{rokbox title=|Example of thermal envelops of Diplodus annularis :: Image: Authors| thumb=|images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-approach-climate-change-effects-fish-posidonia-mediterranean-hinz-et-al-2024-thumb.jpg|}images/stories/ieo/imagenespublicaciones/centro-oceanografico-baleares-ieo-csic-approach-climate-change-effects-fish-posidonia-mediterranean-hinz-et-al-2024.jpg{/rokbox}

Hilmar Hinz, Jorge Terrados, **Joan Moranta**, **Olga Reñones**, Ana Ruiz-Frau, Ignacio A. Catalán, 2024. **A risk-based approach to the analysis of potential climate change effects on fish communities associated to *Posidonia oceanica* in the Mediterranean**.

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Abstract: The Mediterranean is recognized as a climate change hotspot, with ongoing warming anticipated to impact its habitats and their associated fish fauna. Among these habitats, the seagrass *Posidonia oceanica* stands out as a foundational species, critical for the stability of coastal fish communities. However, our understanding of climate change consequences on *P. oceanica* associated fish fauna to date remains limited in part due to a lack of longterm data. This study aimed to highlight potential climate change risks to fish species associated with *Posidonia*, integrating data on species' thermal envelopes with their habitat and depth preferences into a climate change risk index. Specifically, 9 species, including three pipefish and several wrasse species of the genus *Symphodus*, emerged as being at higher potential risk from climatic change. A historical time series from Palma Bay (Balearic Islands, Spain), spanning 45 years and providing clear evidence of warming, was employed to evaluate trends in species abundance and occurrence in relation to their relative climate risk score. While certain high-risk species like *Symphodus cinereus* and *Diplodus annularis* showed an increase in abundance over time, others, such as the pipefish *Syngnathus acus*, *Syngnathus typhle*

and
Nerophis maculatus
experienced declines. The absence of observed declines in some high-risk species could be attributed to several factors, such as acclimation, adaptation, or unmet response thresholds. However, this does not rule out the potential for future changes in these species. Factors such as increased nutrient influx due to growing human populations and changes in fishing regulations may also have contributed to the observed trends. These findings underscore the intricate interplay of environmental and anthropogenic factors and accentuate the pressing need for sustained, long-term data acquisition to fathom the implications of climate change on this highly important marine ecosystem.

Keywords: Climate change risk, *Posidonia oceanica* habitats, Fish species trends, Thermal envelopes, Long-term data acquisition