Nocturnal vertical migrations by amphipods of the *Posidonia oceanica* (L.) Delile foliar stratum : Importance of the litter cover.

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I. Introduction

Mediterranean *Posidonia oceanica* meadows shelter an important biodiversity and biomass of vagile invertebrates. Among these invertebrates, several taxa, including amphipod crustaceans, seem to perform a nocturnal rise from the lower layers of the meadow (*i.e.* the "matte") to the foliar stratum. This vertical migration is generally regarded as a defense mechanism against predation by diurnal fishes, as well as a mean to maximize the exploitation of trophic resources offered by the meadow [1,2]. However, this phenomenon is poorly known, notably regarding the distribution of the organisms in the lower layers during daytime. Here, we focused on the role of the *Posidonia* litter (*i.e.* the dead *Posidonia* leaves and the detrital material associated) dispersed among the meadow in the diel vertical migration of amphipods.

II. Material & Methods

Our study was carried out in the Calvi Bay (NW Corsica). All samples were taken by SCUBA diving near the STARESO research station, at a depth of 10 m. The foliar stratum was sampled using a hand-towed net, as described by [3]. The litter was collected manually. Sampling has been performed in two seasons (November 2006 and March 2007), at two periods of the day (day- and nighttime) and using two methods, thus leading to a total of 8 samples.

III. Results & Discussion

In total, 1194 amphipods, belonging to 28 species from 19 families, were identified. Among these, the species *Apherusa chiereghinii* and *Aora spinicornis* were by far the most abundant, accounting respectively for 70,44 % and 5,11 % of the total individuals. As shown on fig. 1, both species show the same abundance variation patterns. Abundance in the foliar stratum shows a strong reduction in the daytime, while abundances in the litter are higher during the day. Our results thus confirm the nocturnal rise of amphipods to the foliar stratum of the meadow.

Dominance of the species *A. chiereghinii* and, to a lesser extent, *A. spinicornis*, is a common feature of studies concerning *P. oceanica* meadow vagile fauna composition [*e.g.* 2]. However, these species are, to our knowledge, completely missing from studies of the macrofaunal composition of the matte *sensu stricto* [4,5]. Combined to an analysis of existing literature, our results thus tend to show that these species spend the daytime not in the matte itself, as it has been proposed in the past, but in the thin layer of *Posidonia* litter present at the "interface" between the foliar stratum and the root/rhizome system. This would emphasize the role of the litter cover in the complexity of the habitat within the meadow, and therefore in the vagile invertebrate community structure and the functioning of the whole meadow as an ecosystem.

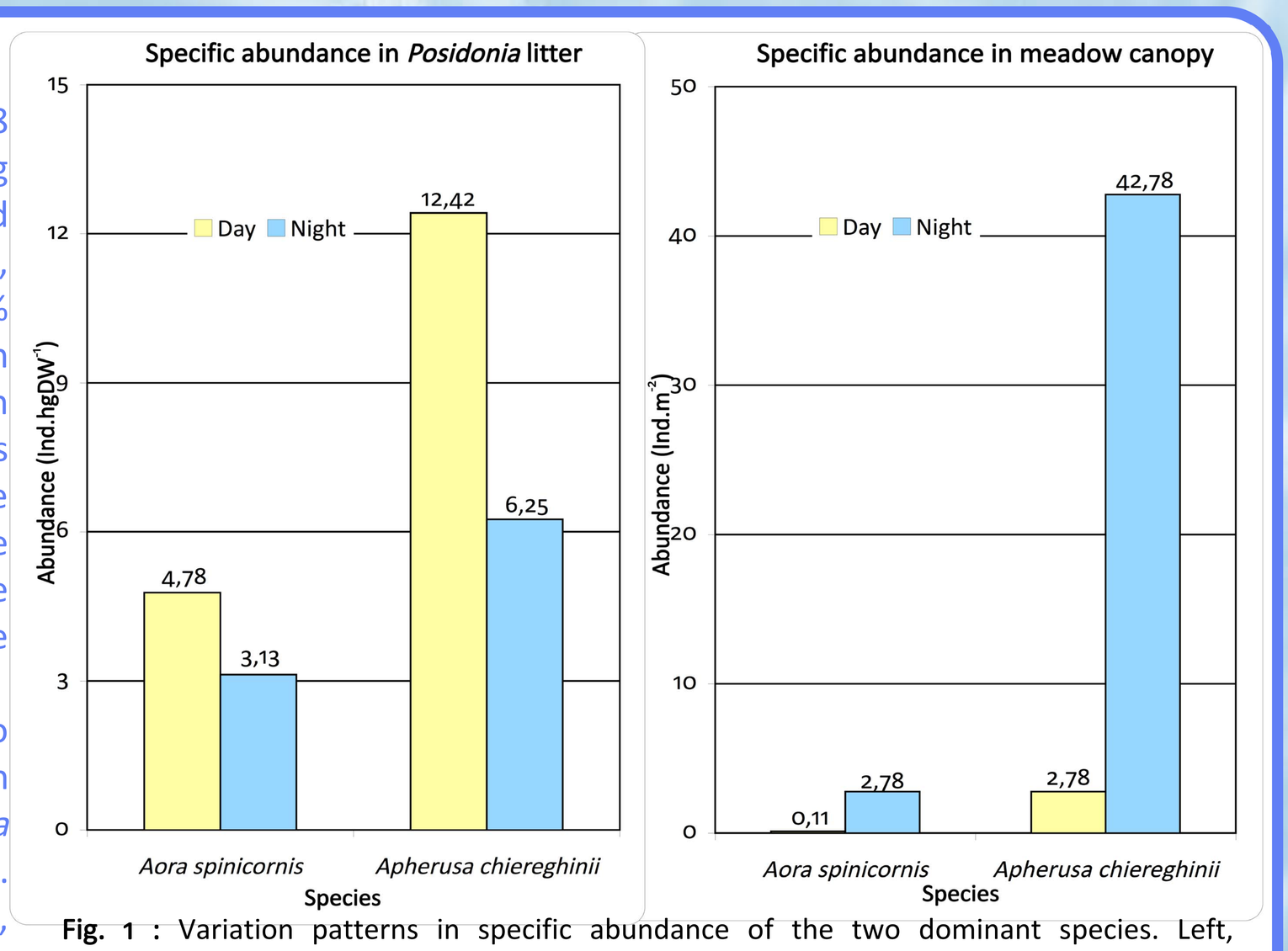

Fig. 1 : Variation patterns in specific abundance of the two dominant species. Left, abundances in the litter cover (expressed in number of individuals per hectogram of dry weight of litter). Right, abundances in the foliar stratum (expressed in number of individuals per square meter of meadow). All values are means of the two sampled seasons.

References

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