{rokbox title=|Geographic extent of the study and sampling localities :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-mass-mortality-pinna-nobilis-mediterranean-not-affected-genetic-diversity-nebot-et-al-2025-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-mass-mortality-pinna-nobilis-mediterranean-not-affected-genetic-diversity-nebot-et-al-2025.jpg{/rokbox}

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The mass mortality of *Pinna nobilis* throughout the Mediterranean Sea has not yet affected the genetic diversity of the species in one of the last genetic reservoirs.

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Abstract: Assessing the genetic conservation status of threatened species is crucial for enhancing their recovery and launch effective management. *Pinna nobilis*, a Mediterranean endemic species facing recurrent mass mortality events since 2016, is now critically endangered. The few unaffected or partially affected *P. nobilis* groups of individuals reside in isolated coastal lagoons and estuaries, but their genetic status and ability to adapt to future threats remains unknown. This study addresses these gaps by first assessing the genetic diversity and structure of the remnant *P. nobilis* group from the Mar Menor coastal lagoon using a set of 21 microsatellites loci and 284 individuals. It then compares this with the previously dense and stable *P. nobilis* group of individuals from Cabrera National Park, using a common set of 19 microsatellite markers and non-lethal mantle tissue biopsies from a total of 1055 individuals. The results reveal genetic homogeneity across different locations within the Mar Menor, suggesting a single, homogeneous group within the lagoon. Remarkably, the genetic diversity in Mar Menor is comparable to that of the now-extinct Cabrera National Park *P. nobilis* group. Despite the species-wide mortality events, the small, enclosed group of individuals from Mar Menor retain approximately 80% of Cabrera National Park's species genetic diversity and possesses 16 unique alleles specific to this lagoon. These findings underscore the crucial current role of Mar Menor lagoon as a genetic reservoir for *P. nobilis*, emphasizing the need for strong protection. Considering these results, individuals from the

Mar Menor could serve as potential candidates for future species reintroduction programs in the western Mediterranean Sea.

Keywords: Pen shell, Conservation genetics, Vulnerable ecosystem, Conservation biology, Reintroduction