

Coral bioerosion in the south central of Vietnam and some discussion about the monitoring method

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Abstract

The term bioerosion refers to the biological destruction of hard structures, such as coral skeletons. On the reefs, this process is contrary of coral calcification. If rates of bioerosion are higher than calcification, healthy reef habitats can be in danger of ruin. Recent years, Bioerosion Monitoring Units (BMUs) have been used for scientists assess, monitor, and understand how coral reefs are responding to ocean acidification. According to NOAA's guidelines, BMUs would be deployed at reef monitoring sites, after collection, changes in density, volume, and mass indicate rates of bioerosion. However, may be due to unclear guidelines or inappropriate conditions/designs, when applied in Vietnam, this method presented some difficulties and limitations in implementation. Even so, we have made some improvements and obtained the initial data on coral bioerosion. We compared the histogram of tomography images from CT scanner (0.6 mm thick of each slides) to evaluate the bioerosion, with the mechanism: the whiter image, the denser coral density. The results show that the bioerosion trend of coral samples at the site Southwest Mun Island was similar to the average of whole Nha Trang area (117.5% and 114.2%), while this rate in Ninh Thuan area was much higher with 158.8% (in two years). This might be explained that due to the environment in Ninh Thuan area (lower Ω_{Ar} value) made corals more vulnerable. Besides, we found that the more hollow/porous the coral sample before deployment, the more susceptible it is to bioerosion. On the basis of the difficulties and limitations that we faced and from the results obtained, we had some discussions and improving suggestions for a more appropriate bioerosion monitoring method (artificial coral, tomography technique, histogram analysis etc.).

Keywords: Coral bioerosion, BMUs, bioerosion monitoring method

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