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**Spatial patterns and inter-annual variability of mid-size pelagic fish species off the Gulf of Cadiz**

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**Abstract**

Understanding spatio-temporal patterns of mid-size pelagic fish species (MSPFS) is of great interest from the standpoint of both their management and conservation. Herein, temporal changes in the spatial patterns of five MSPFS (*Scomber colias, Scomber scombrus, Trachurus trachurus, Trachurus mediterraneus* and *Trachurus picturatus*) off the Gulf of Cadiz (GoC) are analyzed from acoustic surveys data (2007-2015). In particular, we evaluated intra- and inter-specific overlapping over time and space using four spatial indices. Further analyses including environmental variables were tested to explain such spatial fluctuations. The main findings showed a progressive reduction of their distribution area in all species except for *T. trachurus*. The only species overlapping in space and timewere *T. picturatus* and *S. colias*. The distribution area of *T. mediterraneus* wasnotably reduced and showing southern preferences over the years while *S. scombrus* is concentrated near the center of the GoC. It is hope that the spatial patterns showed in this study will contribute to the implementation of the Marine Strategy Framework Directive as indicators to achieve "good environmental status" in the frame of a future ecosystem approach to management in the GoC.

**Keywords:** spatial patterns, environmental pressures, ecosystem approach to

management, overlapping, inter-annual variability, mid-size pelagic fish, Gulf of Cadiz

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