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Abstracts

Marina Sanz Martin¹
Marta Albo-Puigserver¹
Konstancja Woźniacka²
Lucía López-López¹
Jorge García Molinos³
Isaac Brito-Morales⁴
Nur Arafeh-Dalmau⁵
Julia Polo¹
Antonio Punzón¹
Sandra Mallol¹
Manuel Hidalgo¹

¹ Spanish Institute of Oceanography of the Spanish National Research Council (IEO-CSIC), Spain

² University of Exeter, United Kingdom of Great Britain and Northern Ireland

³ Arctic Research Center of Hokkaido University, Japan

⁴ Moore Center for Science of Conservation International, United States of America

⁵ Stanford University, United States of America

Climate change and seasonal dynamics of bottom-trawl fisheries landings in the western Mediterranean

The Mediterranean Sea stands out as one of the most vulnerable ecosystems on a global scale, facing an array of cumulative impacts, including high climate risks. Climate velocity drives species shifts and redistributions, which has led to changes at different ecosystem levels. However, it is necessary to examine how commercial marine species respond at regional and seasonal levels, which is often the optimal management scale. In this paper, we analysed time series data on bottom-trawl fisheries landings (2007 to 2021) and explored seasonal variations using climate velocity and relative climate exposure as metrics of potential range shifts (1987 to 2021) in the western Mediterranean Sea. Additionally, we examined the impact of climate connectivity, using climate velocity trajectories and temperature preferences, along with life-history traits of commercial species. The outcomes of our study showed fluctuations in climate velocity across diverse spatial and seasonal scales. We identified a relationship between the abundance of most captured commercial species and seasonal climate velocity. These variations were also influenced by the temperature preferences and the life-history traits of these species and play a key role in the climate connectivity between the network of marine protected areas. We conclude that climate velocity metrics are valuable to comprehend how economically important marine species respond in the western Mediterranean Sea at regional and seasonal levels. Using this knowledge, we can develop climate-smart management strategies, contributing to biodiversity conservation and the preservation of crucial ecosystem services, while mitigating the risks associated with future maladaptation.

