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

1973 RESEARCH VESSEL PROGRAMME

REPORT R V CIROLANA: CRUISE 6b

(Provisional: Not to be quoted without reference to the author)

STAFF:
J P Bridger
R G Shelton
D J Ellett
C L Whiting
J W Read
R V Perkins (Hull)
H D McDiarmid (IDU, WFA)
A Fraser (Torry)
A H Wheeler (Brit Museum Nat History)
A Mattacola (MBA)

A Urquhart )
C Beatty (S G Brown)) 25-26 July only
G Moore )

DURATION: Left Stornoway 1800 h 13 July
Arrived Grimsby 0140 h 26 July

All times are Greenwich Mean Time

LOCALITY: West of Britain

AIMS:

1 To continue and extend studies into the distribution and abundance of fish in 350-600 fm along the continental slope to the West of Britain begun on CIROLANA 4/73.

2 To make hydrographic observations on the Wyville-Thomson Ridge.

3 To obtain seawater samples from West of Britain for the Fisheries Radiobiological Laboratory.

NARRATIVE

All but two of the scientific staff and visitors having travelled to Stornoway to join the ship, R V CIROLANA, sailed at 1800 h 13 July for the continental slope some 95 miles to the west of Foula. Three surface seawater samples were taken for Fisheries Radiobiological Laboratory on passage.

14 July: Four trawl hauls, each of 1½ hours duration, were made on this part of the slope in depths of 397-645 fms, before steaming overnight to the Wyville-Thomson Ridge.

15 July: Two hydrographic sections and an echo survey of the Wyville-Thomson Ridge and Ymir Ridge were begun at 0020 h and finished at 2330 h when course was set for the slope to the west of Sulisker.

16 July: Four trawl hauls were made at depths of 304-610 fm and then the Temperature-Salinity-Depth Recorder and an empty underwater camera case were tested to 575 fm. The glass camera-porthole of the latter imploded, making it inadvisable to use the other camera on the trawl as had been intended. The ship then steamed south again.

17 July: Five hauls were made on the slope to the northwest of Flannan at depths of 307-603 fm. One of these hauls was abortive since the gear came fast after only 9 minutes parting the headline and tearing the square and top wings. When trawling ceased further tests on the TSD recorder were carried out that night before steaming still further south.

18 July: Five further trawl hauls were made to the west of St Kilda at depths of 304-601 fm, one of which 'came fast' in thick mud after only 4 minutes but no damage was sustained.

19 July: Five standard 1½ hour hauls were made off Tory Island in 284-606 fm before steaming south overnight to a point on the slope to the west of Eagle Island.

20 July: The first haul here was successful but the second encountered a mass of very hard coral in 425 fm and the net was damaged beyond repair. Having rigged a new trawl, failure of the winch brakes and increasing wind and swell prevented further hauls in this area. On passage south four large Russian factory trawlers were encountered fishing in 100 fm around 53°45'N, 11°15'W.

21 July: Five hauls were made in 307-601 fm SW of Dingle Bay. The deepest of these hauls did not settle properly and caught virtually nothing.

22 July: Four hauls were made SW of Bantry Bay in 295-612 fm and another haul on the northern edge of the South Hake Ground in 500 fm.

23 July: Two more hauls were made in the same general area, one of them a foul shot, by noon. In view of the very low catches on all these southern grounds and a request from the Laboratory to inspect and service the JONSIS A current meter rig off Flamborough Head, fishing then ceased and the vessel set course for Brixham to land two of the visitors.

24 July: Arrival off Brixham. Messrs Wheeler and Mattacola were landed by pilot cutter at 1300 h and course was set via the channel for Yarmouth Roads to embank Messrs Urquhart, Beatty and Moore to make checks on the satellite navigation system.

25 July: At 1020 h having taken the above three people aboard together with certain spares to refurbish JONSIS A the vessel steamed north in very unpleasant weather to JONSIS A arriving at 2000 h. The surface toroid was found in position, and the surface pellet the correct distance away. The acoustic release was interrogated and found to be functional. In view of the weather, wind 25 knots and a nasty short sea running, it was decided not to attempt to lift the rig and having checked that the toroid light was functioning the vessel set course for Grimsby.

26 July: 0140 h berthed at Grimsby.

RESULTS

All the major aims of the cruise were accomplished.

Deep trawling. 37 hauls were made of which 33 were of the standard 1½ hours fishing time, about 2½ hours total, covering 9 areas, 6 previously visited in April and 3 new ones. Some 20½ tons of fish were caughtin 49½ hours fishing, a catch rate of 41.6 tons per 100 hours as against 67.3 tons in April 1973. The reasons for this decline in catch appear to be:

1 The spawning concentration of smoothheads, Alepocephalus bairdi, at Tory had naturally dispersed. Small catches of this species occurred on several grounds.

2 The new grounds, Eagle Island, Dingle and Bantry all produced very poor catch rates (7-25 tons per 100 hours).

3 Blue ling, Molva dypterygia, which provided good catches in 400-500 fm in April had moved on to the shelf and in July appeared only in small quantities in the 300-350 fm zone.

Catches of Grenadiers, Coryphaenoides rupestris, were however considerably higher than in April. Over 7 tons of this species were taken compared with less than 3 tons in April.

Palatability tests: 18 blocks of blast frozen filletted fish were processed for Torry Research Station.

Measurements: Over 11,500 fish were measured including 1870 Coryphaenoides, 1307 Chimaera and 1138 Dogfish and sharks.

Age Determination: A stratified sample of over 100 pairs of otoliths and scales were taken from Coryphaenoides and lesser samples from 14 other species.

Stomach Contents/Maturity/Fecundity: Almost all the dogfish and sharks were examined for stomach contents and maturity. The size and number of eggs or embryos in the female sharks were recorded by Mr Wheeler.

Muscle and tissue samples from a variety of isospondyls were fixed and preserved by Mr Mattacola for Drs Bone and Spondo of the Plymouth Laboratory.

Hake: 14 blood and tissue samples were taken for Mr Mangaly.

Rare fish: Species hitherto considered to be rare were often taken in considerable quantities. Lepidion eques for example was taken in 25 of the deeper hauls, no less than 1440 specimens being taken in all.

Several specimens of Melanostigma atlantica were obtained. Very few specimens of this species have been found in the E Atlantic.

Numerous specimens of Onogadus argenteus were taken at Sulisker.

The spiny eel Polyacanthonotus rissoanus was caught in some numbers at several stations - this had been very rarely recorded before in the NE Atlantic.

Other interesting fishes preserved for the National Collection included Gephyroberyx darwini, Xenodermichthys copei, Raja fyllae, Cottunculus sp., Synaphobranchus pinnatus, Hoplostethus atlanticus, all poorly represented in the British Museum (Natural History).

Invertebrates: Considerable numbers of cephalopods were caught at most stations and representative samples were retained by Mr Mattacola for Dr Clarke of the Plymouth Laboratory. A collection of other invertebrates was also made including penaeid and other crustacea for the Gatty Marine Laboratory.

Hydrography: A short hydrographic section of four stations was worked across the Wyville-Thomson Ridge from the north-east on 16 July. As in the previous year, cold water was found on the western flank of the ridge just below the crest, temperatures being 0.5 C at 10 m above the bottom, rising to 6.7°C at 30 m above the bottom. Sampling in the moat at the foot of the ridge showed only relatively warm water, but 2 n ml further to the south-west water of 4.0° to 4.6 C occupied the lowest 40m of the water-column in depths of about 900 m.

Subsequent stations and echo-sounding demonstrated that the moat does not continue at similar depths to the north-westward. Consequently, the occurrence of the 4°C water in the central basin suggests that the main overflow of Norwegian Sea Deep Water may have taken place closer to the junction of the Ymir Ridge with the Wyville-Thomson Ridge.

Echo-sounding was carried out in the vicinity of the col in the Ymir Ridge at approximately 60°N, 8°30'W. Five east-west lines of soundings were run to examine the possibility that a gap in the ridge might exist at this point, but the deepest soundings encountered at the crest of the col did not exceed 820 m, thus ruling out the possibility that the densest water in the basin could escape to the Rockall Channel by this route.

Test lowerings of the TSD recorder were made on 16 July, and confirmed that erroneous salinity values were produced as pressure increased. Further tests on two following days permitted the trouble to be traced to a faulty circuit board within the probe.

The acoustic release system was tested and cut the wire perfectly at a depth of 1000 m.

For reference purposes, a hydrographic series station was worked on 22 July in the vicinity of the shelf at 50°N. Temperatures in the 600-1000 m range (10.2°C to 9.2°C) were 1.3 to 1.5 deg C higher than at similar depths in 58°30'N.

Sea Water Samples: Twenty-six 50 litre samples of surface water and salinity samples were taken between the Foula Ground and Lands End for the Fisheries Radiobiological Laboratory.

Photographs: 36 black and white photographs, 130 colour slides and 600 ft of 16 mm colour film were exposed, showing the gear used, work on board and all the commoner fish caught as an aid to identification.

Photographs were also taken of specimens dissected to show how these deep water fish are adapted to their environment.

J P Bridger
2 August 1973

SEEN IN DRAFT: H A C

T F (Master)
G W A (Fishing Skipper)

DISTRIBUTION:

Basic List

Mr Bridger
Dr Shelton
Mr Ellett
Mr Whiting
Mr Read
Mr Perkins
Mr McDiarmid
Mr Fraser
Dr Wheeler
Mr Mattacola
Mr Urquhart
Mr Beatty
Mr Moore

r.v. CIROLANA , Cruise 6b / 1973