

Adaptive changes in size of tropical benthic megafauna

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Megabenthic animals of soft-bottom sediments play a crucial role for the cycling of elements and sediment-water coupling. They respond rapidly to anthropogenic and natural stress. Changes in size of megafauna inhabiting soft-bottom sediments of the Colombian Caribbean Sea were comparatively investigated. Size controlling variables and processes were identified for samples collected from a depth range between 10 and 500 m. Generalized Additive Models were applied and significant changes in size analyzed to infer the influence of biotic and environmental factors. Organism size as the dependent variable and depth, temperature, inter and intra specific density, species richness, latitude and longitude as predictive variables were computed. The majority of species indicated size increments with increasing depth and decreasing temperature. An abrupt decrease in size was observed along the middle part of the Colombian Caribbean Sea towards the Magdalena River mouth, possibly due to the strong physicochemical changes produced by the river. This zone is characterized by showing the lowest plankton primary productivity along the northern coast of South America. Towards the north of Magdalena River, an evident increase in sizes was observed. This effect is possibly related to the coastal upwelling that takes place in the northern part of the Colombian Caribbean.

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