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reference to the laboratory.

## Cruise Report

FRS Clupea

14 - 30 November 1972

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## Objectives

1. To continue experiments on the response of Nephrops to electric fields using divers and underwater TV.
2. To use an electrified beam trawl to fish for plaice. A divided net was constructed with electrified ticklers on one side only so that a continuous comparative fishing experiment could be conducted. It was intended to use divers to observe the operation of the gear in shallow water.

## General

Clupea sailed from Buckie on 14 November and proceeded to the Minch via the Pentland Firth. Bad weather severely limited operations, and apart from two trial hauls to check shooting and hauling arrangements and the operation of the gear, the second objective had to be abandoned. Observations on Nephrops behaviour were made in Little Loch Broom and Loch Shell.

## Results

In Little Loch Broom work was continued on the shallow water Nephrops colony studied earlier in the year. Divers applied pulsed electric fields to burrows thought to be occupied by Nephrops, using a portable pulse generator and electrode frame. The stimulus used was mainly 1 second long bursts of 50 Hz DC pulses at a frequency of 0.5 Hz. Unlike the stimulus used in previous tests, this proved highly effective in inducing the animals to leave their burrows. A total of 45 burrows were tested, and 18 of these were found to be occupied by Nephrops. Gobiid fish occupied some of the remaining burrows, and others displayed no sign of occupancy when the electric field was applied. Since only burrows thought to be Nephrops burrows were tested, it must be presumed that though apparently unoccupied some at least must have contained Nephrops. 12 Nephrops were forced from the 18 burrows known to be occupied, and half of these emerged immediately the field was applied (say in 1 to 2 seconds) and the others took longer to emerge. The observed behaviour corresponded well with that seen in aquarium experiments in that most of the animals emerged by using a rapid tail flick. Several of the events were recorded on film.

TV was most successfully used to observe the reactions of Nephrops to electric fields in Loch Shell, and about 40 events have been recorded on video-tape.

Peter A M Stewart  
7 December 1972