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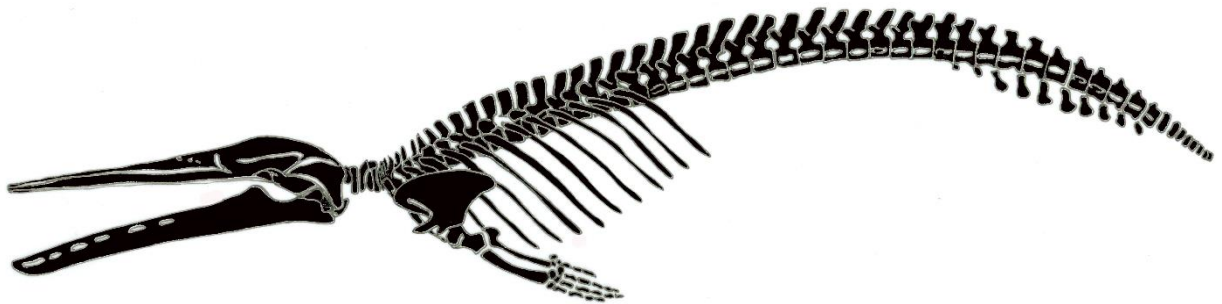


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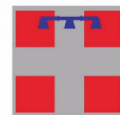
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Novel quantitative approaches for the investigation of Mediterranean Coralligenous: application on Marzamemi (Sicily) build-ups

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Coralligenous reefs, made up of crustose coralline algae, are among the most important ecosystems in the Mediterranean Sea shelf, as their skeletal framework supports high diversity of epi- and infaunal communities. Describing and assessing the relationship between the algal framework and

these hosted communities are therefore of extreme importance for both monitoring purpose and paleontological and ecological analyses. Here we present a quantitative assessment of both the surficial cover and the skeletal framework of two coralligenous build-ups collected off the coast of the Marzamemi village (SE Sicily) during the CBR2 campaign of the project FISIR 04543 “CRESCIBLUREEF - Grown in the blue: new technologies for knowledge and conservation of Mediterranean reefs” (<https://cresciblureef.unimib.it/>). The first build-up (CBR2_7c, 37 m depth), has been collected in an area with high coralligenous cover, while the second (CBR2_21c, 36 m depth) from a submarine channel with discrete, sparsely distributed build-ups. Innovative techniques, seldom used for the characterization of coralligenous build-ups, were implemented on the two samples. The first approach involved the quantification, with an image analysis software, of the surficial cover, both before and after the removal of their ephemeral canopy of unmineralized and detachable organisms. Several categories of organisms and materials making up the external part of the build-ups were recognized with this technique. Subsequently, computed axial tomography (CT-scan) has been used in order to investigate the internal components of the coralligenous. The results show the high porosity of the framework and identify 4 classes of material with different densities. In both cases the results confirm the principal role of crustose coralline algae as main builders of the Mediterranean coralligenous reefs matching the evidence with the Quaternary fossil record.