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to the Laboratory

## CRUISE REPORT

FRV MARA

27 March - 28 April 1972

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Objective : To conduct a comparative fishing experiment for NEPHROPS using a beam trawl fitted with electric ticklers. The electrical stimulation was intended to force NEPHROPS from their burrows, and the design parameters were based on the aquarium observations of the response of burrowed NEPHROPS to electric fields.

General: Mara was based in Buckie and trawled in the South Deep area of the Moray Firth from 2°40'W to 3°48'W. Nine days were lost, wholly or partially, due to bad weather. One day was given over to the C.O.I. film unit, and one day was used for divers to make observations on the beam trawl, in Spey Bay.

Procedure: An 18 feet beam trawl was used in the experiment. This was fitted with wide skids to carry it over the mud, and the beam was a flotation chamber. The pulse generator and electrode array tested in the previous cruise were used in the first series of experimental hauls. The electrodes consisted of 6 lengths of stainless steel warp, slung 2 feet apart behind the beam, connected alternately positive and negative, and towed parallel to the direction of motion. The pulse generator mounted on the beam developed 24V exponential pulses, with a 40 mS time constant, across the electrodes. Power was supplied to the pulse generator at 230V via a high tensile cable from the ship. The rigging of the electrodes, bridles and power cable was checked by divers and found to be satisfactory. The observations were made on a sandy bottom at a depth of 60 feet. The electrodes were seen to be in contact with the sea bed during towing. In order to maximise the time during which NEPHROPS are exposed to the field, the trawl should be towed at around 1 knot. It proved difficult to do this in the adverse weather conditions in the first part of the cruise, but later, towing speeds of 1 knot or less were maintained.

Results: In general, catch rates were poor. The results are therefore inconclusive and no statement can be made about variations in the size and sex composition of the catch due to the electric field. The low catch rate was attributed to the small opening and slow towing speed of the beam trawl. It had been hoped, based on the results of the previous cruise, that catch rates would exceed 50/hr with this gear, but seldom did so in practice. A higher powered pulse generator, developing 48V across the electrodes, was then used, but with no greater success. Although it is not possible to be categorical, the electric field, as used in this experiment, did not appear to have the dramatic effects anticipated, on the basis of the aquarium observations. It is possible that the grounds covered had a very low density of NEPHROPS, but this is thought to be unlikely in view of the continuing commercial effort in the area, and the occasional good tows obtained with the beam trawl. Before attempting any further electrified trawling for NEPHROPS it will be necessary to thoroughly