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

1971 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 6

(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

| | |
|---|---|
| D J Garrod | A J Burridge |
| J F Wickins (Conway) | Mrs A Houghton |
| C L Whiting | Mrs J E Howlett |
| M Macdonald | D Riley (Student) |
| T Watson | A J Hopson (Visitor) |

DURATION

Left Grimsby 2200 hours, 14 July

Arrived Grimsby 0530 hours, 5 August

All times are British Standard Time

LOCALITY

Iceland

AIMS

1. Fishing and echo survey of the pelagic scattering layer of 0-group fish at Iceland.
2. Study of the detailed structure of the scattering layer at one station.
3. Microbiology a) collect samples for analysis of chlorophyll
   b) direct preparations for electron microscopy
   c) set up cultures of nonno-plankton.

NARRATIVE

R V CIROLANA sailed at 2200 hours, 14 July. During the passage north a representative of Stone Manganese Ltd carried out trials with the bow-thrust propeller and was then disembarked by pilot boat off Aberdeen. These trials, which showed the bow thruster to be functional, had to be carried out under the lee of the northeast coast owing to gale force winds which persisted until we reached Faroe Bank. Thereafter the weather remained fair for the entire trip.

Preliminary gear trials intended for Faroe Bank had to be abandoned owing to failure of the acoustic link which sustained damage on the deck. The unit could not be repaired at sea. R V CIROLANA then continued the passage to Iceland, streaming the main trawl warps en route and arriving on the Whaleback Flat at 0700 hours, 18 July. There we carried out two hauls with the Granton trawl to secure material for Dr Portmann at Burnham, and for Mr Bye (pineal studies) before commencing the 0-group survey at 1530 hours.

The 0-group survey was part of a programme coordinated between Iceland, Norway, Germany and UK with each country being allocated a sector of the sea areas around Iceland, though in this first year of such a survey it was not possible to schedule all the research vessels to carry out their survey simultaneously. R V CIROLANA was allocated a sector off the east and northeast coast of Iceland indicated on the attached chart, but in the event, it was possible to carry out a preliminary survey of other areas further west within the time available.

The survey technique was identical to that used on routine 0-group surveys in the Barents Sea, combining an echo record with Boothbay and Engels net hauls every 30 miles at least, for trace identification. During the course of the survey further development was carried out on the quantitative aspects of the echo survey incorporating the Simrad Integrator. This system was serviceable for the second half of the survey. Surface temperature was recorded throughout with additional bathythermograph observations at each trawl station.

On 20 July R V CIROLANA put in briefly at Neskaupstadur to collect a permit to fish within the exclusive fishery limit at Iceland and on 25 July we put in to Akureyri overnight to disembark Mr Hopson, who had to return to UK, and to collect a spare for the acoustic link. (The spare did not solve the problem.) The survey was completed on 28 July and we then carried out the detailed investigation of two traces, fishing at varied depths with additional TTN samples at the same depths to collect zooplankton that might be the source of food for the 0-group fish. This was completed on 30 July in order that R V CIROLANA could call at Reykjavik for an exchange of information with the Icelandic scientists. Leaving Reykjavik on 31 July the echo survey was continued along the south coast of Iceland and then a detailed 0-group survey was carried out on Faroe Bank on 2 and 3 August before returning to Grimsby.

Phytoplankton sampling was carried out at selected stations throughout the cruise, sea water samples being filtered at 69 stations, electron microscopy preparations made at 10, cultures set up at 5 and dilution series made at 6 stations.

R V CIROLANA left Faroe Bank at 1500 hours 3 August and docked at Grimsby 0530 hours 5 August.

RESULTS

1. 0-group survey - Iceland

Off the east and northeast coast in the area allocated to R V CIROLANA, the scattering layer was extremely weak and contained only a very few 0-group fish of species which are not commercially important. However a widely distributed scattering layer of adult blue whiting was located at 40 m depth off Langanes. The main concentration of scattering layer and 0-group fish lay west of the longitude of Grimsey. Long rough dab predominated in the first traces encountered but as the survey progressed westward these became fewer, cod, capelin being most abundant, with sandeels (I-group) in places. Redfish became predominant off the western fishing banks. Haddock were represented only by the occasional individual and no coalfish were caught. The cod and redfish were small compared to 0-group fish caught in comparable surveys in the Barents Sea (30-40 mm compared to 50 mm +) but the haddock caught were much larger

and it is possible that the relatively poor catches reflect their early migration to the sea bed. Large quantities of jellyfish hampered fishing everywhere off the northwest coast and are believed to have made a substantial contribution to the echo trace.

The main concentration of echo trace and of 0-group fish was associated with the boundary of the intrusion of warmer water around the north coast from the Irminger Current. However this body of water appeared to be constricted by cold water from the East Greenland Current, the ice edge being very far south for this time of year. Whereas in 1969 R V ERNEST HOLT fished the Anton Dohrn Bank in July, R V CIROLANA could not reach the edge of the continental shelf northwest of Iceland and, in fact, the passage westward around North Cape was completely closed for some days shortly after R V CIROLANA passed.

This being the first survey of its kind at Iceland it is not yet possible to evaluate the results in terms of their prospective importance of the 1971 year class to the commercial fishery. However very useful progress was made in the development of the echo counting and integration equipment associated with survey work.

2. Although the traces were nowhere very heavy two particular traces were followed for several hours, sampling at different depths with Boothbay, Engels and Tin Tow nets. The catches have been preserved for later analysis.

3. At Faroe Bank echo traces were heavier but contained larger quantities of invertebrates than at Iceland. Haddock was the predominant species at this time.

4. Microbiology

Although detailed analysis of the 69 samples of filtered sea water must await return to Lowestoft it appears that all stations sampled, from south of Faroes, around the coast of Iceland and back to Faroes, were relatively rich in phytoplankton when compared to samples taken at Faroe and in the North Sea earlier in the year. At certain stations use of a preliminary 600 mpi net prior to filtration showed the amount of phytoplankton retained on the net to be negligible, indicating the phytoplankton to be small in size, ie less than about 20 /u diameter.

From Faroes to northeast Iceland diatoms (mainly Chaetoceros, Rhizotolenia and Nitschia species) were found together with dinoflagellates (Ceratium, Peridinium, Dinophysis and Gymnodinium species). An unidentified pink dinoglagellate was also very common. Along the north coast of Iceland, although quantities of phytoplankton were retained by the filters, no organisms could be detected by microscopic examination. The substance appeared to consist of disintegrated cells of brownish-orange colour. The unidentified dinoflagellate was found along the north coast and Dinophysis, Gymnodinium and Peridinium species were also found in small numbers. Northwest of Iceland brownish patches observed in the water were sampled with a phytoplankton net and found to consist of a very fragile brownish orange organism which has yet to be identified. It is possible that this organism was responsible for the disintegrated phytoplankton recorded along the north coast.

No diatoms or dinoflagellates were observed in samples taken off from the western and southern coasts and it is presumed that the phytoplankton present consists of flagellates.

5. Samples were frozen for Dr Portmann and material for pineal studies preserved for Mr. Bye.

D J Garrod

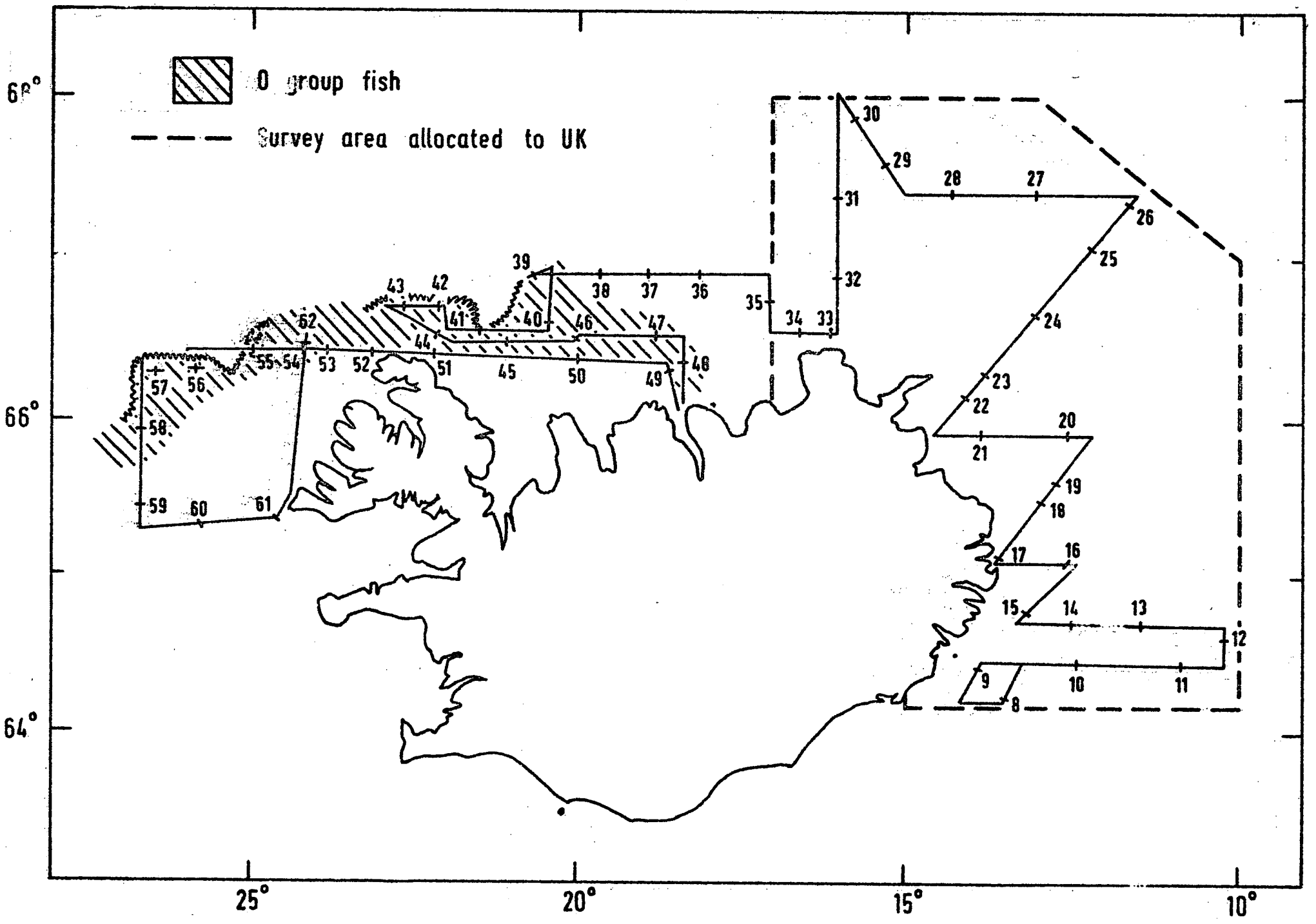
11 August 1971

SEEN IN DRAFT: E A Binnington (Captain)
G W Argumont (Fishing Skipper)
INITIALLED: AJL

DISTRIBUTION

Basic List

D J Garrod
J F Wickins (Conway)
C L Whiting
M Macdonald
T Watson
A J Burridge
Mrs A Houghton
Mrs J E Howlett
D Riley (Student)
A J Hopson (Visitor)


0 group fish
Survey area allocated to UK
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66°
64°
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