Trophic tracers reveal considerable diversity among diets of dominant amphipods from *Posidonia oceanica* seagrass meadows

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### Objectives

1. Estimate relative importance of available food items for amphipod nutrition: *P. oceanica* leaves and litter; suspended (SPOM) and benthic (BPOM) particulate organic matter; leaf and litter epifauna; leaf, litter and rhizome epiflora.

2. Evaluate the extent of interspecific trophic diversity among the taxocenosis.


### Results & Discussion

#### I. $\delta^{13}C$ and $\delta^{15}N$ of consumers and food items

- $\delta^{13}C$ values: 3 groups of sources. *D. spiniventris* mostly feeds on the most negative ones. *A. chiereghinii, A. spinicornis, A. helleri* and *C. acanthifera* mainly rely on the "median" ones. *G. fucicola* and *G. aequicauda* seem to forage on two distinct food items groups.

- $\delta^{15}N$ range of food sources and consumers overlapping: amphipods are primary consumers + low $\Delta^{15}N$.

#### II. Application of the SIAR mixing model

Using only $\delta^{13}C$ data and experimentally measured TEF ($\Delta^{13}C = 0.2 \pm 0.6 \%$), source were lumped in 3 groups.

- All species but *D. spiniventris* have a mixed diet and feed on more than one group of items.

- Posidonia-derived carbon is important for *G. aequicauda*.

- "Most negative" sources importance seems higher than inferred from descriptive analysis: major items for *A. helleri, C. acanthifera, G. fucicola* and *G. aequicauda*.

#### III. Insights drawn from other techniques and trophic status of the dominant species

**Gut contents:** Main food item = macroalga. No live seagrass grazing, no deposit feeding. Microherbivory or suspension feeding unlikely.

**Fatty acids:** Plant-based diet (C$_{18}$ and C$_{20}$ PUFA). No live seagrass grazing (low [18:2(n-6)] and [18:3(n-3)]). Diatom marker16:1(n-7) rare.

**Overall:** A. chiereghinii and A. spinicornis are grazers focusing mostly on leaf and litter epiphytes. *D. spiniventris* and *G. fucicola* graze preferentially on rhizome epiphytes. *A. helleri* and *C. acanthifera* are generalist epiphyte grazers. *G. aequicauda* is an herbivore/detritivore.

### Conclusions

- All species heavily rely on macroepiphytes ➔ Potential to have a critical influence on the ecosystem functioning through the grazer-epiphyte-seagrass system.

- Interspecific dietary preferences towards different algal groups and mixed diets ➔ Mechanism to avoid competition and maintain specific diversity.

### Acknowledgements

At the time of the study, LM and NT were respectively F.R.S.-FNRS Postdocs and PhD Research Fellows. G. Lepoint is a F.R.S.-FNRS Research Associate. The authors would like to thank Renzo Biondo (Laboratory of Oceanology, ULg) for his technical assistance in the conception and building of sampling gear and the staff of the STARESO Research Station for their help during the fieldwork.