

{rokbox title=|Map of the study area with bathymetry and overview :: Image: Authors|
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[Preferential aggregation areas of *Seriola dumerili*: Estimation of environmental influences and insights towards sustainable exploitation](#)

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Abstract: A key aspect of the sustainable management of commercially important coastal pelagic fish stocks is the identification of the spatio-temporal dynamics of aggregation behaviour. An exemplary case species is the greater amberjack, *Seriola dumerili*. This top-predator is an important commercial resource exploited by recreational and commercial fisheries worldwide. Greater amberjack is known to form aggregations during important stages of its life-history, making it highly vulnerable to overfishing with potential consequences to its conservation. To improve the limited knowledge on the spatio-temporal aggregation areas of this important resource, this study combined fishing fleet dynamics (Vessel Monitoring System records), environmental and landing data into a species distribution model to predict such vulnerable events in space and time around the Balearic Islands. Our results indicated that *S. dumerili* aggregations were generally encountered in coastal areas at shallow depths (minor than 100 m), low salinities, low chlorophyll concentrations, and weak meridional and zonal current velocities around the Balearic Islands. The preference for these environmental variables and processes is probably related to searching for an optimal scenario that maximises the success of larval development and survival of its offspring. Moreover, the distribution model suggested the possibility of a longer spawning period than previously predicted. This research demonstrates the use of a perceptive statistical tool that efficiently combines fisheries-dependent data and environmental data to highlight essential factors that influence the aggregation behaviour of *S. dumerili* and thus provides essential information for the conservation and sustainable exploitation not

only of the greater amberjack, but also for other gregarious species highly-vulnerable to fishing by their aggregation behaviour.

Keywords: Species distribution model, Aggregation behaviour, VMS data, Greater amberjack, Western Mediterranean Sea