

IMPACT OF MAINTENANCE CHANNEL DREDGING ON SEDIMENT CHEMISTRY AND TOXICITY IN A NORTHERN ADRIATIC COASTAL LAGOON

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Coastal lagoons are ephemeral habitats whose conservation requires direct human intervention, including maintenance dredging of the inner channels. Dredging can modify sediment properties and resuspend fine sediment nutrients and pollutants, which can lead to eutrophication, hypoxic events and increasing toxicity in the bulk sediments and the overlying waters. The aim of the present study was to assess the effects of channel dredging, carried out between October 2004 and August 2005, on sediment chemistry and toxicity both in channels and adjacent ponds in the northern Adriatic lagoon Pialassa Baiona. Three putative impacted sites were located in a channel and in a pond far from the dredged area. Replicate samples were collected at each site before and after the dredging operations. Heavy metals, grain size, and sedimentary organic matter were measured. Survival of the amphipod *Corophium insidiosum* and luminescence inhibition in the marine bacteria *Vibrio fisheri*, exposed in the laboratory to the sampled sediments, were also assessed. While some changes in sediment toxicity and contamination were observed after the dredging operations, it was not possible to unambiguously attribute these differences to the intervention. This could be due to the unavoidable variability in the sensitivity of the test species and to the high spatial heterogeneity that characterise the studied environment, which can hide the effects of the dredging. Moreover, since the dredging operation was lengthy, and included the frequent suspension of activity, the physical disturbance could have affected the impacted sites at different times, and therefore the intervention cannot be considered a single and unique event.

Keywords: Dredging, Coastal lagoon, Pollution, Ecotoxicology, northern Adriatic Sea