

CIGESMED - Coralligenous based indicators to evaluate and monitor the "good ecological status" of the Me-diterranean coastal waters

Summary

CIGESMED will contribute to the SeasEra's theme C: *Development of indicators and science support and management tools for the determination of Good Environmental Status in the Mediterranean Sea*. Such an issue is linked to the implementation of the MSFD and other European directives (WFD, habitats directive).

In the Mediterranean Sea, coralligenous and Posidonia meadows, which are by far more studied, are the most important biologically mediated habitats. They are the main milieu generating structural complexity and biodiversity. Coralligenous reefs produce goods (food and raw material, including the red coral) and services in several domains (CO₂ sequestration). Pollution, anchors and trawling may cause degradation, whilst traditional fishing as well as angling mainly affects the target species. Diver frequentation is another cause of degradation. Coralligenous may also be susceptible to invasive alien species. These habitats which are of great ecological, socio-economic and patrimonial importance are also under the pressures linked to the global warming. It has been suggested as a possible cause of large-scale events involving invertebrates' mass mortalities on coralligenous. If this hypothesis is true, such events might occur again and become more frequent, which would cause profound changes in the specific composition and structure of the coralligenous communities.

Even if an overall knowledge about its composition and distribution in the NW-Mediterranean basin, the distribution of coralligenous populations, their structuring, functioning and threats are important lacunae from the conservation point of view. There are key gaps in the current scientific knowledge of the coralligenous habitat that make it difficult to make recommendations for protecting them. Cryptic species has been found in several marine taxa, making the issue of a reliable identification in the spotlight for conservation and protection purposes. CIGESMED will then develop barcoding. Genetic structuring and effective dispersal potential will also be addressed as a pre-requirement.

The other objectives proposed are (1) to enhance the knowledge on coralligenous populations by deciding on reference states, acquiring long chronological sets and setting up a network of Mediterranean experts, (2) to monitor networks, locally managed and coordinated them on a regional scale (citizen science), (3) to standardize protocols that could be applied to the entire Mediterranean. Species that are indicators of the state of health of these formations will be identified, as well as quality criteria giving information on specific human impacts. A complexity approach will permit to mutualize and visualize large data collections, and to manage knowledge to study ecosystems and test indices and index. A new index, specific to coralligenous will be co-constructed with scientists, marine natural parks and reserves (directly or through national AMP agencies which are linked to CIGESMED via other projects like Index-Cor), representative of the concerned ministries and the general public, through the implementation of a "citizen science" network. An original approach will be the use of trees of knowledge as tools to sort, to organize and to illustrate big heterogenous sets of data.

To make all possible, CIGESMED gathers scientists from France, Greece and Turkey, making it possible to access to for off sites and to work on the same issues in both the Western Mediterranean basin and the Aegean-Levantine one.