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Caratterizzazione ecologica e studio dei popolamenti macrobentonici dei fondali sedimentari prospicienti la foce del Torrente Bevano

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Abstract

More than 40% of Italy's coastline is affected by coastal erosion, impacting local habitats by altering their structure and function, leading to biodiversity loss. To counteract this, artificial barriers, with varying level of environmental impact, are widely used. The European LIFE NatuReef project introduces an innovative approach: constructing a natural reef made of oysters and sabellariids along a stretch of coastline in the northern Adriatic Sea. This project has a dual goal: reintroducing these species and mitigating erosion along a protected coastal area near the Bevano River mouth. An ecological baseline survey was conducted before the intervention to assess the effects of this natural structure. This thesis focuses on these preliminary studies providing a detailed ecological characterization of the area based on macrobenthic assemblages inhabiting the sedimentary seabed. For this purpose, 40 sediment samples were collected through scuba diving across a 500,000 m² area north of the Bevano River mouth. The samples were analysed in the laboratory, where organisms were sorted and taxonomically classified. Organic matter content was assessed using the Loss on Ignition (LOI%) method. The data were processed with specialized software to evaluate the ecological status of benthic assemblages. The results enabled mapping the distribution of dominant species, analysing species richness, overall diversity, evenness and LOI%. The analyses revealed relationships between depth, LOI% and species density, particularly for the polychaetes Prionospio cirrifera*,* Magelona papillicornis, Owenia fusiformis, *the phoronid* Phoronis muelleri*, and the bivalves* Lentidium mediterraneum *and* Chamelea gallina*. This study represents a crucial step in understanding the area's natural dynamics, allowing future assessment of the oyster and sabellariid reef's impact. Moreover, it aims to support coastal management strategies that integrate erosion mitigation with nature-based solutions.*