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Session gear development

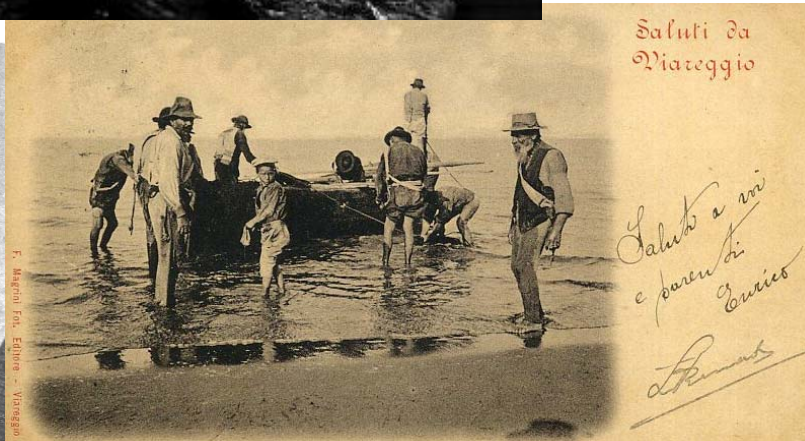
Mitigation options to reduce impact of trawling on benthos

Performance and seabed impact of new fishing gears alternative to boat seine fisheries



Once upon a time...

...there was a fishing gear called
Mediterranean boat seine



Project MARTE+



MARTE+

Mare, Ruralità e Terra: potenziare l'unitarietà strategica



SOTTOPROGETTO SD
Innovazione nei sistemi produttivi
e tecniche per la pesca e l'acquacoltura

Project aims



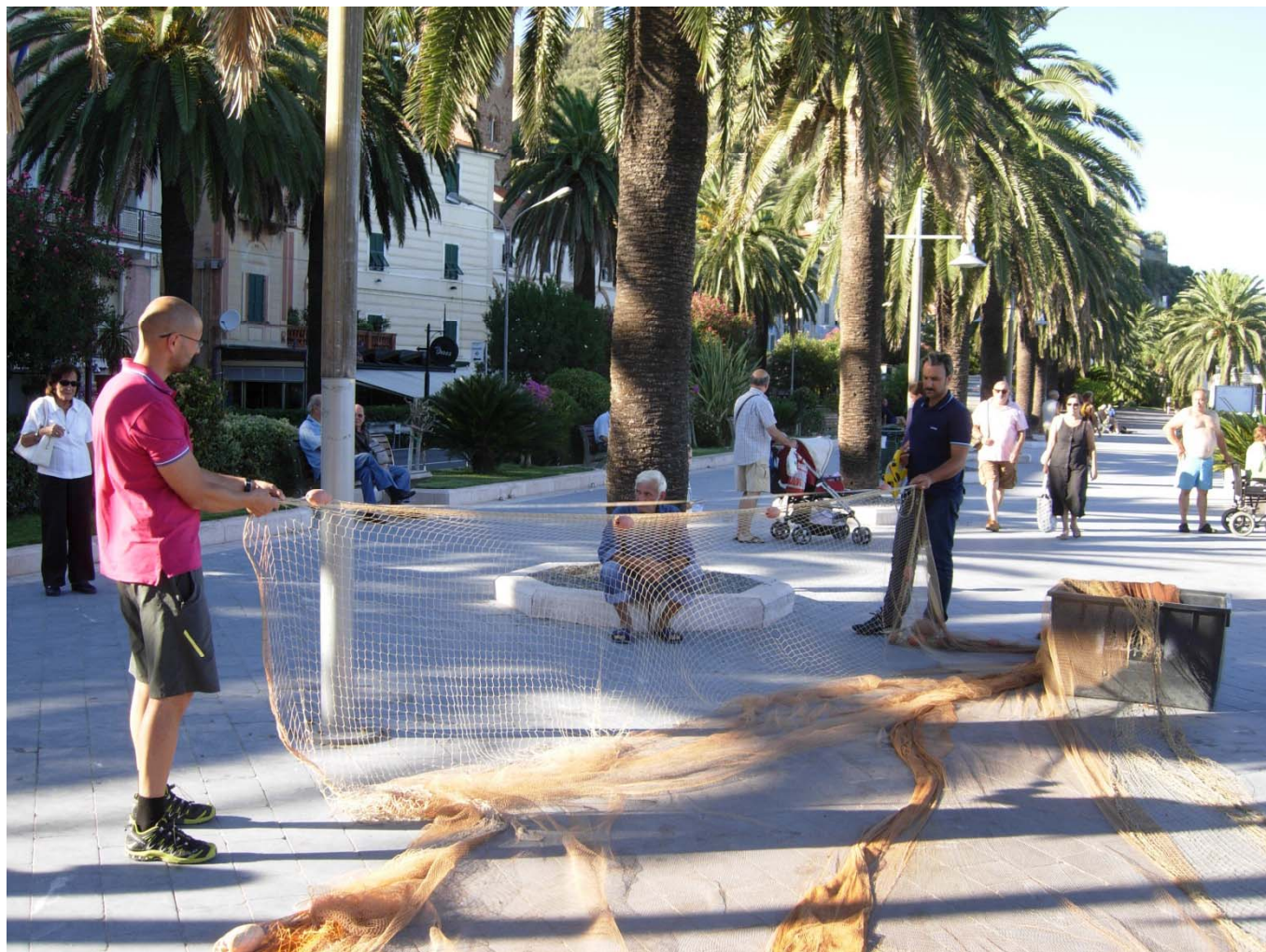
1. Study of the traditional fishing gear systems used in the cross-border area (Corsica, Liguria, Tuscany and Sardinia)
2. Development of innovative and sustainable fishing gears in accordance with European Regulations and 'costumes and traditions' of the Ligurian SSF

Workplan

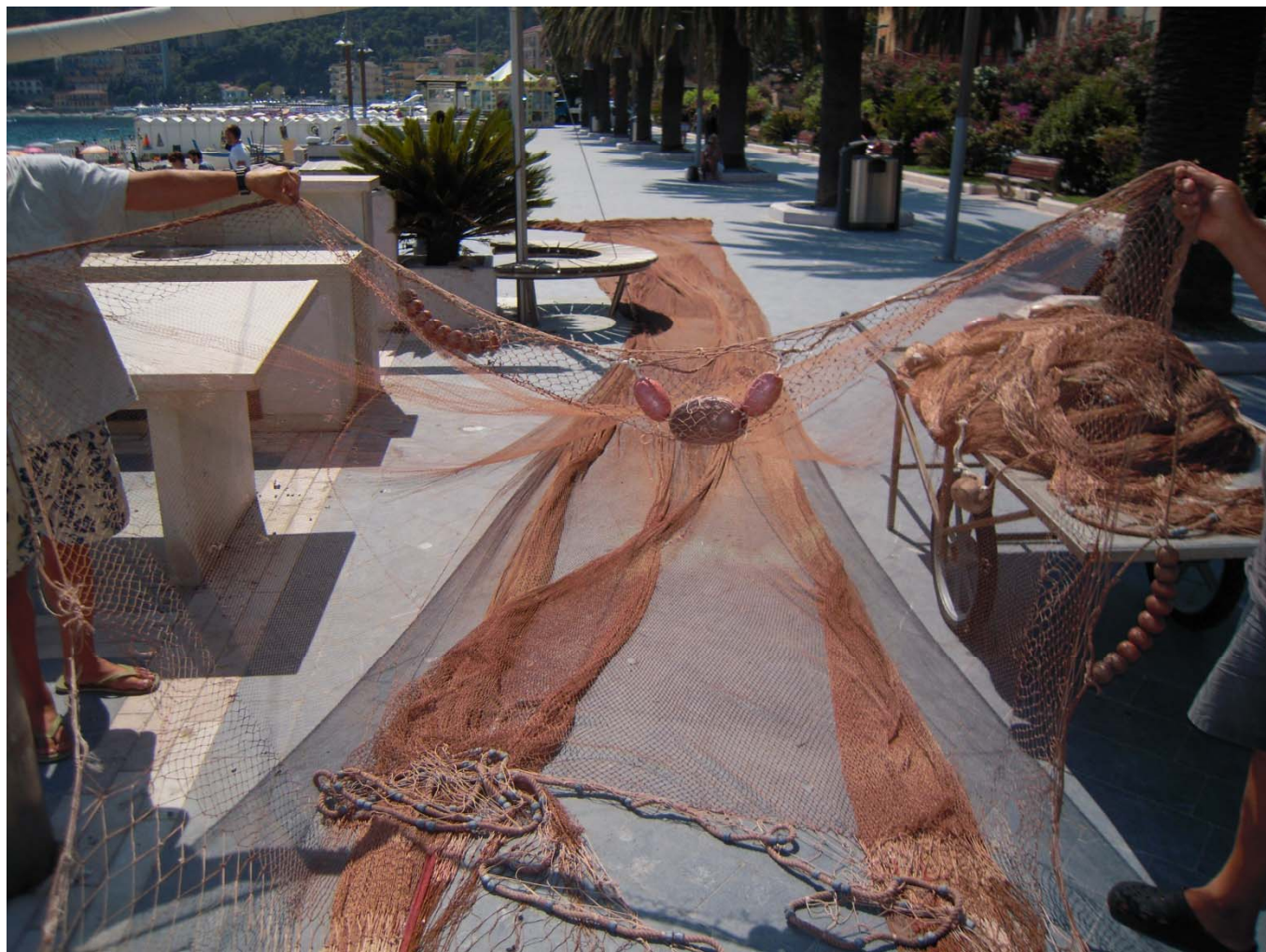
1. Main characteristics of the traditional fishing gears
2. Main characteristics of the local fishing fleet
3. Assessment of the current trawling impact
4. Options for mitigations and alternative fishing gears



ain characteristics of the traditional fishing gear



ain characteristics of the traditional fishing gear



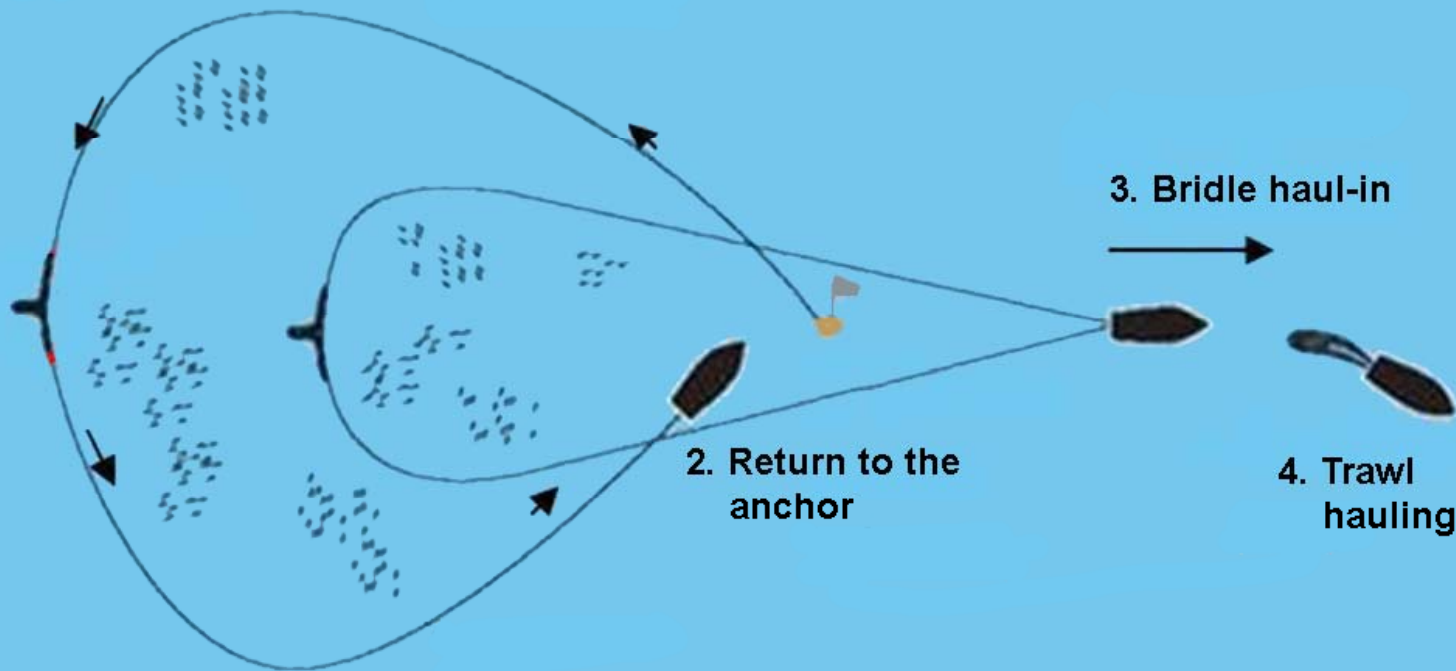
main characteristics of the traditional fishing gear



ain characteristics of the traditional fishing gear

Idealized boat seine setting

1. Trawl set out



Main characteristics of the fishing fleet



Main characteristics of the fishing fleet

Vessel	Harbour	TSL	LOA	kW	Year
Leda	Arenzano	2.19	6.12	58.82	1987
Carlin Padre	Varazze	1.95	6.16	18.38	1984
Albatros	Andora	6.92	11.15	73.50	1959
Aquila	Andora	4.90	9.36	81.00	1998
Ely Gio	Alassio	2.95	7.20	16.20	1979
Azzurra	Alassio	1.47	5.15	8.80	1982
Martin II	Alassio	2.73	6.33	24.00	1982
Lucia	Loano	2.55	6.12	24.30	1979
Nicola Antonio	Loano	2.24	6.60	22.80	2003
Gianna	Vado Ligure	5.13	8.70	30.88	1964
Canun	Bergeggi	1.60	5.15	14.71	1968
Vaigottina	Finale Ligure	1.83	6.03	12.87	1981
Alex IV	Finale Ligure	2.53	6.35	14.71	1985
Delfino	Noli	1.43	4.68	3.50	1967
Giulia	Noli	1.56	4.94	11.00	1947
Cala Oro	Noli	1.77	5.65	16.00	1985
Tornerai	Noli	1.07	4.70	-	1984
San Francesco	Noli	2.87	7.25	13.80	1966
Scià Gina	Noli	1.84	6.80	14.70	2006
Tugnan V	Noli	1.56	6.10	13.20	2009
Mean		2.55	6.53	24.90	1981
Min		1.07	4.68	3.50	1947

Ancona, Adriatic Sea, Mean LOA 22.5 m



Ligurian SSF, Mean LOA 6.5 m



ain characteristics of the fishing fleet: target species

Typical species composition of costal area with Posidonia meadow

- Sparids
- Wrasses

Species of high commercial value

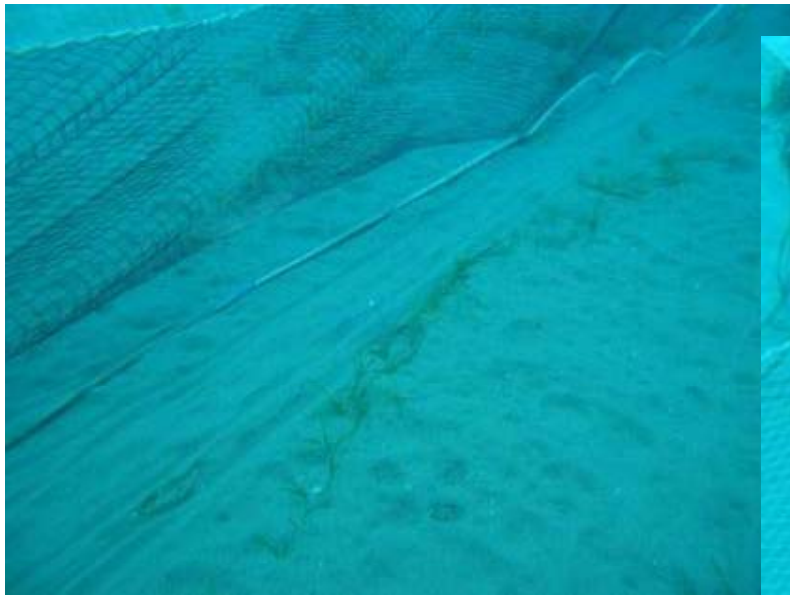
- Gilthead seabream (*Sparus aurata*)
- Common dentex (*Dentex dentex*)
- Sea bream (*Diplodus sp.*)
- Common pandora (*Pagellus sp.*)

Species with moderate value (*mixed fry fish*)

- Picarel (*Spicara smaris*)
- Blotched picarel (*Spicara maena*)
- Bogue (*Boops boops*)
- Saddled seabream (*Oblada melanura*)
- Mediterranean horse mackerel (*Trachurus mediterraneus*)



Assessment of the current trawling impact



COUNCIL REGULATION (EC) No 1967/2006

of 21 December 2006

concerning management measures for the sustainable exploitation of fishery resources in the Mediterranean Sea, amending Regulation (EEC) No 2847/93 and repealing Regulation (EC) No 1626/94

Towed nets: trawl nets, boat seines and shore seines

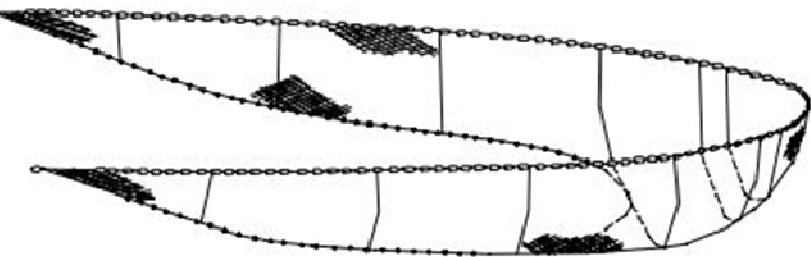
Surrounding nets: catch by surrounding fish (*equipped or not with a purse line*)

Article 9. Minimum mesh sizes

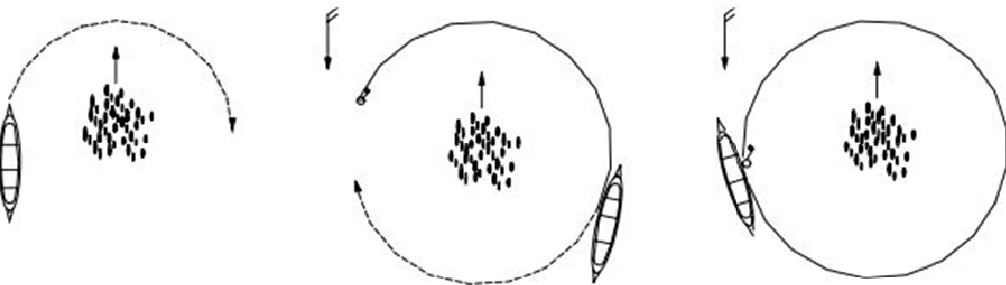
Towed nets: 40 mm square-mesh codend or, at the duly justified request of the shipowner, 50 mm diamond-mesh

The use of surrounding nets without purse line is still allowed within the technical provisions of EC Reg. 1976/2006: MMS=14 mm

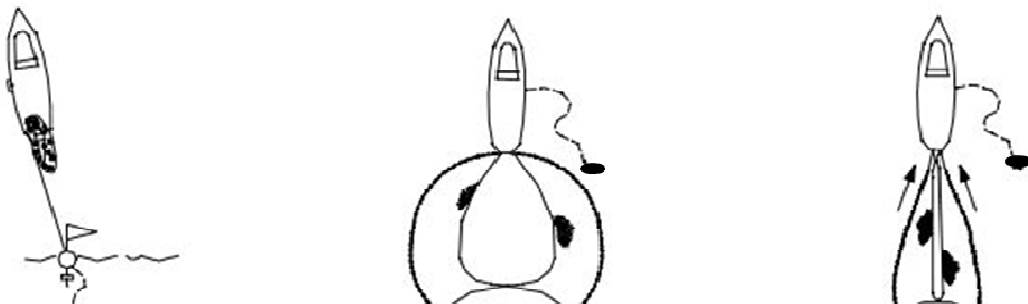
Options for mitigations: First alternative fishing gear



Surrounding net without purse line



Encircling method

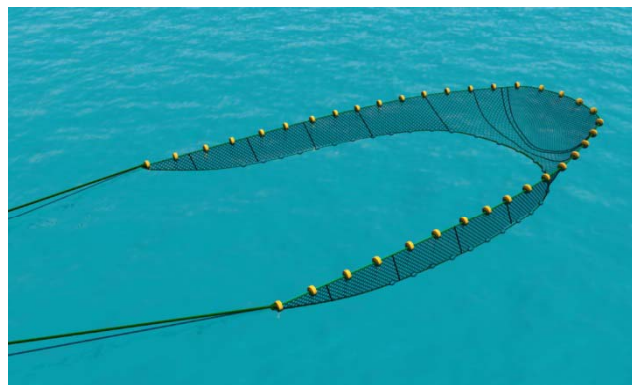


Trawl set out and hauling

Main differences between boat seine and surrounding net without purse line

Characteristic	Surrounding net without purse line	Boat seine
Bridles / ropes	Short (10-15 m) or no ropes	Long ropes (>100 m)
Net drop	Drop=1/10 length <i>(higher than boat seine)</i>	Low
Groundrope	Shorter than headline	Longer than headline
Float buoyancy	> Groundrope weight <i>(headline on the surface)</i>	< Groundrope weight <i>(net close to the seabed)</i>
Net design	Large rectangular panel	Conic shape
Wings	Short	Well developed (~300 m)
Codend	Short	2-3 m long

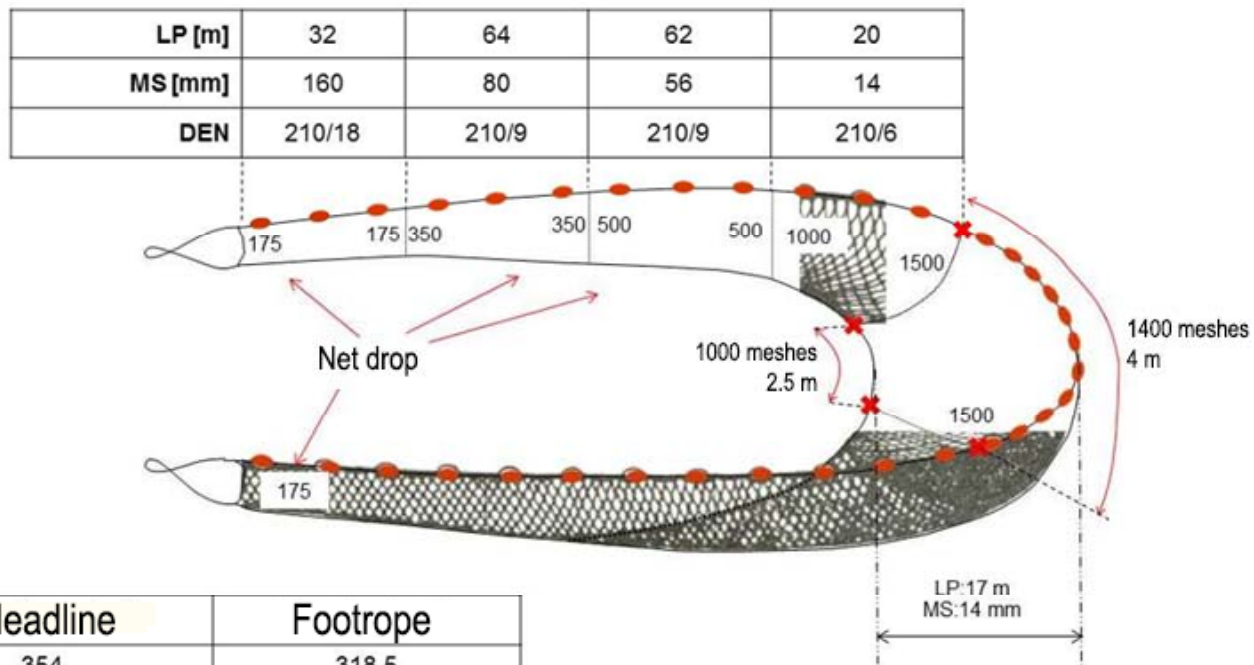
Experimental surrounding nets without purse line



Characteristic	Surrounding net without purse line (C1)	Surrounding net without purse line (C2)
Colour	PA (<i>black</i>)	PA (<i>black</i>) and codend in garnet
Wings	Different in length (<i>150 and 210 m</i>)	Equal length (<i>178 m</i>)
Codend	Mesh size: 28 mm (<i>netting height 4000 meshes</i>)	Mesh size: 14 mm (<i>netting height 5400 meshes</i>)
Distance between floats	50 cm	25 cm

Experimental surrounding nets without purse line

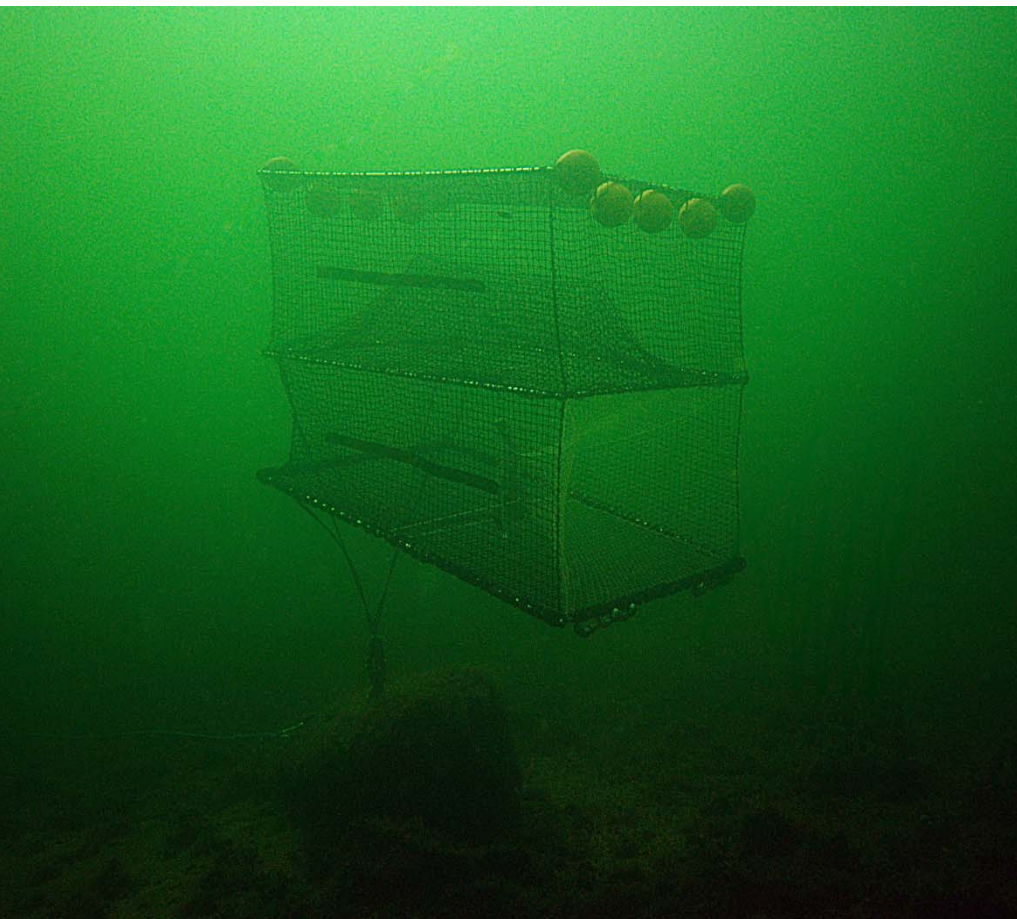
Surrounding net, named C2



	Headline	Footrope
Length [m]	354	318.5
Material & diameter [mm]	PA 5 mm	Leaded ropes (8-10 mm)
Floats / Weight	200 (60x34 mm)	0.2 kg/m

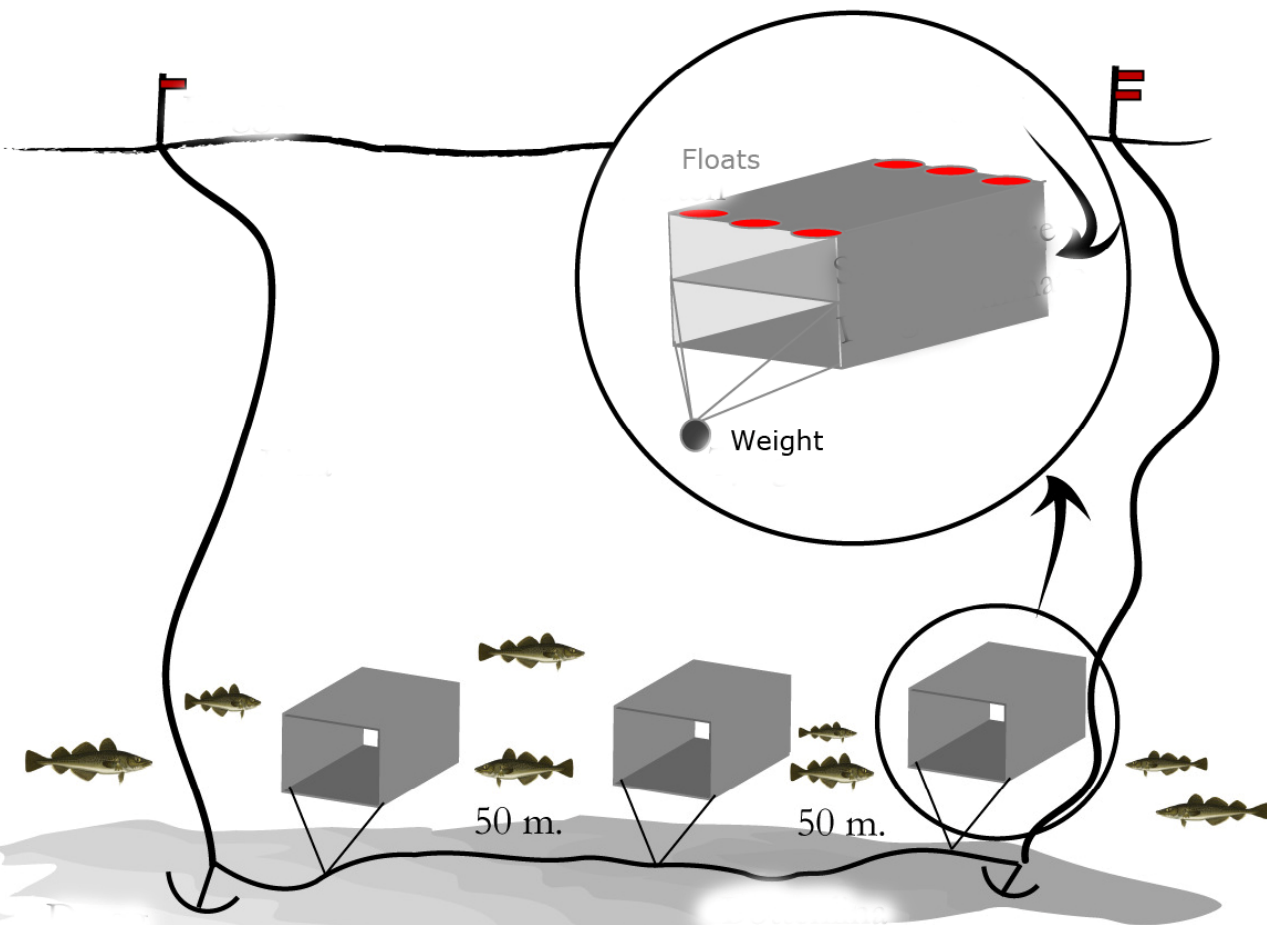
Options for mitigations: Second alternative fishing gear

Norwegian floating fish pots

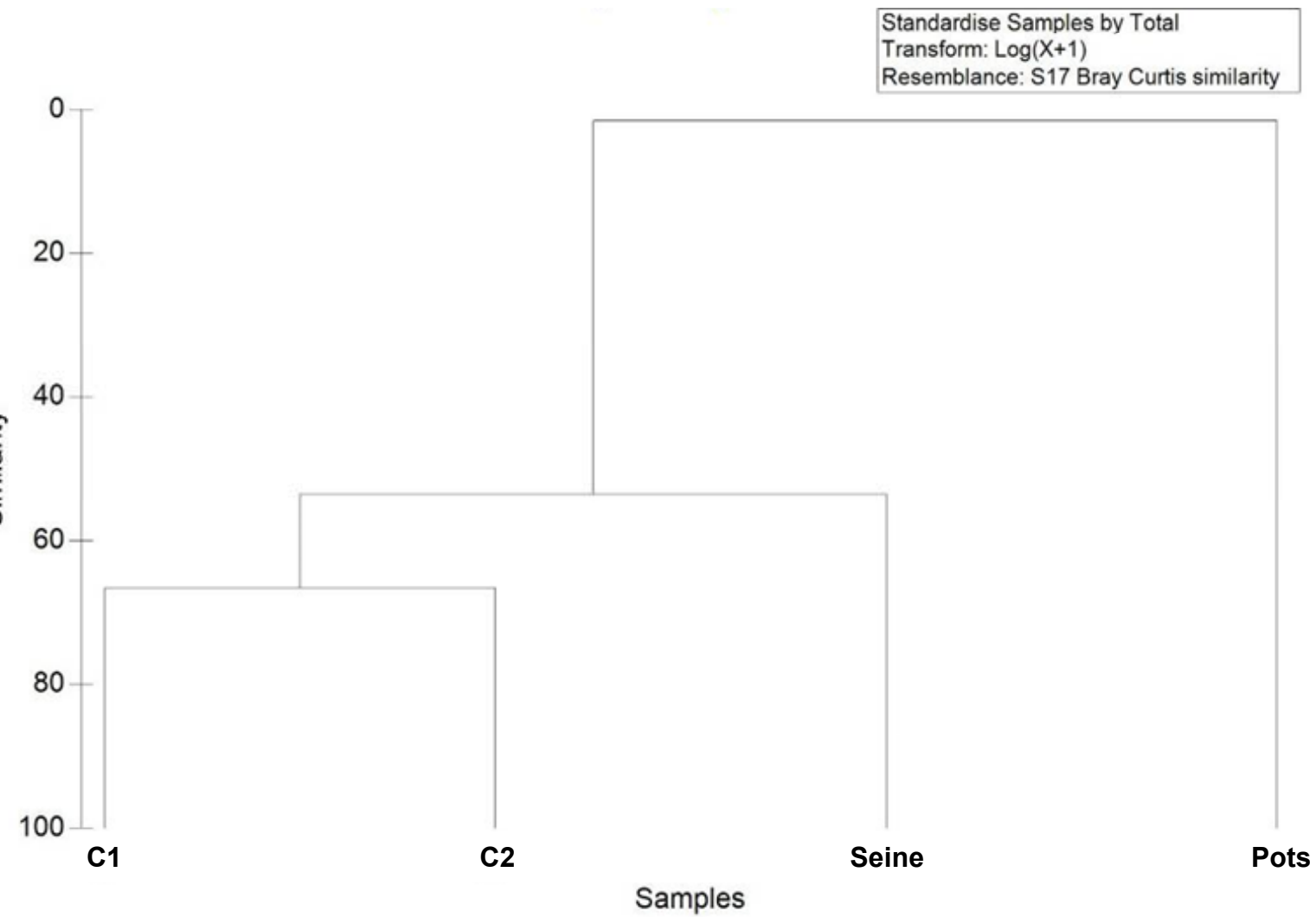


Options for mitigations: Second alternative fishing gear

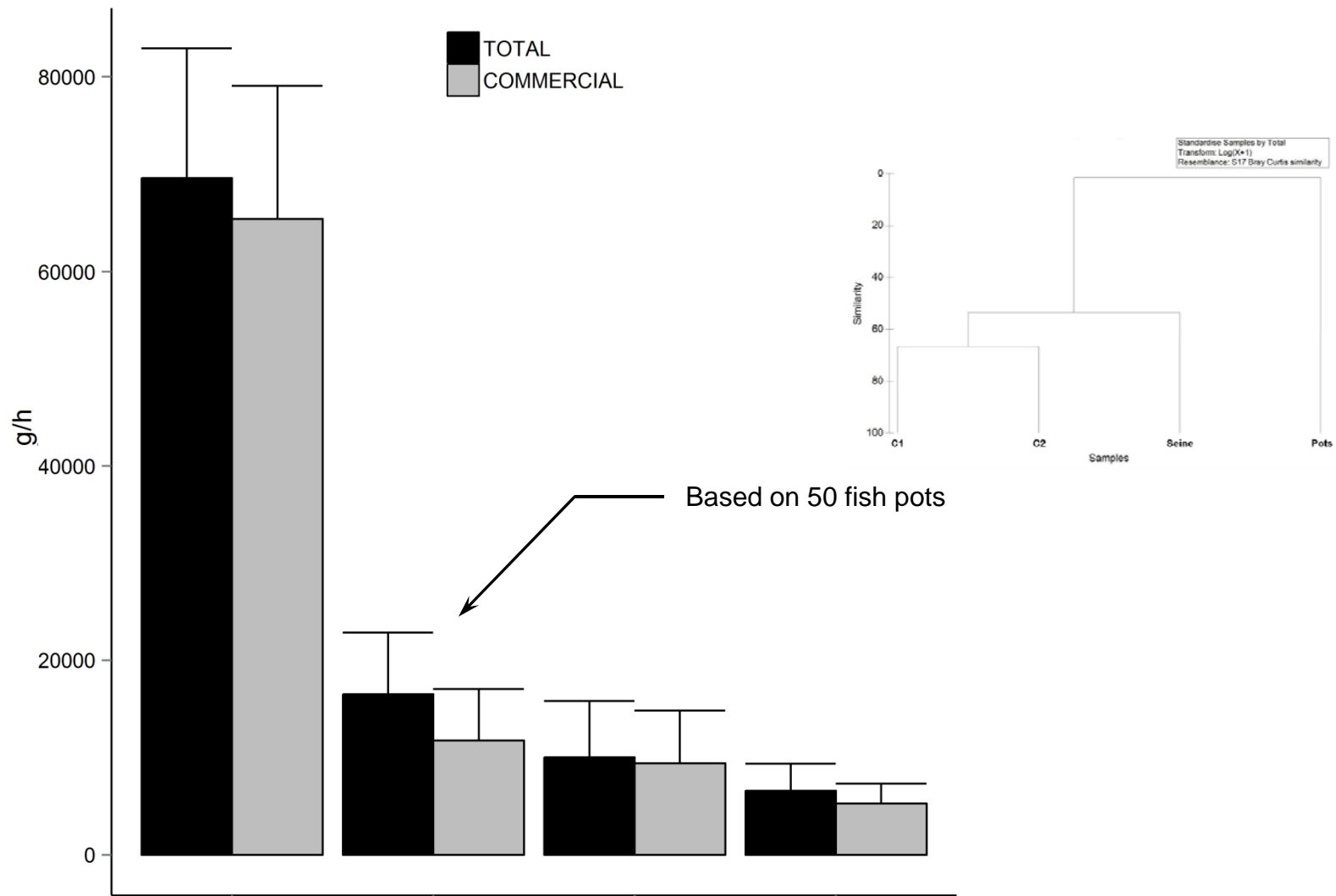
Norwegian floating fish pots



Results / total abundance species similarity

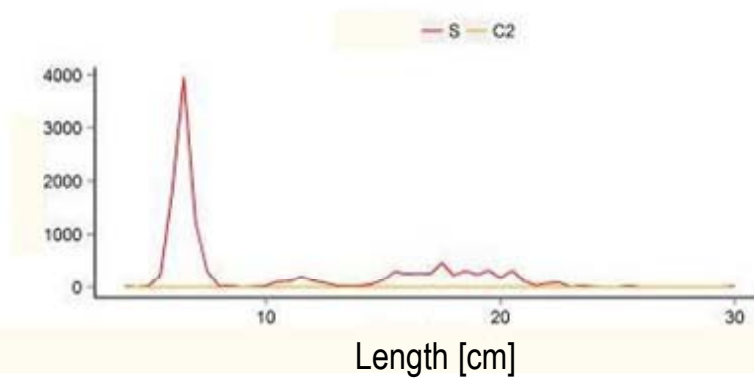
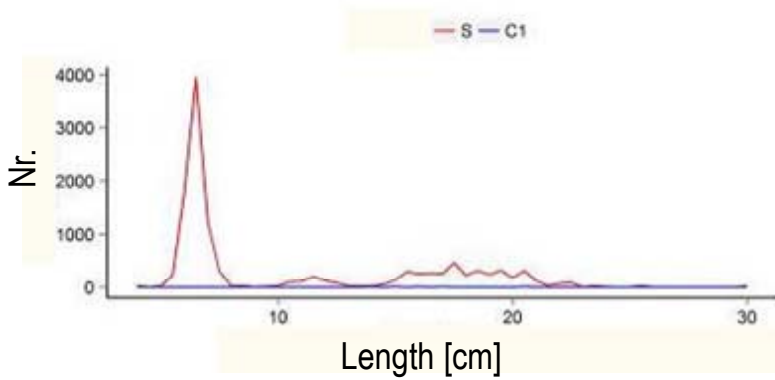
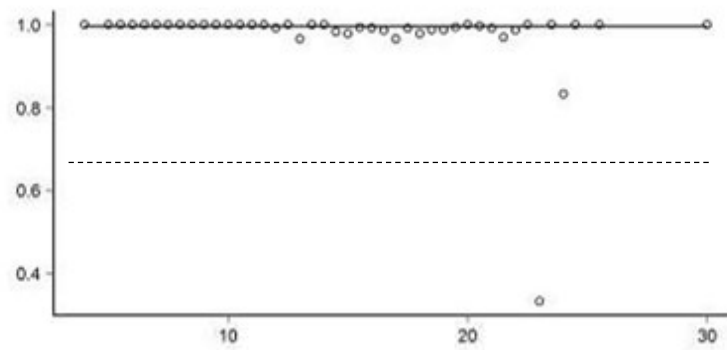
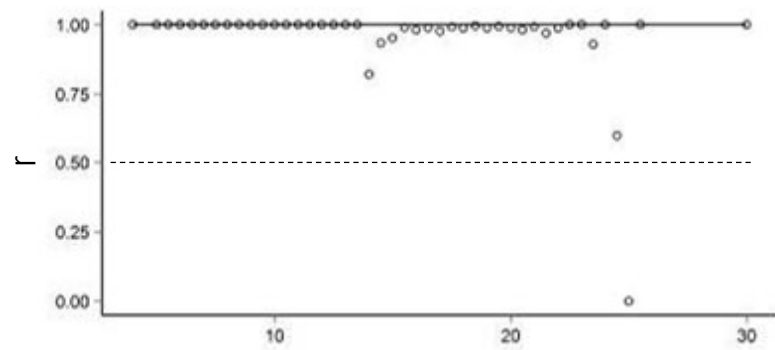


Results / Catch efficiency



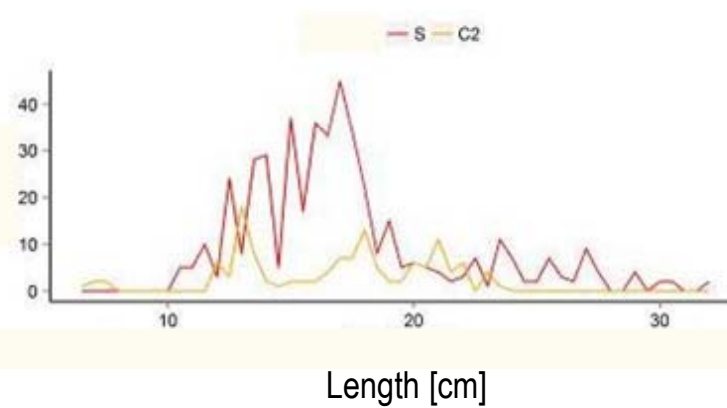
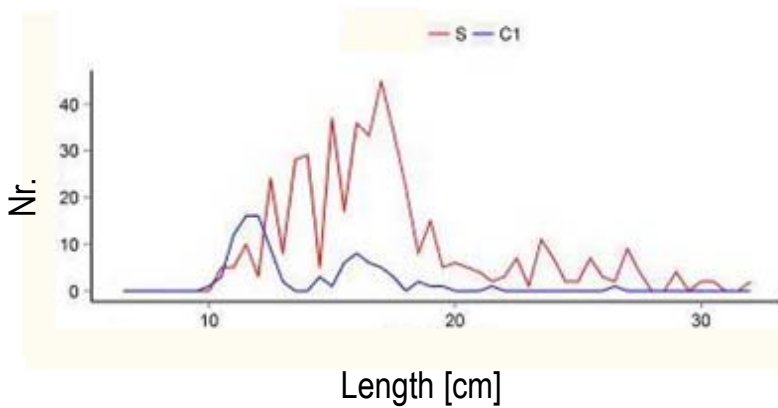
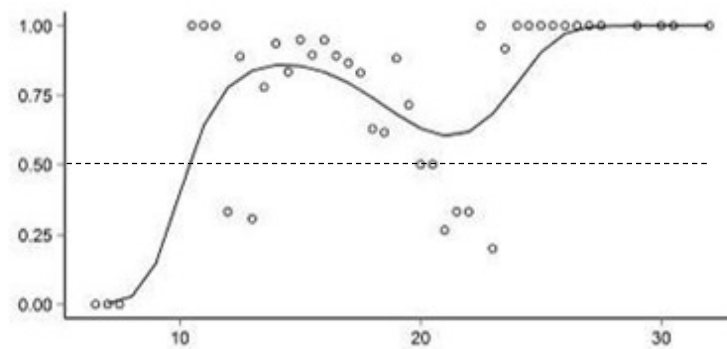
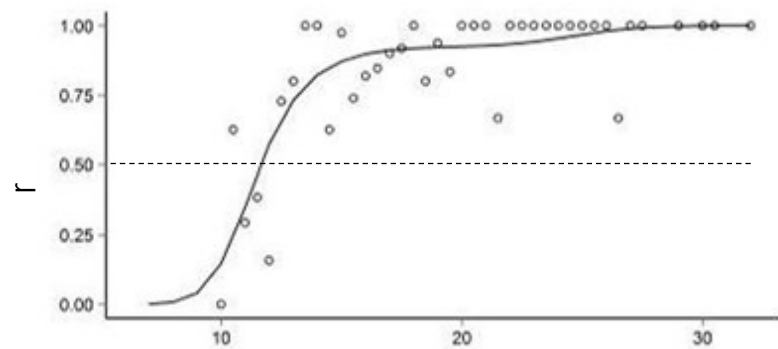
Results / Catch comparison by species

Boops boops (Bogue)



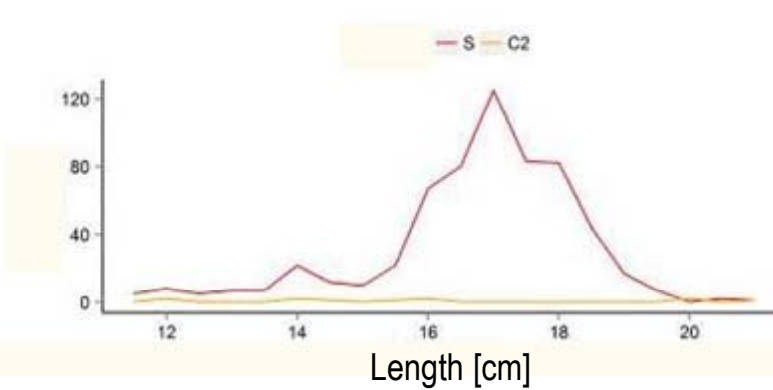
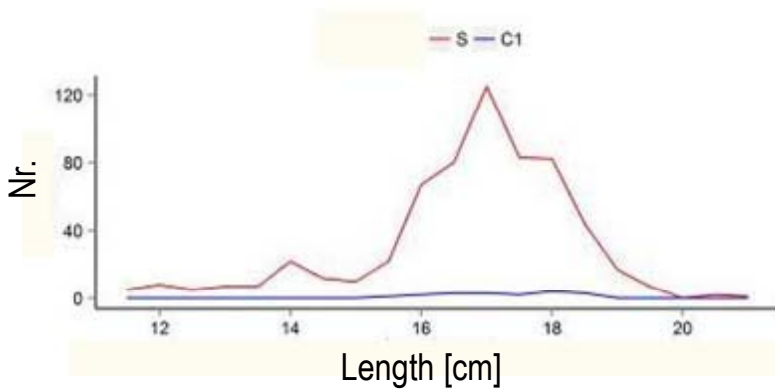
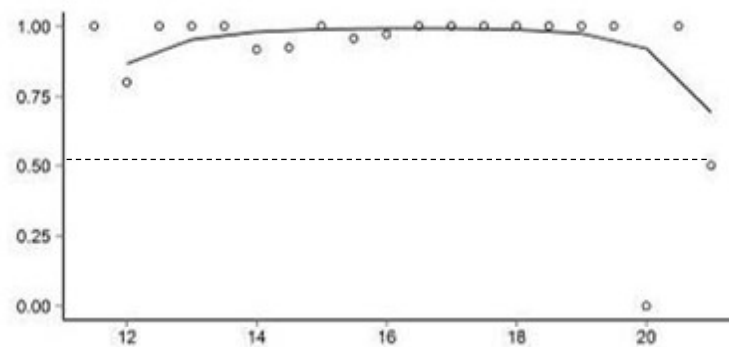
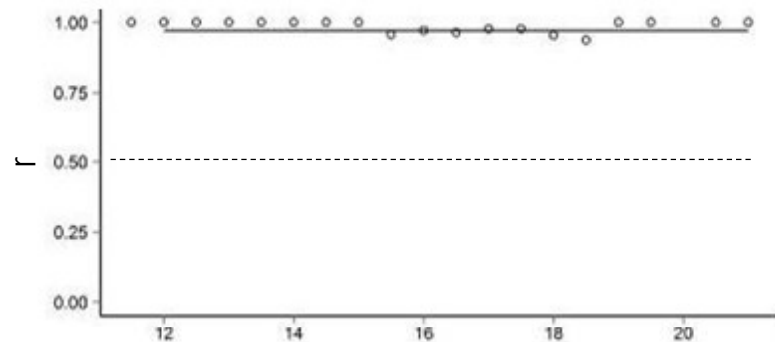
Results / Catch comparison by species

Oblada melanura (Saddled seabream)



Results / Catch comparison by species

Spicara maena (Blotched picarel)



Conclusions

- **At a certain time of the story: little interest of the local fishermen for the alternative fishing gears**
- **Their hopes are obtaining derogation from the EC Reg. 1967/2006 for the use of traditional boat seine**

At the request of a Member State, the Commission - *omissis* - ...shall allow a derogation - *omissis* - ... on condition that such derogation is justified by particular geographical constraints, such as the limited size of coastal platforms along the entire coastline of a Member State or the limited extent of trawlable fishing grounds, where the fisheries have no significant impact on the marine environment and affect a limited number of vessels, and provided that those fisheries cannot be undertaken with another gear and are subject to a management plan - *omissis* - ...Member States shall provide up-to-date scientific and technical justifications for such derogation.

The measures to be included in the management plans - *omissis*- shall have regard to:

- (a) the conservation status of the stocks;
- (b) the biological characteristics of the stocks;
- (c) the characteristics of the fisheries in which the stocks are caught;

Conclusions

- Contrarily to the traditional boat seine, both the surrounding net without purse and fish pots had no physical impact on the posidonia meadows
- The aim of the work presented was to assess the relative efficiency of the alternative fishing gears compared with the traditional Ligurian boat seine
- Efficiency comparisons were performed on three main commercial fish species and on total catch basis
- For all the three main species, the traditional boat seine was significantly more efficient than the experimental gears
- Nevertheless, the experimental surrounding net without purse line showed a potential improvable fishing power
- Additional sea trials with a new surrounding net without purse line are on going

...the best is yet to come

Tusen takk!

Grazie Merci Thank you Obrigado Спасибо

Gracias 谢谢 ありがとう Arigatou Danke Dziękuję

Dank je / u Mulțumesc Teşekkür ederim

Tack Tack så mycket

Kiitos תודה לך Takk d'akujem d'akujem vám

Hvala شكراً shokran Ευχαριστώ 감사합니다

Děkuji Tak skal du have Dankon Hvala Hvala lepa

Najlepša hvala Gràcies Faleminderit Ačiū De'koju

Labai ačiū ขอบคุณ ขอบคุณมาก (khàwp khun) (khàwp khun mâak)

shukrīya () شكريه (بهت) bahut) Cảm ơn cô

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Tencinu Terima kasih Дуже дякую Дякую Спасибі Баярлалаа

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