**ROV-based sampling as tools for geobiological determination of recent marine bioconstructions**

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# Mediterranean Sea hosts a wide range of biogenic “reefs” originated by the growth and stabilization of several organisms. They are distributed in different marine settings, from shallow to deep water and from open to confined sectors (especially vermetid reefs, sabellariid build-ups,  polychaeta/bryozoan biostalactites from submarine caves, coralligenous build-ups and deep-sea cold-water corals) and constitute important archives of recent environmental and climate changes. Among these, the coralligenous habitat represents an important “hot spot” of biodiversity (Ballesteros, 2006) characterized by a low accretion rate and a high sensitivity to natural and anthropic impacts, including the ongoing climate change (Basso et al., 2022).

# During the project “CRESCIBLUREEF” and according to principles of the Europe Blue Growth Strategy, a ROV-based innovative technology for minimally invasive sampling of marine bioconstructions has been developed and tested. This underwater coring device is characterized by three main modules: (i) core drilling head, (ii) anchoring system and, (iii) tool change mechanism. Moreover, it is driven via a specifically designed control interface which contains information such as core rotation speed, drilling depth and tool magazine positioning.

# Using the protocol proposed by Cipriani et al. (2024), coralligenous core samples, collected from off Marzamemi (Sicily, Italy), are characterized from a geobiological perspective and compared with data obtained from coralligenous build-ups sampled in the same area by scuba-drives the method of Bertolino et al. (2014).

# This comparison will assess core-samples obtained with ROV-based technique as representative of the entire bioconstruction. If representativeness is confirmed, the new tool would be used for sampling marine bioconstructions, with minimal invasiveness and preventing unnecessary damage to these slow-growing and delicate ecosystems.

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