

IN the fourth of a series of articles for Fishing News, Mike Montgomerie, Gear Technologist at Seafish, gives his perspective on the issue and the work Seafish, along with industry, has been doing to help develop new selective technologies and net-based fishing activities to reduce discards.

In the previous article he started to look at the effectiveness and fitting of square mesh panels. This week he continues by examining the options for fitting square mesh panels.

BELLY OF THE TRAWL

This has been trialled in the South West beam trawl fishery as part of CEFAS 50% project.

This type of release panel is more suited to fisheries where a lot of benthic debris and invertebrates are entering the mouth of the trawl. Much of these will be 'riddled' out through the square mesh panel in the lower sheet of the trawl.

Many of the small sole, megrims and monks will also escape through this type of panel. The square mesh panel in this position is not very effective for releasing the round fish from the trawl, as they tend to swim higher above the lower panel clear of the sand cloud.

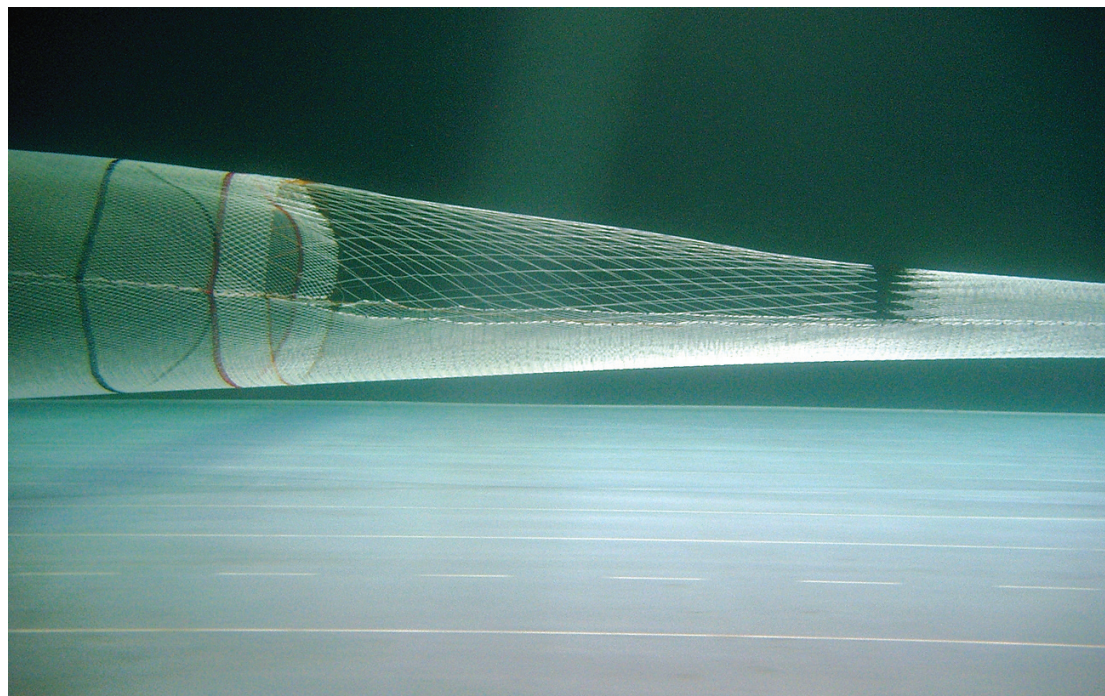
In a Nephrops trawl many of the smaller Nephrops would probably be lost through the square mesh as they trundle along the lower panel of netting.

COD ENDS AND EXTENSIONS

Several skippers have been

Fitting panels

The discard issue – the square mesh option



Large mesh (400mm) diamond mesh fitted in the top of a demersal trawl

experimenting with this type of codend, and it was trialled as part of the CEFAS 50% project on some beam trawlers in the South West.

In many flatfish fisheries skippers are adopting square mesh codends to prevent capture of the many small round fish, yet retain almost all the flatfish above the Minimum Landing Size (MLS).

For the release of small undersized round fish inserting square mesh on top, and/or lower panels in the codend

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With the square open meshes being at the aft end of the trawl, where there is a much reduced water flow, the small fish have time to recover from the trauma of being

captured and swept down the trawl.

By being exposed to the square mesh for the duration of the tow they have adequate time to find their escape path through the open meshes, unlike a square mesh panel where they have only a few seconds to make their escape.

The size of square mesh used needs to be balanced to the size of round fish that the vessel wants to retain.

The square shape of the meshes is better suited to the

cross sectional shape of round fish, rather than flat fish, allowing them to escape more readily.

Many skippers have reported that they have seen no difference in the retained catch of flat fish when they have fitted a square mesh codend of a similar mesh size to their original diamond mesh, but have managed to release in the region of 90% of the small round fish.

To further improve the selectivity of a square mesh codend it can be made using four panels (if regulation allows this in the particular fishery), instead of the normal two, as this helps the extension stay more open, allowing the fish more space to swim in before escape.

Trials with square mesh codends in Nephrops fisheries have resulted in the loss of many of the smaller Nephrops through the open meshes.

With some work it may be possible to get a configuration of square and diamond mesh in a Nephrops trawl that will release most of the small round fish, but retain enough of the larger Nephrops for the vessel to maintain its profitability.

There have been a few legislative issues with the use of square mesh codends and extensions so it is always better to check with the local fishery officer before using one.

When codends and extensions of square mesh (T45) and T90 mesh are used they are much more stable than a diamond mesh codend, as they are being towed.

This is due to the much improved water flow through the codend which results in improved catch quality, and increased opportunity for small fish to escape.

Large diamond mesh panels – the solution?

SOME skippers have tried replacing top sheet panels with areas of large diamond mesh (greater than 200mm).

This is much easier to fit precisely into the trawl than square mesh, as it can be accurately baited into the smaller diamond mesh, both in length and width. In scientific trials with mesh sizes up to 400mm surprisingly only about 40% of the haddock, whiting and other high swimming round fish are released through the meshes.

In these cases the large mesh netting must still be acting as a herding device, and keeping many of the fish that could escape in the trawl.

If carried right down to the end of the taper of the trawl too many of the target species of a marketable size would be lost.

Large mesh inserted in the front part of a demersal trawl has been successful in reducing discards of cod, as in the 'Orkney Trawl' with 300mm mesh and the 'Eliminator trawl' with 2.4m mesh.

In both these trawls the large mesh is fitted in the wings and first belly section in both top and bottom panels, and



Two large mesh (300mm) diamond mesh panels fitted in a nephrops trawl

allows the early release of many of the smaller fish.

A general increase in mesh sizes throughout the trawl, such as replacing 160mm mesh with 200mm mesh, or 90mm with 110mm, will help to reduce the number of small fish discards.

It will also help to reduce the drag of the trawl, thereby saving fuel.

Skippers should be asking

themselves do I really need all this small mesh in my trawl.

In all these discard reduction devices the fish are allowed to enter the trawl, then provided with an early escape mechanism through open meshes post capture.

There is much debate about how many of the fish actually survive after escaping through diamond or

square mesh, due to their exposure to excessive stress, exhaustion or damage to scales or flesh.

For fish to survive it is much better to be able to use a device or gear alteration that prevents capture, rather than catches the fish then releases some of them.

Some of these devices will be covered in future articles.