



## Phytoplankton trapped within seagrass (*Posidonia oceanica*) sediments are a nitrogen source: An in situ isotope labeling experiment

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**ABSTRACT:** We examined the retention of nitrogen associated with sedimented planktonic material trapped within a Mediterranean seagrass (*Posidonia oceanica*) meadow with the use of  $^{15}\text{N}$ -enriched algal material injected into vegetated and nonvegetated sediment as a tracer. The retention of labeled nitrogen material in the sediment and the appearance in *P. oceanica* leaves, rhizomes, and roots was examined 3, 5, 9, and 21 d after injection. More than 80% of the label material added to the bare sediment was lost within 5 d. Labeled material was retained better in vegetated sediments. Labeled material from the sediment was taken up rapidly by the roots, translocated through the rhizomes, and accumulated in the new leaves. The amount of  $^{15}\text{N}$  recovered during the experiment in *P. oceanica* meadow was fourfold higher than that recovered in unvegetated sediment, demonstrating that the *P. oceanica* meadow was more efficient in retaining the nitrogen deposited as algal material than unvegetated sediments. Enhanced trapping of sestonic particles by seagrass canopies can be an efficient nutrient acquisition strategy in the oligotrophic environments that seagrasses inhabit.

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