



MINOUW

Science, Technology, and Society
Initiative to Minimize Unwanted
Catches in European Fisheries

2. Reducing discards

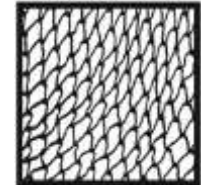
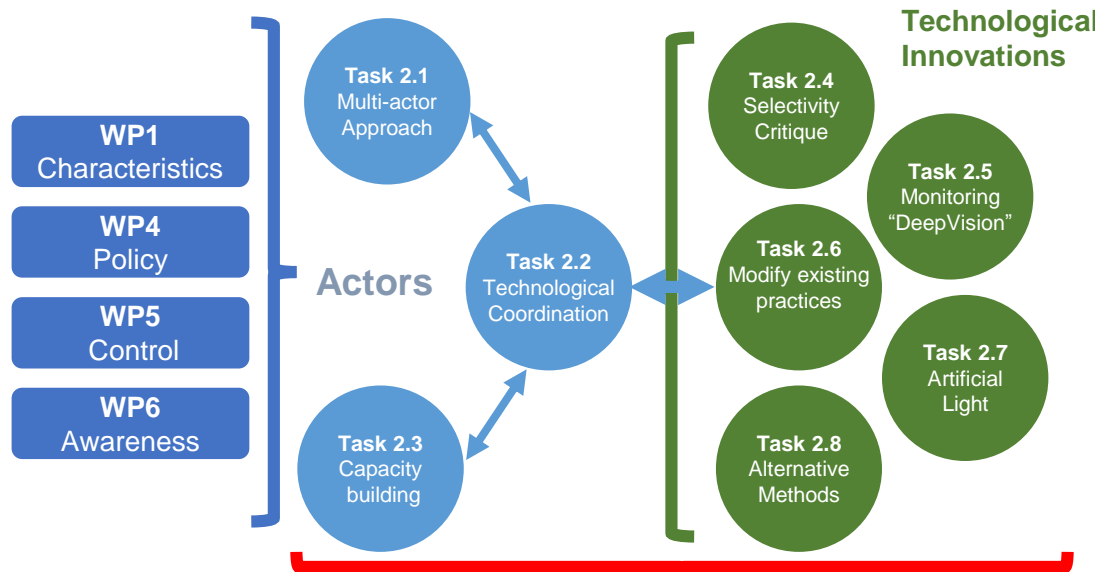
COLUMBUS – iSEAS
“Science-policy
dialogue with EFCA”
2 Feb 2017, Vigo



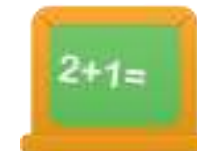
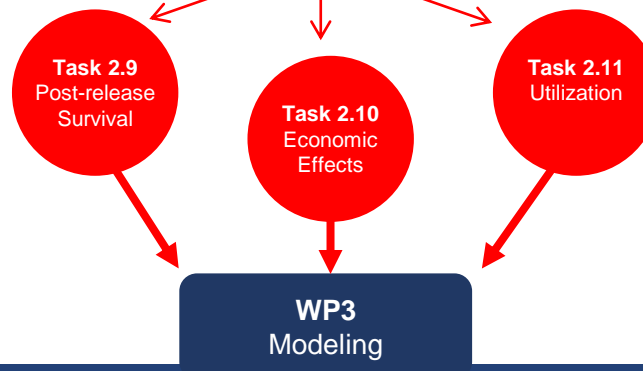
Co-funded by the Horizon 2020
Framework Programme of the European Union



WP2: 11 Tasks under 3 broad thematic headings: 3 groups: actors, technologies, impacts



Bio-economic effects





Task 2.1. Multi-Actor approach

- YEAR 1. **Phase 1** – characterisation of the problem and identification of field actions
 - Step 0. Stakeholder analysis and action plan
 - Step 1. Seeking institutional support from administrations (bilateral meetings with the authorities)
 - Step 2. Engaging the fishing sector at institutional level (bilateral meetings with fishers' representatives)
 - Step 3. Engaging the fishing sector (at operational level): Introductory Meeting
 - Step 4. Regular multi-stakeholder workshops (characterize the problem, propose solutions)
- YEARS 2 and 3. **Phase 2** – testing solutions in the field
 - Step 5. Monitoring the implementation, assisting fishers
- YEAR 4. **Phase 3** – Performance assessment, drawing conclusions
 - Step 6. Evaluation of field interventions, developing replication kit

Presentation MINOUW to local DG

Presentation MINOUW to Catalan Federation

Presentation MINOUW to Blanes Fishers' Assoc.

Meetings with stakeholders

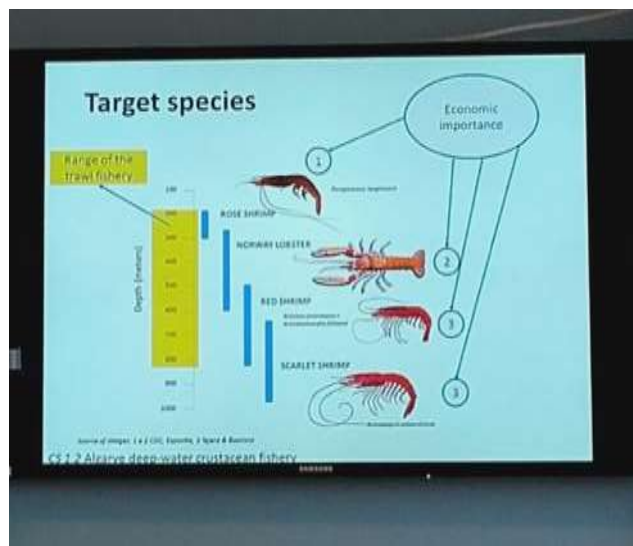
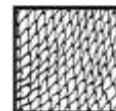
COLLECTIVE
ENQUIRE
PROCESS



Blanes 3 Jul. 2015



Phase 1: mid 2015 – Feb. 2016
Phase 2: Mar. 2016 – Feb. 2017
Phase 3: 2017



technologists evaluate results of enquiry process

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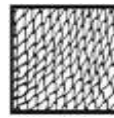
Local scientists prepare field interventions



On-going (2016-2017) activities implemented in the pilot case studies, as agreed during the participatory / consultative process with stakeholders (from page 8 of Deliverable D2.1).

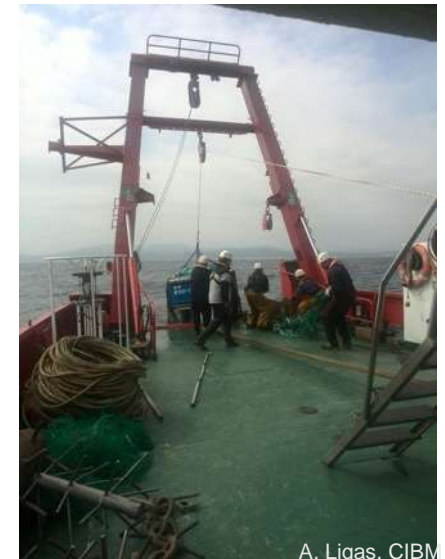
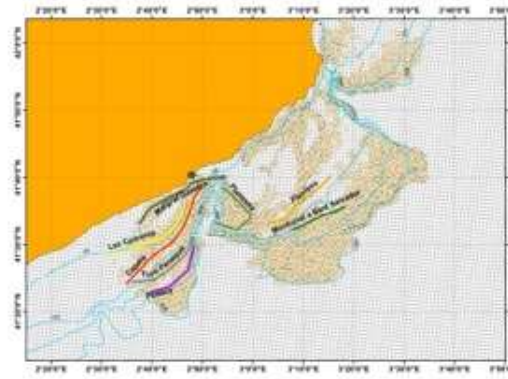
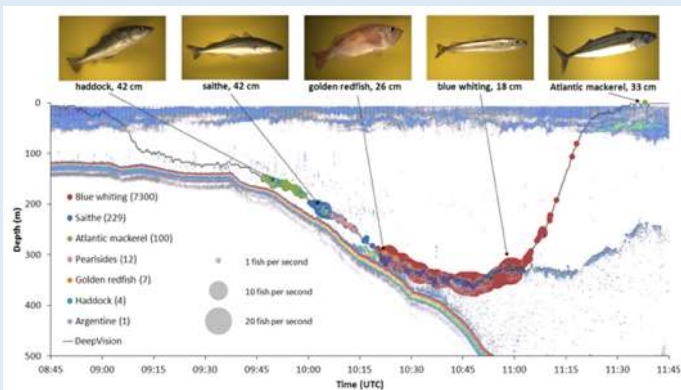
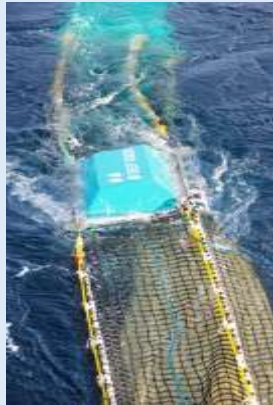
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		Jan	Feb	Mar	Apr
	2016	1	2	3	4	5	6	7	8	9	10	11	12	2017	1	2	3	4
Catalan Bottom Trawling																		
Regular monitoring on board																		
Lights for fisheries Norw. Lobster	1.4													1.4				
Gear modifications for red shrimp																		
Deep Vision field test																		
Sicilian Bottom Trawling	1.5													1.5				
Grid field experiments																		
Tuscan Bottom Trawling/lights	1.6													1.6				
On board observation/field test	1.8													1.8				
Regular fishermen visits																		
Adriatic Pelagic trawling	2.1													2.1				
Participation in public consultancy																		
Algarve Purse seiners																		
Improving pre-catch identification																		
Enhancing Survival rates/slipping texts	2.2													2.2				
Survival assessment 2 slipping methods																		





Task 2.5: deployment of the **Deep Vision** system developed by SCANTROL in Mediterranean bottom trawl case study to analyze the potential catch using a non-invasive method (“pre-catch identification method”).
The first test (April 2016, on board R/V “García del Cid” using a commercial trawl) was only partially successful, but the problems identified will help engineers at SCANTROL to improve the system for further tests during the second 18-month period.

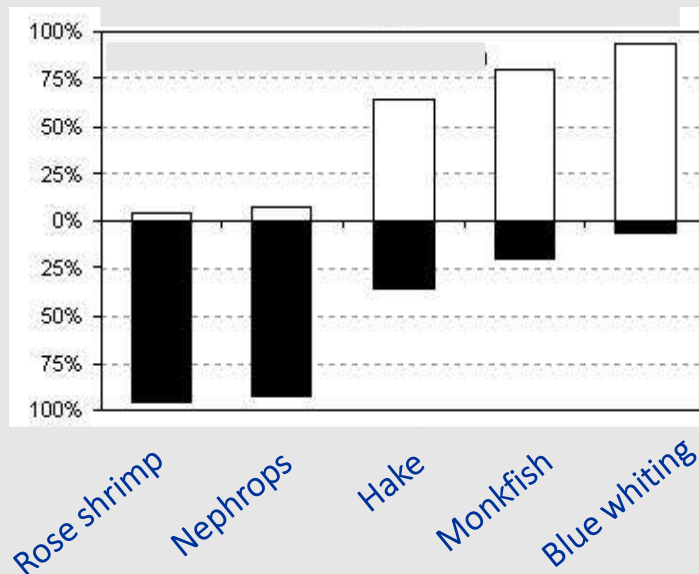
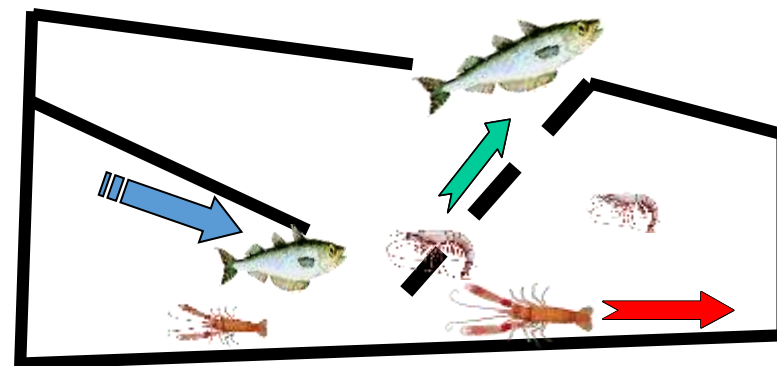
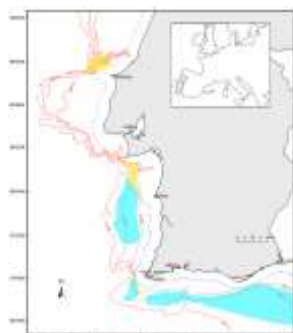
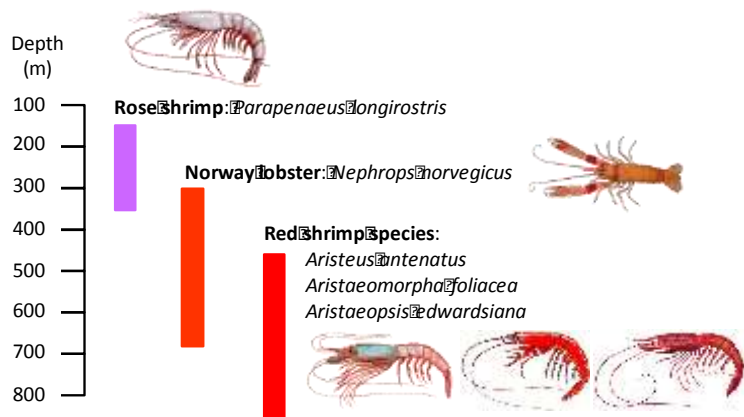
How it works (in Norway)



A. Ligas, CIBM



Species selection: South Portugal demersal crustacean fishery (mainly OTB)



Escapes

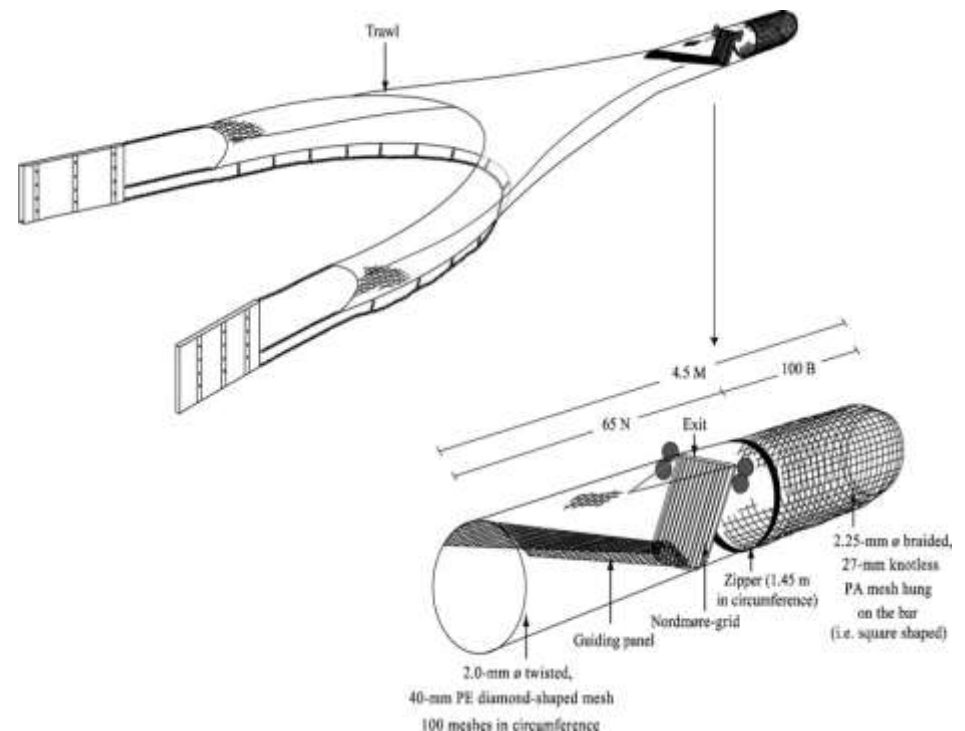
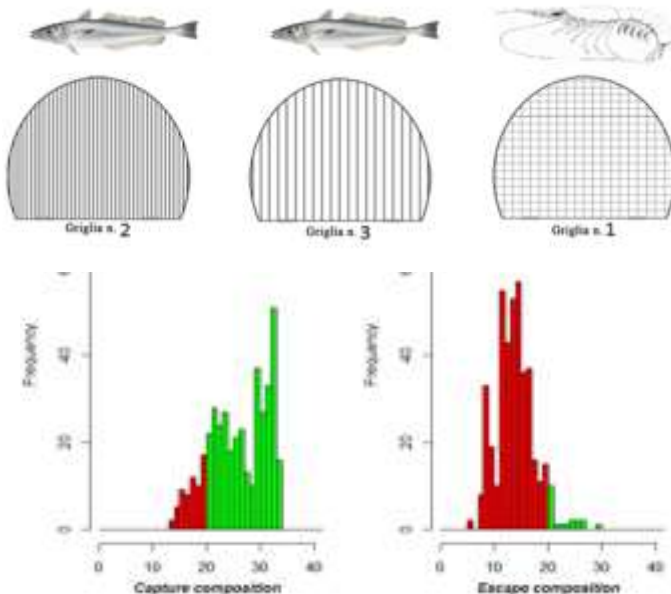
Retained

In **Task 2.6** the case studies carried out activities related to **modifications of existing fishing practices** to improve selectivity and decrease unwanted catches.

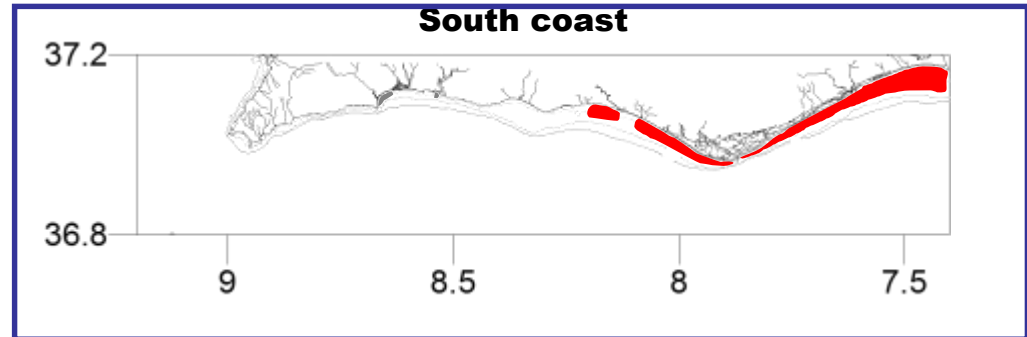
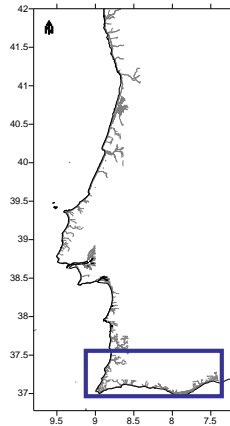
Main type of fishing gear:

- Task 2.6a towed fishing gear (trawl and bivalve dredges),
- Task 2.6b purse seine, and
- Task 2.6c static fishing gear (set nets, surface longlines and pots)

TRAWL – testing new designs of sorting grids (CS1.2, 1.5)



Clam dredges



Fishing gear

Dredge fleet - 78 vessels

53 Portuguese vessels
25 Spanish vessels



Only mechanical dredges: toothed bar to dig clams out of the sediment; length of the teeth varies with the target species; catches retained in a metallic grid cage.



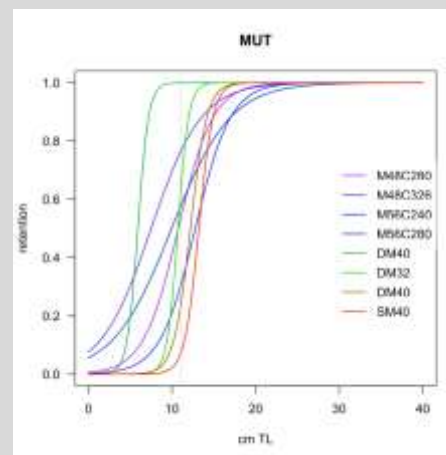
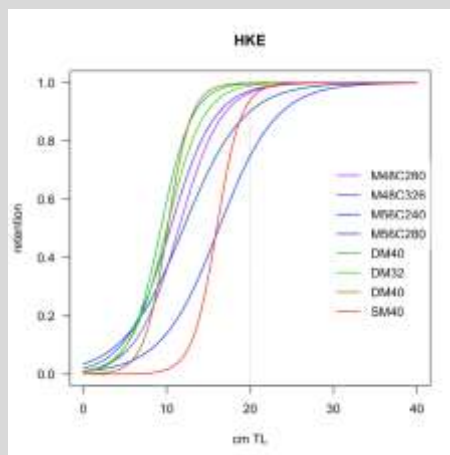
Target species

Donax trunculus;
Chamelea gallina and
Spisula solida



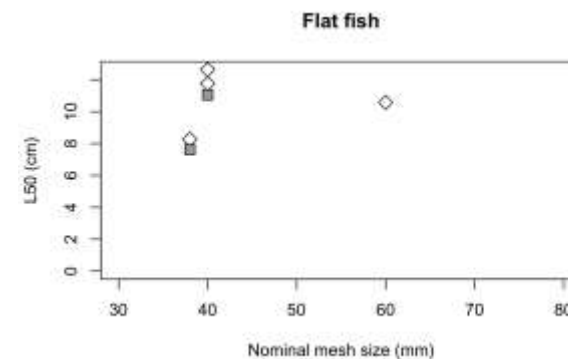
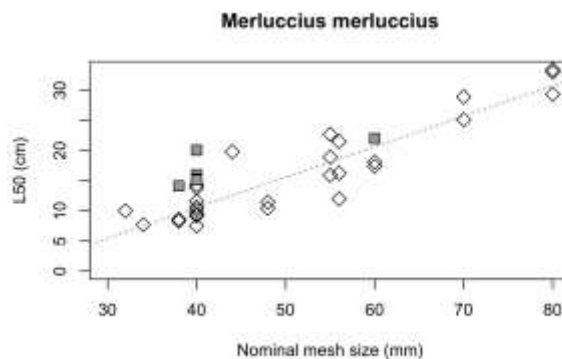
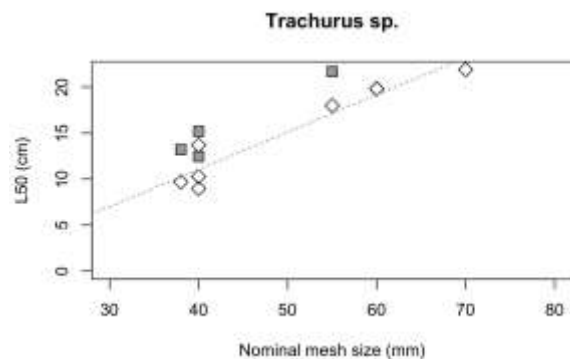


Codend SM40



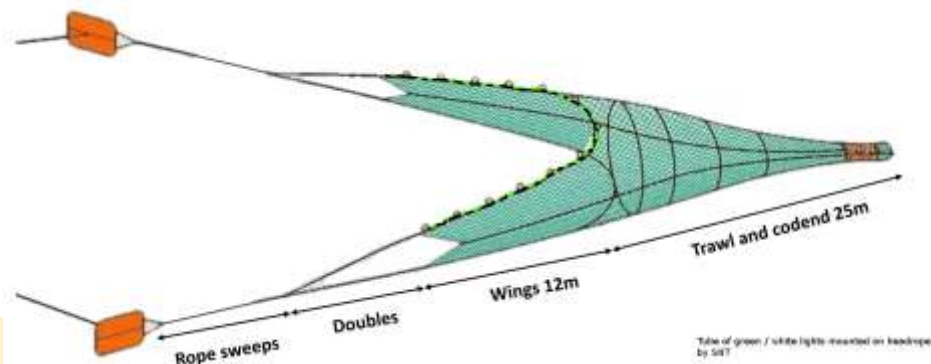
Square mesh (SM40) has contributed significantly to improve selectivity in Med. OTB, particularly for roundfish, although far from sufficient for certain species (eg hake)

Limits to codend size selectivity

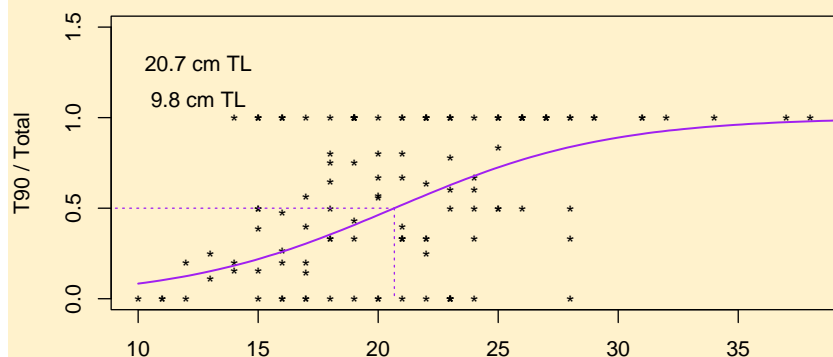
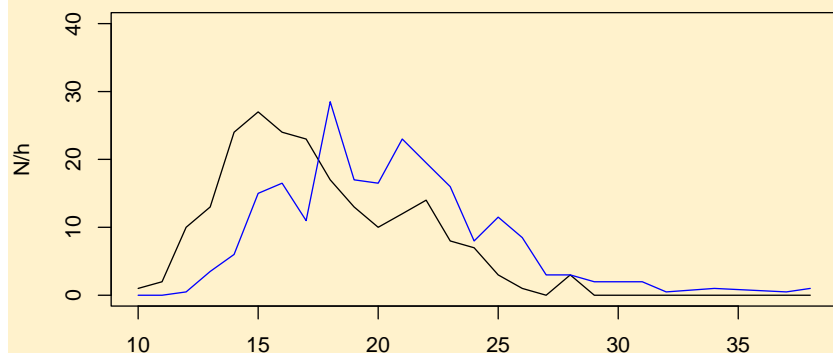


SIZE SELECTION – PLAYING W CODENDS

- Testing T90 extension piece to reduce bycatch of juveniles of target species
- Started August 2016
- Provisional results show that L50 increases significantly for hake and red mullets (although SR incr. as well)



T90 before cod-end



L50 in line with MLS for hake (20 cm TL)
Inexpensive solution

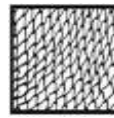
Improving the selectivity of fishing gears by manipulating the behaviour of the marine organisms during the capture process using stimuli based on artificial light. Differential sensitivity and responses of fishes, crustaceans and cephalopods will be exploited to design more selective harvesting methods.



Artificial light as stimulus to ATTRACT or REPEL

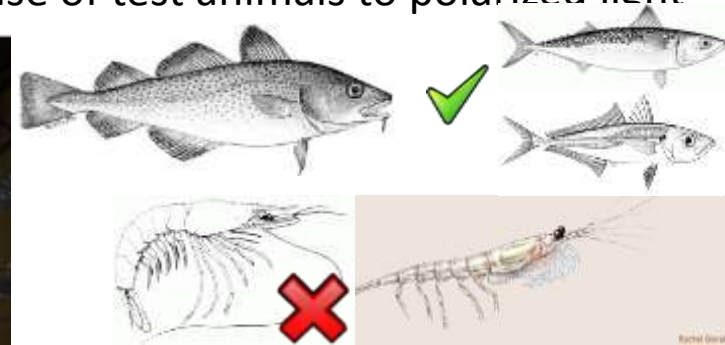
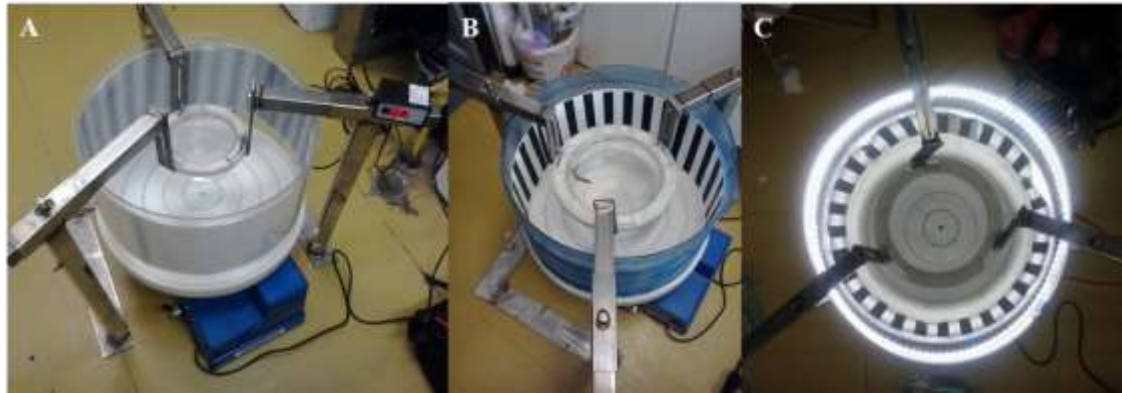
Successful results in N Sea trawl fisheries using *light circles* developed by SNTech



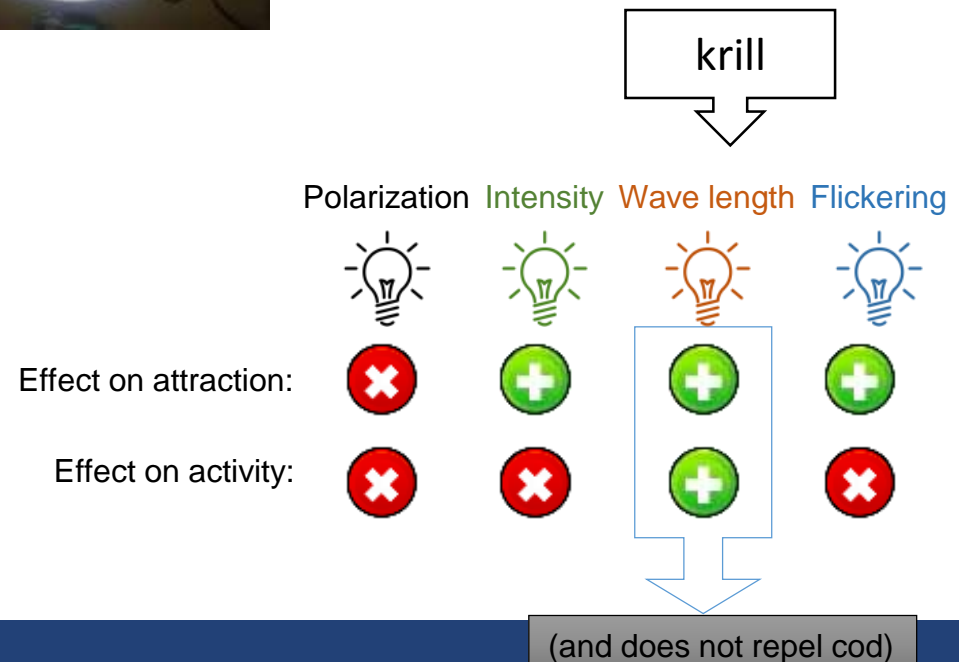


T2.7 Research on artificial light stimuli to modify the selectivity of fishing gear, either by attracting or repelling certain taxa.

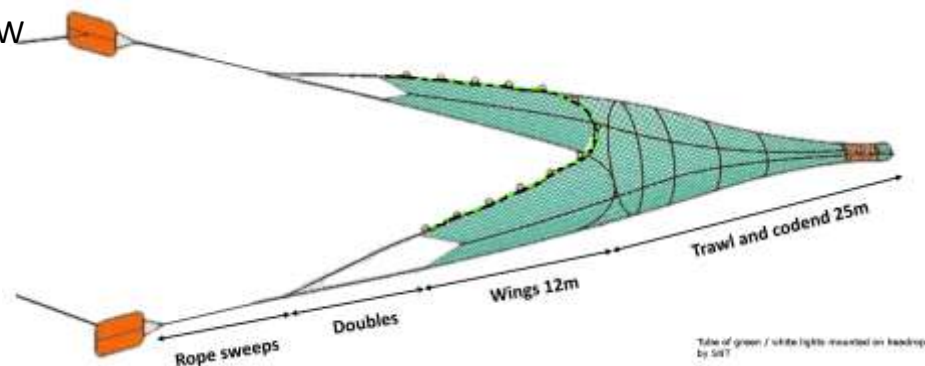
“Optomotor” apparatus to examine individual response of test animals to polarized light



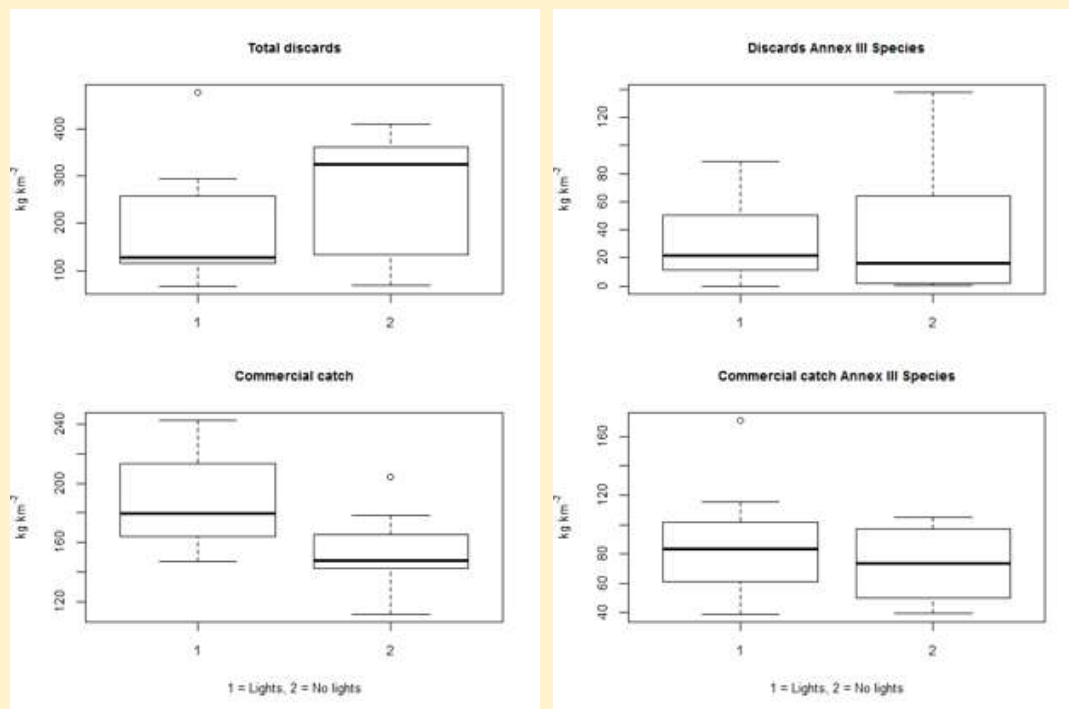
- Polarized light may be a useful visual cue for target fish that are visual predators. Polarization vision may be exploited to attract fish to pots either by using live bait (small crustaceans) or by artificial lures which are polarization active against an unpolarized background.
- Playing with other visual cues, such as wave length, shows that the prey (krill) of target species (cod) could be attracted to pots in a more efficient way than with traditional systems based on bait (→ **Task 2.8; “Alternative fishing gear”**).



- Lights on headrope of trawl to test effect on UWC of fish in DW crustacean fishery
- Two different configurations: “bulbs” and “neon stripe”
- Started June 2016
- Preliminary results suggest:
 - reduced overall discards
 - no significant difference in discards or catches of Annex III sp
 - increased commercial by-catch



Reduced sorting costs and increased commercial fraction (bulbs)



TRAWL – testing artificial light stimuli (CS1.4, 1.8)



T2.6b Purse seine: comparing 'early slipping' techniques (CS2.2):

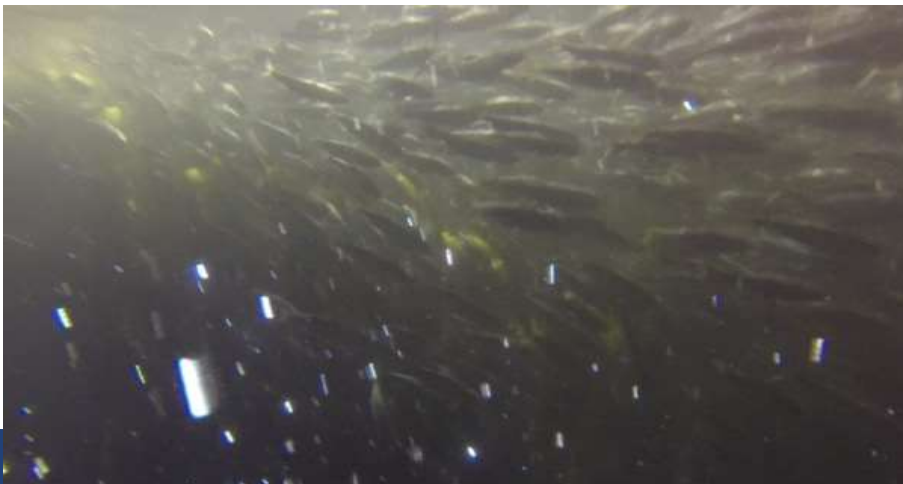
- Standard technique practiced by Algarve PS fishers vs. modified techniques
- Does the modified technique produce lower mortality rates on released fish?



Standard slipping procedure. The catch is densely crowded inside the net and a combination of the weight of the catch on the net and wave action forces the floatline underwater, to a depth of <1 m, allowing some of the catch on the surface to spill out of the net



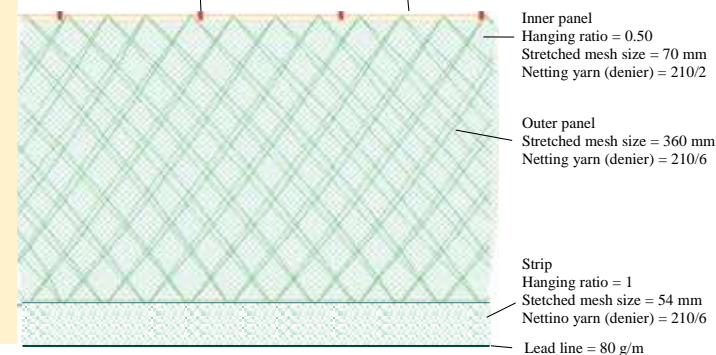
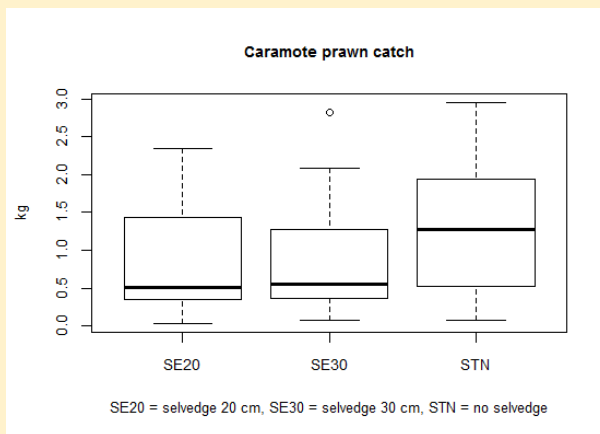
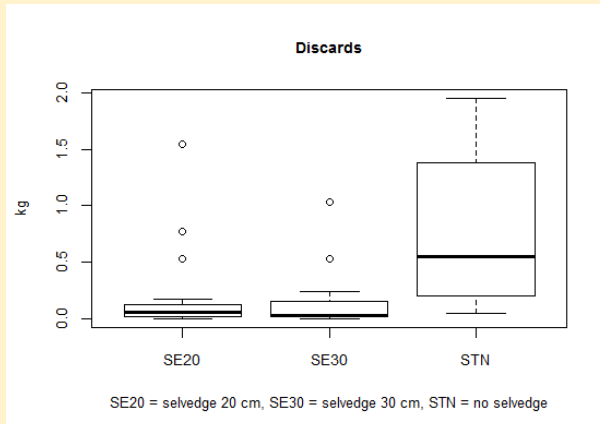
Modified slipping procedure with increasingly large weights allow for higher escape rates of sardine.



- **Considerably reduced amount of discards (both total discard and Annex III species)**
- **Non-significant reduction of main species catches**

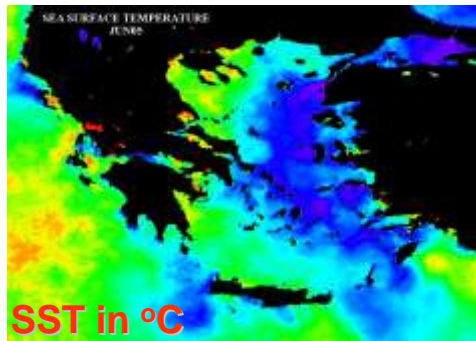
TRAMMEL NET – testing “selvedge” strip (CS3.4, 3.5)

Reduced sorting costs and unappreciable loss of income from target species



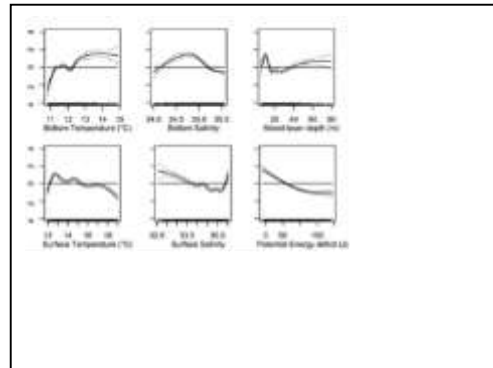
T3.3 Spatial dimension of discards-reducing policies

Environmental conditions: Satellite
environmental data

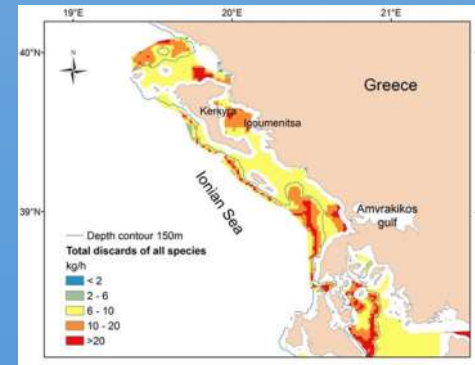


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Statistical model : GAMs



Potential UWC maps



Trawl Discard catches per group
(Fish/Crustacea/ Molluscs/Total)

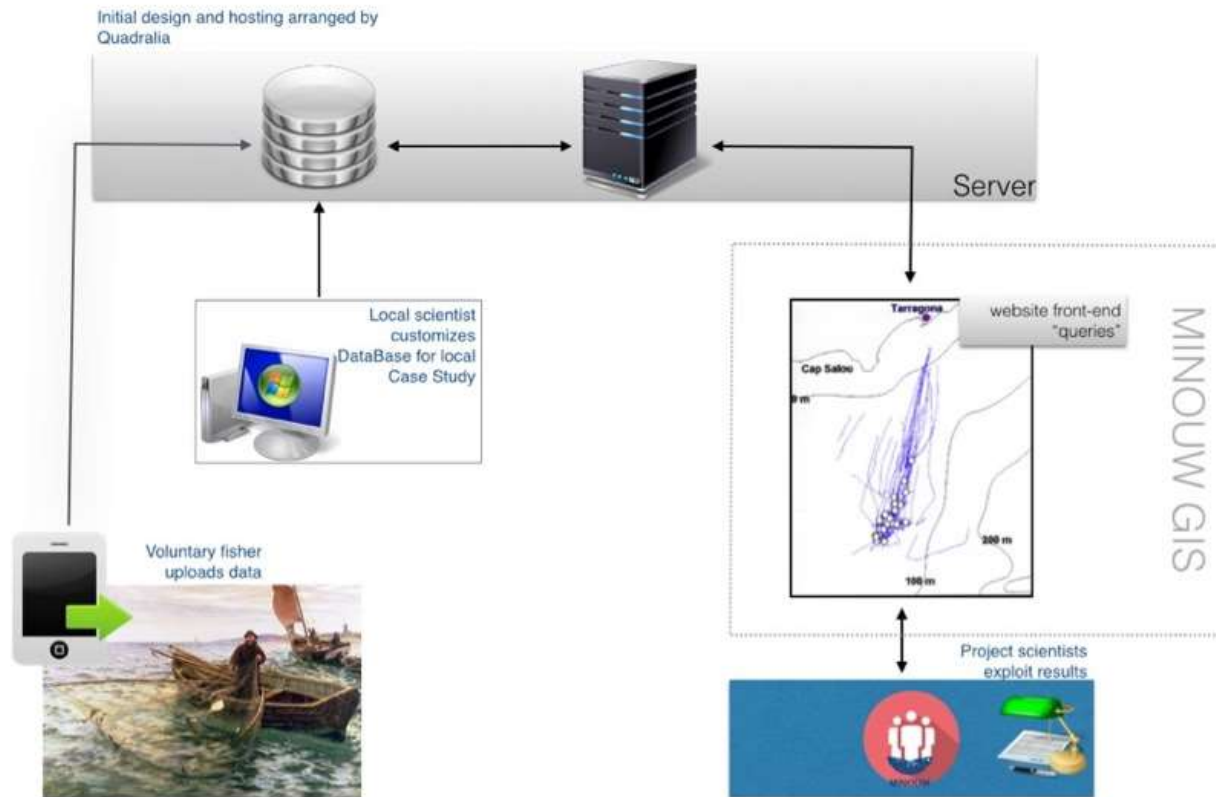
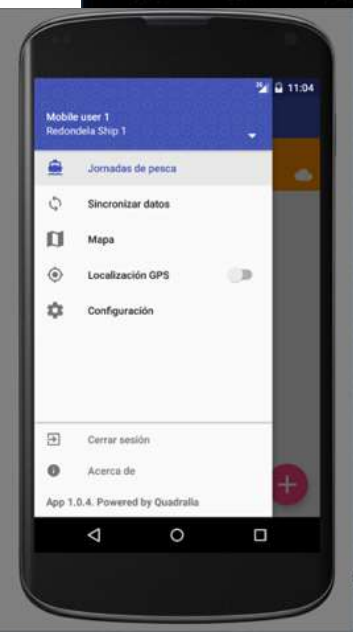
WP1
(Habitat
maps)

WP3,
Task 3.3

Task 5.1
Spatial effort from
AIS/VMS fine scale

Bayesian

Task 5.2
Fishers' input (priors)
at fine temporal scale



App fully functional and documented (D5.1)
Downloadable from <http://www.minouw.com>
Fishers in pilot case studies not "buying in" (delay)



Thank you!

<http://www.minouw-project.eu>



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RESEARCH & INNOVATION