{rokbox title=|Study area :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-habitat-and-survival-atlantic-bluefin-tuna-reglero-et-al-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-habitat-and-survival-atlantic-bluefin-tuna-reglero-et-al.jpg{/rokbox}

Patricia Reglero, **Rosa Balbín**, Franciso Javier Abascal, Antonio Medina, Diego Alvarez-Berastegui, Leif Rasmuson, Baptiste Mourre, Sámar Saber, Aurelio Ortega, **Edurne Blanco**, Fernando de la Gándara, **Franciso Javier Alemany**, G Walter Ingram, **Manuel Hidalgo**, Handling editor: Emory Anderson, 2018.
Pelagic habitat and offspring survival in the eastern stock of Atlantic bluefin tuna.
ICES Journal of Marine Science, fsy135, https://doi.org/10.1093/icesjms/fsy135.

Abstract: In this manuscript, we test how an understanding of geographical variation in larval fitness in relation to temperature and habitat use could be a useful method to improve our understanding of recruitment and develop better indices of annual recruitment. On the basis of the assumption that growth and survival of tuna larvae are influenced by temperature, we have developed a potential larval survival index for Atlantic bluefin tuna (*Thunnus thynnus*) by combining empirical data from egg and larval rearing experiments with temperature data from hydrodynamic models. The experiments were designed to test the full range of temperature variability that bluefin larvae would experience in the field and provide a mechanistic understanding of the processes driving egg and larval survival. We then developed a biological model using the temperature-related growth expressions and a size-dependent survival function for the larvae. The biological model was applied to a time-series of spatially explicit temperature data for the western Mediterranean from the Strait of Gibraltar to 6°E, which includes the major recognized bluefin tuna eastern stock spawning area, the Balearic Sea. Our results show that areas with high probabilities of larval survival coincide with those that would be considered as optimal based on other data sources (ichthyoplankton surveys, spawning female locations from commercial fisheries data, and adult tracking data). However, evidence of spawning has been found in areas with suboptimal thermal habitats, as predicted by the model, which we discuss regarding sampling effort and salinity fronts. There was a good match between the survival index and recruitment indices from standardized CPUE fisheries data. These results have implications for our understanding of the recruitment process of the eastern stock of Atlantic bluefin tuna, since they suggest that the combined effects of temporal and spatial variability of the environment drive recruitment success, which has important implications for the management of the species.

Keywords: