

Trophic diversity of seagrass detritus copepods: A consequence of species-specific specialization or a random diet?

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One of the major ecological research questions is understanding how biodiversity influences ecosystem functioning. Unravelling interspecific feeding preferences of organisms with overlapping trophic niches will give part of the answer. Subsequently, the present study displays the trophic diversity of a benthic copepod community in a North-Western Corsican *Posidonia oceanica* seagrass ecosystem. These seagrass meadows are often interrupted by bare sand patches serving as deposition area for loose detritus. The accumulated macrophytodetritus, mainly derived from senescent macrophytes, harbour a diverse community of Harpacticoida (Crustacea, Copepoda). The most abundant copepods (i.e. three harpacticoids and one calanoid, belonging to different eco-morphological types) and their potential food sources (i.e. macrophytodetritus, epiphytic biofilm and suspended organic matter) were analysed for stable isotope ratios ($\delta^{13}\text{C}$, $\delta^{15}\text{N}$) and total lipids content. The results revealed a harpacticoid copepod feeding preference towards the epiphytic biofilm, while calanoid copepods preferred suspended organic matter. Additionally, a species-specific composition variation revealed finer partitioning of food resources (e.g. different micro-organisms present in the biofilm like bacteria, diatoms, fungi) over time.

In conclusion, results showed species-specific food preferences, resulting in trophic niche and resource partitioning. Every eco-morphological type seems to cope in different ways with temporal fluctuations of food sources to comply with their nutritional needs. This illustrates the high resilience of the copepod community present in macrophytodetritus accumulations. Moreover, our results underlined the importance of multiple biomarker species-specific analysis in trophic ecology studies, especially in complex and dynamic environments offering numerous food items to consumers.