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

1974 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 5b/197

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

STAFF

J P Bridger  
M J Holden  
D J Ellett  
C J Garrod  
S Stevens  
R A Bray (B.M.)  
P J Smith (NERC)  
J Bronze (Sandwich Student)

DURATION

Left Stornoway 0600 h 11 June  
Arrived Immingham 0740 h 21 June  
All times are British Standard Time

LOCALITY

Deep water to the West of British Isles

AIMS

1. To re-survey the deep trawling grounds on the continental slope from Sulisker to Tory.
2. To survey the lower slopes of Rockall Bank for possible new deep trawling grounds.
3. To carry out a single hydrographic section in the Ymir Deep.
4. To collect fish specimens for Torry Research Station, the Departments of Radiography and Histology, Nuffield Institute of Comparative Medicine.
5. To collect material for a study of the infestation by parasites of deep water and commercial fish species.
6. To collect water samples for the Radiobiological Laboratory.

NARRATIVE

The changeover of scientific staff between Parts (a) and (b) of the cruise having been effected at Stornoway by 1200 h 10 June, westerly gales delayed sailing until 0600 h 11 June. Thereafter the weather remained near perfect for the remainder of the cruise, causing no further delays in the programme. Each day's work consisted of carrying out 3 or 4 trawl hauls of 1½ hour's duration each in 350-550 fathoms, then a

hydrographic section followed by an overnight steam of 90 to 150 miles to the next ground.

- 11 June: 3 hauls, all valid, between Sulisker and Flannan.
- 12 June: 3 hauls, all valid, on the Kilda ground.
- 13 June: 4 hauls all valid on the Tory ground.
- 14 June: 4 hauls only one of which was completely valid to the NW of Porcupine Bank. Of the other 3 hauls two came fast, resulting in extensive damage to the net and another had to be heaved back at once on encountering very foul ground. A line of 5 expendable bathythermograph observations (XBT) were made during the night of 14/15 June on passage to the south end of Rockall Bank and the results transmitted to Bracknell.
- 15 June: 3 hauls, of which two were valid and one came fast, but without seriously damaging the gear, were carried out at S. Rockall.
- 16 June: 3 hauls, all of which came fast, were made on the eastern slopes of Rockall Bank.
- 17 June: 4 hauls, of which two were valid, were made on the lower slopes of Rosemary Bank.
- 18 June: After carrying out hydrographic observations in the Ymir Deep two valid trawl hauls were made to the north of the Wyville-Thomson Ridge at the southern end of the Foula ground.
- 19 June: A single valid trawl haul and a hydrographic section were made at the northern end of the Sulisker ground before setting course for the Humber via the Pentland Firth at 0500 h.

After an uneventful passage the vessel dry docked at Immingham at 0740 h  
21 June.

## RESULTS

All the aims of the cruise were achieved although the high incidence of fasteners at Porcupine, Rockall and Rosemary Banks severely curtailed the number of valid observations in those areas.

Twenty-six trawl hauls were made in the 8 days spent on the grounds. The total fishing time, including 8 hauls of less than the standard  $1\frac{1}{2}$  hours, amounted to  $29\frac{1}{2}$  hours. The total catch amounted to 20.7 tonnes, a catch rate of 0.7 tonnes per hour, which is comparable with that on all the other cruises made in deep water to the west of Britain.

No new deep trawling grounds were found on the eastern slopes of Rockall Bank. The average catch rates there based on the undamaged hauls were less than a quarter of those obtained between Sulisker and Tory.

The total catch comprised.

Marketable species	1.2 tonnes	(6%)
Potentially marketable species	12.0 tonnes	(58%)
Sharks	4.1 tonnes	(20%)
Trash species	3.4 tonnes	(16%)

The quantity of marketable species taken was less than usual since blue ling were nowhere abundant on this survey, only 520 kg being taken in all. The Grenadier, Coryphaenoides rupestris occurred on all the grounds fished except Foula; the Kilda ground being most productive. Over 9.9 tons of this species were taken in all which, together with 1.1 tonnes of Black Scabbard Aphanopus carbo, provided the bulk of the potentially marketable species. Only one "Director" fish, Gephyroberyx darwinii, was taken on the entire cruise. As usual Smoothheads, Alepocephalus bairdi, and rabbit-fish, Chimaera monstrosa, made up the bulk of the trash species. All the usual species of sharks occurred but in smaller quantities than on many previous cruises.

109 samples of fish were measured amounting to over 6,800 fish including 3000 Grenadiers, 550 Scabbard, 1080 Sharks, 670 Rabbit-fish, 440 Smoothheads and over 1000 fish of other species.

Stratified otolith samples were taken from Grenadiers and Black Scabbard whenever these species were taken in reasonable quantities. The female sharks were examined for sexual maturity, fecundity and stomach contents.

128 fish of 37 different species were examined for parasites. The alimentary canal, urinary bladder, gall bladder, bile duct, gills, mesenteries, body cavity, skin and liver were examined and digenic and monogenetic trematodes, nematodes, cestodes and parasitic isopods were found and preserved for further examination.

Bottom temperatures at 1000 m ranged from  $-0.4^{\circ}\text{C}$  at Foula to  $8.5^{\circ}\text{C}$  at Porcupine. Bottom temperatures on the eastern slopes of Rockall Bank were similar to those along the continental slope, so that temperature alone does not explain the relative absence of deep water species in that area. The extremely low temperatures found to the north of the Wyville-Thomson Ridge are presumably responsible for the absence of all the deep water species with the exception of a very few rays and Greenland halibut.

A water-bottle cast was taken in the isolated Ymir Deep, just to the south of Faroe Bank, where observations were taken on a number of occasions in 1973. The temperatures of  $3.8^{\circ}\text{C}$  at 1680 m were the lowest obtained to date and appear to represent Norwegian Sea overflow with a less than 45% admixture of Atlantic Water from the upper layers. A short echo-sounder run along the axis of the deep confirmed that it consists of a single basin.

Sera samples were collected from 8 species for Dr A Hay, Histology Department and 6 species were deep frozen for Dr M Darling, Radiology Dept, Nuffield Institute.

Seven species were deep frozen for Dr Beckman and 6 fish of each of 7 species were gutted washed and deep frozen for the Humber Laboratory.

Seven sea water samples were taken for Radiobiological Laboratory.

A sea bird count was made at 36 observation stations for the seabird group Aberdeen University.

The new all steel otter boards provided by Humber St Andrews. appeared to function well, housed extremely well and gave catches comparable with previous cruises.

The headline height telemeter functioned correctly and gave some interesting results. It was not used at Porcupine, Rockall or Rosemary Banks due to the incidence of gear damage including a parted headline on a number of occasions.

J P Bridger  
11 July 1974

SEEN IN DRAFT: T Finn  
G W Argumont

INITIALLED: AJL

DISTRIBUTION

Basic list

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M J Holden  
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r.v. CIROLANA, Cruise 5b/1974

