



**Population status and structure of *Pinna nobilis* after the Mass Mortality Outbreak and evaluation of juveniles recovery from mussel farms for restocking purposes**

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*Pinna nobilis*, is an endemic bivalve of the Mediterranean Sea and one of the largest worldwide, that populate both marine and lagoon systems, from 0 to 60 meters depth. This species is supposed to play a key ecological role in the benthic communities, by filtering large quantities of seawater and retaining Phytoplankton, Zooplankton and indeterminate debris. In the last five years, it has been disappearing from our seas due to an abnormal Mass Mortality Event (MME), the causes of which are still under investigation. In 2016, the MME was first detected across a wide geographical area of the Spanish coast, affecting specimens of all sizes, depth range, and habitat. The disease spread rapidly from West to East of the Mediterranean basin, causing high mortality rates in infected populations. Consequently, in December 2019, *P. nobilis* has entered the IUCN Red List as a critically endangered species. In Italy, in early 2017, the MME of *P. nobilis* was reported along the western coast (Campania and Sicily), affecting 85-100% of the population. In the summer of 2018, an infected population was recorded in Mar Piccolo of Taranto and in 2019 the disease reached the coasts of the Northern Adriatic. Nowadays, the only reports of living populations come from lagoon environments or coastal areas with few connections to the sea like the Ebro Delta, Mar Menor Lagoon in Spain (Prado et al., 2021), Rhone's delta, Leucate and Thau in France (Foulquie et al., 2020; García-March et al., 2020; Katsanevakis et al., 2021), Venice, Grado-Marano and Lake Faro in Italy (Curiel et al., 2021; Donato et al., 2021; Russo, 2017), that are considered the last healthy shelters for *P. nobilis* populations in the central and eastern Mediterranean basin (Foulquie et al., 2020). In this critical condition for the species is framed my PhD project that has three different objectives: i) carry out large-scale geographical study (along the Italian coasts) to assess the status of *P. nobilis* populations both in marine and lagoon systems after the MME; ii) investigate the species ecological and the trophic role in benthic ecosystems; iii) evaluate *P. nobilis* juveniles recovery from mussel production facilities and to assess restocking viability in the natural environments

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