

# Application of an angiosperm-based classification system (BiPo) to Mediterranean coastal waters: using spatial analysis and data on metal contamination of plants in identifying sources of pressure

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**Abstract** The Biotic Index based on *Posidonia oceanica* (BiPo) is a classification system for evaluation of the ecological status in Mediterranean coastal waters, developed in accordance with the EU Water Framework requirements. The aim of this study is to verify the applicability and reliability of the BiPo index to different geographical areas of the north-western Mediterranean (France, Spain and Italy), to understand whether such a classification system may be applied more extensively, as so far it has only been applied to coastal waters in Corsica. The ecological status determined for sites is verified against pressures revealed from satellite imagery and from trace metal contamination of plants, to identify the sources of pressure that may be responsible for a low ecological status. The results of this study indicate that: (i) the BiPo index responds reliably to pressures, in different areas of the Mediterranean; (ii)

sites with an ecological quality ratio (EQR) close to the good/moderate boundary require particular attention to identify and reduce causes of deterioration; (iii) the support of chemical indicators, in this case metal contamination, is relevant to identify potential sources of pressure.

**Keywords** Seagrass · *Posidonia oceanica* · Water Framework Directive · Ecological status · Mediterranean · Coastal waters

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