

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

1974 RESEARCH VESSEL PROGRAMME

REPORT: RV CORELLA: CRUISE 13

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

STAFF

P G W Jones
A R Folkard
C W Baker

DURATION

Left Lowestoft 0930 h, 3 September

Arrived Lowestoft 0800 h, 16 September

All times are Greenwich Mean Time

LOCALITY

Southern North Sea

AIM

To participate in an International Workshop with the Netherlands Institute for Sea Research Texel, the Free University of Brussels and the University of Liege to study methods of collecting and analysing sea water for trace metal content.

NARRATIVE

The vessel's departure from Lowestoft was delayed by one tide owing to bad weather. CORELLA sailed at 0930 h, 3 September but anchored off Corton between 1030 and 1715 h owing to gale force winds. The vessel then proceeded to Den Helder, docking at 0900 h, 4 September.

For most of the remaining period, CORELLA was based at Den Helder and made short cruises to sea to collect water for intercalibration purposes. During the first week, however, severe gales curtailed these activities. Water was collected in the Marsdiep (1200-1245 h, 5 September), off Den Helder (0645-1200 h, 7 September and 0815-1200 h, 12 September) and off IJmuiden (0815-1600 h, 10 September). Belgian and Dutch scientists joined the vessel for some of these cruises. During the period in port, a MAFF hydrographic buoy that had been recovered locally was delivered to the vessel.

CORELLA finally departed from Den Helder at 1630 h, 14 September and proceeded to a position off the Hook of Holland. Water samples were collected for a comparison of surface sampling techniques between the Hook of Holland (2300 h, 14 September) and the Thames Estuary (1915 h, 15 September). The vessel then returned to Lowestoft, docking at 0800 h, 16 September.

RESULTS

Techniques for both the laboratory analysis of trace metals and the collection of samples at sea were tested.

The participants used the following analytical techniques:-

MAFF Hydrography and Texel: MIBK extraction

MAFF Radiobiology: Chloroform extraction

Texel and Liege: Anodic stripping voltametry

Brussels: Chelex ion exchange.

The metals analysed were zinc, copper, cadmium and nickel. The levels of nickel present, were, however, barely detectable in most samples.

The extraction methods gave comparable results. Small variations within the three groups were not systematic and were within the expected precision of the methods.

The number of analyses by chelex ion exchange resin was small. Values showed some scatter when compared with those obtained by the extraction method but were generally within the same order of magnitude.

The electrochemical technique employing anodic stripping generally gave high values compared with those obtained by organic extraction. This feature was particularly evident in the measurement of cadmium, which was approximately an order of magnitude greater by anodic stripping.

The sea water filtration unit used by MAFF was compared at sea with the equipment used by the Texel laboratory. The latter was shown to leach zinc and copper into samples during filtration.

MISCELLANEOUS

For the comparison of surface sampling techniques the methods employed were collection by bucket, pump and Niskin bottle. The samples were deep frozen and returned to Lowestoft for analysis.

Samples for the analysis of mercury by the Fisheries Radiobiological Laboratory were collected at selected stations.

A phytoplankton sample for Dr Dodge of Birkbeck College, London was collected 10 n miles off Lowestoft.

P G W Jones
23 September 1974

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INITIALLED: AJL

DISTRIBUTION:

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