

MINISTRY OF AGRICULTURE, FISHERIES AND FOOD  
FISHERIES LABORATORY, LOWESTOFT, SUFFOLK, ENGLAND

1980 RESEARCH VESSEL PROGRAMME

REPORT: FV MARRIE JACOB (Double Beam Trawler)

(PROVISIONAL: Not to be quoted without prior reference to the author)

STAFF

M R Vince  
T W Boon

DURATION

24 March-1 April

LOCALITY

Irish Sea

AIMS

- 1 To collect data on the relationship between total cod-end catch composition and the condition of fish, with particular emphasis on those below the selection size of the cod-end in use.
- 2 To achieve the primary aim using a double beam trawler fishing commercially and using cod-ends not encumbered by covers as used on previous charter trips.
- 3 To assess discard rates.
- 4 To obtain photographic evidence of fish condition relevant to debris content of cod-end catches when possible.

NARRATIVE

MARRIE JACOB sailed from Fleetwood at 1830 h 24 March and fishing commenced three hours later approximately 25 miles west of Fleetwood (Ground A). Fifteen hauls of three hours duration were made on these grounds before a move was made at 0200 h 27 March. Two hauls were made on grounds between 15 and 30 miles SSW of the Chickens. A further 26 hauls of between 3 and 3½ hours duration were made on a comparatively small area of ground situated approximately 26 miles east of Lambay Island (Ground B).

A total of 43 hauls was made; on five of these serious damage to one of the nets was sustained. The damage was usually restricted to the belly of the net and occasional broken tickler chain. The weather was on the whole reasonable, apart from the last 24 hours when a southerly gale made conditions uncomfortable.

MARRIE JACOB docked at Fleetwood at 0100 h 1 April and landed her catch that same morning. The staff returned to Lowestoft later that day.

## GEAR

Two 8 metre beams rigged with similar nylon 'V' nets were used. The tickler chain array consisted of six or eight chains between the beam heads and six necklace ticklers. Both nets were rigged with shell traps and were fished open throughout the trip. A difference between the rigging of the groundrope and positioning of the shell trap on the port side net was thought to cause the difference in debris catch (see Results). The cod-ends were those normally used by the vessel constructed of double braided nylon. The port side cod-end was soft material similar to cod-ends used on previous double-beam trawl selectivity experiments. The average mesh size of this cod-end was 78 mm, although the eighth and ninth row of meshes up from the cod-line were of the order of 90 mm due to a join. The starboard cod-end was braided in a hard nylon and had an average mesh size of 76 mm.

## RESULTS

1 Although not a planned feature of this experiment, by good fortune the two nets in use were not identical. A difference in the rigging of the groundrope and positioning of the shell trap was thought to be responsible for the greater amount of debris that was a consistent component of the catch retained in the port side cod-end (Table attached). The differences in debris catch between the two sets of gear were in the order of 2 and 12 times on Grounds A and B respectively. Very little debris was retained by the starboard cod-end at all; consequently, the fish from that side were nearly always in excellent condition.

Debris from Ground A consisted mainly of starfish, shell (whelk, hermit crab), Corystes and whelk eggs. The debris from the second main ground was often shell, brittle-star, Echinoderm, and occasionally a quantity of muddy sand. Between 1 and 2 baskets of accumulated Bryozoan/Hydroid were shaken from the meshes of the belly and cod-end every haul. This was included in the debris and classified as 'weed'.

In comparison to the previous beam trawl charter voyages, when the catches often contained relatively large quantities of debris, the condition of the fish was noticeably better on the majority of the hauls made during this experiment. Many of the sole retained, especially by the starboard side cod-end, were usually so lively and covered in slime that had this been a tagging trip their survival chances would have been high. The hauls on which the condition of the fish was seriously affected were those where a quantity of muddy sand was retained. This catch appeared to render the fish lifeless and without slime. Small fish seemed particularly affected. The bulk of the fish caught were sole and this seemed the species best able to survive. Plaice were not in such a good condition and often appeared dead, even when relatively a small amount of debris was caught. Other fish retained included cod, pollock, coalfish, ling, turbot, brill and angler.

3 Quantities of dab and flounder were caught and rejected on Ground A and were affected in much the same way as plaice, but were lively with slime on some hauls when no debris was caught. The rejected species from Ground B were mainly large pout (Trisopterus luscus) which were usually dead, and a small number of small ray, sole and plaice.

4 A small number of black and white photographs were taken of the catch and individual fish.

Measurements of sole and plaice totalled 4 800 and 1 280 respectively.

Cod-end mesh measuring was carried out at the start and completion of the trip.

A sole which measured 51 cm in length and had a width of 22 cm was caught. The otoliths were removed and were later used to age the fish which was found to be 22 or 23 years old.

This trip was not a charter voyage, and staff were carried entirely due to the goodwill of the skipper and crew. For the above and the assistance received the staff are exceptionally grateful.

M R Vince

24 April 1980

Initialled: AJL

DISTRIBUTION

Basic list  
M R Vince  
T W Boon

MARRIE JACOB, March 1980: summary of fishing results

|                            | Starboard (cod-end mean mesh 76 mm) |        |       |        |       | Port (cod-end mean mesh 78 mm) |        |       |        |       |
|----------------------------|-------------------------------------|--------|-------|--------|-------|--------------------------------|--------|-------|--------|-------|
|                            | Sole                                | Plaice | Mixed | Debris | Total | Sole                           | Plaice | Mixed | Debris | Total |
| GROUND A, 11 valid hauls   |                                     |        |       |        |       |                                |        |       |        |       |
| Number of baskets          | 6.9                                 | 3.8    | 20.9  | 2.4    | 34.0  | 7.4                            | 4.4    | 30.5  | 30.0   | 72.3  |
| Av. baskets/haul           | 0.6                                 | 0.4    | 1.9   | 0.2    | 3.1   | 0.7                            | 0.4    | 2.8   | 2.7    | 6.6   |
| Mean length (cm)           | 26.9                                | 28.9   | -     | -      | -     | 27.6                           | 28.9   | -     | -      | -     |
| No. fish/basket            | 206                                 | -      | -     | -      | -     | 188                            | -      | -     | -      | -     |
| <u>Rejection</u>           |                                     |        |       |        |       |                                |        |       |        |       |
| No. baskets (calc.)        | 0.8                                 | 0.5    | 17.4  | 2.4    |       | 0.5                            | 0.8    | 27.3  | 30.0   |       |
| Percentage rejected (nos.) | 24.6                                | 27.4   | -     |        |       | 13.7                           | 33.7   | -     |        |       |
| " " (vol.)                 | 11.6                                | 13.2   | 83.2  |        |       | 6.8                            | 18.6   | 89.5  |        |       |
| GROUND B, 24 valid hauls   |                                     |        |       |        |       |                                |        |       |        |       |
| Number of baskets          | 22.1                                | 6.1    | 26.5  | 32.2   | 86.9  | 20.5                           | 6.7    | 27.6  | 83.0   | 137.8 |
| Av. baskets/haul           | 0.9                                 | 0.2    | 1.1   | 1.3    | 3.6   | 0.8                            | 0.3    | 1.2   | 3.5    | 5.7   |
| Mean length (cm)           | 29.7                                | 30.5   | -     | -      | -     | 30.2                           | 30.4   | -     | -      | -     |
| No. fish/basket            | 140                                 | -      | -     | -      | -     | 122                            | -      | -     | -      | -     |
| <u>Rejection</u>           |                                     |        |       |        |       |                                |        |       |        |       |
| No. baskets (calc.)        | 0.6                                 | 1.0    | 10.2  | 32.2   |       | 0.4                            | 1.0    | 10.2  | 83.0   |       |
| Percentage rejected (nos.) | 6.4                                 | 25.1   | -     |        |       | 4.7                            | 25.0   | -     |        |       |
| " " (vol.)                 | 2.5                                 | 16.0   | 38.5  |        |       | 1.8                            | 15.4   | 37.0  |        |       |