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

1975 RESEARCH VESSEL PROGRAMME

REPORT: R V CIROLANA: CRUISE 5

STAFF:

S J Lockwood
N Reynolds
C W Baker
B E Riches
D Denoon
H Edge (Grimsby)
C R Way (Falmouth)
D Wright (Fleetwood)

DURATION:

Left Grimsby 1630 h 8 May
Arrived Grimsby 0600 h 24 May

LOCALITY:

Northeast Atlantic

AIMS:

1 To continue the survey of the distribution and abundance of blue whiting started during cruises 3 and 4.

2 To sample trace metals at selected stations.

3 To monitor the standing crop of phytoplankton in the area covered by the survey.

4 To make continuous plankton recorder tows when practicable.

NARRATIVE:

CIROLANA sailed at 1630 8 May and steamed, through fog, via the English Channel to a position south west of Porcupine Bank. The acoustic survey began at 2100 h 11 May. At 0800 h 13 May the survey was stopped and CIROLANA dodged for 20 hours. The survey then continued without a break until 1800 h 19 May when the ship began dodging again. CIROLANA dodged in storm conditions on 20 May until 0830 h 21 May when conditions had improved sufficiently to permit steaming southwest toward Faeroe. The acoustic survey was restarted in good conditions at 0600 h 22 May and continued in the region between Faeroe and Shetland until 1800 h when the survey ceased and CIROLANA set course for Grimsby. The ship docked at 0600 h 24 May. A copy of the ship's survey track is attached.

During the cruise the Icalandic research vessel ARNI FRIDRIKSSON was contacted on three occasions in order to compare results with their survey to the west of Faeroe. Between 2 May and 20 May she surveyed from Iceland to Faeroe and southward to the west of the Bailey and Rockall Banks. From 22 May to 29 May she was going to survey north of Faeroe.

RESULTS:

1 Blue whiting traces were found to extend from 56°N to at least 64°N (see attached chart). At the southern limit of the distribution fish were lightly distributed and only found within a few miles of the continental shelf. North of 60°N the distribution was much more widespread. Although we found only extremely sparse blue whiting traces east of 4°W, the ARNI FRIDRIKSSON found light traces extending all the way from Iceland to Faeroe and south to 57°N to the west of Rockall. The greatest concentration of blue whiting were found in the deep water due south of Faeroe.

Seven trawl hauls were made, including one with a Granton trawl, in traces of varying density. Blue whiting were caught on every occasion, the highest catch rate being 22 baskets in 5 minutes (250 + baskets/hour).

A biological analysis of a sample of blue whiting from each trawl haul was made. The results are summarised in the attached table. The majority of fish were maturity stage VI, but some fish in all stages were found; 98% were found to be feeding and 90% had nematode worms present in the body cavity. Generally the worms appeared to be embedded on the surface of the liver, frequently in very high numbers but they were also found free in the body cavity.

2 Surface water samples were collected and processed at 15 stations en route. Due to poor weather conditions and the lack of bow thruster only one of three deep water stations was abandoned.

It was intended that our analytical procedure for measuring the total inorganic concentration in sea water should be tested during the cruise. The samples were to be analysed within minutes of collection, thus eliminating sample losses that may occur during long storage. Samples were taken and successfully analysed at 8 positions during the early part of the cruise. The method was easy to use and no serious problems were encountered. However, on the fifth day out the MAS 50 (Mercury Analyser System) developed a fault which could not be repaired and consequently no further analyses were possible.

3 The Turner Fluorometer and chart recorder were run continuously throughout the cruise. The amounts of chlorophyll 'a' present in 38 discreet samples was determined by measuring the fluorescence of acetone extracts. In the majority of cases determinations were also made on samples which had been passed through a 10/um nylon mesh to assess the abundance of the nanoplankton.

Preparations for EM microscope examination were made at 9 stations and material was preserved in Lugols Iodine for light microscope examination ashore from 19 stations.

Chlorophyll 'a' values of 5 /ug/l or more were found in the English Channel and across to S W Ireland, decreasing to 3 /ug/l on Procupine Bank and generally along the edge of the Continental Shelf to about 56°N. They then decreased to 1-2 /ug/l generally with noticeable peaks in the shallower water on Faroe Bank and Faroe Plateau: of this 2 /ug/l was contributed by the nanoplankton in the southern part, falling to around 1 /ug/l in general north of 56°N. AT many of then northern stations the nanoplankton constituted 80-100% of the total phytoplankton.

The increase in total chlorophyll 'a' on Faroe Bank and Faroe Plateau was due almost entirely to an increase in the larger diatoms, of which Rhizoselenia hebetata, Rh. stolterfothii, and Chaetoceros laciniorum were the most important.

Nitzschia delicatula and Fragilariopris sp. were common among the nanoplankton, which also contained several coccolithophorids, some Pyramimonas sp. and an assortment of round to oval non-motile cells.

4 The continuous plankton recorder was towed for 1020 miles to the west of the British Isles and through the Faeroe-Shetland Channel. Also 16 XBT records were obtained along the track. The positions are listed below. This work was carried out for IMER (Edinburgh).

Position of XBT records

53°25'N	13°52'W
55°01'	10°37'
55°50'	10°02'
58°41'	07°55'
61°06'	07°15'
60°43'	07°31'
60°34'	06°04'
62°02'	05°29'
63°18'	04°40'
61°12'	04°16'
63°34'	02°11'
59°53'	08°40'
60°03'	08°11'
60°14'	08°11'
60°17'	07°46'
60°21'	07°39'

S J Lockwood
3 June 1975

SEEN IN DRAFT: T H F (Master)
W J S (Fishing Skipper)

INITIALLED: A J L

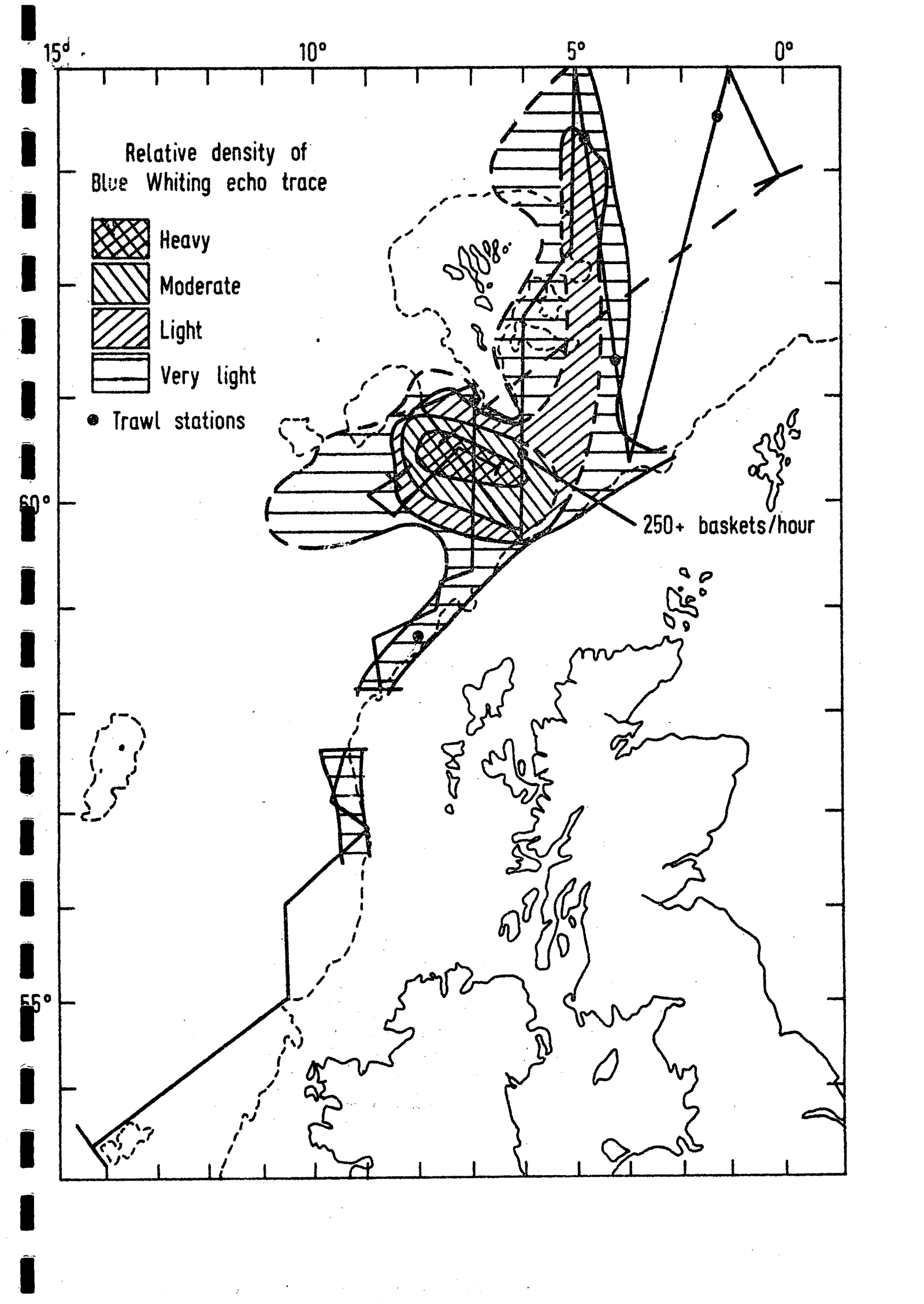
DISTRIBUTION:

Basic List

Dr Lockwood
Dr Reynolds
Mr Baker
Mr Riches
Mr Denoon
Mr Edge (Grimsby)
Mr Way (Falmouth)
Mr Wright (Fleetwood)
Dr Pawson

BIOLOGICAL ANALYSIS OF TRAWL HAULS

	Latitude	Longitude	Mean Length cm	Maturity stage, % of sample Male							Female							% Occurrence	
				0	I	II	III	IV	V	VI	0	I	II	III	IV	V	VI	Food in gut	Nematodes in body cavity
14.5.75	58°40'N	08°00'W	28.6	-	3	-	3	-	9	85	-	32	-	-	-	28	40	81	97
15.5.75	61°09'N	07°14'W	29.6	13	20	-	7	-	23	37	-	28	10	10	3	41	7	93	85
16.5.75	60°33'N	06°03'W	30.6	-	-	-	4	5	23	68	-	11	18	15	-	26	30	100	98
16.5.75	62°00'N	05°39'W	30.0	48	35	-	-	-	4	13	28	38	-	-	-	2	32	98	74
17.5.75	63°13'N	04°43'W	30.0	-	-	-	-	-	38	62	4	46	4	-	-	35	11	100	100
18.5.75	61°05'N	04°11'W	29.2	14	4	-	4	-	14	64	8	34	8	8	-	-	42	97	88
19.5.75	63°30'N	02°16'W	30.1	17	-	-	-	-	33	50	9	61	13	9	-	4	4	100	95
	All stations		-	14	9	-	3	<1	19	55	9	35	7	5	2	20	22	96	90


15°
10°
5°
0°
60°
55°
Relative density of
Blue Whiting echo trace
Heavy
Moderate
Light
Very light
Trawl stations
250+ baskets/hour