IECD 2024 Conference

The 3rd International Electronic Conference on Diversity

15–17 October 2024 | Online

MDPI

Diversity and spatial distribution of benthic crustaceans in Southern Tunisia coasts

University of Sfax

Nawfel Mosbahi[1], Jean-Philippe Pezy[2], Lassad Neifar[1],Jean-Claude Dauvin[2]

1-Marine biodiversity and Environment Laboratory, Faculty of Sciences of Sfax, Sfax University, Tunisia.

2-Laboratoire Morphodynamique Continentale et Côtière (M2C), Caen University, France

Laboratoire de Morphodynamique Continentale et Côtière UMR CNRS 6143 M2C

INTRODUCTION & AIM

❑ Crustaceans represent an important group of macrofauna benthic in the coastal marine ecosystems.

❑ Crustaceans constitute important linkages in the food web and can respond nonlinearly to environmental changes (Ros et al., 2021).

❑ Crustaceans are considered to be the component of benthic communities most characteristic of soft-bottom sediments.

As such, these benthic species can act as appropriate indicators in both monitoring and conservation programmes (Sampaio et al., 2016).

The aims of this study:

✓ Analyse the spatial and temporal patterns of Crustaceans assemblages in the Southern Tunisian Coasts.

✓ Identify the role of the main environmental factors in relation to the distribution of polychaete assemblages.

METHOD

❑ Crustacean's diversity of the Gulf of Gabès was studied in eight localities in Gulf of Gabès (southern Tunisian coasts, Fig.1), during the five last years (2019-2024).

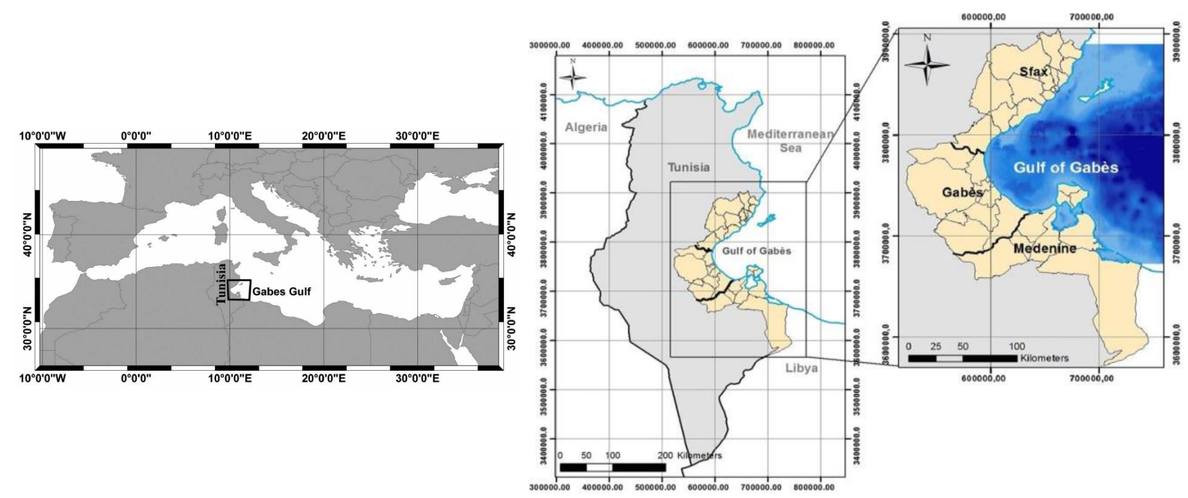

Fig.1: Location of study areas (Gulf of Gabès).

❑ Benthic crustaceans sampling eight localities in the southern Tunisian coasts was carried out using a Van Veen grab covering an area of about 0.05 m^2 (Fig.2).

❑The topmost 3-cm sediment layer was also sampled in each replicate for granulometric analysis and organic matter

❑Chemical and physical parameters were measured (pH, temperature, salinity, and oxygen dissolved,….).

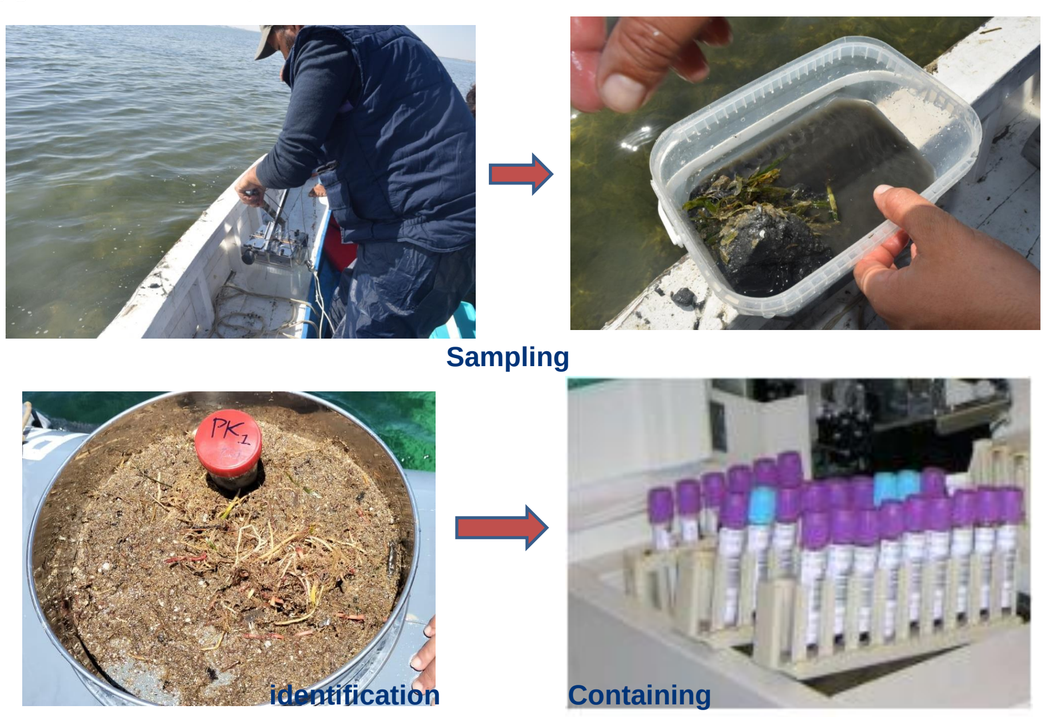

Fig.2: Sampling design and samples treatment

RESULTS & DISCUSSION

❑ 20,114 individuals belonging to 162 crustacean's species were identified during five sampling years (20 exotic crustaceans species have been listed).

❑ Amphipoda (48% total species), Decapoda (23%) and Isopoda (16%) are the most dominant taxa.

❑ Seagrass meadows (*Posidonia oceanica, Cymodocea nodosa, Zostera noltei*) constitutes a suitable habitats for crustaceans species in the Gulf of Gabès and included a highly diversity.

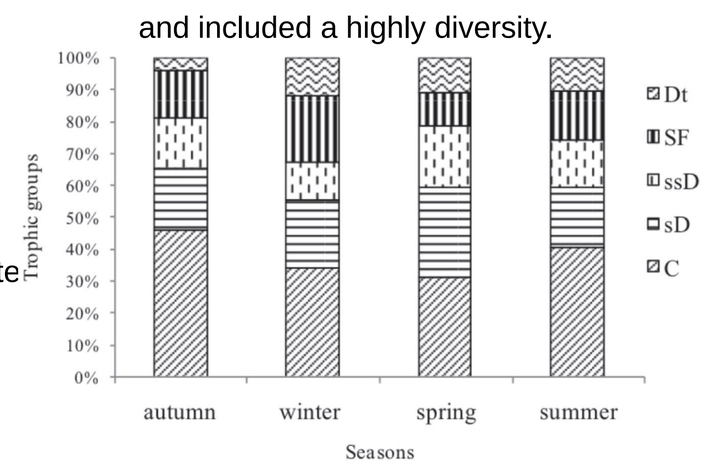

Fig. 3: Trophic groups variation of Crustaceans communities

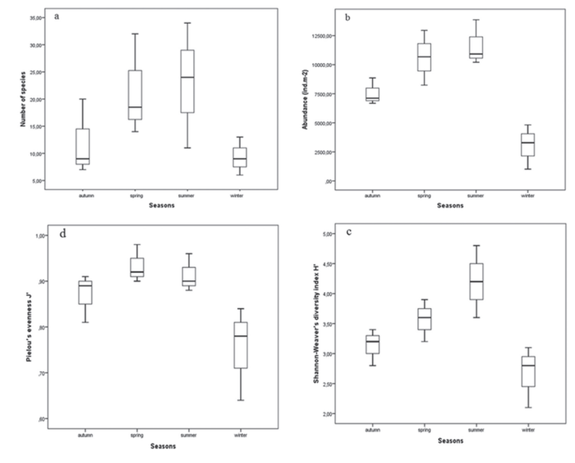

Fig.4: Seasonnal variation of crustaceans diversity of the GG

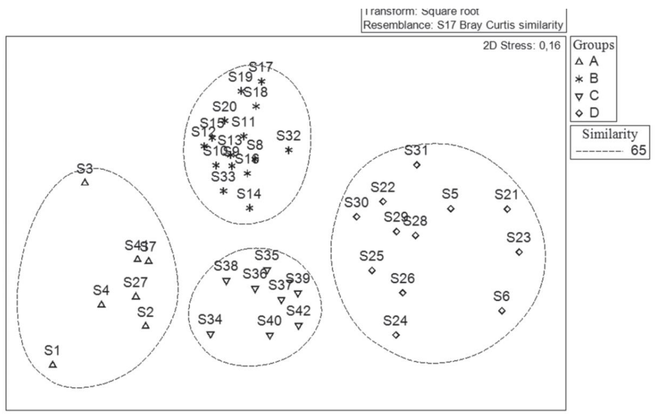

Fig.5: Crustaceans assemblages distribution (A;B;C; D: different type of habitats)

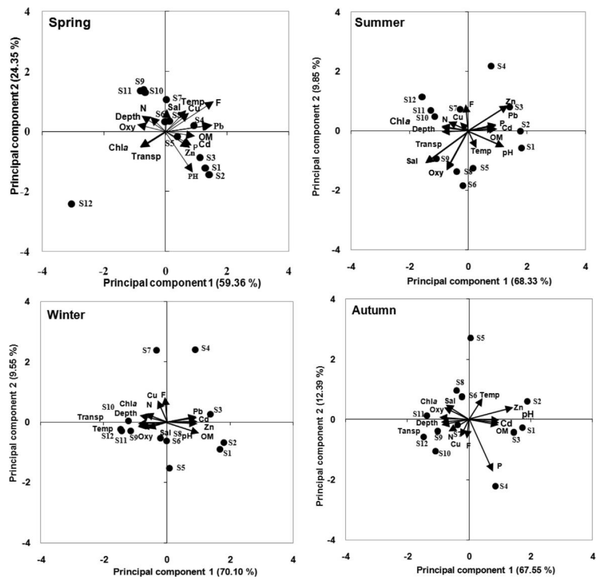

Fig.6: Environnemental factors controlling crustaceans distribution

❑ The spatial distribution of the crustaceans communities of the GG was strongly dominated by many environmental factors (sediment type, organic matter and presence/absence of seagrass) (Fig.5.6).

CONCLUSION

This study suggests initiating a long-term monitoring program to improve our understanding of the temporal changes of the crustaceans' communities in the Gulf of Gabès, to recommend the necessary conservation measures in this area of high-value natural heritage.

FUTURE WORK / REFERENCES

In the next steps of this research will be the identification the impacts of the anthropogenic pressures on the crustaceans diversity in the Gulf of Gabès like the pollution, bottom trawling and climate change. Likely, the effects of the introduction of the crustaceans invasive species like the blue crabes and lessepsian shrimps in the Gulf of Gabès.

Ros,M., Guerra-García,J.M., Lignot,J.H., Rivera-Ingraham,G.a.,2021.Environmental stress responses in sympatric congeneric crustaceans: Explaining and predicting the context-dependencies of invader impacts. Marine Pollution Bulletin 170 (2021) 112621.

Sampaio,L., Mamede,R., Ricardo., Magalhães, L. et al., 2016. Soft-sediment crustacean diversity and distribution along the Portuguese continental shelf. Journal of Marine Systems.163,43-60.