

# LIFE PINNARCA

LIFE NAT/ES/001265



## DELIVERABLE D4.1

REPORT WITH DATA ON THE EFFECTIVENESS OF SEDIMENT  
FENCES



**RESPONSIBLE IRTA**

## INDEX

Follow up of the effectiveness of sediment fences	1
Sediment fences design and installation	1
Sediment fences monitoring	6
Sediment accretion	6
Physicochemical variables	7
Vegetation cover and habitat suitability	11
Nutrients	13
Final Remarks	16
References	16
Appendix	17

## Follow up of the effectiveness of sediment fences

The main aim of this action is increasing the survival and reducing the threats of fan mussel populations in the remaining areas where *P. nobilis* still survive. Most of the areas inhabited by pen shell individuals are subjected to anthropogenic impacts such as pollution, fishing, recreational activities, etc. Consequently, there is the necessity to conduct different pilot actions to increase pen shell habitat suitability. One of this pilot actions is the installation of sediment fences. The use of sedimentation fences has been demonstrated to act as a green filter, increasing the retention of suspended sediments, the establishment of new estuarine vegetation, and to minimize erosion and impacts caused by sea level rise.

Most of the north shore of the Alfacs Bay is greatly affected by agricultural freshwater discharges, which contain nutrients, organic matter, and agrochemicals used in rice cultivation. These elements impact the habitat available for pen shells, influencing factors such as water quality and the availability of benthic seagrass meadows of *Cymodocea nodosa*. The present distribution of the species is mostly relegated to the southern coast of the Alfacs Bay, further away from the discharge areas and where seagrass meadows feature enhanced quality conditions. Therefore, the surrounding of the St. Joan Tower (Zone 4) was considered as an optimal place for this pilot study (**Figure 1**), since the site is located in between two discharge channels from rice field irrigation, but it naturally hosts a population of several hundreds of pen shells. Therefore, the improvement of habitat and water quality in this area will directly favour the condition status of these individuals and may favour the local recruitment of the species.

If the efficiency of this action is proven for the recovery of fan mussel populations or the associated benthic habitat (based on associated monitoring actions; see below), the information will be transferred to institutional managers and scientists across the species distribution range where are facing similar problems. This transfer aims to enable the implementation and replication of the action at a large scale, both within the Ebro Delta and in other areas in the Mediterranean.

## Sediment fences design and installation

Two sediment fences were constructed perpendicular to two different outlets of the rice field irrigation network in St. Joan Tower area (**Figure 1**). The sediment fences were constructed at the end of the year 2022, following the design provided by Boumans *et al.* (1997), with minor modification. Mainly, each sediment fence,