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

1994 RESEARCH VESSEL PROGRAMME

REPORT: RV CIROLANA: CRUISE 11

STAFF:

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R Ayers
C Whiting (21 Oct-10 Nov)
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Ms G Leaper (JNCC, 21 Oct-10 Nov)
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DURATION:

Left Lowestoft 0900h, 21 October 1994
Mid-cruise break: Lerwick 2130h, 9 November to 0700h, 11 November
Dry dock: South Shields 0500h to 1630h, 23 November
Arrived Lowestoft: 1200h, 24 November 1994.

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) Distribution and abundance of all fish species.
   b) Length and age distribution of commercially important species.
   c) Distribution of fish in relation to their environment.
   d) Distribution of macrobenthos and anthropogenic debris.
2. To collect material for fish identification courses.
3. To provide fish samples for contaminant analysis.
4. To collect samples of herring (*Clupea harengus*) for the study of Ichthyophonus disease.
5. To collect biological data from ling (*Molva molva*), catfish (*Anarhihcas lupus*), silvery pout (*Gadiculus argenteus*), poor cod (*Trisopterus minutus*), four-beard rockling (*Rhinonemus cimbrius*) and bib (*Trisopterus luscus*).
6. To collect fish food.
7. To investigate seabird feeding on discards (JNCC Aberdeen).
8. To carry out further trials of electronic data capture equipment.
9. To collect berried crabs.

10. To collect surface and bottom temperature and salinity data using reversing bottles.
11. To collect whiting tissue samples as part of the EC Molecular Genetics programme, and herring samples for molecular genetic research at Swansea University.
12. To make new estimates of weighing error variances.
13. Following completion of the grid, if time permits, to replicate a random selection of stations to estimate within survey variance.
14. To investigate the feasibility of improving benthos sampling.
15. To investigate whether ranging problems encountered with the 80 kg Pols balance used on Cirolana 9/94 were caused by a fault in the balance or whether the problems are common to both 80 kg Pols balances.
16. To collect whelk samples for studies on the effects of antifouling chemicals by Netherlands Institute for Sea Research.
17. To collect squid samples for biological studies by Cork University.

NARRATIVE:

Trawling began in the Thames estuary (rectangle 32F1 on attached chart of standard station positions), and by day 13, valid tows had been made at 35 stations in the southern half of the North Sea. Bad weather delayed further trawling until day 17. Stations were then worked northwards, on the Norwegian side, finishing in rectangle 51E9, north east of the Shetland Isles, before making a 36h mid-cruise-break in Lerwick. Starting in rectangle 51E8, just to the north of the Shetlands, stations were then worked southwards in the north central and north western parts of the North Sea until the last in rectangle 43E8, off Aberdeen. One station was fished on both days 27 and 31 in accordance with aim 13. On day 33, the last fishing day of the survey, tows were also repeated at 3 stations near Tyneside, previously fished on days 7 and 8. The ship dry docked on 23 November, and left later on the same day for Lowestoft. A computer drawn track of the whole cruise is attached.

RESULTS:

1. A total of 73 valid trawl stations was completed, four of them twice (aim 13). One station was abandoned (rectangle 44F4) after the belly of the trawl was ripped on successive shots. The usual biological sampling procedures were carried out on the target species. Benthos were sorted into taxonomic groups (aim 14) and weighed, counted and photographed. Anthropogenic debris was recorded.
2. Surface and bottom temperature and salinity data were collected from all but one of the trawl stations, and four of them were sampled twice (aim 13). A box of salinity samples was also collected for the purpose of calibrating the shipboard CTD device.
3. Specimens of many species were collected for use on the fish identification course (aim 2).
4. Samples of herring, haddock, mackerel and dab were collected, according to availability, from 7 specified stations near oil-fields in Scottish waters (aim 3).
5. Numerous herring samples were collected as available for the study of Ichthyophonus disease (aim 4).

6. Biological data were collected from a variety of minor species as targetted by the ICES IBTS Working Group (aim 5).

7. Quantities of small fish were frozen for use as fish food (aim 6).

8. JNCC bird observers maintained a continuous watch on sea bird numbers when conditions were adequate, i.e. good visibility, and vessel speed greater than 5 knots. Numerous successful discard experiments were conducted (aim 7). This work will be reported by the Netherland Institute for Sea Research.

9. A prototype of a bar-coded fish measuring board was trialled successfully by several members of the scientific staff (aim 8), and detailed corrections made to the software used to log and display the data. About half an hour's training was needed for each new operator. Measuring was slower than when using the traditional method, but since one person may be used instead of two, and data archiving and checking are unnecessary, total labour requirements are lower, and accuracy appears to be improved. Minor structural improvements for the equipment were suggested by the trials.

10. One berried crab (*Cancer pagurus*) was encountered and maintained in a deck tank for return to Lowestoft (aim 9).

11. Whiting and herring samples were collected in accordance with aim 11.

12. New estimates of weighing variances were made by repeatedly reweighing and retaring a single basket of fish. The new type of balance in use, the Pols, proved to be considerably superior to the Isleson, used on previous surveys. An 18 kg fish basket was weighed repeatedly with retaring to a give a standard error of less than 10g, a coefficient of variation of about half a percent. Ranging was not a problem, despite lumpy weather.

13. Four tows were repeated after intervals of several days (aim 13). Time of day, date, exact location of tow, and tide were allowed to vary randomly for the replicates. Dry docking arrangements prevented repetition of more tows.

14. Identification of benthos to groups and occasionally species was achieved, and weights recorded on specially designed forms for all but the earliest stations (aim 14). This was a considerable improvement over procedures on past cruises, but required additional staff time of the order of 0.75 hour for each station on average.

15. It was concluded that ranging problems encountered previously with the Pols balance were caused by wind through the scupper holes close to the balance platform (aim 15).

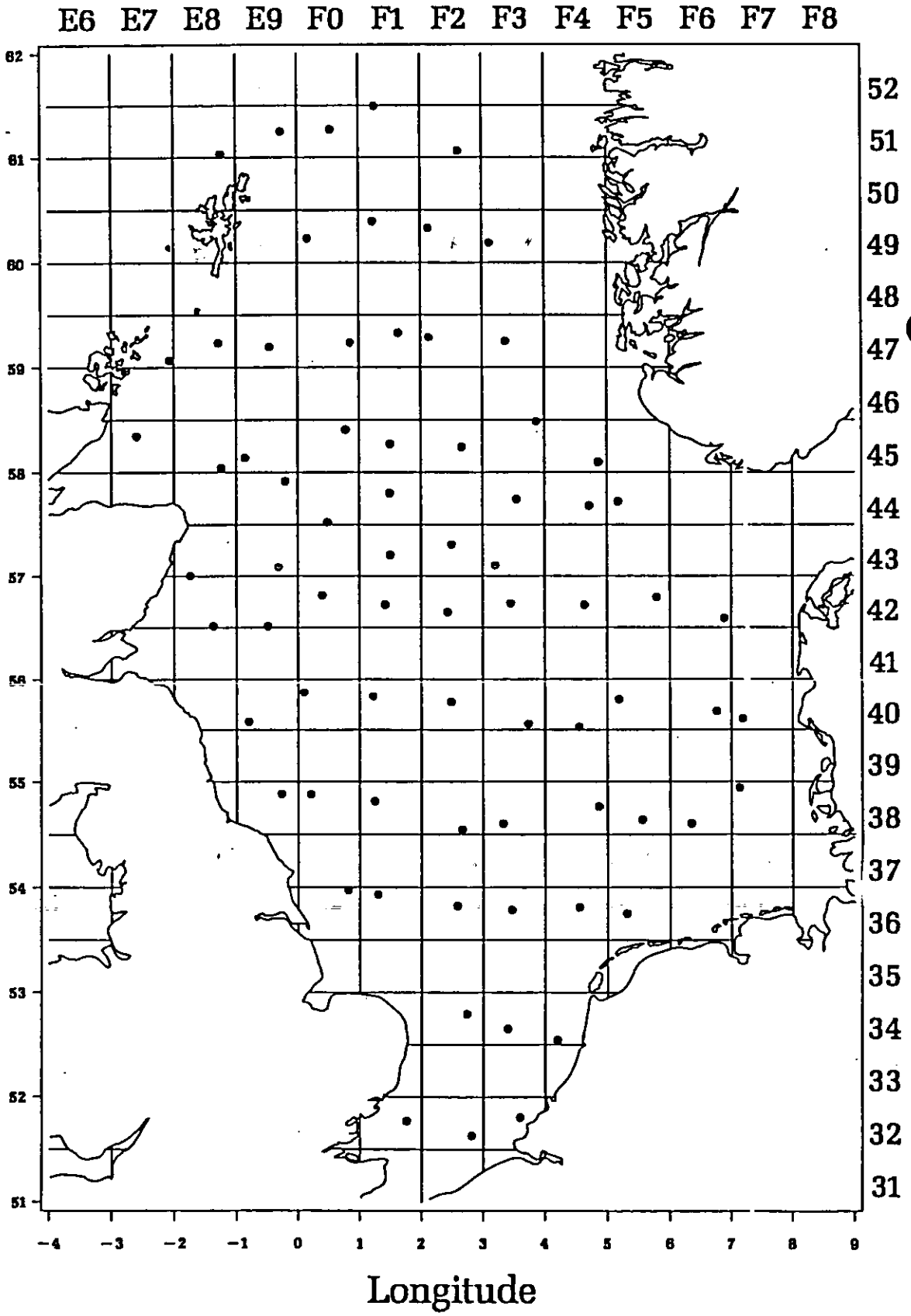
16. Samples of whelk and squid were preserved from almost all stations where they occurred (aims 16 & 17).

17. Samples of morlog were collected from trawl hauls for the British Geological Survey.

J. Cotter
23 November 1994.

Seen in draft and approved by Mr B Chapman, Master
Mr M Reeder, Fishing Skipper
C Barton, Joint Nature Conservation Committee
J Horwood, Deputy Director of Fisheries Research

MAFF IBTS Quarters 3 & 4
Standard Station Positions



21-9-94

CRUISE DATA FILE FOR JCPLOT

SHOWING :
CRUISE TRACK
STATION POSITION
STATION NUMBER
COASTLINE