Present and future estimates for Mediterranean rhodolith-beds productivity and associated carbon fluxes

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Project Summary

With the current threat of climate change, the role of CO2 uptake and storage by marine ecosystems has become a hot topic of international research and policy. Through major research efforts, carbon pools and fluxes within and among vegetated coastal environments, such as mangroves, salt marshes and seagrasses, have been quantified and led to the inclusion of these "blue carbon habitats" in existing frameworks to combat climate change. In this regard, a controversial point, increasingly discussed in recent days, is the potentially major role of ecosystems that are built by calcifiers, such as those formed by free-living coralline algae (rhodolith beds) in carbon sequestration and storage. Yet, even though rhodolith beds are most likely highly relevant contributors to the global carbon cycle, no significant efforts have been made so far to quantify their contribution. This is not only due to the scarce information available on rhodolith bed global coverage, but mostly related to the current lack of knowledge on carbon stocks and carbon sequestration rates associated to these habitats. This information is essential to ascertain if these ecosystems meet the requirements to be considered in climate mitigation policies, and hence, to support interventions needed to protect and enhance the potential of these natural systems to sequester and store carbon. The aim of this project is to provide evidence of the present-day and future carbon sink/source capacity of Mediterranean rhodolith beds to frame and value their contribution in the oceanic carbon cycle. Sound and repeatable field and lab-based methodologies will be implemented to quantify the magnitude and direction of carbon fluxes in Mediterranean rhodolith-beds and to evaluate the implications of future climate changes on those fluxes.