CRUISE REPORT

FRV "MARA"

4 August - 12 September 1969

OBJECTIVES

1. Observation and photography of the behaviour of round and flatfish during the process of seine-netting.

2. Observation and recording of the changes of shape of the gear and sinking rates of seine ropes.

3. Underwater photometry for studies of underwater visibility in relation to fish behaviour.

4. Underwater tagging during the second part of the trip.

PERSONNEL

C C Hemmings, SSO; J Main, EO; Miss M V Moodie, SA; G J Booth, SA constituted the full-time diving group, while J R G Hislop, SO; N Langham, SO; I Murray, AEO; G Sangster, SA; W Duncan, SA; A Bell, Photogr. were present as part-time members of the diving team. A Corrigall, EO; R Kingsley, visiting scientist; C C Roworth, vacation student, were present part-time to investigate seine net performance from the surface. In addition a number of visitors were accommodated for one or more days, including Dr Corbin and Mr Creese from MBA Plymouth, Mr T Brown from Fisheries Division, DAFS and one or two local seine-net fishermen.

NARRATIVE

Most diving and scientific gear had remained in the Buckie store from the previous cruise (16 June to 4 July) and 'Mara' retained the seine rope coilers. Seine net hauls were made in Spey Bay in 10-14 fathoms depth, and on the 'Bellings' ground NE of Buckie in 17-20 fathoms, using the techniques tested during the first cruise. Onshore winds or fog prevented working on 7 out of the 30 working days of the cruise.

SEINE NET INVESTIGATIONS

Normal diving techniques were used with a telephone link to a tape recorder and head set in the rubber boat which acted as diving tender. The spoken commentaries from these hauls were supplemented with still photographs and some cine film taken by Nikonos, Hasselblad and Telford cameras. The seine was shot 57 times with divers making observations resulting in 44 recorded commentaries. The remaining 13 comprised hauls where there was an unknown break in the telephone cable or when the gear came fast and invalidated the haul.

Further observations were made of the effect on haddock behaviour of gear with drastic modifications. The use of a pair of wings minus bag confirmed that haddock keep station with the wings, and experiments with only one wing showed that they will keep station when they can only see one wing. A further important observation was that haddock did not change level greatly when the net approached them, ie fish close to the ground, or at headline height, remained at those levels when they started to swim with the net.

Sinking rates of ropes were determined either by a diver with a watch, or

a diver in communication with the surface by telephone following the rope down as it sank. Surface studies were made of warp divergence and depression angles, and the speed of the gear through the water. The warp angles were calculated from measurements derived from photographs taken during the haul. The determination of the speed of the gear through the water was not successful. Despite the most strenuous efforts it proved impossible to use a fragile laboratory flowmeter tied onto a seine net and obtain error-free readings in the rubber boat.

UNDERWATER PHOTOMETRY AND VISIBILITY

Further data were obtained for the calculation of α, the beam attenuation coefficient, and K, the diffuse attenuation coefficient, which are of fundamental importance in the investigation of underwater visibility.

UNDERWATER TAGGING

Haddock were tagged at the end of nine hauls, after the codend had been detached underwater. In this way 271 fish were tagged and released at a depth of approximately 12 fathoms without being taken to the surface. 66 plaice were released in the path of the net for study of recapture rates.

C C HEMMINGS
29.10.69