

## Shading and alterations of the sediment: *in situ* experiments to mimic impacts of fish farms on a Mediterranean coastal ecosystem

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In the Mediterranean coastal zone, the seagrass *Posidonia oceanica* forms underwater meadows which sustain a high biodiversity and has many important roles (production of oxygen, protection of coasts, ...). Unfortunately, they are more and more threaten, notably by the increasing development of aquaculture. Indeed, fish farms increase the biomass of phytoplankton organisms in the water column (leading to a shading effect) and modify the sediment, which entail the disappearance of the seagrass. To understand the impact of those troubles on *P. oceanica* and the ecosystem, in situ experiments were led during three months, in STARESO (STATION de Recherches Sous-marines et Océanographiques; Calvi, Corsica), at a depth of 10 meters. The shading was mimicked by shading frames, which stopped around 50 % of the incident light. To modify the sedimentary compartment, sediment was taken from under the aquaculture of Calvi and added once a week on marked zones in the meadow. Those sites were compared with a control site, situated near them. Measured parameters are: the concentration of nutrients in pore water, grain size, redox potential discontinuity, biomasses of bacteria, organic matter, meiofauna and microphytobenthos within the sediment, the length, width, biomass and chlorophyll a content of *P. oceanica* leaves and the biomass of epiphytes. During those experiments, *P. oceanica* was not very affected although some parameters of the sedimentary compartment were modified. These results show that the sedimentary compartment reacts more rapidly to threats than the seagrass itself. So, it could be an interesting tool in quality assessments.

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