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Comparative analysis of cryptic incrusting biota of autonomous reef monitoring structures (ARMS) from tupinambás ecological station, são paulo state, brazil

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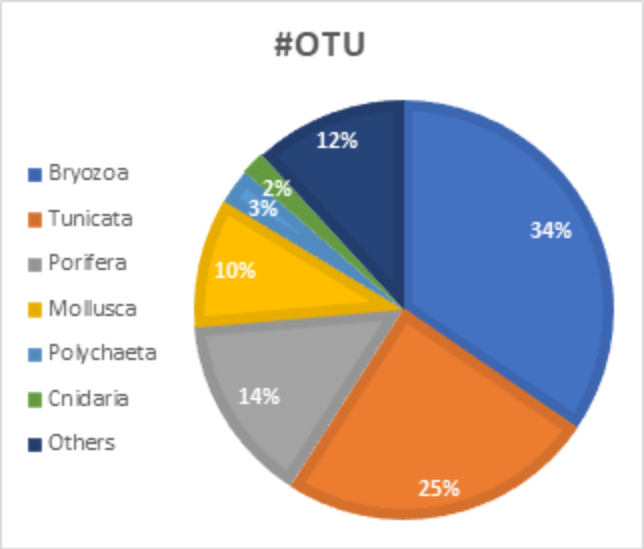
Abstract

Reef ecosystems are amongst the most complex, valuable, and diverse marine ecosystems. Part of the benthic fauna that inhabits these areas is called cryptic fauna, usually composed by small sized invertebrates. These hidden communities live in crevices or inside the reef matrix and their study is hampered by the limited access to this component and troublesome taxonomic identification. To deal with this fraction of the reef biodiversity, the ARMS (Autonomous Reef Monitoring Structures) were conceived. Given how quickly reef systems are losing their resilience, the goal of this work is to analyze and compare the cryptic incrusting biota found inside ARMS from two main locations, Alcatrazes and Ubatuba, inside the Tupinambás Ecological Station on the northern coast of the São Paulo state, Brazil. ARMS were deployed in March 2019 and, one year later, retrieved for processing. Photographs in high resolution were taken during processing and images of 216 plate faces were then analyzed in the CoralNet platform. Identifications were made to the lowest taxonomic resolution and considered operational taxonomic units (OTU). A total of 110 OTUs belonging to fauna, algae and other components were identified, all considered in the analyses. Bryozoans, tunicates, and sponges were the most abundant organisms (figure 1). Red algae were also abundant, especially on the edges of the plates. Sites from Alcatrazes showed higher species richness, while Ubatuba had higher diversity. Assessments on beta diversity revealed that species turnover was more relevant than nestedness amongst all spatial scales analyzed, even considering microhabitats inside the ARMS. This is the first set of ARMS properly analyzed in the Southern Atlantic, and data from metabarcoding are being generated for future comparisons with other localities. These results highlight the convenience of ARMS as a tool for monitoring hard bottom communities in marine protected areas in Brazil.



Keywords

Cryptic biota, ARMS, Ecology, Incrusting biota