

# Survival and habitat characterization of *Pinna nobilis* in the Mar Menor coastal lagoon

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## INTRODUCTION

*Pinna nobilis* (Fig. 1) is a critically endangered Mediterranean endemic bivalve due to a serious epidemic mainly caused by the parasite *Haplosporidium pinnae* and other pervasive pathogens. Currently living populations in Spanish waters are constricted to the Ebro Delta (Cataluña) and Mar Menor (Murcia). The Mar Menor coastal lagoon has been subjected to several crisis of eutrophication since 2016, due to the constant inflow of water with a high concentration of nutrients, organic matter, and sediment, which pose a threat to the survival of *Pinna nobilis*.

## OBJECTIVES

1. To analyze the mortality episode of *P. nobilis* individuals in a eutrophication event occurred in Mar Menor coastal lagoon during the summer months of the year 2021.
2. To define some of the direct pressures that caused the mortality of individuals.
3. To characterize the variables that describe the current habitat of *P. nobilis* within the lagoon.

## METHODOLOGY

Four sampling areas (Fig. 2). Samplings between September 2021 and February 2022.

- Survey of living and dead individuals → percentage of mortality in each area.
- Characterization of the sediment close to living and dead individuals (extraction of sediment cores) → redox potential, pH, organic matter and granulometry.
- Description of macrophyte beds → density, cover, and height canopy.



Figure 1. *Pinna nobilis* in Mar Menor (author: Javier Murcia).

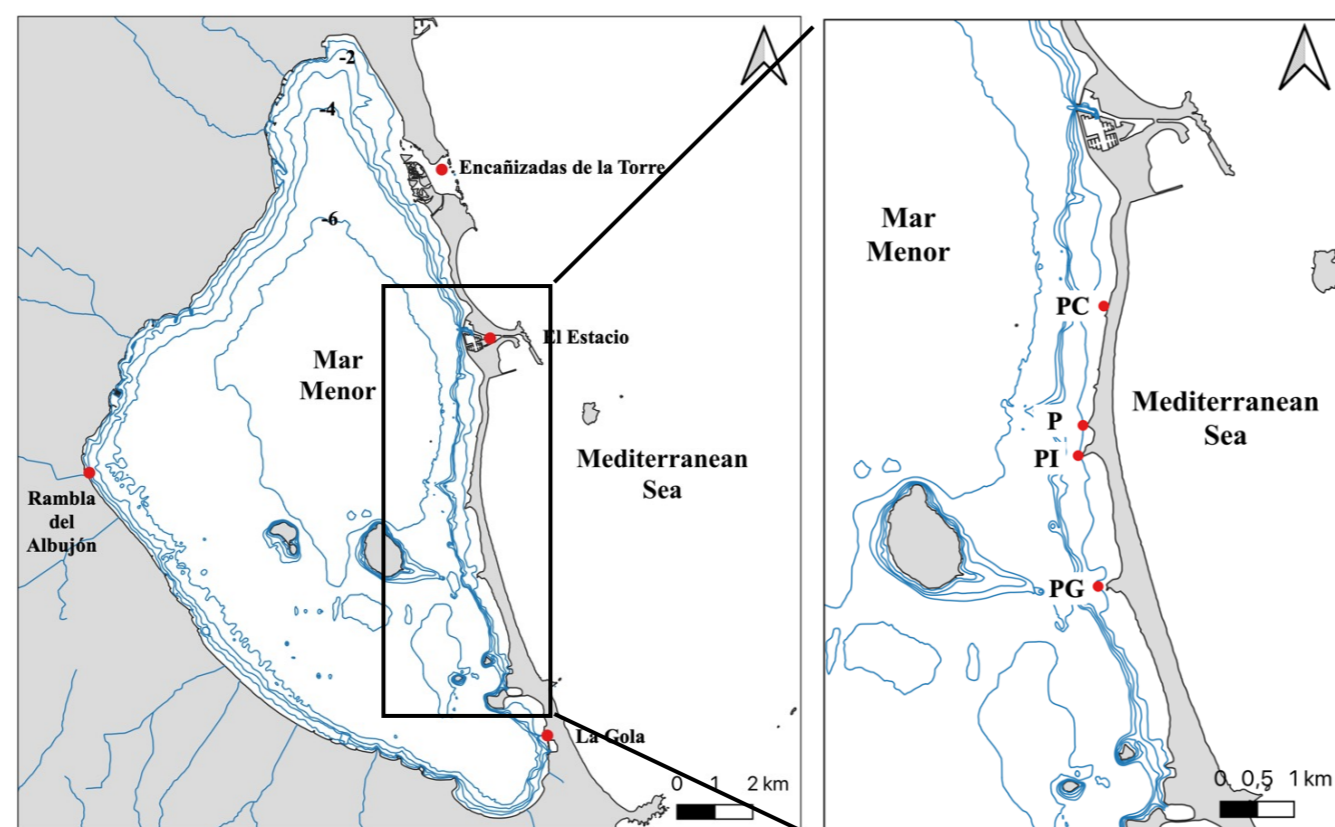


Figure 2. Location of the sampling areas: Pueblo Cálido (PC), Pedrucho (P), Pedruchillo (PI), and Punta del Galán (PG).

## RESULTS

- The average mortality found in the sampling areas was around 15% of the prospected individuals, finding the highest mortality in Pedrucho area (Fig. 3).
- In the Pedrucho area, for dead specimens the Eh is more negative and the percentage of OM is higher (Figs. 4, 5).
- *C. nodosa* cover was significantly higher in PC and PG (14-20%) when compared with P and PI (Fig. 6).

## CONCLUSIONS

Pedrucho area:

- Higher mortality of individuals
- More altered sediment conditions near to dead individuals
- Lower cover of *C. nodosa*

Due to the conditions of sediment hypoxia and anoxia generated in the eutrophication episode of summer 2021

The eutrophic ecosystem of the lagoon supposes a great instability for the survival and conservation of *P. nobilis*. These results may help us to improve our understanding of the factors that affect the survival of this species, supporting the development of future conservation strategies.

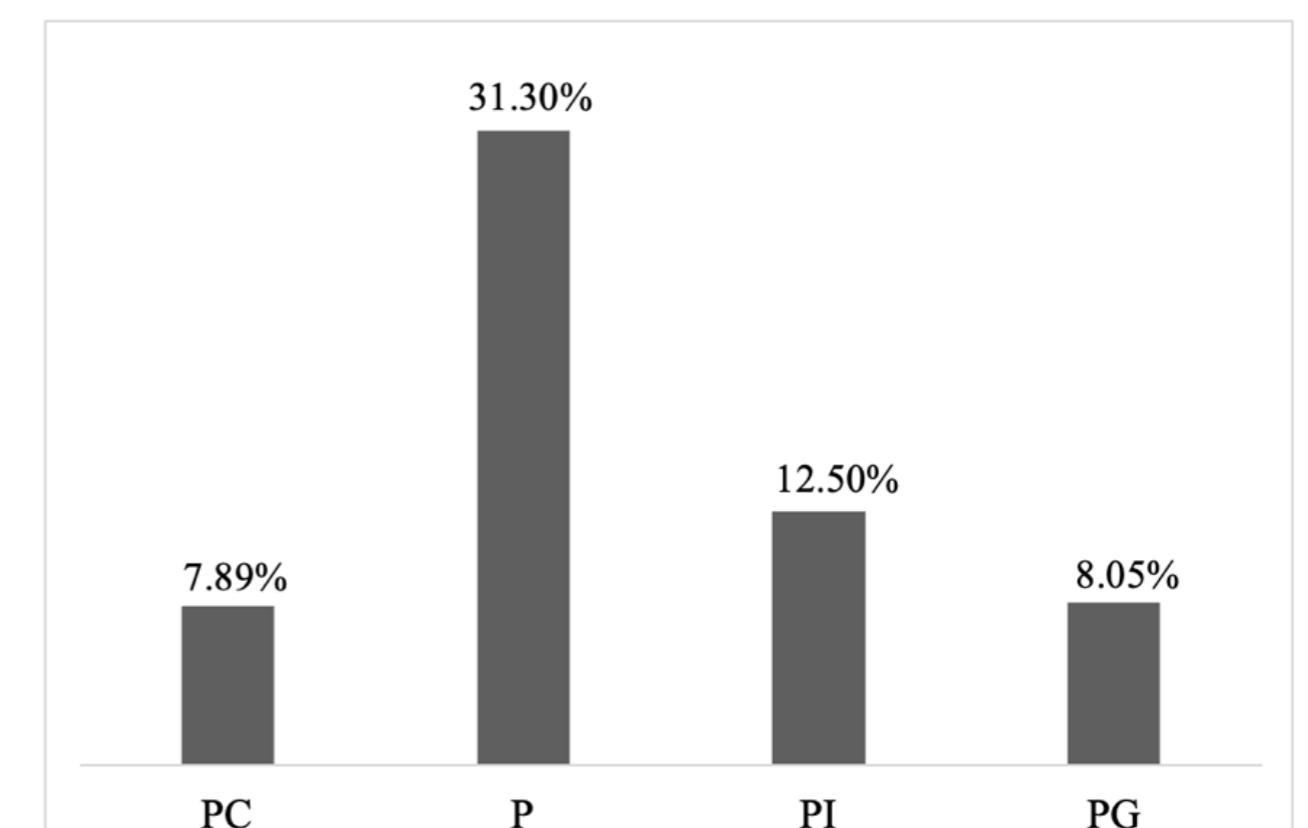


Figure 3. Mortality percentage in each study locality. PC= Pueblo Cálido, P= Pedrucho, PI= Pedruchillo, PG= Punta del Galán.

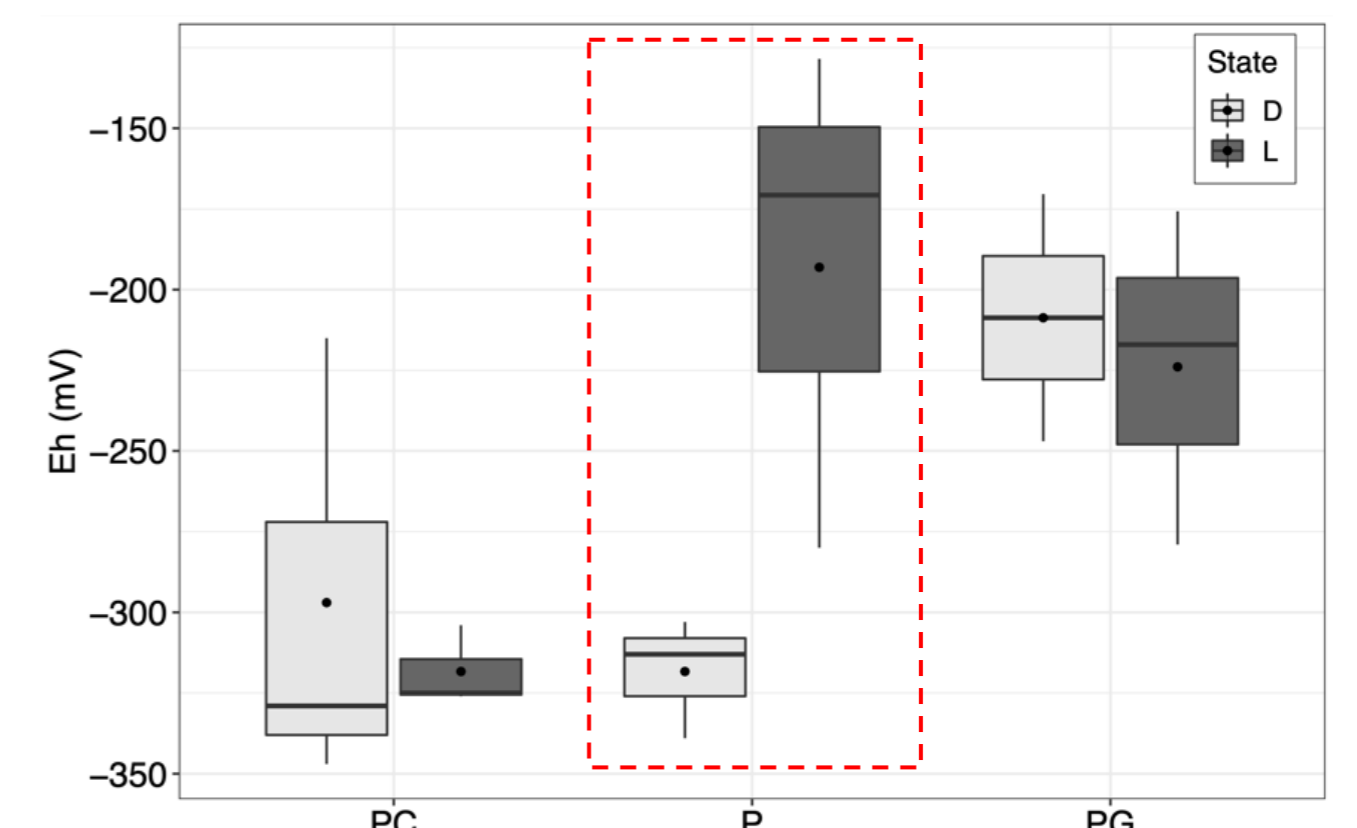


Figure 4. Boxplot showing mean (black point) of the redox potential of the adjacent sediment to dead (D) and living individuals (L) on each area.

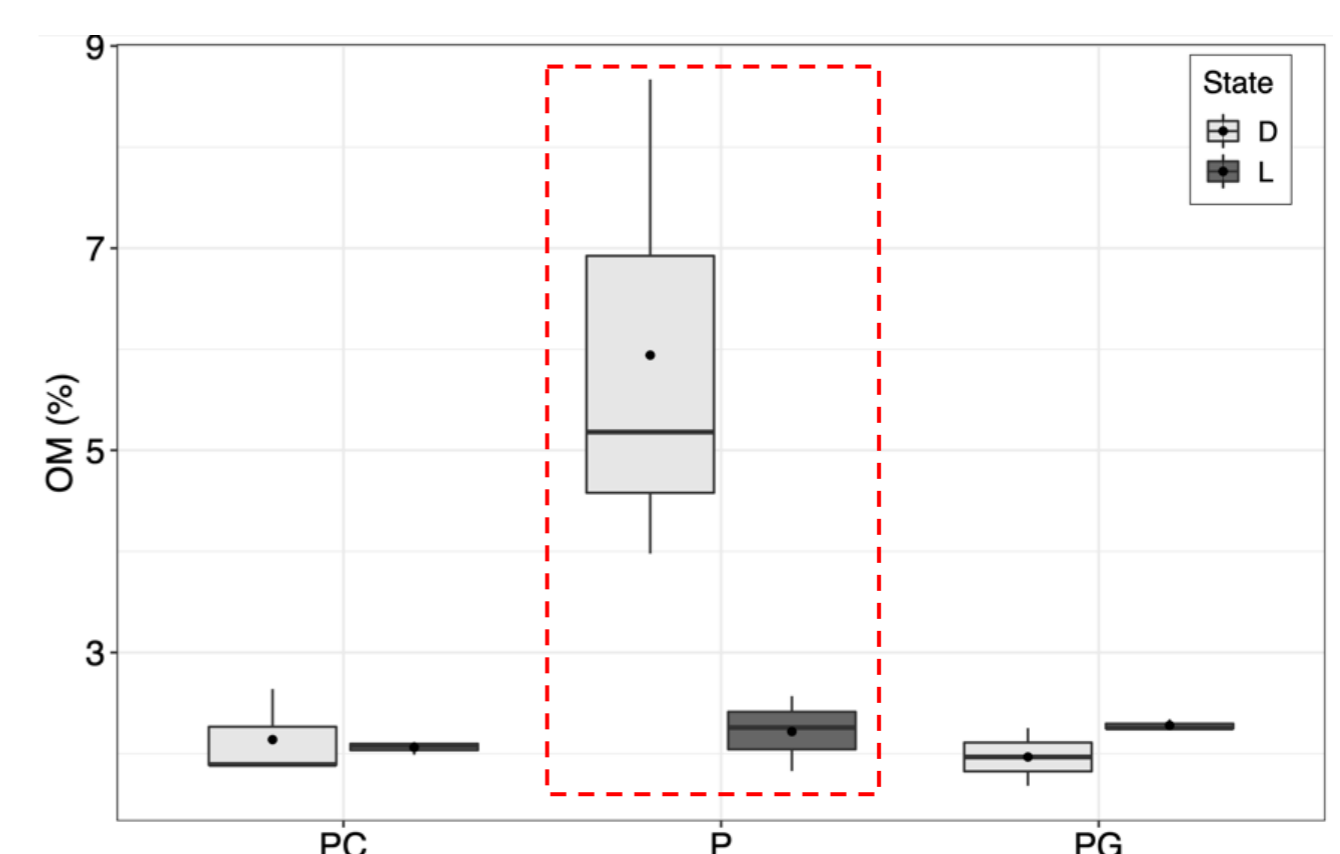


Figure 5. Boxplot showing mean (black point) of the organic matter fraction of the adjacent sediment to dead (D) and living individuals (L) on each area.

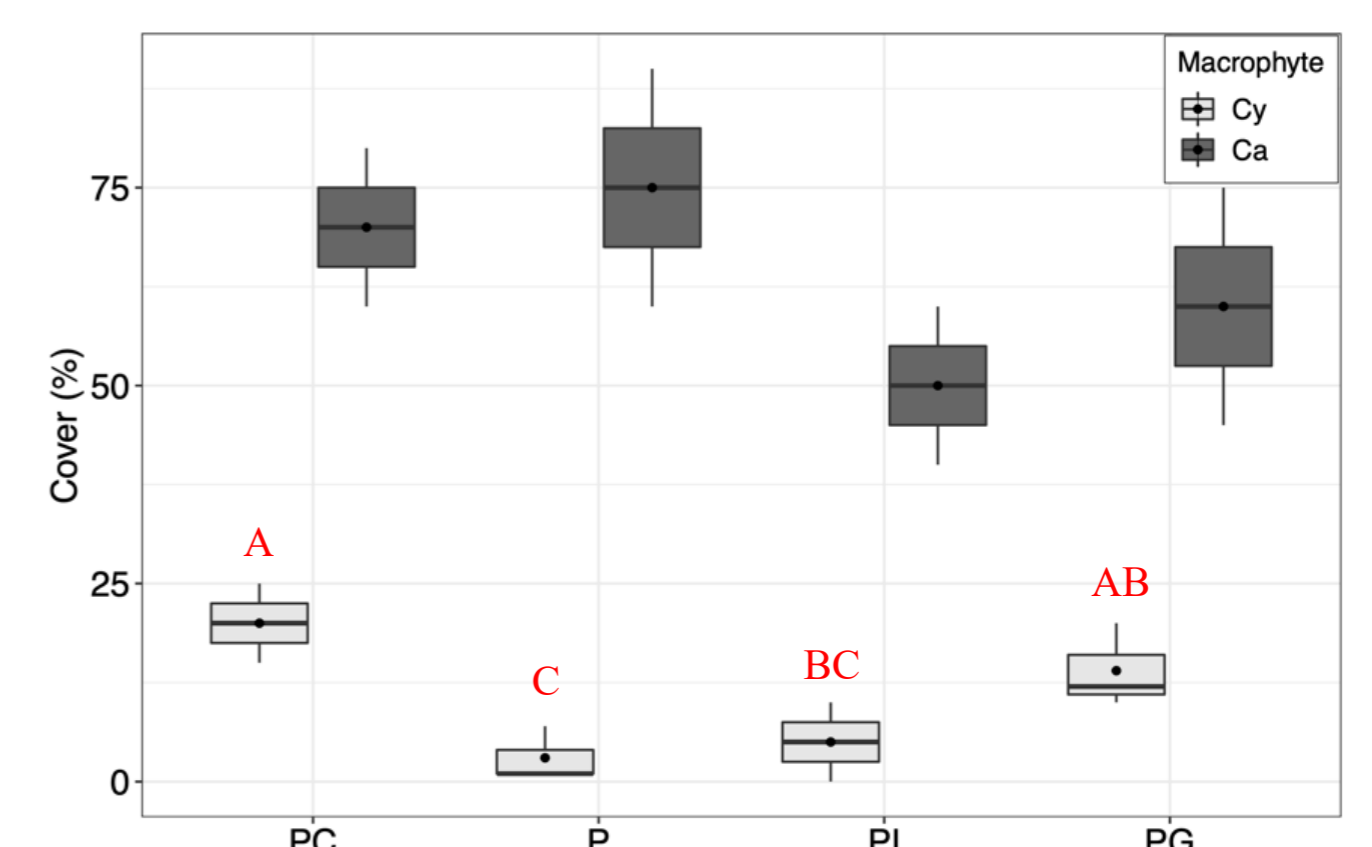


Figure 6. Boxplot showing mean (black point) of *Cymodocea nodosa* (Cy) and *Caulerpa prolifera* (Ca) cover (%) estimated for the studied localities.

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