



Northern Ireland Gear Trials Project 2017-2019

Summary Report



Department of
**Agriculture, Environment
and Rural Affairs**

Executive Summary

A process of formal and informal discussions was undertaken at the three main fishing harbours of Northern Ireland; Portavogie, Ardglass and Kilkeel. During the discussions, ideas were collected on how fishing gears currently being used for targeting nephrops can be modified or re-designed to increase the selectivity performance and improve the release of unwanted fish catch. In addition, several Northern Ireland and Republic of Ireland based gear manufacturers were also approached with the same requests for information and ideas.

Selective gear designs were reviewed by an expert panel and subsequently rejected or taken forward to a manufacturing stage. In 2017 two novel designs were trialled at sea on board commercial fishing vessels over multiple trips with adjustments made each time. By early 2018, the analysis of results from the gear trials that had been run over the previous year of the project indicated that one design showed potential in addressing the project brief whilst the other showed less potential. The designs are named the Inclined Net Grid 200 and Fin Fish Free (FFF) trawls respectively.

In addition to the two designs that were taken forward from 2017, the project assessed the potential selectivity attributes of attaching lights to various areas of gears. In March 2018 the square mesh panels (SMPs) of vessels trawls were illuminated with pressure activated light units. Three different colours/wavelengths of light were tested. The results from the light trials indicated that by illuminating the SMPs in trawls more bulk catch is retained. This suggested that lights can be used to modify the behaviour of fish when caught in trawl gear however illuminating the SMPs seems to reduce the amount of fish that escape through it. Analysis of the results also indicated that whiting may be particularly affected by blue light, particularly individuals below MCRS.

Subsequent trials repositioned the light units inside the Inclined Net Grid 200 and FFF trawls. The FFF trawl under performed however the Inclined Net Grid 200 trawl with blue lights attached showed some potential. Fish release was high although nephrops loss was also affected.

The project assessed the effect of increasing codend mesh size in the TR2 nephrops fishery with trials undertaken on board twin-rig and single-rig vessels. The results from this trial indicated that whilst an increase in codend mesh size from 80mm to 90mm may be effective at removing some of the fish component from the catch the loss of nephrops from both single and twin rig vessels was excessively high.

Based on the results of data collected during trials of the two novel gear designs with lights attached inside, further trialling of the most promising gear design, the Inclined Net Grid 200, was undertaken with lights removed. In addition to this, a second section of trawl was manufactured to the same design with one key component modified to try and address the loss of nephrops that was observed during previous trials. In the new design the mesh size of the internal inclined net grid was increased from 200mm to 400mm square. This is called the Inclined Net Grid 400. The effect of increasing mesh size was successful in reducing the amount of nephrops that is lost from the trawl however the 400mm panel appeared to be less effective at removing fish from the trawl than the 200mm version.

Finally, the project collected data on the performance of two currently approved TR2 highly selective devices. These were the 300SMP trawl and the SELTRA270 trawl. Analysis of the data collected over the duration of this trial indicated that fish release rates between the two selective devices are comparable however the SELTRA270 appears to be more effective at retaining the catch of nephrops. This could potentially be of conservation benefit.

This report provides an overview of the gear trials carried out under the Northern Ireland Gear Trials Project and provides summarised results on each trial for key species of interest.



Figure 1. Map showing study area and locations of Portavogie, Ardglass and Killeel harbours. Portavogie harbour is most northerly and Killeel harbour most southerly with Ardglass harbour situated in between.

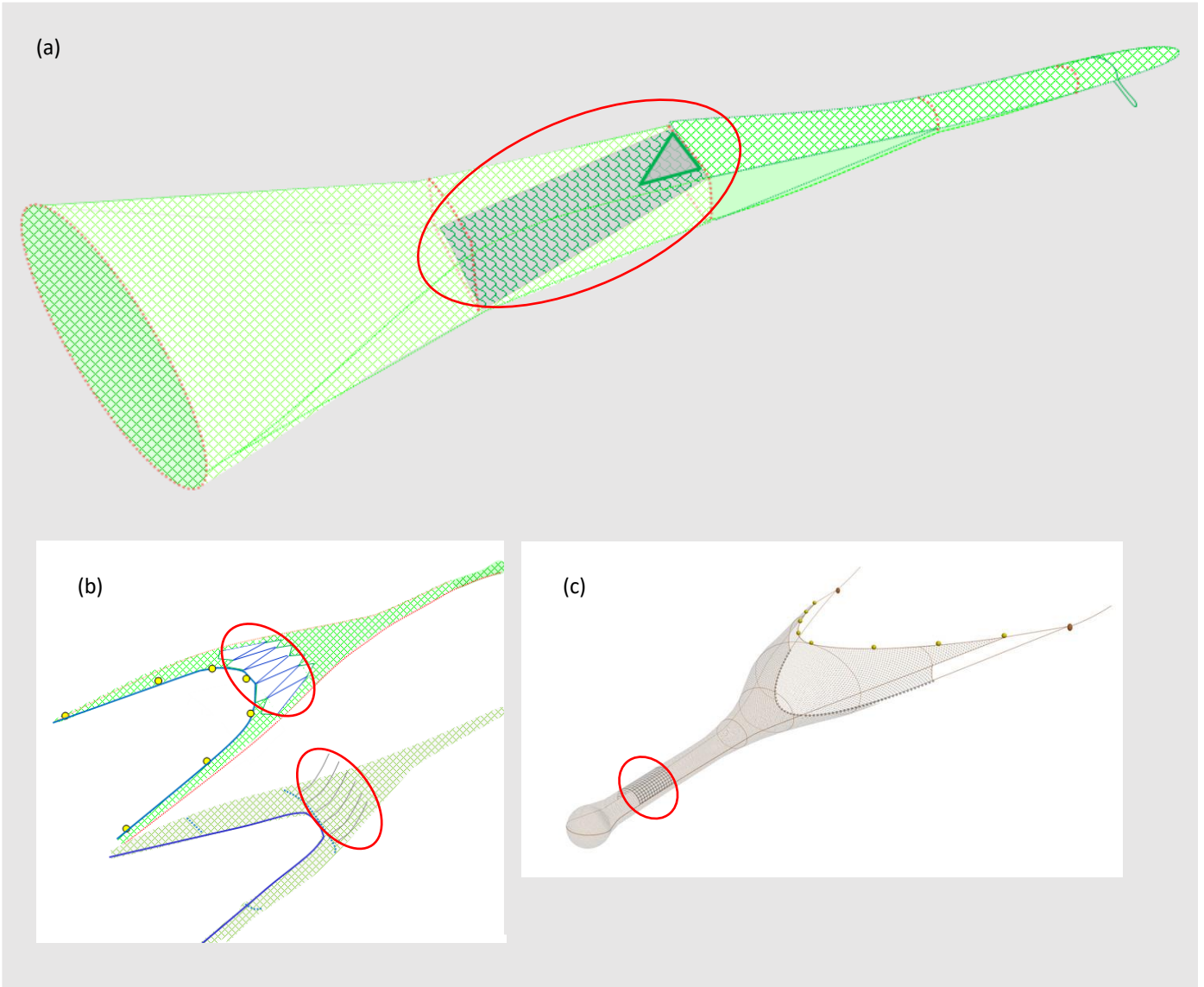




Figure 2. (a) Inclined Net Grid with inclined square mesh panel & escape hole, (b) Fin Fish Free trawl showing pelagic size mesh in cover (top) and internal leader lines (bottom) and (c) position of a 300mm square mesh panel. The active selective component/s in each gear are circled. During the gear trial's where lights were used, they were attached at these locations and in the case of (b) were attached to the leader lines. Drawings not to scale.

Details of gear trials undertaken


Gear Trial 1. Preliminary trial of 2 trawl designs - Inclined Net Grid 200 & Fin Fish Free against a 300mm SMP control

	Chartered Vessel	FV Oceanus, Twin - Rigged trawler
	Trial Date	21-25.8.2017
	Trial undertaken	Preliminary testing of Fin Fish Free & Inclined Net Grid 200 trawls.
	Trial Area	VIIa, FU15
	Results	FFF - Reduced bulk catch. Reduced nephrops catch. Effective at reducing haddock catch but not whiting. Inclined Net Grid 200 - Small reduction in bulk catch. Reduced nephrops catch. Small reduction in whiting catch.


Gear Trial 2. Illumination of 300mm SMP, 3 colours of light trialled against a 300mm SMP control


	Chartered Vessel	FV Oceanus, Twin - Rigged trawler
	Trial Date	13-17.11.2017
	Trial undertaken	Blue, white and green lights on SMPs.
	Trial Area	VIIa, FU15
	Results	All colours generally increased the bulk catch. Nephrops catch unaffected. Behaviour of whiting appear most effected by the introduction of lights. Whiting appeared to be particularly affected by blue light. Below MCRS whiting more influenced by blue light than larger fish.

Gear Trial 3. 90mm Codend & Extension against an 80mm Codend & Extension control


	Chartered Vessel	FV Providence IV, Twin - Rigged trawler
	Trial Date	5-9.3.2018
	Trial undertaken	90mm codend & extension.
	Trial Area	VIIa, FU15
	Results	Reduced nephrops catch (-31%). Increased whiting catch (+51%). Increased haddock catch (+100).

Gear Trial 4. 90mm Codend & Extension against a 70mm Codend & Extension control


	Chartered Vessel	FV Jack the Lad, Single - Rigged trawler
	Trial Date	13-20.4.2018
	Trial undertaken	90mm codend & extension.
	Trial Area	VIIa, FU15
	Results	Reduced nephrops catch (-53%). Reduced whiting catch (-65%). Reduced haddock catch (-38%).

	Chartered Vessel	FV Children's Hope, Single - Rigged trawler
	Trial Date	13-20.4.2018
	Trial undertaken	90mm codend & extension.
	Trial Area	VIIa, FU15
	Results	Reduced nephrops catch (-53%). Reduced whiting catch (-65%). Reduced haddock catch (-38%).


Gear Trial 5. Fin Fish Free trawl, green lights attached to leader lines, against a 300mm SMP control

	Chartered Vessel	FV Aubrietia, Twin - Rigged trawler
	Trial Date	19-23.3.2018
	Trial undertaken	Fin Fish Free trawl with green lights attached to leader lines.
	Trial Area	VIIa, FU15
	Results	Reduced nephrops catch (-21%). Increased whiting catch (+25%). Reduced haddock catch (+10%).


Gear Trial 6. Inclined Net Grid 200 trawl, blue lights attached to inclined panel, against a 300mm SMP control

	Chartered Vessel	FV Providence IV, Twin - Rigged trawler
	Trial Date	19-23.3.2018
	Trial undertaken	Inclined Net Grid 200 trawl, blue lights attached to inclined net panel.
	Trial Area	VIIa, FU15
	Results	Reduced nephrops catch (-26%). Reduced whiting catch (-35%). Reduced haddock catch (-68%). Bulk catch reduced in modified trawl. Seaweed accumulating on inclined net panel.


Gear Trial 7. SELTRA 270 trawl against a 300mm SMP trawl

	Chartered Vessel	FV Golden Ray, Twin - Rigged trawler
	Trial Date	6-10.8.2018
	Trial undertaken	Comparison of two approved highly selective gears - SELTRA270 & 300 SMP.
	Trial Area	VIIa, FU15
	Results	Small difference in fish catch. Increased whiting catch (+2%) in SELTRA270. Increased nephrops catch (+13%) in SELTRA. Decreased haddock catch in SELTRA270 (-7.6%).

Gear Trial 8. Inclined Net Grid 200 trawl, no lights attached, against a 300mm SMP control

	Chartered Vessel	FV Aubrietia, Twin - Rigged trawler
	Trial Date	13-17.8.2018
	Trial undertaken	Inclined Net Grid 200 trawl with no lights.
	Trial Area	VIIa, FU15
	Results	Reduced nephrops catch (-16%). Reduced whiting catch (-48%). Reduced haddock catch (-40%).

Gear Trial 9. Inclined Net Grid 400 trawl against a 300mm SMP control

	Chartered Vessel	FV Oceanus, Twin - Rigged trawler
	Trial Date	20-24.8.2018
	Trial undertaken	Inclined Net Grid 400 trawl.
	Trial Area	VIIa, FU15
	Results	Reduced nephrops catch (-7.2%). Reduced whiting catch (-30%). Reduced haddock catch (-23%).