caught at Stanton Bank was frozen for Mr Wood.
- b) Two mackerel samples of approximately 150 fish each were frozen for Dr K MacKenzie (Aberdeen) for gut parasite studies. These were both from the Celtic Sea area.
- c) 57 mackerel gonads were preserved for L Marinduena (Ecuador student).

B. C Bedford
28 June 1983

SEEN IN DRAFT: Master - G Sinclair
Skipper - G F Lee

INITIALLED: DJG

DISTRIBUTION:

Basic List
B C Bedford
L E Woolner
Ms W A Dawson
Ms M J Boon
R D E Hudson
P M Hudson
S M Stevens
Ms R T Harrop
B O'Brien (Eire observer)
S J Lockwood
J H Nichols

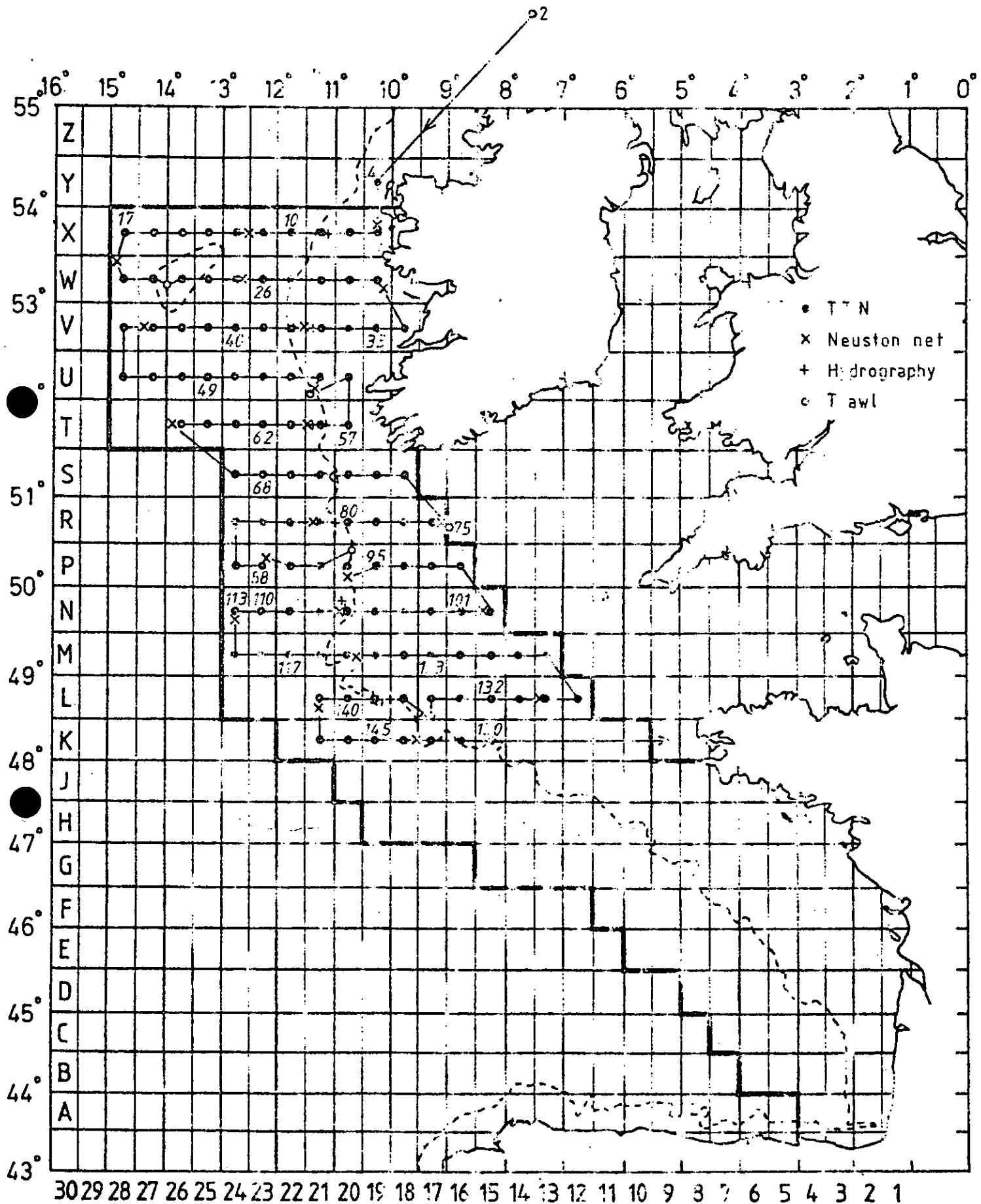


Fig. 1

Cirolana cruise 6/83

Track chart

26 May - 9 June 1983

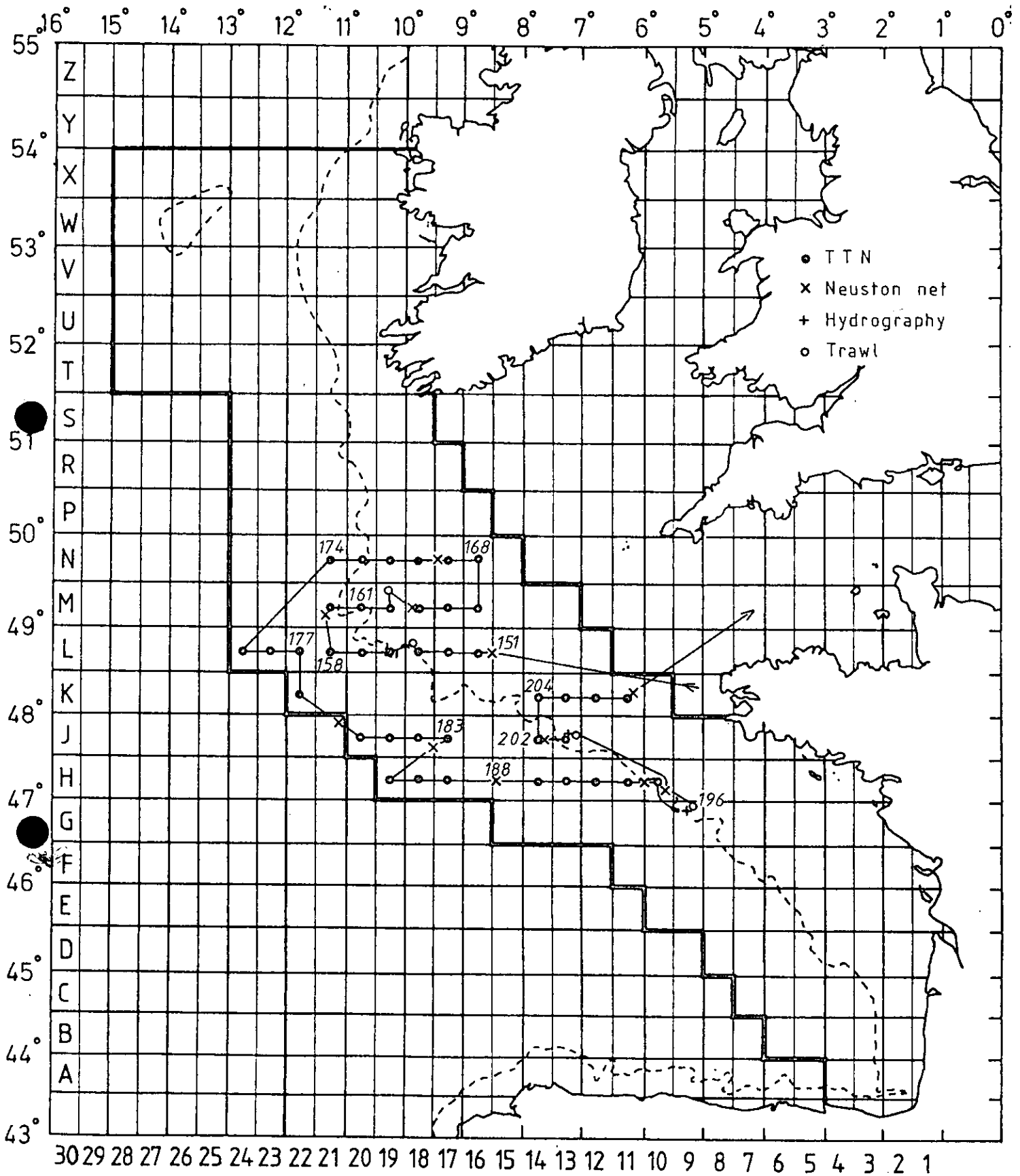


Fig. 2

Cirolana cruise 6/83

Track chart

10 - 19 June 1983

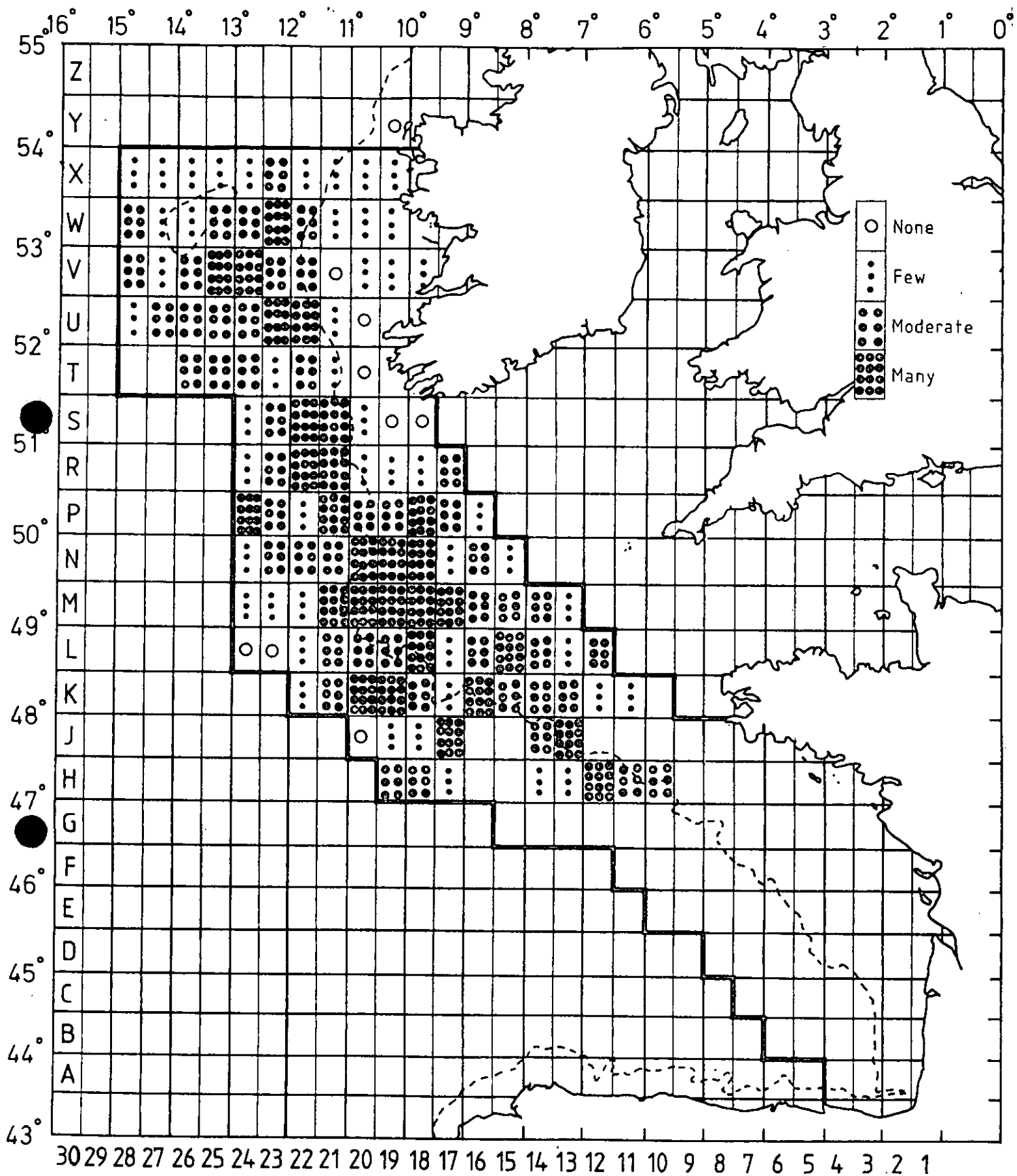


Fig. 3