O uso de assembléias mortas de moluscos para inferir padrões de diversidade em longa escala temporal

Using mollusk death assemblages to access patterns of diversity in a long time-scale

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Mollusk shells can resist a long time in the sediment – from days to thousands of years – before they are destroyed or fossilized. This resilience results in the accumulation of remains from successive community states which can be used as a tool to access long-term variation in mollusk diversity. Coastal lagoons are very unstable environments and its fauna composition and distribution can change drastically due to changes in environmental conditions. Araruama Lagoon is a coastal lagoon located in Southeast Brazil which presents a salinity gradient that runs from oceanic to hypersalinity conditions towards the inner lagoon. Benthic fauna and flora are strongly influenced by this gradient and few organisms can colonize areas with reduced oceanic influence. The aim of the present study was to investigate the mollusk death assemblages from Araruama Lagoon to infer patterns of diversity in a long time-scale. The field work consisted in gathering shells on the superficial sediment from five beaches along the lagoon: one located in the channel that connects it to the sea, with almost marine physical-chemical characteristics; one in an intermediate area and the other three along the inner lagoon, where tide effects can't be detected and oceanic influences are reduced. The resulting species lists were compared with the lists of living animals. Twenty-four mollusk species were collected alive in the channel, while only nine species were identified as empty shells. The channel is an urban area and it is constantly being dredged and having its margins modified. Consequently, shells from successive community states probably do not accumulate. It is also the most studied area of the lagoon, and species lists made on the last decades are probably more representative of variation in mollusk diversity. A different taxonomic composition was found in dead and live assemblages in the intermediate area, but species richness was the same. These differences occurred probably due to sampling in areas with different characteristics, but further studies are required. In the inner lagoon beaches only small and physiologically stressed individuals of the euryhaline bivalve Anomalocardia brasiliiana were found alive. But empty shells of ten mollusk species were identified: A. brasiliiana, Chione cancellata, Codakia costata, Cyclinella tenuis, Diplodonta punctata, Laevicardium brasiliananum, Tellina lineta, Trachycardium muricatum, Bulla striata and Cerithium atratum. Nine of them are known to tolerate at least moderate hypersalinity (the exception is L. brasiliananum). The only list of mollusk species in the inner lagoon was gathered in one of the periods with highest salinity. It is known that, in the last 40 years, salinity in Araruama Lagoon has changed approximately 25 units but always remained higher than normal. This condition is also believed to date back at least to 16th century. The ten euryhaline species that were not found alive are probably species that are capable of colonizing the lagoon in periods of more moderate hypersalinity. Diversity and composition of the mollusk death assemblage also indicate that hypersaline condition is a permanent feature of the history of the Lagoon.