Corsican seagrass detritus: an opportune shelter or a copepod Eldorado?

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Seagrass ecosystems are extensive beds of marine flowering plants bordering tropical and temperate coastal regions. They play an important role in maintaining biological productivity and bio-geochemical cycles in the sea and support higher diversity and abundance of fauna in comparison to adjacent non-vegetated areas. The seagrass meadow primary production can be directly consumed through herbivory but the majority of the plant material falls on the sea floor during the autumnal leaf senescence. The leaf litter then degrades within the meadow or accumulates with other micro- and macrophytodetritus to form detritus accumulations on the adjacent non-vegetated sand patches. These exported accumulations are quite dynamic in relation to seafloor geomorphology and local hydrodynamics. Thus, the detritus accumulations are an easily disturbed ephemeral environment with one large influx a year. Consequently the physico-chemical characteristics can change very fast and impact the sheltering capacity and food supply present. Nonetheless, fishes, macrofauna and meiofauna are omnipresent throughout the year.

In our study site along the shore of N.-W. Corsica, *Posidonia oceanica* seagrass meadows are characterised by substantial detritus accumulations. The present study aimed to analyse the biodiversity of the copepod species communities (Crustacea, Copepoda) in those detritus accumulations. The results showed that the copepod detritus community consisted of a mixture of species that are also found in adjacent habitats (seagrass meadow, sediment, epilithic habitats, water column). Each adjacent habitat is characterised by organisms that are morphologically adapted to the specific features of that habitat. The majority of copepods are epiphytic (order Harpacticoida), that occur typically on seagrass leaves and macroalgae. Other species are planktonic (orders Cyclopoida and Calanoida) and some were benthic (order Harpacticoida), known from the nearby sediment. A minority of the copepod community were parasitic on fish or invertebrate (order Siphonostomatoida).

In order to clarify their origin, we assume that passive transport by currents plays a significant role next to the active migration from the anoxic sediments under the detritus. For sure they also reproduce within the detritus packages as we found many nauplii, copepodites and gravid females.
The above-mentioned suggestions cannot explain such high density of copepods by themselves. Other attraction mechanisms are needed to explain the important amount of planktonic and epiphytic species with good swimming ability, such as higher food accessibility. In the detritus no plant-defence mechanisms are present anymore and a lot of micro-organisms and thus potential food sources are present. Furthermore, the dense detritus package provides shelter and protection from potential predators.

Subsequently we may consider the detritus accumulations as a copepod species-specific opportune Eldorado for sheltering, nursing and feeding.