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PRELIMINARY ASSESSMENT OF CORALLIGENOUS BENTHIC ASSEMBLAGES ACROSS THE MEDITERRANEAN SEA

Abstract
A preliminary study of coralligenous benthic assemblages was performed in 2013 at 20 sites in Turkey, Greece and France within the framework of the EU-funded project CIGESMED. At each area the most conspicuous species were recorded using in situ observations and photoquadrats. The survey revealed a total of 267 species belonging to 11 systematic groups. Within the sampled sites, algae ranked first in terms of species richness (83 species), followed by Porifera (55 species), Cnidaria (32 species), Bryozoa (22 species) and Echinodermata (21 species). A total of 172 species were encountered in France, 107 species in Turkey and 93 species in Greece. Six alien species, Caulerpa cylindracea, Stypopodium schimperi, Acrothamnion preissii, Womersleyella setacea, Amphistegina lobifera and Synaptula reciprocans, were found at sampling sites. Taking into account the preliminary character of the performed surveys, the biodiversity reported herein is presumably underestimated. Species richness is expected to increase following the upcoming, more exhaustive CIGESMED surveys. The final species lists will later be critically evaluated to meet the needs for developing new biotic indices and also for applying already developed ones (e.g. Index-Cor) in order to be used by scientists, managers and stake holders for the effective monitoring and management of coralligenous communities.

Key-words: Coralligenous, assemblages, Turkey, Greece, France

Introduction
Coralligenous communities represent some of the most productive and diverse biological structures in the Mediterranean (Laubier, 1966; Laborel, 1987). They generally develop on rocks in dim-light conditions and mainly occur in the circalittoral zone. These assemblages are directly or indirectly subjected to human-related pressures such as sedimentation due to pollution, invasion by alien species, physical damages by divers or nets, bioerosion by borers and grazers, and climate change (Ballesteros, 2006). The fragility of the coralligenous habitats is related to the stability of the environment in which it has evolved, the combined effects of erosion and bioconstruction, and the low demographic dynamics of their inhabitants (Linares *et al*., 2010). This paper aims to summarize the results of the first field surveys performed within the framework of the EU SEAS-ERA project CIGESMED (www.cigesmed.eu), aiming to assess the diversity of benthic coralligenous assemblages across the Mediterranean.

Material and Methods
Scuba-assisted surveys within coralligenous habitats (depths down to ca. 40 m) were performed at 6 sites in Turkey (Aegean and Levantine Seas), 7 sites in Greece (Aegean

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and Ionian Seas) and 7 sites in south France (Gulf of Lions) in 2013. Coralligenous assemblages were determined through the use of visual count techniques (e.g. direct observations and photographic quadrats). Photoquadrats were analyzed using photoQuad software.

Results

A total of 267 species belonging to 11 systematic groups were encountered. Algae ranked first in terms species richness (83 species), followed by Porifera (55), Cnidaria (32), Bryozoa (22) and Echinodermata (21). The highest species richness was reported in the French sites (172), followed by those in Turkey (107) and Greece (93). Four invasive species (*Caulerpa cylindracea, Stypopodium schimperi, Amphistegina lobifera* and *Synaptula reciprocans*) were found in Turkey, 1 species (*Womersleyella setacea*) in Greece, and 3 species (*C. cylindracea, W. setacea* and *Acrothamnion preissii*) in France. Several species of algae (e.g. *Lithophyllum stictaeforme, Mesophyllum alternans*) and sessile animals (e.g. *Axinella* spp., *Madracis pharensis, Halocynthia papillosa*) were shared among all studied areas. Gorgonians (e.g. *Paramuricea* spp., *Eunicella* spp.), on the other hand, were commonly recorded at the western Mediterranean locations and, less so, in the eastern basin, since they were recorded only in one site in Greece (Ionian Sea).

Discussion and Conclusions

Through the applied underwater visual survey techniques, coralligenous habitats at different sites along the northern Mediterranean coastline exhibited a certain degree of diversity. However, all surveys performed conducted so far were preliminary, hence the number of reported species is expected to increase both following the upcoming, exhaustive CIGESMED surveys, as well as in future scheduled attempts that will elucidate the taxonomic status of species not presently identified at the species level. The present study detected different coralligenous assemblages in the western and eastern Mediterranean Sea. In the western basin, gorgonians were found to be dominant even in shallow-depths, whereas these animals were rare or absent in the first fieldwork session performed at the eastern Mediterranean sites. However, a number of algae and invertebrates were common in the different Mediterranean areas and could be useful for future monitoring programs and the implementation of biotic indices that have already been developed (e.g. Index-Cor) or will be developed within the framework of CIGESMED.

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