

In Confidence: Not to be quoted without reference to the Laboratory

CRUISE REPORT

FRV "MARA"

11 - 29 August 1975

Objectives

Part 1

- (a) To investigate the potential of two sites in the vicinity of Bell Rock and St Abbs Head as sites for sewage sludge dumping.
- (b) To sample a transect between Middle Craig and Joppa in the Firth of Forth for comparison with previously collected intertidal sampling.

Part II

To investigate mercury, copper, lead, zinc and cadmium in water, particulate matter and surface film at fourteen stations in the Firth of Forth.

Narrative

FRV "Mara" left Buckie on 11 August and proceeded to Dundee. Due to fog "Mara" dropped anchor off the Tay estuary that night, arriving at Dundee before noon on the 12 August, when Messrs D C Moore, F J Moore and Shand joined her.

Due to fog, sailing was delayed until 10.30 hours on 13 August, the ship reaching the survey area and starting work at 13.30 hours. Work continued until the 20 August only returning to Methil for the weekend (16 - 17 August) and to permit Mr Shand's return to Aberdeen on the morning of the 20 August. On 21 August further survey work was undertaken at Middle Craig in the Firth of Forth. On this occasion Mrs M Martyn of Fisheries Division J accompanied "Mara" in order to gain first hand knowledge of research ship working. Messrs. D C Moore and F J Moore left "Mara" on 22 August.

Messrs Davies, Shepherd & McKie joined "Mara" on 24 August. The survey programme was begun on 25 August and completed on 26 August. An extra series of stations was worked on 27 August, and two cages of shellfish laid in March were hauled, examined and replaced. Thanks to the excellent weather all surface sampling was performed from a small boat. The scientific staff left "Mara" on the afternoon of 27 August, and "Mara" left Methil for Buckie.

Results

Part I

- (a) The surveys of each area revealed that both were relatively flat with separate but homogeneous types of sediment, that of Bell Rock being silty sand and that of St Abbs Head being muddy sand. The dominant animals in the Agassiz Trawl hauls were Asterias rubens, Pagurus sp (both grounds), Alcyonium sp (Bell Rock) and Pandalus sp (St Abbs Head). Over the two areas 86 macrobenthos samples and 18 meiobenthos samples were taken along with sediment samples for physical and chemical analysis. Video tape recordings were also made of the sea bed.
- (b) The sampling of the area between Middle Craig and Joppa yielded a total of 20 macrobenthos and 7 soil samples. The sediments were thick black mud throughout with some shell gravel mixed with the mud in places. There were no signs of anoxia but the mud did have an oily smell and an oily sheen on the surface.

Results (Cont)

Part II

The concentrations of dissolved lead and copper in the Firth are higher than in clean areas, whereas the mercury concentration, except west of Edinburgh, is not significantly enhanced.

D C Moore

I M Davies

8 December 1975

Seen in draft - W T Mair