

IN CONFIDENCE:- Not to be quoted without reference to the Laboratory.

CRUISE REPORT

F.R.V. "MARA"

16 February - 5 March 1976

- Objectives
- (1) To conduct comparative fishing trials with a Gourock Midwater Trawl fitted with headline transducer, to compare the effects of codends of 20 mm and 12 mm nominal size on the length composition of the sprat catch.
 - (2) To conduct a pelagic trawling and echosounding survey of Moray Firth and Buchan coastal waters.

Narrative

"Mara" left Buckie at 1300 on 16 February and made for Aberdeen to collect pelagic trawling weights. Owing to deteriorating weather "Mara" put into Fraserburgh instead and the weights were sent up by van early the next morning. "Mara" then proceeded to Troup Head to commence an echo-sounder search in an area where sprat shoals had been reported the previous week. The net was shot twice with the 20 mm codend on small 'marks', but only a few sprats were taken and the remainder of the day was spent searching the coastal waters north and west of Fraserburgh. No further 'marks' were recorded and "Mara" returned to Fraserburgh.

The following morning "Mara" searched eastwards and then southwards along the coast. Off Cruden Bay echo traces were found and these got progressively denser as "Mara" steamed further south. Off Collieston the net was shot using the 20 mm codend and a catch of $3/4$ basket of sprats was obtained. Five miles due east of the Ythan estuary $13\frac{1}{2}$ baskets of sprats were caught using the same 20 mm codend. A different Gourock midwater trawl fitted with a 12 mm codend was then shackled on and gave a catch of about 50 baskets of sprats over the same tow as the previous haul. "Mara" then made for Aberdeen where she docked at 1815.

Since the mesh size in the body of the two Gourock midwater trawls was found to differ considerably, it was considered that comparisons of codend mesh selection data obtained using these trawls would not be strictly valid. As it was not possible to obtain identical Gourock trawls from the Laboratory it was decided to use one net throughout the experiments. Since the lacing and unlacing of nets is time consuming, the 20 mm codend was laced on to the end of the existing 12 mm codend on alternate hauls.

"Mara" left Aberdeen at 0745 on 19 February and completed three sets of paired trawls using first the 20 mm codend and then the 12 mm codend. The same towing path was followed as closely as possible. Catches of up to about 60 baskets were obtained in a half hour haul, and after completing the six hauls "Mara" returned to Aberdeen. The next day "Mara" completed another pair of hauls in the same area before docking in Aberdeen for the weekend at 1220.

On 23 February "Mara" was unable to leave port because of severe weather. One of the Gourock trawls was rigged so that it could be used with a 20 mm codend and a removable 12 mm cover. The following day "Mara" steamed for the Moray Firth because of a heavy ground swell off Aberdeen, making one haul en route in the area east of Collieston. Very few sprats were caught, however, and "Mara" continued searching up the coast before docking in Fraserburgh.

On 25 February a search was made in the coastal waters between Fraserburgh and Buckie in extremely poor conditions. No good 'marks' were encountered and "Mara" proceeded to Buckie. The following day "Mara" conducted a search pattern between Buckie and Burghead. No good 'marks' were found, but the net minus the codend cover was shot unsuccessfully about five miles north of Lossiemouth on a small 'mark'. The next day searching continued north-east of Buckie. No 'marks' were seen and at 1335 "Mara" redocked at Buckie for the weekend.

On 1 March "Mara" was unable to leave harbour because of severe weather, but the following day a search was carried out in an area 12-13 miles off the coast from Buckie to Peterhead. No significant echo traces were encountered and "Mara" docked in Peterhead. The following morning "Mara" headed north for Rattray Head and then in a heavy swell searched the area 20-30 miles offshore between Rattray and Banff. Because unsuitable tides made docking impossible in the evening, the search was continued as far as Burghead Bay where "Mara" anchored overnight. The following morning the search was continued between Nairn and Cromarty. "Mara" towed through some 'marks' just outside the Sutors of Cromarty, but only a handful of sprats was retained by the 20 mm mesh codend. "Mara" continued searching to Tarbat Ness and then across to Buckie where she docked at 1800 for the end of the cruise.

Results and Conclusions

(1) The primary objective of the cruise was to compare the selective properties of 20 mm and 12 mm codends. Because of problems of gear comparability, however, the data collected present problems in working out selection parameters.

The length composition of the sprats was rather below that required to give a reliable selection curve with the 20 mm codend. With an overall mode of 5.5 cms a major proportion of the catch was not retained by the 20 mm codend. Catches of $\frac{1}{3}$, $\frac{3}{4}$, $2\frac{3}{4}$, $\frac{2}{3}$ of a basket respectively, taken with the 20 mm codend, compared with catch of $\frac{3}{4}$, 3, 60, 30 baskets respectively, taken with the 12 mm codend in 4 sets of paired hauls.

Adverse weather also hindered fishing operations and for part of the cruise "Mara" was forced to work in the Moray Firth when the main sprat concentrations had moved further south.

(2) The secondary objective of the cruise was to search for sprat concentrations in the offshore areas of the Moray Firth. Despite the limitations imposed by bad weather, considerable offshore searching was carried out and very few marks were observed in these areas.

J A MORRISON
25.5.76

Seen in draft - W T Mair