

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

1993 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 10

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

STAFF: D Thompson (SIC)
P J Bromley
L Kell
T W Boon
J Dann
A M Watson
T Watson
B Rackham
P Welsby
N Strachan (Torry Research Station) 18 Oct-3 Nov
B McGregor (Torry Research Station) 18 Oct-3 Nov

DURATION: Departed Lowestoft 18 October
Arrived Lowestoft 15 November

LOCALITY: North Sea

AIMS:

1. To carry out a groundfish survey of the North Sea using a standard GOV trawl in order to obtain information on:
 - a. the distribution and abundance of all fish species;
 - b. the length and age distribution of commercially important species;
 - c. the distribution of fish in relation to their environment;
 - d. the distribution of macrobenthos and anthropogenic debris.
2. To collect surface and bottom temperature and salinity data using reversing bottles.
3. To collect material for fish identification courses.
4. To continuously monitor surface temperature and salinity.
5. To carry out trials with the Torry Research Station image analysis equipment for fish identification.
6. To collect samples of herring (*Clupea harengus*) for the study of Ichthyophonus disease.

7. To collect biological data from angler fish (*Lophius* spp.), pollack (*Pollachius pollachius*), tusk (*Brosme brosme*), catfish (*Anarhichus lupus*), hake (*Merluccius merluccius*), poor cod (*Trisopterus minutus*) and bib (*Trisopterus luscus*).
8. To provide fish samples for contaminant analysis as part of the National Monitoring Plan. (A Franklin)
9. To collect fish food.
10. To collect otoliths and gonads from four-bearded rockling (*Rhinonemus cimbrius*) for histological studies.
11. To carry out beam trawl stations for benthos in the central North Sea. (H Rees)
12. To collect whiting (*Merlangius merlangus*) tissue samples for the EC Molecular Genetics Programme. (D Thompson)
13. To carry out trials of the electronic measuring boards under field conditions.

NARRATIVE:

RV CIROLANA sailed from Lowestoft at 1000 h (GMT) on 18 October and after lying off Gorleston until compass calibrations had been carried out, steamed to the Southern Bight. The survey commenced at the most southerly of the International Bottom Trawl Survey stations at 0642 h on 19 October. Work proceeded up the eastern side of the North Sea (see track chart) until the evening of 2 November when RV CIROLANA steamed to Lerwick for a mid-cruise break. The typical working day consisted of three IBTS stations at each of which 30 minute tows with the GOV bottom trawl were carried out and hydrographic observations of surface and bottom salinities and temperature were taken. Whenever possible stations were worked during the hours of daylight. There were minor delays on 19 and 28 October due to gear damage and work was prevented for a few hours on 21 October due to bad weather. Beam trawl stations were carried out on 24, 25 and 26 October. RV CIROLANA docked at Lerwick at 0600 h on 3 November. The scientists from the Torry Research Station disembarked and their Image Analysis equipment was dismantled and unloaded.

After a break of 24 hours RV CIROLANA sailed at 1000 h on 4 November and proceeded to a station to the north of the Shetland Islands to continue the survey. Stations were worked consistently following the previously described procedures until 14 November. Gales during the latter part of the 9th restricted work to one IBTS station. Severe gales on the 14th forced work to be abandoned before fishing started. The weather continued to worsen and with the forecast of continuing gales the prospects of completing the last two stations of the survey became most improbable. At 1155 h the decision was made to return to Lowestoft and RV CIROLANA made passage docking at 1000 h on 15 November.

RESULTS:

Aim 1: Seventy-two IBTS stations were worked. Only at one station were two GOV tows necessary when damage to the gear made the first one invalid. All fish at each station were weighed and samples were measured; otoliths were taken from selected species at the agreed IBTS levels. All of the collected data were stored in the FSS database. The numbers of otoliths taken were as follows:

	IVA	IVB	IVC	TOTAL
Cod	340	116	14	470
Haddock	774	356	0	1130
Whiting	624	578	101	1303
Saithe	230	3	0	233
N. Pout	145	62	0	207
Plaice	45	125	60	230
Monk	20	4	0	24
Catfish	2	0	0	2
F.B. Rockling	4	18	0	22
Hake	16	1	0	17
Poor cod	34	28	24	86
Pollack	5	0	0	5
Bib	0	19	24	43
Herring	493	838	62	1393
Mackerel	230	101	119	450
Sprat	131	392	145	668
Total	3093	2641	549	6283

Weights and photographic records of macrobenthos were taken at each station. The weights and types of anthropogenic debris were recorded.

Apart from some minor modifications to the rigging of the GOV trawl made during the early stations to stabilise the performance of the net all the fishing gear and ancillary equipment functioned satisfactorily.

Aim 2: Surface and bottom salinities and temperatures were taken by Nansen bottle casts at each survey station.

Aim 3: A range of species were collected for the fish identification courses held at Lowestoft.

Aim 4: Surface temperature and salinity were monitored from the "Chelsea" unit. There were problems with the continuous logging of the data on to the computer as the programme needed daily resetting.

Aim 5: During Part 1 of the cruise the staff from the Torry Research Station tested their Image Analysis equipment designed for fish identification. Reference data were stored for a range of species. The ability of the equipment to discriminate into different species mixed samples of similarly sized small gadoids was tested.

Aim 6: Hearts from herring (*Clupea harengus*) were collected for the study of Ichthyophonous disease at FDL, Weymouth.

Aim 7: Biological samples were obtained from angler fish (*Lophius* spp.), pollack (*Pollachius pollachius*), tusk (*Brosme brosme*), catfish (*Anarhochus lupus*), hake (*Merluccius merluccius*), poor cod (*Trisopterus minutus*) and bib (*Trisopterus luscus*).

Aim 8: Samples of dabs (25 fish) were collected from 7 stations for A Franklin (Burnham-on-Crouch) as part of the National Monitoring Plan.

Aim 9: Fifty-five boxes of "O" group gadoids, squid, crabs and shrimps were collected for fish food.

Aim 10: Otoliths were collected from 22 four-bearded rocklings.

Aim 11: Benthos samples were collected by 5-minute 2 metre beam trawl tows at 3 stations in the eastern North Sea for H Rees (Burnham-on-Crouch) as part of the National Monitoring Plan. Time did not allow tows at two other specified positions but the benthos from the two nearest IBTS stations was preserved as substitutes.

Aim 12: Tissue samples (brain, heart, liver and muscle) were taken from 100 whiting at stations 16 and 104 for allozyme and DNA studies at Lowestoft, the University of East Anglia and University College, Cork.

Aim 13: The "Ichtyometer" electronic measuring board was tested during the first part of the trip and at one station comparisons of accuracy and speed were made between this board and its direct data storage system and the traditional method of measuring, recording and inputting of data.

Additional aims:

1. Various tissues from two monkfish were preserved for S Feist (FDL, Weymouth) as part of the study into the cause of abnormal pigmentation in some recent catches of this species.

2. Tissue samples from two tope (*Galeorhinus galeus*) were collected for taxonomic studies at the CSIRO Fisheries Laboratory at Hobart, Tasmania.

David Thompson
14 November 1993

SEEN IN DRAFT: J Harper (SFM)
B Chapman (Master)

INITIALLED: JGS

DISTRIBUTION:

Basic List +
D Thompson
P J Bromley
L Kell
T W Boon
J Dann
A M Watson
T Watson
B Rackham
P Welsby
N Strachan (TRS)
B McGregor (TRS)

Cirolana 10/93

