

{rokbox title=|The two distinct sampling locations at the Northeast and Southwest of the Menorca Island and the six coves monitored during the study :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-supervivencia-asentamiento-diplodus-sargus-mediterraneo-cuadros-et-al-2018-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-supervivencia-asentamiento-diplodus-sargus-mediterraneo-cuadros-et-al-2018.jpg{/rokbox}

Cuadros A, Basterretxea G, Cardona L, Cheminée A, **Hidalgo M**, **Moranta J**, 2018. [Settlement and post-settlement survival rates of the white seabream \(*Diplodus sargus*\) in the western Mediterranean Sea.](#)

PLoS ONE 13(1): e0190278. <https://doi.org/10.1371/journal.pone.0190278>

Abstract: Survival during the settlement window is a limiting variable for recruitment. The survival is believed to be strongly determined by biological interactions and sea conditions, however it has been poorly investigated. We examined the settlement patterns related to relevant biotic and abiotic factors (i.e. Density-dependence, wind stress, wave height and coastal current velocity) potentially determining post-settler survival rates of a coastal necto-benthic fish of wide distribution in the Mediterranean and eastern Atlantic, the white seabream (*Diplodus sargus*). An observational study of the demography of juveniles of this species was carried out at six coves in Menorca Island (Balearic Islands, western Mediterranean). Three of the coves were located in the northern and wind exposed coast, at the Northeast (NE) side; while the other three were found along the southern and sheltered coast, at the Southwest (SW) side of the island. The settlement period extended from early May to late June and maximum juvenile densities at the sampling sites varied between 5 and 11 ind. m⁻¹ with maximum values observed in late May simultaneously occurring in the two coasts. Our analysis of juvenile survival, based on the interpretation of the observed patterns using an individual based model (IBM), revealed two stages in the size-mortality relationships. An initial density-dependent stage was observed for juveniles up to 20 mm TL, followed by a density independent stage when other factors dominated the survival at sizes > 20 mm TL. No significant environmental effects were observed for the small size class (minor than 20mm TL). Different significant environmental effects affecting NE and SW coves were observed for the medium (20-30mm TL) and large (>30mm TL) size class. In the NE, the wind stress consistently affected the density of fish of 20–30 mm and >30 mm TL with a dome-shape effect with higher densities at intermediate values of wind stress and negative effect at the extremes. The best models applied in the SW coves showed a significant non-linear negative effect on fish density that was also consistent for both groups 20–30 mm and >30 mm TL. Higher densities were observed at low values of wave height in the two groups. Because of these variations, the number of juveniles present at the end of the period was unrelated to their initial density and average survival varied among locations. In consequence, recruitment was (1) primarily limited

by density-dependent procedures at settlement stage, and (2) by sea conditions at post-settlement, where extreme wave conditions depleted juveniles. Accordingly, regional hydrodynamic conditions during the settlement season produced significant impacts on the juvenile densities depending on their size and with contrasted effects in respect to cove orientation. The similar strength in larval supply between coves, in addition to the similar phenology for settlers in the north and south of the Island, suggests that all fish may come from the same parental reproductive pool. These factors should be taken into account when assessing relationships between settlers, recruits and adults of white seabream.

Keywords: