



Bord Iascaigh Mhara
Irish Sea Fisheries Board

BIM Flume Tank Workshop

Hirtshals, Denmark

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Key findings

- There were mixed reactions towards sorting grids but some positive feedback on the demonstrated models and the practicalities of deployment at sea.
- There was strong interest in the Seltra sorting panel as a measure for reducing catches of whitefish species. The Seltra performed better than a standard square mesh panel.
- Low lying coverless trawls and sole rigs also have good potential to reduce catches of whitefish species in *Nephrops* fisheries.
- Alterations to the fishing gear to increase the height of the fishing line have good potential to reduce catches of cod in mixed demersal fisheries.

Introduction

BIM organised a trip to a flume tank in Hirtshals, Denmark in November 2015. The aim of the trip was to test and discuss various devices for improving species and size selectivity in Irish fisheries, with a particular emphasis on the commercially important *Nephrops* fishery. Promoted through the Irish Producer's Organisations, the trip was well attended by six prominent Irish skippers, two net makers, Daniel McDonald and Daragh Browne from BIM. Gear demonstrations were carried out by Mike Montgomerie from Seafish, who has extensive experience of conducting flume tank courses in the UK and Denmark. Accurately scaled from net plans, over 100 different net models were available to choose from.

Gear Demonstrations

Standard trawl

The first net displayed was a typical Bobbin Net with an 80 ft fishing line and 60 ft headline. This is a typical gear used by vessels powered by a 200kw engine. Standard v-doors with double back straps were used with this net which also had v-wings. This specific net was used so that any changes to the gear could easily be demonstrated in the tank. The v-wings allowed for alterations to be made to the ground gear and headline. When making alterations to the gear it was highlighted that if the gear fails to perform correctly, it is possible to adjust the ground rope length relative to the fishing line.

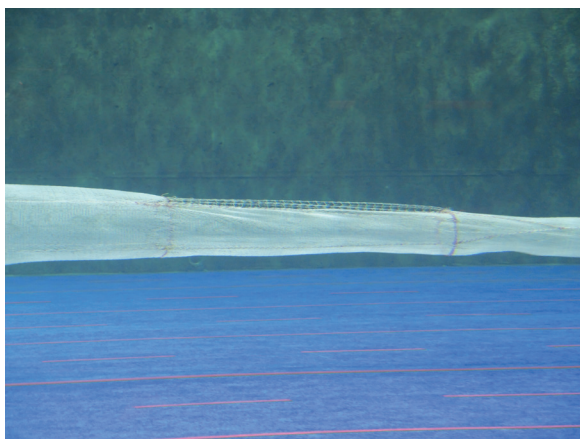


Figure 1. Seltra sorting panel

Nephrops fisheries



Figure 2. Coverless trawl

A range of devices which can be used to reduce fish catches in the *Nephrops* fisheries including the Swedish grid, Seltra sorting panel, inclined separator panel, standard square mesh panels, a coverless trawl and sole rigs were demonstrated in the tank. While many of the fishermen were familiar with these devices, much enthusiastic discussion followed on which device would best suit the variety of different gear types and species compositions encountered in Irish *Nephrops* fisheries.

A range of rigid sorting grids were examined and participants showed particular interest in a grid with curved edges. This grid took the shape of the tunnel of the net and didn't skew the net in any way. There were a few questions concerning the material used to construct the grid. Durable plastic was recommended because of its lighter weight compared with steel, but this led to concerns about the durability of the grid and the ability of this material to maintain its shape when deployed. There were mixed reactions when it came to the practicalities of using a rigid sorting grid in Irish fisheries. Some participants had experience using the grid and seemed to think it's a credible option for reducing unwanted catches. Others said it was not safe to work and highlighted the handling issues rather than anything else.

There was strong interest in the Seltra sorting panel which is essentially a large square mesh panel set into a four panel section of netting and positioned very close to the tail string. It was apparent from looking at the net (section) in the water that it would work better with a four panel cod end. Unlike standard square mesh panels the Seltra sorting panel didn't skew or pucker the meshes where it was joined into the main net. With the correct joining ratio, the sorting panel should have little effect on the shape of the main gear.

During the course a coverless trawl, and triple sole rig with a two warp system were displayed. The latter system can easily be adapted so that either two or three nets can be towed without changing the trawl doors. The trawl doors are located close to the wings. These gears are low lying similar to the quad-rig and would be very selective for gadoids due to the fact that they have such low headline height.

It was noted that many of the devices demonstrated in the tank would select out fish at the rear of the net, close to the cod-end. Some concerns were raised in relation to post release survivability once fish encountered these devices. In the *Nephrops* fisheries it was suggested that a guiding panel could be incorporated into the mouth of the gear, leading to a large mesh panel in the top of the net to assist in early release and survival of unwanted fish species. In relation to small *Nephrops*, participants were keen to see more work being carried out on mesh size and alterations to the grid to try and reduce catches of small *Nephrops*.

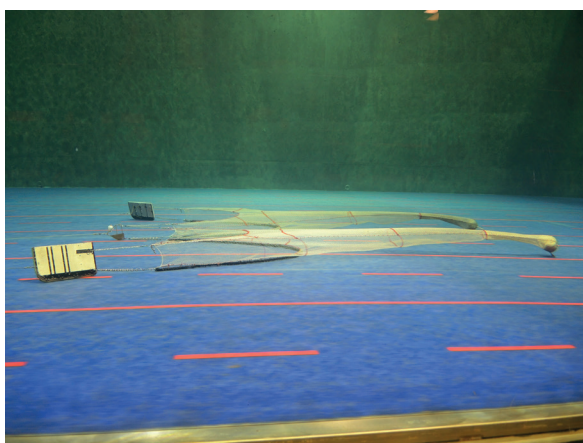


Figure 3. Sole rig with 2 nets

Mixed demersal fisheries

Some discussion also occurred on measures to release cod in the mixed demersal whitefish fishery. It was suggested that altering the fishing gear to increase the height of the fishing line relative to the ground gear could take advantage of the typical ground hugging behaviour of cod, resulting in reduced cod catches while maintaining catches of whiting and haddock.

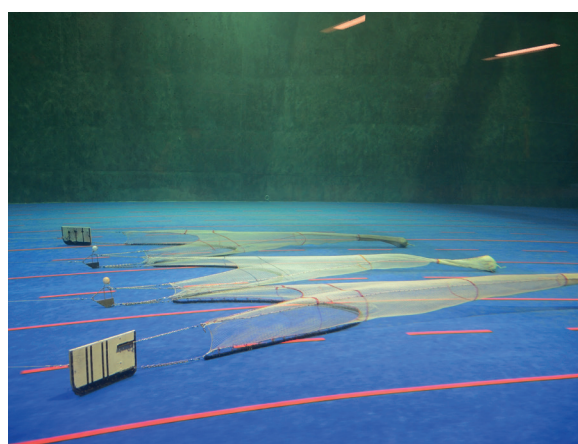


Figure 4. Sole rig with 3 nets

Conclusion

Feedback from course participants indicated that although they have made many of the discussed gear alterations, it was difficult to visualise what effect these alterations actually had on the gear. As a result of the demonstrations at the flume tank, they had a much better understanding of how simple alterations can change the dynamics of the trawl. All participants said they had a good learning experience and were glad they attended the course. Many of the participants enquired about the possibility of organising similar courses in the future and said that they would be interested in sending or recommending such a course to skippers of partner vessels and colleagues within the industry.

The flume tank workshop provided an excellent forum for discussion on gear solutions and was timely, given the introduction of the landing obligation in 2016. While understandably anxious about changes in regulations, feedback was generally very positive. Participants expressed their confidence that some simple alterations to their gear could assist them in meeting challenges posed by the landing obligation. Feedback will also be invaluable in developing BIM's gear technology work programme which aims to reduce unwanted catches and maximise vessel profitability in the years ahead. For further information on the flume tank in Hirtshals, please view <https://www.youtube.com/watch?v=hlOO8I869Fc>

Acknowledgements

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