Separating Fish from Prawns in Bottom Trawls

The Separator Trawl Technical Information Sheet No: 1986/03/FG

Why separate fish from prawns?

The Norway lobster, *Nephrops norvegicus*, commonly called the "prawn", is widely distributed around the UK and is the main species for a number of important trawl fisheries. The animals are caught by specially designed light bottom trawls with a small mesh, on grounds where the seabed usually consists of fine cohesive mud in which they excavate burrows. But in many *Nephrops* fisheries because of the small mesh, there can be a significant by-catch of white fish, often of undersized commercial species. This is particularly true in the Irish Sea with whiting and the Bay of Biscay with hake. It would, therefore, make a lot of sense from the point of view of conservation if, when trawling for Nephrops, this catch could be separated from the undersized fish and moreover only those fish of marketable size retained.

Experiments performed by the Marine Laboratory, Aberdeen, have shown that with knowledge of fish behaviour, it is possible to separate certain species of white fish when trawling, without losing *Nephrops*. By using a special separator panel in the trawl it could be arranged:

- To catch Nephrops in the lower part of the trawl and prime condition haddock and whiting in the upper part. The separation minimises damage which the spiked shell of the *Nephrops* can cause to the softer white fish.

- To release the haddock and whiting from the top cod end when trawling, by leaving the cod end open. This would be done when permissible quotas for these fish had been achieved, or the prices for haddock and whiting were such thatit would be uneconomical to land them and it is better to leave them for another day.

- To increase the top cod end mesh size, so that only the larger fish were retained. The flexibility of this method of fishing could lead to less waste of unwanted marketable size fish at sea.

- Arranging the deck layout to separate the two catches for easier sorting by the crew.

Seafish trials of separator trawls in the Irish Sea

In the Irish Sea fishery for *Nephrops* considerable quantities of immature whiting are caught. It was, therefore, in an attempt to reduce this by-catch in 1984 Seafish conducted trials using separator trawls on two Northern Ireland trawlers - the 49 ft. long and 240 hp 'PROGRESS' (Skipper Winston Cornwell) and the 55 ft. and 230 hp 'FAVOURITE' (Skipper Thomas Wills). It was also considered that the quality of white fish should improve tremendously by being able to separate them from the *Nephrops* and seabed debris, and reducing damage from abrasion. It was hoped that this fish would command better prices on the market.

The trawls used and their separator panels

The nets used by the trials vessels were a Cosalt 520 mesh dual purpose prawn/fish trawl and a Hamilton 23-fathom prawn trawl. Each net was rigged with a second fishing line on a horizontal separator panel which divided the net into two horizontal compartments terminating in separate cod ends. The top cod end stretched mesh size in the dual purpose net was 80 mm and in the prawn trawl 70 mm. Both bottom cod ends were 60 mm stretched mesh, this being the minimum legal size when fishing for *Nephrops* in ICES Area VIIa. Figure 1 is an illustration of the separator panel and double

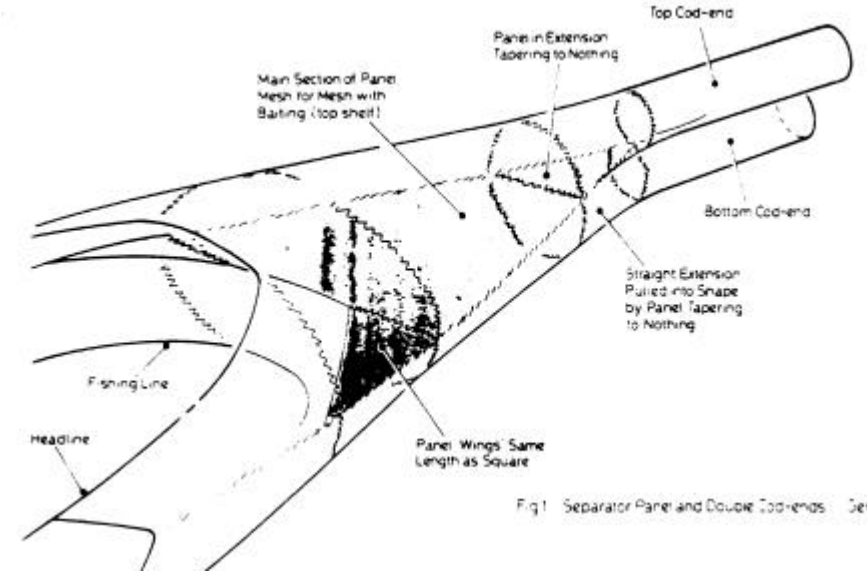

Fig 1 Separator Panel and Double Cod-ends : General Principles

cod ends.

What the trials proved

1. The separator panel was found to be up to 90% effective in separating mature whiting from *Nephrops* and seabed debris. However, it was less effective in separating the other main species - dogfish and cod. This was almost certainly owing to the fact that these fish try to escape by keeping hard down on the seabed after being disturbed by the footrope. A bar chart showing the effectiveness of the separator panel appears in Figure 2.
2. The quality of whiting in the top cod end was far better than that of the whiting in the unmodified trawls. It was clean and virtually unmarked and produced a better fillet.

3. Twin cod ends considerably eased the problems of sorting the catch on deck. Notwithstanding conservation benefits, the crew members of the two vessels perceived this as the main benefit of immediate value to them.

4. The best panel configuration was to insert it over the full length of the trawl from fishing line to extension and at a height of 0.5m above the footrope. The additional resistance of a trawl fitted with panel was not significant in the overall towing power needed.

5. Further development of the trawl is needed to make use of the separator panel as a conservation device, but the principles are now well understood. Seafish have designed a version of the Dual Purpose Trawl fitted with a separator panel. Figures 3a and 3b.

This work was carried out under the MAFF

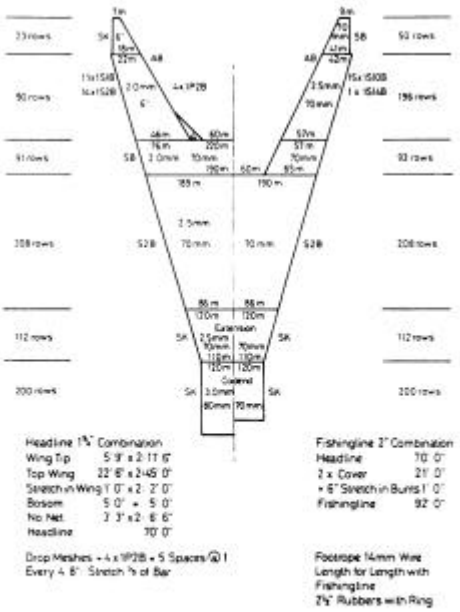

Fig 3a 360 x 70mm Dual Purpose Trawl
Seafish Design

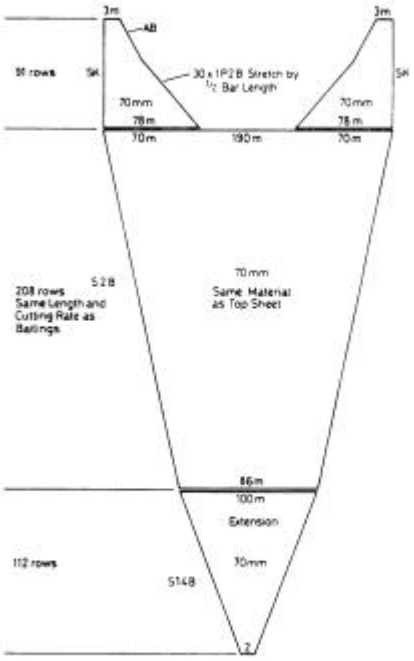

Fig 3b Separator Panel - Dual Purpose Trawl
Seafish Design

Commissioned R & D programme.

How to obtain more information

More detailed advice on using trawls with separator panels in the Irish Sea *Nephrops* fishery is contained in Technical Report No. 253, available from the Sea Fish Industry Authority, Technology Division, St. Andrews Dock, Hull, HU3 4QE. A small charge is implemented to cover printing and postage costs. Another document describing the work of DAFS Marine Laboratory and the behaviour of Nephrops is "The Behaviour of the Norway Lobster *Nephrops Norvegius* during Trawling" obtainable from DAFS Marine Laboratory, P O Box 101, Victoria Road, Aberdeen, AB9 8DB.