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

FRV "MARA"

CRUISE 8/78

REPORT

7-18 AUGUST 1978

Net studied Stuart 16 fm Prawn Trawl - 100 HP.

Aims

To investigate practical methods of guiding young fish out of a prawn trawl when used to catch Nephrops norvegicus and other demersal shellfish.

Results

Experiments were successfully carried out on 9 days of this 10 day cruise. Two prawn trawls one with 70 mm mesh and a similar trawl with 115 mm top panel were adjusted until fishing efficiently with 15 fm sweeps. Both trawls showed a surplus in the width of netting in the top panel. During fishing, it was strained longitudinally and not laterally. The tops of the nets were flat behind the headline (height 2 ft); no bulge developed in the top of the net. Many roundfish were seen in both nets, whiting, sandeels and sprats dropped back into the codend while swimming gently forwards positioned just under the top panel of the net; flat fish on the other hand drop back swimming forwards close to the belly netting panel. Measurements of fish in the codend showed that fish smaller than 15 cm escaped from the codend meshes.

Experiments creating various types of opening in the top of the net were relatively successful in releasing undamaged a proportion of the fish passing into the mouth of the gear. It was important that the aperture was made as wide as the gear. If continuous channels remained under the top edges of the gear, fish were guided back to the codend past the aperture. Parallel rising white strings set to rise at about 30° from a transverse line on the belly of the net to the trailing edge of the aperture were spaced at 3 mesh intervals right across the gear and were effective in guiding the majority of small roundfish up to the aperture. Roundfish typically dropped back to the contrasting white parallel lines swimming forwards while rising towards the aperture. Many flatfish were observed including plaice, lemon sole, dabs and brill and none reacted to the rising strings nor to the aperture in the top of the net. Flatfish facing forwards dropped back towards the codend between the rising strings. Video tapes illustrating these fish reactions and the gear behaviour were made.

The evolved prawn trawl with the aperture and rising strings was shown to be effective in catching Nephrops at 50 fms on the southern deep ground. An attempt to observe Nephrops reactions in shallower Nephrops grounds failed. However, with the aperture open or closed a number of roundfish species were still caught. A large mesh top panel would be more effective if made to curve downwards towards the codend. In the present net the fish were unable to rise through this horizontal panel while swimming horizontally. A horizontal top panel should be tailored so that the length of the mesh openings is similar to the fish length. This suggests that openings of at least a 300 mm mesh top panel would be required to release 15 cm fish undamaged. A higher headline would allow a vertical taper and a bulge in the top panel could then be created in front of the codend funnel allowing fish to pass out through a smaller mesh while still horizontal.

Seen in draft James A Calder
Relief OIC

C S Wardle
12 September 1978