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the Laboratory.

## CRUISE REPORT

## FRS EXPLORER

11 JULY-6 AUGUST 1971

## OBJECTIVES

1. To collect water, plankton, fish, benthos and sediment samples for heavy metal analysis.
2. To make continuous surveys of temperature, salinity, nitrate and chlorophyll concentrations.
3. To measure currents in the sea area between Arran and the Ayrshire coast using current meters and parachute drogues.
4. To examine and sample bottom sediments in the vicinity of Garrochhead using underwater TV.
5. To collect samples of sea water at a number of fixed stations in the Clyde area for salinity, temperature, nutrient and dissolved oxygen analysis.
6. Uplift and relay moored current meter at Collieston.

## NARRATIVE

All but one of the objectives were successfully completed. Owing to a faulty navigation light the Collieston mooring was not re-laid.

A combination of good weather and trouble-free scientific instrumentation allowed the following additional sampling work.

1. Current measurement using parachute drogues in the area of the sill at the entrance to the Clyde.
2. Collection of flatfish at several beach areas between Ardrossan and Troon using FRV "Sprat".
3. Inshore survey of the nitrate content of waters in the area of the nylon work's pipeline.
4. A number of hydrographic stations were done during passage back to Aberdeen to delineate area of mixing between coastal and oceanic waters.

Passage from Aberdeen to the Clyde area was deliberately delayed some 12 hours for investigation of the area around Aberdeen Banks. Standing Instructions for "fish kill" were carried out at a number of stations in this area.

## RESULTS TO DATE

1. Chlorophyll levels within the firth were much higher than the chlorophyll levels found in the sea areas outside the sill. In particular, chlorophyll levels in the Irvine Bay waters were found to be up to 15 times as high as outside waters.
2. Examination of the dumping grounds at Garrochhead using underwater TV visually confirmed the results previously obtained from biological examination of grab samples in this area.
3. Current meter observation confirmed previous measurements of very small tidal movements and the absence of strong winds throughout the cruise was reflected in current meter records which were seldom in excess of 10 cm/sec. At each of the current meter positions the overall drift appeared to be in the north-west direction.

G TOPPING  
31 August 1971