

Seasonality, interannual variation and distribution of *Carybdea marsupialis* (Cnidaria: Cubozoa) in the Mediterranean coast: influence of human impacts

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This study addresses the seasonal and interannual variability in box jellyfish abundance for a population of *Carybdea marsupialis* monitored along the coast of Denia (NW Mediterranean, Spain). Environmental data and cubomedusae density have been monthly recorded from March 2010 to December 2013. Environmental variables registered included water temperature, salinity, nutrients concentration (i.e. DIN, phosphate and silicon), chlorophyll concentration and zooplankton abundance and composition. Generalized Additive Models (GAM) have been fitted to understand the relationships of aforementioned environmental variables and *C. marsupialis* abundance. Salinity and chlorophyll concentration have been reported as the most important variables influencing *C. marsupialis* abundance, as well as N and P concentrations. Also, LUSI (Land Use Simplified Index) showed a positive correlation with the presence of this box jellyfish; this index reflects the impact of nutrient inputs along the coast. Moreover, an ensemble platform for species distribution model (*Biomod2* package for R software) has been fitted using the sightings of the species recorded through different citizen science databases from the Mediterranean region (ENPI-Medjellyrisk and LIFE+ Cubomed projects). A forecasting of the probability of occurrence of this species under current environmental conditions was developed, and the results indicate that *C. marsupialis* inhabits in coastal areas characterized by a high degree of human disturbance. This and other previous studies relating box jellyfish blooms with the intensity of human coastal activities need to be considered during the development of coastal management protocols.

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