

## Irish Sea trial of the FloMo fishing device



February 2026

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Front cover image: the 'MFV Wakeful' fishing trawler operating in the Irish Sea. All images ©Seafish unless stated.

## Acknowledgements

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# Contents

Disclaimer .....	1
Acknowledgements .....	1
Acronyms .....	3
1.0 Executive Summary .....	4
2.0 Introduction .....	5
3.0 Methodology .....	7
3.1 Pre Trial – Sizing Panel .....	7
3.2 Rigging the FloMo .....	7
3.3 Sea Trial.....	8
3.4 Data Collection at Sea .....	9
4.0 Results.....	11
5.0 Discussion .....	16
5.1 Findings.....	16
5.2 Operation .....	18
5.3 Storage.....	19
5.4 Catch Quality.....	20
6.0 Conclusions.....	21
7.0 Recommendations .....	22
7.1 Technical improvements .....	22
7.2 Further research requirements .....	23
7.3 Operational and fleet-level considerations.....	23
7.4. Regulatory .....	23
8.0 References.....	24

## Acronyms

AFBI	Agri-Food & Biosciences Institute
ANIFPO	Anglo Northern Ireland Fish Producers Organisation
DAERA	Department of Agriculture, Environment & Rural Affairs
MCRS	Minimum Conservation Reference Size
MFV	Motor fishing vessels
MHS	Modular harvesting system
LPUE	Landings per unit effort
NIFPO	Northern Ireland Fish Producers' Organisation
PSH	Precision Seafood Harvesting
TPU	Thermoplastic polyurethane
UHMWPE	Ultra-high-molecular-weight polyethylene

# 1.0 Executive Summary

In May 2025, a ten-day gear trial was conducted in the western Irish Sea Nephrops<sup>1</sup> fishery to evaluate the FloMo<sup>2</sup> technology originating from New Zealand. The trial marked the first use of the prototype FloMo technology within the UK. The main aim was to assess its effectiveness in reducing bycatch while maintaining target catch retention on a Northern Irish >12 metre twin-rig Nephrops trawler. Additional observations were collected on the operation and handling of the FloMo gear during normal fishing activities.

Across 22 tows, the FloMo gear successfully met the primary trial objective by significantly reducing the bycatch of sub-MCRS (Minimum Conservation Reference Size) whiting, compared with the control trawl which was fitted with a 300 mm square-mesh panel—the standard selective device used in this fishery. This demonstrated the potential of the FloMo gear as a by-catch mitigation tool. The FloMo system also retained more larger fish when present in the catch.

Retention of ‘whole’ Nephrops was similar between gears; however, the quantity of retained smaller Nephrops suitable for tailing (for supplying the scampi market) was significantly lower when using FloMo. As typical for any first-of-its-kind gear trial, the results provide valuable learning which could subsequently be used to inform further refinement and optimisation of this gear technology. With robust trial data now available, future efforts could be directed towards improving size selectivity to achieve the desired catch rates for smaller Nephrops.

Operationally, the FloMo gear did not present any major difficulties during the trial, supported by the vessel’s ample deck space between the net drum and the stern. However, most vessels in the Northern Ireland Nephrops fleet have a different net drum configuration, with less clear deck space which may limit adoption.

Considering the anticipated costs associated with vessel modifications required to accommodate FloMo, alongside the reduced catch value linked to the smaller Nephrops observed during the trial, the available evidence does not currently indicate a strong economic incentive for voluntary uptake of this technology by the Northern Irish commercial Nephrops fleet. Further assessment, including potential vessel modification and gear re-design, would be required to better understand FloMo’s practical and economic viability for the Northern Irish fleet.

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<sup>1</sup> *Nephrops norvegicus* (also known as Norway lobster, langoustine, scampi, and Dublin Bay prawn) is a mud burrowing marine decapod crustacean.

<sup>2</sup> [About FloMo - FloMo](#)

## 2.0 Introduction

The bycatch objective of the Fisheries Act 2020 states that “the catching of fish that are below minimum conservation reference size, and other bycatch, is avoided or reduced” (1). Together with wider conservation and sustainability commitments adopted by the UK fishing industry, this has generated a clear incentive to develop and test more innovative and selective fishing gear designs.

One such innovative gear development is the FloMo system, previously described in the literature as the Modular Harvesting System (MHS) or the ‘Kiwi Codend’. FloMo is a novel trawl component originally developed by Precision Seafood Harvesting (PSH) for use in several New Zealand fisheries. While its initial purpose was to improve catch quality, recent work in New Zealand and elsewhere has also explored its potential to reduce bycatch.

FloMo replaces the extension and codend of a traditional trawl with a configuration comprising a cone, three retention modules and a lifting bag (Figure 1). The cone attaches to the body of the trawl via a transition piece constructed from conventional nylon netting. Unlike traditional mesh-based trawls, FloMo uses top and bottom sheets made from ultra-high-molecular-weight polyethylene (UHMWPE) fabric coated with thermoplastic polyurethane (TPU). Selectivity is achieved through patterns of apertures (or holes) cut into the retention modules during manufacture, with aperture size and shape tailored to the fishery of interest.

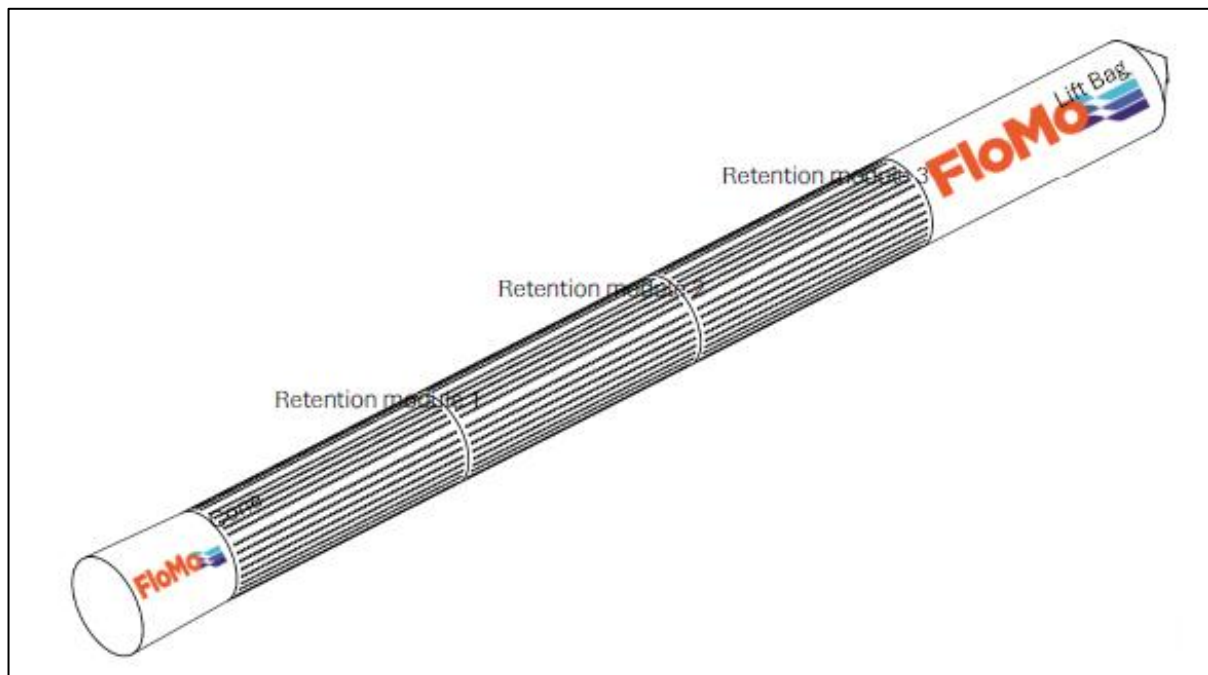


Figure 1. FloMo section

The FloMo system has been approved for use in several New Zealand fisheries, and ongoing work by PSH and associated partners is assessing its performance in the Metanephros fishery. Metanephrops species share a similar body form to *Nephrops norvegicus*, the commercial species of primary interest in the UK.

In the UK, fisheries management is devolved, and each administration is responsible for supporting gear technology initiatives within its own jurisdictional waters. In Northern Ireland, this activity is overseen by a steering group comprising representatives from the Department of Agriculture, Environment & Rural Affairs (DAERA); Agri-Food & Biosciences Institute (AFBI); Seafish; and the two Northern Ireland-based fish producer organisations: Northern Ireland Fish Producers organisations (NIFPO) and the Anglo-Northern Ireland Fish Producers Organisation (ANIFPO). Because UK fisheries span several distinct sea basins, each with unique ecological and environmental characteristics, bycatch-reduction solutions often require fishery-specific adaptation.

This report presents the findings of a 10-day trial of the FloMo device conducted in summer 2025 within the offshore region of the western Irish Sea (Figure 2).

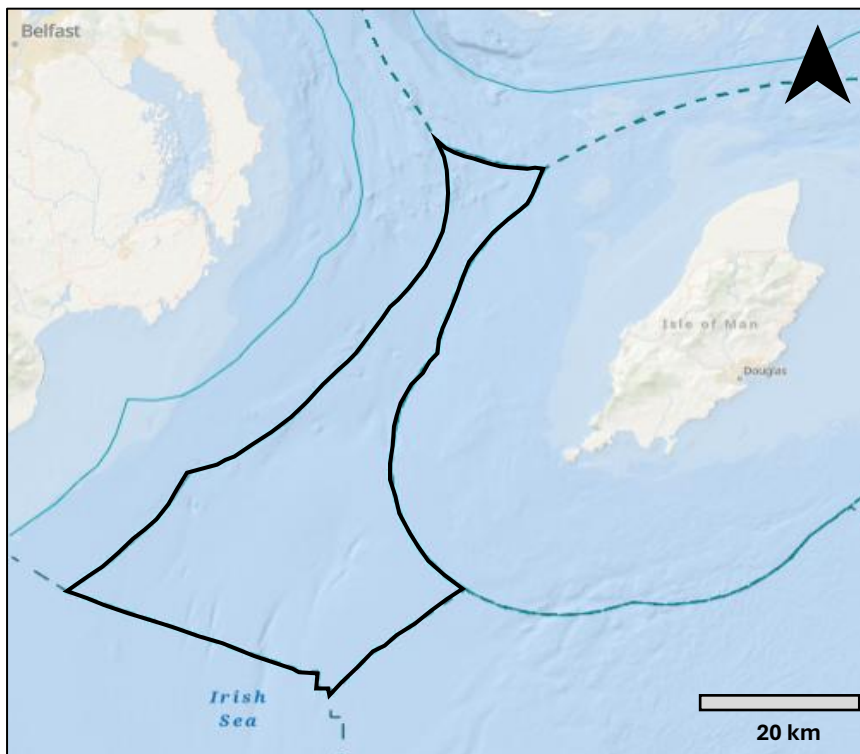


Figure 2. Western Irish Sea. Black line designates offshore region.

## 3.0 Methodology

### 3.1 Pre Trial – Sizing Panel

Prior to the sea trial, a sizing panel (Figure 3a) was used to identify the appropriate aperture sizes for the top and bottom sheets of the FloMo unit. Three boxes of unsorted catch from the trial area were supplied by a local trawler. The three priority species—whiting, haddock and Nephrops—were sorted (Figure 3b), individually measured, and then tested to determine the smallest aperture each animal could pass through (Figure 3c). These measurements informed the final aperture dimensions used in the FloMo device for the Irish Sea Nephrops trial.

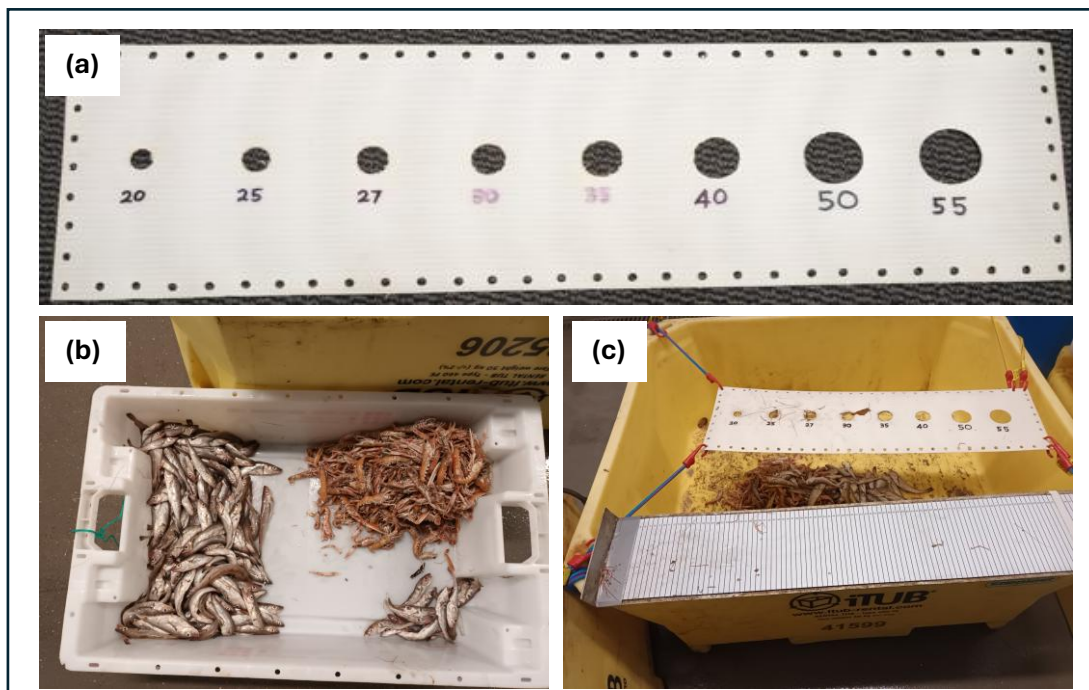


Figure 3. (a) sizing panel, (b) whiting, haddock, nephrops separated, (c) measuring board and sizing panel.

### 3.2 Rigging the FloMo

The trawl intended to accommodate the FloMo device was first modified by cutting it 7.5 meshes forward of the square-mesh panel. At this point, both the top and bottom sheets were 100 meshes wide, using 80 mm mesh. A transition section, produced by a local gear maker, was then fitted. This section was 100 meshes wide at its forward end and tapered to 70 meshes wide at its aft end, with all meshes made from 80 mm diamond mesh. The forward end of the transition piece was attached to the cut end of the trawl, and its aft end was connected to the FloMo device via the cone section (Figure 4).

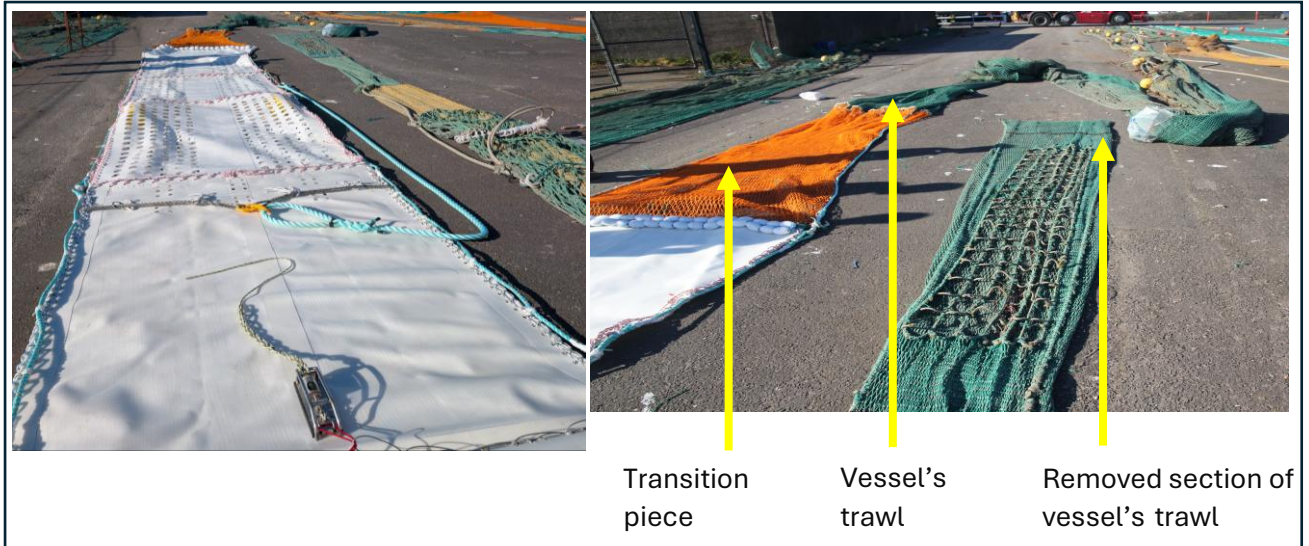


Figure 4. FloMo (left) next to removed section of trawl (right).

### 3.3 Sea Trial

Between the 8<sup>th</sup>-17<sup>th</sup> May 2025, a total of 22 tows using the FloMo device were undertaken in the Western Irish Sea (Nephrops functional unit 15.) A 22 metre Nephrops trawler, the MFV Wakeful FR261, was chartered for the duration of the trial (Figure 5). A twin-rig gear configuration was used with one net acting as the control gear and the adjacent net accommodating the FloMo device (Figure 6). The control gear comprised a standard net as used by the vessel during normal fishing operations (i.e. fitted with a 300mm square mesh panel measuring 3m long.) Trawl doors were fitted with Marport spread sensors with readouts displayed on a wheelhouse monitor.

It is a standard feature that Nephrops trawls used by the Northern Irish fleet have a top sheet that is slightly shorter than its bottom sheet. This is to allow for stretching on the top/ and or shrinkage on the bottom. This remained the case throughout this trial. Adjustments were made to the join between the transition piece and the cone section of FloMo halfway through the trial. This change coincided with improved performance over the second half of the trial (tow 12 onwards.)

The duration of each tow was between 2.5 to 5.5 hours. Tows were carried out across a range of flood and ebb tidal conditions to ensure that the gear trial corresponded to normal fishing activity as closely as possible. Flood and ebb tide directions within the study area run from the north and south respectively. The sea state was calm over the period of the trial with little to no swell on any of the days at sea.



Figure 5. MFV Wakeful.

### 3.4 Data Collection at Sea

At the end of each tow, the catch from each codend was emptied separately into the vessel's hopper. The FloMo and control catches were then basketed, and the total number of baskets recorded. To obtain a representative sample, three baskets from each codend—taken from the top, middle and bottom of the hopper—were set aside for detailed sampling. The remaining catch from each codend was processed separately by the crew as normal. Once processing was completed, the quantities of whole and tailed Nephrops from each gear were recorded.

From the three-basket samples, all species were identified and measured. Additional Nephrops samples were collected after each tow for length–frequency analysis. Sampling was undertaken by an AFBI fleet observer.

A range of operational and environmental data were also recorded during each gear deployment, haul and tow. This included water depth, trawl door spread, warp length, vessel speed, engine revolutions, tow direction, tidal state, wind strength and direction, and any modifications made to the FloMo gear between tows.

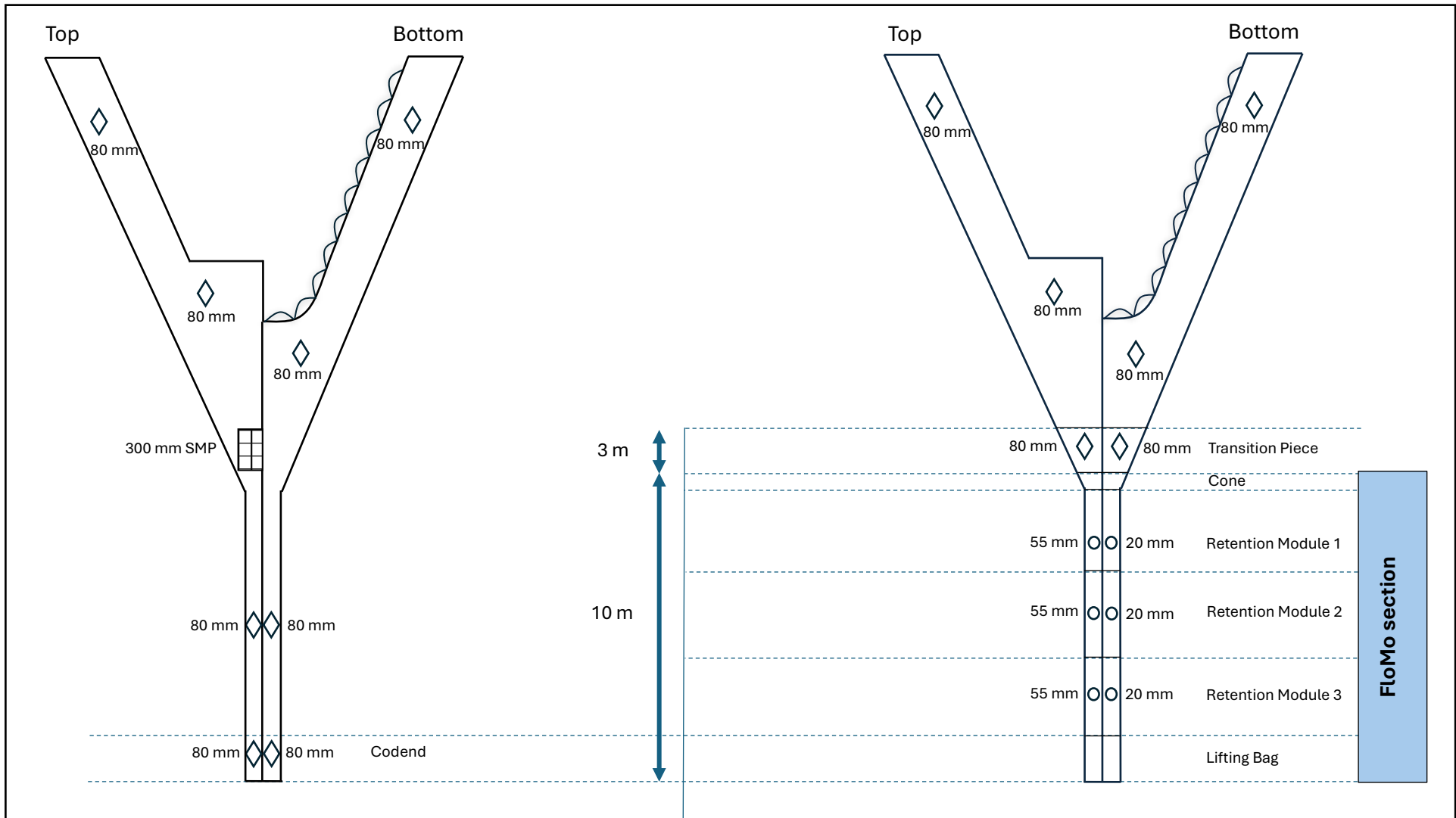


Figure 6. Net plans for control gear (left) & FloMo gear (right). Drawings not to scale. Any lengths are approximate.

## 4.0 Results

1. During the first half of the trial (tows 1–11), the FloMo system was not fishing correctly. The outlined adjustments made to the FloMo device halfway through the trial coincided with improved performance over the second half of the trial (trawl 12 onwards.)
2. When compared, the total number of baskets (the bulk catch) per tow was consistently less in the FloMo device than in the control gear. Over the 22 tows, the FloMo generated 237 baskets of unsorted bulk catch, with tows 1-11 catching 103 baskets and tows 12-22 catching 134 baskets. The control gear generated 347 baskets of unsorted bulk catch, with tows 1-11 catching 168 baskets and tows 12-22 catching 179 baskets (Figure7).

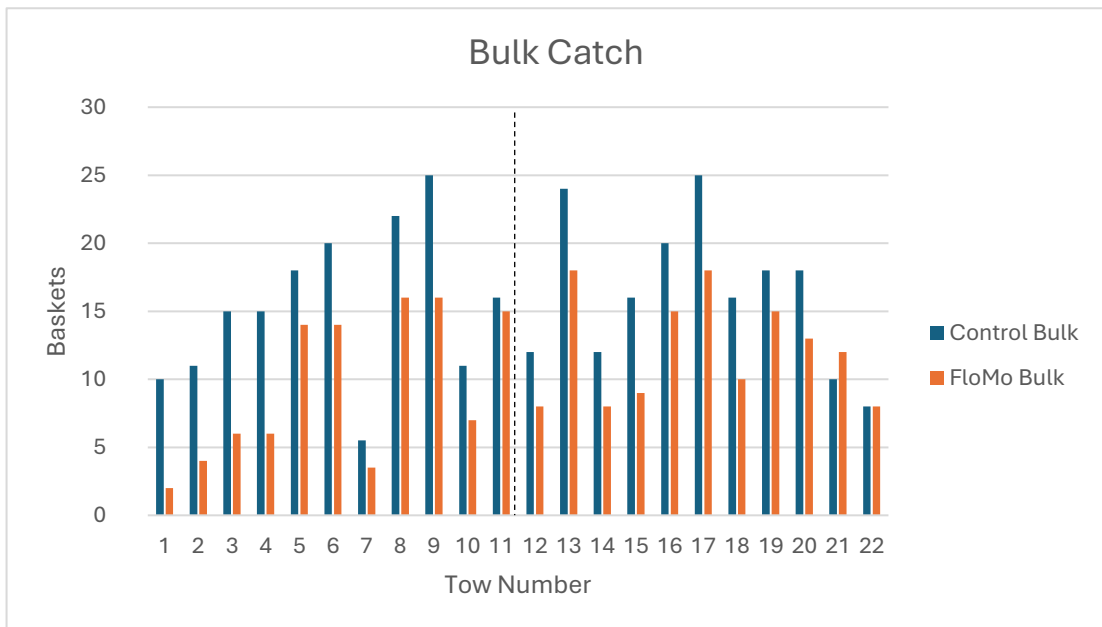


Figure 7. Bulk catch for control and FloMo gears. Dashed line separates tows 1-11 & 12-22.

3. The catch volume of larger Nephrops, usually retained onboard for sale as whole prawns, was typically in the same range for the FloMo gear and the control gear. Over 22 tows FloMo generated 17 baskets of whole Nephrops, with tows 1-11 catching six baskets and tows 12-22 catching 11 baskets. The control gear generated 20 baskets of whole Nephrops, with both tows 1-11 and 12-22 catching 10 baskets each (Figure 8).

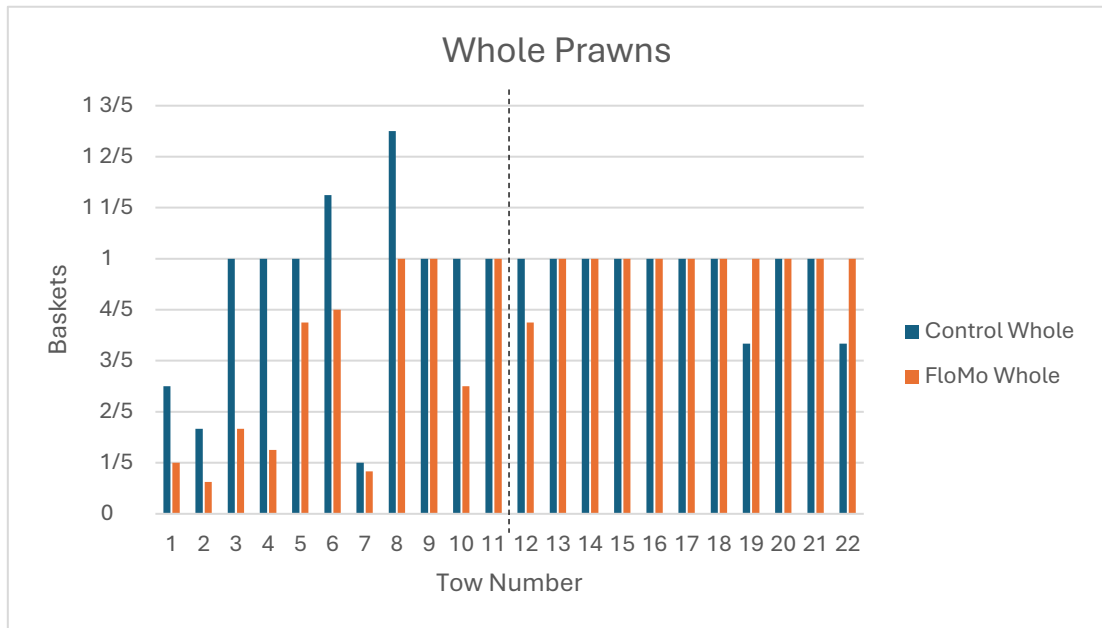


Figure 8. Whole Nephrops catch for control and FloMo gears. Dashed line separates tows 1-11 & 12-22.

- Catch volume of the smaller sized Nephrops component of the catch was not in the same range between FloMo and control gears. Analysis of the catch data indicated that the FloMo generated 25 baskets of Nephrops tails over 22 tows; with tows 1-11 catching 11 baskets and tows 12-22 catching 14 baskets. The control gear generated 52 baskets of Nephrops tails over 22 tows with tows 1-11 catching 29 baskets and tows 12-22 catching 23 baskets (Figure 9).

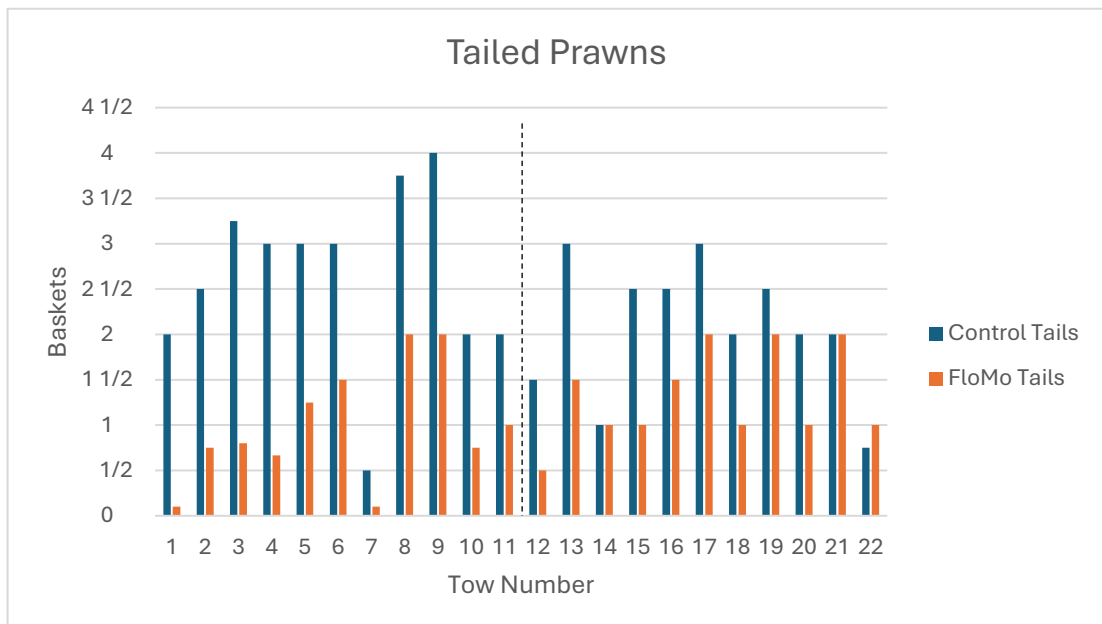


Figure 9. Tailed Nephrops catch for control and FloMo gears. Dashed line separates tows 1-11 & 12-22.

- During the trial, AFBI's onboard observer sampled the catch and recorded species data for all 22 tows. Post trial analysis undertaken by AFBI however, focused on data collected during the second half of the trial; the rationale being that the gear was operating more

consistently by this point. Their analysis confirmed the trend in Nephrops catch data outlined above. Landings per unit effort (LPUE) were similar for the whole Nephrops component of the catch. However, LPUE were significantly reduced for the tailed Nephrops component of the catch (Figure 10).

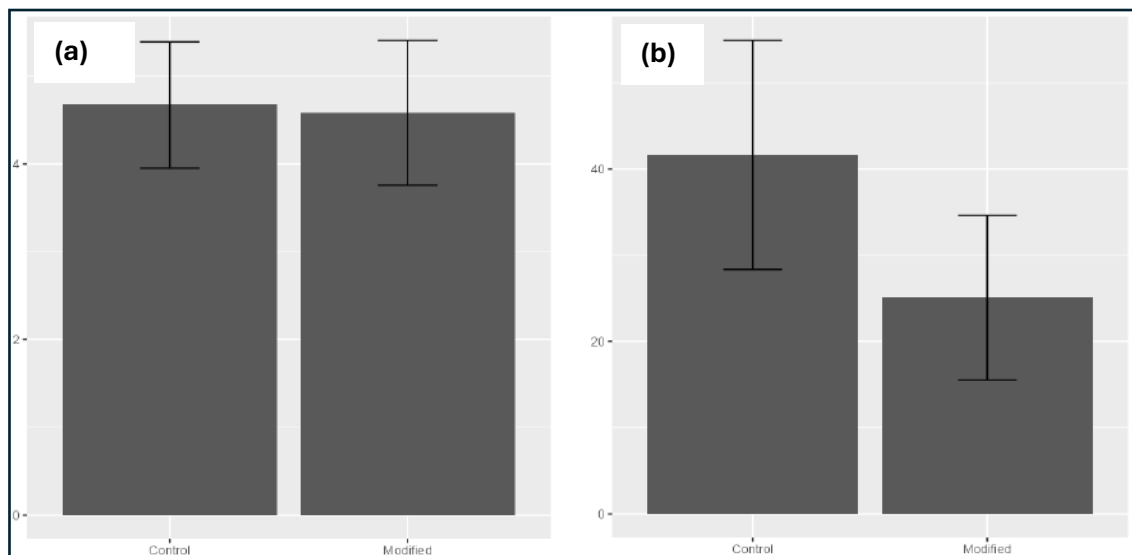


Figure 10. Landings per unit effort (LPUE) kg/hr. (a) Whole Nephrops (b) Tailed Nephrops. AFBI.

- The monetary value of Nephrops caught during the trial, in both the FloMo trawl and control trawl are shown in Table 1.

Table 1. Sales value of landed Nephrops

	Whole Prawn sales value (£)	Tailed Prawn sales value (£)
<b>FloMo</b>	£2,170.80	-
<b>Control</b>	£2,552.70	-
<b>FloMo</b>	-	£4,635.50
<b>Control</b>	-	£9,453.50

- The majority of whiting caught during the trial were below the MCRS of 27 cm. By raised count, the FloMo reduced the catch of whiting by 59% over tows 1-11 and by 74% over tows 12-22%, when compared with the control gear. AFBI's analysis of data collected during the second half of the trial indicated that the catch rate of whiting was greater in the control gear for most length classes of fish, with a small increase in catch rate of larger whiting apparent in the FloMo trawl (Figure 11).

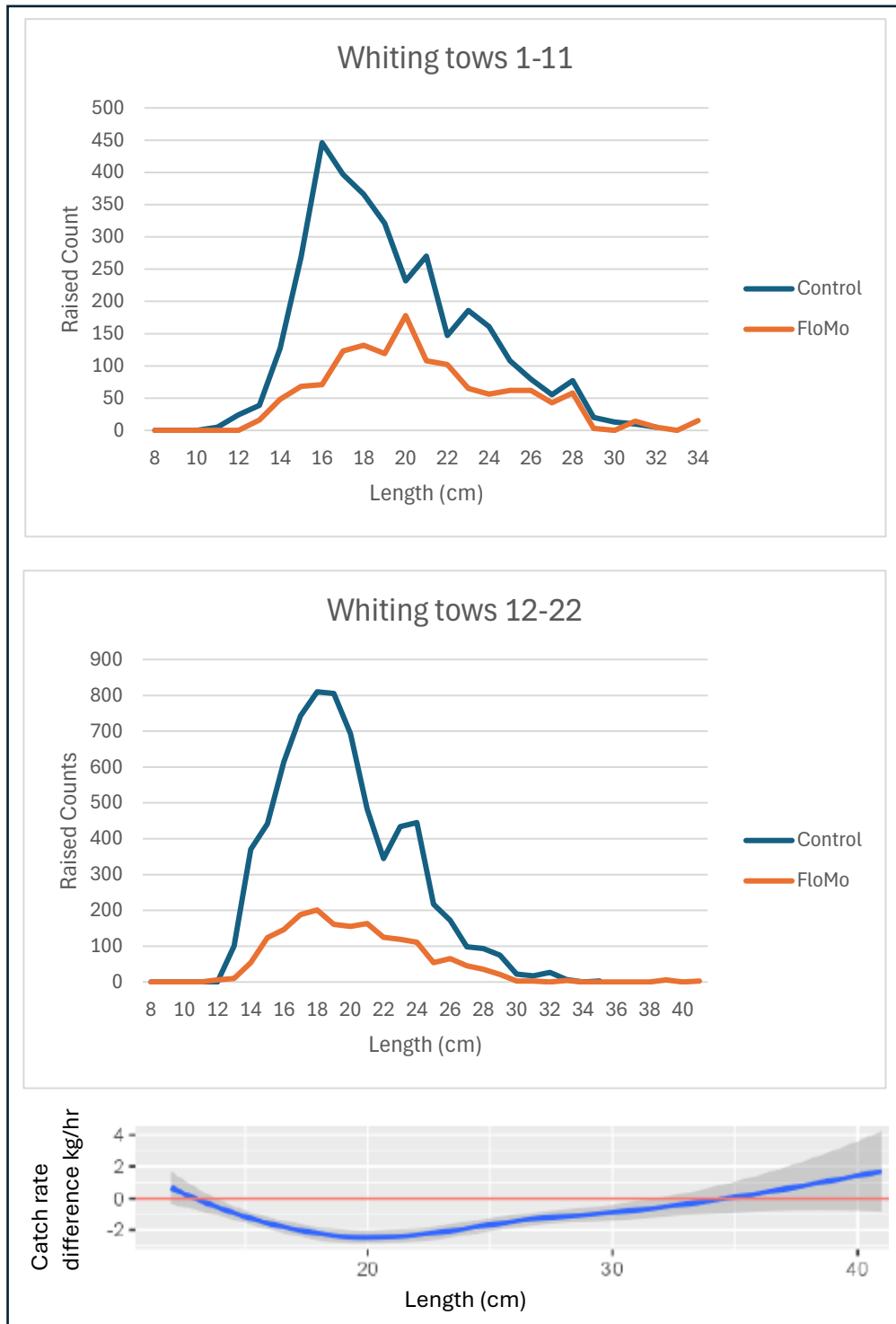


Figure 11. Raised counts of whiting catch for control and FloMo gear and catch rate difference (bottom (AFBI)).

- The total haddock catch from the FloMo and control gear was considerably less than the corresponding whiting catch. Haddock was the second most abundant commercial fish species present during the trial. By raised count the FloMo increased the catch of haddock by more than 100% over tows 1-11 and reduced it by 12% over tows 12-22, when compared with the control gear. Most of the increased haddock catch attributed to FloMo

was composed of fish above the MCRS of 30 cm. This corresponds with AFBI's analysis of catch rate differences over the second half of the trial; this shows that haddock over 30 cm were typically caught at a greater rate by FloMo than the control gear (Figure 12).

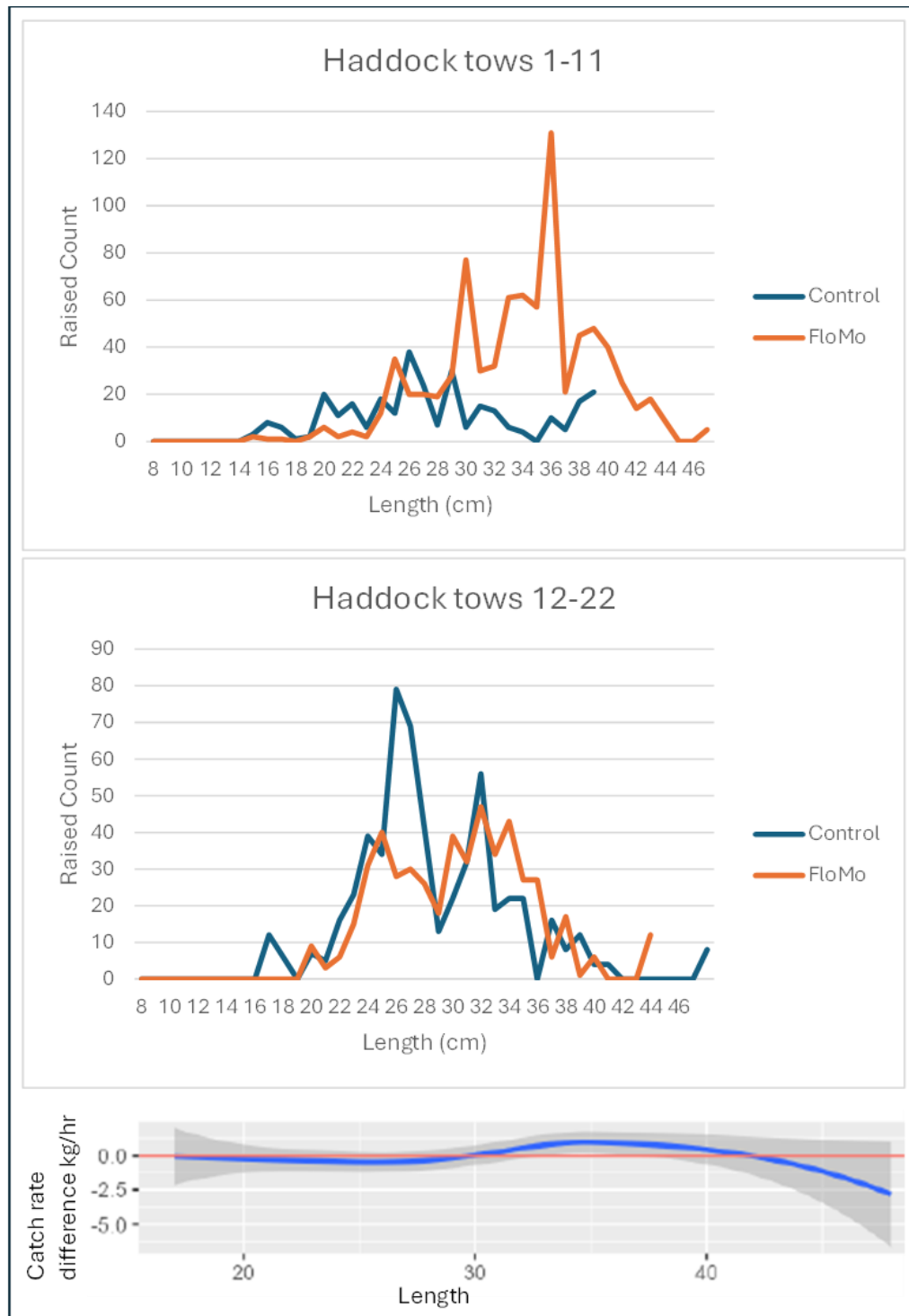


Figure 12. Raised counts of haddock catch for control and FloMo gear and catch rate difference (bottom (AFBI)).

## 5.0 Discussion

### 5.1 Findings

Irish Sea whiting is a conservation priority in the Northern Ireland Nephrops fishery as bycatch mortality can be high at certain times of the year. The stock is currently below biological limit reference points with ICES (International Council for the Exploration of the Sea) advising a total allowable catch of no more than 200 tonnes for 2026 (2). A proportion of Irish Sea whiting reach maturity at a length that is below the MCRS for this species. This trend is partly attributable to changes in environmental conditions in the Irish Sea such as water temperature. As a consequence, much of the whiting caught by Northern Ireland Nephrops trawlers operating in the Irish Sea cannot be sold into the food chain. Gear innovation and the development of more selective fishing gears are therefore important to avoid this bycatch.

The results from the FloMo gear trial show that this device can be an effective means of reducing the capture of whiting and other small fish in the Irish Sea Nephrops fishery. The significant reduction in whiting catch that was observed in the FloMo trawl was evident throughout the trial. Video footage obtained from cameras positioned inside FloMo showed a passive water flow environment; whereas in a standard trawl, turbulent water flow is more typical. Turbidity inside FloMo was negligible in the video footage that was collected; however, this was obtained during the hauling phase of operations. It was not possible during this trial to determine if turbidity inside FloMo remained low as it was towed across the seabed.

Based on the results of this study, it is likely that the combination of a calm water flow environment and reduced turbidity inside FloMo aides fish escapement. Some of the reviewed video footage from inside the trawl appeared to show a suction effect around the apertures of FloMo, but this could not be confirmed during the trial. This would tend to make sense if a pressure gradient was established between the inside and outside of FloMo during towing.

It was noted that as catch was emptied from the hopper, the catch from the FloMo device was consistently less muddy than that caught by the control gear. It was also noted that larger fish caught in the FloMo trawl exhibited more energetic behaviour than corresponding fish caught in the control gear.

The size of apertures in the top and bottom sheets of FloMo are a key design feature of this device, both in terms of bycatch reduction and the retention of target species. Analysis of catch data collected as part of this trial indicates that aperture size in the FloMo was not optimal for the size of Nephrops the fishery aims to retain. The MCRS for Irish Sea Nephrops is 70mm total length,

37mm tail length and carapace length 20mm. Small Nephrops above the MCRS easily passed through the 20mm apertures fabricated into the bottom sheets of the FloMo device. Based on the size of Nephrops that would usually be retained onboard and processed as a tail, a more suitable size aperture for the Irish Sea would be 10-15 mm.

Secondary loss of Nephrops appeared to be occurring from the selvages (the longitudinal join between the top and bottom sheets) of the FloMo; the joins between the retention modules and some of the top sheet apertures (Figure 13). Some modifications - taped and tied-up top sheet apertures – were undertaken in an attempt to address the Nephrops loss during the trial however, the success of these measures could not be quantified.

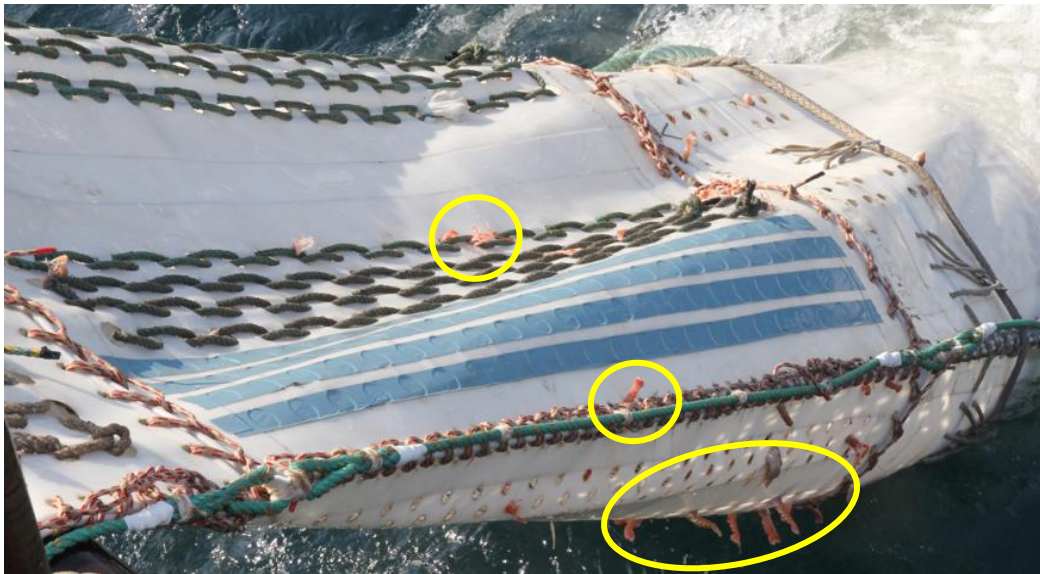


Figure 13. Nephrops escape from FloMo (circled).

From observations made during the trial and from the results of the post-trial catch data analysis, it is evident that the trawl fitted with the FloMo device retained more larger fish than the control gear. This was the case for haddock, whiting, lesser spotted dogfish and spurdog. Cod catch throughout the trial was low and is not discussed further in this report.

The largest apertures in the FloMo that was trialled were 55mm and were situated along the top sheets of the device (Figure 14). This aperture size is large enough for whiting below the MCRS and other small fish to escape through, but is too small to permit the escape of large quota and non-quota species. In some fisheries, where there is adequate fish quota, the retention of larger fish may be a positive benefit of FloMo. However, in mixed fisheries that include fish species with low or no quota the limited ability of FloMo to release larger fish may require further consideration. The results of this trial indicate that a 300mm square mesh panel (present in the control gear, but absent from the FloMo gear) is more effective at reducing the catch of larger bycatch species.



*Figure 14. Image of FloMo showing 55mm apertures on top sheets and 20mm apertures on bottom sheets.*

## 5.2 Operation

Over the course of the trial, the spread of both gears was consistent and comparable with each other. Engine revolutions during towing were within the expected range and it did not appear that FloMo was any more difficult to tow than the control gear. However, an assessment of potential fuel efficiency associated with FloMo was beyond the scope of this trial.

During the deployment of FloMo, it was noted that the crew / skipper required more effort to achieve movement of the device away from the stern of the vessel. A standard trawl (the control gear) more naturally moves away from the stern of the boat after it has been deployed. This difference in behaviour is potentially a consequence of the variation in buoyancy between the FloMo and control gears. FloMo is constructed from sheets of a buoyant plastic material and is made more buoyant by floats that are fitted inside the retention modules, and at the end of the cone section.

Due to the vessel set-up, there was also no clear view from the wheelhouse to the net drum, as is the case for most fishing vessels in Northern Ireland. This caused issues when the crew stopped the haul suddenly at times, resulting in a large backwash which flushed the majority of the catch into the retention modules resulting in a large part of the catch being lost. Whilst the crew were advised that the FloMo system needed to be hauled smoothly and evenly until the last retention module is out of the water, this operation was impeded by the lack of a clear line of sight.

Sea state was exceptionally calm for the duration of the trial and therefore weather conditions had no discernible effect on the operation of the FloMo device. During the hauling phase of operations, the crew were required to gently retrieve the FloMo trawl to the stern of the vessel before lifting and guiding the codend around to the vessel's hopper. Backwash was observed inside FloMo when the gear was close to the surface with loss of Nephrops visible. Normal fishing operations do not require gentle operation of the winch to retrieve gear and backwash inside a standard trawl is not pronounced. Aside from a few small holes in the lifting bag of FloMo, there is limited scope for water to flow out of the end of the gear. This may contribute to the backwash effect when the gear is brought to the surface.

Once clear of the water, the FloMo lifting bag quickly drains. The gear was easily brought around to the side of the vessel and lifted into the hopper. This part of the operation was comparable to working with a standard net.

The release mechanism that allows the catch from the FloMo to be emptied into the hopper worked efficiently at first; however, by the final days of the trial the release mechanism became more unreliable.

### 5.3 Storage

Northern Ireland based Nephrops trawlers typically use a twin-rig or quad-rig gear configuration. When gear is not being towed behind the vessel it is stored on net drums situated at the stern. In some respects, the MFV Wakeful is atypical of fishing vessels belonging to the Northern Irish fleet which target Nephrops in the Irish Sea. The distance (approximately 5m) between the stern of the MFV Wakeful and the net drums is greater, and the net drums are also larger, than those found on most Northern Irish vessels. Amongst Northern Irish Nephrops trawlers, it is more typical for net drums to be smaller and positioned closer to the stern of the vessel (Figure 15).

FloMo is bulkier than standard gear (Figure 16) and less prone to collapsing down on itself. When not deployed in the water, the device requires more storage space on the net drum. On the MFV Wakeful the net drums were not large enough to hold the entire FloMo device (Figure 17). These are important operational considerations aboard all commercial fishing vessels.



Figure 15. Typical net drum configuration on Northern Ireland Nephrops trawlers.

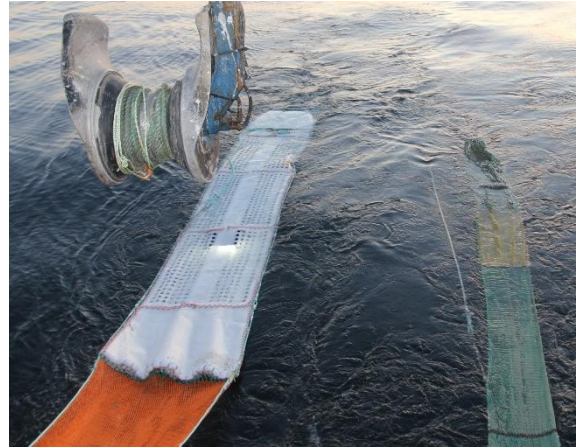


Figure 16. FloMo and control gear.



Figure 17. FloMo stored on net drum of MFV Wakeful.

## 5.4 Catch Quality

As already stated, the original concept of the FloMo device was to improve catch quality and reduce water flow turbulence inside the trawl. However, the trial covered in this report focused on bycatch reduction and therefore a detailed assessment of 'catch quality' was not undertaken.

During the summer months, Northern Irish based Nephrops trawlers operating in the western Irish Sea generate 80-90% of their income from the sale of landed Nephrops tails. There was no apparent difference in quality of Nephrops tails originating from the FloMo device and the control gear. As presented in the results (Section 4), the whole Nephrops component of the catch was

similar for both gears. Larger Nephrops with one or both chelipeds missing tend to be tailed. Therefore, the catch quantity of larger Nephrops with both chelipeds intact was the same between FloMo and the control gear. It is likely that any benefits to Nephrops quality resulting from the FloMo device are partially negated by the increased catch of larger fish, as their presence, and more lively condition, in a codend may cause damage to the Nephrops catch.

It was noted that when the catch from the FloMo was emptied into the vessel's hopper it appeared 'cleaner' (less muddy) than the catch from the control gear. Lesser spotted dogfish and Spurdog also appeared to exhibit more 'lively' behaviour. These factors may contribute to a higher survival rate of discarded fish caught by FloMo however, a detailed assessment of survival rates was beyond the scope of this trial.

## 6.0 Conclusions

1. FloMo is an innovative gear device with marked differences to a traditional trawl design. Nephrops fisheries in New Zealand and the Irish Sea are also markedly different. Therefore, when developing new selective fishing gear, it is important that it is tailored to the specific fishery that it will be deployed in.
2. The Irish Sea Nephrops fishery is typified by a target species that is comparatively small, when compared to the same species found in other UK Nephrops fisheries, together with a main bycatch species (whiting) that is also relatively small. Therefore, achieving separation between the two species whilst retaining the desired Nephrops catch is challenging.
3. FloMo substantially reduced catches of juvenile whiting and other small fish – the main objective of the trial - providing a clear conservation benefit for a stock currently below biological reference points in the Irish Sea.
4. The internal flow characteristics of FloMo—reduced turbulence together with the exceptionally calm-at sea conditions—likely promoted escapement, although full validation (particularly during towing) would require further investigation.
5. Aperture sizes trialled (20 mm bottom sheet, 55 mm top sheet) were not optimal for retaining the sizes of Nephrops typically landed in the Irish Sea. Nephrops above MCRS passed through the 20 mm apertures and additional losses occurred at joins and selvages. The size of the escapement holes was based on the data provided from the fish size sampling, but in hindsight this was not optimal for the size of Nephrops to be retained and a smaller hole size would have been better.

6. FloMo retained significantly more large fish than the standard trawl, an outcome that may be beneficial in quota-rich fisheries, but problematic in mixed fisheries with limited fish quota.
7. Operationally, buoyancy-related handling issues and backwash caused some Nephrops loss during retrieval. Careful, smooth and even hauling of the FloMo system is needed until the last retention module is out of the water and the catch is in the lift-bag.
8. The release mechanism on the lift-bag deteriorated, hindering reliability during the trial, making the device unsuitable for commercial use in its current form<sup>3</sup>.
9. FloMo device storage requirements exceed typical capacity on Northern Ireland Nephrops trawlers, representing a potential major barrier to adoption.
10. No sampling was undertaken to ascertain whether there was either any discernible improvement in Nephrops quality compared with the standard trawl, or whether the presence of increased large and livelier fish in the tows resulted in any catch damage.
11. FloMo shows promise as a selective device, but some redesign is required before it can be considered commercially viable for the Northern Ireland Nephrops fleet.
12. Supporting the uptake of new selective gear designs is of current relevance in UK fisheries (3), where the foundations of technical measures are based on mesh sizes. FloMo poses some interesting questions in terms of policy and regulation, as the device does not comprise of meshes therefore, the pathway to regulatory approval is presently unclear. It is noted that PSH have negotiated the regulatory pathway to gain approval in some New Zealand fisheries and there may be useful lessons to be learnt for the UK.

## 7.0 Recommendations

Recommendations for consideration prior to any future Northern Ireland Nephrops trials using the FloMo device.

### 7.1 Technical improvements

1. Evaluate reducing the bottom-sheet aperture size to improve retention of legally marketable Nephrops.
2. Improve sealing and construction of selvages, module joins and top-sheet apertures to reduce secondary Nephrops loss.
3. Re-engineer the catch-release mechanism to ensure consistent, durable performance under repeated commercial use.

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<sup>3</sup> Issue with the lift-bag release was noted and work has been undertaken to improve the design to prevent this issue from recurring. Martin de Beer, email to the authors, 11<sup>th</sup> December 2025.

4. Explore options to improve device deployment behaviour, minimise surface backwash during hauling and increase water-exit capacity near the lifting bag to reduce pressure build-up.

## 7.2 Further research requirements

5. Consider conducting trials to gather data on the performance of FloMo in relation to bycatch reduction and target catch retention in other UK Nephrops fisheries.
6. Characterise internal turbidity and flow patterns during towing, not only hauling, using video or sensor systems.
7. Evaluate the survival of fish escaping or discarded from the FloMo device, particularly whiting, haddock and dogfish.
8. Assess performance under a wider range of sea states, including moderate and rougher conditions, to understand operational characteristics and any associated risks.
9. Conduct further trials on vessels typical of the NI fleet, to validate handling, storage and safety on representative vessel configurations.

## 7.3 Operational and fleet-level considerations

10. Assess feasibility and cost of vessel modifications required for safe storage and deployment of FloMo, noting current incompatibility with standard net-drum arrangements.
11. Consider the assessment of fuel use performance in future FloMo trials.
12. Undertake economic analysis of potential catch value trade-offs, given the reduced retention of Nephrops for tailing and increased catches of larger fish.
13. Any future (voluntary) fleet uptake will be heavily influenced by progress to address the above technical and operational issues, and where evidence of economic benefit will need to be demonstrated.

## 7.4. Regulatory

14. Explore potential transferable lessons from New Zealand where gaining regulatory approval in other UK jurisdictional waters for the FloMo device is concerned.

## 8.0 References

1. Fisheries Act 2020. [Fisheries Act 2020](#)
2. ICES. 2025. Whiting (*Merlangius merlangus*) in Division 7.a (Irish Sea). In Report of the ICES Advisory Committee, 2025. ICES Advice 2025, whg.27.7a.  
<https://doi.org/10.17895/ices.advice.27202947>
3. Seafish. 2025. Supporting the commercial uptake of innovative fishing gear. Publication Reference No. 36726. [Supporting the commercial uptake of innovative fishing gear — Seafish](#)