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Livro de resumos das comunicações do 4º Encontro Ibérico de Ecologia,
Coimbra, Portugal, 16-19 de Junho de 2015

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Coimbra, Portugal, 16-19 junio de 2015

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DOI: 10.7818/4IberianEcologicalCongress.2015

Deadline editorial: 01/06/2015

Publica:

Asociación Española de Ecología Terrestre (AEET)
C/ Tulipán s/n, 28399, Móstoles, Madrid, Spain

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S5. Oral

Large-scale prediction of seagrass distribution: the case of *Cymodocea nodosa* (Mediterranean-Atlantic)

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Understanding the factors that affect seagrass meadows encompassing their entire range of distribution is challenging yet important for their conservation. We model the environmental niche of *Cymodocea nodosa* using a combination of environmental variables and landscape metrics to examine factors defining its distribution and find suitable habitats for the species. The most relevant environmental variables defining the distribution of *C. nodosa* were sea surface temperature (SST) and salinity. We found suitable habitats at SST from 5.8 ºC to 26.4 ºC and salinity ranging from 17.5 to 39.3. Optimal values of mean winter wave height ranged between 1.2 m and 1.5 m, while waves higher than 2.5 m seemed to limit the presence of the species. The influence of nutrients and pH, despite having weight on the models, was not so clear in terms of ranges that confine the distribution of the species. Landscape metrics able to capture variation in the coastline enhanced significantly the accuracy of the models, despite the limitations caused by the scale of the study. By contrasting predictive approaches, we defined the variables affecting the distributional areas that seem unsuitable for *C. nodosa* as well as those suitable habitats not occupied by the species. These findings are encouraging for its use in future studies on climate-related marine range shifts and meadow restoration projects of these fragile ecosystems.