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# Long-term ecological changes in the north Adriatic Sea: Epi-to Infauna turnover at the Brijuni islands national park

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The northern Adriatic Sea with its densely populated coastline experienced strong anthropogenic impacts during the last centuries. The Brijuni islands at the southern tip of Istria, Croatia, are a national park since 1983 and represent a study area of special interest when comparing impacted marine areas with regions under relatively long-term protection that were able to recover from the pressure of fishing and bottom trawling. The present study is part of a project on the historical ecology of the northern Adriatic sea and focusses on long-term ecological changes and benthic community shifts as a result of anthropogenic impacts since the Holocene transgression.
Several cores of 1.5 m length and a diameter of 90 mm were taken close to the main island of Brijuni and sliced into smaller subunits for sediment analyses and the investigation of death assemblages. Hard part remains of molluscs, crustaceans, bryozoans, echinoderms and sedentary polychaetes were analysed for species composition, abundance and indicators for high biomass epifauna. Death assemblages were compared with surface samples of the recent fauna taken at the same area by grab-sampling and by divers using a 100 x 100 cm frame. Data analyses revealed a steep increase of species abundance and diversity in the early stages of the Holocene transgression, at the very bottom of the core, followed by a steady decline, representing a major shift from a previously epibenthic to an infauna dominated community. Towards the top of the core, this trend weakens, and in the uppermost 6 cm it even reverses indicating a possible recovery of the benthic communities since the protection of the area. By correlating down-core changes in benthic community structure with sediment parameters (grain size distribution, TOC, heavy metal content, concentrations of organic pollutants) and data from radiometric sediment dating, we can further improve our understanding of the timing and the magnitude of past ecological changes and their consequences for benthic communities.