

O38.5**Impacts of small coastal infrastructures on seagrass carbon stocks**

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Abstract

Seagrass meadows, through their large capacity to sequester and store organic carbon in their soil, contribute to mitigate the impacts of climatic change. However, these ecosystems have experienced large losses and degradation worldwide due to anthropogenic pressures, and they continue to be among the most threatened ecosystems on Earth. At the local level, seagrass meadows are commonly impacted by coastal constructions either directly (replacement of the meadows by the structures or burial) or indirectly (changes in the hydrodynamic or light regimes due to the structures). When a meadow is impacted, the vegetation is partially or completely lost, and the sediment is exposed to the atmosphere or water column, resulting in the erosion and remineralisation of the carbon stored, which is eventually released as carbon dioxide. Here we assessed how small coastal infrastructures in a coastal lagoon affected the sedimentary organic carbon stocks of seagrass meadows. Three intertidal areas colonised by seagrasses and impacted by the construction of a bridge and two pontoons were selected in the Ria Formosa (Portugal) based on the analysis of historical satellite images. At each site, the sedimentary blue carbon stock was assessed in the impacted area and the adjacent seagrass meadows by extracting 2.5-m long cores, in which the organic carbon content was measured. We observed that the sediment in the impacted areas was mainly sand whereas that from the well-preserved meadows presented a higher percentage of silt and clay. These differences are reflected in the organic carbon stock, which was, on average, 1/3 lower in the impacted areas than in the adjacent meadows. These results showed that, although the impacted area was not large, the coastal infrastructure caused a significant reduction of the sedimentary carbon stock and the total disappearance of the meadow, and consequently a total loss of its carbon sequestration capacity.

Keywords

Blue Carbon, Impacts, Seagrass, Anthropogenic pressure