



## **Molluscan shell communities: a window into the ecological history of the northern Adriatic Sea**

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The historical ecology approach used in the present study sheds light on the younger ecological history of the northern Adriatic Sea, targeting the period of the last 500 to 1500 years. We focus on down-core changes in molluscan death assemblages, where differences between community structures serve as a proxy for ecological shifts over time. The northern Adriatic Sea, with its densely populated shoreline, is among the most degraded marine ecosystems worldwide and is therefore particularly suited to study ecosystem modification under human pressure.

Multiple cores of 1.5 m length and diameters of 90 and 160 mm were taken at seven sampling stations throughout the northern Adriatic Sea, covering different sediment types, nutrient conditions and degrees of exploitation. For the mollusc analyses, the cores were sliced into smaller subsamples and analysed for species composition, abundance, taxonomic similarity, evidence for ecological interactions (i.e. frequencies of drilling predation) and taphonomic condition of shells. Sediment analyses include granulometry and radiometric sediment dating using Pb 210. Sediment age analysis revealed one-order-of-magnitude differences in sedimentation rates between stations (34 mm/yr at the Po delta, Italy, 1.5 mm/yr at Brijuni islands, Croatia). In total, 114 bivalve and 112 gastropod species were recorded. Bivalve assemblages showed significant interregional differences that are strongly correlated with sedimentation rates and sediment composition. Down-core changes in molluscan communities are conspicuous in all cores, particularly in the uppermost core sections. This information, together with radiometric shell dating for selected species, helps to specify the timing of major ecological changes in the past and define pristine benthic communities as references for future conservation and management efforts.