



## Evaluating the coastal ecosystem status of two Western and Eastern Mediterranean islands using the seagrass *Posidonia oceanica*



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### ABSTRACT

Mediterranean seagrass *Posidonia oceanica* is used as a ‘biological quality element’ in the long-term monitoring programmes of the Water Framework Directive (WFD 2000/60/EC) for the evaluation of ecological status of coastal waters. Due to its low resilience to anthropogenic pressures, *P. oceanica* meadows have disappeared irreversibly along some of the Mediterranean coasts. The main objective of this survey, is therefore to compare the ecological status of coastal waters and *P. oceanica* meadows in two islands from Eastern (Gökçeada, Turkey) and Western (Corsica, France) Mediterranean Sea based on the *Posidonia* Biotic Index (BiPo) and the Vitality Index besides concentrating on: (i) their consistency in different environmental conditions present in the Mediterranean Sea, (ii) their effectiveness to discriminate the ecological status of coastal waters in relation to different anthropogenic pressures and (iii) their application capacity to initiate long-term data series for monitoring the evolution of the meadows in less evaluated regions (i.e. from the Eastern Mediterranean). The measurements of several descriptors of *P. oceanica* are interpreted based on the BiPo and the Vitality indices for 2 regions; 9 sites from Gökçeada and 15 sites from Corsica exposed to different human pressures. The mean BiPo and Vitality indices are higher in Corsica than in Gökçeada, where the values correspond to a “good” status for Corsica and a “moderate” status in Gökçeada. The application of these biotic indices showed their feasibility and comparability to assess the ecological status in different environmental conditions. Significant relationships between the scores of Anthropization index and the EQR values of the BiPo index ( $r = -0.745, p < 0.01$ ) and the Vitality index ( $r = -0.702, p < 0.01$ ) highlighted their efficiency to determine the seagrass degradation in the sites subjected to higher pressure levels. It can be assumed that this study initiates the development of long-term data series and also meets the essential data deficiency in less evaluated regions.

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