

Presentation on climate change and the expansion of the deep-water rose shrimp (*Parapenaeus longirostris*)

Ribera-Altimir J., Carreton M., Mingote M.G., Galimany E., Sala-Coromina J., Bahamon N., Santos-Bethencourt R., Clavel-Henry M., Recasens L., Company J.B.



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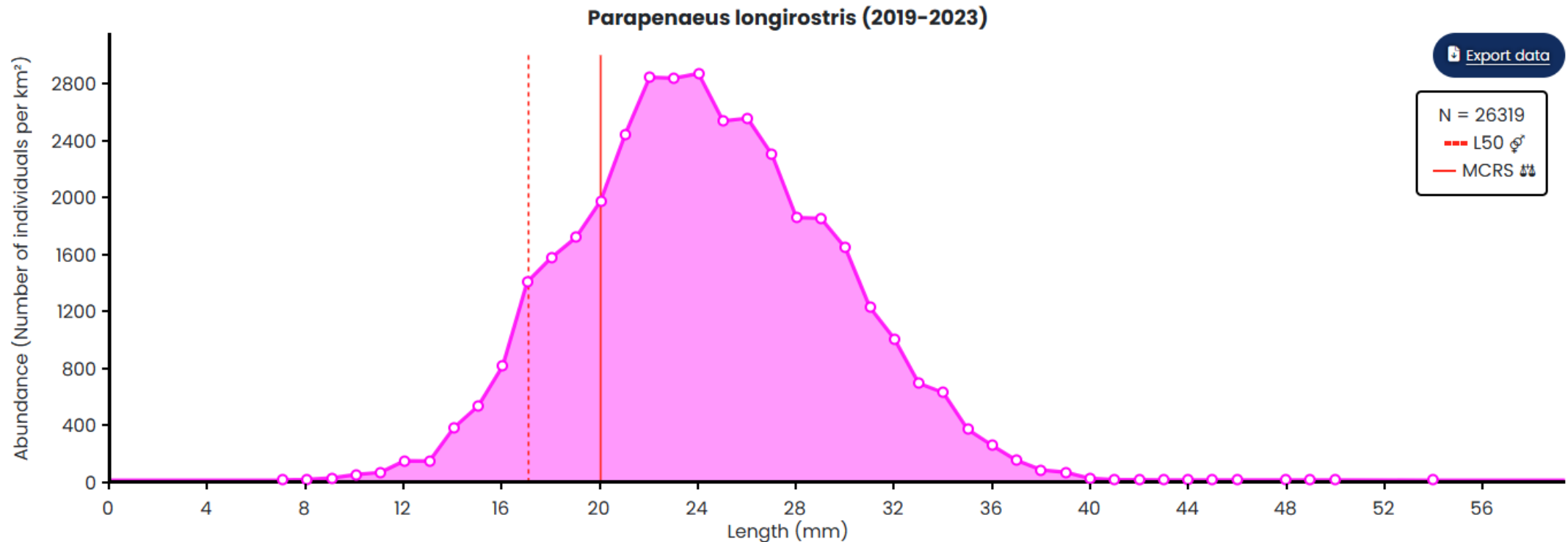


Introduction



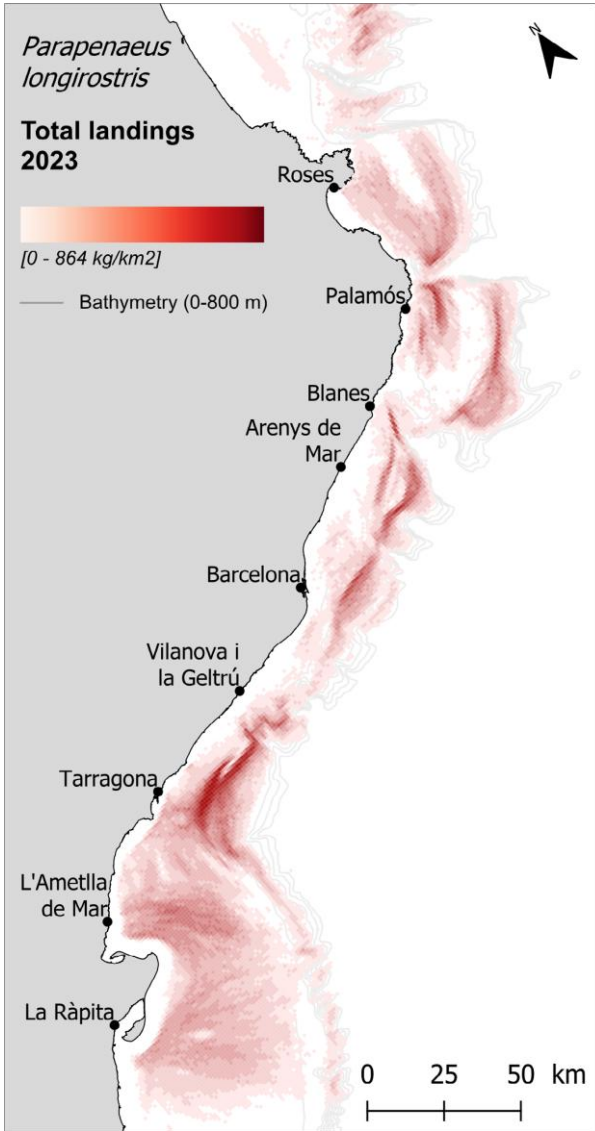
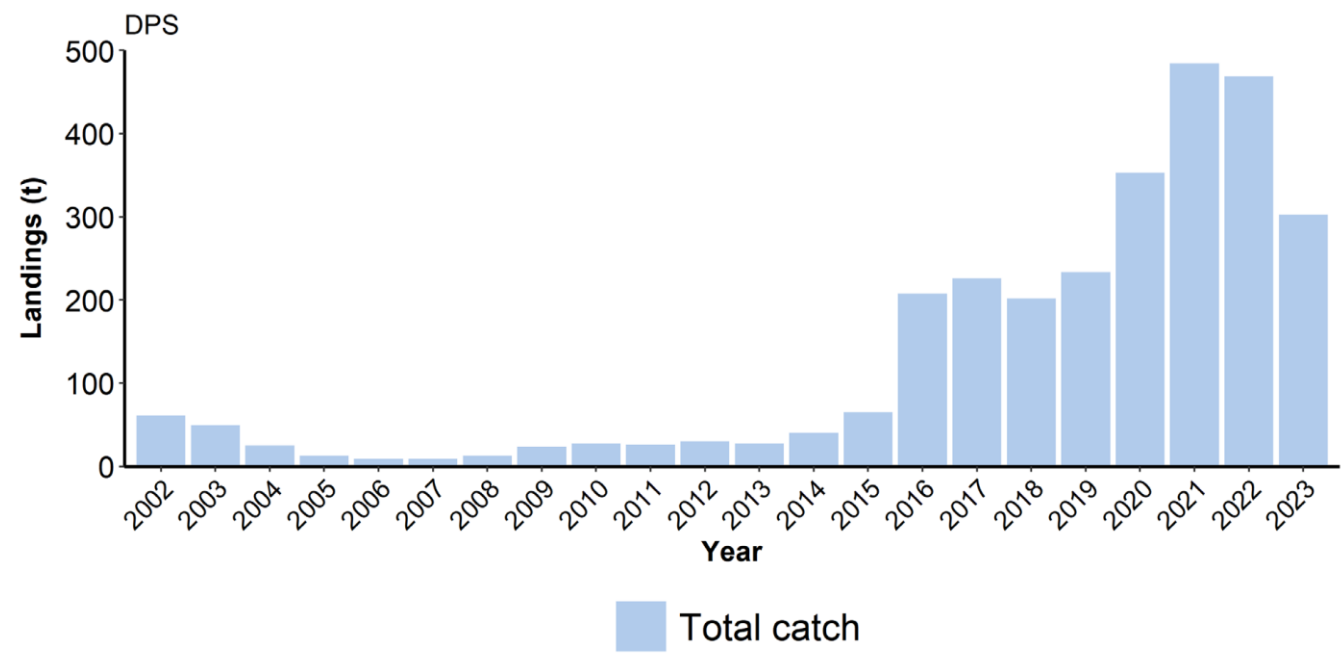
- Deep-water rose shrimp (*Parapenaeus longirostris*)
- Crustacean decapod
- Demersal
- Sandy-muddy bottoms
- Depth range: 20-750 m
- Max. abundance depth range: 100-400m
- Atlantic and Mediterranean
- Mainly fished with bottom trawling

Length frequency distribution



View by: Year Season Métier Region

Introduction





Objectives

Determine

Spatial structure and its evolution along the time

Study

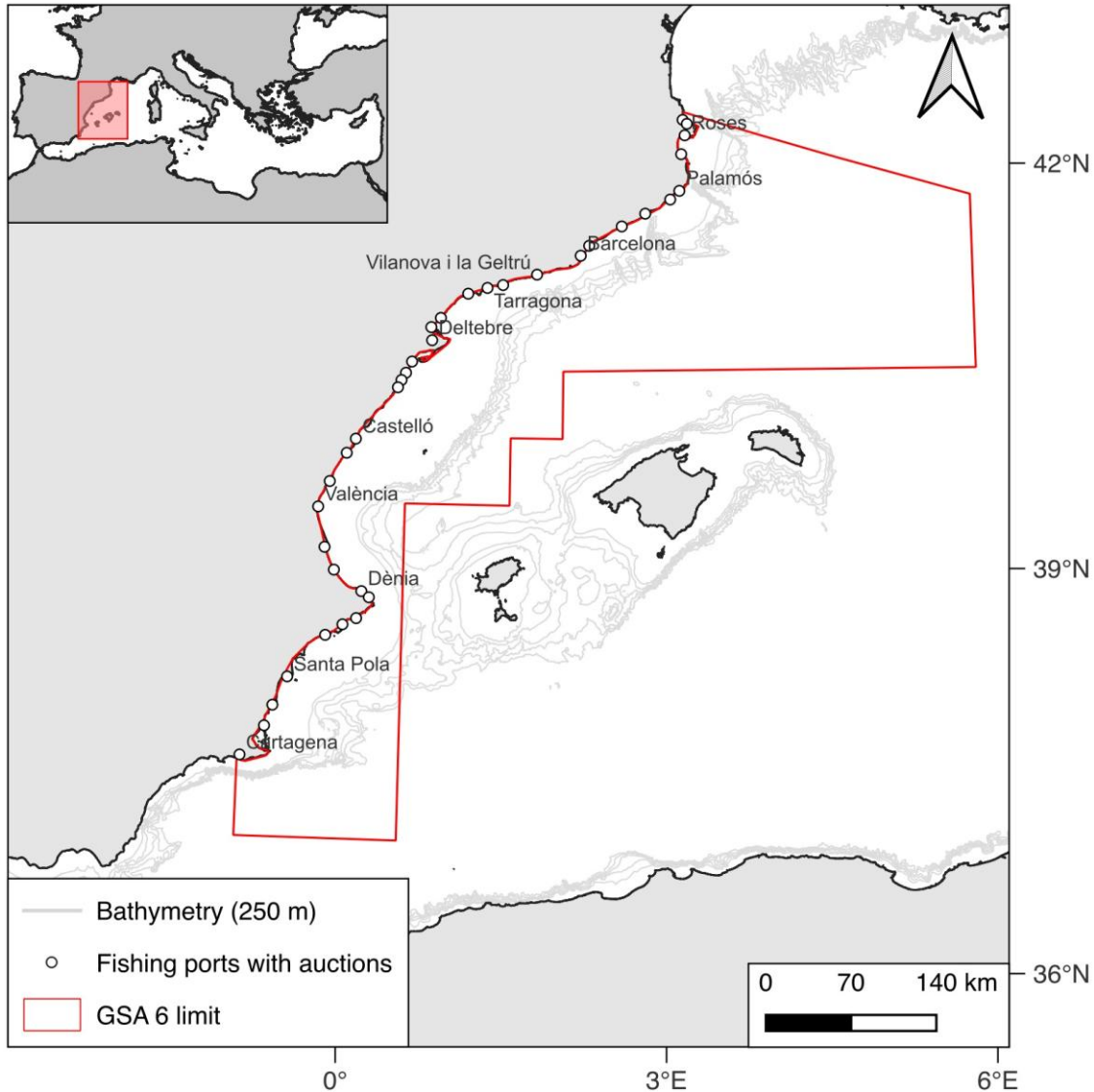
Landings evolution and the reasons behind it:

1. Change in the fishing effort
2. Interaction with another fishing resource
3. Environmental changes

Reference:

M. G. Mingote et al. Warming and salinization effects on the deep-water rose shrimp, *Parapenaeus longirostris*, distribution along the NW Mediterranean Sea: Implications for bottom trawl fisheries, Marine Pollution Bulletin, Volume 198, 2024, 115838, ISSN 0025-326X, <https://doi.org/10.1016/j.marpolbul.2023.115838>.

Study area



Study period: 2008 - 2020

Study area: GSA 6

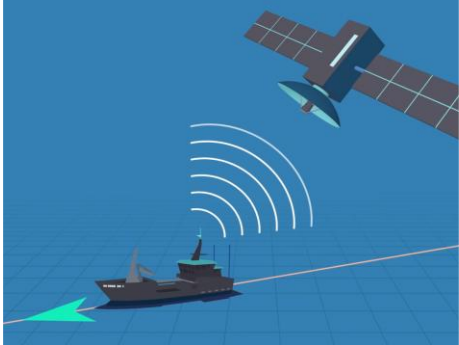
19 landing ports

Daily landings

Bottom trawling

Data processing

Vessel Monitoring System (VMS)



Where are the vessels fishing?

Data validation Point interpolation



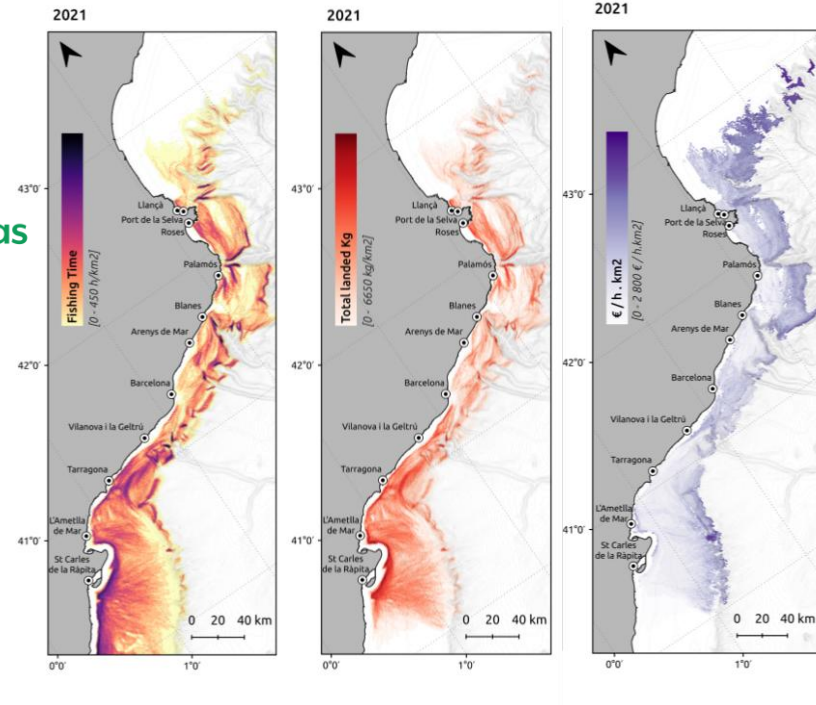
Fishing filters
Speed
Machine learning models



What are they fishing?



Daily fishing landings

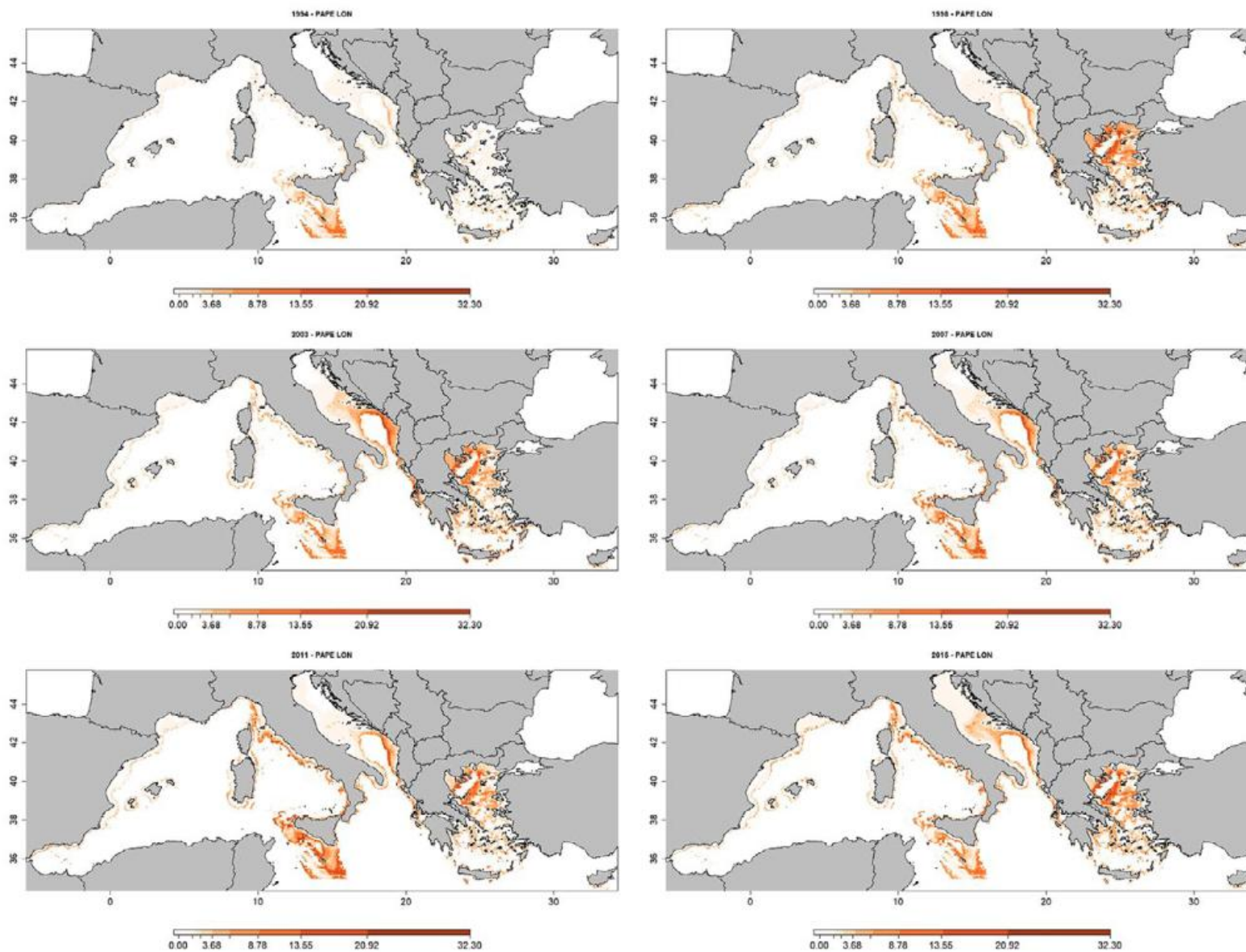


Commercial fisheries monitoring

Determine

Spatial structure and its evolution along the time
(2008-2020)

Spatial structure and its evolution along the time

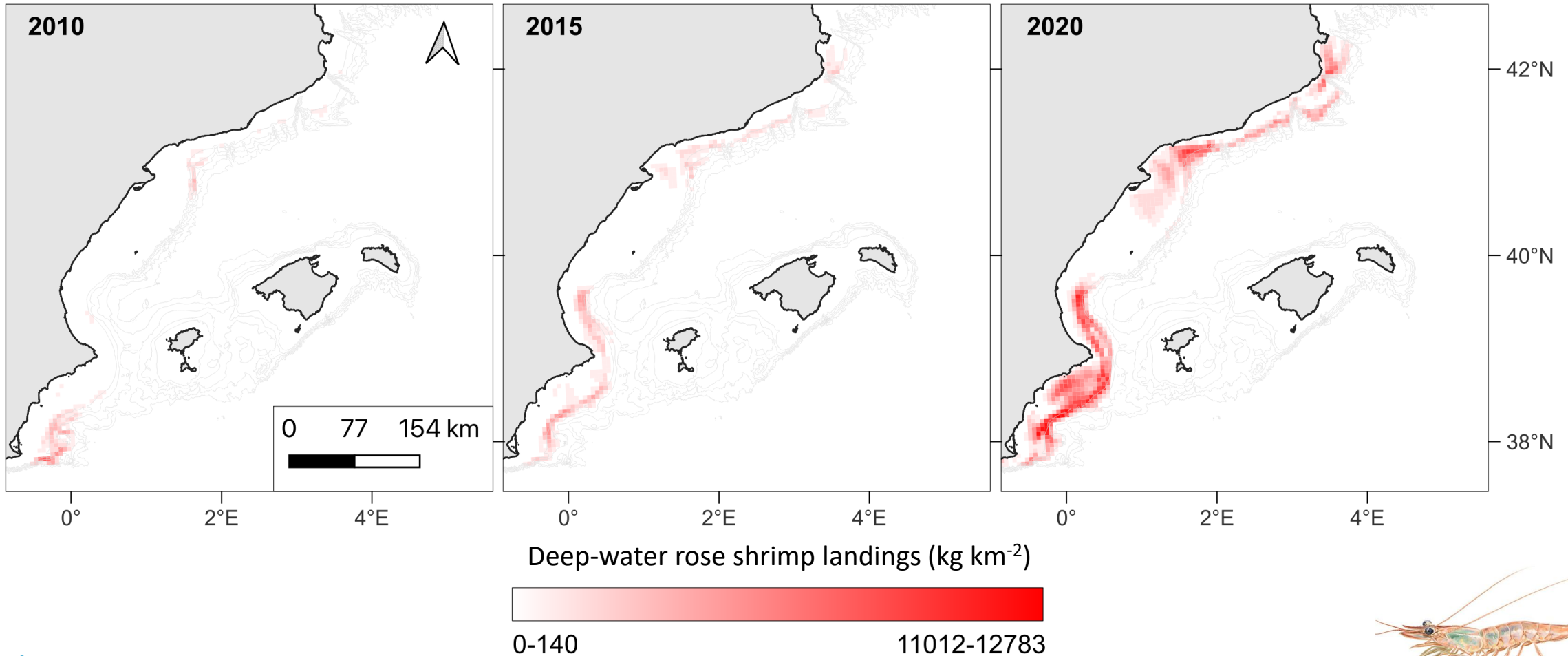


MEDITS trawl
surveys from
1994 to 2015

Ref.: M. Sbrana et al.
SCI. MAR. 83S1, 2019,
71-80. ISSN-L 0214-8358
<https://doi.org/10.3989/scimar.04858.27A>



Spatial structure and its evolution along the time

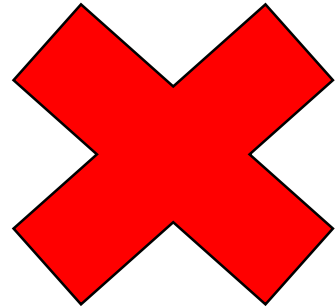
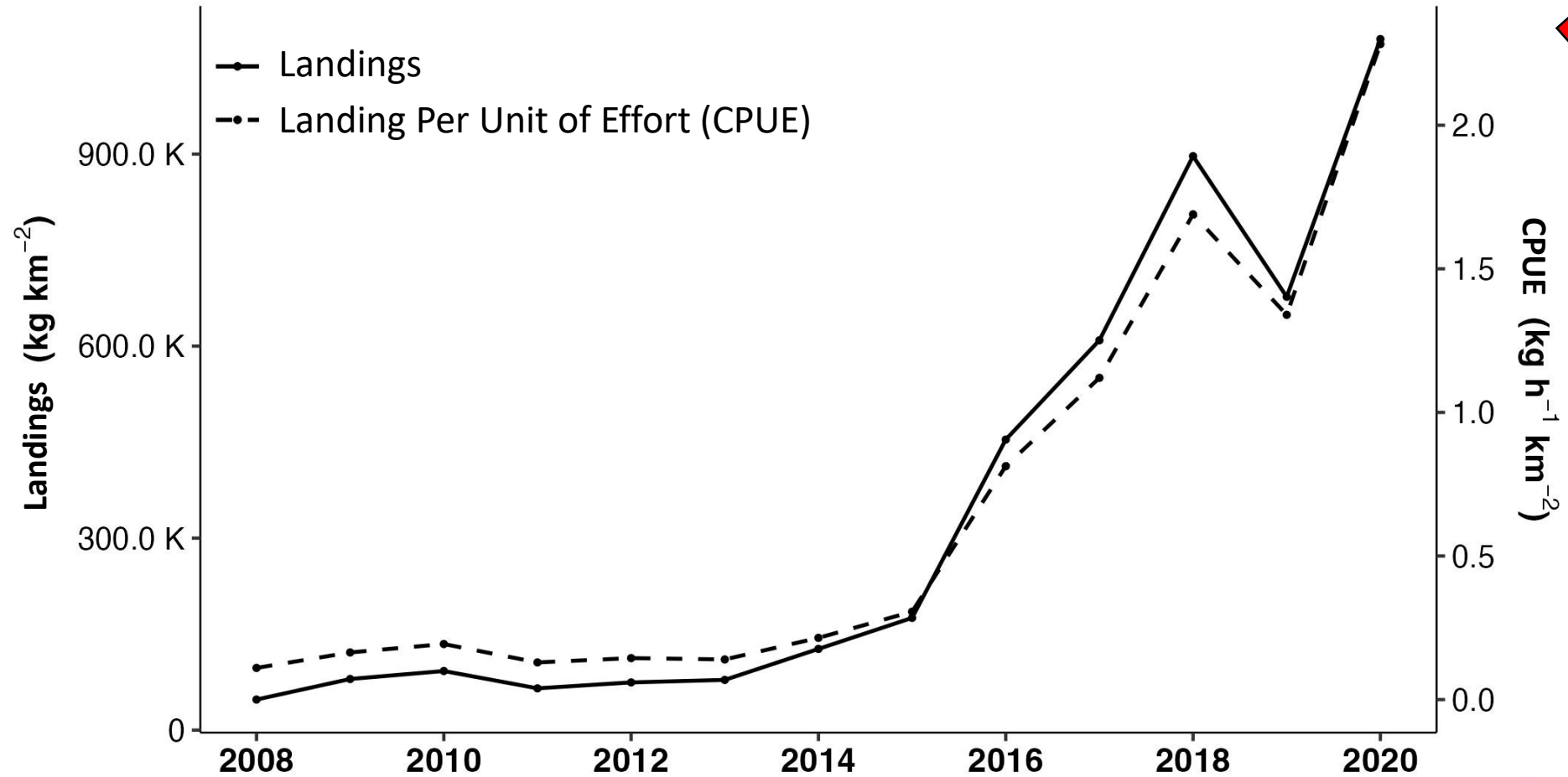


Commercial fisheries monitoring

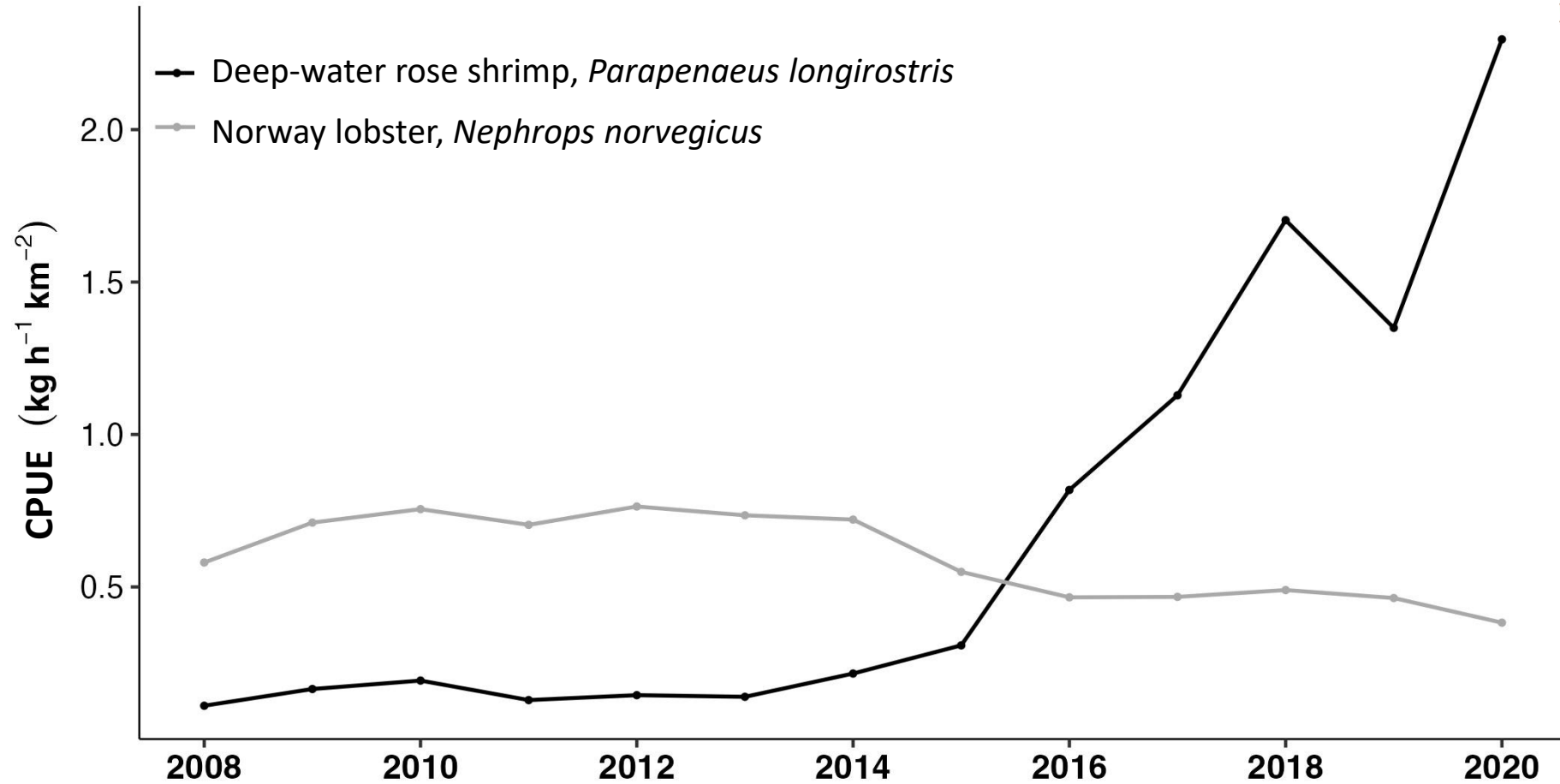
Study

Landings evolution and the reasons behind it

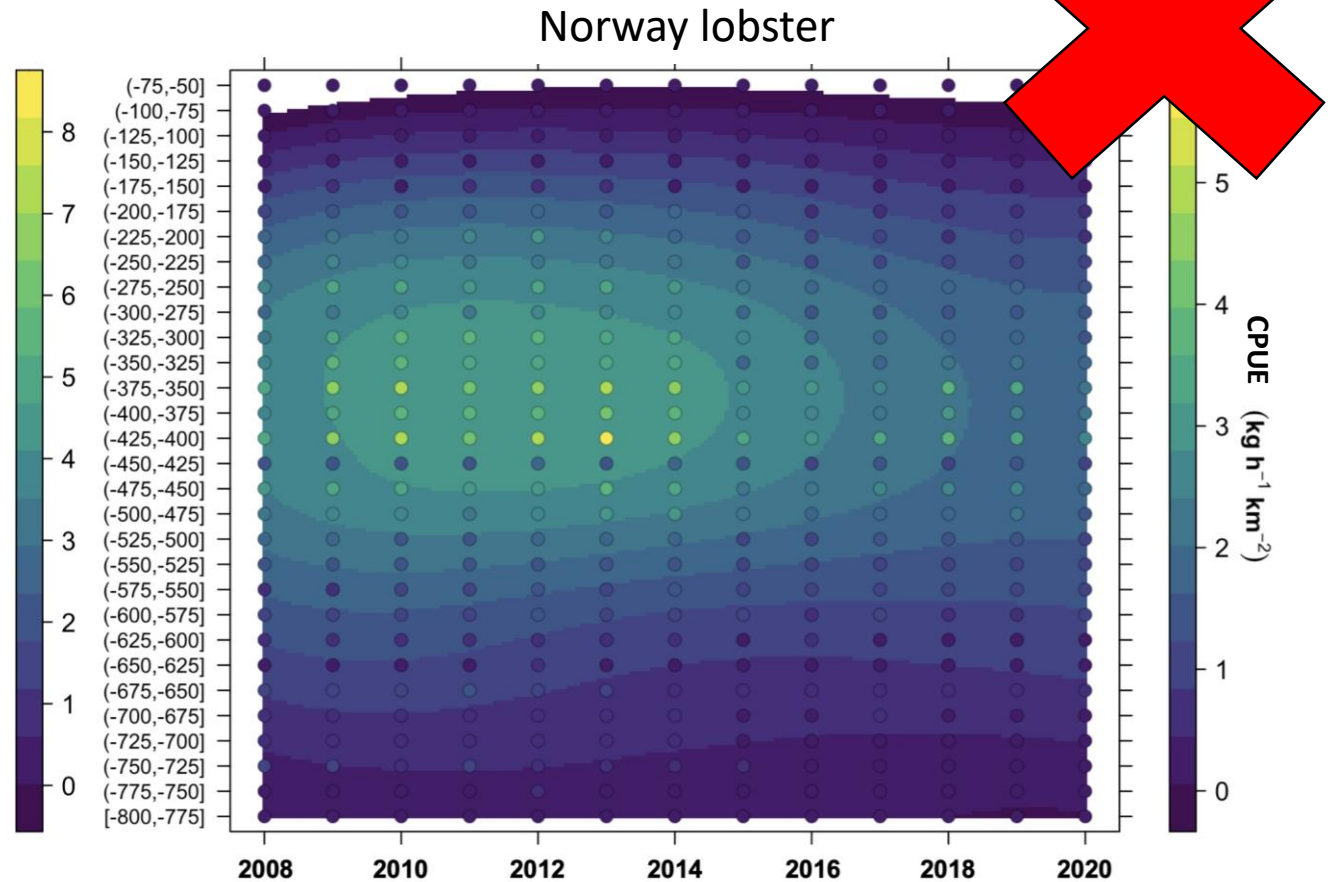
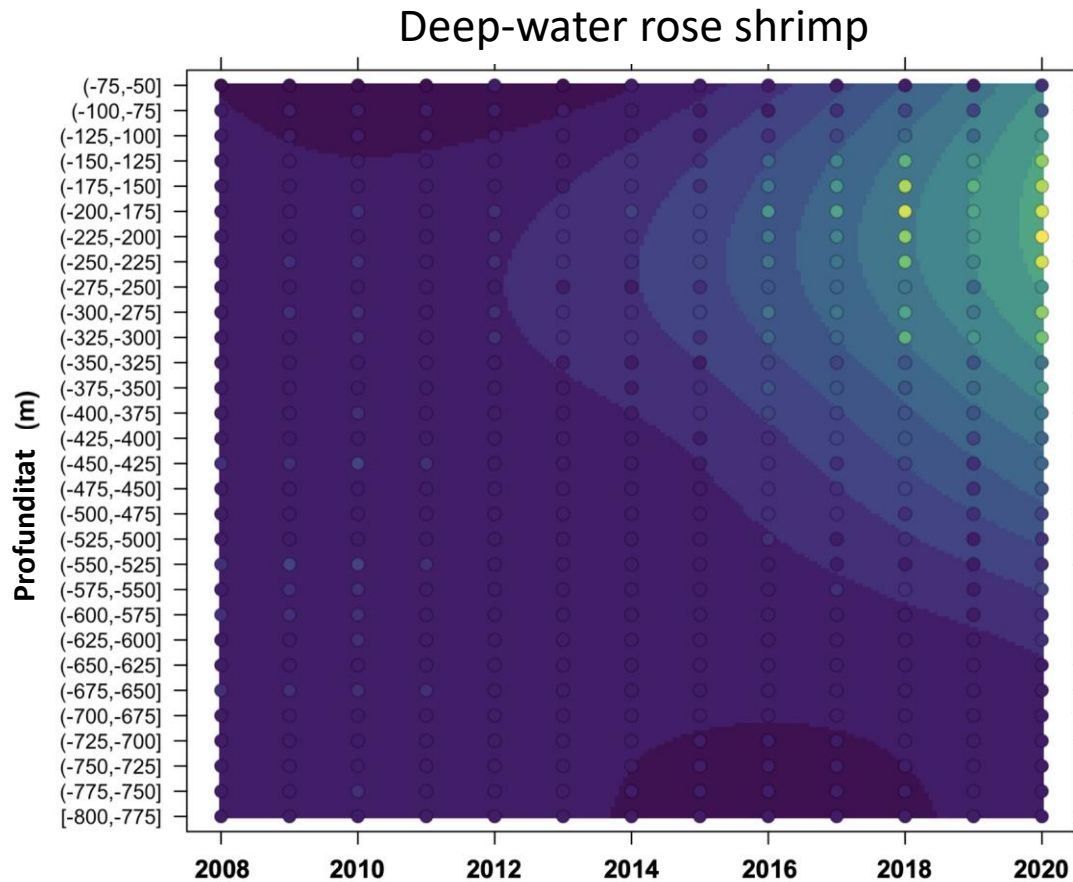
Change in fishing effort



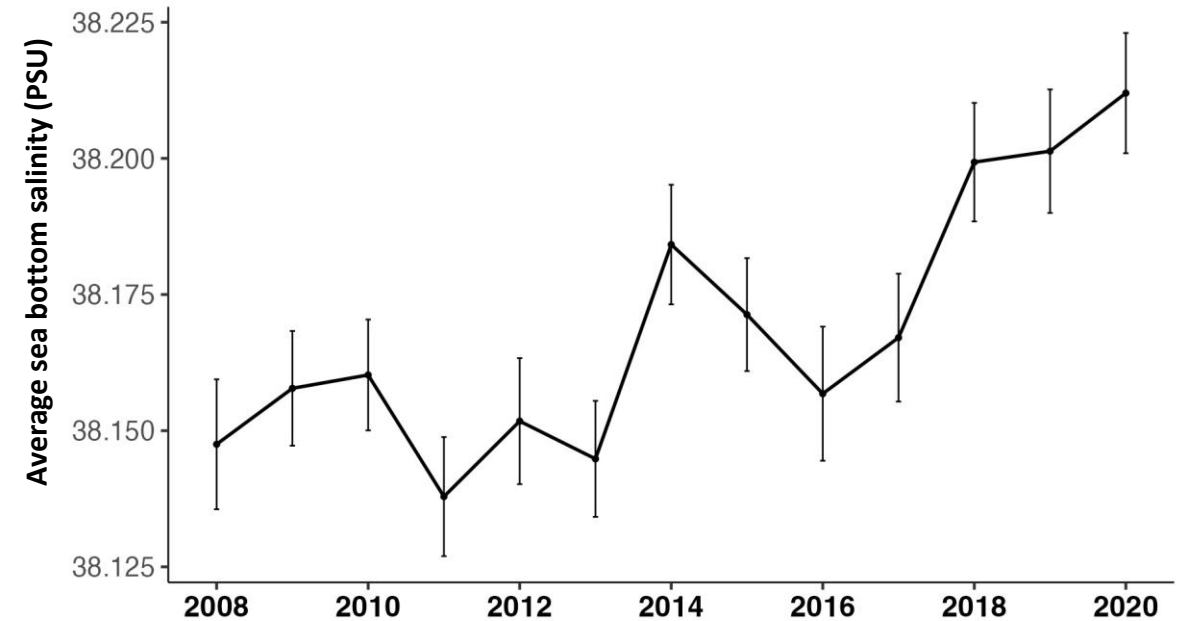
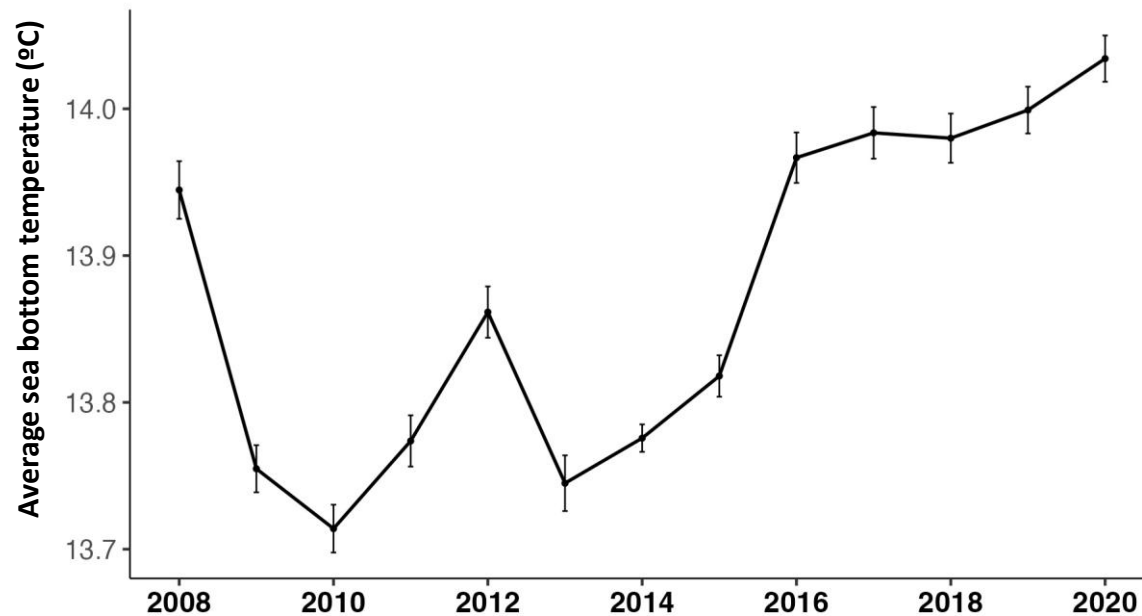
Interaction with another fishing resource



Interaction with another fishing resource



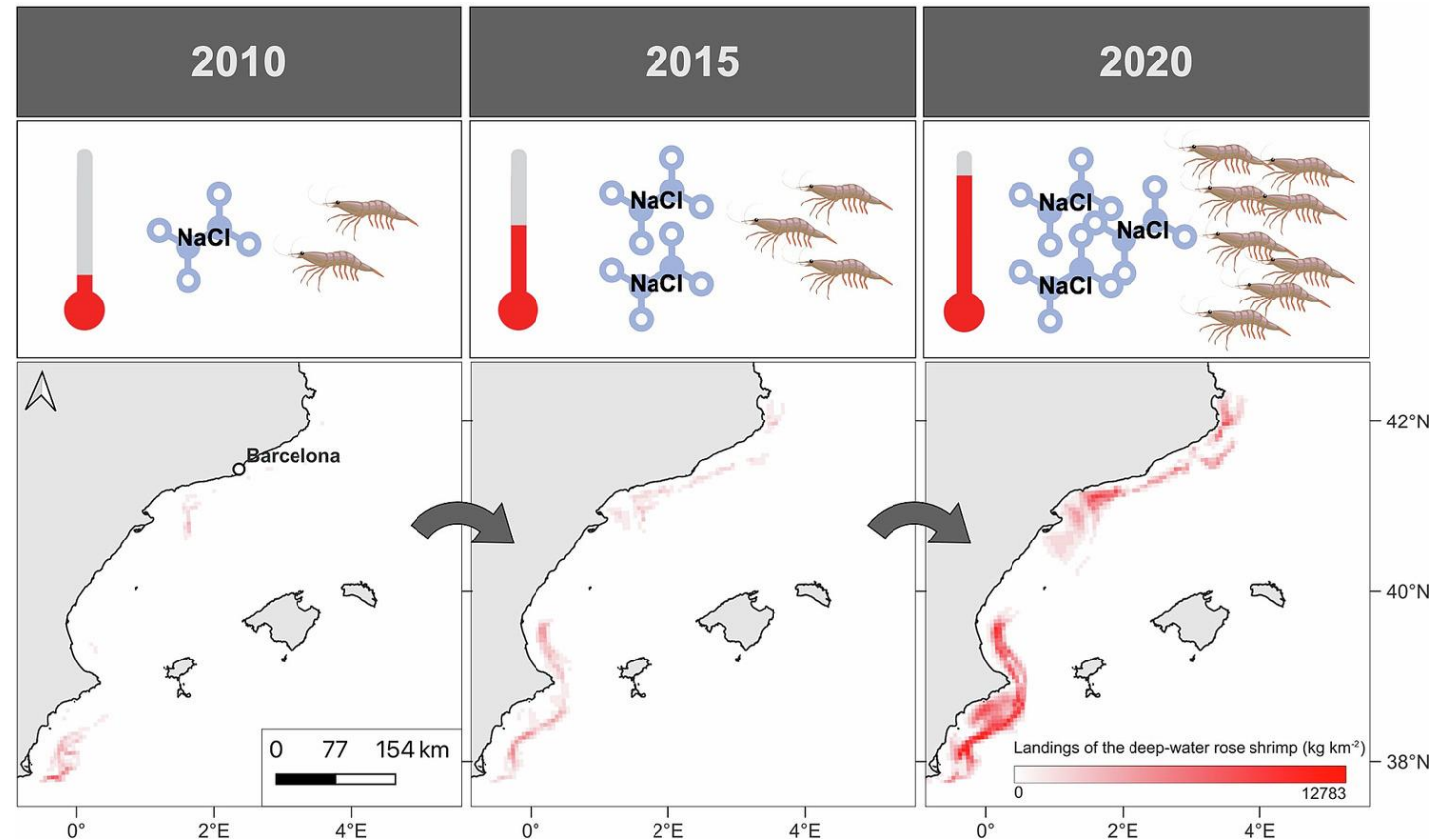
Environmental changes (100-400 m depth)



GAM models and correlations show that the increase in CPUE of the deep-water rose shrimp is closely related with the increase of sea temperature and salinity

Conclusions

- Deep-water rose shrimp (*P. longirostris*) has become one of the most important resources in the WMed in the recent years.
- *P. longirostris* is spreading northwards along the continental margin.
- The increase in abundance and distribution are related to sea bottom warming and salinization.



Just as deep-water rose shrimp has "benefited" from the "tropicalization of the Mediterranean", there are other fishing resources that have been harmed by these conditions.

Thank you

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