

CRUISE REPORT - F R S SCOTIA

12 August - 2 September 1970.

Objectives

a) To lay 4 current meter moorings at 3, 6, 9 and 40 kms off the Ythan Estuary.

b) To carry out a detailed environmental survey in the area, involving studies of the surface T and S, chlorophyll A, nitrate and silicate; vertical temperature and salinity measurements and the collection of zooplankton.

c) To test the efficiency of the transponding radio buoys.

d) To experiment with a single wire taut moorings system.

Narrative

Because of various difficulties SCOTIA was unable to sail until 2230 on the 14th August and proceeded immediately to lay the 4 current meter moorings. SCOTIA was forced to dodge on the 16th because of poor weather but apart from this, work proceeded undisturbed until the 20th when the ship had to put into Aberdeen to land a sick crewman. SCOTIA sailed from the upper dock the following day but 15 minutes later had to tie up in the lower dock with steering trouble. The fault was rectified the following day and SCOTIA finally sailed on the evening of the 22nd. Work proceeded continuously from then until a few hours before she put into Aberdeen on the afternoon tide of the 1st September.

Results

a) Current measurements

The quality of the records from the current meters is not yet known. Of the 4 Plessey meters used one was lost (40 km position) because of interference by a trawler and another (9 km position) was found by chance suspended from a subsurface buoy 5 miles to the north of the mooring position. On this occasion a seine-netter was responsible, apparently chopping the instrument wire in order to free his ropes. The two Aanderaa current meters laid at the 9 and 40 kms suffered some damage.

b) Hydrography

Initially, because of the effect of recent gales, hydrographic surface features were fairly uniform over the area but persistently calm weather later resulted in much patchiness towards the end of the cruise. There was no trace however of the very strong thermal boundary that was present last year 7 miles offshore. The effects of the River Dee, however, were evident as much as 12 miles offshore, where the surface salinity was only 33.8‰ in a 2 mile wide band normal to the shoreline. This salinity was 0.9‰ lower than the ambient salinity. Another salinity boundary in the area marked the transition between North Sea waters and waters of fairly recent oceanic origin. This boundary with a salinity of 34.9‰/35.1‰ was found 20 miles off Rattray Head and followed the 50 fathom contour marking the northern edge of Turbot Bank.

Vertical temperature and salinity measurements were usually made with reversers but, in order to quantify the thermocline fluctuations which were apparent from the reverser measurements, a station adjacent to the 40 km current meter position was repeated 60 times, using the T.S.D. recorder. The thermocline fluctuations were observed to have the same period as the vertical tide but 180° out of phase with it. The amplitude of the fluctuations was about 20 m in a depth of water of 100 m.

c) Radio buoys

Trials on the performance of the radio buoys were continued.

d) Single wire mooring

Tests with this rig were satisfactory and it should be possible to go ahead and lay buoys in water of intermediate depths with or without an anchor release system.

H D Dooley

15 September 1970