Identité : Joaquim Garrabou – Institut de Ciènces del Mar – garrabou@icm.csic.es - +34932309500

ASSESING CONSERVATION STATUS OF MEDITERRANEAN ROCKY BENTHIC COMMUNITIES DOMINATED BY LONG-LIVED SPECIES: INSIGHTS ON EFFECTIVE CONSERVATION AND MANAGEMENTS PLANS

Garrabou, J.[1], Arizmendi, R.[2], Ballesteros, E.[3], Bally, M.[4], Bensoussan, N.[5], Casas, E.[1], Cebrian, E.[3], Crisci, C.[6], Hereu, B.[2], Kersting, DK.[2], Kipson, S.[1,7], Ledoux, J.B.[1], La Rivière, M.[4], Linares, C.[2], Romano, JC.[8], Sala, E.[3,9], Teixidó, N.[1,2], Zabala, M.[2]

1. **Institute of Marine Science, Spain -; nteixido@icm.csic.es ; garrabou@icm.csic.es; ledoux@icm.csic.es, ecasas@icm.csic.es**
2. **University of Barcelona, Spain - cristinalinares@ub.edu, hereu@ub.edu; rosiarizmendi@gmail.com diegokersting@gmail.com**
3. **Centre d'Estudis Avançats de Blanes, Spain - emma@ceab.csic.es, kike@ceab.csic.es**
4. **Mediterranean Institute of Oceanography, France - marc.bally@univmed.fr, marie.la-riviere@univ-amu.fr**
5. **Ipso Facto, SCOP-ARL, France - nathaniel.bensoussan@ips-o.fr**
6. **Université de la Méditerranée, France - carocrisci@hotmail.com**
7. **University of Zagreb, Croatia - silvija.kipson@zg.htnet.hr**
8. **Université de Corse, France - romano@univ-corse.fr**
9. **National Geographic Society, USA – esala@ngs.org**

Abstract: Mediterranean rocky benthic communities dominated by long-lived species (e.g. *Cystoseira spp.*, gorgonians species) are submitted to strong environmental pressures induced by human activities such as pollution, overfishing, diving activities, invasive species and climate change. The combination of these disturbances unambiguously questioned the future of rocky benthic Mediterranean communities. In this context, interdisciplinary research efforts are required to better understand the impact of global change in order to ultimately promote the conservation of these biodiversity rich communities. To achieve this aim, we developed an integrated approach over the past 20 years to (1) acquire high resolution temperature data to characterize temperature regimes of the study areas and temperature anomalies (T-MEDNET initiative www.t-mednet.org), (2) assess the impacts of invasive species at community and population level, (3) study biodiversity dynamics on the selected communities by carrying out long-term and large scale data analysis, (4) to analyze the population genetic structure and diversity of key gorgonian species, (5) study resilience of gorgonian populations by demographic surveys and population dynamics models and, (6) study the sensibility and the adaptation capacity of different key species to warming and invasive species using experimental approaches. These studies were carried out in several MPAs from different areas of the NW Mediterranean (mainly Balearic Islands, Spanish Iberian Coast, Provence coast and Corsica,) and involved the analysis of unique long-term data series. Based on these results, we discuss how to improve current management and conservation plans and suggest the development of efficient monitoring strategies to facilitate the assessment and eventually mitigation of potential impacts of global change in the MPAs.

Keywords: Mediterranean coastal ecosystems – climate change impacts– invasive species – long-lived benthic species

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