

Increasing selectivity in EU fisheries – State of play and best practices

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Objectives of the study

- Outline the existing types of **selectivity measures** (gear and tactics) in EU fisheries.
- Identify **best practices** in existing projects that have successfully improved selectivity.
- Analyse how **EU funding** has been used for promoting projects that increased selectivity.
- Provide **policy recommendations** on potential action to improve the selectivity of EU fisheries.

Structure of the presentation

- 1. Definitions**
- 2. Selectivity measures: fishing gears**
- 3. Selectivity measures: tactical**
- 4. Best practices**
- 5. EU funding for improved selectivity**
- 6. Policy recommendations**

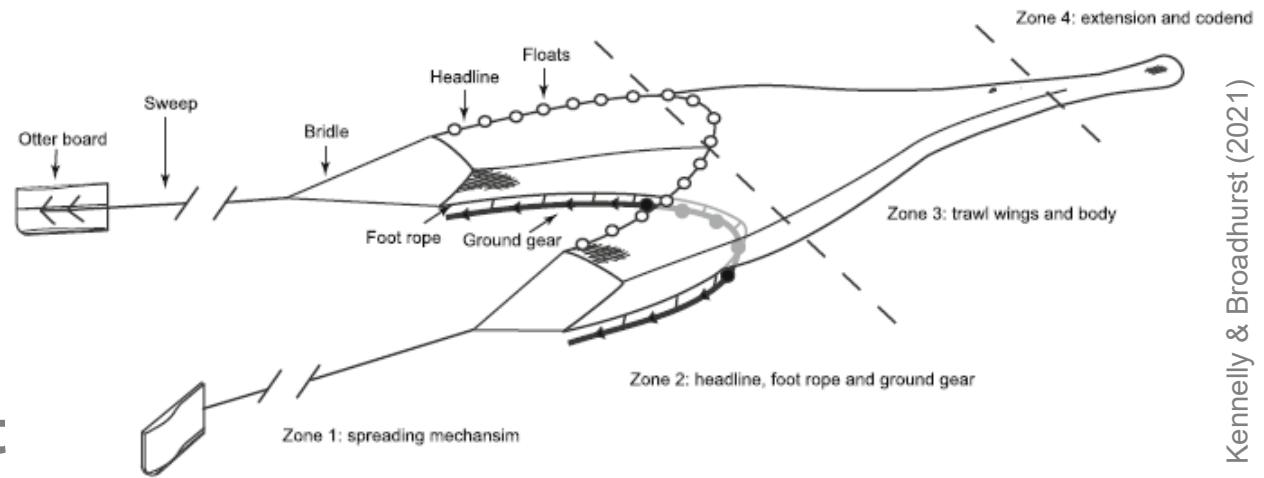
1. Definitions

- **Selectivity** = ability of fishing method to select the desired species and sizes of individuals from the ecosystem in which the fishery operates.
Can be modified through **gear technology** or **fishing tactics**
- **Bycatch** = any catch beyond the species and sizes of the targeted marine organisms
- **Discards** = all bycatch returned to the sea

2. Selectivity measures: fishing gears

Trawls (1)

Intense research effort on trawl selectivity



From the **simplest** modifications...

- Mesh size
- Mesh shape
- Codend circumference
- Netting material

That can be just on **small sections**:

- Large mesh escape windows
- Size- or species-selective grids

Guiding devices can help increase effectiveness

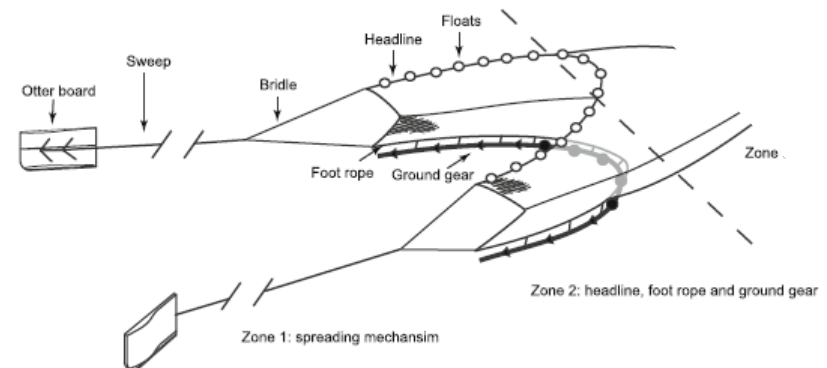
2. Selectivity measures: fishing gears

Trawls (2)

Many modifications on codend, extension or body, not as many on **anterior parts**:

- Spreading mechanisms
- Foot rope & ground gear
- Headline

Added advantage of increased survival potential



Kennelly & Broadhurst (2021)

Big progress made using **species behaviour** to separate **downward-orientating** vs **upwards-raising** species:

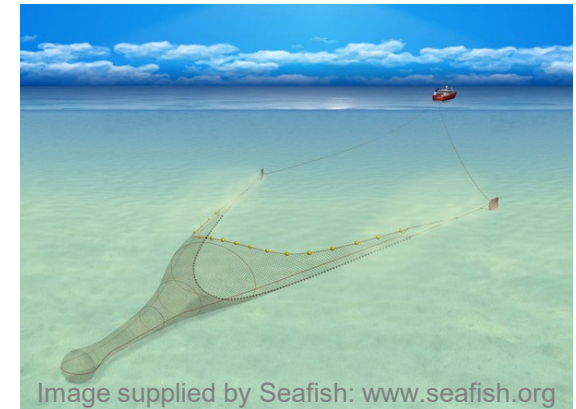
- Horizontal separator panels
- Quad trawl rig
- Topless trawls

2. Selectivity measures: fishing gears

Trawls (3)

... to the **most complex** modifications:

- Lights:
 - Can modify species vertical behaviour
 - Effects differ between species, day/night, season, colours...
- Electrical stimulation:
 - Controversial, unknown broad impacts, banned since 2021
- Hydrodynamic devices
- High-tech systems:
 - Cameras: fixed on gear, or real-time videos feed
 - Some coupled with AI and gates enabling to act upon the trawl while fishing



2. Selectivity measures: fishing gears

Purse seines

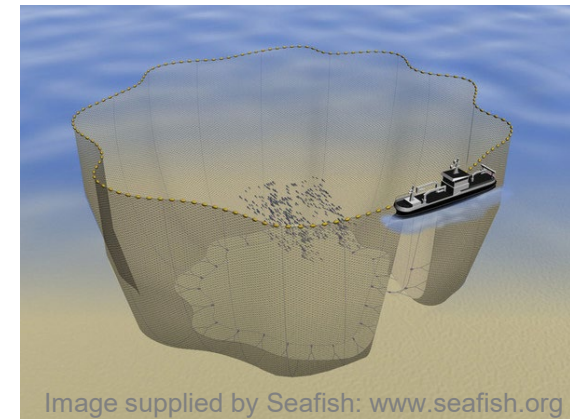
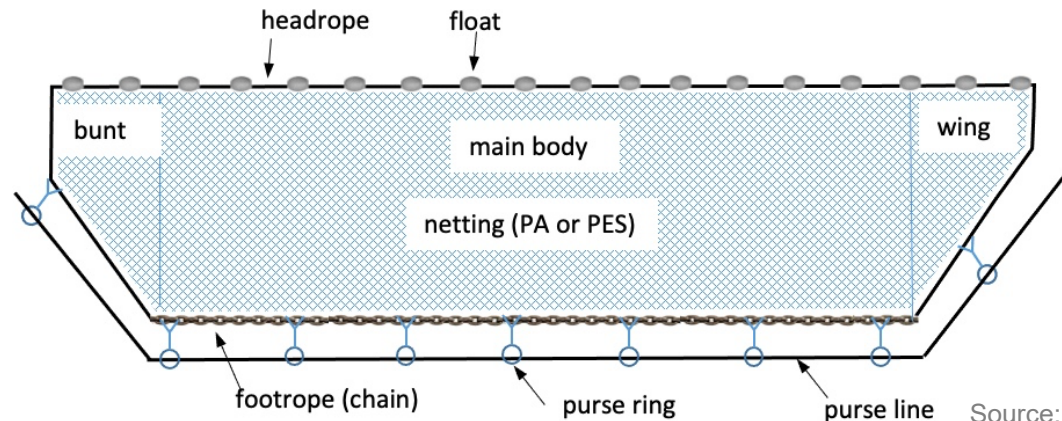


Image supplied by Seafish: www.seafish.org

Source: He et al (2021)

Objective = confirm the catch composition before crowding to avoid (illegal) slipping mortality

- Acoustic
- Mini-trawl
- Modified float-line

Or avoid entangling of vulnerable species

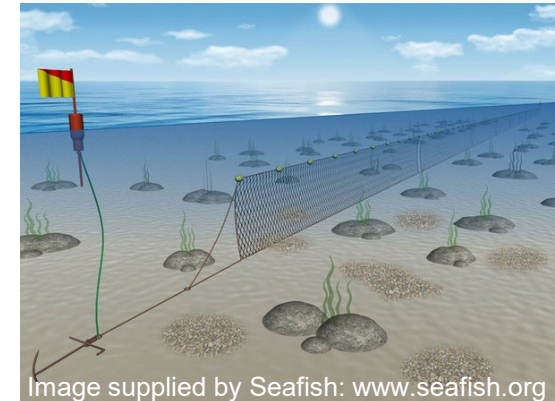
- Non-entangling fish aggregating devices

2. Selectivity measures: fishing gears

Less research on **passive gears**, generally considered more selective, but some fisheries can generate high bycatch, in particular of vulnerable species

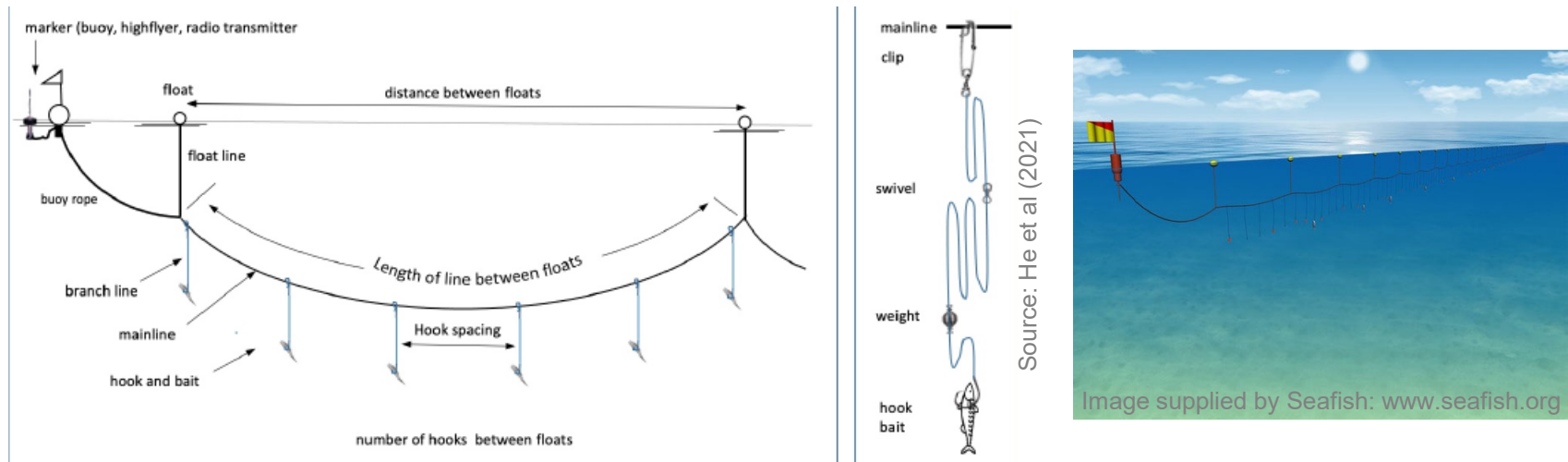
Entangling nets

- Mesh size
- Raised trammel net and guarding nets = stop scavengers from damaging the catch
- Lights = one of the most promising bycatch reduction device for marine megafauna
- Acoustic deterrent devices or pingers = effective for some cetacean species, some cases of habituation



2. Selectivity measures: fishing gears

Hooks and lines (1)



- Hook shape (e.g., circle hooks)
- Hook size
- Bait size = one of the main factor for size selectivity
- Bait type = affects species selectivity

Alternative baits have had limited success so far

2. Selectivity measures: fishing gears

Hooks and lines (2)

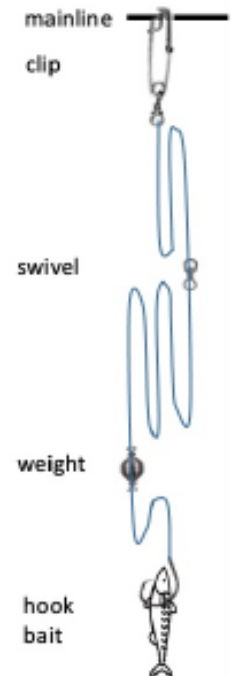
- Leader material (wire vs nylon)
- Leader thickness
- Lights = effects depend on species and colours
- Electropositive and magnetic repellents to reduce bycatch of elasmobranchs

Pots

Objective = improve effectiveness of pots to target fish

- Pot design, adapted to species behaviour
- Lights

Or develop alternative fisheries using pots instead of trawls



Source: He et al (2021)

3. Selectivity measures: tactical (1)

Fishing closures

- **Dynamic** closures have higher potential for bycatch reduction than **static** closures

Real-time measures

- More flexible, good acceptance of sharing bycatch information among fishers
- **Real-Time Incentives** could be an effective alternative for limiting impacts on vulnerable species

Fishers' strategies

- Bycatch avoidance mostly through many **fine-scale real-time tactical choices** and **trade-offs**

3. Selectivity measures: tactical (2)

Decision support tools

- Providing fishers with **scientific knowledge** on where and when bycatch is more likely to occur with maps/apps
- Wide variety of approaches

Depth-based measures

- Depth greatly affects species distribution and discards

Time-based measures

- E.g. night setting of longlines to mitigate seabird bycatch

Soak time

- Soak tactics widely vary in gillnets fisheries

4. Best practices (1)

- **Collaborate closely with fishers**
- Build up **trust** with transparency and continuity
- Promote **bottom-up** initiatives
- Provide the **right incentives**:
 - Financial but not only...
 - Promoting a good public image can also be very effective
- Provide solutions **adapted to local specificities**
- Develop “**fishers friendly**” solutions
 - Limited capacity to accept loss of commercial catch
 - Consider operational, technical and economic constraints
- **Simplicity vs complexity**

4. Best practices (2)

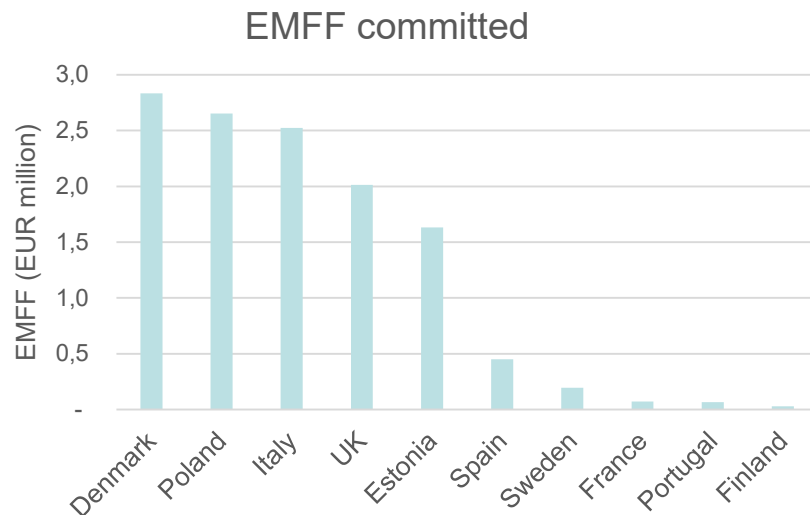
- **Optimise** the testing of new measure(s)
- Perform **rigorous** testing
- Make existing solutions **visible** and **easy to understand**
- Communicate **widely**
- Make best use of fisheries data & promote **data sharing**
- **Integrate knowledge** on species behaviour and ecology
- Integrate **all ecosystem impacts** (e.g., unintended cross-taxa conflicts)

5. EU funding for increased selectivity

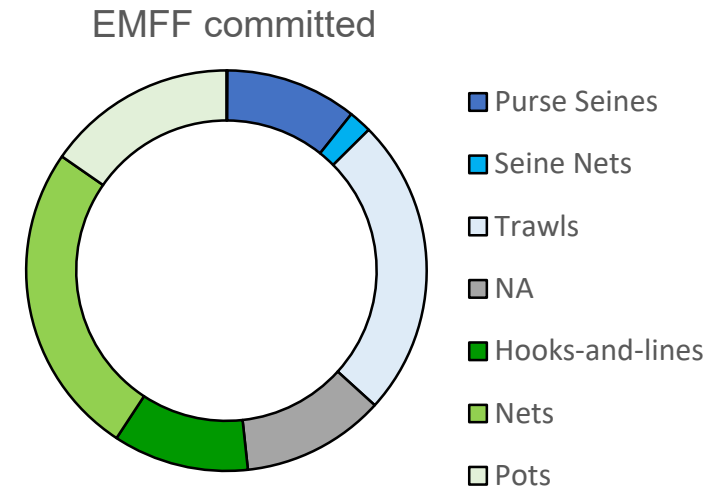
Data: European Maritime and Fisheries Fund (EMFF)
2014-2022 – specifically dedicated to “Gear selectivity”

Total: 1493 vessels – EUR 12.47 million committed

By Member States



By gear type



Data source: FAMENET

6. Policy recommendations (1)

Clearly define management objectives & priorities

- Fishing selectivity can only be directed at some species
- Trade-offs must be made

Promote collaboration & bottom-up approaches

- Wide range of selectivity measures, but overall **low uptake**
- Involving more fishers into management decisions can help

Reinforce regionalization & increase flexibility

- Enable faster legal acceptance of new measures

Incentivize uptake of selective measures

- Regulatory trade-offs
- Influence of group behaviour, fostering pride

6. Policy recommendations (2)

Results-based management & Fully Documented Fisheries

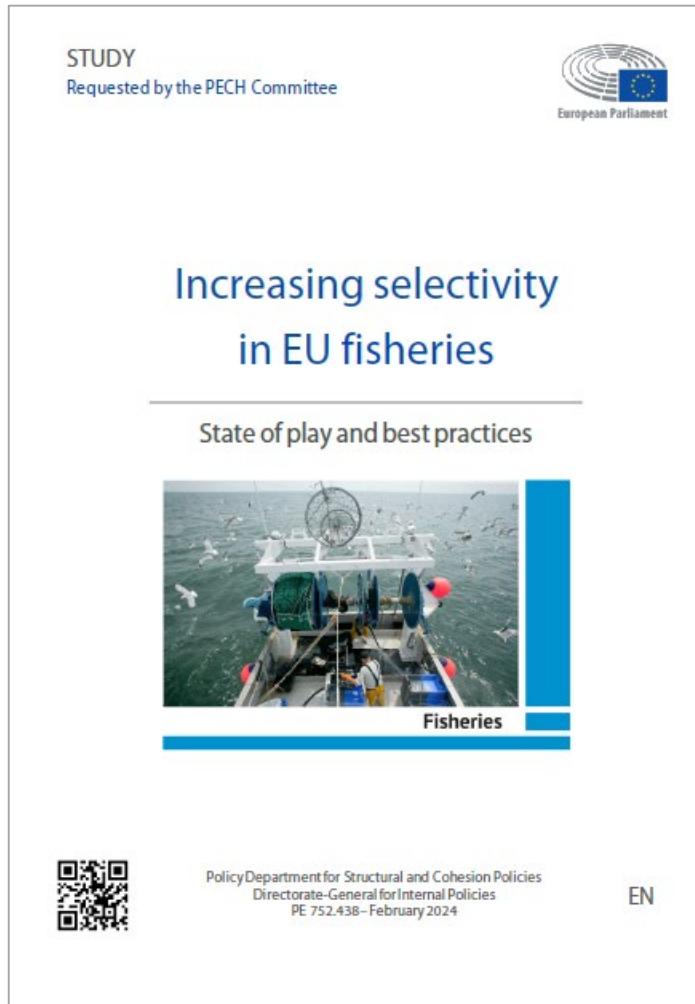
- Data collection consistent with management objectives
- Knowledge on bycatch and fisheries is key

Integrated bycatch management & monitoring

- Fishing selectivity should be integral part of EAFM
- Monitoring to assess broad impacts of new measures

Use the LO as a lever

- No perfect solutions, high variability, and low uptake
- Exemption from the LO could be granted to fishers using selective measures, under catch documentation



Thanks!
Obrigada!
Merci!

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