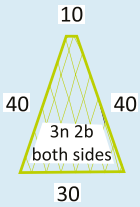

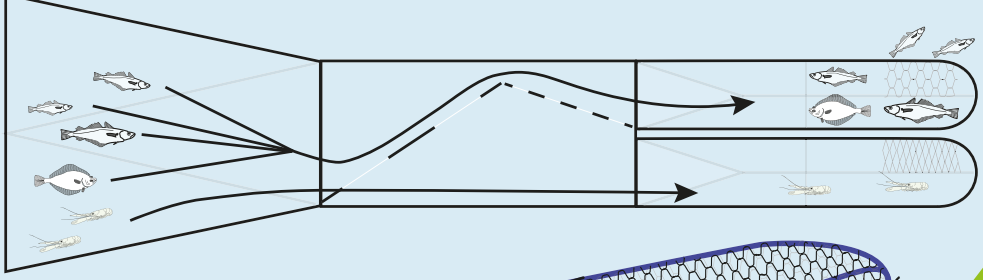

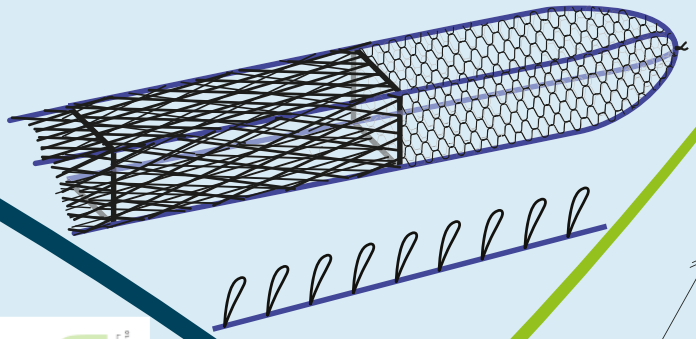

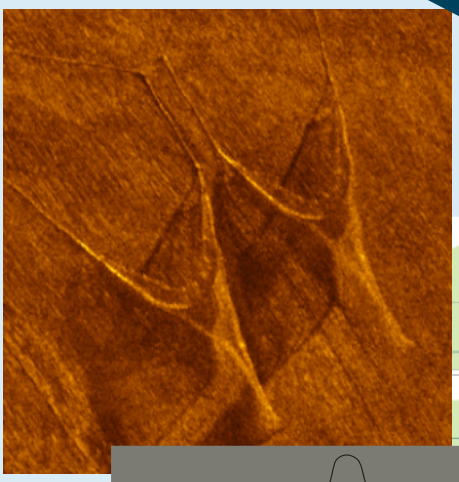

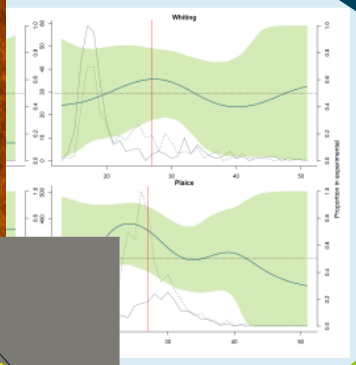

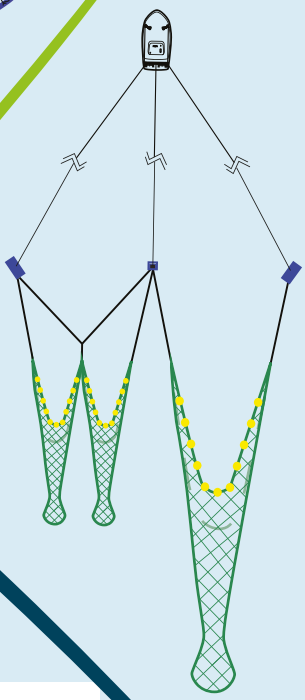

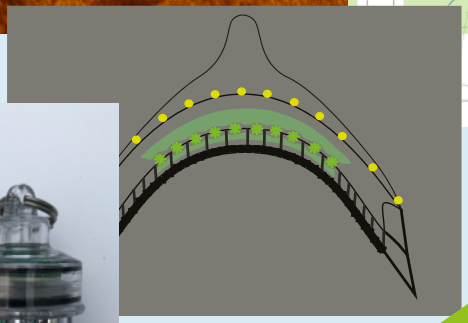

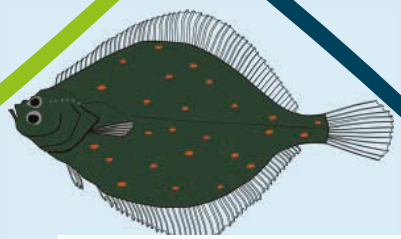

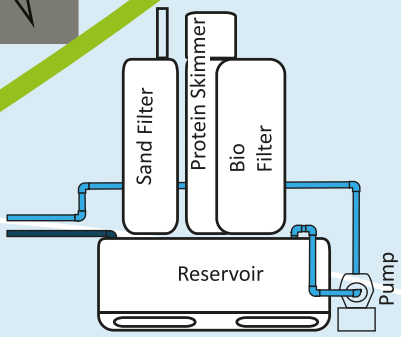

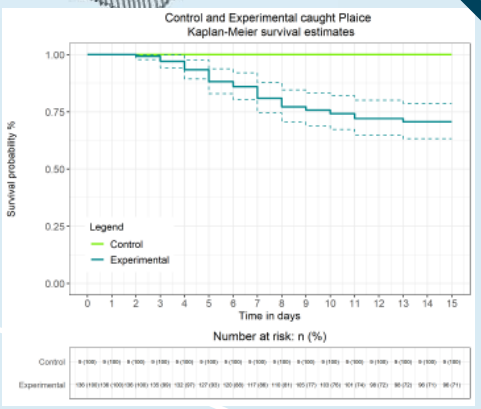

BIM Ireland's Seafood Development Agency

Fisheries Conservation solutions to reduce unwanted catches

February 2022

Ireland's EU Structural and Investment Funds Programmes 2014 - 2020
Co-funded by the Irish Government and the European Union

An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

EUROPEAN UNION
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Introduction

BIM's Fisheries Conservation team works closely with the Irish fishing industry to develop technical solutions that reduce unwanted catches. This helps address challenges posed by the EU landing obligation and boost fisheries sustainability and marine biodiversity by decreasing landings of small (juvenile), over-quota and non-target species.

This updated guide contains summaries of technical solutions developed since 2014 and categorised as follows:

A. Small, over quota and non-target fish species in *Nephrops* trawls

B. Small *Nephrops* in *Nephrops* trawls

C. Small, over quota and non-target fish species in demersal trawls

The landing obligation is primarily implemented through discard plans which specify detailed requirements for demersal fisheries in North-Western waters. These include survivability and de minimis exemptions which permit some continued discarding, and gear measures that aim to avoid unwanted catches during fishing. New gear measures are also implemented through other legislation, such as remedial measures under the annual EU Regulations on fishing opportunities.
(see: https://bim.ie/fisheries/advisory-services/fisheries-management-chart/)

Many of the solutions developed in Ireland are included in this EU legislation which greatly assists with industry uptake and implementation. Detailed studies on all of these solutions are available at: https://bim.ie/publications/fisheries/

Acknowledgements
Thanks are extended to all the owners, skippers and crews of Irish vessels who collaborated with BIM. The work was funded by the Irish Government and part-financed by the European Union through the EMFF Operational Programme 2014–2020 under the BIM Sustainable Fisheries Scheme.

A. Reduce under size, over quota and non-target fish species in the Nephrops trawl fishery using a:

1. 300 mm square mesh panel
2. SELTRA sorting box
3. SELTRA sorting box compared with a 300 mm square mesh panel
4. SELTRA sorting box (with 90 mm mesh)
5. SELTRA codend net plan
6. Swedish grid
7. *Nephrops* catch sensor (Notus Echo) on a Swedish grid
8. Dual-codend separator
9. Dual-codend separator compared with a 100 mm codend
10. Dual-codend separator compared with a 300 mm square mesh panel
11. Dual-codend net plan
12. Bycatch escape corridor

Reducing fish catches with a 300 mm square-mesh panel in *Nephrops* trawls

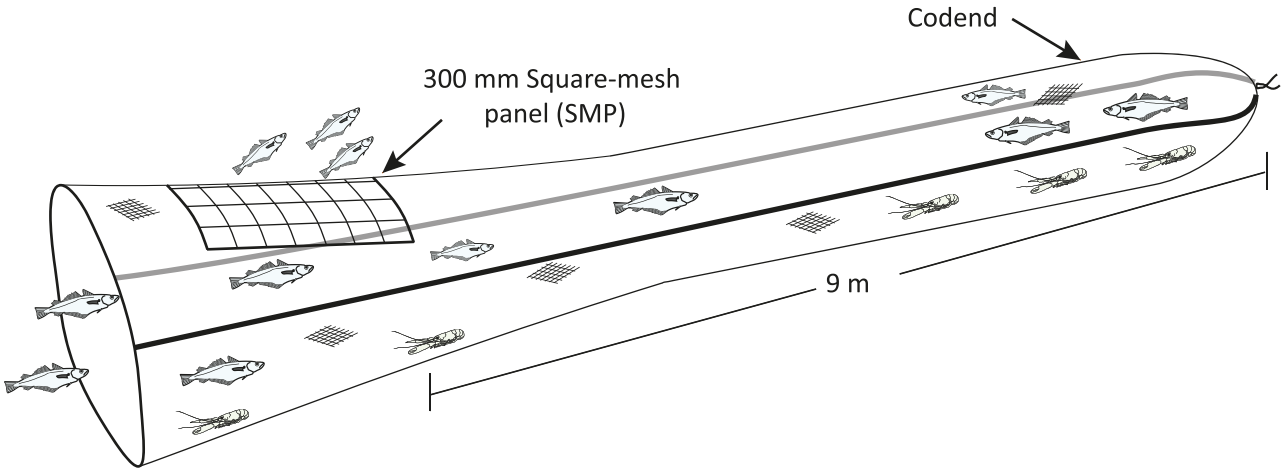
AREA, VESSEL

The 23 haul quad-rig catch comparison trial took place in the western Irish Sea (ICES 7a) on board the MFV Stella Nova (DA57) (23.5 m, 441 kW) during August 2014, while targeting *Nephrops*.

GEAR MODIFICATION

A 3 m long 300 mm square-mesh panel (SMP) was inserted 9 m from the cod-line in the two-panel test gear. The standard gear was identical but without a square-mesh panel.

Nominal codend mesh size and fishing circle were 70 mm and 386 × 70 mm.



Species	Standard gear (kg)	300 mm SMP (kg)	Difference (%)
Haddock	214	65	-70
Whiting	136	66	-52
Nephrops	1106	1262	14

RESULTS

- Haddock and whiting catches were reduced across most size grades
- Nephrops catches were not reduced
- The 300 mm SMP is a gear measure in the Celtic and Irish Seas

FURTHER INFORMATION
https://tinyurl.com/2hx6n4t4
geartrials@bim.ie

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Reducing fish catches with a SELTRA sorting box in *Nephrops* trawls

AREA, VESSEL

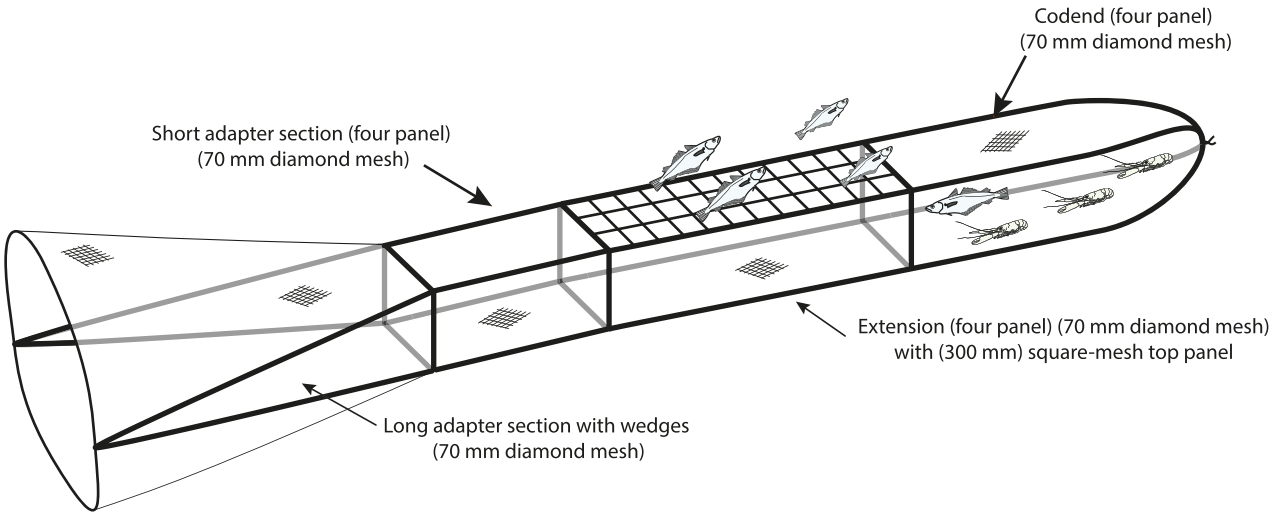
The twin-rig catch comparison trial took place in the western Irish Sea (ICES 7a) on board MFV Ocean Breeze (D96)(17 m, 224 kW) during September 2016, while targeting *Nephrops*.

GEAR MODIFICATION

The SELTRA sorting box:

- a 3 m long four-panel section of 70 mm diamond mesh
- with a 3 m long 300 mm square-mesh escape window in the top panel attached 3 m from the cod-line

The standard and SELTRA gears were fished on identical twin-rigged trawls (380 × 80 mm fishing circle) and both were fitted with a 70 mm codend. A square-mesh panel was not present in the standard gear.



Species	Standard gear (kg)	SELTRA (kg)	Difference (%)
Whiting	152	66	-57
Haddock	126	12	-91
Flatfish	20	6	-69
Monkfish	5	9	72
Dogfish	351	25	-93
Nephrops	362	396	9

RESULTS

- Substantial reductions in catches of most fish species
- Catches of very small whiting < 20 cm not reduced
- *Nephrops* catches not reduced
- The SELTRA is a gear measure in the Celtic and Irish Seas

FURTHER INFORMATION
https://tinyurl.com/2p83m2pz
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Comparing catches between a SELTRA sorting box and a 300 mm square-mesh panel in *Nephrops* trawls

AREA, VESSEL

The twin-rig catch comparison trial took place in the western Irish Sea (ICES 7a) on board MFV Ocean Breeze (D96) (17 m, 224 kW) during December 2016, while targeting *Nephrops*.

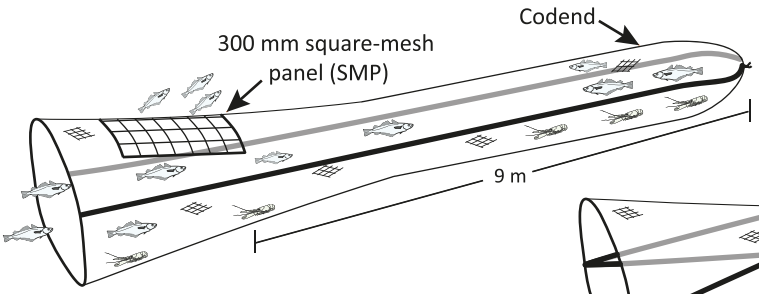
GEAR MODIFICATION

The SELTRA sorting box:

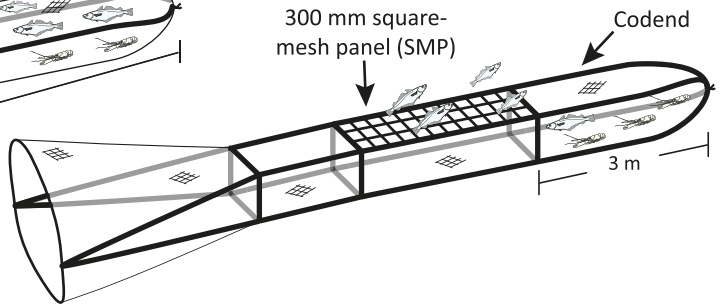
- a 3 m long four-panel section of 70 mm diamond mesh
- with a 3 m long 300 mm square-mesh escape window in the top panel attached 3 m from the cod-line

The standard gear was fitted with a 3 m long 300 mm square-mesh panel (SMP) 9 m from the cod-line. Both gears were fished on identical twin-rigged two-panel trawls (380 × 80 mm fishing circle) and fitted with 70 mm codends.

300 mm SMP gear



SELTRA



Species	300 mm SMP (kg)	SELTRA (kg)	Difference (%)
Whiting	362	277	-24
Haddock	639	314	-51
Cod	43	8	-81
Flatfish	118	53	-55
Monkfish	123	107	-12
Dogfish	1617	419	-74
Nephrops	610	725	19

RESULTS

- Substantial reductions in catches of most species
- Catches of very-small whiting < 20 cm not reduced
- Greater *Nephrops* catches in the SELTRA
- SELTRA is a superior gear measure

FURTHER INFORMATION
https://tinyurl.com/2p83m2pz
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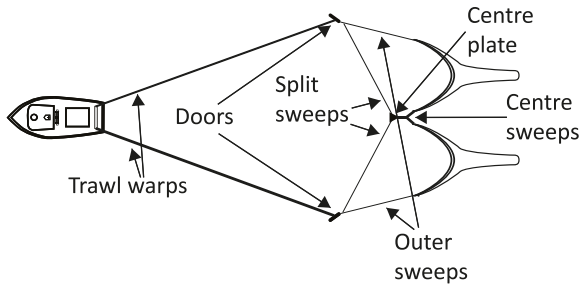
Reducing catches of small fish with a SELTRA sorting box with 90 mm codend

AREA, VESSEL

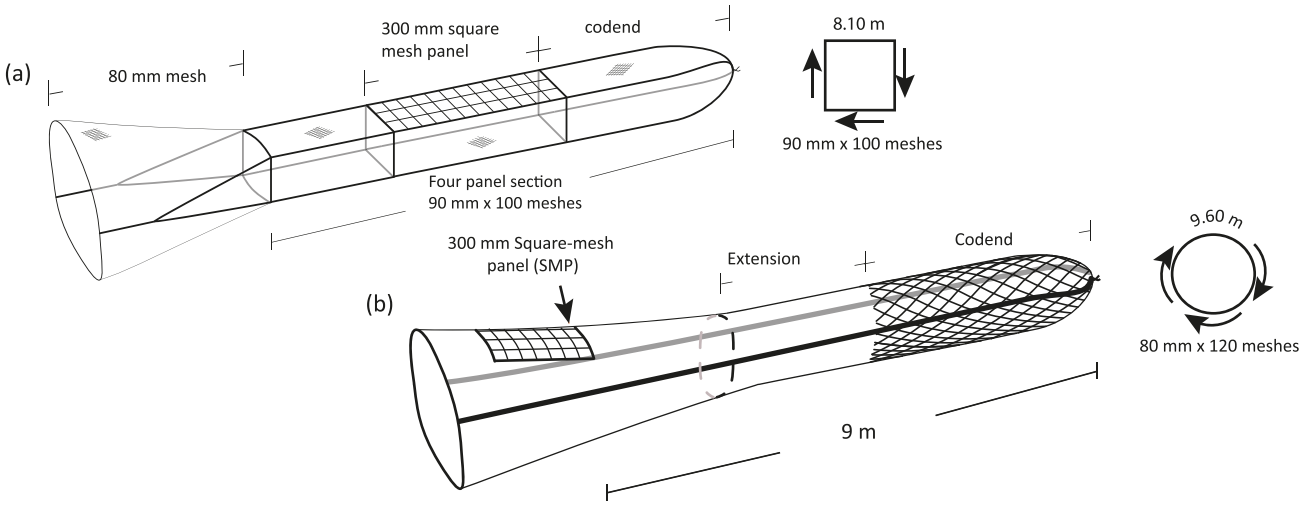
A catch comparison trial was conducted in the western Irish Sea (ICES 7a) in June 2018 on board an 18 m vessel.

GEAR MODIFICATION

Trawl gear comprised 2 x 37 m footrope *Nephrops* trawls towed using two warps in a half quad-rig configuration. (a) The test gear consisted of a four-panel 90 mm SELTRA sorting box with a 300 mm SMP mounted 3.7 m metres from the codline.



(b) The standard gear consisted of a two–panel aft section with a 300 mm SMP and 80 mm codend.



Percentage of total catch weight in each codend

Species	Standard 80 mm kg)	SELTRA 90 mm (kg)	Difference (%)
Whiting			
≥ 27 cm#	4	2	-56
< 27 cm#	54	13	-75
< 20 cm	42	9	-78
Haddock			
≥ 30 cm#	29	11	-62
< 30 cm#	289	85	-70
< 20 cm	166	51	-69
Nephrops			
≥ 25 mm*	1009	814	-19
< 25 mm*	48	31	-34

#MCRS: minimum conservation reference size
*carapace length

RESULTS

- Catches of very-small whiting < 20 cm were reduced by 78%.
- Concerns over mortality of very small whiting escaping through codend meshes
- Reduction in *Nephrops* catches mainly occured for tail grades

FURTHER INFORMATION
https://tinyurl.com/bvftrzch
geartrials@bim.ie

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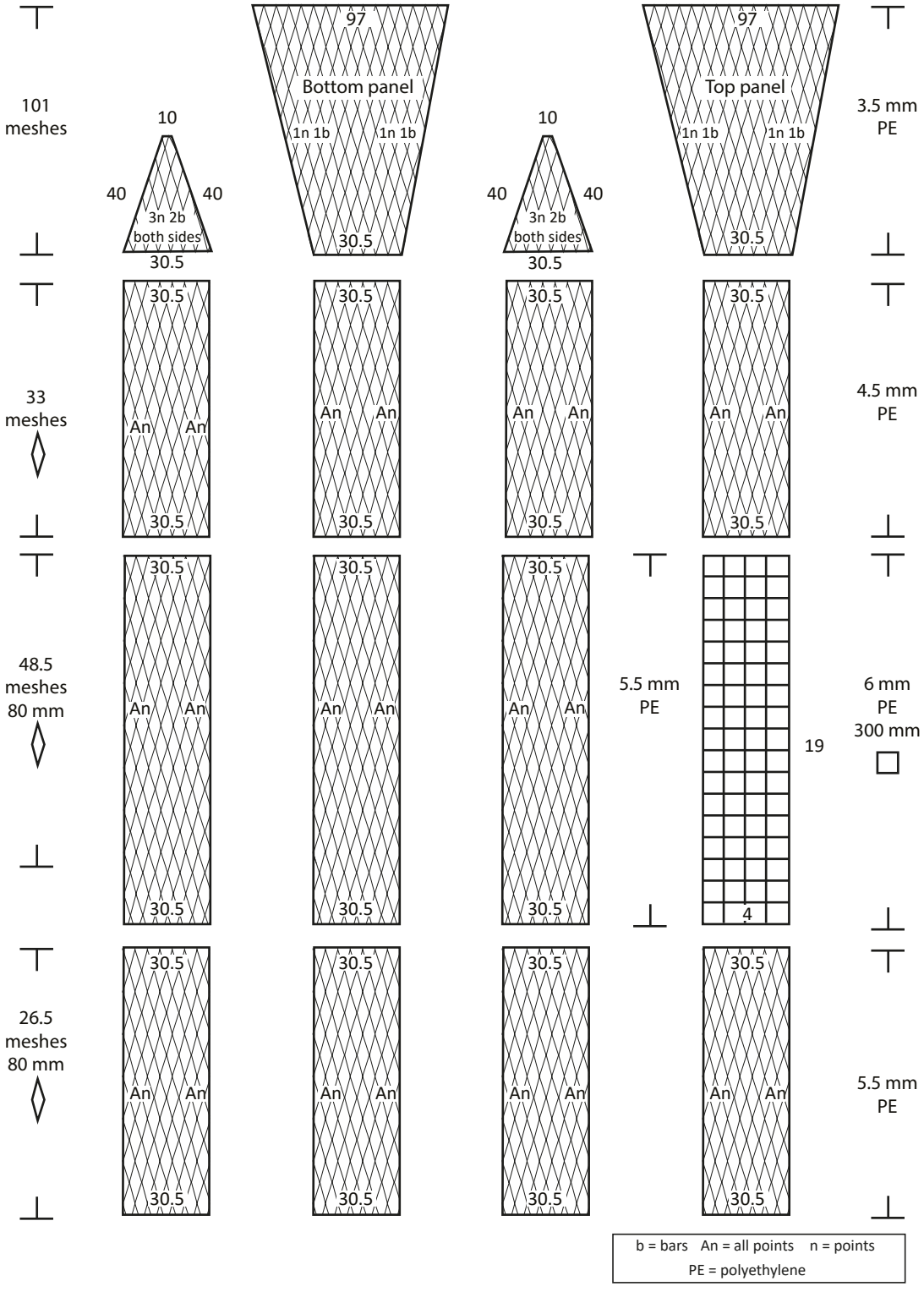
SELTRA codend net plan



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Reducing fish catches with a Swedish grid in *Nephrops* trawls

AREA, VESSEL

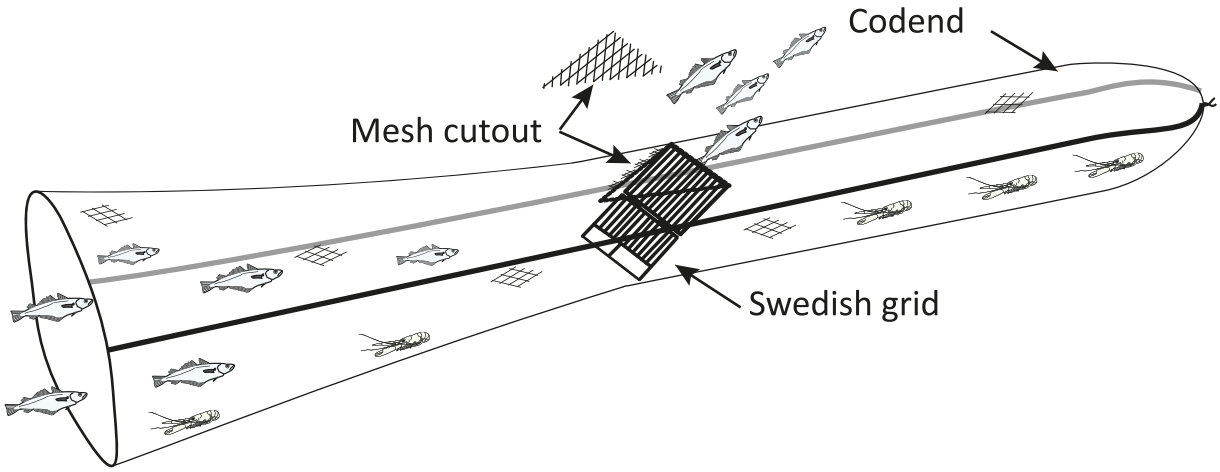
The 12 haul quad-rig catch comparison trial took place in the western Irish Sea (ICES 7a) on board MFV Our Lass II (DA261) (21.7 m, 484 kW) during September 2015, while targeting *Nephrops*.

GEAR MODIFICATION

The test gear was fitted with:
A Swedish grid with vertical bars:

- spaced 35 mm apart and
- a 15 cm high gap at the bottom

An escape hole in the top sheet of the trawl forward of the grid. The standard gear was identical but without a grid. Nominal codend mesh size was 70 mm for both gears and fishing circle was 380 × 80 mm.



Species	Standard gear (kg)	Swedish grid (kg)	Difference (%)
Whiting	183	42	-77
Cod	75	0	-100
Haddock	42	4	-90
Nephrops	1908	1834	-4

RESULTS

- Substantial reductions in key fish species across all size classes
- Little difference in *Nephrops* catches
- The Swedish grid is a gear measure in the Celtic and Irish Seas

FURTHER INFORMATION
https://tinyurl.com/4a4tw6rj
geartrials@bim.ie

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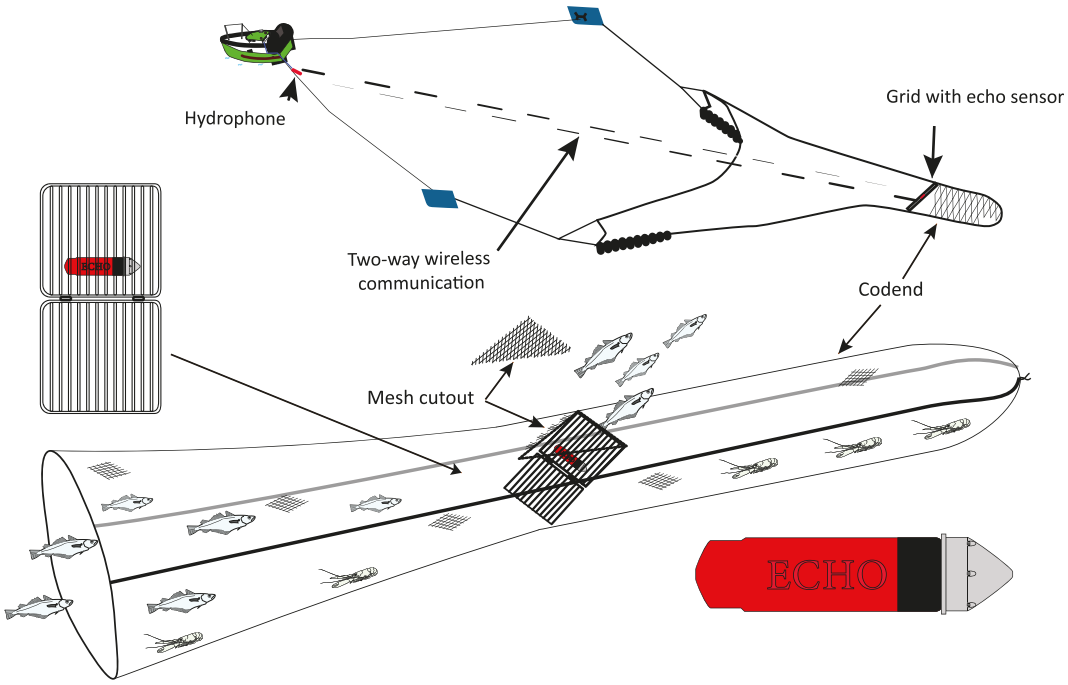
Assessment of the Notus Echo catch sensor in the Irish *Nephrops* fishery

AREA, VESSEL

The trial took place on the Galway and Aran fishing grounds (ICES 7b) on board a 11.6 m trawler during Summer 2019.

GEAR MODIFICATION

A Notus Echo sensor (used to dectect crustaceans hitting a grid) was placed on a standard *Nephrops* grid to assess its functionality in detecting *Nephrops*. The sensor was tested at different sensitivity settings to determine which was optimal for *Nephrops* detection.



Voltage	Position on grid	*Nephrops* dectection
0.60	Lower half	Inflated
1.25	Lower half	Reduced
1.00	Upper half	Optimum

RESULTS

- Optimal *Nephrops* detection (at 1.00 v) with sensor on top half of grid
- Potential uses on other grid types
- Potential to improve operational efficiency

FURTHER INFORMATION
https://tinyurl.com/hzch966j
geartrials@bim.ie

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Reducing catches of small fish with a dual-codend separator in *Nephrops* trawls

AREA, VESSEL

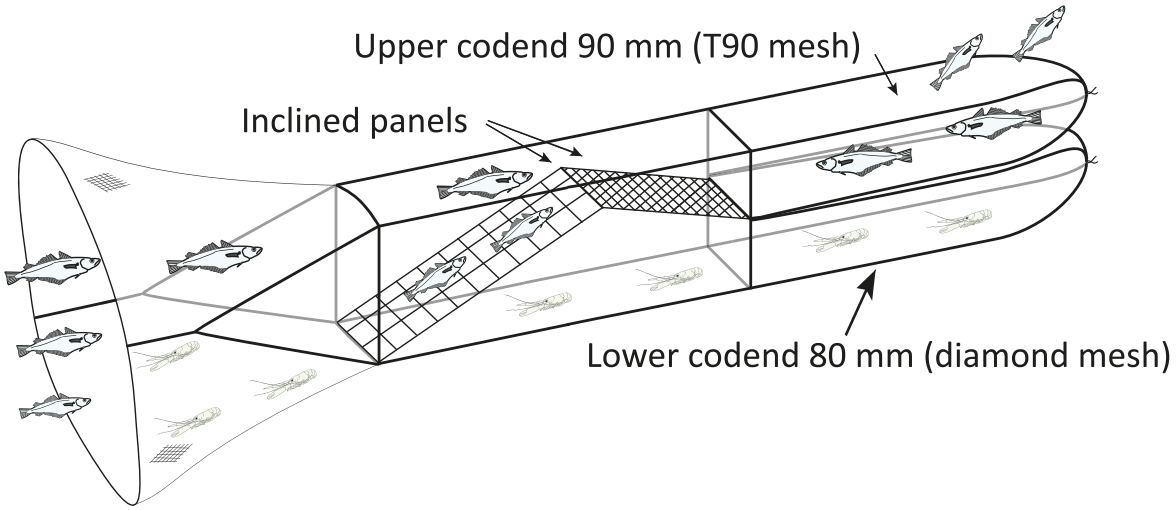
The catch comparison trial took place at the Smalls (ICES 7g) on board MFV Stella Nova (DA57) (23.5 m, 441 kW) during October 2016, while targeting *Nephrops*.

GEAR MODIFICATION

The test gear consisted of:

- a four-panel 80 mm diamond-mesh extension piece
- a 300 mm inclined square-mesh panel
- an 80 mm inclined diamond-mesh panel
- an upper codend with 90 mm T90 mesh
- a lower 80 mm diamond-mesh codend

The standard codend and extension piece were constructed with 80 mm diamond mesh. A square-mesh panel was not present in either gear.



Species	Standard gear (kg)	Test gear (kg)	Difference (%)
Haddock < 30 cm#	100	52	-49
Haddock ≥ 30 cm#	254	277	9
Whiting < 32 cm$	1435	401	-72
Whiting ≥ 32 cm$	874	553	-37
Nephrops			
< 25 mm#*	325	289	-11
≥ 25 mm#*	2103	2094	0

#minimum conservation reference size (MCRS)
*carapace length
$market size

RESULTS

- Substantial reduction in catches of small fish
- Loss of market-size whiting
- No loss in larger *Nephrops*
- Gear measure in the Celtic Sea

FURTHER INFORMATION
https://tinyurl.com/mut62yn3
geartrials@bim.ie

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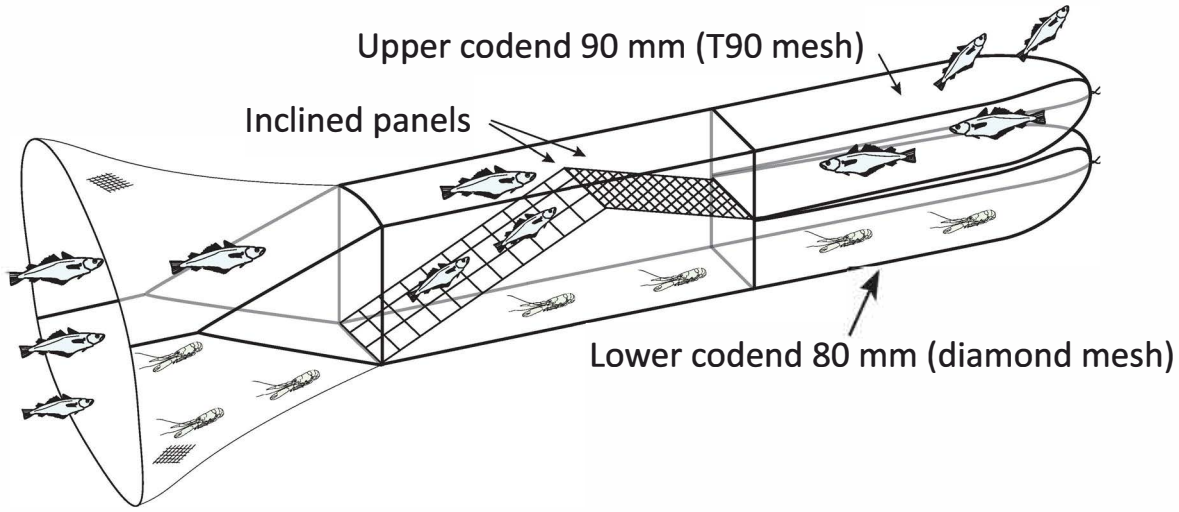
Comparing catches between the dual codend and a 100 mm codend with 120 mm square-mesh panel

AREA, VESSEL

The 6 haul twin-rig catch comparison trial took place in the Celtic Sea (ICES 7g) on board MFV Ocean Pioneer (S45) (22.4 m, 440 kW) during December 2019, while targeting *Nephrops*.

GEAR MODIFICATION

The test gear comprised, a four-panel 80 mm diamond-mesh extension piece (made with 4 mm Ø twine), a 300 mm inclined square-mesh panel with a 80 mm inclined diamond-mesh panel, an upper codend with 90 mm T90 mesh, and a lower 80 mm diamond-mesh codend. The standard codend and extension piece were made with 100 mm diamond mesh. A 120 mm square-mesh panel was only present in the standard gear.



Species	Standard gear (kg)	Dual (kg)	Difference (%)
Nephrops < 25 mm#*	5	22	>100
Nephrops ≥ 25 mm#*	123	228	85
Nephrops estimated value	€1149	€1445	20
Haddock < 30 cm#	641	504	-21
Haddock ≥ 30 cm#	32	29	-9
Whiting < 27 cm#	27	22	-19
Whiting ≥ 27 cm#	24	12	-50
Cod < 35 cm#	5	5	0
Cod ≥ 35 cm#	11	10	-9

#minimum conservation reference size (MCRS)
*carapace length

RESULTS

- 20% increase in *Nephrops* catch value
- Little difference in haddock catches
- Substantial reduction in whiting catches
- Gear measure in the Celtic Sea

FURTHER INFORMATION
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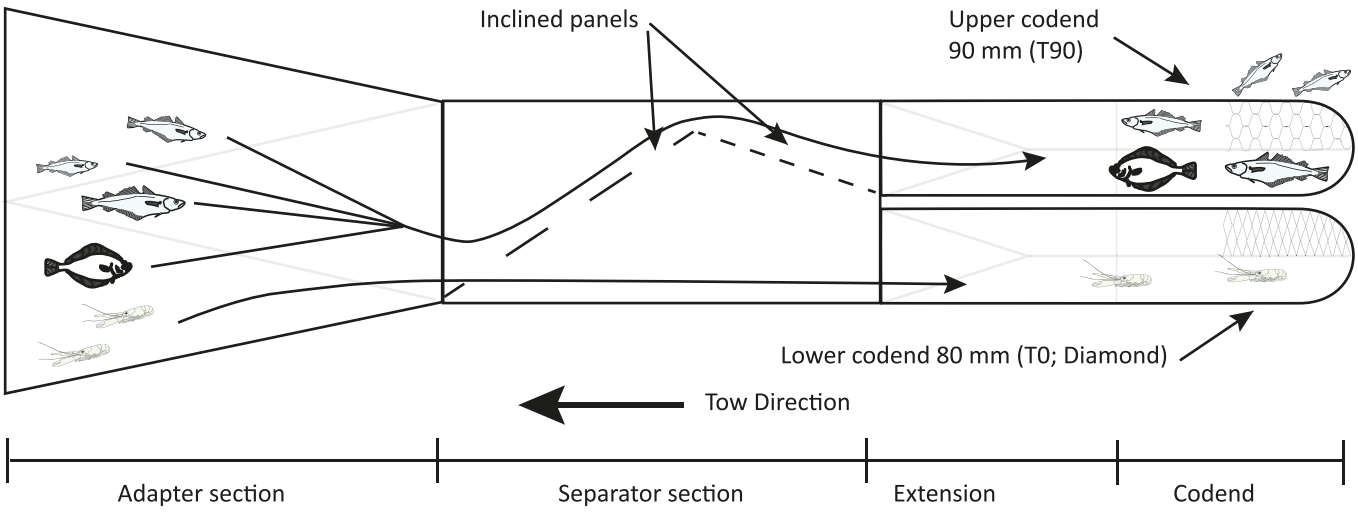
Comparing catches between the dual codend and a 80 mm codend with 300 mm square mesh panel

AREA, VESSEL

This trial took place on the Aran grounds (ICES 7b) on board the 22 m trawler MFV Kittiwake (G25), during May 2021.

GEAR MODIFICATION

A dual codend, with a 80 mm diamond mesh lower codend and 90 mm T90 (mesh turned 90°) upper codend was compared against a single 80-mm dimond-mesh codend with a 300 mm SMP in a half-quad configuration.



Species	Standard codend (kg)	Dual codend (kg)	Difference (%)
Nephrops	82	71	-13
Wanted fish	13	28	>100
Gurnard	26	22	-15
Lesser spotted dogfish	18	16	-12
Unwanted fish	3	3	0

RESULTS

- 83% of gurnards captured in upper codend
- Substantial reduction in catch sorting times
- Substantial increase in wanted fish catches with the dual codend
- Gear measure with *Nephrops* high survivability exemption in ICES sub area 7

FURTHER INFORMATION
https://tinyurl.com/5cx8ay67
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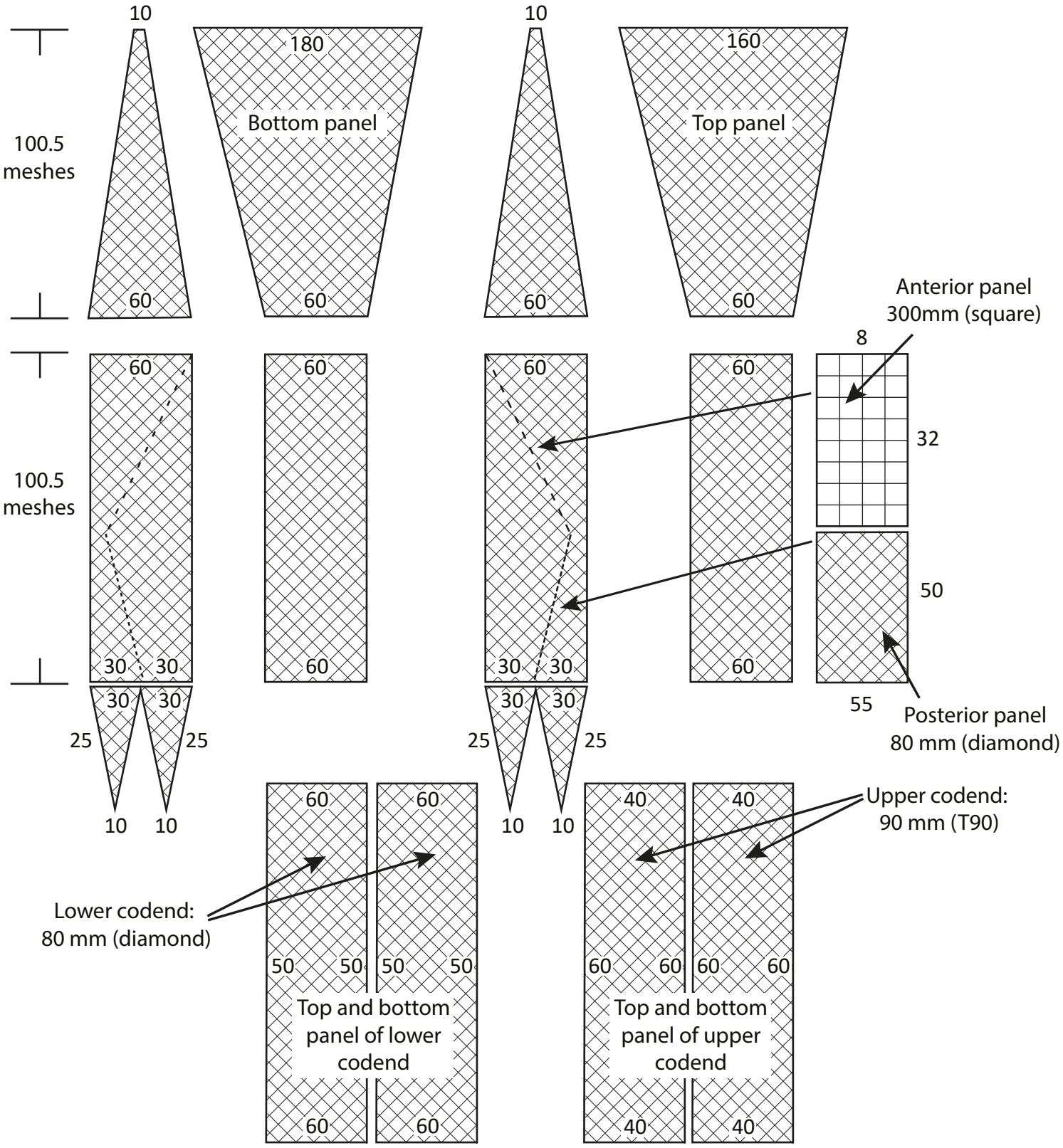
Dual codend net plan



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Using side-scan sonar to visualise the bycatch escape corridor

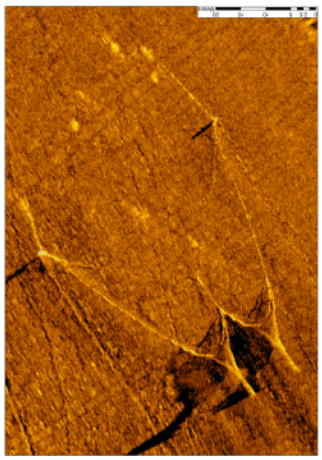
AREA, VESSEL

This trial took place in the western Irish Sea (ICES 7a) on board the 17 m trawler MFV Ocean Breeze (D96) and the 12 m RV T Burke II, during June 2021.

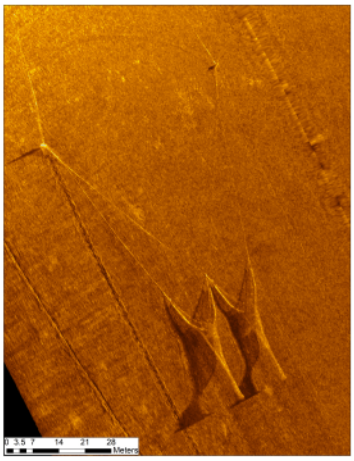
GEAR MODIFICATION

We assessed the utility of side-scan sonar in visualising gear modifications in the Irish Nephrops fishery. A bycatch escape corridor between half quad-rig trawls was used for this purpose.

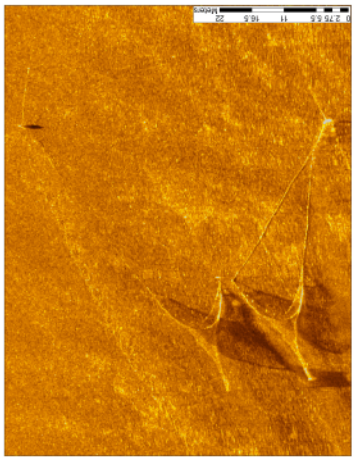
Typical set up



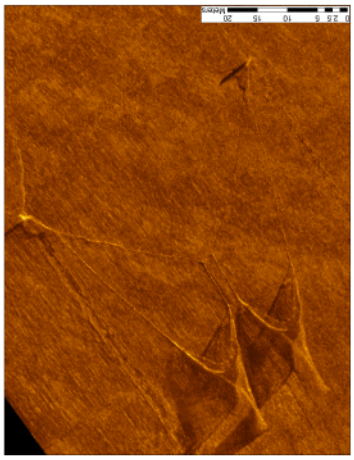
Alternative set up



Alternative set up with gap



Alternative set up with corridor



RESULTS

- Side-scan imaging successfully used to visualise fishing gear modifications
- Potential to fast track fishing gear development
- Escape corridor/gap warrants further evaluation

FURTHER INFORMATION
https://tinyurl.com/48zn67ky
geartrials@bim.ie

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B. Reduce under size *Nephrops* in the *Nephrops* trawl by:

13. Demonstrating *Nephrops* high survivability using a SELTRA
14. Increasing codend mesh size from 70 to 80 mm
15. Modifying the codend circumference
16. Using a *Nephrops* sorting grid

Reducing landings of small *Nephrops* by demonstrating high survivability of discarded *Nephrops*

AREA, VESSEL

The study took place on the Galway and Aran fishing grounds (ICES 7b) on board a 11.6 m (150 kW) trawler and a 9.8 m (63 Kw) creel vessel, during July 2017.

METHODS

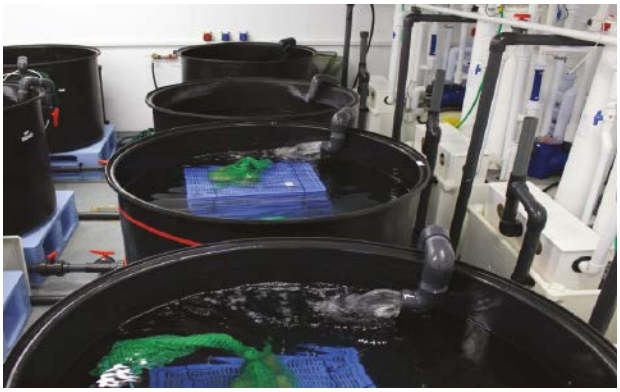
A standard SELTRA sorting box with:

- a 3 m long four-panel section
- 80 mm diamond mesh

The SELTRA gear was employed on a single-rigged trawl (380 × 80 mm fishing circle) with an 80 mm codend.

Control *Nephrops* caught with creels were stored along with the test *Nephrops* for two weeks at an onshore facility.

Nephrops in storage crate



Onshore holding facility

Nephrops	Number caught	Survivors (Number)	Survival (%)
Trawl	1664	1070	64
Creel	204	200	98

RESULTS

- The overall *Nephrops* survivability was:
  - 64%, trawl
  - 98%, creel
- High survivability exemption with selective gears granted in ICES sub area 7

FURTHER INFORMATION
https://tinyurl.com/2p923j3j
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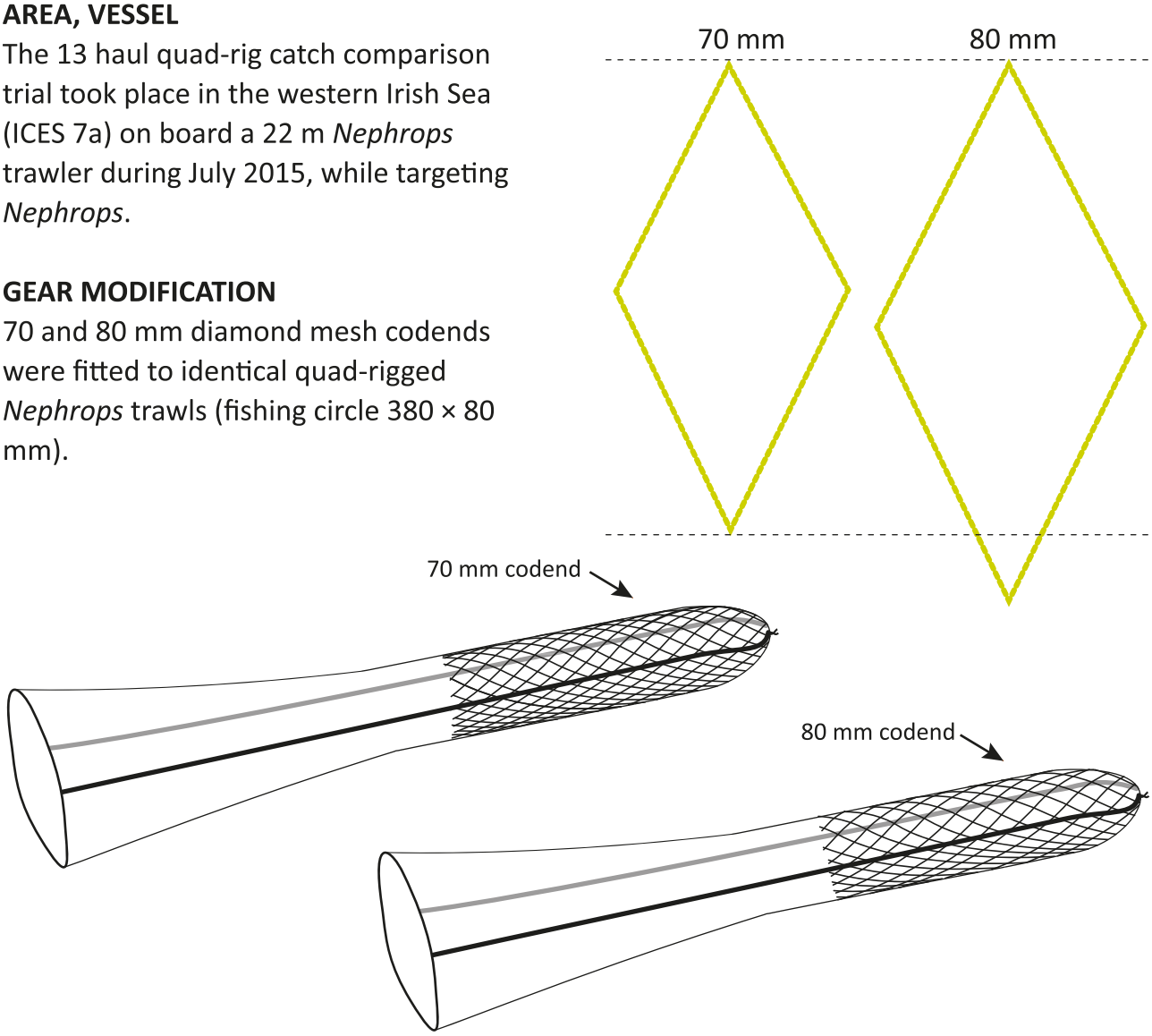
Reducing catches of small *Nephrops* with an increase in codend mesh size from 70 to 80 mm

AREA, VESSEL

The 13 haul quad-rig catch comparison trial took place in the western Irish Sea (ICES 7a) on board a 22 m *Nephrops* trawler during July 2015, while targeting *Nephrops*.

GEAR MODIFICATION

70 and 80 mm diamond mesh codends were fitted to identical quad-rigged *Nephrops* trawls (fishing circle 380 × 80 mm).



Species	70 mm codend (kg)	80 mm codend (kg)	Difference (%)
Nephrops			
< 25 mm*	53	29	-45
≥ 25 mm*	2040	1808	-11

*carapace length

RESULTS

- Significant reduction in catches of small *Nephrops*
- Small loss in *Nephrops* >25 mm
- No loss in profitability over the course of a fishing season
- New regulated mesh size increase from 2017

FURTHER INFORMATION
https://tinyurl.com/y69rc2w8
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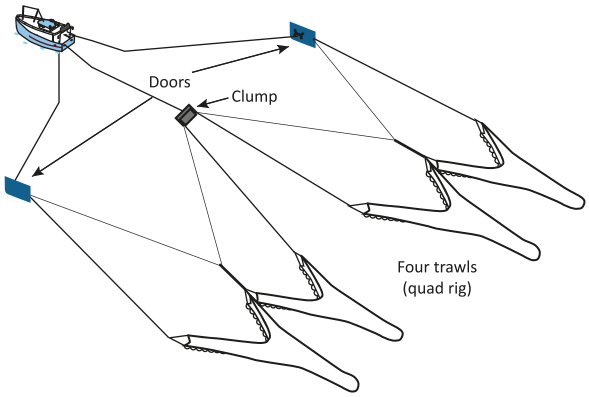
Modifying the codend circumference to reduce catches of small *Nephrops* and whiting in *Nephrops* trawls

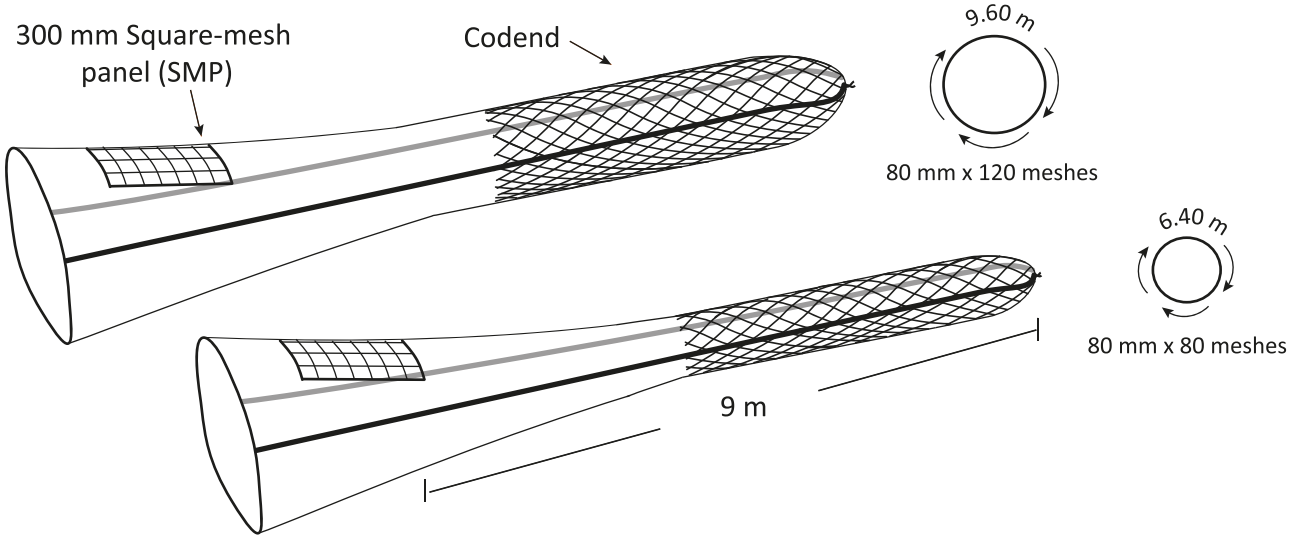
AREA, VESSEL

The 12 haul catch comparison trial took place in the Western Irish Sea (ICES 7a) on a 23 m quad-rig trawler, during February 2018, while targeting *Nephrops*.



GEAR MODIFICATION

An 80 × 80 codend (mesh size (mm) × number of meshes in circumference) was compared against a standard 80 × 120 codend. The circumference and mesh size. in the extension piece matched the codend to which it was attached. A 300 mm square -mesh panel (SMP) was mounted 9–12 m from the codline in each trawl.



Species	80 × 120 (kg)	80 × 80 (kg)	Difference (%)
Nephrops			
< 25 mm*	48	33	-30
≥ 25 mm*	396	350	-12
Whiting			
< 20 cm	144	122	-15

*Carapace length

RESULTS

- Substantial reduction in small *Nephrops*
- Minimal reductions in larger *Nephrops* and very small whiting

FURTHER INFORMATION
https://tinyurl.com/2p8cka62j
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Reducing catches of small *Nephrops* using a modified sorting grid

AREA, VESSEL

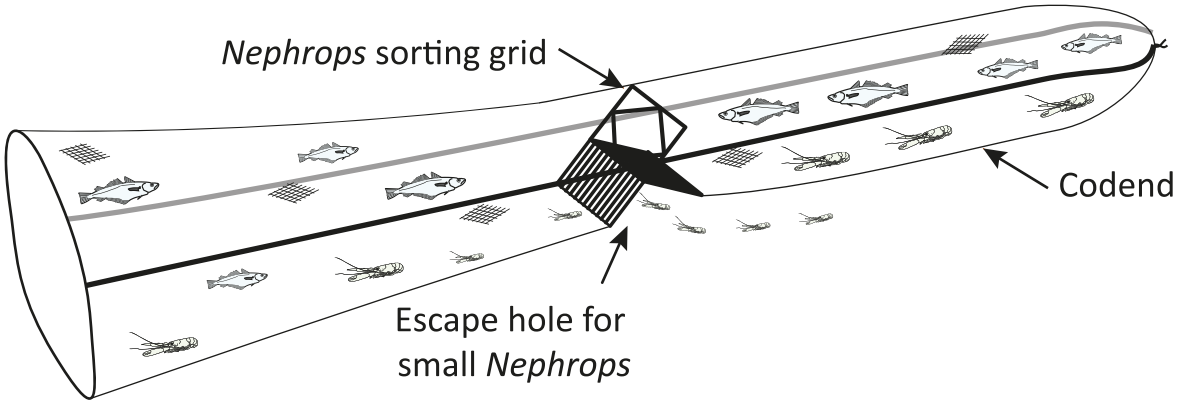
The 12 haul quad-rig catch comparison trial took place in the western Irish Sea (ICES 7a) on board MFV Our Lass II (DA261) (21.7 m, 484 kW) during September 2015, while targeting *Nephrops*.

GEAR MODIFICATION

The test gear was fitted with a *Nephrops* sorting grid (NSG):

- Vertical bars spaced 15 mm apart in the lower half
- Reinforced opening in the top half
- Guiding panel and escape hole in trawl's bottom sheet to the rear of the grid

The standard gear was identical but without a rigid grid.
Nominal codend mesh size and fishing circle were 70 mm and 380 × 80 mm.



Species	Standard gear (kg)	NSG (kg)	Difference (%)
Nephrops			
< 25 mm*	454	293	-35
≥ 25 mm*	1454	1232	-15
> 31 mm&*	346	332	-4

*carapace length
&whole grade

RESULTS

- Substantial reduction in small *Nephrops*
- Small reduction in larger *Nephrops*
- Fish catches maintained

FURTHER INFORMATION
https://tinyurl.com/4a4tw6rj
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C. Reduce under size, over quota and non-target fish species in the mixed demersal trawl fishery targeting fish species by:

17. Using 80 mm T90 mesh codend to reduce under-size whiting
18. Using 90 mm T90 mesh codend to reduce catches of small fish
19. Using 100 mm T90 mesh codend to reduce catches of small haddock
20. Using four-panel T90 codend to reduce unwanted catches
21. Raising the fishing line to reduce cod catches
22. Staggering the fishing line to reduce unwanted fish catches
23. Lights on the raised the fishing line to reduce unwanted catches
24. Assessing plaice survivability in a seine fishery

Reducing catches of small whiting with 80 mm T90 mesh in whitefish trawls

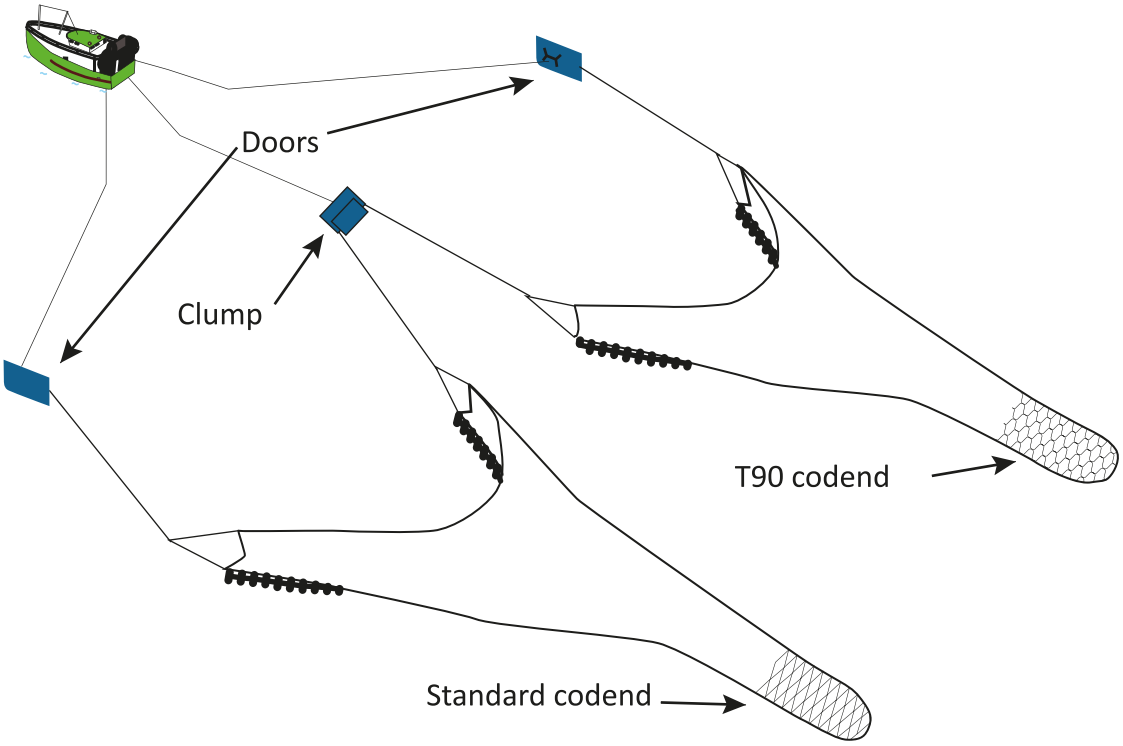
AREA, VESSEL

The 13 haul twin-rig catch comparison trial took place in the Celtic Sea (ICES 7g) on board MFV Foyle Fisher (G497) (24.7 m, 441 kW) during April 2016, while targeting whiting.

GEAR MODIFICATION

The test codend and extension piece were constructed from T90 (turned 90°) 80 mm mesh. The standard codend and extension piece were constructed from diamond 80 mm mesh.

The fishing circle of the twin-rigged hopper trawls was 550 × 80 mm.



Species	Standard gear (count)	T90 (count)	Difference (%)
Whiting			
< 32 cm$	2628	857	-67
≥ 32 cm$	6691	7774	16

$market size

RESULTS

- Substantial reduction in small whiting
- Increased catches of larger haddock, whiting and plaice
- Substantial improvement in catch quality

FURTHER INFORMATION
https://tinyurl.com/3h9ss5e4
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Reducing catches of small fish with 90 mm T90 mesh codend in a whitefish trawl

AREA, VESSEL

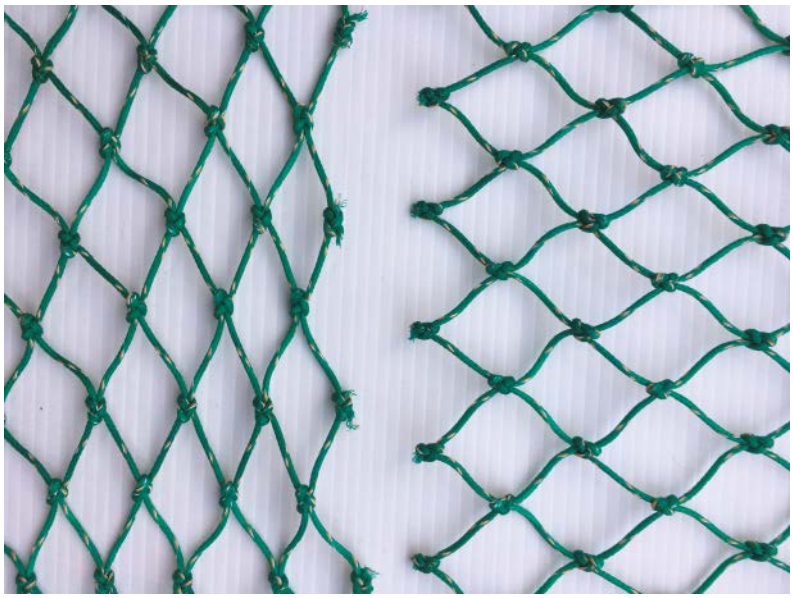
The 10 haul twin-rig catch comparison trial took place in the Celtic Sea (ICES 7g) on board MFV Foyle Fisher (G497) (24.7 m, 441 kW) during May 2019, while targeting whitefish.

GEAR MODIFICATION

The test codend and extension piece were constructed from 90 mm T90 (turned 90°) mesh. The standard codend and extension piece were constructed from diamond (T0) 80 mm mesh.

The fishing circle of the twin-rigged hopper trawls was 550 × 80 mm.

T0
Diamond



T90
Diamond
turned 90 ^{0}

Species	Standard gear (kg)	T90 (kg)	Difference (%)
Haddock < 30 cm#	312	35	-89
Haddock ≥ 30 cm#	876	1,236	41
Whiting < 27 cm#	25	1	-97
Whiting ≥ 27 cm#	307	60	-80
Whiting ≥ 32 cm$	143	56	-61
Cod < 35 cm#	64	26	-59
Cod ≥ 35 cm#	192	192	0
Monkfish	244	380	56

#minimum conservation reference size (MCRS)
$market size

RESULTS

- Substantial reductions in catches of whiting, small haddock and small cod
- Substantial increases in catches of monkfish and larger haddock

FURTHER INFORMATION
https://tinyurl.com/338wmk9n
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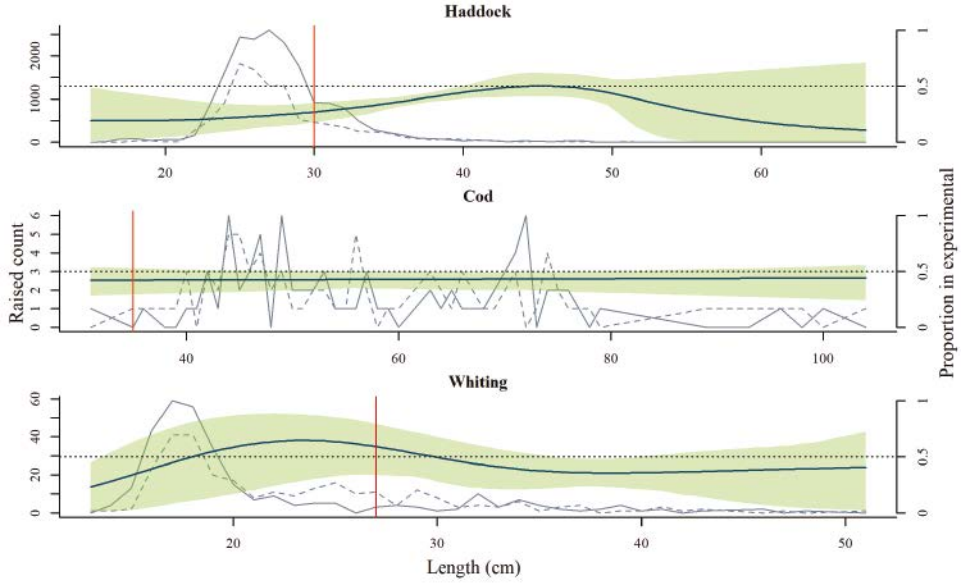
Reducing catches of small haddock with a 100 mm T90 codend in the Irish Sea

AREA, VESSEL

This trial took place in the Irish Sea (ICES 7b) on board a 22 m trawler during March 2020.

GEAR MODIFICATION

A 100 mm T90 (mesh turned 90°) codend and extension was compared against a 120 mm diamond (T0) mesh codend and extension to assess its equivalent selectivity. The codends were attached to a single-rigged high opening whitefish trawl. The trial was completed using alternate hauls.



Species	T0 120 (kg)	T90 100 (kg)	Difference (%)
Haddock < 30 cm	2565	1520	-41
Haddock ≥ 30 cm	1897	1100	-42
Cod ≥ 35 cm	169	179	6
Whiting < 27 cm	12	13	8
Whiting ≥ 27 cm	19	21	11
Plaice < 27 cm	43	246	>100
Plaice ≥ 27 cm	266	442	66

RESULTS

- Selectivity improved for haddock with the 100 mm T90 codend
- The catch value increased with the 100 mm T90 codend
- The 100 mm T90 codend added as a gear measure in the Irish Sea

FURTHER INFORMATION
https://tinyurl.com/2s4zma5w
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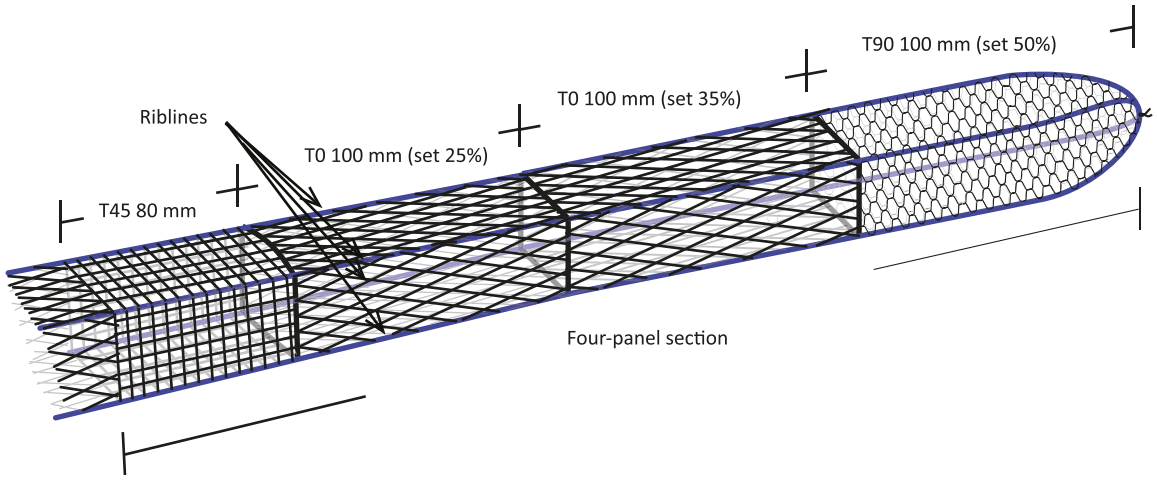
Reducing catches of small haddock with a four-panel T90 codend in a demersal seine net fishery

AREA, VESSEL

This trial took place in the Celtic Sea (ICES 7j&g) on board an Irish demersal seiner, during November 2021. Haddock is a key target species for Irish seiners, with additional quota for this fleet.

GEAR MODIFICATION

A new four-panel 100 mm T90 codend with shortened riblines or lastridge ropes along each selvedge was compared with a standard two-panel 100 mm T90 codend.



Riblines with toggle loops used to set mesh at 35 and 50% opening

Percentage of total catch weight in each codend

Species	Control (kg)	Test (kg)	Difference (%)
Haddock small	32	9	-70
Haddock large	24	56	133
Haddock medium	32	83	157
Hake medium	11	11	0
Hake large	54	53	-2

RESULTS

- Size selectivity improved
- The test codend caught 70% fewer small-grade, and over 100% more medium and large grade, haddock
- 34% increase in total catch value with new codend

FURTHER INFORMATION
https://tinyurl.com/5e6spyyu
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Reducing cod catches with a raised fishing line in whitefish trawls

AREA, VESSEL

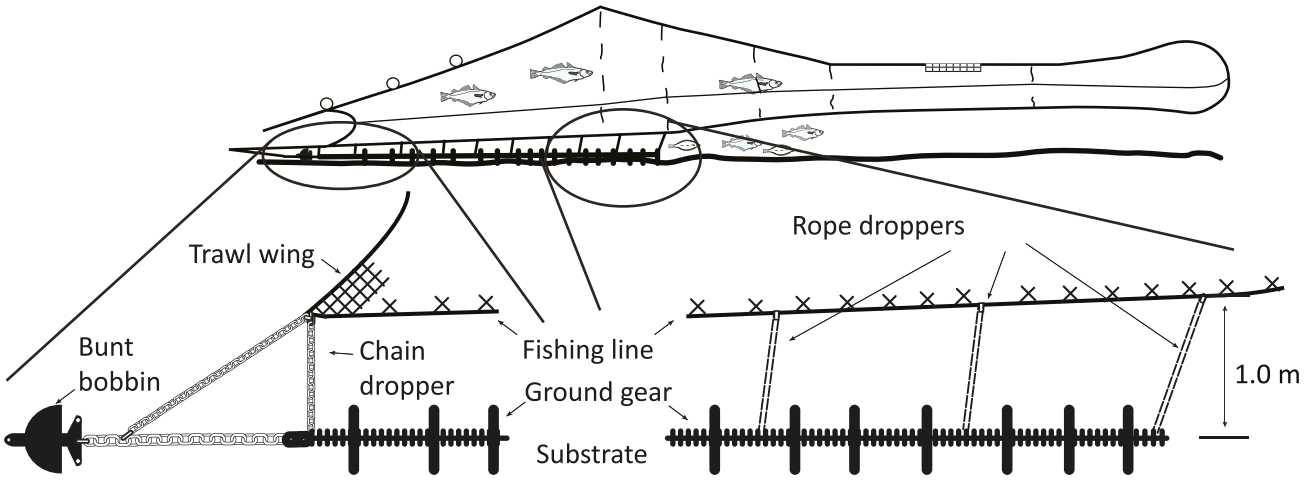
The twin-rig catch comparison trial took place in the Celtic Sea (ICES 7g) on board a 25 m whitefish trawler during March 2017, while targeting whiting.

GEAR MODIFICATION

Two identical whitefish trawls (620 × 80 mm fishing circle) were used during the trial.

On the standard gear the ground gear/ fishing line arrangement was unaltered. On the test gear the droppers between

the fishing line and the ground gear were lengthened to 1 m.



Species	Standard gear (kg)	Raised fishing line (kg)	Difference (%)
Cod	798	488	-39
Whiting	2706	5069	87
Haddock	1975	2713	37
Flatfish	584	250	-57
Monkfish	202	57	-72
Skate and ray	124	25	-80

RESULTS

- Reduced catches of cod, flatfish, monkfish, and skate and ray
- Substantial increases in whiting and haddock catches
- Total catch value increased by 14%
- Gear measure in the Celtic Sea

FURTHER INFORMATION
https://tinyurl.com/yc3yka6s
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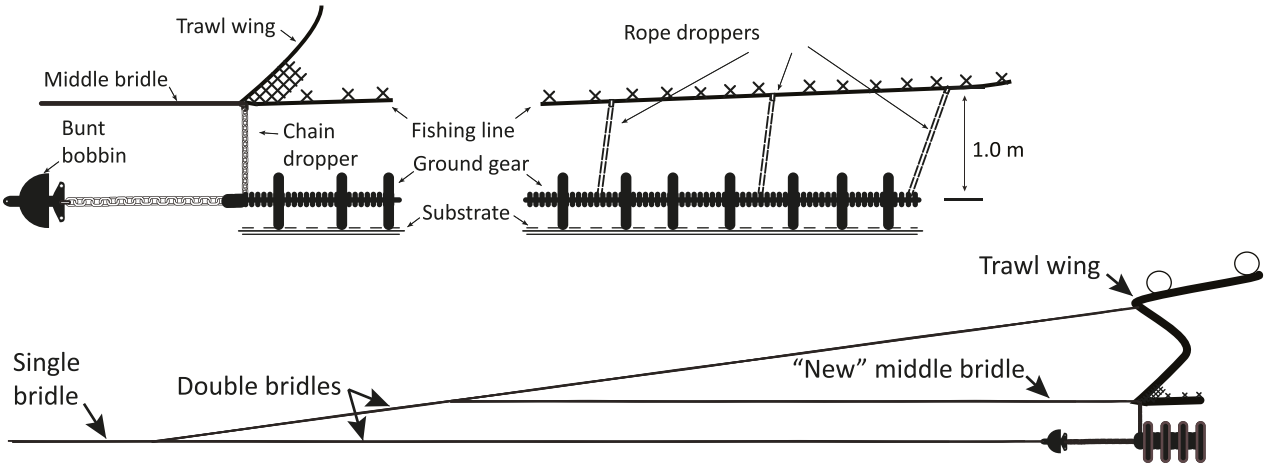
Reducing unwanted fish catches with a staggered fishing line in whitefish trawls

AREA, VESSEL

The 24 alternate-haul catch comparison trial took place in the Celtic and Irish Seas (ICES 7a,g) on board the MFV Northern Celt (SO472) (25 m, 600 Kw) during March and April 2019, while targeting whitefish.

GEAR MODIFICATION

Following on from the previous field and flume tank testing of a trawl with 1 m droppers between the fishing line and ground gear; modifications were made to the bridle configuration to improve operation. An additional bridle was attached between the fishing line and upper bridle.



Species	Standard gear (kg)	Staggered fishing line (kg)	Difference (%)
Cod	83	59	-29
Haddock	3,057	2,783	-21
Whiting ≥ 31$	545	562	3
Whiting < 31$	455	246	-46
Flatfish	609	188	-69
Skate and ray	160	35	-78
Dogfish	1,480	180	-88

$market size (cm)

RESULTS

- Moderate reductions in cod and haddock
- Substantial reductions in small whiting, flatfish, skate and ray, and dogfish
- Gear measure in the Celtic Sea

FURTHER INFORMATION
https://tinyurl.com/ejc4h9y
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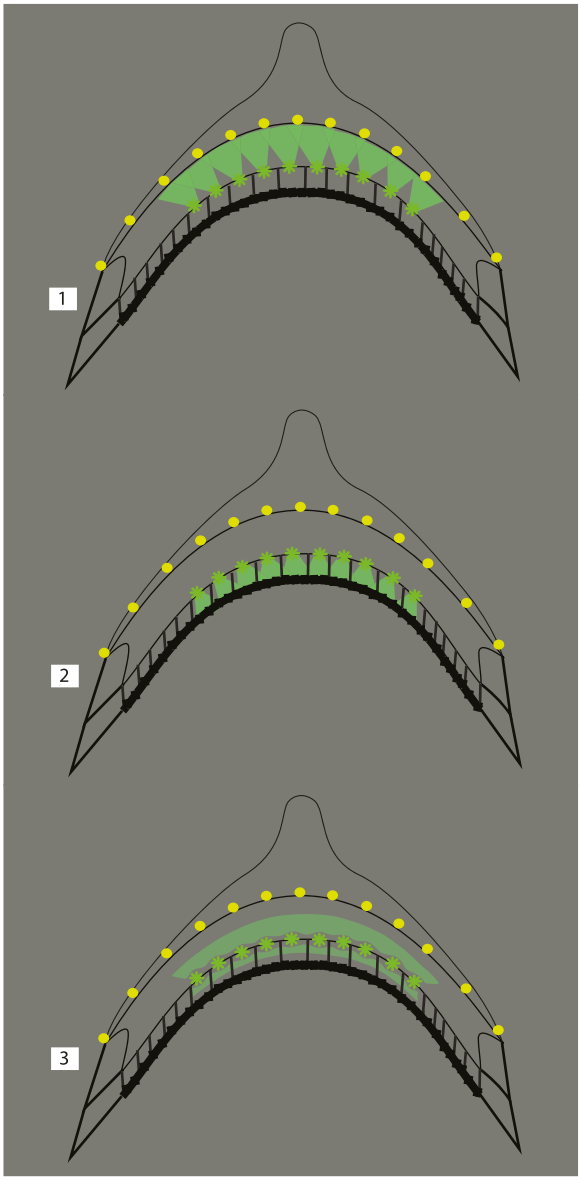
Reducing haddock catches with lights on the raised fishing line

AREA, VESSEL

This trial took place in the Celtic Sea (ICES 7g&j) on board the 25 m trawler, MFV Foyle Warrior (SO 274), during April 2021.

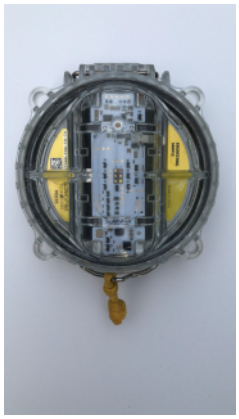
GEAR MODIFICATION

Lights were attached to the fishing line of a raised fishing line trawl. The lights used were directional Safetynet technologies—SNTech, (at positions 1 and 2) and omnidirectional Lindgren Pitmans (at position 3). Each lights set up comprised 10 lights sepatated by 1.5 m. The gears were fished using alternate hauls



Lindgren Pitman

SNTech



RESULTS

- Substantial reductions in haddock catches with lights at positions 1 and 3
- A small reduction in whiting catches with lights at position 3
- Further research planned

FURTHER INFORMATION
https://tinyurl.com/yckw5f62j
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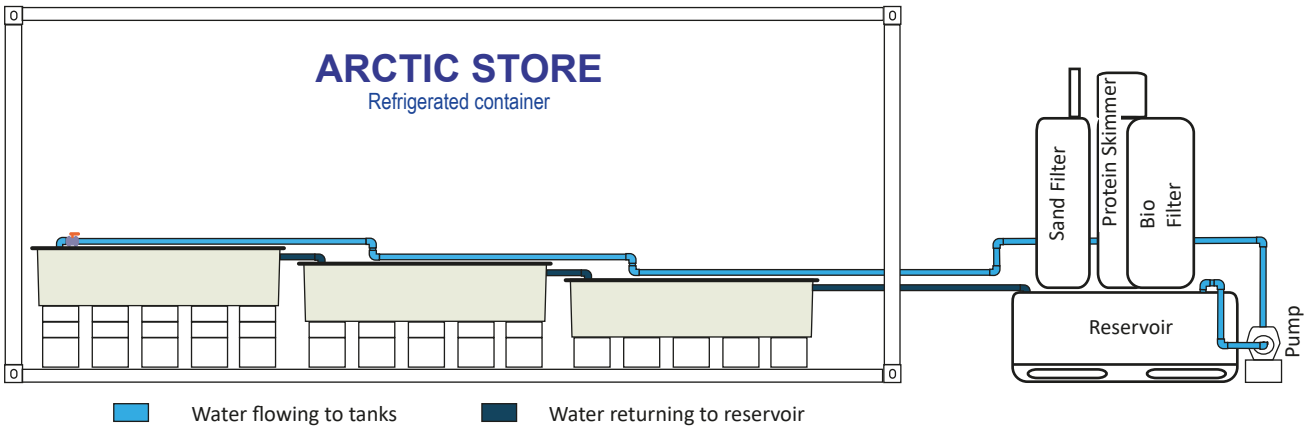
Plaice survivability in the demersal seine net fishery

AREA, VESSEL

This trial took place in the Celtic Sea (ICES 7j&g) on board the seiner MFV Róise Catríona (T100) (24 m, 413 kW), during September 2020.

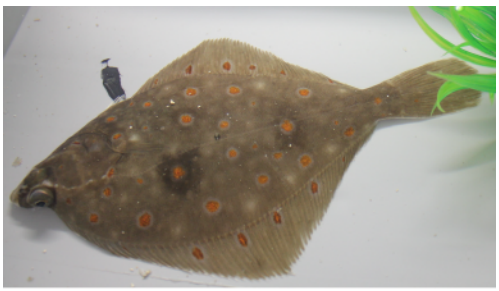
GEAR MODIFICATION

A single-rigged seine (68 m footrope) with codends made from T90 (turned 90°) 100 mm was used. Plaice were caught in rings averaging 2 hr 18 min. Fish were monitored in a bespoke holding system, for up to 15 days, that was set up on the pier in Castletownbere, Co Cork.



Plaice numbers at start and end of trial

Plaice	Number caught	Number survivors
Control	9	9
Test	136	96



RESULTS

- 70% survial for test plaice was observed
- 100% survial for control plaice was observed
- A high survivability exemption from the landing obligation has been granted in ICES 7b to k for plaice caught in seines

FURTHER INFORMATION
https://tinyurl.com/ujrun78t
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