

MR BATE

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

1975 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 4/1975

(Provisional; Not to be quoted without prior reference to the author)

STAFF

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DURATION

Left Grimsby 1015h 3 April

Arrived Grimsby 1810h 28 April

All times are Greenwich Mean Time

LOCALITY

West of Scotland

AIMS

1. To continue the survey of distribution and abundance of Blue Whiting started in Cruise 3.
2. To sample trace-elements at selected stations during the survey.
3. To sample fish eggs and larvae and other plankton using the Continuous and Longhurst-Hardy Plankton recorders.

NARRATIVE

CIROLANA left Grimsby at 1015h 3 April and, after a good passage through the English Channel the echo-sounding survey was started south of Ireland at 1520h 5 April. The echo-survey and fishing were continued for the next 23 days covering the area from Porcupine Bank to Faroe Bank (see track chart attached). Work was interrupted by bad weather from 1400h/7th to 0900h/9th and again from 0040h-1610h/19. On several other occasions course and speed had to be adjusted to allow work to continue in adverse weather conditions. The survey was also stopped from 0120-1200h/13 when the bow-thruster could not be housed after a deep water sampling station. Course was set for the Clyde at slow speed but eventually the engineers housed the bow-thruster manually and the survey was resumed at 1300h/14.

Gale force westerly winds ended the survey on the morning of 27th, when there was no prospect of conditions improving sufficiently to allow further fishing and echo sounding.

Course was then set for JONSIS 2 current meter rig which was found about 1 mile out of position with its light flashing. JONSIS 1 buoy was found in its correct position but its light was not flashing. CIROLANA docked at Grimsby at 1810h/28.

## RESULTS

Aim 1. Few traces of any kind were found south of Porcupine Bank. One haul with the Engel trawl SE of Porcupine only caught Maurollicus and Argyropelecus. The first traces likely to be Blue Whiting were recorded close to the bottom on the NW side of Porcupine Bank. Granton trawl hauls amongst these traces caught small quantities of Blue Whiting mixed with larger quantities of Hake, Helicolenus and numerous other species. The distribution of Blue Whiting northwards from Porcupine Bank was similar to that found during cruise 3B except that the fish were perhaps concentrated closer to the continental slope (see chart). Highest integrator levels were recorded in a relatively small area west of Barra, where the ARCTIC PRIVATEER and several other vessels were getting very high catch rates (up to 1000 baskets for a few minutes tow in the echo trace). The northern limit appeared to be at about 60°N where a diffuse trace fished east of Outer Bailey Bank gave 60 baskets of Blue Whiting for an hours' tow, but few traces likely to have been Blue Whiting were found near the other northern banks - Bill Bailey's Bank, Faroe Bank and the southern end of Faroe Plateau. No traces were recorded over the deep water between Faroe Plateau and Shetland. The typical Blue Whiting trace was picked up again on the edge of the shelf west of Shetland at about 60°20'N, but bad weather prevented completion of the survey in that area.

The mid-water traces were sampled in most areas with an Engel 1600 trawl. The Granton trawl was used in two areas where the traces were close to the bottom. No attempt was made to fish near-bottom traces with the Engel trawl because of the unpredictable and limited performance of the headline transducer system.

Blue Whiting from all catches were sampled for length, sex and maturity and stratified otolith samples were taken for age determination. Most of the fish were spent and not feeding.

Aim 2 Water samples for trace-element estimation were taken at 28 stations and one sample was taken for <sup>137</sup>Cs determination. At 8 of these stations samples were taken from surface, mid water and bottom in deep water.

### Aim 3

#### 1. Longhurst-Hardy Plankton Hauls (LHPR)

11 Oblique hauls of about 2 hours' duration were made to a maximum depth of 630m. Timing of hauls was spaced evenly over the 24 hour period to give a picture of the vertical migration of blue whiting larvae and their relationship to other constituents of the plankton. Hauls were at about 2 day intervals and their extent ranged from 51°18'N to 59°19'N and from 06°43'W to 14°00'W. Several Myctophum sp were taken in these hauls and will be examined for gut contents. A provisional examination of the haul material showed blue whiting eggs to be abundant in the Porcupine Bank area; a smaller number

of eggs were recorded from the northern end of Rockall Channel (58°30'N 11°03'W). The eggs were predominantly between 300 and 400m. Larvae were found from the Porcupine area to 58°00'N, those from farther North being younger. The larvae were principally in the upper 50m of the water column. The vast majority of the plankton was caught in a scattering layer found at about 150-200m by day and 0-50m by night: it was composed chiefly of calanoid copepods with occasional dense patches of Euphausiacea. XBT casts were made concurrently with the LHPR hauls.

## 2. Continuous Plankton Recorder Tows (CPR)

A Hardy CPR was towed for the majority of the cruise track from 50°00'N to 57°30'N at 10m depth. Considerable numbers of larvae were caught along the cruise track. These will subsequently be examined for any correlation with the adult distribution obtained from the echo survey. Highest numbers were provisionally found along the shelf edge area from 55°00'N to 57°00'N and extending into the central regions of Rockall Channel.

## 3. Expendable bathythermograph recordings (XBT)

21 XBT drops were made to give temperature profiles of the upper 1500ft of the water column. Drops were made at all LHPR stations and through dense fish traces both over deep water at the shelf edge and on the shelf. The surface temperature ranged from 51°F at the southern end of the survey to 49°F at 59°30'N. Temperatures on the shelf were approximately 1°F colder than the main Atlantic Water. Temperatures decreased about 1°F in the upper 100ft from the surface and then increased evenly to 1500' to that at the surface, (i.e. 1°F increase 100ft to 1500ft). There was no indication of any thermal stratification which could be associated with the adult blue whiting's depth distribution. (XBT's are calibrated in °F, 51°F = 15.2°C).

## 4. 20cm diameter Bongo net hauls

10 paired Bongo net hauls were made with mesh sizes of 253<sub>μ</sub> and 333<sub>μ</sub>. 8 of these hauls were surface hauls and 2 were oblique hauls to 630m. All hauls were at about 2 knots. 5 of the surface hauls of 1 hour's duration were taken in the study of the diurnal migration of the larvae; large numbers of larvae were taken in this 12 hour transect from the centre of Rockall Channel to over the shelf at 56°30'N. 3 surface hauls were made at trawl stations 10, 14 and 23. Few blue whiting larvae were found in the Porcupine area (Stations 10 and 14) but considerable numbers of mackerel eggs were caught. A moderate number of blue whiting larvae and a few eggs were provisionally found at Station 23. Moderate numbers of blue whiting eggs and larvae were provisionally identified in the oblique hauls made concurrently with LHPR hauls at 54°33'N 11°12'W and 56°47'N 13°47'W.

Miscellaneous Blue Whiting samples were deep frozen for the Burnham Laboratory, and quantities were frozen for fish food.

Specimens of a wide variety of species were deep frozen for use in the Fishery Officers fish identification course.

The Trawl Depth Telemeter was used successfully on the Engel trawl in addition to the headline transducer, and was invaluable when the latter was being temperamental.

Radio contact was kept with the ARCTIC PRIVATEER and information on catches was exchanged daily. As she was fishing to the limit of her freezing capacity in the area of densest traces there was no occasion for re-directing her activities.

R W Blacker  
5 May 1975

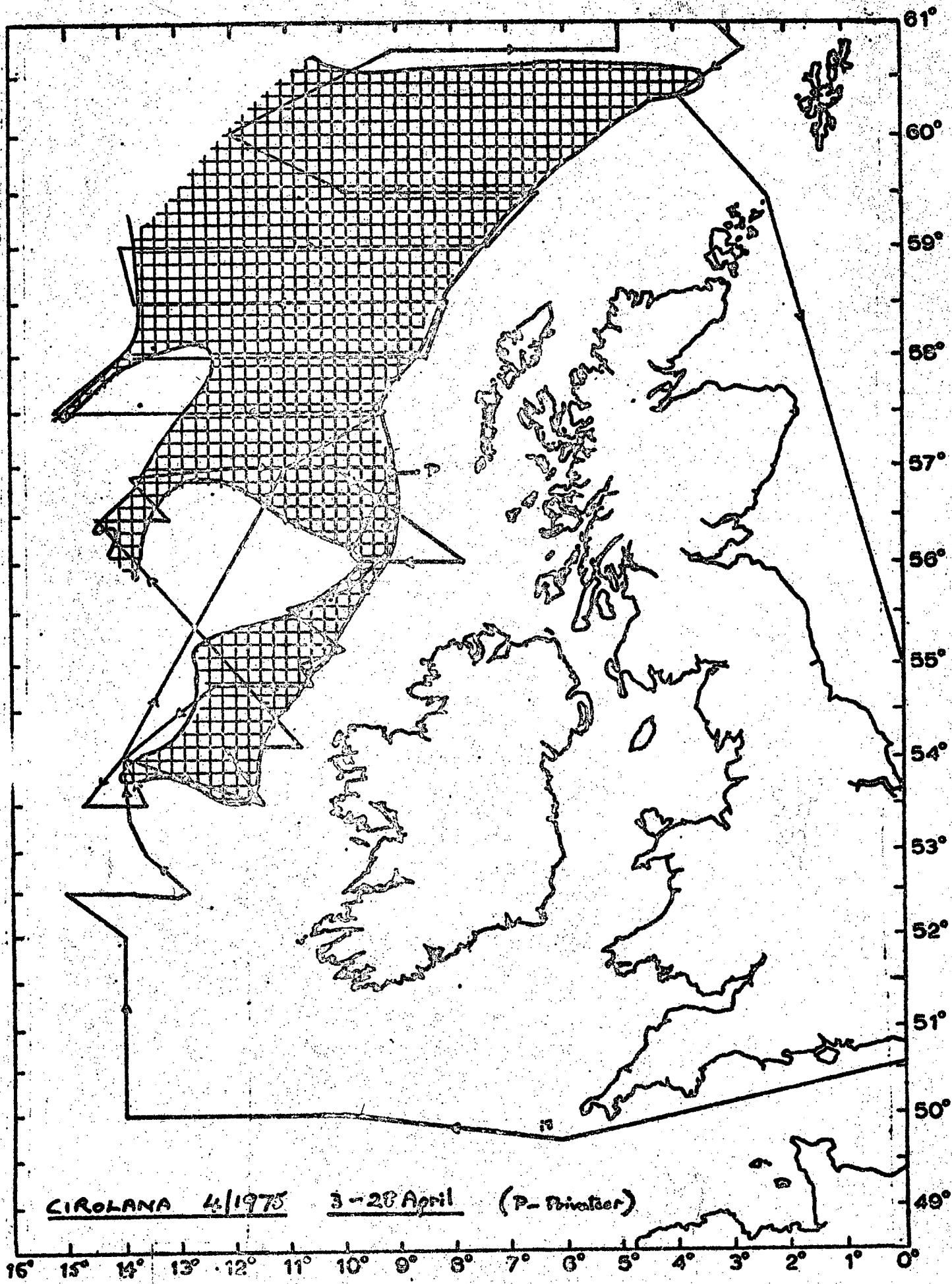
SEEN IN DRAFT JENB  
GWA

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DISTRIBUTION

Basic list and

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CIROLANA 4/1975 3-28 April (P. Privatier)