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SEVENTH FRAMEWORK PROGRAMME

Technological Innovations: from active to passive gears

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EU FP7 Grant Agreement number: 312088

Options for Mitigation

Technological Mitigation to Reduce Benthic Impacts

- Moving from active to passive gears

  Potentially involves aspects of:

  - Reducing effort
  - Reducing gear footprint
  - Reducing gear impact on seabed
  - Increasing target species selectivity

- Investigations of the viability of traps and pots in some trawl fishing areas

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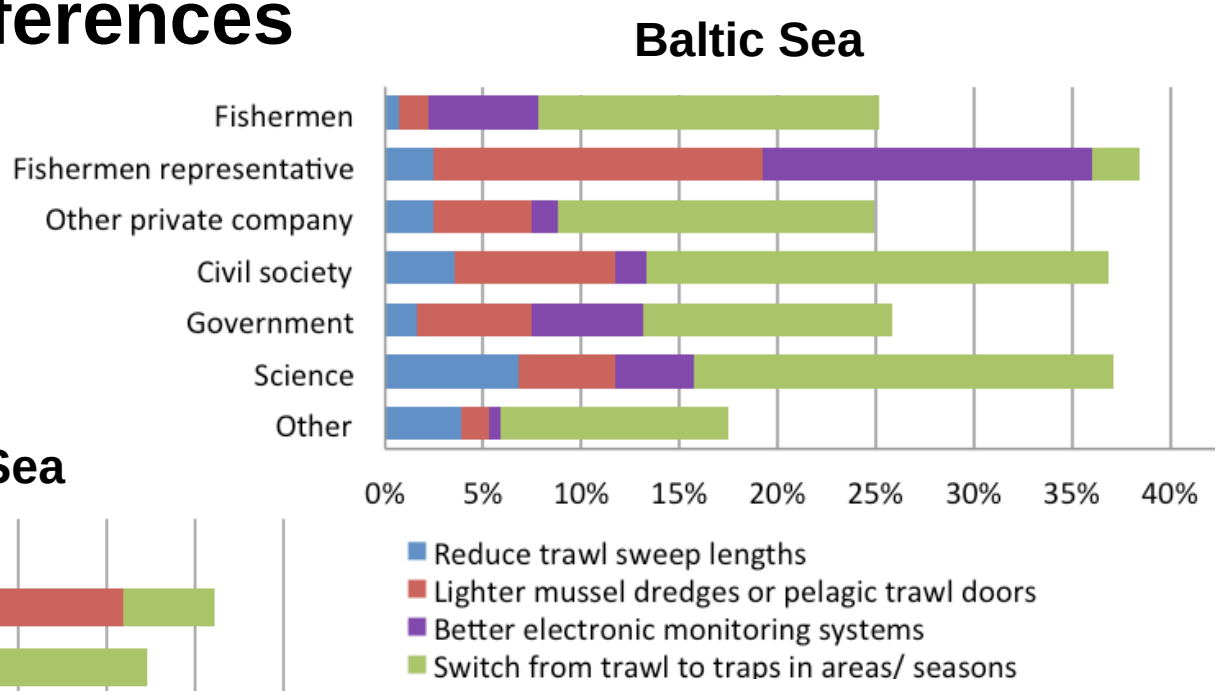
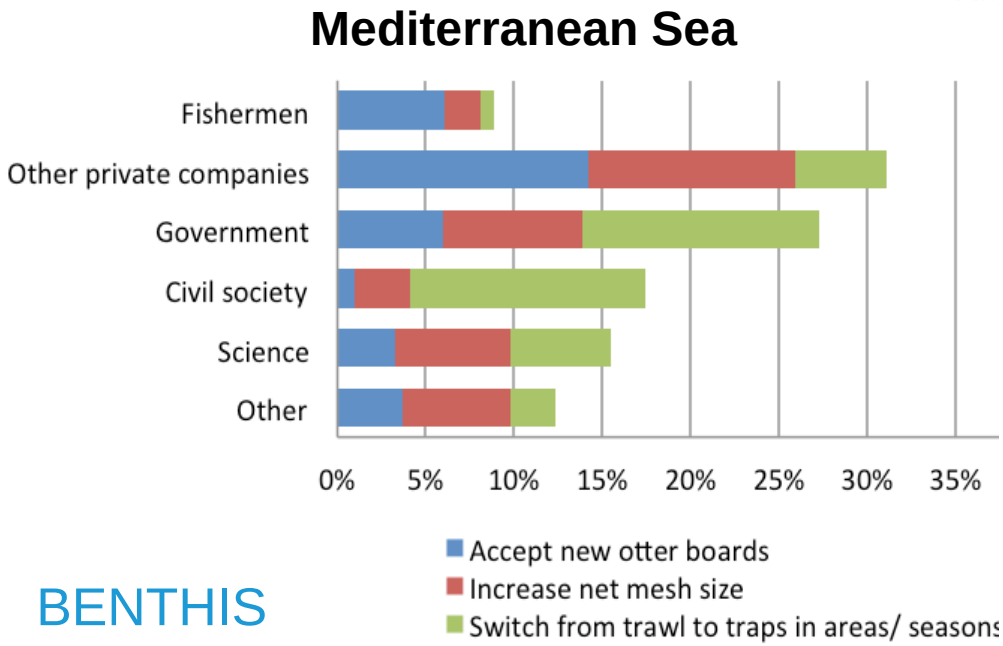
From active to passive gears

Stakeholder Preferences

Switch from trawl to traps areas/seasons





From: Soma et al. (in prep). Stakeholder perceptions in fisheries management: Integration of sectors with benthic impacts

From active to passive gears

3 Case Study Areas

- Baltic - Kattegat: Denmark and Sweden
  - *Nephrops* creel fishery compared to trawl fishery
- Aegean Sea - Greece
  - Trials of fish and shrimp pots/traps
- Ionian Sea - Italy
  - *Nephrops* trap trials

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Nephrops Creels in the Baltic

Initial creel fishery experiment:

- Camera monitoring indicated that the creels sank down into the sediment;
- The bait attracted Hagfish which forcing some Nephrops escapement;
- Catch rates about 180 g/creel per day;

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Nephrops Creels in the Baltic

Initial creel fishery experiment:

- Preliminary CBA: Daily profit about 3800 DKK per day for small vessels with two persons on board;
- CBA: Comparable trawl fishery for trawlers < 12 m about 3000 DKK per day
- Estimated profitability study shows good profitability especially in 2-man vessels, although larger Danish trawlers have much higher profitability.

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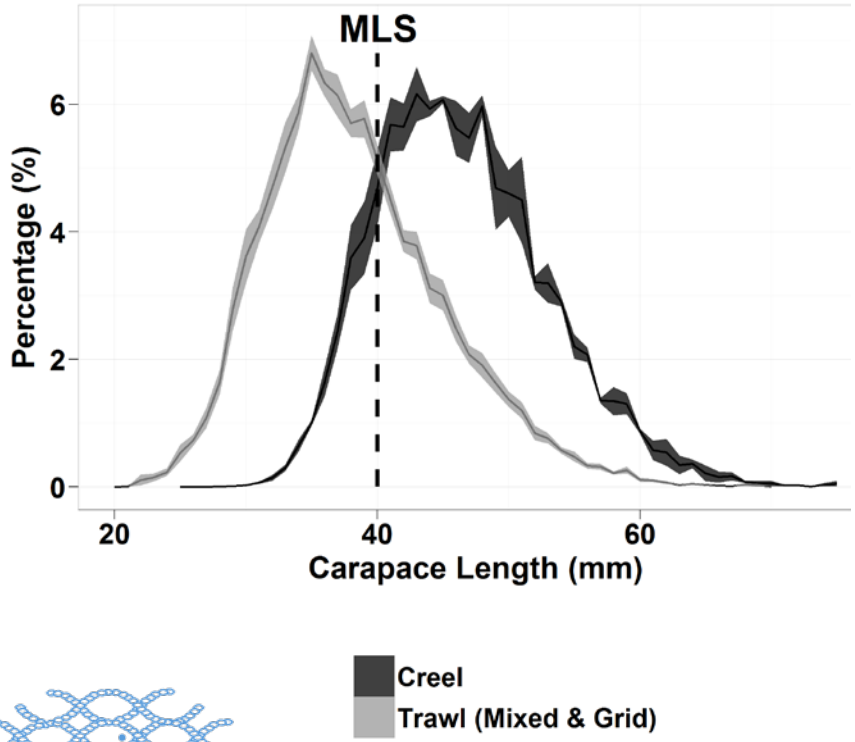
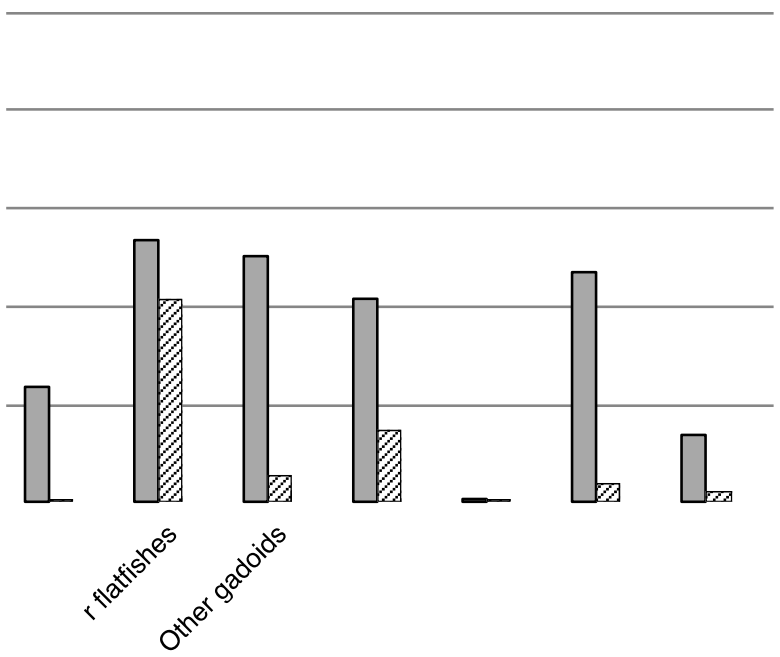
Nephrops Creels in the Baltic

Catch comparison of creels and trawls

Nephrops Size



By-catch



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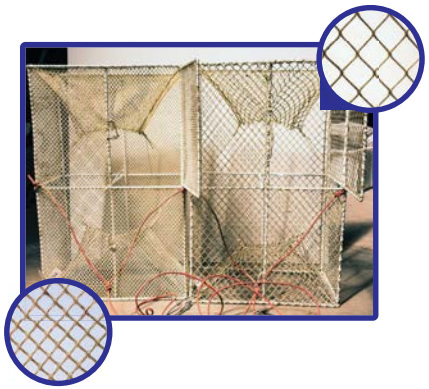
Traps/Pots in the Mediterranean

Gears:

- Norwegian Cod Pot
- Mediterranean Kurtos
- Greek Shrimp/Nephrops Trap
- Croatian Nephrops Creel



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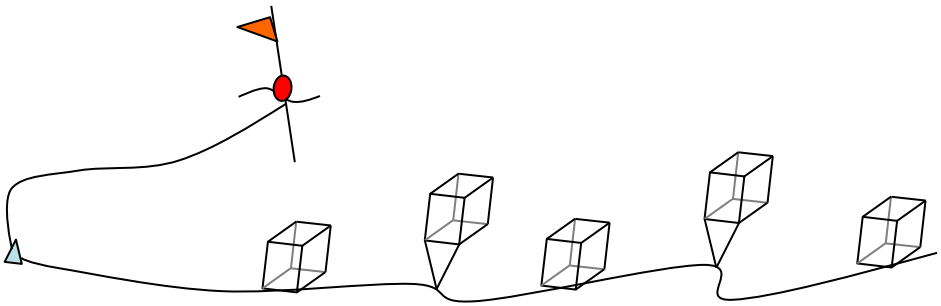
Traps/Pots in the Mediterranean

Gears:

- Baited traps/pots (oily fish)
- Long line deployment systems
- Deployed depths: 10, 30-40, 80-90, 200, 420 m
- Local trawl comparisons
- Fished about 1200 traps/pots



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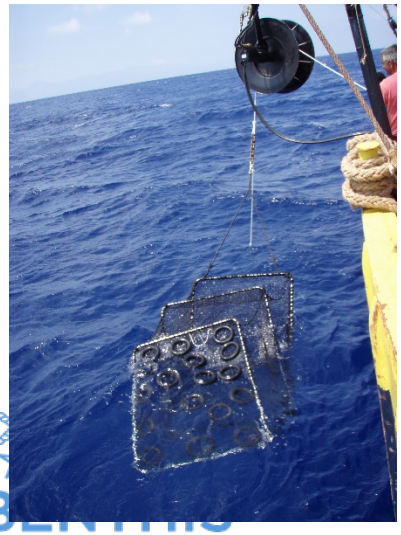
Traps/Pots in the Mediterranean

Catches – mixed, generally poor



Traps and Pots in the Aegean

Catches – mixed:

- Typically <10% of the local trawl species
- Very low catch of target species
- More spent on bait than value of catch
- Shrimp pot in the Nephrops ground had best performance

Shallow Water Species

	Gournes 30-40 m				Gournes 90 m				Dia Island			
	FP	BP	Kr	Sh	FP	BP	Kr	Sh	FP	BP	Kr	Sh
Muraena helena		X				X				X		
Conger conger						X			X	X	X	
Echelus mirus										X		
Spicara flexuosa				X			X	X				
Spondyliosoma cantharus								X				
Pagrus pagrus								X				
Dentex macrophthalmus										X	X	
Bothus podas				X								
Citharus linguatula						X						
Helicolenus dactylopterus				X								
Phycis phycis						X			X	X		
Raja asterias										X		
Squalus acanthias									X			
Octopus vulgaris		X		X						X		X
Sepia officinalis					X	X						
Parapenaeus longirostris										X		
Plesionika ensis										X		

Deep Water Species

	Evoikos 440 m			Pagasitikos 90 m			Mytilini 440 m		
	BP	Kr	Sh	BP	Kr	Sh	BP	Kr	Sh
Conger conger				X	X		X		
Trisopterus capelanus				X		X			
Spicara flexuosa						X			
Serranus hepatus						X			
Helicolenus dactylopterus							X	X	X
Scyliorhinus canicula									X
Octopus vulgaris				X	X				
Nephrops norvegicus						X	X		X
Parapenaeus longirostris				X		X			X
Plesionika martia									X
Squilla spp.				X	X	X			
Calappa granualris									X
Goneplax rhomboides						X			
Liocarcinus depurator				X		X			

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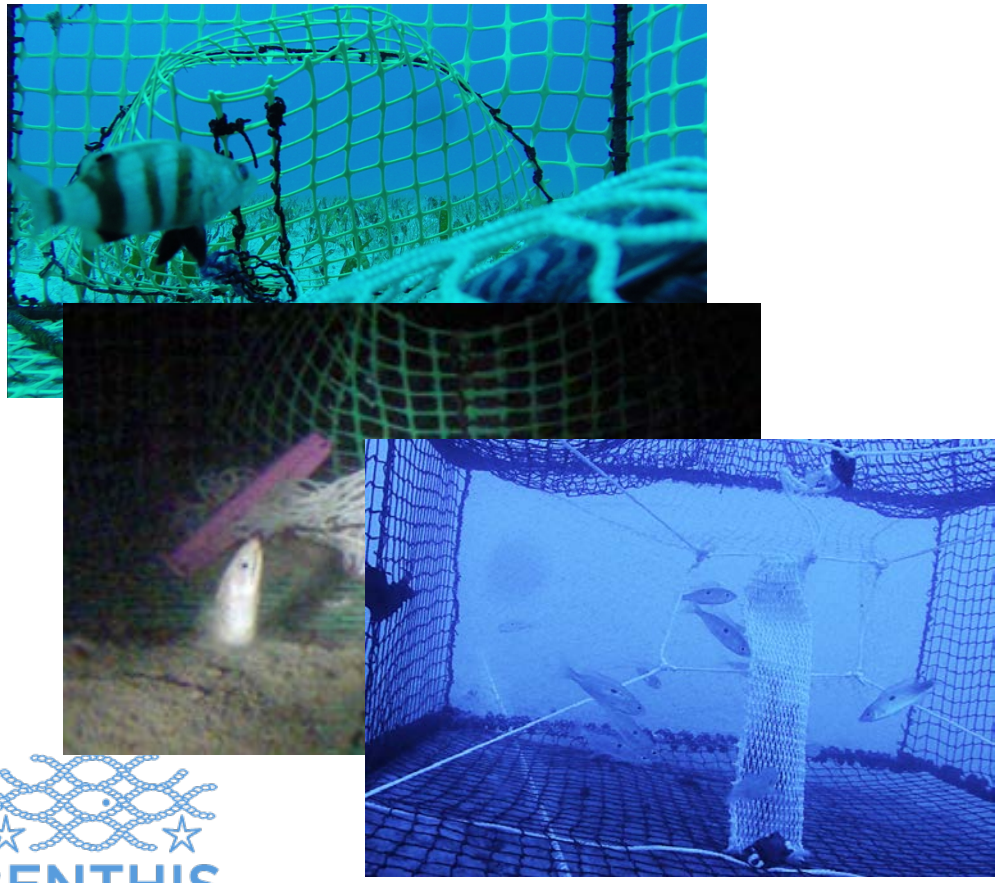
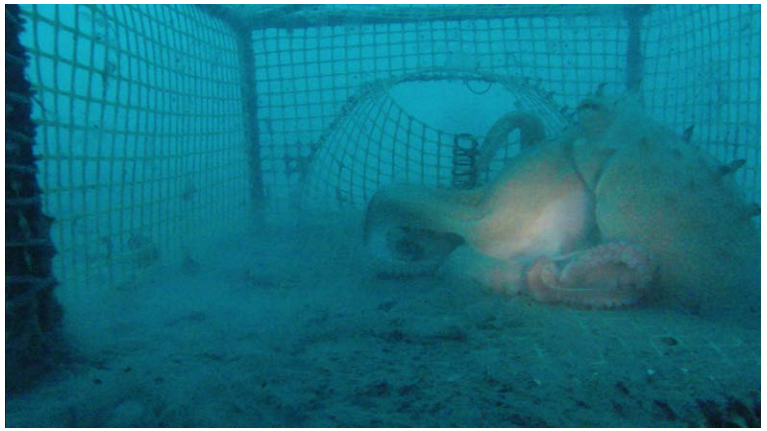
Traps and Pots in the Aegean

Video – mixed activity:

In shallower waters many small individuals – few recovered



Fewer large target species



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Experimental Conclusions

Baltic Kattegat creel experiments:

- Creels viable and ecological sustainable alternative to trawl fishery for certain vessels in certain areas to reduce benthic impacts. Highly selective and low by-catch.

Mediterranean pot/trap experiments:

- Viability was questionable – might only be viable in an artisanal fishery.
- Potential issues with correct mesh size.
- If the area is a prior trawl ground, before trap fishery may be viable, areas may need a recovery plan.

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Conclusions

But what do we know about traps:

- They have very low impact on the seabed (swept area, digging/scraping potential).
- Selective for species and size of species, high quality.
- Discarding is low.
- Applicability seems to be very area/season/fishery specific.
- Can have interference issues from other species.
- Technical Measures: questions on how many traps should be allowed for a single fisherman, how many trapping fishermen should be allowed in an area, mesh size in multi-target species.

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Conclusions

Overall Message:

1. Trapping may be a good mitigation technique for reducing impacts, but it will be very area/season/fishery specific.

2. A trapping vessel will not have the same economic efficiency as a large trawler fishery. Therefore on a local fishery level, trapping is unlikely to produce similar levels of catch.

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