

In Confidence: Not to be quoted without
reference to the Laboratory.

CRUISE REPORT

F.R.S. "Explorer"

12th - 27th May, 1969.

Principal objective

Tagging of roundfish, caught by trawl with a detachable codend.

Narrative

"Explorer" sailed from Aberdeen at 2400 hours on May 12th and proceeded to a position approximately 90 miles NNE Aberdeen. On May 13th and 14th, visibility was extremely poor, owing to extensive fog patches and this made it impossible to use the detachable codend. During this period, adjustments were made to the buoyancy of the codends and hauls were made by trawl using an ordinary codend to locate suitable concentrations of marketable sized roundfish for tagging. Various positions were tried but at all of them large catches of small haddock of the 1967 year class were obtained. These fish were very abundant throughout the area sampled and outnumbered the rest of the catch by about 10 to 1 by weight. However, since this year class was known to be abundant throughout the whole of the northern North Sea, no attempt was made to find other grounds yielding larger catches of marketable sized fish and work was conducted in the vicinity of latitude 58°18'N longitude 2°14'W for the remainder of the time. "Explorer" returned to Aberdeen at 0830 hours on May 26th.

Experiments using detachable codends

Two detachable codends were used. They were detached from consecutive hauls in 35-40 fm of water and raised slowly to the surface over periods of about 32 hours. Each codend was fitted with a door covered with a mesh of suitable size to permit haddock of the 1967 year class to escape, whilst retaining larger fish. Even so, hauls had to be kept down to about 20 minutes' duration to avoid overcrowding the fish in the codend. As a result, the numbers of marketable sized haddock in the catches were disappointingly small. Of those caught, about two-thirds of the haddock and whiting were found to be swimming strongly and, from all outward appearances, were in good condition. The majority of these fish were tagged, using LIS222 to make them easy to hold during the tagging operation, and were then placed in a release tank for periods from 2 to 12 hours before they were released. The tagged fish were then lowered to the sea bed in this tank and released by opening it within half an hour of its reaching the sea-bed with a time release mechanism. Before release any dead fish were removed from the tank. Altogether 193 haddock and 134 whiting were tagged in this way. Of these, 3 haddock and 1 whiting died after being tagged and before they were released.

Experiments using normal codends

During some of the periods while the detachable codends were being raised to the surface, a number of hauls for tagging purposes were made by trawl fitted with a normal codend. To minimise damage to the fish, hauls were of short duration, 15-20 minutes, and at the end of each haul the codend was emptied directly into a tank of water. Marketable sized haddock and whiting that appeared to be in good condition were then selected and kept in deck tanks for a minimum period of 24 hours. During this period about 30% of them died. The remainder were then tagged in the same way as those captured in the detachable codend. Altogether 230 haddock and 127 whiting were tagged in this way, of which 113 of the haddock and 83 of the whiting died before release.

Physiological experiments

Freshly caught haddock were rested in deck tanks for short periods and were then chased to exhaustion in order to study the lactate metabolism in the muscle and blood. To this end blood samples were withdrawn from the caudal vein by syringe immediately after chasing. At 3 hours the fish were sacrificed and blood taken for lactate, glucose and corticoid analyses. Muscle blocks were frozen in liquid nitrogen for muscle lactate determination. Tranquillized and untranquillized fish were compared by this technique.

Grab sampling

During the cruise, samples were taken with the Smith-McIntyre grab to obtain live benthic organisms for feeding experiments.

At the end of the cruise about 100 small haddock, 11 whiting and 12 dabs were brought back alive to the Laboratory. Some of the haddock were for Stirling University and the remainder plus the whiting and dabs were for the use of Marine Laboratory staff. These fish were all caught in the detachable codend, and, of the fish transported to the Marine Laboratory about half of all three species were feeding on their second day in the aquarium. Up to three weeks later there had been no deaths, but two haddock and two whiting had been rejected as sub-standard because of scale damage.

R. JONES
16th June, 1969.