

{rokbox title=|Location map of Ebro Delta with the three locations involved in the study :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-reproduction-endangered-fan-mussel-natural-captivity-conditions-hernandis-et-al-2023-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-reproduction-endangered-fan-mussel-natural-captivity-conditions-hernandis-et-al-2023.jpg{/rokbox}

Sebastián Hernandis, Patricia Prado, Jose Rafael García-March, Ignasi Gairin, **Maite Vázquez-Luis**

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[Reproduction of the endangered fan mussel *Pinna nobilis* under natural and captivity conditions](#)

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Abstract: A mass mortality event that started in 2016 has put the fan mussel *Pinna nobilis* close to the brink of extinction, leading to the species being classified as Critically Endangered in the Red List of the International Union for Conservation of Nature. Under current circumstances, with the persistence of the disease caused by

Haplosporidium pinnae

in the open sea, isolated populations in coastal lagoons and estuarine bays appear to be the main chance for the survival of the species. The low resilience of those populations highlights the importance of implementing additional measures to avoid the extinction of the fan mussel. One of these measures relies on completing its reproductive cycle in captivity. The reproductive window of the remaining fan mussel population in Alfacs Bay was explored to obtain gametes and to understand possible limitations in the reproductive activity in wild populations. For this purpose, during the reproductive season, several groups of individuals were relocated for short periods (~2 weeks) into the vivarium to obtain gametes under controlled conditions.

Simultaneously, controlled temperature treatments and adapted food dosage for conditioning adult fan mussels out of their reproductive season in the wild were conducted in a recirculating aquaculture system. The reproduction of natural populations was mostly restricted to May, featuring temperatures around 20°C. A low success of spawning was obtained in the vivarium, with a 0% success in 11 out of 20 of the trials (six to nine individuals each) and an overall success of 16% (25 out of 156 individuals). A 100% success (14 out of 14) was obtained with individuals conditioned for ~2 months in the recirculating aquaculture system. A second conditioning of six of those individuals was attempted after a ~3-month period, with a 33.3% success of spawning.

Keywords: aquaculture, captive breeding, conditioning, conservation, endangered species, fan mussel