Effect of dredging activities on the health status of *Posidonia oceanica* meadows along the north Latium coast (Tyrrhenian Sea)

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Coastal areas are characterized by several disturbances due to the presence of numerous anthropic activities that may alter the health status and ecological functioning of *Posidonia oceanica* meadows. The reduction of seawater transparency and the increase of sedimentation rate are among the main causes of their regression.

This work is focused on the northern Latium coast (Central Tyrrhenian Sea), from Marina di Tarquinia to Santa Severa. Over time, alteration of river run-off (change in land use, captation along rivers, etc.) and dredging activities carried out within the Civitavecchia harbour, have led to the dispersion of a large amount of fine materials in the marine environment. In this area, four Sites of Community Importance were identified according to the Habitats Directive (92/43/EEC), due to the presence of *P. oceanica* beds. Meadows are fragmented and discontinuous also because the high geomorphological heterogeneity.

The aim of this work has been to evaluate the effects of the reduction of seawater transparency and the alteration of sedimentation rate on the meadows due to dredging activities. The evaluation of meadows health status from 2002 to 2013 was performed by structural (shoot density and coverage) and functional (leaf biometry) standard descriptors analysis. In the same period, the water transparency and the sedimentation rate have been analysed using numerical models able to distinguish between river and dredging contributions.

The simulations of dredged sediments transport have highlighted as the plume is transported mainly to the north, with high concentration values near the shoreline; for this reason the evaluations of shoot density of *P. oceanica* meadows located near the harbour and far from the coast have not shown a decrease over the years. In the meadow further north, where the concentration of dredged suspended materials is decreasing, the reduction in shoot number is mainly due to the sediment plumes of the Marta and Mignone rivers.