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

1971 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 4

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

STAFF

G C Trout
N Reynolds
C Purdom
P Scholes
E G Shreeve

Mrs A Houghton
C N Humphreys
Miss E Cowie
N E Platt (FHU)
P A Moore (North Shields)
(Mr Mapplebeck of Stone Manganese Marine 4 and 5 May only)

DURATION

Left Grimsby 1517 hours 4 May

Arrived Grimsby 2000 hours 28 May

All times are British Standard Time

LOCALITY

A: Faroe Islands and Faroe Bank

B: Portland

AIMS

A: 1. To ensure that officers and crew are thoroughly practised in the use of the Engels 788 Cod Trawl prior to beginning to investigate the vertical extent of the cod's pelagic phase;

2. To collect cod blood for Dr Jamieson;

3. To obtain live halibut for Dr Purdom;

4. To develop a technique for estimating amounts of nanophytoplankton with the aid of the Turner fluorometer;

5. To obtain live turbot for Dr Allan Jones;

6. To continue investigations into the incidence of cod flesh parasites.

B: 1. To carry out ship noise trials.

NARRATIVE

Staff and gear reached the CIROLANA by tug, due to their late arrival, by hired bus, at her usual berth. The ship sailed at 1517 hours, 4 May and tested the bow propeller before putting Mr Mapplebeck ashore, by pilot boat, at Aberdeen and picking up Mr Moore at 1930 hours, 5 May.

The northern banks of the Faroe Islands and the deeper offshore waters were selected for the trials with the midwater trawl, so as to be close to the inshore areas of reported small halibut concentrations required for Aim 2.

The first part of the trials resolved itself into a complete re-rigging of the headline, doors and weights and developing the simplest method of hauling the large net by the small (and shorthanded) crew. In addition, time was spent in obtaining experience with the sonar by practising on artificial targets.

Medical services at Thorshaven were required on May 10th for a member of the E/R staff who amputated part of his finger when oiling a winch, and for the First Officer who was left in hospital ashore for observation.

Dr Purdom and Colin Humphreys took the opportunity to seek local knowledge of halibut fishing and finally hired a small trawler for 24 hours, whilst the CIROLANA returned, in gale force winds, for further handling trials with the midwater trawl. She returned to Thorshaven at 0430 hours 13 May to rendezvous with the halibut fishing party. The live fish were transferred and samples of cod blood were sent by air to London Airport and the ship sailed at 2300 hours for the Faroe Bank region, for fishing trials.

Work was interrupted by a further gale on 15 May when, to avoid risk of damage to the live fish in deck tanks, the CIROLANA sought a lee under the islands. She returned to the Bank the following day in strong winds of force 6-8, to undertake a restricted echo search for cod shoals or other shoals to be used as targets for the 788 net. Work terminated at 0300 hours 20 May after bottom trawling for cod had provided the required 108 blood samples, and course set to Thorshaven for dispatch of the blood to London Airport and further medical advice for the injured crew member, both transported by pilot boat when CIROLANA anchored outside the harbour at 0930 hours 20 May. Leaving at 1245 hours, fishing for turbot began at 1340 hours 21 May off Aberdeen. After shifting ground several times to find suitable fishing, course was set for the North West Rough, but bad weather intervened and the ship dodged at slow speed to Yarmouth, berthing at 1130 hours, 24 May. Staff, fish and gear left for Lowestoft and the vessel sailed again for Portland at 1915 hours and arrived at 1430 hours, 25 May in preparation for noise trials, which were completed by 1800 hours, 27 May and CIROLANA docked at Grimsby at 2000 hours 28 May.

RESULTS

AIM 1: Handling difficulties with the Engels 788 trawl arose largely because the 56 cm meshes of wings and trawl mouth fouled and broke on any object which came in contact with them. Headline floats in particular, although encased in small meshed envelopes, caused considerable damage. Bights of headline or footrope similarly caused foul shoots and damage when paying away and hauling. Finally the entire set of plastic floats imploded during one deep trial (to obtain the warp/depth calibration curve) and soft nylon envelopes were constructed (from Granton trawl lengthening pieces) each containing 10 normal metal floats and built upon a separate attachment line and the fouling ceased. Subsequently, the net was shot and hauled smoothly and with confidence by the small crew, and in reasonable weather

warp tensions could be kept around or below 7 tons each side. In bad weather however, and with 600 fathoms of warp out, tension increased to 8-9½ tons each side and the winch motor stalled. Propeller rpm had to be reduced materially - a dangerous manoeuvre if the net had been close to the bottom - before the winch would heave. Furthermore, in bad weather the ship is pinned down by the gear and alterations of course take a long time to complete. Length of warp out also reduces ship speed for a constant propeller rpm (eg., 100 rpm; 100 fathoms warp - 3½ knots; 500/600 fathoms warp - 1½-1¾ knots). Altogether, a smaller net should prove more suitable for all weather fishing and allow the ship greater freedom for manoeuvring when towing. In bad weather - wind 34 knots, sea state 7 - full power from two generator units, producing some 1100 shaft hp (by E/R ammeters), was insufficient to bring the ship round and she was making a crab-like course and warp loads were up to 9-9½ tons each side. If the third generator had been connected, warp loads would have increased.

The problem of where the net is, in azimuth, in cross winds or strong tides, becomes more acute in bad weather and true aimed fishing will prove difficult.

When operating close to the bottom the headline transducer produced excellent records of the footrope's position above the bottom. When over deep water a quick and positive method of obtaining actual depth of headline would be valuable - possibly an upward firing transducer - either as digital readings, or recorded on the present MS 29.

The net was shot without the transducer during the early phases of handling trials. Some difficulties with cable leads were experienced and damage occurred to the cable on four occasions, but was mended quickly. Shooting rate was around 180 ft per minute; hauling about 210 ft per minute and the transducer cable was driven out. More practice is required to achieve higher speeds and rate meters on both winches would help.

When operating with the Engels trawl, the Granton was dismembered. The doors were removed from the after towing blocks and stored on deck; the net put below and the bobbins stored outside the bobbin track to allow the 1500 lb weights to reach the winch. Some four hours were needed to re-rig the Granton. Thus work requiring use of both trawls during the 24 hours would be uneconomic unless a net drum winch were to be installed. Only then can the 70-100 fathoms bridles advised for maximum mouth opening, be accommodated. Granton doors would still have to be carried on the side decks until needed. The present mid-water trawl rig and method of handling is nevertheless, fully operational and effective for reasonable weather conditions, ie., up to Force 7.

Catch: No large dense traces were found during the three echo searches, hence the sonar was not used. Many small traces, several of individual fish, were seen on the sounder and the net adjusted to the desired depth. Several were seen to enter. No cod were caught, but haddock, saithe, 60-107 cm and 2 Lophius sp of ca 100 cm were amongst the catch in the covered codend. Several baskets of blue whiting, mackerel, squid and medusae, including a 2 ft in diameter Cyanaea, whilst Paralepis which were caught on knots, probably also gave rise to the traces seen to enter the net.

As no worthwhile traces were seen in the final part of the trials the net was fished only to within 8 metres of the bottom. It took some 20 to 30 minutes to stabilise gape and distance above bottom after each winch/ship movement, but reaction to any change was seen on the recorder within seconds and in practise was achieved with reasonable precision, helped by the calibration curve of warp out/headline depth.

AIMS 2 AND 3: Some 28 live small halibut were transferred from the MT VON at Thorshaven and were added to by larger fish from the Faroe Bank fishing by Granton trawl. Cod were also caught in both areas and a group of 108 samples of blood collected from each. A total of 30 halibut reached the laboratory in good condition.

AIM 4: Chlorophyll estimates of total phytoplankton and nanoplankton were made at 93 fluorometer stations. Almost all phytoplankton in the Faroe Shetland Channel was nanoplankton but over Faroe Bank the diatoms Rhizoselenia spp and Nitzschia spp predominated. Appropriate samples were collected for spectrophotometry to calibrate the fluorometer. All samples were taken from the ship's clean sea water system direct, after comparison with overside samples.

Cultures were set for laboratory study of nanoplankton and an improved method of making direct preparations at sea for electron microscopy was also tested satisfactorily.

AIM 5: Only one large female turbot was retained - rocks damaged two others and bad weather prevented an extension of fishing from the Turbot Bank to the North West Rough of the Dogger.

AIM 6: Cod were examined for flesh parasites. In addition, other gadoids were "candled". Long Rough Dabs were also found to be heavily infested and collections of worms were made for fuller indentification at the laboratory.

Miscellaneous: A sample of spurdogs was measured for Mr Holden.

Acoustic Link trials were carried out by Mr Shreeve and were highly satisfactory.

B: Noise trials were carried out under nearly ideal weather conditions at Portland and will be the subject of a separate report when analysis is complete.

G C Trout

7 June 1971

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GWA

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DISTRIBUTION

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