

{rokbox title=|Figure showing sampling locations in the Mediterranean Sea, (A) Spain, (B) Sicily, (C) Adriatic and (D) Aegean and habitat suitability maps for *Sardina pilchardus* indicating the probability of sardine presence in the Mediterranean Sea based on the estimated GAM model in December and satellite environmental data from 2004 to 2008 (2004 and 2005 not shown). The scale indicates probability ranges :: COB-IEO|thumb=|images/stories/ieo/imagenespublicaciones/tugores_meps_thumb.jpg|images/stories/ieo/imagenespublicaciones/tugores_meps_640.jpg{/rokbox}

Maria Pilar Tugores, Marianna Giannoulaki, **Magdalena Iglesias**, Angelo Bonanno, Vjekoslav Tičina, Iole Leonori, Athanassios Machias, Konstantinos Tsagarakis, **Núria Díaz**, Ana Giráldez, Bernardo Patti, Andrea De Felice, Gualtiero Basilone, Vasilis Valavanis, (2011).

[Habitat suitability modelling for sardine *Sardina pilchardus* in a highly diverse ecosystem: the Mediterranean Sea.](#)

Mar Ecol Prog Ser 443:181-205.

Abstract: Integrated information from different parts of the Mediterranean Sea was used to model the spatial and temporal variability of the distribution grounds of the sardine population. Acoustic data from the North Aegean Sea (Eastern Mediterranean), the Adriatic Sea (Central Mediterranean), the Sicily Channel (Central Mediterranean) and Spanish Mediterranean waters (Western Mediterranean) were analysed along with satellite environmental and bathymetric data to model the potential habitat of sardine during summer, autumn and early winter. Generalized additive models were applied in a presence–absence approach. Models were validated in terms of their predictive ability and used to construct maps exhibiting the probability of sardine presence throughout the entire Mediterranean basin as a measure of habitat adequacy for sardine. Bottom depth and sea surface temperature were the environmental variables that explained most of the data variability. Several areas along the Mediterranean coastline were indicated as suitable habitat for sardine in different seasons. An expansion of these areas over the continental shelf, up to 100 m depth, was consistently noticed from summer to winter. This was attributed to the horizontal movements of sardine related to spawning (i.e. winter period) and the peculiarities of the Mediterranean Sea where areas favouring growth, feeding and spawning processes tend to be localised and prevent a long range, offshore migration as opposed to large upwelling ecosystems. Moreover, within the study period, a positive relationship between the extent of sardine preferred habitat and landings was revealed for both summer and winter seasons throughout the entire Mediterranean Sea.

Keywords: Sardine · Habitat suitability modelling · Sardine potential habitat · Potential spawning habitat · Mediterranean Sea · Small pelagic