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Effects of organic matter input from a fish farming facility on a *Posidonia oceanica* meadow

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Abstract

In the Mediterranean, the development of aquaculture along the coasts appears as a source of disturbance to the littoral ecosystems, and in particular to *Posidonia oceanica* seagrass meadows. Although the impact of fish farms in Northern Europe has been studied over the last few years, the data are more scarce in the Mediterranean. Thus, a number of physico-chemical and biological parameters have been examined here in order to evaluate the impact of a fish farm in a littoral bay of Corsica. The following values that were recorded in the vicinity of the fish farm are much higher than those at the reference station: organic content of the sediment (24–21 versus 2%), nitrogen concentrations (ammonium: 19.5–8.4 versus 1.8 μM) and phosphorous levels in the pore water (orthophosphates: 5.2–1.3 versus 1.7 μM). The seagrass meadow vitality also seems to be affected in the vicinity of cages, with densities that drop from 466 (reference station) to 108 shoots m^{-2} (20 m from cages). Total primary production also varies from 1070.6 to 87.9 g m^{-2} $year^{-1}$. The main impact factors seem to be the input of organic matter originating from the cages and the high epiphyte biomass caused by the nutrient enrichment. The high level of organic matter and the presence of mud seem to alter the physico-chemical characteristics of the bottom sediment; moreover, the plant/epiphyte competition seems to lead to a leaf fragility and, more importantly, to a decrease in available light.

Keywords: seagrass beds; regression; organic matter; nutrients; aquaculture; Mediterranean coast

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