North Western Waters Advisory Council

Santiago de Compostela, 14 Marzo 2023

Project RAPANSEL
Bottom trawl selectivity in ICES 7

UNIÓN EUROPEA
FONDO EUROPEO MARÍTIMO Y DE PESCA (FEMP)

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Project RAPANSEL: Bottom trawl selectivity in ICES 7

OBJETIVE:

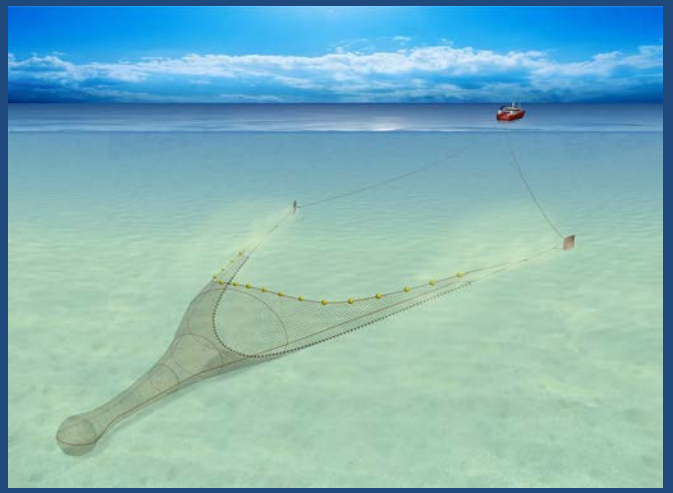
Mitigate the impact of the landing obligation (Art. 15 of the FCP) in the mixed trawl fisheries targeting bottom species (megrim, monkfish and hake) in the European waters fishing ground of ‘Gran Sol’ (ICES Area 7).

Design and test fishing gears with better selective properties and the possible technical solutions to reduce discards and make the fishery more sustainable

Project RAPANSEL: Bottom trawl selectivity in ICES 7

OBJETIVES TO SELECTIVITY IMPROVEMENTS:

1. Reduction of unwanted species:
Gadids: haddock, cod, whiting and blue whiting
Pelagics: horse mackerel, mackerel and boardfish



2. Reduction of discards of small sizes:
Megrims
Hake

3. Maintain the target species yields: Megrims and monkfish





METODOLOGICAL DESIGN:

1. Identify selectivity issues

2. Define a selective device for this fishery.

3. Experimentation in fishing trials at sea: 5 trials 2018-2022

4. Evaluate each device based on three criteria:
   - escape of unwanted catch (juveniles and pelagic species),
   - loss of target species (quantitative)
   - assess operational and practical aspects of the new gear designs (qualitative).

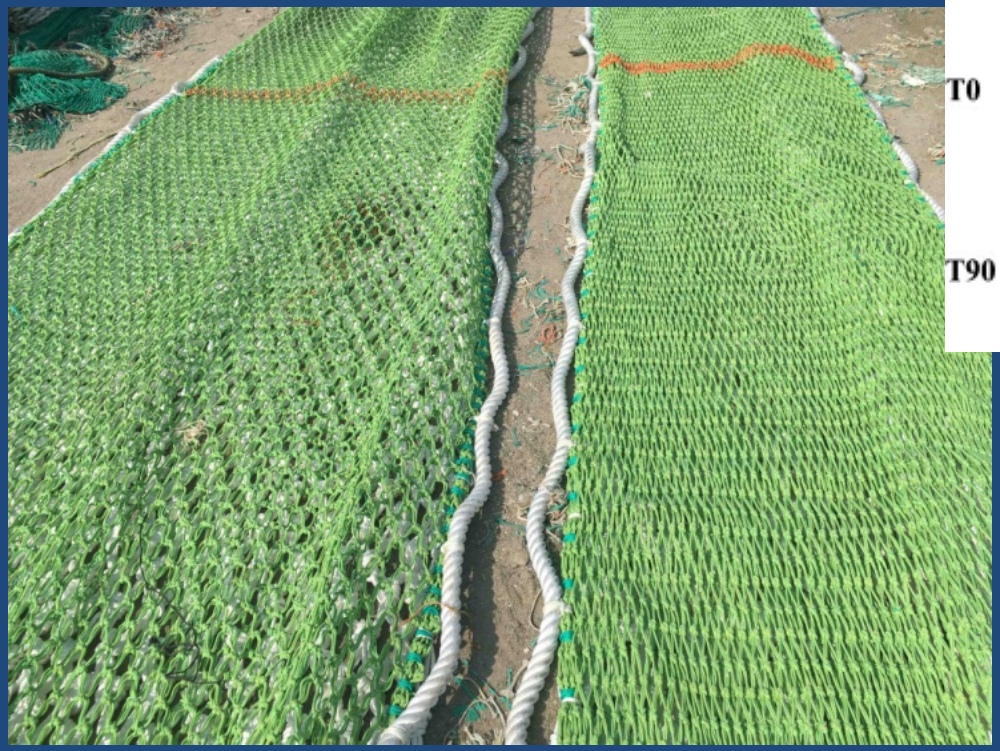
SELECTIVITY TRIAL RAPANSEL2018

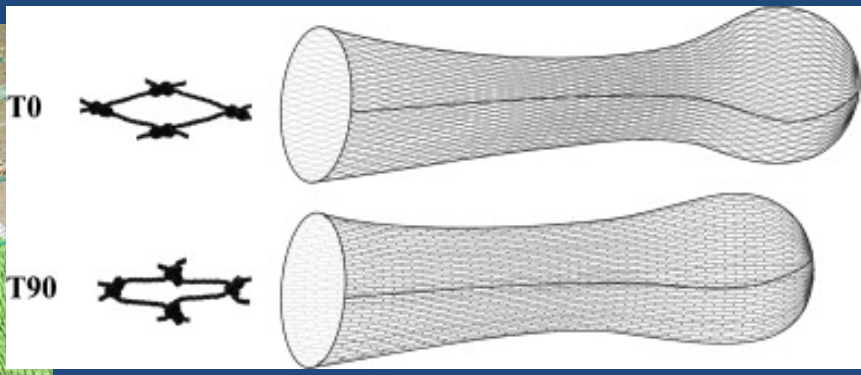
Testing T90 codend mesh

- ✓ Normative codend diamond 100 mm mesh size

vs

- ✓ Experimental codend diamond 100 mm mesh size





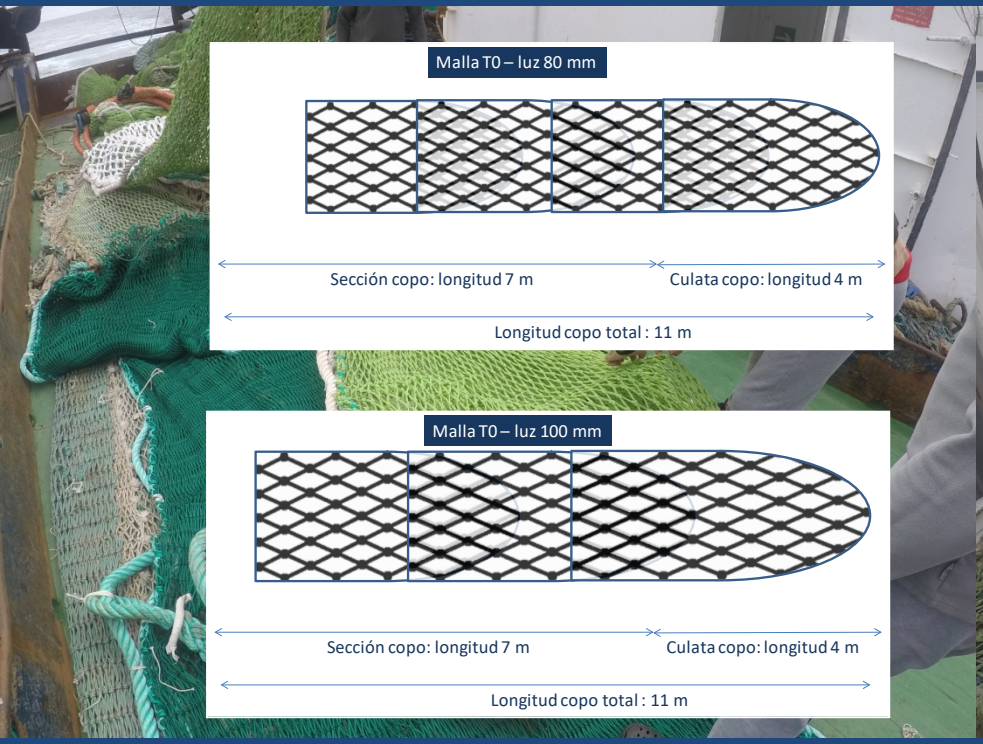
Inconclusive results

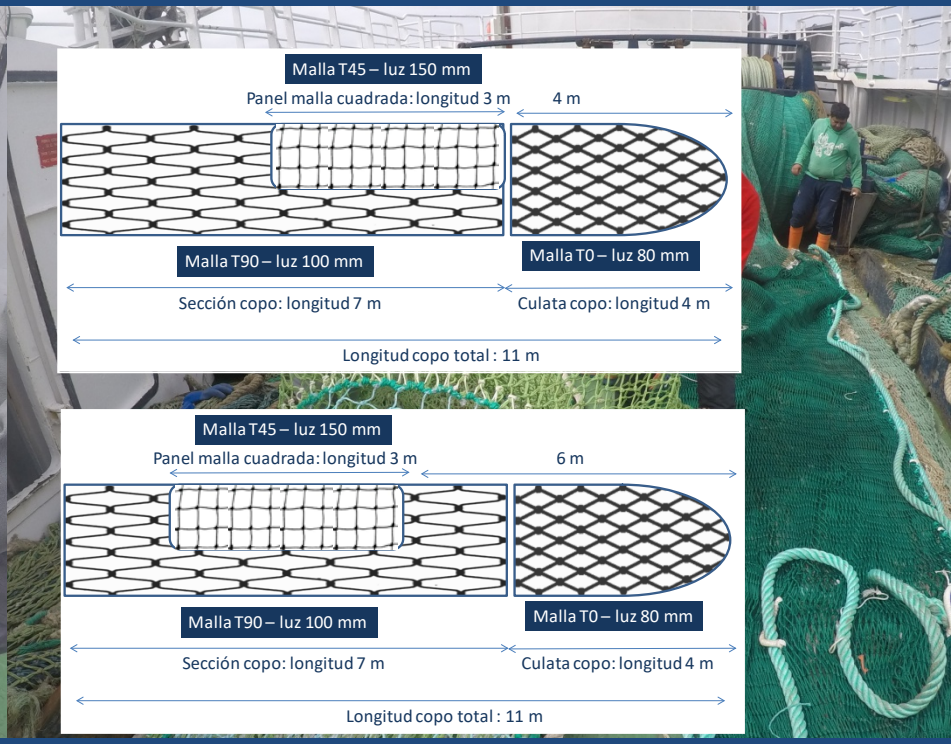
SELECTIVITY TRIAL RAPANSEL2019

EXPERIMENTAL CODENDS 80/100:
mix of mesh (diamond/square/T90)
and a square panel 150mm mesh size

Project RAPANSEL: Bottom trawl selectivity in ICES 7

SELECTIVITY TRIAL RAPANSEL2019



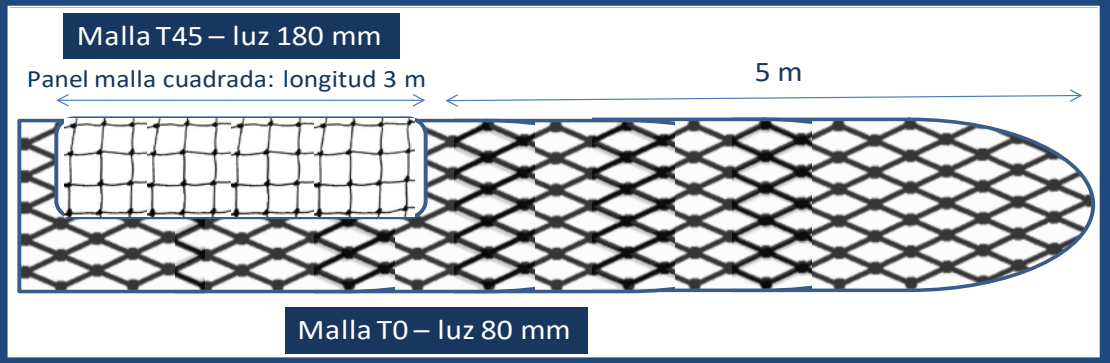


EXPERIMENTAL CODENDS 80/100: mix of mesh (diamond/square/T90) and a square panel 150mm mesh size

Great reduction of unwanted species, but significant loss of megrim **(19-32%)**

SELECTIVITY TRIAL RAPANSEL2020

CODEND 80 mm + panel 180 mm



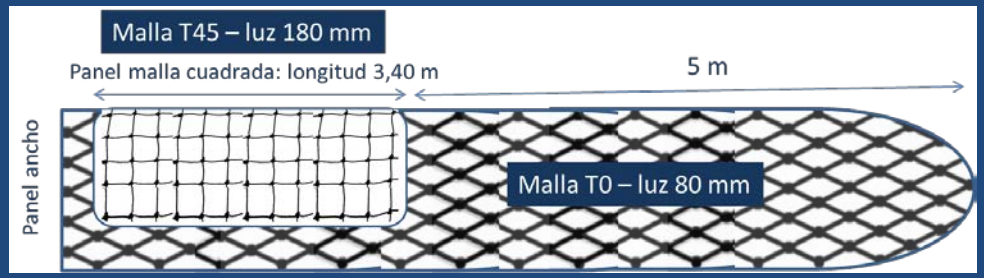
EXPERIMENTAL CODEND:
Codend 80mm mesh size + Square mesh panel:

- Top panel
- Longitude 3 m
- Square mesh size 180mm
- Mounted 5 meters from the end of the codend

Great reduction of unwanted species, but significant loss of hake (55%)

SELECTIVITY TRIAL RAPANSEL2021

CODEND 80 mm
+ wide panel 180 mm



EXPERIMENTAL CODEND:
Codend 80mm mesh size + Square mesh panel:

- Top-lateral wide panel
- Longitude 3.40 m
- Square mesh size 180mm
- Mounted 5 meters from the end of the codend

Great reduction of unwanted species, but significant loss of hake (36%)

SELECTIVITY TRIAL RAPANSEL2022

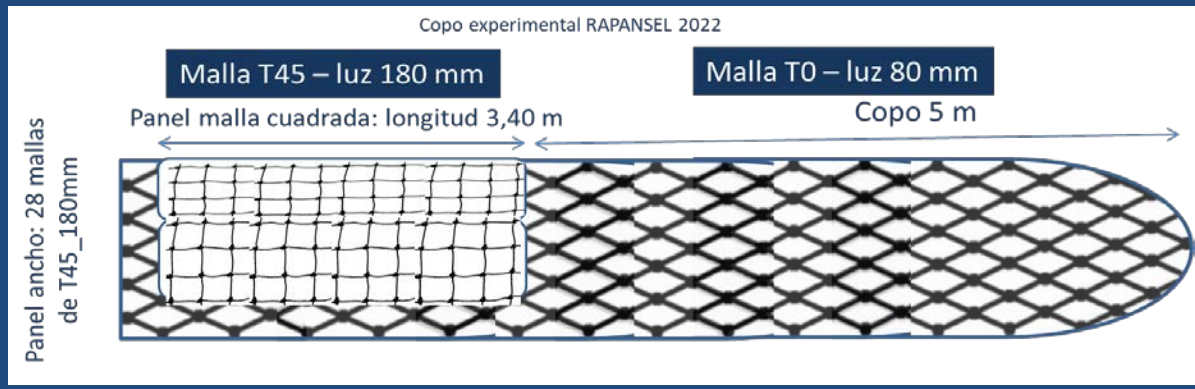
SELECTIVITY TRIAL RAPANSEL 2022

METODOLOGY: CODENDS

NORMATIVE CODEND:
T0_100_0_0
-Codend 100mm mesh size
-No panels.

vs

EXPERIMENTAL CODEND:
T0_80_T0_05_180
- Codend 80mm mesh size
- Square mesh panel:
  - Top and side panel
  - Longitude 3.40 m (28 meses)
  - Square mesh size 180mm
  - Mounted 5 meters from the end of the codend



METODOLOGY: CODENDS

Experimental codend

Normative codend

SELECTIVITY TRIAL RAPANSEL 2022

METODOLOGY: CODENDS

CODEND 80 mm + Top and side panel 180 mm square mesh

SELECTIVITY TRIAL RAPANSEL 2022

METODOLOGY: CODENDS

CODEND 80 mm + Top and side panel 180 mm square mesh

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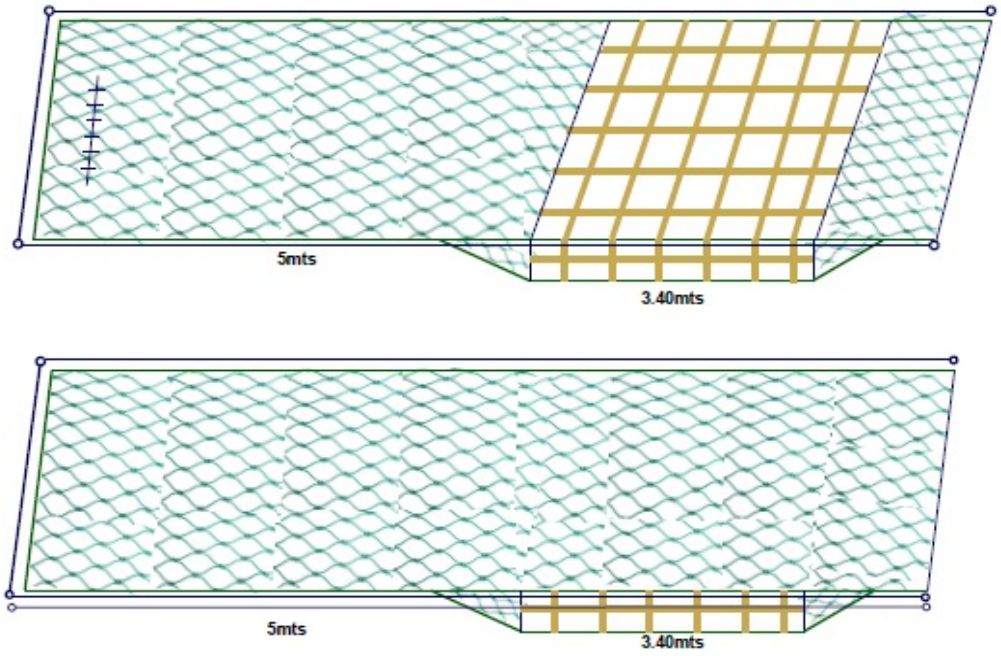
PROYECTO RAPANSEL 2022
CAMPAÑA DE SELECTIVIDAD RAPANSEL 2022
M/P PESCABERBÉS TRES



METODOLOGY: CODENDS

CODEND 80 mm + Top and side panel 180 mm square mesh

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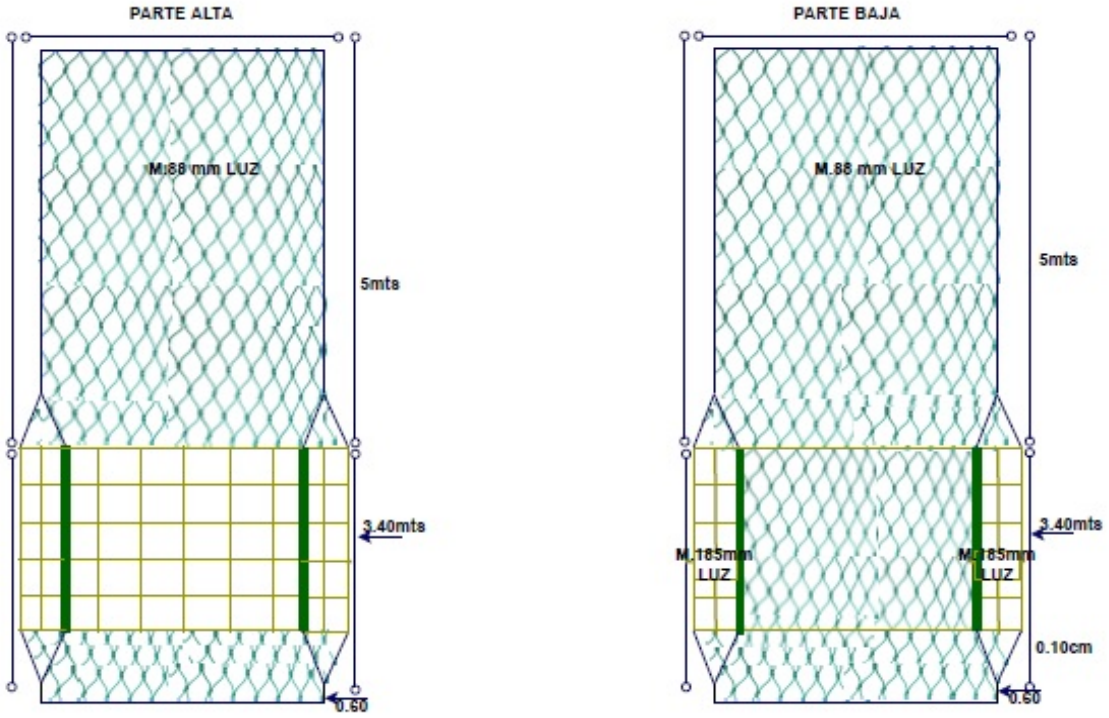
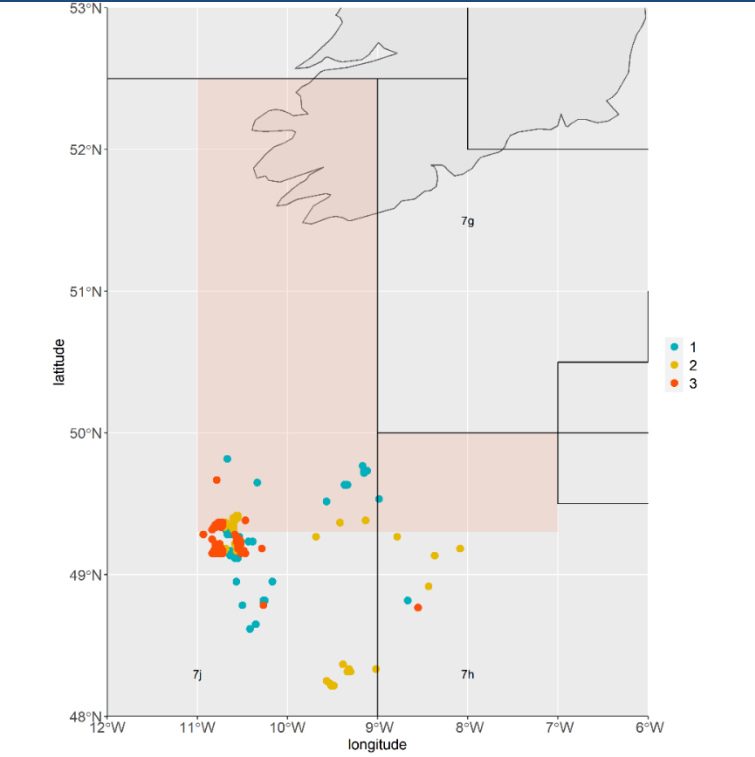
PROYECTO RAPANSEL 2022
CAMPAÑA DE SELECTIVIDAD RAPANSEL 2022
M/P PESCABERBÉS TRES

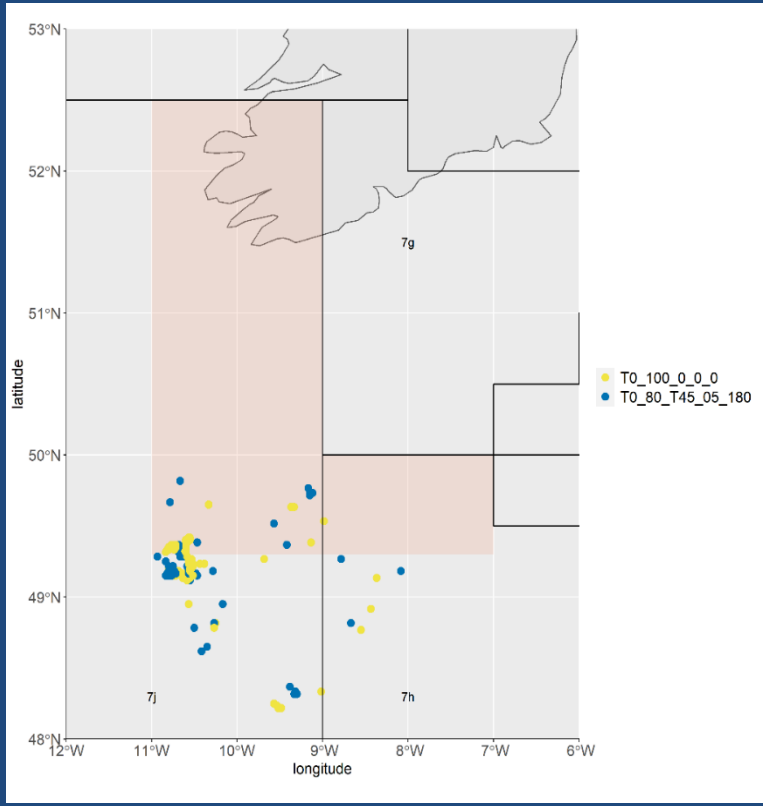


SELECTIVITY TRIAL RAPANSEL 2022

RESULTS

- Trial dates (43 days at sea): 21 april to 29 may 2022 (3 fishing trips)





105 valid sampling hauls
(53 normal/52 experimental).

SELECTIVITY TRIAL RAPANSEL 2022

RESULTS: Differences in retained and unwanted catches

TARGET SPECIES

Unwanted catch in experimental codend 80mm + panel 180mm:

- ✓ Megrim unwanted captures were reduced by 68,0% (99.9 kg/haul)
- ✓ Monkfish unwanted captures were reduced by 45,2% (23,3 kg/haul)
- ✓ Hake unwanted captures were reduced by 72,9% (20,0 kg/haul**)**

Commercial catch in experimental codend 80mm + panel 180mm:

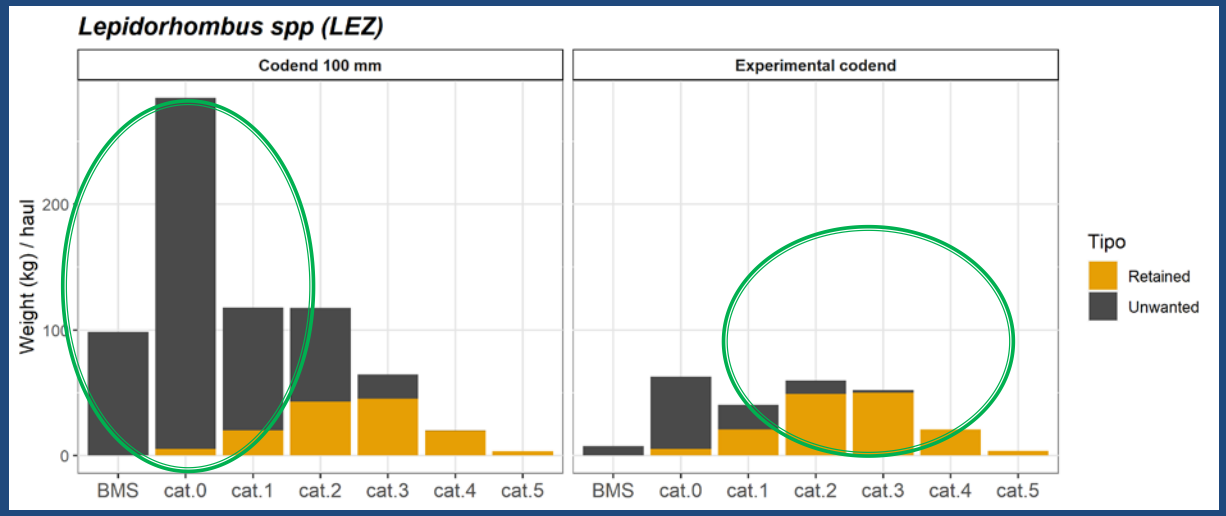
- ✓**Increase** of retained catch of Megrim by 7.4% (5.3 kg/haul)
- ✓**Reduction** of retained catch of Hake by 34.5% (20 kg/haul)

SELECTIVITY TRIAL RAPANSEL 2022

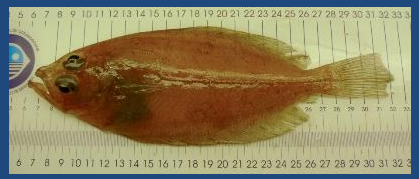
RESULTS: Differences in retained and unwanted catches

RAPANSEL 2022

Yields en kg/haul by comercial catch



✓Megrim LEZ
(*Lepidorhombus sp*)



Reduction of Megrim unwanted captures by 68,0% (99.9 kg/haul)

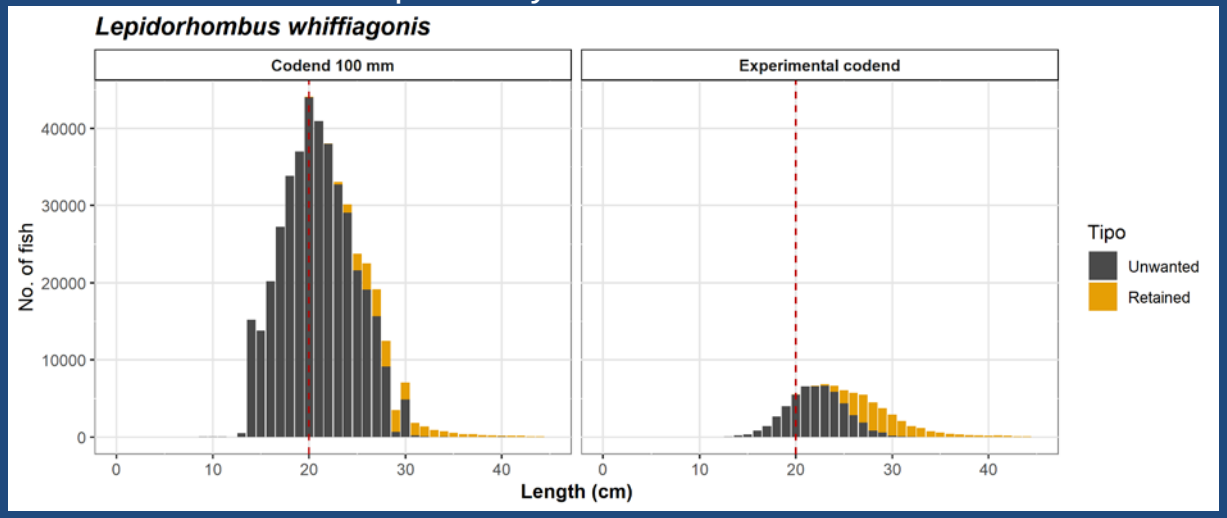
Increase of retained catch of Megrim by 7.4% (5.3 kg/haul)

SELECTIVITY TRIAL RAPANSEL 2022

RESULTS: Selectivity by fish lenght

RAPANSEL 2022

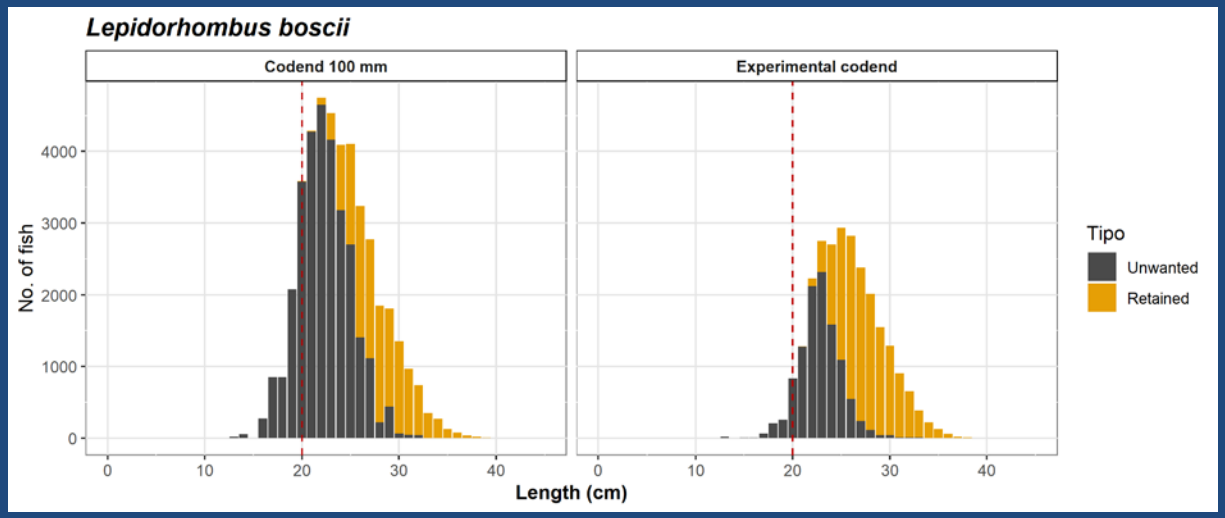
Number of fish captured by size



Reduction of small sizes

✓ Megrim (*Lepidorhombus whiffiagonis*)

RAPANSEL 2022



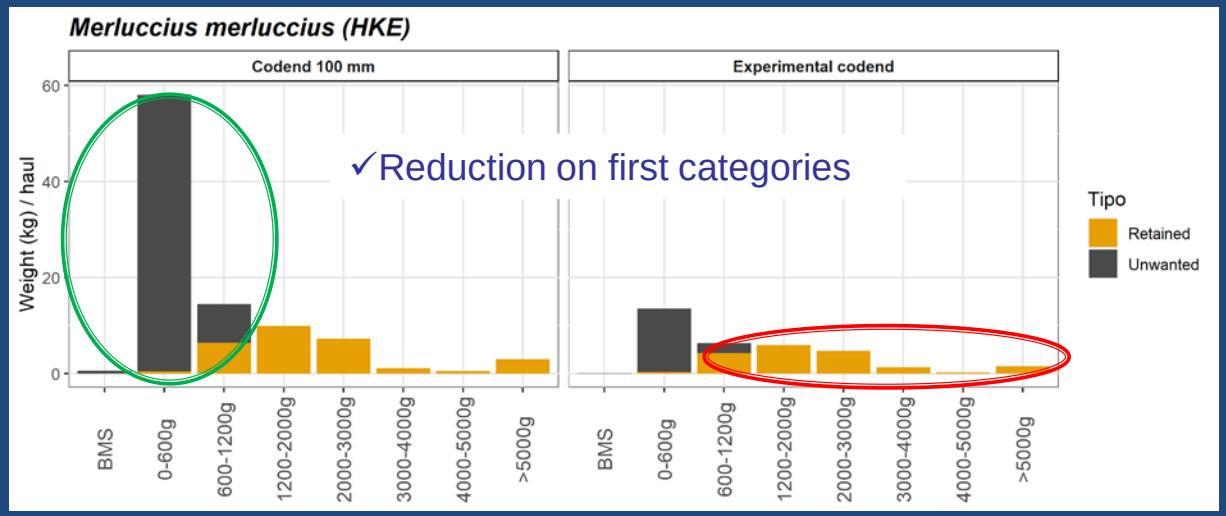
✓Four spot megrim (*Lepidorhombus boscii*)

SELECTIVITY TRIAL RAPANSEL 2022

RESULTS: Differences in retained and unwanted catches

RAPANSEL 2022

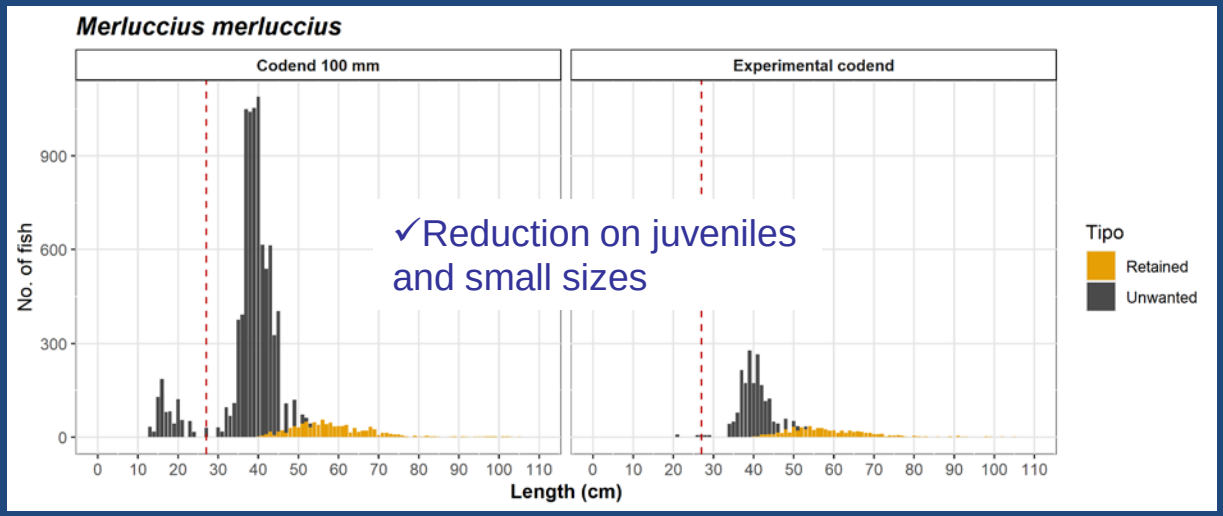
Yields en kg/haul by comercial catch



✓Hake (*Merluccius merluccius*)

RAPANSEL 2022

Number of fish captured by size



- ✓ **Reduction** of Hake unwanted captures by 72,9%
- ✓ **Reduction** of retained catch of Hake by 34.5% (20 kg/haul)

SELECTIVITY TRIAL RAPANSEL 2022

RESULTS: Differences in retained and unwanted catches

NOT TARGET SPECIES

Unwanted catch in experimental codend 80mm + panel 180mm:

✓Haddock unwanted captures were reduced by 80,9% (5,478 kg/haul)
✓Cod unwanted captures were reduced by 44,0% (0,377 kg/haul)

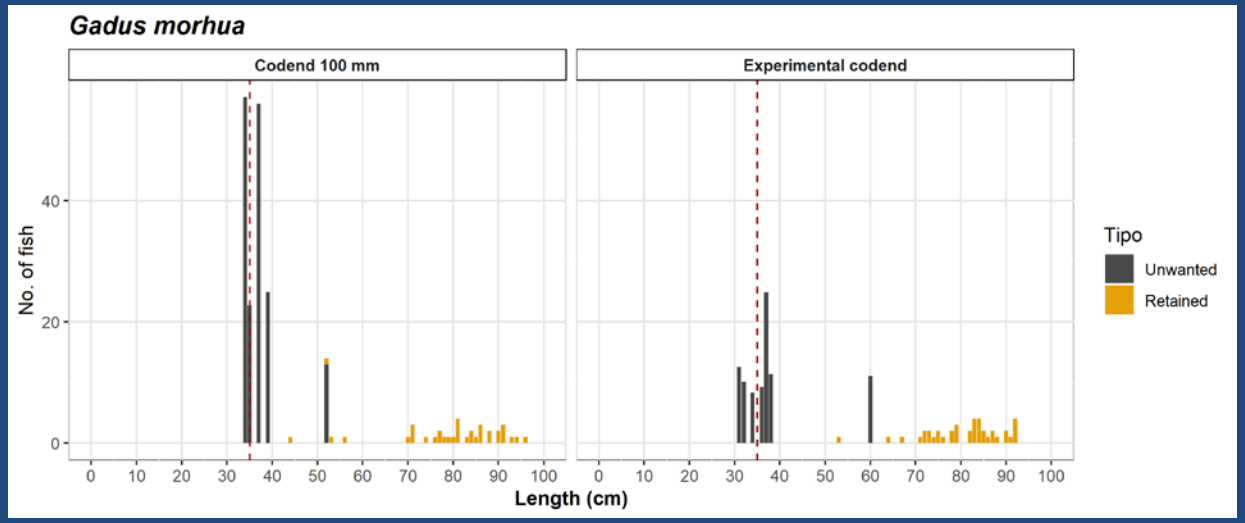
✓Blue whiting unwanted captures were reduced by 99,4% (5,383 kg/haul)
✓Horse mackerel unwanted captures were reduced by 89,9% (47,661 kg/haul
✓Dogfish unwanted captures were reduced by 71,4% (79,380 kg/haul)

SELECTIVITY TRIAL RAPANSEL 2022

RESULTS: Selectivity by fish lenght

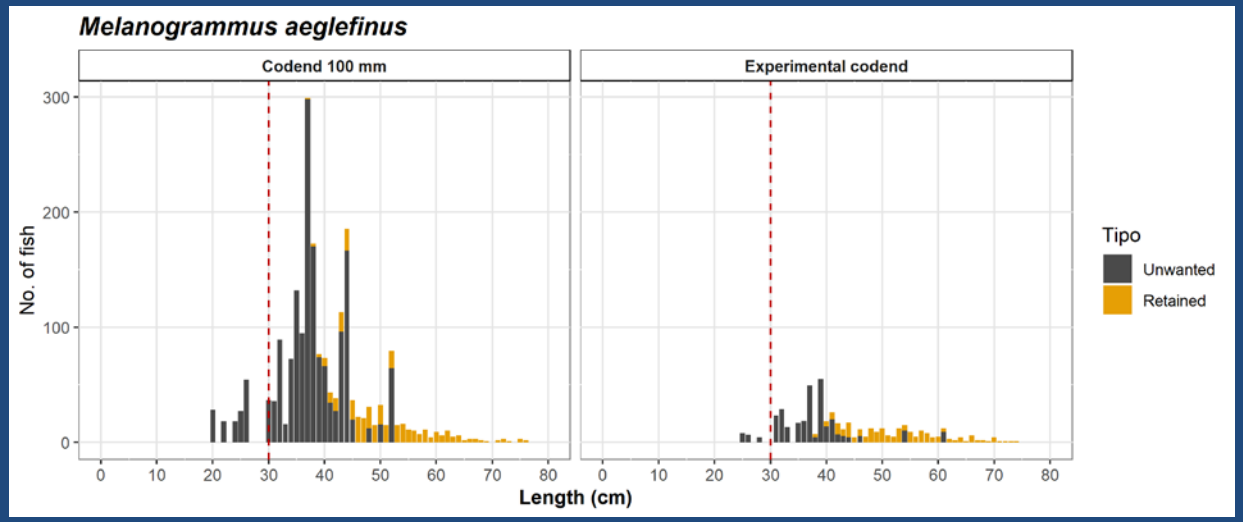
Number of fish captured by size

RAPANSEL 2022



✓Cod: 45% less

RAPANSEL 2022



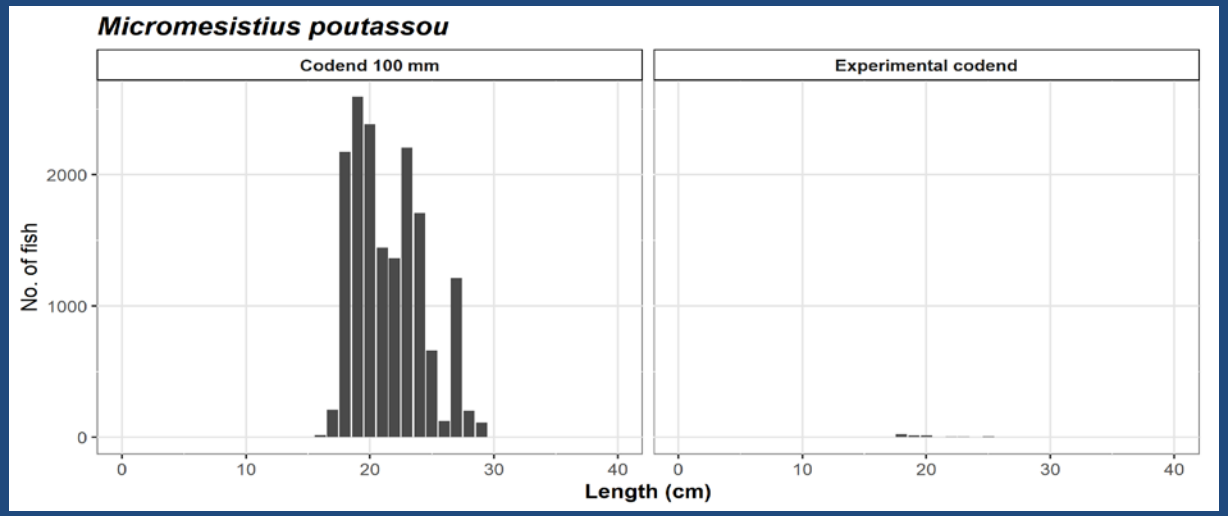
✓Haddock: 81.9% less

SELECTIVITY TRIAL RAPANSEL 2022

RESULTS: Selectivity by fish lenght

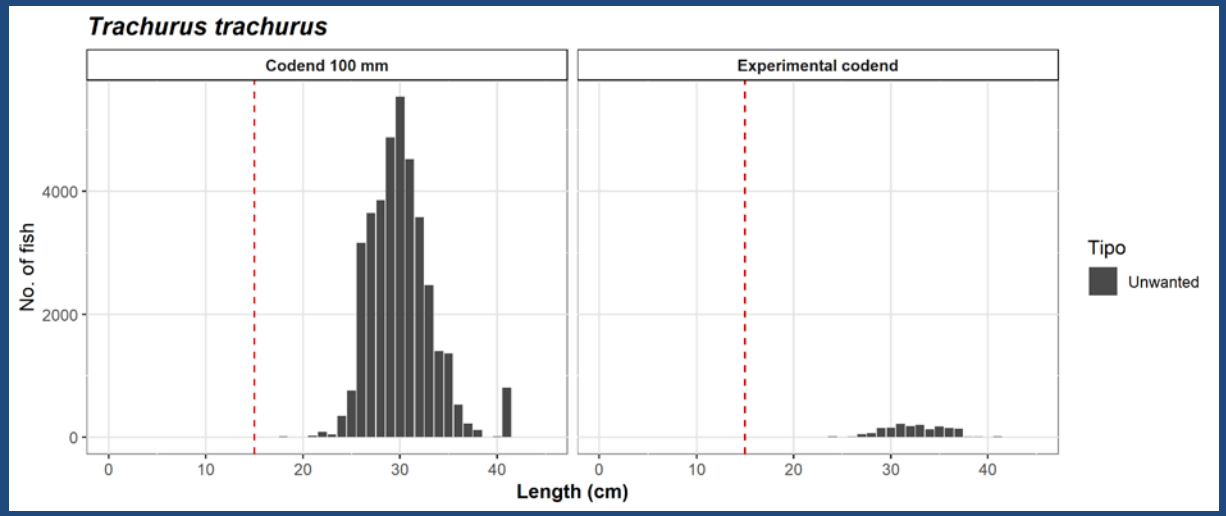
Number of fish captured by size

RAPANSEL 2022



Blue whiting: 99.4% less

RAPANSEL 2022

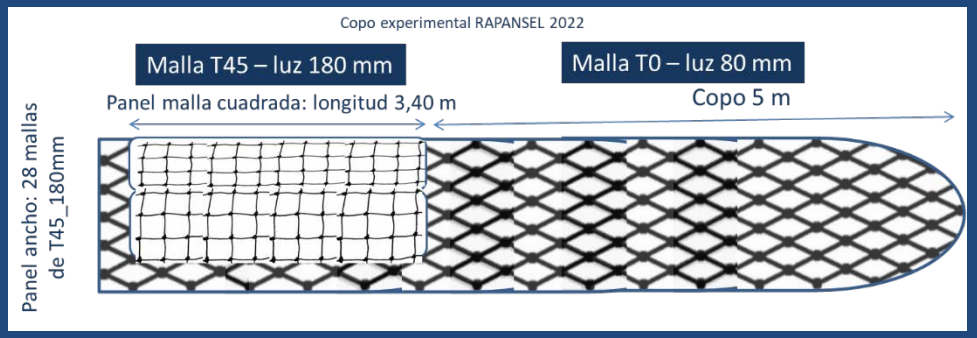


Horse mackerel: 89.9% less

Project RAPANSEL: Bottom trawl selectivity in ICES 7

RESULTS RAPANSEL2022

CODEND 80 mm
+ top lateral panel
square mesh 180 mm



ADVANTAGES
Reduction of unwanted catches

DECREASE IN UNWANTED CATCHES:

Megrim -68.0%
Monkfish-45.2%
Hake- 72.9%
Haddock -80.9%
Cod-44.0%
Blue whiting -99.4%
Horse mackerel -89.9%

INCREASE IN COMERCIAL CATCH:
Megrims +7.4%

DISADVANTAGES
Lost of commercial catch

DECREASE IN COMERCIAL CATCH:

Hake -34.5%

CONCLUSIONS

1. **The new design has differences in selectivity for unwanted species and sizes**
   - ✓ Species selectivity: Significant reduction of cod, haddock, horse mackerel and blue whiting
   - ✓ Selectivity by size: Reduction of small sizes of megrim, hake and monkfish

2. **Advantages of codend 80mm + square mesh panel 180mm:**
   - ✓ Discard reduction (lower risk due to lack of quota, juvenile reduction, potential improvement of stock status)
   - ✓ Better quality, cleaner and less damaged fish (product valorization)
   - ✓ Save diesel costs by reducing the weight of the codend
   - ✓ Savings in workload due to less triage time for unwanted species and invertebrates (crew works more efficiently, with more time to prepare fish, more rest, greater safety)
   - ✓ Reducing the impact of the landing obligation in the fishery

3. **Disadvantages : Loss of 34.5% of comercial Hake (20kg/haul)**
4. **To propose this selective codend to be included in the technical measures regulation for its voluntary use in this fishery in ICES 7**

Project RAPANSEL: Bottom trawl selectivity in ICES 7

***To propose this selective codend to be included in the technical measures regulation for its voluntary use in this fishery in ICES 7**

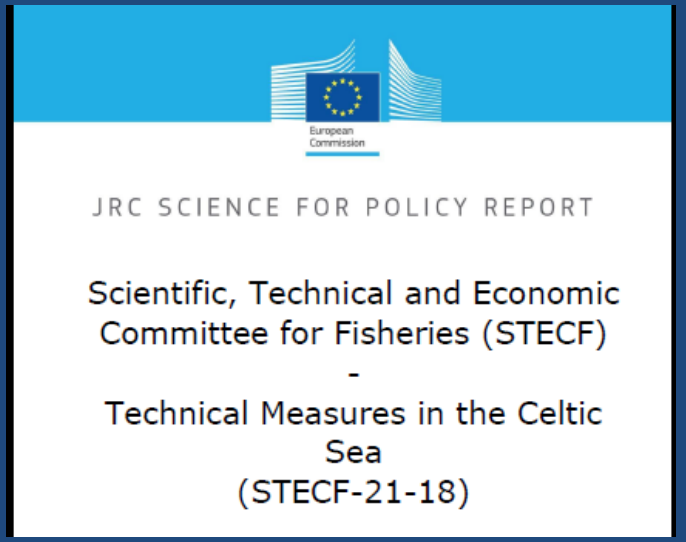
This gear must be assessed by STECF upon request of one or more Member States and approved by the Commission to introduce in the Technical measures Regulation (EU) 2019/1241

First results presented inScientific, Technical and Economic Committee for Fisheries (STECF):

STECF EWG 21-05 Evaluation of Joint Recommendations on the landing obligation and on Technical Measures Regulation. 17-21/05/2021

STECF EWG 21-07 Review of the Technical Measures Regulation. 11-15/10/2021

STECF EWG 21-18 Technical Measures Celtic Sea. 01-05/11/2021



Acknowledgements:

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Grupo de investigación Pesca Sostenible y Medidas Técnicas
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