Contrasting effects of fishing and warming on functional traits configuration of Mediterranean and Atlantic demersal communities

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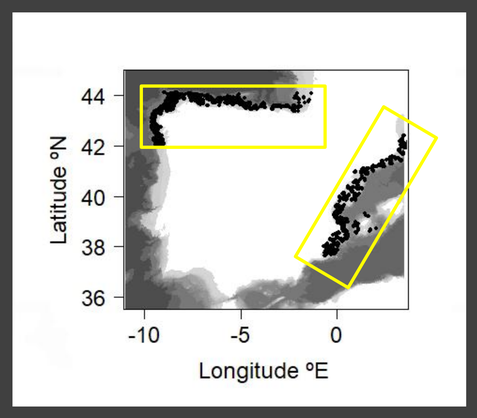
INTRO: For some time now, the study of ecosystems' 'health' status is incorporating trait-based in addition to taxonomic approaches, as they reflect more specific mechanisms underlying changes in communities.

GOAL: Assess the response of eight commonly used life history traits to two of the most important abiotic stressors: **warming, fishing pressure** and their **interaction.** Traits were weighted at the community level using field data for an Atlantic and a Mediterranean demersal community.



Both studied areas, in Cantabrian and Mediterranean seas

M&M: We computed Community Weighted Mean Traits (**CWMt**), based on eight commonly used life history traits, for two bentho-demersal communities, the Spanish Mediterranean and the Cantabrian Seas'. We modelled the response of these CWMt to warming (using surface temperature data, SST) and pair and otter trawling effort (vessel monitoring data, VMS) using generalized least squares models, accounting for spatio-temporal autocorrelation. We tested the potential response using a combination of 0 to 3-year lags for each stressor.

INSTRUCTIONS FOR READING THIS POSTER:

LIFT ME UP!

EXPECTATIONS FROM LITERATURE VS REALITY

RESULTS FOR:

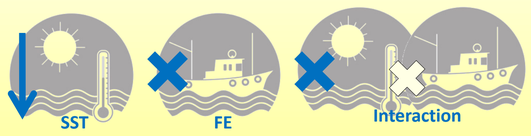
ATLANTIC COMMUNITY'S

MEDITERRANEAN COMMUNITY'S

OUR MAIN QUESTIONS ARE:

ARE COMMUNTY TRAITS RESPONDING TO EXTERNAL STRESSORS?
ARE THESE RESPONSES THE SAME EVERYWEHERE?

In the MEDITERRANEAN BODY SIZE* increases with:

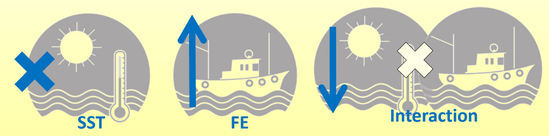


BODY SIZE responds significantly to:

FISHING EFFORT \ TEMPERATURE	0 lagged	1-year lagged	2-year lagged	3-year lagged
0 lagged				
1-year lagged				
2-year lagged	SST	SST		
3-year lagged	SST			

* No spatio-temporal autocorrelation structure was considered in these models.

In the MEDITERRANEAN LONGEVITY* increases with:

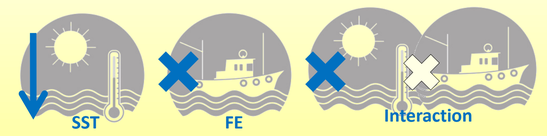


LONGEVITY responds significantly to:

FISHING EFFORT \ TEMPERATURE	0 lagged	1-year lagged	2-year lagged	3-year lagged
0 lagged		FE Interact.	FE Interact.	FE Interact.
1-year lagged		FE Interact.		
2-year lagged				
3-year lagged				

* No spatio-temporal autocorrelation structure was considered in these models.

In the MEDITERRANEAN FECUNDITY* increases with:

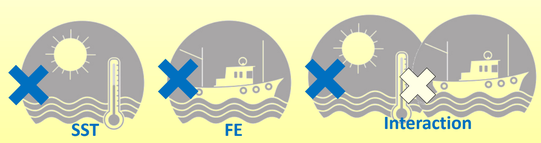


FECUNDITY responds significantly to:

FISHING EFFORT \ TEMPERATURE	0 lagged	1-year lagged	2-year lagged	3-year lagged
0 lagged		SST		
1-year lagged		SST		
2-year lagged		SST		
3-year lagged		SST		

* A spatial autocorrelation structure was considered in these models.

In the MEDITERRANEAN OFFSPRING SIZE* increases with:



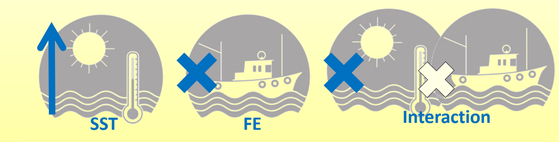
OFFSPRING SIZE responds significantly to:

FISHING EFFORT \ TEMPERATURE	0 lagged	1-year lagged	2-year lagged	3-year lagged
0 lagged				
1-year lagged				
2-year lagged				
3-year lagged	SST			

* A spatial autocorrelation structure was considered in these models.

CLIMATE CHANGE AND FISHING IMPACTS ON MARINE SPECIES ARE CONTEXT-DEPENDANT.

In the MEDITERRANEAN GROWTH* increases with:

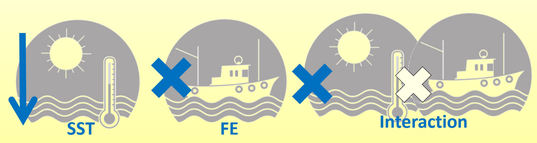


GROWTH responds significantly to:

FISHING EFFORT \ TEMPERATURE	0 lagged	1-year lagged	2-year lagged	3-year lagged
0 lagged		SST		
1-year lagged		SST		
2-year lagged		SST		
3-year lagged		SST		

* A spatial autocorrelation structure was considered in these models.

In the MEDITERRANEAN TROPHIC LEVEL* increases with:

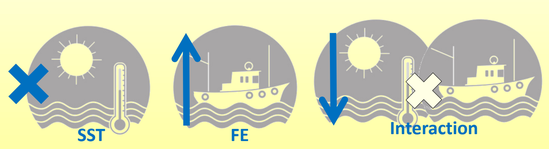


TROPHIC LEVEL responds significantly to:

FISHING EFFORT \ TEMPERATURE	0 lagged	1-year lagged	2-year lagged	3-year lagged
0 lagged	SST	SST		
1-year lagged	SST			
2-year lagged	SST			
3-year lagged				

* A spatial autocorrelation structure was considered in these models.

In the MEDITERRANEAN AGE AT MATURITY* increases with:

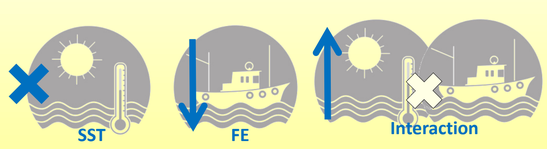


AGE AT MATURITY responds significantly to:

FISHING EFFORT \ TEMPERATURE	0 lagged	1-year lagged	2-year lagged	3-year lagged
0 lagged		FE Interact.		FE Interact.
1-year lagged				
2-year lagged				
3-year lagged				

* No spatio-temporal autocorrelation structure was considered in these models.

In the MEDITERRANEAN SPAWNING DURATION* increases with:



SP. DURATION responds significantly to:

FISHING EFFORT \ TEMPERATURE	0 lagged	1-year lagged	2-year lagged	3-year lagged
0 lagged		FE Interact.		
1-year lagged				
2-year lagged				
3-year lagged				

* No spatio-temporal autocorrelation structure was considered in these models.

Results from: VADAPES

A project of: CSIC Consejo Superior de Investigaciones Científicas; Instituto Español de Oceanografía

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References:

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