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Posidonia oceanica interaction on sedimentary processes and related effects on the seasonal structure of the associated community

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The Posidonia oceanica is the endemic seagrass of Mediterranean Sea, subjected to a diffuse regression in last 50 years. Sedimentary flux is one of the ecological factors of the seagrass ecosystems and makes an important theme for the conservation of coastal natural resources. The present work investigates the vertical sedimentation flux on P. oceanica meadow and the linkage between the sedimentary dynamic and benthic community structure. The experimental investigations about sedimentation of organic and inorganic matter were monthly conducted on a meadow placed at 7 m depth in Civitavecchia (Italy), throughout the year 2015-2016, by the use of sediment traps. Fauna assemblage were analysed seasonally on three macro-habitat (sand pool, rhizome and leaves) of P. oceanica. The experimental investigations conducted on P. oceanica meadow have demonstrated the role of seagrass on particles sedimentary process and how this interaction has a direct implication on the structure of fauna assemblage. Proceeding from the bottom toward the leaves a vertical gradient of stability is clearly recognized. The leaf stratum fauna is the most variable and strongly dependent to the growth of leaves; the population of rhizomes is more susceptible to sedimentary dynamic regime of particles, that causes a shift of trophic categories while populations of sand pool are quite stable during the year. The capacity of a P. oceanica meadow in particles retention, especially during the maximum growth of leaves, favours the accumulation of organic matter and sediment that contribute to ‘matte’ accretion and provide habitat and feed for benthic species that live in the rhizome-matte stratum.